CHAPTER VII
DIAGNOSIS AND TREATMENT SERVICES
INTRODUCTION AND CHAPTER SCOPE

Diagnosis and treatment services absorb the bulk of current expenditures for health care and dominate health planning and review activities in California. It is this sector of the health system that most people think of when deploring high costs or questioning medical efficacy. Many believe that some of the resources now devoted to diagnostic and treatment services should be diverted to promotion and prevention, long term care or health related social services.

Because this sector is so large, the traditional planning approach to diagnosis and treatment services has been to split them into manageable pieces reflecting medical specialty practice (e.g., clinical laboratory service) or apparently unique service characteristics (e.g., emergency medical services). This approach, which is required by current State and federal regulation, encourages the view that diagnosis and treatment services are discrete, independent and self-contained. It discourages analysis of possible substitutes, desirable interdependence and common issues.

This Plan cannot break with tradition entirely, but it does group diagnosis and treatment services somewhat differently from the 1978 and 1979 HSPs. For instance, CT scanner services are discussed under the more general category of ancillary services and a section to address a critical age group has been established (e.g., children and youth services). The intent is to encourage attention to interrelationships and recurrent problems and to provide a larger focus for planning analysis.

Services in this chapter are arranged as follows:

- Primary Care
- Reproductive Services
- Children and Youth Services
- Emergency Medical Services
- General Acute Care
- Ancillary Services
- Ambulatory Surgery
- Burn Care
- Cardiovascular Surgery
- Acute Rehabilitation
- End-Stage Renal Disease
- Micro and Laser Surgery
- Oncology Services
PRIMARY CARE *

DEFINITIONS AND SCOPE OF SERVICES

Primary care is that level of personal health services which meets the routine and basic health needs of most of the people most of the time.

There is no uniform definition of the services encompassed by primary care, and no definition currently exists in OSHPD or federal regulations. The definitions used in the California HSPs vary. A federal attempt to define primary care for policy purposes refers only to attributes of primary care and does not specify the substantive content of the care.¹

For purposes of this Plan, primary care is defined to include:

- well care: prevention, health education and health maintenance
- diagnosis and treatment of common, acute and chronic illness and disability
- psychological support to help stabilize patients and families during illness and stressful episodes
- referral, coordination and followup when specialty care, hospitalization or other form of institutionalized care is required.

Primary care services ideally focus on the family or living unit as the recipient of care. They are provided in a manner that promotes accessibility, acceptability, comprehensiveness and continuity of care.

Various aspects of primary care are presently delivered by a great variety of people and organizations including:

- private physicians in group and solo practice
- nurses, especially public health nurses
- practitioners in other health professions, e.g., dentists, pharmacists, social workers, psychologists
- nurse practitioners (NPs), physician's assistants (PAs) and other midlevel practitioners (MLPs)

* Much of the substance of this section was derived from "Primary Care," Carol Spain, February 1980, Office of Statewide Health Planning and Development, which serves as a supplement to this Plan.
Primary Care

- community healers such as acupuncturists
- Health Maintenance Organizations (HMOs).
- hospital outpatient departments and emergency rooms
- freestanding clinics of public, voluntary nonprofit and private sponsorship.

Providers of primary care function as the entry point into the health care system and often refer patients to other services and specialties.

BACKGROUND

Relationship to Health Status

The impact of primary care on health status is difficult to assess. Patient problems are frequently diffuse, chronic or long unattended. Ironically, the sudden availability of primary care may produce a rise in reported morbidity as people appear for care for the first time. For these reasons, statistical data relating to the efficacy of primary care services must be interpreted carefully.

Available data for traditional health status measures present an uneven picture. Physicians in office based practice, rate 80 percent of all visits as either slightly serious2 or not serious and Kaiser Permanente categorizes 68 percent of patients presenting at first contact as well or worried well.3 On the other hand, the decline in maternal mortality from 727.9/100,000 in 1915-19 to 14.6/100,000 in 1974 is almost certainly due to increased access to and improved quality of prenatal and maternity care.4 Similarly, contraception and childhood immunizations have had positive effects on individual health. The potential of antihypertensive agents to reduce morbidity and mortality from stroke and coronary heart disease is very promising, provided access to care can be assured.

However, primary care has been found to have a measurable impact on some conditions that can be prevented as well as treated.

- a study of maternal and infant care primary care centers into low income areas in the 1960's showed overall reduction in neonatal death rates from 20.0 to 15.7 per 1,000 live births or a 23 percent decline in infant mortality in the predominantly black and high risk populations served in the program5

- the infant mortality rate (IMP) declined 28.4 percent in census tracts in Denver which had access to Neighborhood Health Center (NHC), as reported by Chabot in 1971. This finding was compared to an 18.4 percent reduction in other census
tracts. After NHC development, the low income population in this area had the same IMP as population in general (1971)\(^6\)

- A study reported by Schinnor in 1972 found that populations served by Neighborhood Health Centers reported declining infant mortality rates. The Tufts Medical School Project in the Mississippi Delta, reported a 57 percent reduction in infant mortality, from 70 to 30 per 1,000 in two years of operation\(^7\)

- A study of impact of a comprehensive care program on the incidence of rheumatic fever in Baltimore children in the late 1960's showed a 60 percent reduction in new cases of the disease in children within the comprehensive care tracts\(^8\)

- The importance of childhood immunizations in the reduction of incidence of preventable diseases and access to contraceptive technology to control fertility is well recognized. Hypertension detection and treatment including the potential of antihypertensive agents to reduce morbidity and mortality from stroke and coronary heart disease is promising.

Ultimately, there is the problem that many primary care problems are important to patients but difficult to factor into health status measures. What value should be assigned to the treatment of acne vulgaris, which consumes about 25 percent of the time of the nation's 4,380 dermatologists or an estimated expenditure of 1,000 physician years annually? Public perception of the value of primary care is indicated by the fact that a very high proportion of primary care expenditures is paid out-of-pocket. Of the U.S. population, 75.5 percent had a physician visit in 1976, and there were 5.1 physician visits per person in 1976. A noted observer has expressed the significance of primary care:\(^9\)

"...None of the indicators used to measure health status... take into account the essential contribution medical care makes toward relieving worry and uncertainty, alleviating pain and discomfort, providing support and reassurance, and facilitating the ability of individuals to make a better adjustment to their environment... this more intangible caring function constitutes an essential aspect of primary medical care."

**National Trends and Policy**

Equitable access to primary care has been a major issue and several strategies have been devised over the last 10 to 15 years to improve it. These include:

- Development of family practice (FP) as a specialty in medicine

- Expansion of roles of mid level practitioners
• physician scholarships and loan forgiveness programs
• improved access to physician services through Medicare and Medicaid
• establishment of the National Health Service Corps, Community Health Centers and Area Health Education Centers (AHECs)
• designation of health manpower shortage areas for receipt of National Health Service Corps physicians and other resources
• encouragement of HMOs.

The impact of these measures has been to:
• greatly increase the number of primary care practitioners, e.g., medical residents in family practice training increased from 290 in 1970 to 5,400 in 1977; 3,000 PAs and 3,500 NPs graduated from 55 PA and 145 NP training programs through 1976
• make some dent in the problem of geographic distribution (70 percent of 1977 graduating FP residents chose practice locations with less than 100,000 population and 36 percent of NPs work in inner city neighborhoods)
• increase use of health services by the poor
• enhance the attractiveness of rural practice
• stimulate growing interest in and numbers of HMOs.

The major identified national gap in primary care is access to care for the "near poor," those ineligible for Medicaid but lacking either insurance or out-of-pocket funds. The current federal priority in regard to this problem is the expansion of primary care programs such as community health centers, rural and migrant health services and the National Health Service Corps.

California Trends and Policy

California has a large proportion of racial/ethnic minority groups in the population (see Chapter IV) and health status indicators demonstrate persistent discrepancies between minority and majority groups.10 For example, life expectancy for whites exceeds that for Blacks by about five years for both sexes (see Chapter IV). Morbidity data for Los Angeles demonstrate higher rates for all reportable communicable diseases (with the exception of gonorrhea) in East/Northeast Los Angeles, inhabited primarily by Spanish surnamed people, than for the county as a whole (Table VII-1).
### TABLE VII-1

**INCIDENCE RATES/100,000 OF SELECTED REPORTABLE DISEASES, LOS ANGELES COUNTY AND EAST/NORTHEAST LOS ANGELES, 1972**

<table>
<thead>
<tr>
<th>Selected Reportable Diseases</th>
<th>Los Angeles County (A)</th>
<th>East/Northeast Los Angeles (B)*</th>
<th>Ratio of (B) to (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoebic dysentery</td>
<td>2.3</td>
<td>9.7</td>
<td>4.2</td>
</tr>
<tr>
<td>Gonorrhea</td>
<td>503.8</td>
<td>317.1</td>
<td>0.6</td>
</tr>
<tr>
<td>Hepatitis</td>
<td>49.0</td>
<td>69.1</td>
<td>1.4</td>
</tr>
<tr>
<td>Measles</td>
<td>20.7</td>
<td>48.1</td>
<td>2.3</td>
</tr>
<tr>
<td>Mumps</td>
<td>20.8</td>
<td>40.1</td>
<td>1.9</td>
</tr>
<tr>
<td>Syphilis</td>
<td>103.2</td>
<td>141.4</td>
<td>1.4</td>
</tr>
<tr>
<td>Tuberculosis (TB)</td>
<td>18.3</td>
<td>36.4</td>
<td>1.9</td>
</tr>
</tbody>
</table>


Also, in Los Angeles County over the last decade, high rates of tuberculosis have surfaced in the Spanish surnamed population. From 1970 to 1975 there was an 83 percent rate increase in this population; much of this increase has been attributed to the undocumented immigrant population. In nearby Orange County, Spanish surnamed TB rates are eight times the white rate indicating a problem of near epidemic proportions.

California State policy strongly supports the concept of primary care. Over the past several years the State has implemented legislation that supports the production of more primary care personnel, in particular the family physician, and gives priority to the extension of basic primary medical care services to designated geographic areas and population groups. The Song-Brown Act (1973), the California Health Manpower Policy Plan (1977), and the annual reports of the California Health Manpower Policy Commission are expressions of these positions. The State also favors the development of organized systems of care including Prepaid Health Plans (PHP's) and HMO's (see also Chapter III, Issue #5), the growth of primary care clinics particularly for medically underserved areas and population groups (e.g., AB 1781, 1978) and the provision of primary care benefits to the Medi-Cal population (e.g., AB 4242, Chapter 1207, Statutes of 1976).
Following are descriptions of current State approaches in manpower, organization and financing which are also highlighted in Figure VII-1.

Manpower

**Family Physicians**: The Song-Brown program (1973) has impacted the specialty maldistribution of physicians by increasing the numbers of family practice teams, by increasing the numbers of family practice residencies in California and increasing the number of training programs for PAs and NPs. (See Chapter III, Issue #3.) In California, there are indications that increasing the number of family practice residencies, striving for innovative family practice educational programs and generally increasing the visibility of family practice residencies and family practice staff to undergraduates, has resulted in a gradual increase in prestige for the family practice specialty among the medical students peer group with a resultant increase in interest for family practice residency placement by medical undergraduates. The specialty is new and there have been cases of family practice residents transferring into other primary care specialties such as internal medicine; but the trend in the growth of family physician residencies has the potential for significantly affecting medical education and the availability of primary care practitioners in medically underserved areas.

**Physician's Assistants (PAs) and Nurse Practitioners (NPs)**: It is currently estimated that there are 416 certified physicians assistants and 1,500-2,000 nurse practitioners in California. As of August, 1979, the Board of Registered Nursing has promulgated regulations defining nurse practitioners. PA's and NPs are currently providing a broad range of primary care services and deployment studies conducted by Charles E. Drew Postgraduate Medical School, Stanford, LAC-USC and U.C. Davis programs demonstrate a high proportion of graduates in underserved areas.

Barriers to utilization of PAs and NPs are gradually being alleviated. As of August 1, 1978, provision of primary care services by nurse practitioners, physicians assistants and nurse midwives became reimbursable under Medi-Cal. These professionals are currently reimbursed at the physician reimbursement rate.

PAs and NPs are also the primary providers of primary care in 29 certified rural health clinics in California under P.L. 95-210 (1978).
Figure VII-1

Characteristics of current California state programs for promotion of primary care (1979).

<table>
<thead>
<tr>
<th>Program</th>
<th>Date</th>
<th>Participants</th>
<th>Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Primary Care Training (rural practice training)</td>
<td>1973</td>
<td>Calif. prevalence rate for FY residencies = 1.3%</td>
<td>$1.375,000 (FY: 1979-80)</td>
</tr>
<tr>
<td>Mid-level practitioners</td>
<td></td>
<td>3 PA training programs (Oreg. Standard-Foothill College, LAC-USC Medical Center)</td>
<td>1980-2000 per county funds (FY: 79-80)</td>
</tr>
<tr>
<td>Medical</td>
<td>1977</td>
<td>No primary care data per se, but for FY 1977-78:</td>
<td>FY 1977-78 state/Federal payments = $1,526,000,000</td>
</tr>
<tr>
<td>National Health Service Corps</td>
<td>1970</td>
<td>43 rural, 6 urban sites (1979-80)</td>
<td>FY 1979 = $12,119,000</td>
</tr>
<tr>
<td>Rural Health Services Development Act (rural area access)</td>
<td>1976</td>
<td>Primary care health centers funded in 25 rural, underserved areas. Includes new clinic which also receives migrant health funds. Ten sites in total, receive other Federal monies (HEW, HESC).</td>
<td>State FY 1970-40</td>
</tr>
<tr>
<td>University of CA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Statewide Area Health Education Center</td>
<td>1979</td>
<td>3 Regional AHECS, 39 counties. Regional Programs based in 3 state medical schools, 3 private medical schools and 3 Pre-Graduate School of Medicine.</td>
<td>Federal: Bureau of Health Disbursement (FY 1977-78)</td>
</tr>
<tr>
<td>Medical &quot;Creanow&quot; Health Plans (MO enrollment for Medical recipients)</td>
<td>1976</td>
<td>FY 1977-78 enrollments = 15,000,000, 3.5 percent decrease from previous year</td>
<td>FY 1977-78 state/federal payments = $10,000,000, FY 1977-78 total enroll (including federal) = $40,000,000</td>
</tr>
</tbody>
</table>

Notes: (1) "Primary Care," draft, DEEMD, 1979, Table 5.
(2) Estimated from 1976 monthly totals for office visits (includes hosp. occp.) home and ER, personal communication, Blue Shield (San Francisco), May 1979.
(3) "Primary Care", op. cit., Table 10.
Regulations have been adopted by the Department of Health Services which recognize the roles of physician's assistants and nurse practitioners in patient care in the hospital setting.

The Rural Health Services Department Act (AB 2450) of 1976 has established a California Health Services Corps which currently funds 58 medical and administrative personnel in rural primary care centers.

Organization

Primary Care Clinics: A variety of primary care clinics have evolved since the 1960's. These clinics have been known as neighborhood health centers, migrant health clinics, women's clinics, community clinics and free clinics. Existing legislation (AB 1781, 1978) recognizes the diversity of types of clinics and establishes two licensable "classes," specialty and primary care, and extends certificate of need coverage to the specialty clinics. (Specialty clinics include: surgical clinics, chronic dialysis clinics, rehabilitation clinics and certain multispecialty clinics.) Exempted from licensure requirements are: clinics or office owned, leased, or operated by physicians, surgeons, dentists, podiatrists, or chiropractors; federal, state, county, and city clinics; Indian Health Clinics; outpatient departments of hospitals; clinical laboratories; teaching clinics; satellite clinics that operate intermittently; and, student health clinics.

"Primary Care Clinics" are defined by the Health and Safety Code as follows:

Primary Care Clinic Types

1. Community Clinic - Operated by a nonprofit corporation. Any charges are based on a sliding fee scale for services rendered and based on the patient's ability to pay.

2. Free Clinic - Operated by a nonprofit corporation. There are no charges directly to the patient for services rendered.

3. Employee's Clinic - Operated, without profit, by an employer or group of employees for the employee group only.

Community and free clinics are a popular and visible mechanism for improving geographic, financial and cultural/linguistic access to health services. They primarily serve medically underserved populations (particularly noninsured, low income individuals and families through free or sliding fee services) and minority populations. Many are located in medically underserved areas where they may be the only provider of care and were initiated by the communities they serve. They are typically freestanding, community based in location and cultural orientation and promote consumer participation (for more discussion see Issue #2).
Legislation and policies that have affected community and free clinics are as follows:

- the Legislature established a Community Clinics and Free Clinics Advisory Committee (CCFAC) to advise the Director of the Department of Health Services

- the California Health Manpower Policy Commission in the 1977 State Health Manpower Plan supported the role the Community and Free Clinics through the following recommendation:

  "The state should seek appropriate ways to promote the continued existence of community clinics and 'free' clinics, since, in addition to providing needed health services to a sizeable segment of the population, many of them have demonstrated capacity for flexibility and innovation in training and utilizing health manpower."

- AB 1981 (1978), in addition to establishing the two classes of clinics, specialty and primary care, provided for (1) decrease in community clinic licensing fee, (2) replacement of Community Clinics and Free Clinics Advisory Committee with a Statewide Advisory Committee on Primary Care Clinics, and (3) substantial revision of clinic licensure regulations for primary care clinics

- AB 2092 (1978) supported the concept of future funding for community and free clinics and described nonprofit corporations of clinics. The bill is currently unfunded, but its passage is indication that the State is cognizant of the role community and free clinics play in the health care delivery system

- AB 1317 (1979) provides a total of $2 million for a program of limited grants and loans to community and free clinics

  $1.3 million will be administered by the Department of Health Services for the purpose of providing grants to clinics for operating expenses and technical assistance. First priority will go to clinics serving medically underserved populations and in need of financial assistance to continue existing levels of operation. $500,000 in grants, and $200,000 in loans will be administered by OSHPD for renovation of buildings and acquisition of fixed capital equipment. These grants and loans are for the purpose of assisting clinics in meeting licensure standards, requirements for accessibility to the physically handicapped and fire and safety requirements and guidelines. In addition, $100,000 is allocated to the Department of Health Services for administrative costs.
Despite the recent passage of AB 1317 in 1979, continuation funding for community and free clinics remains problematic and in jeopardy as a result of the passage of Proposition 13. The $1.3 million provided in AB 1317 for operating expenses will not meet the needs of clinics many of whom have annual operating expenses of over $250,000. Some of the larger clinics (i.e., West Oakland Health Center and La Clinica de La Raza in Oakland) have over $1 million in annual operating expenses. Many clinics have been dependent on partial funding from County Boards of Supervisors and State categorical grants. Available funding varies year to year and since Proposition 13 has in many cases been reduced. The lack of stable year to year funding is a major problem for these clinics.

Indian Health Service: Leading causes of deaths among Indians are tuberculosis, accidents, cirrhosis of the liver, influenza and pneumonia and congenital malformation. Tuberculosis accounts for six times as many deaths among Indian men than among other Californians. Death from accidents and cirrhosis of the liver account for four times the number of deaths among Indian men as among all other races. The death rate for influenza and pneumonia is 2.2 times, and from congenital malformations 1.7 times the rate of death from similar causes among the population as a whole.

Since 1967, the State has gradually increased funding for primary care and related health programs for Indians.

- in 1967, funds provided through the Maternal and Child Health (MCH) program established a pilot program directed toward improvement of Indian Health
- passage of SB 1397 in 1969 (Sections 429.30 and 429.31 of the Health and Safety Code) mandated the State Department of Public Health to maintain an Indian Health Program and called for "...Studies of health and health services, technical assistance and coordination of similar health programs." A one year appropriation of $32,000 was used to establish an Indian Health Unit of two people in the MCH Program. In 1970 the Secretary of DHEW reversed the federal policy of not providing health services to California Indians and provided continuation funding of the two positions from 1970-1975.
- in 1975, SB 52 (Section 429.32 of the Health and Safety Code) appropriated $2.5 million for the establishment of the present Indian Health Branch and local assistance to 24 Indian Health Clinics in the State. These clinics are Indian controlled and operated. They provide comprehensive medical, dental and preventive health services and outreach to the Indian communities they serve.

Rural Health Services: Rural Health Services Development Act (AB 2450, Chapter 1196, Statutes of 1976) now funds comprehensive primary care centers in 25 rural underserved areas. Ten sites receive additional federal monies (Rural Health Initiative, Migrant Health, National Health Services Corps). In the last quarter of 1978, there were 85,000
patient visits to the clinics. The clinics employ nurse practitioners and physician assistants and many have applied for designation as federal rural health clinics (P.L. 95-210). In FY 1979-80, the State budgeted $2.69 million for rural health services. More recently, the Department of Health Services has appointed two advisory committees to deal with rural health services. The Advisory Committee on Rural Health Services will advise the Department regarding legislation aimed at improving and expanding rural health services and current health programs for rural residents and unmet needs of California's rural population. The Advisory Committee on Health Services to Seasonal Agricultural Workers will help promote and develop programs for migrant workers.

Organized Health Systems: HMOs and Prepaid Health Plans (PHPs) - Provision for licensure of all health services plans was established under the Keene-Knox Health Care Services Plan Act of 1976. The State has attempted to encourage HMO development in California by exempting this category of health service from the State's Certificate of Need Program (as previously discussed, currently enacted federal legislation, P.L. 96-79, has exempted the larger HMOs -- those with a minimum of 50,000 enrollees -- from certificate of need).

There are approximately 30 HMOs in California. The largest HMO in the State is Kaiser-Permanente plan with 2,616,300 enrollees or 12.2 percent of the State population. Kaiser operates 21 hospitals (4,975 beds) and 48 outpatient facilities.15

The State Department of Health Services has been experimenting with capitation contracts to prepaid group practices for MediCal recipients since 1971. In FY 1979-80 there were 116,351 individuals enrolled in 31 PHPs with capitation payments of $29,381,000. For further discussion of current State policy and trends of organized health systems and Medi-Cal see Chapter III, Issue #5 in the Plan.

Financing

Medi-Cal: California's Medicaid program (Medi-Cal), is more inclusive than the "basic" Medicaid program required for shared federal funding: a broader scope of services are covered and eligibility income levels are higher allowing coverage to the medically indigent group with, in some cases, monthly "spend-down" requirements. Some relevant aspects are:

- FY 1977-78: Over 2.9 million eligibles representing 15 percent of the State population

- Medi-Cal provides reimbursement for a range of primary care services and California is one of the states that currently reimburse primary care clinics for provision of primary care services under Medicaid programs
there has been no thorough analysis of expenditures for primary care services—
but a recent tabulation of Medi-Cal expenditures in 1978 for primary care
services (RVS codes 90000 - 90477 and 90720 - 90776) indicate that payments
to providers in ambulatory settings (i.e., organized outpatient clinics, county
outpatient clinics, community outpatient clinics and physicians) were over $700
million and represented 4.8 units (services) per Medi-Cal recipient.

Item 20 in the 1977-78 Budget Act—Medi-Cal allowed a 25 percent increase in
reimbursement for some primary care services (Codes 90000 - 90477) to
licensed primary care clinics.

from 1976-1977 the number of providers in family practice increased 46.2
percent compared to a 12.1 percent increase in other medical specialties.

AB 4242 (Chapter 1207, Statutes of 1976) established a statewide uniform
schedule for reimbursing physician's services to Medi-Cal patients. The bill
allowed a 30 percent increase in the reimbursement level for primary care
services and 30 percent for maternity care services. (Although these increases
were substantial, the reimbursement level for these services remains far below
usual and customary fees, in part due to subsequent inflation.) This bill
eliminated differences in reimbursement levels for service provided in rural and
urban areas. It also gave the Director of the Department of Health Services
the power to grant further increases in reimbursement levels for services, if
necessary.

in FY 1979-80 the total Medi-Cal budget increased 6 percent (over $198 million)
from the $3.3 billion 1977-78 budget base resulting in a $3.5 billion FY 1979-80
budget. Provider rate increases for primary care services were substantially
increased. Increases ranged from a 6.0 percent increase for free and
community clinics to a 35.7 percent increase for limited physician services—
maternity care.

Health Systems Plan Highlights

All HSPs view primary care as cost effective in terms of treating problems earlier and
preventing hospital admissions. They recommend that third party coverage should be
expanded, staffing of underserved areas should be increased and public health departments
should use their funds to provide primary care services. They also recommend that
consumers participate through informed self-care, that financial, temporal, linguistic and
transportation barriers be eliminated and that Medi-Cal reimbursement be increased.
Many HSPs propose the achievement of specified physician:population ratios as
objectives. They also propose minimum standards for the distance between physicians (or
other sources of care) and populations. The need for a "population based," small area
analytical method for deriving "needs" is often expressed.
ANALYSIS OF DEMAND AND SUPPLY

Analysis of Demand

Analysis of demand for primary care theoretically involves one or a combination of three sets of data:

- utilization statistics (services used)
- interview data (what people say they need or want)
- certain population characteristics, such as the number of people 65 years of age or older (such characteristics imply a demand for care).

In the absence of any such data, or perhaps supplementing what is available, supply data are sometimes used as a measure of potential demand, for example, physician to population ratios. A ratio below some standard is assumed to indicate some level of unsatisfied demand. Use of this approach thus can lead to confusion over the relationship of lack of supply with real unmet demand.

No uniform utilization data for primary care are available for California. If national visit rates to general practitioners and family physicians are applied (unadjusted) to the 1977 estimated State population, Californians generated 28,000,000 visits to these practitioners alone in 1977. This volume may rise to 32,000,000 in 1985.16

No interview data exclusive to California are available. However, data for "the West" are available from the National Health Interview Survey. Since about 60 percent of "the West's" population reside in California, the following statistics are of interest:

- 78.5 percent of those interviewed reported having a "regular source of care," while 17.5 percent reported "no regular source of care"17
- 69 percent of visits were to primary care specialists (general/family practice, internal medicine, pediatrics, OB/GYN)18
- over half of the people with no regular source of care stated the reason for this was "no doctor needed"19
- the highest proportion (15 percent) reporting no source of care resided within SMSAs, while the lowest (13.5 percent) reside in farm areas20
- 13 percent reported problems getting medical care, of which time and financial barriers were the most prevalent21
no significant differences in access problems were reported by race or urbanization.

7.1 percent of persons reported "self-perceived unmet needs" with cost by far the most significant barrier, followed by "other" and inadequate physician time.

for those reporting unmet needs, the differences by race and income were significant.

While survey methods can always be criticized, these data suggest at least the magnitude of unsatisfied demand in California: approximately 13 percent or 2.7 million people reported problems obtaining medical care. It would be highly desirable to substantiate this finding and to pinpoint where these people are.

More recently, the Robert Wood Johnson Foundation funded a health service utilization study of the U.S. which included the "Raza" (Spanish surnamed) population in the Southwest as an identifiable subgroup. Three results of the Foundation's data as analyzed by the California Raza Health Alliance were particularly notable:

- Raza are most likely subpopulations to be without regular source of health care (17 percent versus 12 percent total population)
- Raza are least likely subpopulation to have some form of health insurance (35 percent versus 12 percent population)
- Raza and rural Southern Blacks are the most likely to have not seen a physician in the past year.

Planning for primary care by public agencies has begun in the last ten years in California and in the nation generally. Current problems associated with primary care planning efforts include:

- the lack of adequate data (e.g., health status, socioeconomic and demographic data) available in small geographic units (e.g., census tracts); lack of adequate and accurate data regarding ethnic minorities, in particular Asians and Native Americans
- the need for refinement of current primary care planning methodologies
- the need for consensus around a common needs assessment methodology for health manpower and designation of medically underserved areas
- inadequate and fragmented primary care planning at federal, State and local level
- lack of State authority for any regional group or body to develop and implement regional primary care system plans.
The current "state of the art" of planning for primary care is focused on physicians and tends to use incomplete needs assessment methods such as physician:population ratios. However, there are a variety of other needs assessment methodologies available. The University of California, San Francisco, the Area Health Education Center (AHEC) has conducted an inventory and analysis of current needs assessment methodologies for primary care physicians. The study shows that few methods offer a complete approach to needs assessment for primary care physicians.

As stated by Kelzer in the recent AHEC report:

"A complete approach to assessing needs for primary care physicians would contain medical, ecological and geographical measures. Medical measures would focus on characteristics of primary care physicians: supply, appropriate quantities (standards), factors affecting their location, other health resources, etc. Ecological measures of need would focus on aspects of the population to be served; health status, socioeconomic and demographic data, occupation, cultural variables, and a population's interaction with an immediate environment. Geographical measures would include development and use of the appropriate geographic units in which to monitor the changing need for primary care physicians."

Others in the field stress the importance of first determining the services needed by the population (based on demographic data, health status data, etc.), then determining the types of health manpower needed and finally making recommendations regarding the mix of providers and service settings required to meet the predetermined need for services.

In California one of the more complete approaches has been developed by the Health Manpower Policy Commission. The Commission has defined and designated medical service study areas (with HSA review and approval), developed standards of adequacy, and designated critical primary care manpower shortage areas and areas of medical underservice. There exists, however, a need to further refine population based needs assessment methodologies and to determine a complete methodology that can be used to calculate current and projected needs for primary care physicians. This methodology should take into account the role and supply of nurse practitioners and physician's assistants in an area as well as the medical, ecological and geographical requirements unique to each planning region.

Analysis of Supply

A detailed inventory of primary care practitioners is available in the 1977 California Health Manpower Plan.
Analysis of primary care supply, like that of primary care demand, is complex. A common approach, and the current basis for the designation by the State of medically underserved areas, is to equate primary care supply with the presence of primary care physicians and then to measure availability in terms of physician:population ratios.

A weakness with this approach is that it overlooks primary care being delivered by other types of physicians and by nonphysicians. There is growing evidence that specialists other than family or general practitioners, internists, pediatricians and obstetricians/gynecologists deliver significant amounts of primary care. One recent study found that general surgeons spend 20 percent of their time providing "primary care." There is also evidence that many primary care visits do not require a physician and that acceptability of nonphysician practitioners in virtually all settings is high. Finally, much primary care is provided in hospital emergency rooms (see "Emergency Medical Services," following). Inappropriate utilization of San Francisco's County hospital's emergency room has forced the development of a "walk-in" emergency room which provides acute episodic primary care to nontrauma patients.

Another problem with measuring supply of primary care in terms of physician:population ratios is that this indicator fails to account for the diverse characteristics of medical practice that influence actual availability and accessibility of primary care. Reimbursement, organizational setting and productivity all influence the supply of primary care. For example, primary care physicians charge and earn less than other specialists, and within primary care, the surgical specialty, OB/GYN, earns the most. This differential among medical specialties is well established and constitutes a disincentive to primary care practice. Medicare reimbursement practices, which are similar to those of private insurance, continue this pattern which rewards surgical, in-hospital and urban/suburban medical practice. This supports specialty and geographic maldistribution and prevents increased supply from lowering prices. It might well be asked then what primary care physician supply would look like if reimbursement rewarded primary care and practice in rural areas. Similarly, what would be the effect of major changes in the organization of physician services: introduction of HMOs, of logistical support for rural practice, of increased professional status rewards for primary care? HMOs use far fewer physicians per 100,000 members than are available to the general population, plus they tend to be innovative in the use of nonphysicians. Finally, both reimbursement and organizational patterns strongly influence physician productivity (visits/day or hours, etc.) which is a central factor in sophisticated models for analyzing primary care physician supply.

In sum, understanding of current supply of primary care resources and projection of future needs present numerous technical problems. These must be accounted for in any method used to plan and fund resources supported by State funds.
ANALYSIS OF ISSUES

Three issues are important for future State policy in primary care: problems of oversimplification, achieving equity in primary care and planning for primary care.

Issue #1: Problems of Oversimplification

The concept of primary care developed over the last 15 years is a reaction to medical care increasingly characterized by reliance on technology, impersonal ritual and fragmentation of the whole person among medical specialties and subspecialties. The preferred ideal has been the general practitioner who has known and treated a patient and family over the years for most of the medical problems encountered in daily life, including birth, acute and chronic disease and death. The general practitioner was also a counselor, adviser and arbiter, involved in family life and crises even when health, strictly speaking, was not an issue.

The concept has been marked by several assumptions:

- primary care is good, therapeutic in the broadest sense, because it is concerned with the entire person in his or her family environment
- primary care is, in its ideal form, dispensed by a physician specializing not in body parts or particular diseases but in care of the whole person over a lifetime and in a family context
- lack of access to such a physician under conditions of cultural, ethnic, racial and linguistic compatibility — not to mention financial, geographic and temporal convenience — constitutes medical underservice
- one response to medical underservice has been an increase in the production of family physicians, a new medical speciality and their location and support in both federal and State designated medically underserved areas.

These assumptions have great intuitive and social appeal. They underlie much current thinking about primary care. Nevertheless, they are only assumptions. The result is an understanding of primary care and of primary care needs that is physician oriented, relatively uncritical and not comprehensive in terms of either the role or the delivery of primary care. Primary care is usually viewed as a problem of physician "shortage."

There are other ways to view primary care, consistent with its definition and scope:
primary care may be more related to practitioner attitudes about services than to particular types of health care personnel

the presumed lack of primary care may be a result of current physician reimbursement patterns which favor specialty practice and technological interventions

more primary care could be provided by the current supply of physicians and midlevel practitioners if economic, organizational and professional incentives were appropriate

there are limits to the hopes to be pinned on primary care, and thereby to the funds that should be expended to "assure" its availability, although no one is certain what these limits should be

there is a relationship between primary care provided by practitioners and personal responsibility for health, although the distinctions and the overlaps are not yet entirely clear.

These are hard problems. But if the major determinants of health status lie outside the health care system, and if costs are a concern no matter where they appear, such considerations need to be raised.

Issue #2: Achieving Equity in Primary Care

There are many obstacles to achieving an equitable distribution of primary care services including the following:

- linguistic barriers — inability of the provider and consumer of health care to effectively communicate
- racial barriers — discriminatory attitudes and practices
- cultural barriers — differing expectations and assumptions concerning health care between providers and consumers
- psychological barriers — patient's perceptions of providers as insensitive and nonaccepting
- temporal barriers — waiting time for appointments and in the waiting room; the unavailability of easily accessible primary care services on weekends and evenings
- geographic barriers — travel time and available modes of transportation
- financial barriers — out-of-pocket expenses, deductibles and co-insurance
The large number of racial and ethnic minority persons in California, coupled with the small number of minority physicians, affects public perceptions of linguistic, racial, cultural and psychological barriers to primary care.

The relative proportions of minority populations and minority primary care physicians are shown in Table VII-2. Data for nurses are shown in Table VII-3.

Recognizing that, for some people, acceptable primary care requires cultural compatibility, minority students must be encouraged to enter the health professions and to practice where their knowledge of culture and language can help diminish barriers for patients. Primary care clinics when community based and adequately funded have potential for increasing temporal, geographical and financial access to care especially for low income families, offering acceptable services to community groups they serve, offering auxiliary services that match the community's needs and linking services to other primary, secondary and tertiary health care providers. They can be centers for comprehensive continuous family oriented care stressing health promotion and preventive services in an acceptable manner to the population groups they serve. Primary care clinics are the logical satellites of an organized medical care delivery system. Services they provide during evening and weekend hours can reduce utilization of emergency rooms and other more costly service settings.

Barriers facing American Indians, seasonal and migrant farmworkers in California are particularly compelling. During Fiscal Year 1975-76, Indian health programs were cut 43 percent while the overall MCH budget was reduced 5 percent. The 1977-78 Indian Health portion of the MCH budget was nearly 50 percent less than the previous year and 67 percent less than the 1975-76 fiscal year. AB 3141 was passed in 1978, but due to the passage of Proposition 13, the $500,000 appropriation was deleted. The bill mandated the Department of Health Services to provide technical assistance to promote the provision of services for preventive health care, health education, and environmental health in Indian health clinics. The bill also prescribed that specified health service programs be made more accessible to Indians. Current funding level for local assistance to the Indian Health Clinics is $2.4 million which, considering health care sector inflation rates, has declined since 1975, yet the Indian population in California continues to grow. The California Rural Indian Health Board, Inc., administers joint federal/State funding for 15 rural Indian clinics with an estimated service population of 53,000 individuals. There are nine urban Indian clinics serving approximately 144,000 individuals administered by federal/State monies through the California Urban Health Projects, Inc.

A 1976 U.S. Census Bureau Survey found that approximately 30 percent of the nation's Hispanic population reside in California as well as 36 percent of the Chinese and 46 percent of the Filipino population. It is also estimated that California has approximately 700,000 local seasonal and migrant farmworkers and dependents, 89 percent of whom are Mexican or of Mexican origin. Approximately 525,000 (3/4) are seasonal farmworkers and 175,000 (1/4) are migrant workers. The Federal Government is currently funding 18 rural
TABLE VII-2

CALIFORNIA MINORITY POPULATION AND MINORITY PRIMARY CARE PHYSICIANS COMPARED TO TOTAL POPULATION AND TOTAL PRIMARY CARE PHYSICIANS

<table>
<thead>
<tr>
<th>ETHNIC GROUP</th>
<th>AS A PERCENT OF TOTAL POPULATION</th>
<th>AS A PERCENT OF ALL PRIMARY CARE PHYSICIANS</th>
<th>MINORITY PRIMARY CARE PHYSICIAN: MINORITY POPULATION RATIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish surname origin</td>
<td>15.8</td>
<td>1.1</td>
<td>1: 21,245</td>
</tr>
<tr>
<td>Black</td>
<td>7.7</td>
<td>2.2</td>
<td>1: 4,027</td>
</tr>
<tr>
<td>Native American</td>
<td>5.0</td>
<td>0.2</td>
<td>1: 7,539</td>
</tr>
<tr>
<td>Other including Asian origin</td>
<td>5.0</td>
<td>5.5</td>
<td>-</td>
</tr>
<tr>
<td>White</td>
<td>71.5</td>
<td>91.1</td>
<td>1: 999</td>
</tr>
</tbody>
</table>

TABLE VII-3

EMPLOYED\textsuperscript{a} NURSES CURRENTLY LICENSED IN CALIFORNIA
BY ETHNIC ORIGIN, NUMBER AND PERCENT, 1975

<table>
<thead>
<tr>
<th>ETHNIC ORIGIN</th>
<th>NUMBER</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish surname origin</td>
<td>1,004</td>
<td>1.1</td>
</tr>
<tr>
<td>Black</td>
<td>3,306</td>
<td>3.6</td>
</tr>
<tr>
<td>Native American</td>
<td>262</td>
<td>.3</td>
</tr>
<tr>
<td>Other including Asian origin</td>
<td>7,994</td>
<td>8.8</td>
</tr>
<tr>
<td>White</td>
<td>77,863</td>
<td>85.4</td>
</tr>
<tr>
<td>Unknown</td>
<td>720</td>
<td>.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>91,149</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

\textsuperscript{a}Includes nurses temporarily unemployed less than six months.

community health centers serving approximately 70,000 seasonal and migrant workers. The State, through Health and Safety Code, Chapter 1196, Sections 1185-1188.7 (AB 2450), is funding 12 rural health clinics serving approximately 30,000 workers. The total number of migratory and seasonal farmworkers served is 100,000. Estimates made recently by the Rural Health Division, Department of Health Services for the total population with unmet need is 600,000 migrant and seasonal workers. Areas identified by the Rural Health Division as grossly medically underserved and with high numbers of seasonal and migrant workers are the following counties: Madera, Kings, Tulare, Kern, Monterey, Santa Cruz and Orange.

Workers in these areas are in severe need of primary and preventive health services. Seasonal and migrant workers experience problems of poverty, mobility, poor housing, inadequate income, inadequate sanitation and lack of adequate access to health care. Those workers do not have access to the Medi-Cal program due to current immigration laws (see also Chapter III, Issue #4 of the Plan). These factors have resulted in high morbidity and mortality rates, the highest rate in the State for occupational disease and third highest for disabling work injuries for this population group.

Agricultural workers are an essential occupational group to one of California's largest and most important industries, agriculture. Not only is it economically sound, but also morally sound to provide this particular group adequate access to health care while working also to improve the other environmental barriers to health that affect them.

Issue #3: Planning Methods for Primary Care

As noted, current State planning for primary care focuses on physicians and is ultimately expressed in physician:population ratios. Many HSPs call for improved planning methods for primary care, and at least two HSAs, Santa Clara and Los Angeles, have developed extensive statistical methods to identify areas of primary care need and availability of primary care resources. This initiative is commendable and refinements in current State methods are highly desirable.
POLICY RECOMMENDATIONS FOR PRIMARY CARE


- ENCOURAGING CHANGES IN HEALTH PROFESSIONS' EDUCATION, FINANCIAL INCENTIVES AND ORGANIZATION OF MEDICAL PRACTICE TO STRENGTHEN PROVISION OF PRIMARY CARE SERVICES BY ALL THE PRIMARY CARE SPECIALTIES AND BY MANY TYPES OF HEALTH PRACTITIONERS

- EXPANDING THE UTILIZATION OF NONPHYSICIAN MANPOWER (E.G., NURSE PRACTITIONERS AND PHYSICIAN ASSISTANTS) ESPECIALLY IN ORGANIZED HEALTH CARE SETTINGS, IN PRIMARY CARE TEAMS AND IN MEDICALLY UNDERSERVED AREAS

- INCREASING MEDICAL SCHOOL RECRUITMENT EFFORTS FOR ETHNIC MINORITIES AND INDIVIDUALS FROM RURAL AND INNER CITY BACKGROUNDS, AND ENCOURAGING AND MAINTAINING THEIR WORK WITH UNDERSERVED AREAS WHILE THEY ARE IN PROFESSIONAL TRAINING: GIVING PRIORITY IN ALLOCATION OF LOANS AND SCHOLARSHIPS TO STUDENTS FROM THESE AREAS.

The State approach to primary care must reflect the scope and complexity of the concept. The key to primary care is the manner in which services are organized and the attitudes with which they are provided. It is not a matter of medical specialty or health care profession. A variety of practitioners have a contribution to make. These policies have potential for impacting medical manpower maldistribution problems with potential for improving equitable access to primary care for the underserved. (See also Chapter III, Issue #3.)
Primary Care-2: THAT THE STATE REVIEW ITS REIMBURSEMENT POLICIES FOR PRIMARY CARE CLINICS AND CONSIDER THE NEED FOR A STABLE AND PREDICTABLE CASH FLOW IN THE FORM OF BLOCK GRANTS, CONTRACTS, OR PROSPECTIVE PAYMENT MECHANISMS, ESPECIALLY WITH RESPECT TO CATEGORICAL PROGRAMS.

Primary Care-3: THAT THE STATE PROVIDE FINANCIAL ASSISTANCE TO CLINICS TO EXPAND THEIR HOURS OF OPERATION FOR PROVISION OF MEDICAL CARE TO INCLUDE EVENINGS AND WEEKENDS AND FOR BRINGING THEIR FACILITIES UP TO LICENING STANDARDS.

Many of the 308 primary care clinics are dependent upon State categorical program contracts and local revenue sharing monies from counties. The current restricted fiscal environment and local cutbacks in funding after Proposition 13 have seriously jeopardized many of the clinics' fiscal viability, yet in many communities they are a major provider of primary care services to the noninsured, low income population and many minorities.

Primary Care-4: THAT THE STATE PROMOTE EQUITY IN THE DISTRIBUTION OF HEALTH CARE BY IMPROVING ACCESS TO PRIMARY CARE FOR AMERICAN INDIANS AND MIGRANT AND SEASONAL FARMWORKERS.

- THAT THE STATE DEPARTMENT OF HEALTH SERVICES, INDIAN HEALTH BRANCH, WORKING IN CONCERT WITH THE INDIAN HEALTH SERVICE (IHS), THROUGH CONTRACTUAL AGREEMENTS WITH SERVICE DELIVERY AGENCIES, I.E., THE CALIFORNIA RURAL INDIAN HEALTH BOARD (CRIHB) AND CALIFORNIA URBAN INDIANS HEALTH COUNCIL (CUIHC), AND TRIBAL ORGANIZATIONS ATTEMPT TO ENSURE EQUITABLE AND ADEQUATE ACCESS TO PRIMARY HEALTH CARE FOR AMERICAN INDIANS IN CALIFORNIA.

- THAT THE STATE CONSIDER INCREASED FUNDING LEVELS FOR PRIMARY CARE RESOURCES SERVING MIGRANT AND SEASONAL FARMWORKERS RESIDING IN HIGH MIGRANT IMPACT MEDICALLY UNDERSERVED AREAS.

The State has a legal mandate to assume responsibility for American Indian health care in California. The unmet need estimate of 600,000 migratory and seasonal workers requires immediate attention.
Primary Care-5: THAT PRIMARY CARE RESOURCE PLANNING EFFORTS BE COORDINATED AT THE STATE AND HSA LEVEL, INCLUDING:

- IMPLEMENTATION OF A JOINT PRIMARY CARE STUDY BEGINNING IN AREAS ALREADY DESIGNATED AS UNDERSERVED BY THE STATE HEALTH MANPOWER POLICY COMMISSION TO DETERMINE THE SIZE, LOCATION AND HEALTH STATUS OF POPULATIONS TO BE SERVED, IDENTIFY THE VARIETY AND NUMBER OF PROVIDERS INVOLVED AND THEIR PROBLEMS AND FUNDING NEEDS AND IMPLEMENT RECOMMENDED ACTIONS

- DEVELOPMENT BY HSAS OF REGIONAL PRIMARY CARE PLANS USING A COMMON NEEDS ASSESSMENT METHODOLOGY IN THEIR HSPS BY 1982 THAT INCLUDES THE DESIGNATION OF MEDICALLY UNDERSERVED AREAS, PRIORITY AREAS FOR NEW PRIMARY CARE SERVICES AND RECOMMENDATIONS REGARDING THE TYPES OF PRIMARY CARE SERVICE SETTINGS NEEDED.

These regional primary care plans will guide and coordinate State, and possibly federal, resource allocations for primary care services.
NOTES

1. Institute of Medicine, Primary Care in Medicine: A Definition, National Academy of Sciences, Washington, D.C., 1977, pp 1-6.


10. Health Resources Administration, op. cit.


12. Ibid., P. 36.


16. Arno Associates, "Population Base for Primary Care Services," Tables for the California State Health Plan, 1979. The tables provide a breakdown by age and HSA.


20. Ibid.

21. Ibid., Table 5.

22. Ibid.

23. Ibid., Table 6.

24. OSHPD, "Primary Care" (SHP draft), 1979, p. 34.

25. op. cit., La Raza Health Alliance, Raza Health Plan, pp. 36-37.


27. Ibid.

28. Ibid.


30. op. cit., Kelzer.


36. For example, Kaiser's "advice nurse."

DEFINITIONS AND SCOPE OF SERVICES

"Reproductive services" encompass "perinatal" services covered in the HSPs and two closely related services: birth control and infertility. The purpose of broadening the perinatal focus currently required in federal and State regulation is to emphasize service interrelationships, the common target population and some underlying political controversies.

Reproductive services are defined as health services related to the reproductive function, including birth control, prenatal care, maternity care, care of the newborn and infertility services.

Birth control services include:
- sex education
- contraception, including sterilization
- genetic counseling
- pregnancy testing.

Prenatal care includes:
- care of the undesired pregnancy (abortions)
- care of the normal pregnancy
- care of the known high risk pregnancy
- counseling to prepare for childbirth and parenthood.

Maternity care includes:
- assistance for normal deliveries
- assistance for high risk deliveries, including transport.

Newborn services include:
- care of normal infants in the neonatal period
- care of distressed infants in the postpartum period (neonatal intensive care), including transport.
Reproductive Services

Infertility services include:

- diagnosis and treatment
- counseling.

Beyond the scope of this definition are general gynecological care, well baby care, pediatric care, child care and child abuse programs, child related income maintenance, human sexuality counseling and sex change services. For a comprehensive discussion of health problems of and services for children see the California Health Plan for Children—1979.1

BACKGROUND

Relationship to Health Status

Birth control and prenatal services have contributed to the following:

- decrease in unwanted births
- decrease in the number of mothers without prenatal care
- decreased low birth weight births
- decline in infant mortality
- lower average number of children per family
- lower number of pregnancies with unfavorable outcomes
- shifts toward both younger and older first time mothers.

Hailed initially for the contraceptive efficacy, the health status impact of oral contraceptives has come under close scrutiny. Studies conflict but major effects among users appear to be the following:

- increased risk of heart attack and stroke, especially in women over 35 who smoke
- decrease in rheumatoid arthritis
- increase in benign breast and liver tumors
- increased risk of morbidity and death from circulatory disease
small increase in liver and gall bladder disease

uncertain effect on cancer rates.

These risks, however, remain significantly lower than the risk of death associated with pregnancy.

Although pregnancy outcome is highly correlated to a variety of demographic and health characteristics of the mother, including race, age, previous pregnancies, socioeconomic status, smoking, drinking, drug use and nutrition, prenatal care is still a critical factor. Perinatal death rates are four to five times higher for births with no prenatal care. Continuous and coordinated care must be stressed in order to enhance the physical, social and emotional well being of a mother and child, with the major objective being a healthy baby and a healthy mother.

National Trends

The major trends involving reproductive services is the decline in the number of live births (Chapter IV) and in the fertility rate in the last 20 years (see Table VII-4).

Teenage pregnancies are increasing. Current estimates indicate that among all girls who are now 14 years old, 20 percent will have at least one live birth, 15 percent will have at least one abortion and 6 percent will have at least one stillbirth by the time they are 20. In 1977, 780,000 teenagers became pregnant. A variety of adverse effects associated with teenage pregnancy is cause for concern, including higher risk of infant and maternal mortality, low birth weight and congenital anomalies, lower educational attainment for mothers, less stable marriages and increased welfare dependence.

Infertility is receiving increased attention, partly attributable to publicity concerning fetal implantation. In 1978, 102,000 married women, ages 20 to 29, received infertility services. A success rate of approximately 35 percent is associated with treatment. Approximately 10 percent of infertile couples seek medical treatment every year.

A moratorium on federal funding of in vitro (test tube) fertilization research may be lifted in 1980. An Ethics Advisory Board to the Secretary of DHEW has stated that such research is ethical provided certain conditions are met, and revised proposed federal regulations for funding in vitro fertilization and embryo transfer have been published. Privately funded research is not prohibited by federal law, but some states have fetal research regulations that may inhibit any fertilization experimentation.

Major changes in technology and in the understanding of the physiology of newborns have fostered an increase in intensive care units for neonates and the emergence of two new medical specialties, perinatology and neonatology. Such services frequently are credited with lowering perinatal and neonatal mortality and decreasing long-term infant
Promotion of regionalized newborn care and infant transport systems are also associated with the increase in these services.

While home births have received considerable publicity in recent years, the more significant trend remains the increase in hospital births since 1940, when 40 percent of white births and better than 70 percent of nonwhite births were out-of-hospital. By 1971, 0.9 percent of U.S. births occurred at home; in 1975, the percentage had increased to 1.3 percent. It is too early to determine the extent to which home birth signals a strong departure from a near universal pattern.

The development of alternative birth centers, on the other hand, appears to be a major response by hospitals to consumer dissatisfaction with high technology delivery. Labor and delivery occur in one homelike room, with technological equipment concealed or absent. The woman has freedom of movement, and spouse, friends, and siblings are frequently allowed. Although most centers are located in general acute hospitals, there are also some freestanding.

The rate of caesarean deliveries in California in 1965 was 5.1 percent and by 1976 it had risen to 15.4 percent of all deliveries, an increase of 202 percent. This increase has been associated with changing obstetrical training patterns, increased understanding of high risk pregnancy, use of the fetal monitor and practitioner concerns regarding malpractice.

Nearly two-thirds of out-of-hospital births in the U.S. in 1977 were attended by midwives or other nonphysician attendants. The term midwife includes three levels of practitioners: lay midwives; trained nurse midwives and certified nurse midwives. Between 1971 and 1976, there was a 37 percent increase in the second and third categories of midwives living or trained in the U.S. By 1976, 36 states and jurisdictions allowed nurse midwives full practice, 13 states allowed nurse midwives less than full practice, legal interpretation in another five states allowed less than full practice and four states allowed lay midwives full practice. Professional acceptance, malpractice liability and other factors still prevent full practice in many states.

Despite its 1973 ruling forbidding state regulation of first trimester abortion, the U.S. Supreme Court ruled in 1977 that states need not pay for nontherapeutic abortions and that public hospitals need not perform abortions although they provide other pregnancy related services. This decision paved the way for passage of the Hyde Amendment in Congress, in turn permitting exclusion of abortion from Medicaid benefits. (This issue is currently being deliberated in federal courts.)

On August 4, 1977, DHEW funds for abortion were restricted to subsidizing only those procedures necessary to save the woman's life. This restriction was in force for 18 months until February 14, 1978, when DHEW promulgated regulations which broadened the indications to include situations in which severe and long lasting physical health damage to the woman would result if the pregnancy were carried to term or if the pregnancy resulted from statutory or forcible rape or from incest. During the 18 months when more
restrictive federal regulations were in force, the Center for Disease Control (CDC), through its epidemiologic surveillance of abortion mortality, has documented three deaths of Medicaid eligible women which were associated to some degree with the restriction of public funds. This finding was less than the 5 to 90 deaths annually which CDC had previously predicted would result from the restriction in federal funds. CDC concluded that the lower-than-expected mortality incidence was a result of two factors: (1) 16 states and the District of Columbia continued to provide state funds to finance abortions under most circumstances; and (2) in those 34 states where neither federal nor state funds were available to support abortion, low income women apparently managed to obtain legal abortions that were partially subsidized by a combination of reduced clinic fees and public funds for ancillary nonabortion services. Their own personal funds made up the difference between the subsidy and the full cost of the procedure. However, the Center also found that in those nonfunded states, women were obtaining abortions at a later gestational stage, thus increasing the risk of complication and death. Finally, CDC concluded that their monitoring system did not provide evidence that the restriction of public funds for abortion has forced a large percentage of Medicaid eligible women to choose self-induced or nonphysician induced abortion.

Because conception and birth are strongly related to many social arrangements and philosophical beliefs, the very existence of reproductive services, not to mention the manner in which they are delivered and paid for, inevitably generate strong feelings. Controversy is intense on such topics as abortion, sex education and contraceptives; use of technology during and physician manipulation of the birth process; the training, attitudes and roles of birth related health professionals; the cost and consequences of neonatal intensive care; and fetal implantation. The extent to which emotion dominates public debate on these and related subjects is in itself a notable trend.

In about one-fourth of birth defects, the cause is thought to be purely genetic. Given current knowledge, many birth defects cannot be prevented. But some can. Carrier identification, amniocentesis and neonatal screening procedures can aid in detecting some genetic disorders before, during, and after pregnancy.

Discovery of a fetal anomaly need not be equated with elective abortion, but rather may enable the family, fully informed of the nature of the defect, to anticipate and plan for any special needs or provisions which the birth of the abnormal child may necessitate.

A principal recommendation in the Surgeon General's Report on Health Promotion and Disease Prevention, 1979, is: "Amniocentesis: ... a test ... can determine whether serious birth defects exist in the fetus." Detection of an abnormality may require a personal decision about an abortion.

Literature indicates an apparent "bonus" of pregnancies that may not have been completed if amniocentesis had not been available.
National Policy

National Planning Guidelines require obstetrical and neonatal intensive care to be planned on a regional basis with linkages among all similar services. Intermediate and tertiary OB units are to have at least 1,500 births annually and 75 percent occupancy. Total Intensive Care Newborn Nursery (ICNN) beds should not exceed 4 per 1,000 live births and a single unit should contain at least 15 beds. Transfer and transport systems are to be given special attention.

California Trends

Population indicators show generally declining birth and related mortality rates in California (Chapter IV). They also show persistent differences in infant mortality by race and by county, differences explored and partially explained in recent studies.15

The slight rise nationwide in home and alternative birthing is evident in California as well. Of California's registered 1977 births, 4,974 or 1.4 percent of the total, were out-of-hospital. Approximately 50 alternative birth centers (ABCs) of one degree or another, in a variety of settings, currently operate in the State. None of the 36 centers opening in 1978 was freestanding; all were started in hospitals with existing OB units.

The legal and professional status of midwives is changing. Certified nurse midwives may practice in the State although they cannot bill Medi-Cal directly for their services (the supervising physician bills and is reimbursed). About 200 people in California call themselves lay midwives, with a wide range of training and experience. Currently OSHPD's Health Manpower Pilot Project Program is developing special guidelines for midwifery pilot projects.

Perinatal care is becoming regionalized. The Legislature is supporting two Infant Medical Dispatch Centers which operate as central dispatch for the 23 tertiary and 31 intermediate newborn intensive care units in California. Regionalization is also fostered by the reimbursement requirements of California Children's Services (CCS).

Regionalization has not, however, fostered closure of underutilized facilities. Data for 1976-77 indicate only a slight change in OB unit capacity and utilization:

1976: 339 hospitals, 5,084 beds, 936,587 patient days, and 50.5 percent occupancy
1977: 338 hospitals, 5,069 beds, 923,055 patient days, and 49.9 percent occupancy
There are no California estimates of the number of individuals in need of specialized infertility services nor of those unserved due to lack of funding.

**California Policy**

Newborn intensive care nurseries require a special permit (Section 90401) and are, therefore, reviewable for CON. Review criteria specific to the service require that the facility be "the most appropriate in the service area" and that existing facilities be operating at 75 percent occupancy or higher (Section 90919).

The Licensing and Certification Division of the Department of Health Services licenses 32 intensive care newborn nurseries, without specifying any level of care classification. However, standards contained in the California Administrative Code, Division 5, Title 22 (Sections 70480 - 70489) imply a tertiary level of care. The California Childrens' Services program (CCS), also administered by the Department of Health Services, classifies neonatal units as tertiary or intermediate units for reimbursement purposes. This program has designated 21 tertiary units in California. But ten of the hospitals with CCS classified tertiary units do not indicate intensive care newborn nursery on their licenses. Nor are an additional 21 licensed units deemed tertiary by CCS. There are also differences when identifying how many facilities are providing Level 2 (intermediate) service. CCS reported 29 hospitals were designated as Level 2 facilities. The 1978 Annual Report of Hospitals indicate 25 hospitals providing Level 2 services. Needless to say, there is considerable confusion as to what service is actually being provided in these facilities.

After paying for abortions without restriction since 1973, Medi-Cal is now prohibited by the Legislature from funding abortions except for limited, specified circumstances. The prohibition, passed in 1977 and again in 1979, is being challenged in the courts. Pending legal resolution of the matter, Medi-Cal has been enjoined from implementing restrictive regulations and is continuing to pay for abortions as before.

**Health Systems Plan Highlights**

The HSA plans do not recommend approval for additional perinatal (obstetric) beds except in a very few, well documented instances. On the other hand, need is projected for intermediate level care newborn nursery services in most HSAs. DHS is asked to develop and implement regulations for such a license category.

The HSAs recommend the development of integrated, regional systems of perinatal care and place emphasis on perinatal health education programs. Problems of payment for care are raised by many HSAs, and State and federal officials are encouraged to clarify or expand provisions for funding neonatal intensive care for infants born to nonresident aliens as well as high risk pregnant women.
It is recommended that perinatal services at hospitals or other birthing sites be responsive to the individual needs of patients and their families concerning beliefs, language and life styles.

ANALYSIS OF DEMAND AND SUPPLY

Analysis of Demand

Demand for reproductive services varies according to type of service. Need for birth control services is directly related to population characteristics rather than to incidence rates of some event: all females between 15 and 44 and all sexually active males may be assumed to have a need for some form of birth control. The need for prenatal and maternity is a function of the fertility rate and, in turn, determine demand for care of the newborn. A requisite for infertility services is unknown but estimated to occur in 10 to 15 percent of married couples.\(^{17}\)

In practice, the need for reproductive services is influenced by the availability of services; physician practice patterns; and financial and cultural factors.

A relationship between demand for birth control services and demand for other reproductive services has not been specified statistically. However, as the need for birth control services is satisfied, demand for prenatal and perinatal services should decline, despite the availability of the latter services. Underutilized perinatal service capacity, widespread in California, provides some evidence for this relationship.\(^{18}\)

Table VII-4 shows the current and projected target population in California for birth control services. Total use of these services is unknown, but data from Medi-Cal indicate the rapidly rising trend: between 1971-72 and 1977-78, family planning visits increased from 11,068 to 695,227, a near doubling of utilization each year.\(^{19}\) DHS estimates that another 622,000 women qualify for these services but do not use them.\(^{20}\) In 1976, county welfare departments in California provided family planning services to 530,000 persons representing 16 percent of all females and three percent of all males in the state.\(^{21}\)

The need for perinatal services, i.e., prenatal, maternity and newborn services, is indicated by the number of births 1970-1977, shown in Table VII-5. While births are increasing slightly, the fertility rate continues to decline.

The provision of amniocentesis services, a highly specialized prenatal diagnostic test for fetal abnormalities is continuing to rise due to the inclusion of an RVS code for Medi-Cal reimbursement in 1979. Also, two State funded pilot projects for amniocentesis and genetic counseling have increased awareness of, and demand for, these services. An estimated 6,000 procedures were performed in 1978-79,\(^{22}\) up from 2,600 the first year of the program.
<table>
<thead>
<tr>
<th>HEALTH SERVICE AREA</th>
<th>FEMALES 15-44 Years</th>
<th>FEMALES 15 Years and Over</th>
<th>MALES 15-44 Years</th>
<th>MALES 15 Years and Over</th>
</tr>
</thead>
<tbody>
<tr>
<td>California, Total</td>
<td>5,424,420</td>
<td>5,865,584</td>
<td>8,758,266</td>
<td>9,422,487</td>
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<tr>
<td>1-Northern California</td>
<td>142,285</td>
<td>156,928</td>
<td>245,968</td>
<td>268,979</td>
</tr>
<tr>
<td>2-Golden Empire</td>
<td>287,356</td>
<td>317,110</td>
<td>466,434</td>
<td>515,049</td>
</tr>
<tr>
<td>3-North Bay</td>
<td>140,014</td>
<td>163,889</td>
<td>232,909</td>
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</tr>
<tr>
<td>4-West Bay</td>
<td>347,878</td>
<td>345,903</td>
<td>588,896</td>
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<tr>
<td>5-Alameda/Contra Costa</td>
<td>423,298</td>
<td>446,910</td>
<td>675,278</td>
<td>711,846</td>
</tr>
<tr>
<td>6-North San Joaquin Valley</td>
<td>172,716</td>
<td>191,419</td>
<td>288,847</td>
<td>313,824</td>
</tr>
<tr>
<td>7-Santa Clara</td>
<td>332,410</td>
<td>363,002</td>
<td>480,948</td>
<td>527,901</td>
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<tr>
<td>8-Mid-Coast</td>
<td>149,539</td>
<td>171,029</td>
<td>263,195</td>
<td>293,689</td>
</tr>
<tr>
<td>9-Central California</td>
<td>289,453</td>
<td>319,275</td>
<td>456,915</td>
<td>495,421</td>
</tr>
<tr>
<td>10-Ventura/Santa Barbara</td>
<td>193,408</td>
<td>215,729</td>
<td>302,597</td>
<td>340,524</td>
</tr>
<tr>
<td>11-Los Angeles County</td>
<td>1,700,219</td>
<td>1,773,954</td>
<td>2,719,387</td>
<td>2,803,068</td>
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<tr>
<td>12-Inland Counties</td>
<td>323,626</td>
<td>364,696</td>
<td>532,140</td>
<td>595,084</td>
</tr>
<tr>
<td>13-Orange County</td>
<td>484,087</td>
<td>538,865</td>
<td>743,547</td>
<td>842,200</td>
</tr>
<tr>
<td>14-San Diego/Imperial</td>
<td>438,131</td>
<td>496,875</td>
<td>761,205</td>
<td>852,008</td>
</tr>
</tbody>
</table>

Source: State of California, Department of Finance, E-150 Series.
### TABLE VII-5

DEMAND STATISTICS FOR PERINATAL CARE:
BIRTHS, FERTILITY RATES, BIRTH RATES, BIRTHS TO WOMEN OVER 35, BIRTHS UNDER 2,500 GRAMS,
OUT-OF-HOSPITAL BIRTHS BY HEALTH SERVICE AREAS
CALIFORNIA 1972 AND 1977

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<thead>
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<th>H E A L T H S E R V I C E A R E A</th>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<th>11</th>
<th>12</th>
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<th>14</th>
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<tbody>
<tr>
<td><strong>Births</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>1972</td>
<td>306,375</td>
<td>7,270</td>
<td>14,709</td>
<td>7,507</td>
<td>17,838</td>
<td>22,860</td>
<td>10,565</td>
<td>16,598</td>
<td>8,278</td>
<td>18,908</td>
<td>10,427</td>
<td>105,963</td>
<td>18,719</td>
<td>23,409</td>
<td>23,324</td>
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<tr>
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<td>347,576</td>
<td>9,124</td>
<td>16,697</td>
<td>8,539</td>
<td>17,240</td>
<td>23,600</td>
<td>12,565</td>
<td>18,156</td>
<td>10,283</td>
<td>22,760</td>
<td>11,829</td>
<td>118,705</td>
<td>22,879</td>
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<td>28,472</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>1972</td>
<td>68.6</td>
<td>67.5</td>
<td>65.2</td>
<td>73.7</td>
<td>54.3</td>
<td>62.1</td>
<td>77.1</td>
<td>63.1</td>
<td>76.8</td>
<td>86.7</td>
<td>69.1</td>
<td>69.3</td>
<td>76.2</td>
<td>66.1</td>
<td>73.6</td>
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<tr>
<td>1977</td>
<td>68.3</td>
<td>70.0</td>
<td>63.5</td>
<td>68.2</td>
<td>50.2</td>
<td>58.7</td>
<td>78.6</td>
<td>58.7</td>
<td>75.7</td>
<td>85.6</td>
<td>66.4</td>
<td>72.4</td>
<td>78.7</td>
<td>60.0</td>
<td>71.7</td>
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<td><strong>Birth Rates</strong></td>
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<tr>
<td>1972</td>
<td>15.0</td>
<td>13.7</td>
<td>14.6</td>
<td>15.5</td>
<td>12.1</td>
<td>13.8</td>
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<td>15.9</td>
<td>17.5</td>
<td>15.4</td>
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<td>15.6</td>
<td>15.3</td>
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<td>15.4</td>
<td>15.1</td>
<td>15.4</td>
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<td>16.9</td>
<td>17.3</td>
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<td>16.1</td>
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<td>35 Years and Over</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1972</td>
<td>16,268</td>
<td>276</td>
<td>626</td>
<td>328</td>
<td>1,185</td>
<td>1,078</td>
<td>485</td>
<td>843</td>
<td>420</td>
<td>900</td>
<td>610</td>
<td>6,215</td>
<td>876</td>
<td>1,198</td>
<td>1,228</td>
</tr>
<tr>
<td>1977</td>
<td>17,197</td>
<td>313</td>
<td>619</td>
<td>288</td>
<td>1,239</td>
<td>1,160</td>
<td>444</td>
<td>918</td>
<td>442</td>
<td>958</td>
<td>574</td>
<td>6,805</td>
<td>915</td>
<td>1,295</td>
<td>1,227</td>
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<tr>
<td><strong>Births Under</strong></td>
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<tr>
<td>2,500 Grams</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1972</td>
<td>19,964</td>
<td>396</td>
<td>967</td>
<td>458</td>
<td>1,172</td>
<td>1,615</td>
<td>726</td>
<td>1,019</td>
<td>465</td>
<td>1,195</td>
<td>549</td>
<td>7,439</td>
<td>1,207</td>
<td>1,228</td>
<td>1,528</td>
</tr>
<tr>
<td>1977</td>
<td>21,068</td>
<td>474</td>
<td>1,072</td>
<td>428</td>
<td>1,263</td>
<td>1,558</td>
<td>676</td>
<td>1,159</td>
<td>463</td>
<td>1,316</td>
<td>578</td>
<td>7,770</td>
<td>1,367</td>
<td>1,250</td>
<td>1,694</td>
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<td><strong>Out-of-Hospital Births</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1977</td>
<td>4,974</td>
<td>290</td>
<td>266</td>
<td>270</td>
<td>311</td>
<td>221</td>
<td>167</td>
<td>125</td>
<td>323</td>
<td>198</td>
<td>169</td>
<td>1,490</td>
<td>268</td>
<td>478</td>
<td>398</td>
</tr>
</tbody>
</table>

1 Per 1,000 women 15-44 years of age.
2 Per 1,000 population.

Source: State of California, Department of Health Services, Birth records.
State of California, Department of Finance, Population Estimates, E-150 Series.
Data for infertility services in California are unavailable.

**Analysis of Supply**

Factors in the supply of reproductive services are summarized in Table VII-6. Key points include:

- the ratio of female population, ages 15-44, per OB/GYN physician varies from 1,366 in HSA 4 (West Bay) to 5,242 in HSA 1 (Northern California), with a statewide average of 2,045

- seventeen counties lack any OB/GYN physician, but only one, Alpine, with 177 women in the 15-44 age group, lacks any primary care physician qualified in reproductive care (OB/GYN, GP, FP)

- number of births per primary care physician is low, with a high of 51 in HSA 9 (Central California) and an average of 37 statewide

- 65 percent of OB/GYN physicians statewide saw Medi-Cal patients in 1976, and the ratio was not less than 50 percent in any HSA*

- although the number of OB beds has declined since 1976, average statewide occupancy is about 47 percent

- the distribution of ICNN beds is regional in nature

- State funded amniocentesis centers are highly centralized in 11 large, urban, teaching centers

- family planning services are spread throughout the State, with only seven rural counties lacking any (Glenn, Lake, Modoc, Siskiyou, Nevada, Sierra, Amador)

In summary, the State appears well supplied with reproductive services, although there may be an undetermined number of people, primarily in rural areas and Medi-Cal eligibles in some urban and rural areas, who lack convenient access to physicians providing obstetrical and gynecological services due to geographic or financial factors. There are no conclusive data providing direct evidence of the number of such people or the consequences of the barriers to such care (e.g., receiving care from other types of physicians, from nonphysicians, from hospital programs, not receiving care at all, etc.).

Quality measures at the State level generally relate to the licensing or certification of facilities and personnel and to the development of program guidelines where appropriate.

*This statistic does not reveal what these physicians saw Medi-Cal patient for: abortion; prenatal care; deliveries or other reasons.*
Table VII-6
SELECTED SUPPLY FACTORS FOR REPRODUCTIVE SERVICES BY HEALTH SERVICE AREA
CALIFORNIA, SELECTED YEARS

<table>
<thead>
<tr>
<th>SELECTED FACTORS</th>
<th>Total</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of OB/GYN Physicians, December 31, 1975</td>
<td>2,425</td>
<td>24</td>
<td>121</td>
<td>38</td>
<td>250</td>
<td>188</td>
<td>57</td>
<td>174</td>
<td>40</td>
<td>83</td>
<td>52</td>
<td>924</td>
<td>118</td>
<td>172</td>
<td>184</td>
</tr>
<tr>
<td>Number of Female Population 15-44 per OB/GYN Physician</td>
<td>2,045</td>
<td>5,242</td>
<td>2,130</td>
<td>3,159</td>
<td>1,366</td>
<td>2,099</td>
<td>2,721</td>
<td>1,726</td>
<td>3,267</td>
<td>3,103</td>
<td>3,121</td>
<td>1,749</td>
<td>2,351</td>
<td>2,482</td>
<td>2,078</td>
</tr>
<tr>
<td>Number of Counties Lacking OB/GYN Physicians Compared to Total Counties in HSA</td>
<td>17</td>
<td>9</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>(58) (14) (8) (3) (3) (2) (7) (2) (4) (6) (2) (1) (4) (1) (2)</td>
</tr>
<tr>
<td>Number of GP + FP Physicians, December, 1975</td>
<td>6,750</td>
<td>261</td>
<td>378</td>
<td>205</td>
<td>412</td>
<td>472</td>
<td>259</td>
<td>262</td>
<td>201</td>
<td>351</td>
<td>239</td>
<td>2,257</td>
<td>427</td>
<td>525</td>
<td>501</td>
</tr>
<tr>
<td>Number of Female Population 15-44 per GP + FP Physicians, December, 1975</td>
<td>540</td>
<td>441</td>
<td>517</td>
<td>494</td>
<td>516</td>
<td>598</td>
<td>491</td>
<td>689</td>
<td>542</td>
<td>594</td>
<td>594</td>
<td>508</td>
<td>509</td>
<td>612</td>
<td>558</td>
</tr>
<tr>
<td>Total Births by Residence Per OB/GYN + GP + FP Physicians, December, 1975</td>
<td>37</td>
<td>28</td>
<td>32</td>
<td>34</td>
<td>26</td>
<td>34</td>
<td>38</td>
<td>40</td>
<td>41</td>
<td>51</td>
<td>39</td>
<td>37</td>
<td>39</td>
<td>37</td>
<td>40</td>
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<tr>
<td>OB/GYN Physicians Taking Medi-Cal Patients (Percent of Total) December, 1976</td>
<td>1,579</td>
<td>22</td>
<td>68</td>
<td>27</td>
<td>196</td>
<td>131</td>
<td>33</td>
<td>120</td>
<td>27</td>
<td>48</td>
<td>39</td>
<td>566</td>
<td>62</td>
<td>119</td>
<td>121</td>
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<td>Number of Medi-Cal Beneficiaries Per Medi-Cal OB/GYN Provider, September 30, 1976</td>
<td>77</td>
<td>104</td>
<td>92</td>
<td>96</td>
<td>55</td>
<td>103</td>
<td>69</td>
<td>47</td>
<td>108</td>
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<td>49</td>
<td>88</td>
<td>99</td>
<td>34</td>
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<td>Licensed Obstetric Beds, 1976</td>
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<td>246</td>
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<td>381</td>
<td>444</td>
<td>205</td>
<td>368</td>
<td>360</td>
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<td>413</td>
<td>481</td>
<td>407</td>
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<td>Number of Births by Occurrence Per Obstetric Bed, 1976</td>
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<td>38</td>
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<td>66</td>
<td>46</td>
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<td>74</td>
<td>60</td>
<td>45</td>
<td>63</td>
<td>49</td>
<td>48</td>
<td>68</td>
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<tr>
<td>Number of Intensive Care Nursery Beds, December, 1977: Tertiary</td>
<td>545</td>
<td>22</td>
<td>-</td>
<td>88</td>
<td>50</td>
<td>-</td>
<td>20</td>
<td>-</td>
<td>12</td>
<td>-</td>
<td>235</td>
<td>35</td>
<td>36</td>
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<tr>
<td>Intermediate</td>
<td>231</td>
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<td>24</td>
<td>10</td>
<td>15</td>
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<td>-</td>
<td>20</td>
<td>16</td>
<td>67</td>
<td>18</td>
<td>-</td>
<td>12</td>
</tr>
<tr>
<td>Number of Counties Lacking Any Intensive Care Nursery Beds Compared to Total Counties in HSA, 1977</td>
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<td>12</td>
<td>7</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>6</td>
<td>4</td>
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<td>2</td>
<td>-</td>
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<td>State Funded Amniocentesis Centers, 1979</td>
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<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
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<td>6</td>
<td>-</td>
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<td>1</td>
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<tr>
<td>Number of Family Planning Sites, 1975</td>
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<td>26</td>
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<td>31</td>
<td>22</td>
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<td>17</td>
<td>42</td>
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<td>81</td>
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</tr>
</tbody>
</table>

Note: OB/GYN=Obstetric and Gynecology
GP=General Practice
FP=Family Practice

DHS has recently established "guidelines" rather than regulations for facilities considering development of an alternative birth center, indicating a desire not to over regulate and control a movement which is, in part, a response to over regulation.

Acceptability and continuity of reproductive services are both difficult to measure. Alternative birth centers and use of uncertified birth attendants are largely a response to change in consumer definitions of acceptable care.

ANALYSIS OF ISSUES

Among the many issues for planning and State policy on reproductive services, the following are selected as most important at this time: prevention of unwanted pregnancy and births; State funding of abortion; prevention of developmental disabilities; the role of medical technology in reproductive services; interhospital differences in perinatal mortality; and coordination of State activities in neonatal intensive care.

Issue #1: Prevention of Unwanted Pregnancy and Births

The sharp drop in the birth and fertility rates of all industrialized countries, including the U.S., since the advent of modern contraceptives in the 1960s, provides compelling evidence of the desire of fertile women to control the number and timing of their pregnancies. In 1976, 27,000,000 married women aged 15 to 44 either used contraceptives, were sterile, or were pregnant. Latest survey data (1976) indicate that only 8 percent of fertile couples in the U.S. at risk for unintended pregnancy use no contraceptive method. Studies of contraceptive users indicate that while differences in use remain between poor and nonpoor, Black and white, Spanish surnamed, Catholic and non-Catholic, the gaps are becoming insignificant, and use among all study groups continues to grow. Use of sterilization by white married couples has risen dramatically since 1973.

The number of legal abortions in the U.S. has increased 71 percent since 1973, with an estimated 1,270,000 performed in 1977, terminating pregnancy in 28 percent of pregnant women. The resulting rate of 24.5 abortions per 1000 women aged 15 to 44 is comparable to rates in Scandinavia and East Germany. Seventy percent of abortions are to white women; 75 percent are to unmarried women; 52 percent are to women with one or more children; 32 percent are to women under 20. Death rates from abortions have plummeted since the procedure was legalized: from 3.5/100,000 in 1973 to 0.8/100,000 (10 deaths) in 1976. Recent data indicate that abortion is not used as a substitute for contraception and is consistent with current rates of contraceptive failure.

As of 1973, the use of contraceptives had reduced births identified as "unwanted" in national surveys to a low percentage of all births. However, "mistimed" births were
reported to be fairly high so that "births wanted when born" were only 50 percent of the
total, with Black women reporting a much lower proportion of such births than white
women.\textsuperscript{33} Thus many women do not yet have total control over their own fertility.

Aside from the availability of contraceptives, the reasons for the decline in childbearing
are much debated. Personal preferences of fertile women, employment prospects for both
men and women, income and educational levels, marriage patterns, cultural factors and
the age composition of the female population are some of the many influencing factors.
In an era of changing values and opportunities, the influence of these factors is difficult,
perhaps impossible, to predict.

Whatever the reasons for the drop in fertility rates, and whatever small increases may
occur cyclically in coming years, voluntary rates of childbearing in the U.S. are not likely
to return to "pre-Pill" levels. If the "freedom of choice" exhibited in the utilization of
birth control and abortion services is to be preserved, such services must continue to be
available and be made available where barriers continue to exist. Of particular
importance will be efforts to assure that the full range of family planning methods and
information is available and accessible to all couples who want to use them. Also
important will be the continued attention to research and evaluation that may lead to
safer use of existing family planning methods and development of new methods.
Reassessment of the cervical cap and work to improve female barrier method technology
will be especially appropriate. The development of safe and effective options for couples
who prefer a method used by the male should be seen as a priority. Continuing evaluation
of existing and new hormonal and intrauterine contraceptions is necessary to identify
patient and method characteristics that assure the best safety for women and men that
choose to use these methods.

\textbf{Issue \#2: State Funding of Abortion}

The restriction of abortion funding under Medi-Cal, currently under court challenge, has
generated almost paralyzing debate in the Legislature for several years. There are
equally compelling arguments for either side of the debate whether seen from a public
health, ethical, or politico-legal viewpoint.

The conflicting public health arguments can be summarized as:

- restrictions on publicly funded abortion services will increase perinatal and
  maternal morbidity and mortality because of inappropriate delays or use of
  unsanctioned methods

- Availability of publicly funded abortion services inappropriately encourages the
  use of abortion as a preferred form of birth control, thus discouraging use of
  methods that have fewer risks.
The conflicting ethical arguments can be summarized as:

- there is validity in the constitutional defense of abortion as a matter of right to privacy and the related issue of a woman's right to control her reproductive behavior regardless of socioeconomic status
- the progressive elimination of "moment of conception" as the definition of life will eventually facilitate establishment of relatively arbitrary definitions of life.

The conflicting politico-legal arguments can be summarized as:

- court imposed spending restrictions on Congress will establish dangerous constitutional precedents relevant to separation of constitutional powers, Church/State relationships and/or freedom of religion
- taxpayers who are opposed to abortion on moral, religious and other substantive grounds must not be compelled to pay for this service.

Ultimately, regardless of the competing views underlying the debate about abortion, Medi-Cal exists to assure that the poor have access to health services available to the rest of the population. The State is not thereby coercing behavior contrary to personal conviction. No one is forced to have (or perform) an abortion by means of these funds. Likewise, no one should be forced to bear an unwanted child for lack of these funds. As long as abortions can be legally secured by those who can pay, equity requires that the procedure also be available to those who cannot, through Medi-Cal funding.

A woman, confronted with an unwanted pregnancy should have knowledge of, and access to, all available options: what to expect in keeping a baby; what to expect in placing a baby for adoption, and what to expect in aborting her unborn child. She should have an understanding of all options that are available.

There are currently in California over 50 emergency pregnancy service centers (EPS Centers) which offer help with alternatives to abortion. EPS centers such as those at O'Connor Hospital in San Jose and Daniel Freeman Hospital in Los Angeles offer a comprehensive program providing primary obstetrical and gynecological services, counseling, education and social work services. Many others, such as the 14 Lifelines in Los Angeles, Pregnancy Hotline in Sacramento and the Birthright services throughout the State offer a variety of services to help the individual find an alternative to abortion that fits into her life.
Issue #3: Prevention of Developmental Disabilities

(See also Chapter VIII.)

CCS, Medi-Cal and some Regional Centers reimburse for genetic counseling and amniocentesis. Such testing can help prevent developmental disabilities, lower infant morbidity and mortality, reduce costs and lessen the trauma associated with the birth of a severely disabled infant. The three most common indicators for testing are maternal age (over 35), chromosomal defect or anatomic anomaly. Abnormalities such as Down's Syndrome (mongolism) and neural tube defects, as well as other genetic diseases, may be detected. When a seriously defective fetus is diagnosed, the pregnancy may be terminated if that is the parents' desire. About 97 percent of the diagnoses turn up normal, and the test is highly accurate and safe. Currently, the majority of Medi-Cal recipients are not aware that this counseling and testing is available.

Another method of preventing developmental disabilities is to encourage adequate prenatal education programs that focus on nutrition, alcohol and drug intake and early prenatal care. Currently, a continuing program, funded under Article 2.8 of the Health and Safety Code serves approximately 8,000 clients with a projected yearly target population of 20,000. The State is continuing to support these 15 centers, while monitoring the quality of their testing and counseling. Two additional centers, funded by Kaiser, are operated on a voluntary basis.

Issue #4: The Role of Medical Technology in Reproductive Services

"Medical technology" in reproductive services encompasses:

- the fetal monitor, caesarean section and labor inducing drugs used during labor and delivery
- modern contraceptives (e.g., the Pill, IUD)
- sterilization techniques (vasectomy, laparotomy)
- abortion techniques (vacuum aspiration)
- ultrasound, amniocentesis and other diagnostic procedures used in prenatal care
- equipment and procedures to sustain the distressed newborn in neonatal intensive care units
- microsurgery and fetal implantation techniques to counter sterility.
During the past several years a variety of sophisticated technologies have been developed to diagnose fetal disorders and to manage high risk pregnancies. Some of these technologies have become part of the routine care of all obstetrical patients. This increase in the technological management of "normal" pregnancy has come into conflict with a movement toward "natural childbirth" and a general increase in concern about the adverse effects of technology. In addition, techniques for antenatal diagnosis (i.e., techniques used to diagnose problems of the fetus prior to birth) raise serious ethical, legal and economic issues.

As one example, controversy is currently intense over the use of the fetal monitor during labor and the steep rise in the number of caesarean sections in delivery. In California, most recent data indicate that monitors are used in 54 percent of all deliveries and that the rate of caesarean delivery averages 16 percent, with a high of 29 percent.

Several questions may be asked:

- does the monitor improve perinatal outcome (mortality and morbidity)
- does the monitor provide information that cannot be gained through personal observation and other methods
- what are the causes of the rising caesarean rate
- do risks associated with the monitor increase hospital stays and thus costs
- does use of the monitor and caesarean represent an "aggressive, high technology" approach to birth?

A new study of California births since 1970 concludes that use of fetal monitors has led to increased use of caesarean section but that both monitoring and caesarean section are associated with lower perinatal mortality (after adjusting for a variety of factors).

**Issue #5: Interhospital Differences in Perinatal Mortality**

The influence of hospital size, location and volume on health status is a sensitive issue. It is often difficult to study because the proper outcome measure is debatable and available statistics are unreliable. Even good studies may be rejected because the data are neither recent nor specific to California.

However, a new study of over 3,000,000 California births appears highly relevant for State policy. The study assesses the impact of hospital characteristics on observed and expected differences in reported perinatal deaths among 504 California hospitals over the 13-year period.
The study method permits analysis of three possible causes of variation:

- differences in patient mix
- differences attributable to medical care
- differences resulting from the statistical methods

The study finds:

"... that there is a considerable difference in the quality of obstetrical and newborn care in California hospitals even after adjusting for ... variations in patient risk (i.e., mix);

... the effectiveness of perinatal care was found to be higher in larger hospitals and in hospitals performing relatively more caesarean sections;

... the effectiveness index was lower in hospitals serving larger proportions of Spanish surnamed mothers;

... the risk-adjusted perinatal mortality rate decreased with increased size of the delivery service until 2,850 births, then increased;

Additionally, the risk-adjusted mortality rates are lower in urban hospitals, in hospitals having large specialist-to-generalist ratios, and in hospitals routinely recording Apgar scores in 1968."

The author concludes:

"While this study has demonstrated that ... factors outside the direct control of hospitals (have) by far the largest impact on observed perinatal death rates, it has also shown that a number of hospital characteristics ... have significant marginal impacts on risk-adjusted outcomes. That is, in spite of the strong link between perinatal mortality and ... nutrition, genetics and environment, it is possible to increase the marginal effectiveness of perinatal care (italics original) ... the medical care delivered to mothers and newborns appears to be as much as twice as effective ... for the highest versus lowest ranked hospitals, even after accounting for ... factors beyond their direct control" (emphasis added).
Reproductive Services

The implication for planning and policy seems clear: regionalization of obstetrical and newborn care saves infant lives. Large services do better than small ones, and specialist staffed services do better than generalist staffed ones.

The concept of regionalized systems for delivery of perinatal care has been strongly endorsed by professional organizations. It is sometimes opposed by both consumers and providers affected by potential closure of underutilized units. Differing philosophies concerning birth, concern for convenient access, the role of the obstetrical service in the hospital and local pride are some of the reasons. The perinatal mortality record of California hospitals, however, indicates the tradeoff.

Issue #6: Neonatal Intensive Care: Coordination of State Activities

Neonatal intensive care is a very expensive service of concern to numerous State agencies, including CCS, Medi-Cal, Licensing and Certification (in DHS), Maternal and Child Health (in DHS) and OSHPD. Three current problems suggest a lack of coordination among some of these groups:

- confusion over which facilities are actually providing what level of care (intermediate, tertiary)
- lack of standards concerning need for neonatal intensive care beds, in total or by level
- the imprecise relationship between neonatal and other perinatal services.

For example, Licensing and Certification currently licenses 32 neonatal intensive care units in California without specifying any level of care classification. The Title 22 standards, however, imply a Level III or tertiary level care. CCS classifies neonatal units as tertiary or intermediate for reimbursement purposes, so classifying 21 tertiary units. But ten of the hospitals with CCS tertiary units do not show "intensive care newborn nursery" on their licenses. Nor are 21 of the licensed units deemed "tertiary" by CCS. Similarly, proposed revisions to Title 22 licensure standards to define two levels of care are not tied to a uniform method for projecting or assessing "need" for Level II (intermediate) beds. Finally, several children's hospitals in California provide neonatal but not full perinatal services. The relationship between these hospitals and others providing both obstetrical and neonatal care is not well defined.

The National Planning Guidelines and professional standards, which endorse two levels of neonatal intensive care, do so within a strong framework of regionalization. The intent is that Levels II and III complement, not duplicate, each other, that they be closely linked and that both relate in numerous ways to Level I, the "normal" newborn nursery. A plan for a regionalized system of neonatal intensive care, including levels of care appropriate for California, relationships among them and need for the facilities by level is
Reproductive Services

Diagnosis and Treatment Services

a responsibility for California's health planning agencies, the OSHPD and the HSAs. Licensure and reimbursement standards should ultimately be consistent with OSHPD policies and planning guidelines.
POLICY RECOMMENDATIONS FOR REPRODUCTIVE SERVICES

Reproductive-1: THE CHOICE OF WHETHER, WHEN AND HOW TO BEAR CHILDREN SHOULD BE STRICTLY A MATTER FOR THE INDIVIDUAL PARENT(S) TO DECIDE.

Reproductive-2: IN ORDER FOR SUCH CHOICE TO BE MEANINGFUL, ALL OPTIONS SHOULD BE UNDERSTOOD AND SHOULD BE WITHIN FINANCIAL AND LEGAL REACH.

Reproductive-3: SEX EDUCATION, CONTRACEPTIVES, ABORTION, PRENATAL CARE, OBSTETRICAL, WELL BABY CARE AND PARENTHOOD COUNSELING SHOULD BE AVAILABLE TO ALL PERSONS.

Such services should be provided in such a way that they give due consideration to the cultural value systems of the population to be served.

Reproductive-4: AS LONG AS MEDI-CAL OR OTHER STATE PROGRAMS PAY FOR HEALTH CARE, THE ABOVE SERVICES SHOULD BE INCLUDED AND FUNDED.

Policy Recommendations 1-4 form a comprehensive statement on the problem of reproductive rights and the State's role in providing related health services. It is inconsistent to agree that freedom of choice should be protected but then withhold the means to exercise it. Further, lack of fertility related services creates numerous health and social problems.

Reproductive-5: REGIONALIZATION OF NEONATAL INTENSIVE CARE SHOULD BE THE BASIS FOR ALL STATE ACTIVITIES RELATING TO THIS SERVICE, INCLUDING PLANNING, LICENSURE AND REIMBUSEMENT, UNDER THE COORDINATION OF THE OSHPD.

Current fragmentation of State regulation in this area creates confusion and invites piecemeal action. The expense of the service and the documented relationship between hospital characteristics and perinatal mortality underline the need for regionalization and for State level coordination.

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Reproductive-6: THE LEGISLATURE SHOULD MANDATE ADOPTION OF THE FAMILY HEALTH COMPONENT OF THE HEALTH INSTRUCTION FRAMEWORK IN ALL SCHOOL DISTRICTS AND SECTION 51510 OF THE EDUCATION CODE SHOULD BE REPEALED.

Schools are major sites for provision of information concerning prevention of unwanted pregnancy and birth, the consequences of sexual activity, contraception and genetic disorders.

Reproductive-7: A COMPREHENSIVE STUDY BY AN OBJECTIVE RESEARCH ENTITY SHOULD BE FUNDED IN ORDER TO INVESTIGATE AND EXPLAIN THE INCREASE IN CAESAREAN SECTION AND FETAL MONITORING AMONG GROUPS OF HOSPITALS AND CLASSES OF PATIENTS.

Although some work on this problem in California has been done, a comprehensive report may suggest any necessary additional policy development.

Reproductive-8: FINANCIAL SUPPORT OF AMNIOCENTESIS TESTING CENTERS SHOULD BE CONTINUED.

Availability of this service helps reduce the number of severely disabled infants born in California.
NOTES


20. Ibid.


24. FPP, 8:54-57, March/April, 1976.


27. FPP, 10:265, September/October 1978.


29. Ibid., p. 273.

30. Ibid., p. 273.

31. Ibid., p. 275.


35. Williams, "C-Section," op. cit., pp. 11-12.


37. Ibid., pp. 103-105.

38. Ibid., p. 108.


DEFINITION AND SCOPE OF SERVICES

Children and youth services are defined as health services related to the acute and chronic health care needs of persons under 19 years of age. Children and youth services include environmental services, health promotion and disease/disability prevention services, diagnosis and treatment services, long-term care services, mental health services, and alcohol and drug abuse services. Although there is a complete overlap between children and youth services and the other categories of services addressed in the Plan, special attention to this age group and their unique health needs is warranted.

BACKGROUND

Relationship to Health Status

The health status of California's children and youth appears to be generally improving. Mortality rates are declining, with the greatest decline noted in infant mortality, although there are still wide variations in ethnic mortality rates. For example, the rate of infant mortality for Black children, while declining dramatically, is still significantly higher than for all other children. While many major organic causes of disease have been conquered or controlled, there is growing concern for the health related social and environmental circumstances of children. Accidents kill more children from 1 month to 20 years of age than organic disease. Venereal disease is increasing in California's population and the problem of teenage pregnancy remains serious. Child abuse may be affecting up to 10 percent of California children. Alcohol consumption among the seventh to twelfth grade population has increased. Up to 50 percent of all high school seniors drink from moderately heavy to heavy. Many of these problems are not amenable to direct medical treatment, however, they are appropriate subjects for health education.

National Trends and Policy

At the national level, mortality rates have declined dramatically over the last few decades. Mortality rates for non-white children and youth, however, still lag behind those for Whites. There has been a noticeable increase in life expectancy for all people. Many of the crippling diseases have been brought under control and many of the medical problems seem to be in check.

Medical problems related to social and environmental circumstances continue to emerge. The Department of Health and Human Services (DHHS) reports increases in the use of alcohol, stimulants, sedatives, tranquillizers and other substances such as heroin, cocaine and hallucinogens. There has been and continues to be a dramatic increase in the "neglected epidemic" - VD. Reports show 300-400 percent increases in numbers and rates

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of infection for gonorrhea over the last few years with ensuing problems of sexually transmitted diseases for the fetus and the newborn. Adolescent pregnancy and illegitimacy rates are increasing, and over 50 percent of high school females who became pregnant dropped out of school.

National trends also indicate an increase in single parent families headed by a female. Over the past ten years, the incidence of families without a male head has grown nearly 10 times as fast as mother/father families. The large increase in families headed by a female is due primarily to the increasing incidence of divorce, and illegitimate births to adolescents.

Most single parent families "remain trapped in poverty". The Women's Bureau Report of 1976 indicated 28.2 million children and youth had working mothers. More than 25 percent of these children were under six years of age. A substantial number of families headed by a female have little money or are in actual poverty. About 65.6 percent of all Black children in families with a female head live in poverty. The poverty rate for children and youth which declined from 22.8 percent in 1963 to 13.8 percent in 1969, is increasing again (16.8 percent in 1975) with Black rates much higher (38.9 percent in 1975).

There are an estimated 7.8 million children who suffer from a physical handicap, of whom 3.6 million are not served.

A wide variety of services and programs for children and youth continue to receive increased federal funding. Many federal programs are designed to establish, extend and strengthen services provided by State and local government. There are 37 State agencies that administer 160 separate programs for children.

**California Policy**

In 1979, activities linked to the "International Year of the Child" heightened interest in the problems of California's children. In mid-1979, the California district of the American Academy of Pediatrics (AAP) adopted the California Health Plan for Children, 1979. The Plan was developed in response to the national health goals stipulated under Public Law 93-641 subsequently amended by P.L. 96-79. The Academy felt problems of child health were not adequately addressed in either P.L. 93-641 or in Health Systems Plans. Nine health goals for various health status indicators were proposed:

1. All infants, children and adolescents should have access to comprehensive and continuous health care appropriate for their age.

2. All children born should be wanted.

3. All children should be born well and to healthy mothers.

4. All children should be immunized against the preventable infectious diseases for which there are recommended immunization procedures.

5. All children should have good nutrition.
6. All children should be educated about health and the health care system.

7. All children should live in a safe environment.

8. All children with chronic handicaps should be able to function at their optimal level.

9. All children should live in an environment that is as free as possible from contaminants.

In addition, for each health service area, health problems as measured by the chosen health status indicators were placed in rank order based upon the California average. Goals for health service area were divided by analyzing data related to each of the nine health goals. Specific recommendations were derived from the analysis of health status and health systems.

A second major effort underway in 1979 was the implementation of SB 363 which called for the development of a Master Plan for Children and Youth. A draft document entitled "Issues in Planning Services for California's Children and Youth" was published in March 1980 by the Office of Statewide Health Planning and Development. This document describes: (1) the condition of California's children; (2) the ongoing programs for children and youth along with funding; and (3) a presentation of five alternative ways of providing services to California's children and youth. This document is considered the initial dialogue in developing the Master Plan for Children and Youth.

The Department of Health Services recently identifies integration and coordination issues affecting health services to children and established a Departmental Child Health Initiative as a major effort in this area.

Health Systems Plan Highlights

There is a consistent need shown in HSPs to increase resources devoted to reducing or preventing diseases. Such as mumps, rubella, rubeola, polio, measles, diphtheria, pertussis and tetanus through immunization. They call for strict enforcement of the California Health and Safety Code which requires immunization for admittance to schools. Most HSAs also call for a formal system of health education and unanimously urge effective use of the Health Instruction Framework for California Schools in all elementary and high school districts. They further urge that formal family education services be established by hospitals, health departments and voluntary health agencies. School boards are promised full HSA support in encouraging the substitution of healthful foods for foods and beverages high in refined sugar in school vending machines. Nutrition education is also encouraged in schools. Many HSAs urge closer ties with the health education efforts of churches, communities and civic organizations. One HSA has established a School Health Council to coordinate health education activities among school districts, to help them create their comprehensive health plans and to coordinate health instruction with community resources for each school.

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Many HSAs are working with school districts to establish inservice health education programs for classroom teachers and to expand existing health education curricula for students. HSAs are also encouraging legislation which would provide these school districts with the adequate resources to continue their health education endeavors.

ANALYSIS OF DEMAND AND SUPPLY

Analysis of Demand

Demand for children's services is directly related to the size of the population under 18 years of age and the variations in the health status of children across the State. Table VII-I reflects current and projected population for children's services. The California Health Plan for Children, 1979 includes an evaluation of child health status in the 14 health service areas in California. A total of 99 health status indicators were compared to the California average for each indicator. Table VII-8 presents the top 10 health status indicators which are above the California average. Each indicator is ranked in the order of seriousness. These data show that indicators associated with health goal number one "all infants, children and adolescents should have access to comprehensive, continuous health care appropriate for their age," and number seven, "all children should live in a safe environment" appears most frequently. Of interest to the reader, health goal number nine appear in the top ten ranking for health service areas 11, 12, 13 and 14 only. This indicator addresses an "environment that is as free as possible from contaminants" such as air pollutants.

Analysis of Supply

Key factors in the supply of children and youth services have been extracted from the California Health Plan for Children, 1979 and summarized in Table VII-9.

Analysis of Issues

Of the many health issues affecting children in this state, seven are discussed in this section: accident prevention; children of undocumented residents and immigrants; health services for juvenile incarcerates; foster care children; environmental pollutant's effect on children; underservice to Native American children; and, child abuse.

Issue #1: Accident Prevention

Accidents, acute poisoning and homicides are the three leading causes of injury and death for Californians 0 - 20 years of age. Table VII-10, depicts the number of deaths due to environmental factors in 1977 of children under 21 years of age by cause. In order to reduce this morbidity and mortality, causal factors present in the home and in the community must be decreased or eliminated. It is imperative that public awareness be
TABLE VII-7

CURRENT AND PROJECTED TARGET POPULATION
0-17
BY HEALTH SERVICES AREA
CALIFORNIA, 1980 and 1985

<table>
<thead>
<tr>
<th>California and Health Service Area (HSA)</th>
<th>YEAR</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1980</td>
<td></td>
<td>1985</td>
</tr>
<tr>
<td>California, Total</td>
<td>6,219,318</td>
<td></td>
<td>6,437,498</td>
</tr>
<tr>
<td>HSA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - Northern California</td>
<td>165,213</td>
<td></td>
<td>176,628</td>
</tr>
<tr>
<td>2 - Golden Empire</td>
<td>321,529</td>
<td></td>
<td>340,224</td>
</tr>
<tr>
<td>3 - North Bay</td>
<td>161,131</td>
<td></td>
<td>175,510</td>
</tr>
<tr>
<td>4 - West Bay</td>
<td>312,156</td>
<td></td>
<td>300,612</td>
</tr>
<tr>
<td>5 - Alameda/Contra Costa</td>
<td>457,942</td>
<td></td>
<td>445,026</td>
</tr>
<tr>
<td>6 - North San Joaquin</td>
<td>229,321</td>
<td></td>
<td>245,130</td>
</tr>
<tr>
<td>7 - Santa Clara</td>
<td>369,088</td>
<td></td>
<td>367,907</td>
</tr>
<tr>
<td>8 - Mid-Coast</td>
<td>165,333</td>
<td></td>
<td>186,559</td>
</tr>
<tr>
<td>9 - Central California</td>
<td>391,478</td>
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<td>422,764</td>
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<tr>
<td>10 - Ventura/Santa Barbara</td>
<td>235,633</td>
<td></td>
<td>245,853</td>
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<tr>
<td>11 - Los Angeles</td>
<td>1,952,461</td>
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<td>1,967,357</td>
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<tr>
<td>12 - Inland Counties</td>
<td>412,491</td>
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<td>447,213</td>
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<tr>
<td>13 - Orange County</td>
<td>532,775</td>
<td></td>
<td>558,036</td>
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<tr>
<td>14 - San Diego/Imperial</td>
<td>512,767</td>
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<td>558,679</td>
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Source: State of California, Department of Finance, E-150 Series.
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<thead>
<tr>
<th>Rank</th>
<th>1</th>
<th>2</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Other transport accident death rate.</td>
<td>Accidental death rate due to natural environmental factors among those &lt;25 years of age.</td>
<td>Neonatal death rate for Chinese.</td>
</tr>
<tr>
<td>4</td>
<td>Accidental death rate for children 1-14 years of age.</td>
<td>Low birth weight rate for Filipinos.</td>
<td>Neonatal death rate for Blacks.</td>
</tr>
<tr>
<td>5</td>
<td>Accident death rate among those &lt;25 years of age due to fire and flames.</td>
<td>Fetal death rate for Blacks.</td>
<td>Out of hospital live births.</td>
</tr>
<tr>
<td>7</td>
<td>Percent of children with hemoglobin values of 10.0 gms.% or less.</td>
<td>Percent children with &quot;weight for height&quot; less than the 5th percentile.</td>
<td>Influenza and pneumonia death rate for children 1-14 years of age.</td>
</tr>
<tr>
<td>8</td>
<td>&quot;Other accidents&quot; death rate for those &lt;25 years of age.</td>
<td>Accidental death rate due to suffocation among those &lt;25 years of age.</td>
<td>Homicide death rate for children 1-14 years of age.</td>
</tr>
<tr>
<td>9</td>
<td>Drowning death rate for those &lt;25 years of age.</td>
<td>Total accidental death rate for infants &lt;1 year of age.</td>
<td>Fetal death rate for Blacks.</td>
</tr>
<tr>
<td>10</td>
<td>Motor vehicle accidental death rates for those &lt;25 years age.</td>
<td>Low birth weight rate for Blacks.</td>
<td>Neonatal death rate for other ethnic groups.</td>
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</tbody>
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### TABLE VII-8 (cont'd)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Health Service Area</th>
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<th>5</th>
<th>6</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Death rate due to undetermined accidents among those &lt;25 years of age.</td>
<td>Mental disorder death rate for those 15-24 years of age.</td>
<td>Legal intervention accidental death rate among those &lt;25 years of age.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Venereal disease case rate.</td>
<td>Undetermined accidental death rate among those &lt;25 years of age.</td>
<td>Petal death rate for Blacks.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Enteric disease case rate.</td>
<td>Death rate due to accidents caused by natural environmental factors among those &lt;25 years of age.</td>
<td>Other accidental death rate among those &lt;25 years of age.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Neonatal death rate among American Indians.</td>
<td>Low birth weight rate for Blacks.</td>
<td>Low birth weight rate for Blacks.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Low birth weight rate for American Indians.</td>
<td>Petal death rate for Blacks.</td>
<td>Mental disorder death rate for those 15-24 years of age.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Viral hepatitis case rate.</td>
<td>Percent of children with hemoglobin 10.0 gms. or less.</td>
<td>Other transport accidental death rate for those &lt;25 years of age.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Death rate to other transport accidents among those &lt;25 years of age.</td>
<td>Death rate due to suffocation for those &lt;25 years of age.</td>
<td>Low birth weight rate for American Indians.</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE VII-8 (con't)

<table>
<thead>
<tr>
<th>Rank</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Percent of children with hemoglobin levels of 10.0 gms.% or less.</td>
<td>Legal intervention accidental death rate for those &lt; 25 years of age.</td>
<td>Neonatal death rate for Blacks.</td>
</tr>
<tr>
<td>2</td>
<td>Mental disorder death rate for those 15-24 years of age.</td>
<td>Influenza and pneumonia death rate for infants &lt; 1 year of age.</td>
<td>Diphtheria, tetanus and pertussis case rate.</td>
</tr>
<tr>
<td>3</td>
<td>Accidental death rate due to natural environmental causes among those &lt; 25 years of age.</td>
<td>Out of hospital live births.</td>
<td>Fetal death rate for other ethnic groups.</td>
</tr>
<tr>
<td>4</td>
<td>Low birth weight rate for Blacks.</td>
<td>Death rate due to accidental falls among those &lt; 25 years of age.</td>
<td>Death rate due to accidents caused by natural environmental factors among those &lt; 25 years of age.</td>
</tr>
<tr>
<td>5</td>
<td>Other transport accidental death rate for those &lt; 25 years of age.</td>
<td>Accidental death rate for infants &lt; 1 year of age.</td>
<td>Legal intervention accidental death rate among those &lt; 25 years of age.</td>
</tr>
<tr>
<td>6</td>
<td>Fetal death rate for Blacks.</td>
<td>Percent of children with hemoglobin levels of 10.0 gms.% or less.</td>
<td>Accidental death rate for infants &lt; 1 year of age.</td>
</tr>
<tr>
<td>8</td>
<td>Infant death rate due to congenital anomalies</td>
<td>Accidental death rate for children 1-14 years of age.</td>
<td>Low birth weight rate for Blacks.</td>
</tr>
<tr>
<td>9</td>
<td>Lead concentration in air.</td>
<td>Enteric and diarrheal disease death rate for infants &lt; 1 year of age.</td>
<td>Accidental death rate due to fire and flames among those &lt; 25 years of age.</td>
</tr>
<tr>
<td>10</td>
<td>Percent of children with an abnormal nutritional status.</td>
<td>Accidental death rate due to fire and flames among those &lt; 25 years of age.</td>
<td>Accidental death rate due to suffocation among those &lt; 25 years of age.</td>
</tr>
<tr>
<td>Rank</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>------</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>1</td>
<td>Neonatal death rate for American Indians.</td>
<td>Lead concentration in air.</td>
<td>Legal intervention accidental death rate.</td>
</tr>
<tr>
<td>3</td>
<td>Fetal death rate for Blacks.</td>
<td>Orthopedically handicapped case rate.</td>
<td>Fetal death rate for American Indians.</td>
</tr>
<tr>
<td>4</td>
<td>Fire and flame accidental death rate for those &lt; 25 years of age.</td>
<td>Oxidant concentration in air.</td>
<td>Fetal death rate for Filipinos.</td>
</tr>
<tr>
<td>5</td>
<td>Fetal death rate for Japanese</td>
<td>Nitrogen dioxide concentration in air.</td>
<td>Oxidant concentration in air.</td>
</tr>
<tr>
<td>7</td>
<td>Death rate due to accidental falls among those &lt; 25 years of age.</td>
<td>Fetal death rate for Blacks.</td>
<td>Low birth weight for Blacks.</td>
</tr>
<tr>
<td>9</td>
<td>Death rate due to natural environmental factors among those &lt; 25 years of age.</td>
<td>Diphtheria, tetanus and pertussis case rate.</td>
<td>Particulate matter concentration in air.</td>
</tr>
<tr>
<td>10</td>
<td>Accidental death rate due to suffocation among those &lt; 25 years of age.</td>
<td>Other handicaps case rate.</td>
<td>Fetal death rate for Chinese.</td>
</tr>
<tr>
<td>Rank</td>
<td>13</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>--------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Percent of children with hemoglobin levels of 10.0 gms.% or less.</td>
<td>Accidental death rate due to legal intervention among those &lt; 25 years of age.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Lead concentration in air.</td>
<td>Adoption rate.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Neonatal death rate for Blacks.</td>
<td>Percent of children with hemoglobin levels of 10.0 gms.% or less.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Influenza and pneumonia death rate for infants &lt; 1 year of age.</td>
<td>Low birth weight rate for Blacks.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Low birth weight rate for Blacks.</td>
<td>Neonatal death rate for Blacks.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Out of hospital live births.</td>
<td>Fetal death rate for Blacks.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Death rate due to other transport accidents among those &lt; 25 years of age.</td>
<td>Particulate matter concentration in air.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Accidental death rate due to natural environmental factors among those &lt; 25 years of age.</td>
<td>Neonatal death rate for American Indians.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Fetal death rate for Blacks.</td>
<td>Child abuse rate.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Abortion rate.</td>
<td>Accidental death rate due to natural environmental factors among those &lt; 25 years of age.</td>
<td></td>
</tr>
</tbody>
</table>

## TABLE VII-9
SELECTED SUPPLY FACTORS FOR CHILDREN AND YOUTH SERVICES BY HEALTH SERVICE AREA
CALIFORNIA, SELECTED YEARS

<table>
<thead>
<tr>
<th>Selected Supply Factors</th>
<th>TOTAL</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Pediatricians, 1975</td>
<td>2,665</td>
<td>19</td>
<td>102</td>
<td>36</td>
<td>357</td>
<td>282</td>
<td>34</td>
<td>208</td>
<td>35</td>
<td>82</td>
<td>53</td>
<td>995</td>
<td>94</td>
<td>193</td>
<td>175</td>
</tr>
<tr>
<td>Number of Pediatricians + 25% GP &amp; FP</td>
<td>4,359</td>
<td>84.5</td>
<td>196.5</td>
<td>87.5</td>
<td>460</td>
<td>400</td>
<td>99.5</td>
<td>273.5</td>
<td>85.5</td>
<td>170</td>
<td>113</td>
<td>1,559</td>
<td>200.5</td>
<td>324</td>
<td>300.5</td>
</tr>
<tr>
<td>Number of Counties lacking ped compared to total counties</td>
<td>19 (50)</td>
<td>9 (14)</td>
<td>3 (8)</td>
<td>0 (3)</td>
<td>0 (2)</td>
<td>3 (7)</td>
<td>0 (1)</td>
<td>0 (4)</td>
<td>2 (6)</td>
<td>0 (2)</td>
<td>0 (1)</td>
<td>2 (4)</td>
<td>0 (1)</td>
<td>2 (2)</td>
<td></td>
</tr>
<tr>
<td>Number of ped + 25% (FP &amp; GP) per 10,000 pop &lt; 18</td>
<td>6.9</td>
<td>5.2</td>
<td>6.1</td>
<td>5.6</td>
<td>13.7</td>
<td>8.2</td>
<td>4.4</td>
<td>7.1</td>
<td>5.5</td>
<td>4.5</td>
<td>4.8</td>
<td>7.8</td>
<td>5.1</td>
<td>6.0</td>
<td>6.1</td>
</tr>
<tr>
<td>Number of DDS, 1975</td>
<td>694</td>
<td>17</td>
<td>32</td>
<td>21</td>
<td>88</td>
<td>91</td>
<td>28</td>
<td>75</td>
<td>17</td>
<td>27</td>
<td>19</td>
<td>200</td>
<td>24</td>
<td>35</td>
<td>20</td>
</tr>
<tr>
<td>Number of DDS per 10,000 pop &lt; 18</td>
<td>1.1</td>
<td>1.0</td>
<td>1.0</td>
<td>1.4</td>
<td>2.6</td>
<td>1.9</td>
<td>1.3</td>
<td>2.0</td>
<td>1.1</td>
<td>0.7</td>
<td>0.8</td>
<td>1.0</td>
<td>0.6</td>
<td>0.7</td>
<td>0.4</td>
</tr>
<tr>
<td>Number of pediatric beds in general acute care hospital</td>
<td>6,749</td>
<td>112</td>
<td>303</td>
<td>77</td>
<td>592</td>
<td>501</td>
<td>163</td>
<td>406</td>
<td>111</td>
<td>391</td>
<td>185</td>
<td>2,449</td>
<td>363</td>
<td>681</td>
<td>415</td>
</tr>
<tr>
<td>Number of ped beds per 10,000 pop &lt; 18</td>
<td>10.7</td>
<td>6.8</td>
<td>9.4</td>
<td>4.9</td>
<td>17.7</td>
<td>8.6</td>
<td>7.3</td>
<td>10.5</td>
<td>7.1</td>
<td>10.3</td>
<td>7.8</td>
<td>12.2</td>
<td>9.2</td>
<td>12.7</td>
<td>8.5</td>
</tr>
<tr>
<td>Percent of population &lt; 18 certified eligible for Medi-Cal</td>
<td>17.7</td>
<td>20.3</td>
<td>20.9</td>
<td>15.0</td>
<td>16.2</td>
<td>16.3</td>
<td>22.9</td>
<td>12.0</td>
<td>15.4</td>
<td>22.6</td>
<td>13.9</td>
<td>20.9</td>
<td>20.2</td>
<td>7.2</td>
<td>15.4</td>
</tr>
</tbody>
</table>

### TABLE VII-10

**DEATHS DUE TO ENVIRONMENTAL FACTORS**  
**AGES 0-20**  
**1977**

<table>
<thead>
<tr>
<th>Causes of Death</th>
<th>Total</th>
<th>Under One Year</th>
<th>1-4</th>
<th>5-9</th>
<th>10-15</th>
<th>15-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Vehicle Accidents</td>
<td>1,342</td>
<td>31</td>
<td>115</td>
<td>136</td>
<td>136</td>
<td>924</td>
</tr>
<tr>
<td>Other Transport Accidents</td>
<td>121</td>
<td>1</td>
<td>22</td>
<td>24</td>
<td>21</td>
<td>53</td>
</tr>
<tr>
<td>Accidental Poisoning</td>
<td>86</td>
<td>1</td>
<td>13</td>
<td>2</td>
<td>4</td>
<td>66</td>
</tr>
<tr>
<td>Accidental Falls</td>
<td>54</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>31</td>
</tr>
<tr>
<td>Fires and Flames</td>
<td>62</td>
<td>7</td>
<td>27</td>
<td>16</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Natural &amp; Environmental Factors</td>
<td>17</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Drowning &amp; Submersion</td>
<td>76</td>
<td>-</td>
<td>3</td>
<td>13</td>
<td>11</td>
<td>49</td>
</tr>
<tr>
<td>Obstruction &amp; Suffocation</td>
<td>64</td>
<td>26</td>
<td>19</td>
<td>5</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Other Accidental Deaths</td>
<td>374</td>
<td>21</td>
<td>137</td>
<td>53</td>
<td>53</td>
<td>110</td>
</tr>
<tr>
<td>Suicide or Self Inflicted</td>
<td>258</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>31</td>
<td>227</td>
</tr>
<tr>
<td>Homicide or Purposely Inflicted by Others</td>
<td>464</td>
<td>31</td>
<td>40</td>
<td>30</td>
<td>43</td>
<td>320</td>
</tr>
<tr>
<td>Legal Intervention</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Undetermined Accidental or Purposely Inflicted</td>
<td>60</td>
<td>14</td>
<td>7</td>
<td>1</td>
<td>5</td>
<td>33</td>
</tr>
</tbody>
</table>

increased. This can be accomplished via the news media and health education in public schools. More direct interventions have also proven successful, as has been the establishment of the Consumer Product Safety Commission, the Hazardous Substance Act, the Poison Prevention Packaging Act, the Flammable Fabrics Act and the Refrigerator Safety Act.

Poison Control Centers are specialized service centers which provide prompt telephone information on poison emergencies to physicians, other health professionals and the public. Currently there are nine poison control centers in California. While these centers serve patients of all ages, about three quarters of the patients served are under 20 years of age. Half are less than three years old.

Physicians have great responsibility and opportunity to directly affect the incidence of these causes of death and disability. Physicians can raise the level of awareness of these hazards and influence citizens to adjust living habits and lifestyles in directions more conducive to safety and health.

Issue #2: Children of Undocumented Residents and Immigrants

Undocumented Residents: According to AAP’s California Health Plan for Children.

"Illegal aliens, because of fear of discovery, will frequently not seek health professionals until illness is far advanced. Most of these people avoid authority whenever possible. Not only does this group include Mexican migrants crossing the border illegally, but also many people from South East Asia who entered with false documents. At the present time, there are no data which addresses the health problems of the children of illegal aliens. Upon arriving in the United States, the undocumented Mexican worker and his family usually take up residence in the most accepting barrio where they "blend" in with the permanent residents. In Los Angeles, they avail themselves of the health care services available to their neighbors. This is often of the episodic type provided by public facilities and the few practitioners in the barrio. Although most qualify for Medi-Cal, fear of deportation limits access to this source. Although the California Children's Service will cover the children of these undocumented workers, the fear of deportation again limits access. If possible, cash payment is used but is often insufficient. As a result, many of these children are treated at public facilities which will accept them. Not all do and an excess burden has fallen on those public facilities that do. The Department of Health Services of Los Angeles County does provide these services now, but there is a move to eliminate nonemergent services. Indeed, at this writing the provision of such services by the County of Los Angeles has been ruled illegal. Thus, the child, who is often a citizen, did not choose to come here illegally and who cannot decide what is emergent, is an innocent sufferer of a political and economic problem not of his/her own making."
Immigrants: Approximately 100,000 Indochinese have immigrated to California since the fall of American supported regimes in South Vietnam.

Among the most common health problems experienced by immigrants and refugees are TB (most prevalent), malaria, VD, dental disease, worms and other parasites and malnutrition.

The United States Public Health Service (USPHS) has been mandated to provide refugee screening services, and some follow-up, particularly in the areas of communicable and infectious disease. However, data have not been available to the Department of Health Services (DHS). There is still a need for ongoing, prevention oriented ambulatory health care which is readily accessible (physically and economically) and acceptable (culturally and linguistically). In the Bay area, the San Francisco General Hospital serves as the primary ambulatory care center for refugees. Six of the ten nationwide refugee reception centers are in California. Private agencies and church groups act as resettlement and advocacy centers for the refugees. The major centers are three U.S. Catholic Resettlement offices in Los Angeles, Orange County and San Diego.

Social workers at the San Francisco refugee resettlement center estimated about 10 percent of the refugees are not screened before entering the United States. The USPHS does screen most refugees, but it is reasonable to assume that many may reside here without ever having a medical screening. Children concerns focus on vaccinations, treatment for intestinal parasites, and general health screening. (See Chapter III, Publicly Financed Services #7 and #8.)

Specific data quantifying the health status and service utilization of the undocumented population is not available, although some general conclusions can be made. Because of their illegal status, they are difficult to identify and assess. The health disorders of this population are dramatic. Due to a generally deprived history of public health intervention in their home countries, many suffer from a variety of disorders (e.g., hypertension, TB, syphilis, salmonella, malaria and dental disease), many of which are enhanced by poor and stressful working conditions.

Issue #3: Health Services for Juvenile Incarcerates

Health services for youths (12-18) who "in the courts" is an unexplored subject. The exact number of youths fitting the definition of "in the courts" is not known, however, it is estimated that there are thousands of youths across the State who are now in group homes, California Youth Authority, juvenile halls, in foster homes or on their way to one of these places. There are two basic categories of juvenile youth offender: the "601 type", or serious, usually multiple offender; and the "602 type", or "status offender," usually the run-away or drop-out whose major crime may be their age. The former are usually in one of the six California Youth Authority "youth prisons." The status offenders are usually in foster homes, group homes, juvenile hall or on probation.
The most prevalent health problem of youth offenders would appear to be a long-term accumulation of neglected chronic health problems which health education classes and parental encouragement should have addressed. Dental caries are abundant as are chronic problems, usually the result of accidents. Sexual concerns also rank high among both sexes (i.e., VD, rape, pregnancy). The current recession in the American economy serves to exacerbate an already bad situation in which low income, education and unhealthful environments produce more crime, violence and unwanted births to low income, undereducated, usually non-white parents with little or no inclination to follow good health care habits.

There are over 4,500 inmates in the California Youth Authority (CYA) system. There are 13 noncoed institutions, 1 coed institution, 6 correction camps and 2 reception center clinics, which screen and treat incoming inmates for TB, VD, etc. They also do some minor surgery and dental work. Health services received at the reception center clinics in Sacramento and Norwalk are reimbursed either through the county or, if possible, from the inmates or parents. Until recently, incarcerated in CYA and juvenile hall were ineligible for federally subsidized health care (Medi-Cal) benefits because of their status as inmates. However, this policy has shown signs of flexibility. SB 148 (Presley) provides Medi-Cal benefits to inmates during the month they enter the institution and one month prior to their release, as federal monies become available. These benefits are expected to relieve the financial burden placed on local agencies and low income parents for the health care of youth in lockup. In addition, it would support the reception centers efforts to screen, diagnose and treat incoming incarcerates for infectious disease, lice, etc., thereby protecting the total inmate population.

**Issue #4: Foster Care Children**

Foster children are under the supervision of welfare agencies, public and private. Unlike orphans, most of these children cannot be offered for adoption (and thus given permanent homes) because their natural parents are still living and will not agree to release them. Society often helps families in crisis stay together, but it is reluctant to terminate the rights of natural parents to their children if there is any possibility the family may eventually be able to provide a suitable home for them. Many foster children remain in a kind of limbo of temporary care, with little hope of a reasonably quick solution.

About one-fourth of the national population of children living outside their families are in institutions and group homes. The rest live in foster homes. By definition, foster care is a temporary arrangement. But it may go on year after year – for some children home after home – until the children are grown. Definitive action is necessary early enough to give the child a permanent home before the damage to his feelings of identity and trust takes place. The most common reasons for a children being removed from their homes are child abuse or neglect.
The total number of children in California as of December 31, 1977, reported in foster care was approximately 30,000, with an average age of 13.5. Of those children, 69 percent were placed in foster family homes and the remaining 31 percent were in either group homes or institutions. Of the total reported number of children in placement during this period, 27 percent were voluntary placements and 73 percent were court ordered placements. Those children with varying degrees of emotional and physical problems made up 43 percent of the foster care population, requiring specialized services or treatment.

Funding sources for foster care services are derived at federal, State and county levels, depending on the child's eligibility for assistance.

Currently, there are no data available at State or local levels describing problems faced by foster care children. There are no data portraying the physical or emotional well-being of these children, nor the long-term effect placement may have on them.

**Issue #5: Environmental Pollutant's Effect on Children**

All children should live in an environment that is as free as possible from toxins and contaminants. There are a number of industrial/agricultural pollutants currently monitored and regulated by the Environmental Protection Agency (EPA) known to produce ill health among adults and children. Among these are oxidants, carbon monoxide, lead, sulphur dioxide, oxides of nitrogen and incompletely burned particulate matter.

In a report on "Air Pollution Health Effects on Children" released September 23, 1977, by the Air Resources Board it is stated: "There is sufficient information to indicate that children may be the most sensitive group of individuals within the population because: (1) their lungs are developing; (2) they have more than twice the air exchange volume of an adult based on body weight; and (3) they have a faster ventilatory rate than adults."

Not much is known of the extent of the participation of health care providers in controlling this health hazard. There is no doubt health professionals should take a more active role in protecting children's health from environmental contaminants. This requires special interest and training which appears to be in the public health realm. An example of local control in protection of children from pollutants is the closure of L.A. County schools on days of high level smog pollution.

There is mounting evidence, however, which suggests that what the EPA and local public health officials currently regulate does not exhaust the number of pollutants within our biosphere. Among these are particulate matter produced from coal combustion, radioactive isotopes, TCP and herbicides. There is also increasing concern over the level of mercury and industrial pollutants within areas where normal active children play, specifically major rivers, lakes and watershed areas throughout northern California.
**Lead Poisoning:** Lead poisoning in California children has received relatively more attention among health care providers than other contaminants primarily because individuals affected can be specifically located and dealt with.

For the young child, the most important target organ is the brain. The catastrophic effects of lead encephalopathy and protean symptoms of lead poisoning have caused many clinicians to ask whether lesser levels of lead poisoning result in more subtle forms of brain injury.

Among the studies of low level lead and brain function, two are acknowledged by many as most rigorous and controlled. Becker and Choate followed children identified as lead exposed, and controls matched on socioeconomic status and race, and found that the exposed group had a higher incidence of gross and fine motor dysfunction, irritability and impaired cognition at the age of four years. When the children were retested at seven to eight years of age, the incidence of dysfunction had not decreased. This finding suggested that the deficit was permanent.

The effects of lead exposure during pregnancy deserves close consideration. Because lead crosses the placenta, it has been found in the umbilical cord blood of newborns.

Clearly, there is a need to screen people in areas which are known to have used lead based paints in housing units. In addition, there is an ever present need to regulate and monitor atmosphere pollutants, as well as auto engine exhaust, lead pipes, etc. and occupational exposure to potential sources of lead poisoning.

**Water Pollution:** Mounting disclosures in the news media relative to carcinogens in municipal water supplies have caused many people to become overwhelmed by this public health hazard to children. The lack of an immediate, clear cause and effect relationship between pollutants and disability and the growing number of pollutants also lead to complacency. Too many people are accepting these hazards as a kind of random "Russian roulette." Whether through conscious acceptance or apathy, otherwise responsible adults may be causing children to involuntarily accept a disproportionate amount of the burden. Since the effects of many of these pollutants are not seen until many years have past, inaction now will condemn today's children to become tomorrow's victims.

**Issue #6: Underservice to Native American Children**

At present there are 27 urban and rural Indian health projects in the State of California serving approximately 197,000 Native Americans. Since their incorporation in 1969, the California Rural Indian Health Board (CRIHB), and the California Urban Indian Health Council (CUIHC), have retained the responsibility for providing primary care services in the remote rural areas where reservations (federal trust lands) are located and in the major urban centers.
Environmental health/sanitation, medical social services, mental health care services, nutrition, community outreach and health education are all services which are capable of addressing the needs of Indian children and youth. The federal government, however, which provides the major portion of funding for CRIHB, has not seen these services as priorities for funding. The Resources Allocation Criteria (RAC) used in determining resource requirements for health services show a 100 percent deficiency for these services (see Primary Care Chapter under issues and recommendations). Integration into local county programs is the only alternative to this situation and is utilized as a means of providing the aforementioned services. Sixteen of the 35 counties comprising the total CRIHB service area are "contract counties" without social service departments. There is a lack of identifiable programs to non-Indians as well as Indians in some counties.

Perhaps the major portion of the reason for medical underservice to California Indian children and youth may be the CRIHB clinics major source of funding: Department of Health and Human Services/Public Health Service/Indian Health Services. The IHS/RAC document is a resource requirement document based on population and national needs assessment data (where local data are unavailable). This system is problematic because the document (based on 1970 Bureau of the Census figures) probably undercounted nearly 100,000 Native Americans in this State. Thus, most Native Americans are not served by either CRIHB or CUIHC because they are financially restricted by the number of Indians which IHS (and the Bureau of Indian Affairs, BIA) choose to recognize as eligible for services, the number being 91,108.

In addition to these problems which CRIHB faces, urban Indian projects coordinated by the California Urban Indian Health Council face similar problems. In particular, access to MCH programs is a major issue. Maternal and Child Health supports ongoing established operations, but has not funded new projects for some time, e.g., Indian Health clinics. Legislative mandate AB 3146 (1978), which targets all DHS Children and Youth projects for financial and technical apportionments to Native Americans for specific services, i.e., funding for MCH, has not been successful or even implemented by the affected agencies.

Another concern is identified in pending legislation, e.g., AB 2141 the Indian foster and adoptive services bill. This concerns the preferential placement of Indian children in Indian foster or adoptive homes. The federal bill, P.L. 95-608, the Indian Child Welfare Act of 1979, identifies only appropriations under Title 2 of the act for reservation Indians and tribal courts. In California this presents a number of problems. The BIA recognizes only 36,000 eligible (federally recognized California Indians). There are about 197,000 Indians both federally recognized and nonfederally recognized in this State. What happens to the other 161,000? Under P.L. 83-280, which gave criminal and civil jurisdiction over Indian lands and affairs to the State, the State must provide the needed services. Indian people have yet to see the State address this concern in concrete terms and adequate funding at the clinic or Department of Health Services level.
For over 25 years, the responsibility for providing necessary culturally acceptable health and social services has been "ping-ponged" back and forth between the federal and State government since the inception of P.L. 83-280 (in 1953). The fact that IHS funded clinics exist in this state is clear evidence of the intent of California legislation. California has not fully accepted the responsibility. On the other hand, the federal IHS has allocated no more than 1.3 percent of their total expenditures for the nation to California Indians. The State (through SB 52) began to fill this gap in 1975 as an interim measure.

**Issue #7: Child Abuse**

**Background:** The types of abuse to which children are subject range from severe neglect by incompetent or indifferent parents to beatings, death or sexual abuse (including rape). Considerable disagreement exists on the appropriate breadth of the definition of child abuse. Areas of controversy, for instance, include consideration of the effect of parental pressure to excel in competitive athletics and academics. The issue is further complicated by questions on children's rights. Broad acceptance of children's rights, other than those granted by adults, has come only in recent years. Some cultures still categorize children as property of their parents and, as such, can be beaten or even sold at will.

The battered child syndrome was first described in 1962 and soon after, every state legally mandated the reporting of cases of battered children. Subsequently, the growing number of reported tragic cases has turned society's attention to dealing with the "new" problem. In California, the reporting of child abuse cases was, and probably continues to be notoriously poor. For the state of California as a whole, the number of child abuse referrals decreased from 119,741 in 1976 to 105,114 in 1978, a 12 percent decrease. The decrease could be reflecting poorer reporting of referrals rather than an actual decrease.

Most parents labeled neglectful are poor, many are on welfare. Frequently, they are single parents. Many suffer from physical or mental illness, drug addiction or alcoholism. The parents are often isolated from other people in their community.*

Twenty-two counties showed an increasing trend in child abuse from 1976 to 1978 as measured by the number of reported child abuse referrals. They are Humboldt, Lassen, Trinity, Placer, Sierra, Napa, Solano, Alameda, Alpine, Amador, Madera, Stanislaus, San Benito, San Luis Obispo, Fresno, Kings, Madera, Tulare, Santa Barbara, Inyo, Riverside and San Bernardino.** (Table VII-11.)


** Child Protective Services, Statistical Services Bureau, January 29, 1980.
TABLE VII-11
COUNTIES WITH HIGHEST INCREASE OF
CHILD ABUSE RATES - 1977

<table>
<thead>
<tr>
<th>Counties</th>
<th># of Service Children per 100,000 Population under 18</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1976</td>
<td>1978</td>
</tr>
<tr>
<td>1. Lassen</td>
<td>34.3</td>
<td>234.3</td>
</tr>
<tr>
<td>2. Trinity</td>
<td>173.2</td>
<td>334.6</td>
</tr>
<tr>
<td>3. Tulare</td>
<td>42.7</td>
<td>176.2</td>
</tr>
<tr>
<td>4. San Benito</td>
<td>**</td>
<td>123.4</td>
</tr>
<tr>
<td>5. Madera</td>
<td>274.5</td>
<td>378.8</td>
</tr>
<tr>
<td>6. Merced</td>
<td>473.6</td>
<td>570.3</td>
</tr>
<tr>
<td>7. Kings</td>
<td>173.5</td>
<td>265.5</td>
</tr>
<tr>
<td>8. Sierra</td>
<td>**</td>
<td>79.8</td>
</tr>
<tr>
<td>9. San Luis Obispo</td>
<td>100.5</td>
<td>178.3</td>
</tr>
<tr>
<td>10. San Bernardino</td>
<td>79.3</td>
<td>136.9</td>
</tr>
<tr>
<td>11. Fresno</td>
<td>152.4</td>
<td>207.5</td>
</tr>
<tr>
<td>12. Stanislaus</td>
<td>326.8</td>
<td>369.6</td>
</tr>
</tbody>
</table>

* Significant increase could be due to one or more quarters data missing in 1976.
** No data reported - 1976
Source: OSHPD
It is difficult to deal with a problem that occurs in the privacy of the home, yet requires early detection and treatment due to the potential of continuing damage. Parents often need treatment as badly as the child, but may be reluctant to cooperate. When cases are uncovered, workers in separate agencies may find it difficult to collaborate. Frequently, physicians and others who become aware of a case do no more than deal with the presenting physical problem because of a reluctance to confront emotionally distressing situations. Physicians furthermore do not wish to think of their patients as abused. Some are not adequately informed, some are too busy to pay attention to the subtleties of child abuse, some are too trusting to be suspicious, and some just do not want to get involved.

One of the major steps to prevention of child abuse is recognition. Recognition should be emphasized in the teaching curriculums of all professions dealing with children and should be followed through into the field of public education. With increasing continuity of health care, and increasing health provider education, awareness of the part of physicians and hospital personnel will hopefully increase.

Treatment must consider community socioeconomic and cultural differences. In low income communities, it might only be possible to educate parents about child development and nonviolent means of raising children. Special attention must be paid to the families in transition who, in moving from familiar surroundings, have ruptured ties to the extended family and friends, and could share the demands of child rearing. Churches and other community organizations can provide more programs to deal with family related problems. Finally, more research can be undertaken to better guide therapeutic programs and more effectively promote prevention.

Types of services available to the child abuse victim are:

- Foster care
- Volunteer or case aide
- Day Care
- Homemaker
- Shelter care*
- Other welfare assistance
- Psychologist or psychiatrist
- Mental health facility
- Visiting or public health nurse
- Hospital

* "Shelter care" refers to short-term emergency care for those children who need immediate action to safeguard them from hazardous circumstances arising from conditions of alleged neglect, abuse, or exploitation. Such care includes subsidized homes reserved for emergency care, as well as other shelter facilities reserved to provide a protective environment. Such an emergency placement is limited to 14 days.
POLICY RECOMMENDATIONS FOR CHILDREN AND YOUTH

Children-1: THE STATE SHOULD COORDINATE PROVISION OF A MASS PUBLIC EDUCATION PROGRAM DESIGNED TO TEACH PARENTS AND CHILDREN THE ELEMENTS OF ACCIDENT PREVENTION.


Children-3: HEALTH SCREENING SHOULD BE DONE BY THE FEDERAL GOVERNMENT AS A REQUIREMENT FOR ENTRY INTO THE UNITED STATES. THIS SCREENING SHOULD BE DONE AT A REST AND HEALTH CENTER AT OR NEAR THE PLACE OF ARRIVAL TO ASSURE A COMPLETE REVIEW AND TO ALLOW FOR PROMPT TREATMENT OF COMMUNICABLE PROBLEMS.

Children-4: THE STATE DEPARTMENT OF HEALTH SERVICES LOCAL HEALTH DEPARTMENTS AND THE CALIFORNIA YOUTH AUTHORITY SHOULD EVALUATE THE HEALTH SERVICES AVAILABLE TO ALL JUVENILE INCARCERATES DURING THEIR PRISON TERM AND SHOULD MAKE ECOMMENDATIONS TO THE LEGISLATURE REGARDING REIMBURSEMENT POLICIES.

Children-5: THE STATE DEPARTMENT OF SOCIAL SERVICES SHOULD CONDUCT A SPOT SURVEY OF LOCAL HEALTH AGENCY FILES ON FOSTER CARE CHILDREN TO DETERMINE THE PLACEMENT EFFECTS (PHYSICAL AND EMOTIONAL) ON THESE CHILDREN.

Children-6: ALL AGENCIES WITHIN THE HEALTH AND WELFARE AGENCY SHOULD COORDINATE PLANNING AND PROGRAM ACTIVITIES WITH THE ENVIRONMENTAL PROTECTION AGENCY, AIR RESOURCES BOARD, WATER RESOURCES BOARD AND COUNTY GOVERNMENTS TO:

- IDENTIFY GHETTOS AND BARRIOS TO BE EXPLORED WITH PROBE SCREENS FOR LEAD POISONING
- EXPAND THE FREE ERYTHROCYTE PROTOPORPHYRIN (FEP) TEST WHICH IDENTIFIES LEAD BURDENED CHILDREN ESPECIALLY IN AREAS WHERE ENVIRONMENTAL HAZARDS HAVE BEEN IDENTIFIED
- COLLECT NECESSARY DATA ON SOURCE OF POLLUTANTS AND POISONINGS AND ESTABLISH STRICT CONTROL OF RECORDS WHICH INDICATE (1) HOW MANY CHILDREN SCREENED POSITIVE, (2) HOW MANY CONFIRMED POSITIVE, AND (3) OF THOSE SCREENED POSITIVE, HOW MANY RECEIVED CONFIRMATION.

- DEVELOP AND IMPLEMENT BETTER SAFEGUARDS AGAINST THE DANGER OF WATER SUPPLY CONTAMINATION FROM TOXIC MATERIALS.

- IMPROVE THOSE WATER SYSTEMS WHICH HAVE BEEN DETERMINED BY THE DEPARTMENT OF HEALTH SERVICES TO BE IN NEED OF IMPROVEMENT.

**Children-7:** THE STATE SHOULD CONTINUE TO PROVIDE LOCAL FUNDING ASSISTANCE FOR URBAN AND RURAL INDIAN HEALTH PROGRAMS IN THE STATE SO AS TO CONTINUE TO EXPAND THE FUNDING UNDER IHS. THE STATE SHOULD CONTINUE TO URGE THE FEDERAL GOVERNMENT TO PROVIDE FUNDING TO CALIFORNIA INDIANS PROPORTIONATE TO THE ACTUAL NUMBERS.

**Children-8:** THE STATE SHOULD COORDINATE THE INITIAL PROCESS OF REGIONALIZATION OF CHILD ABUSE SERVICES TO ASSIST THE SMALLER COUNTIES IN PROVIDING A FULL SPECTRUM OF SERVICES TO THE ABUSED CHILD.

**Children-9:** ALL AGENCIES PROVIDING SERVICES TO FAMILIES AND TO CHILDREN SHOULD EXAMINE THE IMPACT OF THEIR REIMBURSEMENT POLICIES ON FAMILY STABILITY AND, WHEREVER POSSIBLE, REIMBURSEMENT SHOULD BE USED TO ENCOURAGE INTEGRATION OF SERVICES PROVIDED IN A FAMILY ORIENTED SETTING INVOLVING PARENTS AS A RESOURCE (ALONG WITH THE NECESSARY SUPPORT TO PARENTS) IN RESOLVING PROBLEMS OF YOUTH.
EMERGENCY MEDICAL SERVICES

DEFINITIONS AND SCOPE OF SERVICES

Emergency Medical Services (EMS) may be broadly defined as communications, transportation and treatment services necessary for immediate medical care to prevent loss of life or aggravation of bodily or mental illness or injury. A system of emergency medical services arranges personnel, facilities and equipment in a manner that assures effective and coordinated delivery of these services.¹

The Federal Emergency Medical Services Systems Act of 1973 (P.L. 93-154) specifies 15 components of the system, including: manpower; training; communications; transportation; facilities; critical care units; public safety agencies; consumer participation; accessibility to care; transfer of patients; standard medical record keeping; public information and education; evaluation; disaster linkage; and mutual aid agreements.

Title 22 (Section 51056) defines emergency services accordingly:

"Emergency services means those services required for alleviation of severe pain, or immediate diagnosis and treatment of unforeseen medical conditions, which, if not immediately diagnosed and treated would lead to disability or death."

Title 22 classifies emergency services in the hospital according to level of care provided:²

- Standby Emergency Medical Service, Physician on Call: "The provision of emergency medical care in a specifically designated area of the hospital which is equipped and maintained at all times to receive patients with urgent medical problems and capable of providing physician services within a reasonable time."

- Basic Emergency Medical Service, Physician on Duty: "The provision of emergency medical care in a specifically designated area of the hospital which is staffed and equipped at all times to provide prompt care for any patient presenting urgent medical problems."

- Comprehensive Emergency Medical Service: "The provision of diagnostic and therapeutic services for unforeseen physical and mental disorders which, if not promptly treated, would lead to marked suffering, disability or death. The scope of services is comprehensive with in-house capabilities for managing all medical situations on a definitive and continuing basis."
The services provided by an EMS system are designed to cover three distinct events:

- Incident care covers a range of operations from the initial call for aid to first aid by the concerned citizen and first aid triage (determination of appropriate and necessary treatment). Basic life support and advanced life support information is also required so that a medical emergency is recognized immediately and an appropriate emergency medical response can be made (e.g., dispatch of medical manpower and equipment to the scene).

- Transport care involves the management and coordination of resources to assure that appropriate medical response and transport decisions are made to provide either basic or advanced life support. Such "field care" programs, in order to be effective, must include predetermined roles and responsibilities assigned to public safety personnel and to both public and private ambulance personnel.

- Definitive care includes those activities in the hospital setting which range from first aid and referral to appropriate specialized medical services.

The American Hospital Association categorizes hospital emergency service visits as follows:

- Emergent requires immediate medical attention; delay is harmful to the patient; disorder is acute and potentially threatens life or function.

- Urgent requires medical attention within a few hours; patient is in danger if not attended; disorder is acute but not necessarily severe.

- Nonurgent does not require the resources of an emergency service; disorder is minor or nonacute.

Federal legislation (P.L. 93-154) further categorizes facilities by their capacity to respond to "critical care" needs. Critical care includes:

- Burn Care
- Trauma Care
- Spinal Cord Care
- Poison Care
- Cardiovascular Care
- Perinatal Care
- Psychiatric Care
Each critical care category is defined to include a basic level of service which any licensed general acute care hospital can provide. The designation and interfacility coordination of these services is intended to be based on a regional "critical care plan," developed by local governments or by regional agencies formed by joint powers agreements.

Disaster medical response is the medical and public health capability required when the normal service capability of a local jurisdiction is exceeded by the number of casualties or by a major threat to public health and safety. The scope of disaster medical services includes: medical intelligence; regulation and coordination of medical manpower, supplies, facilities and ancillary services; and mass casualty treatment. The scope of disaster public health services includes: sanitation; radiological health; vector control; hazardous materials/waste disposal; infectious disease control; and laboratory services.

BACKGROUND

Relationship to Health Status

The death rate for accidents has fallen from 55 per 100,000 in 1970 to 45 per 100,000 in 1977. However, accidents remain the fourth leading cause of death in this State. The relationship of other health problems that require emergency medical services has not been quantified.

National Trends

Since World War II, the emergency medical system in United States hospitals has been influenced by the increasing demand for emergency services, new technologies and a series of historical events leading to a greater understanding of emergency medicine.

From 1946 to 1960, there was a 400 percent increase in patient visits to hospital emergency departments. From 1955 to 1967, there was an increase of 257 percent. The increase is proportionately higher than population growth, twice as great as outpatient department visits and five times greater than inpatient admissions during the same period. This trend is fueled by use of the emergency room by nonemergency patients as a provider of primary care services.

Another major development is the increased sophistication of critical care medicine, including the development of cardiopulmonary resuscitation, telemetry and the advances in transport and communications capabilities.

The need for and implementation of an Emergency Medical System has been acknowledged by many groups, including the American College of Surgeons, the American Hospital Association and the National Academy of Sciences. These have encouraged the development of standards and criteria for emergency departments, ambulances and cardiopulmonary resuscitation.
National Policy

Prior to the development and passage of federal legislation to improve emergency medical services, little attention was given to them. In 1966, the National Academy of Sciences published a paper which drew attention to severe system deficiencies, called for a coordinated system of care for trauma victims and stimulated passage of the National Highway Safety Act of 1966 (P.L. 89-564). This Act was aimed at reducing the annual reported mortality of 65,000 persons and nonfatal injury of 110,000 associated with vehicular accidents.

P.L. 93-154, the Emergency Medical Services Systems Act, was enacted in 1973 and extended in 1976 by P.L. 93-573. These bills allocate funds for local governmental entities (associations of local governments, joint powers agreements among local jurisdictions, etc.) to develop regional emergency systems. By July 1976, the Act had provided for training of 15,000 paramedics and emergency medical technicians, 4,000 nurses, 1,200 physicians and 6,000 other types of health care personnel. Due to this assistance, emergency services systems have been started in 235 areas across the nation.

To augment public subsidies of emergency medical program development, the Robert Wood Johnson Foundation has been actively involved in supporting the development of new and improved emergency medical systems components, including communications systems and manpower training.

California Trends

The following trends characterize the California Emergency Medical Services System:

- increased utilization of emergency medical services: data indicate over 6 million emergency room visits during FY 1976-77, an increase of over 2 million annual visits from 1970

- continued emphasis on "regionalization" of EMS: primary impetus was provided by the EMS Systems Act (P.L. 93-154 and P.L. 93-573); all of the 15 California regions have established EMS agencies

- diffuse and conflicting planning mandates: planning networks and regionalization concepts are continually blurred by overlapping, competing and/or conflicting planning requirements

- the proliferation of contracts between physician groups specializing in emergency medical services and institutional providers of emergency care

- the lack of a centralized data bank continues to plague the system
California Policy

Legislation relating to emergency medical services is contained in six California Codes: Health and Safety; Vehicle; Government; Welfare and Institutions; Business and Professions; and Penal. The California Administrative Code contains regulations relating to EMS under the following titles: Education; Public Health; Health Care Services; Motor Vehicles; Aeronautics; and Labor.

At the State level, major emergency medical services activities are conducted by:

- **California Highway Patrol**: ambulance licensing
- **Office of Traffic Safety**: grants for communication equipment and ambulances
- **Office of Emergency Services**: statewide planning and response to disasters
- **State Emergency Medical Services Advisory Committee**: provide advice on overall emergency medical services
- **Department of Health Services**: Medi-Cal reimbursement of emergency medical services; ambulance and public safety personnel first aid training standards; standard setting and development of medical components of State disaster planning
- **Office of Statewide Health Planning and Development**: manpower pilot projects, certificate of need and State Health Plan.

Section 1760 of the California Health and Safety Code requires the Department of Health Services to develop emergency medical service systems throughout the State, provide technical assistance to counties on emergency medical service system planning, set standards for ambulance personnel training and education, collect and disseminate data for emergency medical service planning and coordinate mass casualty response in disaster situations.

Establishment of a new basic or comprehensive emergency medical service requires a certificate of need. An applicant for a new basic emergency medical service must demonstrate that:

- it is licensed as a general acute care hospital
- the facility is the most appropriate facility in the service area to offer such new service
- the service will be available to any person who requires it regardless of the person's ability to pay or any other nonmedical factor.
OSHPD's 1980-81 Plan Development Guidelines instruct the individual HSA on developing a methodology for estimating EMS resource requirements. The initial projections of utilization should be based on the utilization rate (visits/1,000 population) adjusted for the anticipated growth in population. Consideration is to be given to HSA goals, objectives and recommended actions to determine the impact on the utilization rate of these externally generated changes.

As a result of California's Wedworth-Townsend Act of 1970, a growing number of California counties are organizing and operating paramedic programs to provide field advanced life support (ALS) services to the general public. Training of ambulance attendants has been upgraded through establishment of Emergency Medical Technician-I (Ambulance) Training Programs.

Since 1973, regional emergency medical services agencies have been established through joint powers agreements between cities and counties within 15 defined regions in the State. These 15 areas are identical to the 14 health service areas established under P.L. 93-641 except that HSA 1 is split into two regions for emergency medical services organization.

California has established responsibility for emergency medical services at the county level. The Health and Safety Code required that Emergency Medical Care Committees be established in each county by July 1, 1968; each appointed EMCC must annually review ambulance services, emergency medical care and first aid practices. Reports of the Committee's observations and recommendations are to be submitted annually through Boards of Supervisors to the State Department of Health Services and the OSHPD. The Health Systems Plan Highlights

The HSPs state that most of the urban areas contain the components of the emergency medical care system while some rural areas are still in need of planning and implementation. All HSPs call for a regionally integrated system which would connect all of the disparate parts of emergency medical care into a coherent whole.

Many HSPs suggest establishing mechanisms for needs assessment, data collection and system performance. Only a few address the need for outcome evaluation or the assessment of the results of the federal, State, regional and local interventions.

The use of the hospital emergency room for nonurgent patients is a universal problem which the HSPs suggest might be mitigated by triaging and/or an educational process which would link nonurgent patients to primary care sources.

The HSPs anticipate the implementation of the "911" emergency call system and frequently state the need for free access to the system and the desirability of multilingual telephone services.
The HSPs recommend that the public's knowledge of the EMS system, first aid procedures, cardiopulmonary resuscitation and choke saving be enhanced.

**ANALYSIS OF DEMAND AND SUPPLY**

**Analysis of Demand**

As Figure VII-2 indicates, the hospital emergency room has experienced a dramatic increase in utilization. If current trends continue, it is projected that, by 1985, hospital emergency room visits will exceed 10 million per year. A number of studies agree that emergency department utilization is doubling every decade, a rate of increase higher than population increase by 7 to 10 percent a year.9 Little data exists to adequately determine the categories of patients using emergency departments in California.

Utilization of emergency rooms as walk-in clinics is believed due to a number of factors:

- physicians are unavailable on nights or weekends, particularly to new patients, and most physicians refuse to make house calls
- the number of primary care practitioners has decreased, especially in low income urban areas and in some rural areas
- increased availability of 24-hour emergency departments which have extensive technical and human resources
- public awareness of the 24-hour availability of care in emergency rooms has increased
- third-party reimbursement pays for "emergency" treatment not covered in physicians offices or clinics
- a more mobile population uses the hospital as its primary resource for health care
- the public lacks knowledge of the availability of primary health services
- a subjective perception of emergency conditions by the patient exists
- most Medi-Cal patients have historically obtained their care at county hospitals, and so look to the hospital setting for care
- many private physicians either do not accept Medi-Cal patients, or limit their caseloads
- some Medi-Cal beneficiaries do not establish a family physician relationship and tend to seek help only when a problem occurs10
- other reasons include a patient's socioeconomic status, residence and frequency of utilization.
FIGURE VII-2
CURRENT AND PROJECTED EMERGENCY ROOM VISITS
CALIFORNIA HOSPITALS
1970-1986

Visits Per 1,000 Population

Years 1970 72 74 76 78 80 82 84 86

Source: State of California, Office of Statewide Health Planning and Development, Annual Reports.
State of California, Department of Finance, Population Estimates.
A study of Los Angeles County emergency medical services found that 25 percent of the patients seen lived within 20 minutes travel time of the hospital and 72 percent lived within 40 minutes. A study of emergency room utilization at the Sacramento Medical Center (a county hospital) found that over three-fourths of all patients seen lived within three miles of the hospital.\(^\text{11}\)

Even though emergency rooms are staffed and equipped to respond immediately to true emergencies, increased public reliance on the hospital for primary care, combined with reimbursement incentives, forces hospitals to meet the nonemergent demand. Ironically, this demand has made emergency departments economically viable for many hospitals. While the increased availability and accessibility provided by the emergency departments contribute to primary care and emergency care, the proliferation of staffing and equipment meant to deal with true emergencies is costly.

**Analysis of Supply**

The supply of emergency medical services in California is a complex network of public and private resources which has yet to be enumerated in any detail on a statewide basis. Data exist only on a regional basis collected through the planning done by the emergency medical services projects funded by P.L. 93-154 and the HSAs. Gross figures are shown below:

**TABLE VII-12**  
SELECTED EMS RESOURCES IN CALIFORNIA, 1976

<table>
<thead>
<tr>
<th>Resource</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency department physicians</td>
<td>3,250</td>
</tr>
<tr>
<td>Police, fire and lifeguard personnel trained in CPR</td>
<td>50,000</td>
</tr>
<tr>
<td>Ambulance attendants and drivers trained in basic life support</td>
<td>9,000</td>
</tr>
<tr>
<td>Schools providing EMT-1 (ambulance) Training Programs</td>
<td>100</td>
</tr>
<tr>
<td>Hospitals with first aid capability</td>
<td>112</td>
</tr>
<tr>
<td>Hospitals with standby emergency medical services</td>
<td>84</td>
</tr>
<tr>
<td>Hospitals with basic emergency medical services</td>
<td>348</td>
</tr>
<tr>
<td>Public ambulance services</td>
<td>160</td>
</tr>
<tr>
<td>Private ambulance companies</td>
<td>270</td>
</tr>
<tr>
<td>Ambulances and emergency vehicles</td>
<td>1,200</td>
</tr>
<tr>
<td>Air ambulance services</td>
<td>20</td>
</tr>
</tbody>
</table>

Source: Emergency Medical Services Section, California State Department of Health Services, 1979.
Cost data on the EMS system have not been assembled in any organized fashion. Medi-Cal data for 1976 show a total of $33,854,830 expended for physician services in an emergency department, averaging $32.98 per patient or $35.65 per unit of service. If hospital overhead charges are added, Medi-Cal expenditure increased to $40,227,354 and $37.48 per patient. California Health Facility Commission data indicate that emergency room visits generated 6.9 percent of gross hospital revenue in FY 1977-78.

ANALYSIS OF ISSUES

Issue #1: EMS System Organization and Management

Little evidence exists to suggest that the components of emergency medical services in California have been planned and organized to approximate a system. Rather, the services are a conglomeration of disconnected and competing public and private resources in urban and rural settings with planning, organizing and statutory authority scattered among a host of federal, State, regional, city and county agencies.

Currently, there are 110 statutes related to some aspect of EMS, as well as at least 13 different agencies, offices, boards and departments with some involvement in EMS. The major actor at the State level was the recently eliminated Emergency Medical Services Section of the State Department of Health Services. At the regional level, joint powers authorities between contiguous counties, whose Boards consist primarily of Supervisors, set policy for EMS development and provide direction to project activities. At the local level, authority for EMS regulation rests with the counties and cities. Policies and ordinances governing potential first responders (police, sheriff, fire personnel) are established by local entities: city; county; and fire district.

There also exists a number of special interest groups organized around ER physicians, nurses, paramedics, EMTs, public safety personnel, hospitals, ambulances, Red Cross, emergency preparedness, etc., who compete for a greater share of authority and resist any attempts to share or shift control. These special interest groups, mixed with the elected officials who govern local governments and regional agencies, form the decision making apparatus of the EMS system. There is an absence of thoughtful, rational planning and organization which is essential to a smoothly functioning system.

Several problems attributable to lack of clean structure and lines of authority may be cited:

- the development of plans for designating critical care units and their interconnections is not delineated between the regional EMS projects and the HSAs, raising the potential for conflicting decisions (a regional EMS agency could designate a critical care unit for burn care in a hospital while the HSA and the State could deny a certificate of need for such a service)
in San Diego, patients with serious trauma are taken to emergency facilities lacking the capability to render care.

- in San Francisco, the training of EMS personnel is fragmented, and there has been no integration of the private and public sectors.

- excess of hospital emergency rooms

- use of ERs for primary care problems

- limited access for undocumented immigrants and the financially disadvantaged at private facilities

- overlapping ambulance districts

- enforcement of regulation as fragmented as the various authority levels.

A final consequence is the halt in the implementation of the "911" program. Through AB 515 in 1972, the State mandated the statewide implementation of "911." Four years later, the Legislature provided for "911" funding through a surcharge levied on intra-State telephone calls. As of July 1979, there was approximately $21.5 million in the State Emergency Telephone Number Account. In 1979, the Legislature postponed mandatory implementation of "911" pending an evaluation of costs/benefits by the Legislative Analyst. His report states:

"No data exist to demonstrate that 911 shortens emergency response time or provides tangible benefits. Thus, support for 911 is based on individual, publicized cases and on supposition, rather than on hard evidence."

The Legislative Analyst recommends that the legislation requiring local governments to implement "911" systems be repealed.

The only comprehensive EMS planning document produced by the State appeared in 1975 (California State Plan for Emergency Medical Services, 1975). The Plan is in urgent need of updating, but this is unlikely due to the demise of the Emergency Medical Services Section. The State's planning and coordinating role will be assumed by the OSHPD unless legislation is passed to reestablish a separate entity.

Issue #2: Lack of Evaluation and Fragmentation of Certification

Current EMS evaluation strategies focus on the system as a process, with little or no emphasis on establishing the impact of the system on morbidity and mortality. Most service providers have made the assumption that an increased supply of equipment, manpower and facility capability will result in fewer deaths and quicker recoveries from
injury and illness. Evaluation of existing services in terms of need estimates, manpower requirements, minimum acceptable response times, performance standards and appropriate economic support for maintaining acceptable EMS programs remains to be done. Similarly, an evaluation of the efficacy of a statewide network of regionalized emergency medical services systems has not been undertaken by any authority, including the State. The "transferability" or desirability of uniform regional models from one region to the next has not been evaluated.

The recent work by the Legislative Analyst concerning the "911" staff can serve as a model. Future management and legislative actions should be based on facts rather than intuition and political expediencies. Legislative initiatives to revive a State EMS agency should be held in abeyance until the State's role is clarified through such an analysis.

The process for certification of EMS personnel illustrates some of the problems. In the absence of uniform guidelines promulgated and enforced by a single agency, the Emergency Medical Technicians I (EMT I)\(^4\) are certified under the California Administrative Code administered by the Department of Health Services. EMT II training programs are approved by OSHPD. Paramedics and Mobile Intensive Care Nurses (MICN) are certified on a county-by-county basis by local health officers. Physicians, nurses and physicians' assistants are certified by the State Department of Consumer Affairs.

A focal point for EMS at the local level is the Emergency Medical Care Committee (EMCC). The EMCCs are required to present an annual report to the Department of Health Services evaluating each of the EMS components, but compliance with this provision is spotty.\(^1\) Additionally, subcommittees of an EMCC such as an Advanced Life Support Committee, may be involved with monitoring the paramedic program in their counties and performing evaluative review of paramedic services.

It may be noted that an adequate data base for systematic evaluation of EMS systems does not exist. HSAs and their regional EMS projects collect some data, but statewide collection, aggregation and analyses are not available.

### Issue #3: The Cost of EMS Components

There are numerous problems associated with the cost of EMS system components, not the least of which is adequate demonstration of effectiveness (see above). Some are highlighted here:

- the cost of local ambulance service
- replacement of revenue from federal subsidy
- hospital emergency room revenue
- hospital emergency room physician contracts.
The question of cost of both public and private ambulance services and the need for county subsidies has never been addressed as a statewide matter. There are no uniform rate reviews, county subsidies standards or requirements for full financial disclosure. A survey of 34 California counties reveals wide fluctuations in per capita costs for county subsidized private ambulance services, from a high of $1.01 for Mendocino County to a low of $.002 for Orange County. The counties surveyed paid a total of $2,230,763 for FY 1976-77 to support private ambulance companies. The survey also indicated a lack of uniformity in establishing rates for ambulance subsidies and only 13 counties had an ambulance ordinance. Often, county subsidies are let without regard to disclosure of financial information. The Blaisdell Study in San Francisco also found that no bills are submitted for city emergency services, although an estimated 70 percent of patients could pay some portion.

Since 1974, approximately $14,500,000 has been allocated to California regional EMS projects for communications systems, development of specialized training programs and public education and information strategies. The projects are also supported in part by county governments, private foundations and the State Office of Traffic Safety. The infusion of federal dollars has created multiple organisms that require continued economic nourishment. The problem is the fate of these programs once federal support is withdrawn. Boards of Supervisors are reluctant to adopt further expensive programs. As an example of local provider consciousness, the Orange County Medical Association withdrew its support for the Orange County Medical Emergency Services grant application on April 1, 1978, maintaining, "... massive misuse of taxpayers' funds." Federal legislation to continue the EMS projects is pending, but continued local support and enthusiasm may be diminished in view of statewide economic and political realities.

The issue of cost reimbursement for hospital emergency services is extremely sensitive, as it may be tied to overall hospital economic viability. Inappropriate utilization is, in part, encouraged by third-party reimbursement schedules that reimburse primary care treatment provided in an emergency room. Revenues for government sponsored patients may represent excessive reimbursements for expensive services that would be more appropriately and inexpensively delivered at either primary/ambulatory care centers or in private physicians' offices. On the other hand, private hospitals are required to provide treatment to emergency admissions, regardless of their ability to pay. This may force a hospital to lose control over the number of indigents and/or Medi-Cal eligibles it treats. Yet hospitals are understandably reluctant to actively pursue cost reduction measures because of the potential for emergency department admissions to patient beds, the utilization of ancillary services such as laboratory, radiology and pharmacy and the issue of liability if an emergent case is denied treatment. Regardless of the legal implications and the ethical concerns associated with reduction or modification of EMS, the cost of emergency medical care is unnecessarily high as a consequence of current reimbursement policies and inappropriate utilization.

The increased utilization of specialized emergency physicians for the provision of services in the hospital emergency department is a rapidly growing phenomenon with important
cost implications. The difficulty of staffing standby and basic emergency departments on a 24-hour per day basis is a well documented fact that affects both urban and rural hospitals alike. But with the organization of emergency medical specialties for physicians and nurses, new impetus has been given to hospitals to offer medical services attractive to consumers, hospital administrators and medical staff members, the latter thereby relieved of the onerous responsibility for 24-hour coverage. Some observers believe that contracts between emergency physician groups and hospitals may result in increased and inappropriate emergency department utilization; escalated fee schedules; increased inpatient referrals from emergency departments with minimum "floors" and guarantees for the volume of patients served per month; and excessive ancillary services ordered for patients admitted to inpatient services. The potential for abuse and exploitation is real and should be reduced through disclosure and utilization reviews.

Issue #4: Disaster Preparedness

California leads the nation in the annual number of presidentially declared states of emergency. Disaster planning thus assumes particular importance as a part of the EMS system. Destructive events such as earthquakes, nuclear accidents, hazardous substancesspills, storms, floods, excessive tides, seismic seawaves, land slides and oil spills could be of such magnitude to threaten or cause loss of life, injury and destruction of property on a scale beyond the capabilities of local jurisdictions and disaster preparedness exercises.

At the State level, the Director of the Office of Emergency Services is vested with the role of coordinating disaster mitigation activities during a declared state of emergency. Locally, county health officers, county offices of Emergency Services and hospitals are involved in disaster planning. Although plans exist, and they are periodically operationalized for mock exercises, there remains some resistance to taking the plans and their implementation seriously. This is due to the perceived improbability of an actual disaster, and the exercises do not impart a sense of realism.
POLICY RECOMMENDATIONS FOR EMERGENCY MEDICAL SERVICES

EMS-1: THE LEGISLATURE SHOULD DIRECT THE LEGISLATIVE ANALYST TO STUDY AND ANALYZE THE PRESENT "NONSYSTEM" AND RECOMMEND METHODS TO INTEGRATE AND COORDINATE ITS COMPONENTS AND REGULATIONS.

The irrational multitude of statutes and multijurisdictional authorities with overlapping roles and fragmented services requires dispassionate, comprehensive study.

EMS-2: OSHPD SHOULD BE VESTED WITH THE AUTHORITY, THROUGH A LEGISLATIVE OR ADMINISTRATIVE MANDATE, TO ASSEMBLE AND ANALYZE DISCRETE COST AND REVENUE INFORMATION GENERATED BY THE VARIOUS COMPONENTS OF THE EMERGENCY MEDICAL SERVICES SYSTEM IN CALIFORNIA.

Disclosure of cost and revenue information to measure current investments in the EMS system would permit reliable cost/benefit studies to better assess the impact of investment in EMS resources.

EMS-3: STATE POLICY SHOULD RECOGNIZE THE CRITICAL NEED FOR STATE AND LOCAL PREPAREDNESS TO MITIGATE THE EFFECTS OF MASS DISASTERS.

California is particularly susceptible to mass disasters. Planning for these eventualities is the only method to prevent potential catastrophies on a large scale.
NOTES


2. California Administrative Code, Title 22, Sections 70411, 70649, 79651.


7. California Health Facilities Commission, Hospital Data for Health Systems Agencies, May 1978, Volumes I, II and III.


10. See note 4.


12. Hospital Data


16. Title 17, Section 6750 - 6760.


21. Letter to the Orange County Emergency Medical Care Committee from the Orange County Medical Association, May 1, 1978.
DEFINITIONS AND SCOPE OF SERVICES

This section provides a broad discussion of hospitals as organizations central to the provision of general acute care. Hospitals provide medical, surgical and related services for the management and treatment of relatively severe, short-term illnesses, injuries or other health problems, or short, severe episodes in the course of chronic or recurring disease or disability. Many hospitals also provide outpatient services of varying degrees of comprehensiveness. Highly specialized facilities, services or personnel are not generally required for the types of illnesses and injuries managed under general medical/surgical care.

As defined in Title 22, California Administrative Code,

"General acute care hospital means a health facility having a duly constituted governing body with overall administrative and professional responsibility and an organized medical staff which provides 24-hour inpatient care, including the following basic services: medical; nursing; surgical; anesthesia; laboratory; radiology; pharmacy; and, dietary services."

This section focuses on such care provided to inpatient adults in general acute care hospitals under the direction of a physician.

BACKGROUND

Relationship to Health Status

The relationship of hospitals to health status is currently a subject of considerable debate. Historically, the rise of the hospital as the community's major resource for acute patient care parallels the decline in overall death rates and a rise in life expectancy over the last 50 years. Consequently, hospitals have been seen as playing a primary role in the improvement of the health status of the population.

This view has been challenged over the last decade. Changing theories concerning the origin of health status, detailed statistical analyses of mortality rates and their relative declines, similar analyses of outcomes of home care and concern over the incidence of iatrogenic disease, have all contributed to questions concerning the efficacy of hospitalization.
National Trends

The cost of a day of hospital care is currently increasing at an annual rate of more than 15 percent, substantially greater than the rate of increase of consumer prices in general. In 1950, the average cost per patient day was less than $16; by 1976, this figure had reached $175. The general level of consumer prices rose 137 percent between 1950 and 1976, while the cost of a day of hospital care climbed more than 1,000 percent. The increased number of days of patient care per capita accounted for only 11 percent of the overall rise in the cost per day for hospital care, while the rising cost per patient day accounted for 89 percent of the annual increase in the per capita cost of hospital care.\(^4\)

Due to the growth and expansion of major medical and hospital insurance policies, and to the introduction of Medicare and Medicaid, the average out-of-pocket cost to the consumer for hospital care is now only about 10 percent of the hospital bill.\(^5\) This fact, combined with less coverage of care in physicians' offices, has provided incentives for consumers and physicians to view hospital care as the least expensive type of health care for the patient. The result is that hospital utilization has been rising.

Several factors have contributed to the increased utilization of hospitals, including the changing age distribution of the population; the growing number of people who have their health expenses covered by Medicare, Medicaid and health insurance policies; the development of new medical technology; and growing specialization of doctors.

Admissions have increased every year from 1960 through 1977; the number of patient days per 1,000 population in nonfederal, short-term hospitals rose from 900 in 1950 to 1,194 in 1973, an increase of 33 percent.\(^6\) This growth in use rate appears to be leveling off. Patient days per 1,000 population dipped slightly from 1,224 in 1976 to 1,215 in 1977.\(^7\)

Hospitals are offering increasingly specialized and varied services. For example, the percent of hospitals offering electroencephalography increased from 12 percent in 1950 to 40 percent in 1973\(^8\) and those with intensive care units increased from 10 to 62 percent.\(^9\) This trend is still evident.

A growing number of people are entering the health care system through the hospital outpatient department or emergency room rather than through a physician's office or a clinic. In 1954, there was one hospital outpatient visit for every nine visits to a physician's office; by 1970 hospital outpatient visits had grown to one for every four visits to the physician's office.\(^10\) Part of this increase is due to increased referrals to the hospital by doctors: the number of referral visits to hospitals increased fivefold between 1954 and 1973.\(^11\) These referral patterns reflect increasing medical specialization and are also indicative of the reimbursement policies of health insurers and government programs.
Hospital emergency service visits have grown most rapidly, sixfold between 1954 and 1973. Visits involving emergency services also increased as a percentage of all outpatient visits from 20 percent to 35 percent during the same period. A considerable share of patients coming to hospital emergency rooms are clearly not true emergency cases, which may indicate that patients look to hospital emergency departments to meet their primary health care needs. A lack of available sources of primary care and Medicaid/Medicare providers willing to treat low income and minority patients have been identified as key factors which prompt utilization of hospital emergency rooms (where they will not be refused) for primary services.

National Policy

National health policies toward hospitals have been formulated in a fragmented, piecemeal fashion, in an attempt to shape or control development of various features of the system. Many policies have been directed toward the general acute care hospital in an effort to address such problems as unequal access to care, rapid rises in hospital costs, quality assurance and unnecessary duplication and proliferation of facilities and services. Several current national health policies of particular relevance to hospitals are common in purpose in that they are directed toward restraining further increases in the costs of hospital care.

Noteworthy national policies include:

- "less than four nonfederal, short stay hospital beds for each 1,000 persons in health service areas except under extraordinary circumstances," such as a proportion of population age 65 and over greater than 12 percent, seasonal and tourism fluctuations, etc.

- "average annual occupancy rate for medically necessary hospital care of at least 80 percent for all nonfederal, short stay hospital beds considered together in a health service area, except under extraordinary circumstances," such as small rural hospitals, etc. The 1980-81 Plan Development Guidelines, (OSHPD, May 1980) recommended a variable occupancy for planning which considers queuing and hospital size.

- current Medicare reimbursement, based upon retroactive cost reimbursement for the accumulated costs of each hospital department in proportion to the amount of service rendered to Medicare beneficiaries, which undermines the hospital's incentives to be efficient, since whatever "reasonable costs" are incurred are reimbursed. Reasonable costs are often set at levels lower than actual costs especially for Medi-Cal patients.

- Medicare caps on per diem reimbursement for nursing care, intended to save Medicare money (but not addressing the fundamental cost based reimbursement policy)
General Acute Care

- decline in Hill-Burton grant funds for hospital construction resulting in a growth in debt financing with consequent interest cost
- public review of hospital capital investment for "need" under State CON laws.

California Trends

The cost per patient day in California has been consistently higher than the average cost nationwide. The annual rate of increase in the cost per day for hospitalization is about 15 percent in California, which is comparable to increases throughout the country. The average cost per patient day increased from $32.11 in 1957 to $290.81 in 1977. Excluding outpatient costs, the cost per day in 1977 was $245.57 in California and $173.98 nationwide. The relatively greater cost per patient day here is partially attributable to the State's lower length of stay and admission rate.

As for utilization, California again contrasts sharply with the nation. While admissions to California hospitals have been growing with the increases in population, admissions per thousand population have been consistently lower than the nationwide average. In 1977, the admission rate was 140.9 per thousand population in California compared to an average of 159.6 nationally. The State also has a comparatively low rate of patient days per thousand population. Patient days in 1977 were 924.4 and 1,215.0 per thousand population for California and the United States, respectively. This is attributed to California's relatively low length of stay and low admission rate. These factors also contribute to California's relatively low occupancy rate compared to the rest of the country. In 1977 the percent occupancy of all nonfederal, short-term, general and other special hospitals in the United States was 73.6 percent, compared to 65.8 percent for the same types of community hospitals in California. The overall occupancy rates in California hospitals dropped from 72.3 percent in 1955 to 57.7 percent in 1977. During this same period the number of beds available rose from 3 to 4 beds per 1,000 population.

Primary factors contributing to the increasing cost per patient day in California hospitals include:

- increased technological complexity
- a growing number of employees per patient day and an expanded volume of equipment and supplies
- increases in wages and prices
- changes in the characteristics of the population
- the introduction of new government financing programs and the requirements for services to be performed.
California Policy

State laws and regulations governing the development and operation of hospitals initially were directed toward assuring that the construction and operation of facilities met specified minimum standards. More recently, State regulations have been developed in response to the issues of rapidly rising costs of health care and the maldistribution of facilities and services. California enacted certificate of need legislation (Chapter 1451, Statutes of 1969), replaced in 1976 by AB 4001, which vested in the Office of Statewide Health Planning and Development final authority to judge certain proposals. This statute differs from federal requirements established under P.L. 93-641 and fails to address the control of expensive medical equipment outside the hospital setting.

In order to implement AB 4001, OSHPD produced policies to guide the development of the Health Systems Plans required under P.L. 93-641. These policies establish target levels for utilization of services provided in general acute care hospitals and set required methods for estimating resource capacity requirements. Specific objectives are identified to address such issues as cost containment, accessibility and excess capacity. Preadmission, ambulatory or home health services are suggested means of achieving the objective of reducing the current utilization of inpatient services.

Like the Medicare program, Medi-Cal reimburses hospitals retrospectively for "reasonable costs." Total hospital Medi-Cal costs were $1.3 billion in 1978, or 18 percent of total hospital costs. Since Fiscal Year 1977-78, the Medi-Cal budget has grown an average of 18.4 percent per year. The program is financed by a combination of federal and State funds from general tax revenues. The State sets eligibility requirements and benefits for the program and establishes reimbursement levels based upon past cost studies. The California Hospital Association states that, in 1976, Medicare and Medi-Cal reimbursed 92 percent of inpatient costs.

State standards designed to assure the quality of care provided in general acute care hospitals are set forth in Title 22 of the California Administrative Code and monitored by the CAL Survey team. This unique, multiagency effort combines the Department of Health Services' Licensing and Certification Division, the Joint Commission on Accreditation of Hospitals and the California Medical Association into a single inspection team which determines compliance with Title 22, the Life Safety Code (for Medicare and Medi-Cal certification) and the survey requirements of the Joint Commission.

Health Systems Plan Highlights

Excess general acute care beds and the consequent increased costs of hospital care represent primary problems addressed by the HSAs. With few exceptions, the HSAs
recommend conversion, closure or merger wherever possible. HSAs call for a further reduction in the use of hospitals by decreasing admissions and reducing the lengths of stay. They recommend shifting to appropriate alternatives to inpatient care, such as preadmission testing and scheduling, ambulatory surgery, day care and home health care services.

Many HSAs recommend that the State Legislature and State Department of Health Services delicense excess beds. Exact conditions and circumstances for delicensure are not agreed to, but delicensure is strongly urged. HSAs also urge enactment of legislation to prevent replacement of any facility without a certificate of need review.

Many HSAs recommend that the State formula for determining acute care bed resource requirements be evaluated for its appropriateness to local needs and conditions, and they will be conducting such an assessment in future planning cycles.

ANALYSIS OF DEMAND AND SUPPLY

Analysis of Demand

During 1977, three million episodes of inpatient illnesses were treated in California's community hospitals, or 141 admissions per thousand population. Admission rates and patient days per thousand population appear to be leveling off, or declining slightly, over previous levels. For medical/surgical services, patient days totaled 14.8 million in 1976, or 697.2 patient days per thousand population. This rate varied from a low of 532.1 in HSA 7 (Santa Clara County) to a high of 991.2 in HSA 4 (West Bay).²⁵

More than 75 percent of California's population is covered by private health insurance, excluding persons over age 65, who are assumed to be covered by Medicare. Private and public third party payments are more extensive for hospital care than for office visits.

Analysis of Supply

In 1976, there were 70,270 licensed medical/surgical beds in California.²⁶ Based upon licensed capacity, the occupancy rate for these beds was 58.5 percent statewide. This varied from a low of 53.4 percent in HSA 5 (East Bay) to a high of 67.2 percent in HSA 3 (North Bay). If utilization levels continue as they were in 1977, then demands can be accommodated for many years into the future and facilities will still not be optimally utilized statewide. These inefficiencies contribute to the cost of hospital stays.

Another source of inefficiency is that surplus beds in one area prevent needed development of facilities in other growing areas. Changes in the State's regulations are needed to allow logical tradeoffs within planning areas.
Figure VII-3 presents the trend of occupancy and resources (beds per 10,000 population) for California from 1955 to 1978. There has been a continuing downward trend in occupancy (1955 - 72.3 percent, 1978 - 57.5 percent) and an upward trend in beds per 1,000 population (3.1 in 1955, 4.0 in 1978) despite the emphasis on reduced resource allocation through the certificate of need process which started in 1976.

In addition to a declining occupancy rate, there are also declining lengths of stay, admissions and patient day rates in California. These declines are due to increasing effectiveness of many State, federal and institutional programs. The programs include individual hospital utilization review committees, PSRO activities, Medicare and Medicaid utilization controls, the increase in skilled nursing and home health care facilities, increased outpatient surgery, preadmission testing, increase in self care and an increasing emphasis on preventive care.

The reduction of general acute care patient days in the past ten years appears to be consistent with the use of more appropriate services as well as changes in medical practice (i.e., reduction in average length of inpatient stay, change in treatment of tuberculosis patients). Statewide, the patient day rate reduction from 1968 - 1977 was 14.2 percent with 10.1 percent from 1972 - 1977. Projections using these historical trends give a further reduction of 15.4 percent from 1977 to 1985 taking into account the aging of the population.

These California trends are consistent with recent nationwide data published in Vital and Health Statistics, Series 13 (DHEW). Both the nationwide and western region patient day rate have been declining from 1974.

ANALYSIS OF ISSUES

Of the multitude of issues surrounding the organization and delivery of hospital care, six stand out for discussion in this Plan: reimbursement; impact of technology; multihospital growth and planning; hospital replacement and modernization; nonexistent and licensed beds; and, the need for data on case mix of hospital patients.

Issue #1: Reimbursement

It is commonly recognized that the payment methods of third party reimbursement insurance and public programs reward hospitals with greater revenue for generating more costs (see Issue #2, Chapter III). Ironically, many regulatory measures to counter the pressure for increasing hospital costs often generate contrary incentives of their own. Hospitals racing to beat imposition of CON restrictions are a case in point. Capital investments are made in order to secure a place in the future market rather than in response to well researched and justified needs.
FIGURE VII-3
TREND OF GENERAL ACUTE BED RATIO
TO POPULATION AND OCCUPANCY RATE
CALIFORNIA, 1955–1978

Source: Office of Statewide Health Planning and Development.
A major weakness of all current controls is that they aim at only one, and perhaps the weakest, decision maker: hospitals. Incentives for physicians and consumers must also be developed if utilization of hospital care is to be brought to its most appropriate level.

**Issue #2: Impact of Technology**

Cost reimbursement has promoted the rapid diffusion of new medical technology, since little incentive exists to analyze costs and benefits. New medical technology, which is expensive and highly sophisticated, has contributed to the rising cost of hospital care, as much as 45 percent of total increases. Recent regulatory programs have attempted to control the acquisition and diffusion of new expensive equipment, but efforts to promote a rational distribution of new medical devices have not been notably successful. In California, grandfathering provisions of the CON law actually resulted in a proliferation of new investments and purchases. Neither federal nor State controls apply to physicians' offices, a factor which has resulted in considerable maldistribution and duplication of expensive medical equipment.

The need for a federal policy regarding new medical technology has been discussed for over a decade. Concerns include appropriate diffusion, standards for efficacy and safety, responsibility for risk and the role of cost based reimbursement. CT scanners, fetal monitors and aorto-coronary bypass surgery exemplify the "technologies" that pose problems. However, fears for innovation, medical education and basic research aroused by broad "policies" in this area have inhibited their formulation and application.

**Issue #3: Multihospital Growth and Planning**

Multihospital systems are a growing response to numerous problems now facing hospitals, including the need to improve efficiency, generate capital, preserve teaching programs, integrate levels of care, ensure quality of care and cope with government regulation. The systems take a variety of legal and organizational forms, including consortia, shared services mergers and outright purchase. An important contribution of such organizations in California in the 1980s may be to reduce excess capacity, decrease duplication of services and diminish the need to replace obsolete buildings and equipment. A multi-institutional arrangement of some sort is almost always an alternative to new investment or replacement by a single hospital.

Despite many potential benefits, there are numerous barriers to multihospital groupings. Some derive from hospitals themselves: their history, organization, legal characteristics and selected role and function. Other barriers derive from current government regulation, both State and federal, including:
possible federal antitrust violations
lack of reimbursement incentives in Medicare, Medi-Cal and private insurance
lack of capital to underwrite buyout, closure, merger, etc.
incentives for single institution replacement in CON exemptions
ambiguities in CON regulations that may inhibit approval of multiinstitutional arrangements.

These regulatory barriers stand in contrast to the policy expressed in P.L. 93-641, where "the development of multi-institutional systems for coordination or consolidation of ... services" is mentioned second out of ten national health priorities.

Multiinstitutional, long range planning can be one step toward development of multihospital systems. Long range planning by individual hospitals is now fairly common, especially among large, urban hospitals. A three year "annual operating budget and capital expenditures plan" is required of hospitals by Medicare for certification. This requirement, however, is for less than "long range planning" in the contemporary sense. Long range planning by a group of hospitals is both rare and difficult to establish, primarily due to the institutional constraints noted above. In California, the preliminaries for such planning are just beginning to appear in some areas.

Several types of hospitals might benefit particularly from joint planning and multiinstitutional organization. First, small rural and accessible suburban (or urban) hospitals could be formally linked to assure tertiary care backup to the former, to strengthen the referral base of the latter and to protect quality of care at both through adequate volume. Second are large, inner city hospitals that offer duplicate services and sustain unused, excess capacity for competitive purposes. The potential for consolidation is widely acknowledged but hard to realize. Third are all hospitals with aging or poorly defined facilities. Automatic replacement without consideration of sharing, merger or some form of affiliation with neighboring hospitals does little to contain costs or improve distribution of services.

Issue #4: Hospital Replacement and Modernization

The present statutes and regulations regarding replacement and modernization do not require that these costly projects conform to California planning and review activities. Given a projected excess capacity of 30,151 general acute care beds in 1985, replacement with little regard for need appears irrational. There are, however, many problems related to excess capacity reduction. These include: (1) the process of selection of hospitals for closure or conversion; (2) public funds buyout; (3) possible infringement on freedom of the market; and, (4) lack of incentives for voluntary reduction.
Areas with high number of excess beds create serious problems for the efficient and effective hospitals that have been increasing their services. Historically CON policy has been to increase capacity based on area, not individual hospital supply and demand; given this process and an excess of beds, efficient and effective hospitals have seldom been allowed to expand. It is time now to reconsider this policy.

In the short range, projections of utilization indicate a continued lowering of length of stay and admission rates; in the longer range, the increases in population will probably exceed the reductions of utilization rates. The planning horizon for replacement and modernization should be at least twenty years to account for population shifts and to recognize the useful life of capital and to provide greater latitude for considering alternative opportunities.

OSHPD should place continuing priority on the reduction of general acute care capacity in ways that minimize negative impacts on the accessibility, availability and range of necessary health services in a given community.

Replacement or modernization of general acute care services should be approved only when such actions are consistent with the policies of this Plan and Appropriateness Review findings.

**Issue #5: Nonexistent Licensed Beds**

California has substantial excess hospital capacity. In 1978, statewide hospital bed occupancy was 57 percent. It is estimated that approximately 4,000 of the beds considered excess in California are nonexistent but are still licensed. Hospitals holding licenses for these beds have elected to use the space once allocated to these beds for other purposes such as offices, outpatient treatment rooms, etc. While hospitals may have put available space to its most efficient use, continuing to license nonexistent bed capacity causes erroneous bed inventories in hospital planning areas, and erroneous estimates of bed surplus or need. Existence of these "paper" beds can cause great difficulties for hospitals with expanding patient loads who are precluded from expanding due to areawide licensed bed surpluses.

Identification and elimination of these nonexistent beds would make the planning process more equitable. There would be no hardship for affected hospitals losing licensed capacity that does not in fact exist and is obviously not needed. Reestablishment of these beds would require a certificate of need; however, institutions that previously gave up licensed bed capacity should be given first priority, all other things being equal.

**Issue #6: The Need for Data on Case Mix of Hospital Patients**

The policy recommendations in this Plan address efficiency and effectiveness of health services. Implementation of these recommendations, as well as the general ability to plan
health services in a manner consistent with community health needs, requires access to data on the mix of hospital patients, (e.g., age, sex, diagnosis, principal procedures). Such data are needed for individual institutional management, patient audit, and utilization performance purposes, as well as broader functions, including interhospital performance comparisons, patient origin determination, evaluating the effectiveness and appropriateness of hospital services, and understanding the community roles of individual institutions.

A large number of studies have demonstrated the need for patient mix data in explaining variations in hospital costs. This research shows that valid cost comparisons cannot be made without considering patient mix. Thus any equitable budget review or rate setting system will require use of patient mix data. Researchers at Yale University recently developed patient mix categories for hospital payment — Diagnostic Related Groups (DRG).

Evaluation of appropriateness and quality of care obviously cannot be performed without data on patient diagnosis, age, sex, complications, etc. Such evaluations would include comparisons across hospitals, across regions and between alternative delivery configurations (e.g., HMO verses non-HMO). Patient mix data are also needed to determine hospital service areas for planning.

In summary, uniform patient mix data on all hospital inpatients represents a minimal requirement for effective and sensitive health planning, provides comparative data to aid hospital management, and is essential for a variety of regulatory and quality review activities.
POLICY RECOMMENDATIONS FOR GENERAL ACUTE CARE

General Acute-1: LEGISLATION INTENDED TO CONTROL THE COST OF HOSPITAL CARE SHOULD INCLUDE APPROPRIATE INCENTIVES FOR THIRD PARTY PAYORS, PHYSICIANS AND CONSUMERS.

Hospitals will be more effective at cost containment if the incentives for those who use and those who pay for care also favor restraint.

General Acute-2: ALL HOSPITALS IN CALIFORNIA SHOULD ACTIVELY SEEK TO ESTABLISH AND PARTICIPATE IN FORMAL, MULTI-INSTITUTIONAL, LONG RANGE PLANNING PROCESSES AND TO DEVELOP MULTI-INSTITUTIONAL ENTITIES TO COORDINATE AND CONSOLIDATE SERVICES.

California hospitals lag behind many in other states in commitment to joint long range planning and nonduplicative growth.

General Acute-3: THE STATE SHOULD SUPPORT, THROUGH LEGISLATION, REGULATION, FINANCIAL INCENTIVES AND OTHER APPROPRIATE MEANS, EFFECTIVE MULTI-INSTITUTIONAL, LONG RANGE PLANNING AND GROUPINGS.

State activities and regulation can encourage the ability of hospitals to develop multihospital planning and organization.

General Acute-4: CHAPTER 854, STATUTES OF 1976 (AB 4001) SHOULD BE BROUGHT INTO CONFORMITY WITH P.L. 93-641 AND BE AMENDED TO REQUIRE A CERTIFICATE OF NEED FOR MAJOR DIAGNOSTIC AND THERAPEUTIC EQUIPMENT INVESTMENT IN ANY SETTING.

Bringing the present CON law into conformity with federal requirements would strengthen HSA and OSHPD efforts to limit duplication of facilities and services. Extension of authority into nonhospital settings is needed to assure appropriate distribution of expensive medical equipment and to avoid duplication of this capacity.

General Acute-5: A TECHNICAL COMMITTEE SHOULD BE CONVENED TO ADVISE OSHPD IN THE STUDY OF VARIOUS OPTIONS FOR STATE POLICY IN REGARD TO THE FINANCING AND DIFFUSION OF NEW MEDICAL TECHNOLOGY THAT REQUIRES LARGE CAPITAL INVESTMENTS AND IS SUBJECT TO CON REVIEW.
Duplication of expensive medical equipment has occurred in the past five years. In addition, standards for efficacy and safety as well as selected benefit cost studies are needed before expensive resources are acquired. The State, together with physician specialists, medical equipment specialists, other providers and consumers can explore the options for use of new technology and equipment.

**General Acute-6:**

LEGISLATION SHOULD BE ENACTED TO BRING STATUTES AND REGULATIONS FOR REPLACEMENT AND MODERNIZATION IN GENERAL ACUTE CARE FACILITIES INTO CONFORMANCE WITH APPROPRIATENESS REVIEW FINDINGS, HSA PLANS AND THE STATE HEALTH PLAN.

Given the trend to substitute outpatient treatment for inpatient services, when appropriate, and other factors, the general acute care utilization rate has declined 10.1 percent since 1972 and is expected to decline approximately 15.4 percent from 1977 to 1985. If all hospitals continue the present modernization and replacement programs and the inventory remains the same, there will be more excess capacity in the future than currently exists today.

**General Acute-7:**

THE LICENSING AND CERTIFICATION DIVISION OF THE DEPARTMENT OF HEALTH SERVICES SHOULD ACCELERATE EFFORTS TO ASSURE THAT ALL "PHANTOM" BEDS (NOT AVAILABLE FOR USE WITHIN 24 HOURS) ARE DELICENSED.

Continued licensing of nonexistent beds introduces erroneous bed inventories which penalize an efficient hospital that has expanding utilization. Priority is needed to have the inventories reflect the actual resources available.

**General Acute-8:**

THE STATE SHOULD HAVE THE AUTHORITY TO REQUIRE EACH HOSPITAL TO MAKE AVAILABLE UNIFORM DATA ON EACH PATIENT DISCHARGE, INCLUDING INFORMATION ON DIAGNOSIS, AGE, SEX, ORIGIN (RESIDENCE BY ZIP CODE OR CENSUS TRACT) DISCHARGE STATUS, ADMISSION TYPE, CHARGES AND SOURCE OF PAYMENT.

Such data are essential for sound health planning and a variety of related activities. Safeguards should be included respecting the confidentiality of individual patients and physicians. In addition, existing hospital discharge abstracting services should be used as the intermediary to assure that no additional reporting requirements will be imposed on hospitals.
NOTES


6. Ibid., p. 317.


9. Ibid.


12. Ibid., p. 42.


15. Ibid., Section 121.202.

17. Ibid., p. 12.


25. Ibid., p. 3.


32. Personal communication, OSHPD, 1979.

33. P.L. 93–641, Section 1502(2).

35. For example, the Santa Clara Valley Planning Project. Personal communication, California Hospital Association, Sacramento, 1979.


ANCILLARY SERVICES

DEFINITIONS AND SCOPE OF SERVICES

Diagnostic radiology ("imaging"), laboratory, and a variety of therapy services are grouped in this Plan as an integrated category of health services termed "ancillary services." The purpose of this designation is to highlight common issues, as well as to suggest a planning approach to those ancillary services not reviewable under CON. This section will conclude with a specific discussion of computed tomographic (CT) scanning, an ancillary service which is currently reviewable under CON.

Cardiac catheterization, an ancillary service under the definition below, is treated in a separate section as a specialized service, following Title 22 practice and in deference to its high cost and visibility. However, the discussion below, under Background and Analysis, applies to this service as well.

"Ancillary services" are not defined as such in State law or regulation. For purposes of this Plan, they are defined as follows:

Ancillary services are services intended to assist physicians to diagnose and treat disease and disability and to enhance the rehabilitative process. Except in a few instances (e.g., pregnancy tests), ancillary services are dispensed only upon a physician order.

This definition reflects the key distinguishing feature of an ancillary service: demand for an ancillary service, and hence supply of ancillary services, are dependent almost entirely on physician practice patterns and are only remotely related to disease incidence or population characteristics.

Ancillary services include:

- "radiological services", also called diagnostic imaging or x-ray services, include "use of x-ray, other external ionizing radiation,...thermography and...ultrasound" (Title 22, Section 70251)

- clinical laboratory services: "The performance of clinical laboratory tests with appropriate staff, space, equipment and supplies" (Title 22, Section 70241)

- nuclear medicine services: "Those measures using internal radio-nuclides for the diagnosis and treatment of patients..." (Title 22, Section 70505)
Ancillary services may be provided in a number of settings, including hospitals (inpatient and outpatient), laboratories or physicians' offices. In most cases, delivery of ancillary services requires specialized durable equipment such as x-ray machines, microscopes, automated multichannel blood chemistry analyzers, specially designed tables or centrifuges. Disposable supplies may include syringes, scopes, recording paper and chemicals.

The focus of this section is use of the high technology ancillary services, such as lab, radiology, nuclear medicine, and CT scanners and issues that tend to be national in origin and scope. Detailed discussion of the other services and of State specific problems is anticipated for future plans.

BACKGROUND

Relationship to Health Status

Ancillary services may be used to diagnose and/or improve health status. Some used to excess or unwisely, e.g., x-rays or certain drugs, may directly harm health.

In diagnostic medicine, laboratory tests, x-rays, computed tomographic (CT) scanning and various procedures assist the physician in identifying, confirming or excluding possible diagnoses. They are used to monitor patient condition and directly to treat disease, as with inhalation therapy.

Ancillary services have emerged in medical practice as innovations. Innovation in medicine takes place within a scientific community whose norms encourage change that results in improvement of services. Over the last 35 years, the practice of medicine has undergone profound change, not the least part of which has been the accelerated rate of change itself. Again and again, there have appeared new diagnostic techniques, new laboratory tests, new drugs, new principles of patient management, new theories of the etiology of various diseases. Most of these innovations were minor steps that altered the medical scene only gradually, if at all. Many indeed, have been short lived and quickly superseded; a few, however, have been milestones in medical development. For instance, the CT scanner has been rapidly accepted by (and diffused throughout) the medical community and is considered to be a major breakthrough in diagnostic evaluation. The recent awarding of the Nobel Prize to its originators has definitively underscored the perceived value of this particular innovation in ancillary service development.
Of the many reasons physicians have to order ancillary services, first is the belief that provision of the service will improve patient care. Procedure results provide information and thereby may increase the certainty of a diagnosis or treatment. In addition, patients may want and request testing, equating it with good care. Under some circumstances, ancillary services are used to document the patient's condition or the physician's standard of practice in the eventuality of malpractice litigation. In a State of California Auditor General's survey in 1975, an overwhelming majority of physicians sampled reported that the then current malpractice situation had caused them to increase their use of lab tests, x-rays, consultations and hospitalizations, either as a precautionary measure or to document diagnosis and that many of these procedures were not medically necessary. These data and others prompted the Rand Corporation to conclude that malpractice insurance rates had encouraged additional procedures and defensive medical practices.

There are also reasons for physicians to decide against ordering ancillary services in diagnosis or treatment, but these are few in number. They include possible discomfort or physical risk to the patient caused by invasive procedures as well as the cost to the patient. However, since costs of ancillary services are commonly covered by health insurance and apart from the situation where the physical risk to the patient outweighs the clinical benefits, the physician has few disincentives to ordering ancillary services, especially for hospitalized patients.

Perhaps the closest approximation to full, yet discriminating, utilization of up-to-date medical knowledge and ancillary service capacity is reached on the wards of the large teaching hospitals connected with medical schools. There, specialists can cooperate in the examination of patients; they can discuss each patient in conferences where many points of view are considered and the latest knowledge in therapy is exchanged and applied. In the best of such hospitals, there is teamwork, consultation and unrestricted use of all the latest diagnostic techniques under relatively controlled conditions that permit scientific assessment of results.

Obviously, such medical care is costly in the aggregate. As ancillary services are developed and routinely adopted in teaching hospitals, their use eventually diffuses to other medical settings and becomes standard practice. Resistance to the adoption of new ancillary services may initially occur, but professional norms encouraging innovation and associated changes in reimbursement policies eventually provide sufficient incentives to facilitate widespread adoption of these innovations. This process creates a persistent strain in the relationship between overall cost containment objectives and professional standards of medical practice.

**National Trends**

The use of ancillary services has contributed to the cost increase in health care that has become a national issue. For certain common diseases, the average number of some ancillary services provided per hospitalized patient increased over 500 percent between
Laboratory test use has grown faster than any other component of medical care, its average annual growth exceeding 14 percent since 1970. As a result, laboratory tests now account for up to 25 percent of some hospital bills. In addition, x-ray use has increased by at least eight percent per year. Increased use of these and other ancillary procedures now accounts for an estimated 75 percent of the rise in total hospital expenditures. Corresponding statistics for ancillary services used in ambulatory care are not available, but probably show similar trends.

National Policy

Federal government subsidy of biomedical research contributes to the development of ancillary services. Amounting to $3 billion in 1974 and coming from a score of federal agencies (DHEW, Agriculture, Defense, Energy, NASA, Veterans Administration and others), these funds help to underwrite the cost of research and testing of new diagnostic tests, procedures and drugs. The federal Office of Appropriate Technology also plays an increasingly significant role in the development of ancillary services.

Medicare reimbursement of hospitals for ancillary services on a full cost basis contributes significantly to their use. Payment for ancillary services is not restricted by any limits such as those applied to nursing services ("inpatient general routine operating costs").

ANALYSIS OF DEMAND AND SUPPLY

Analysis of Demand

As implied by the definition of ancillary services, these health services are made available to patients upon physician prescription. No methodology exists to derive demand for ancillary services from physician practice patterns.

Crude approximations, x-rays per admission, lab tests per outpatient department visit, physical therapy treatments per medical/surgical discharge, etc., can be made. But the resulting anticipated volume is highly unstable.

Analysis of Supply

Needed supply is a function of demand, of physical capacity, of equipment, of patient handling routines (e.g., prep time for a CT scan), of physical facility layout and of efficiency protocols established by hospital or other management. All these factors vary widely by hospital and by the presence or absence of teaching programs. Standardized methods for forecasting needed resources are extremely crude.

ANALYSIS OF ISSUES

Of the many important issues related to ancillary services, two are selected for discussion in this Plan because they are most amenable to change through State legislation and government policy: incentives in open-ended third party reimbursement and the impact of physician supply trends.
Issue #1: Incentives in Open-ended Third party Reimbursement

It is difficult to analytically distinguish and empirically document the various incentives that affect the utilization of ancillary services. As previously mentioned, such incentives as norms of medical practice, proximity to sources of innovation (i.e., teaching hospitals) and reimbursement policies are assumed to be the major incentives that influence physician practice patterns as they relate to ancillary services. The open-ended, third party fee-for-service payment system, the dominant method of paying for physician and hospital services in the U.S., produces some of the incentives to perform (or not perform) various types of services and, along with other incentives, creates continuous inflationary pressures to increase charges for covered services. Third party coverage, by relieving patients of most or all of the financial cost of medical care, removes one of the disincentives for physicians to order services.

Three features of the current payment system contribute to the utilization of ancillary services. First, fee-for-service payment to physicians may favor ancillary, particularly technological, services. Until 1979, physician prices were usually based on Relative Value Studies (RVS), which creates incentives for the individual physician to order ancillary services. A recent Federal Trade Commission ruling that RVS constituted an illegal "restraint of trade" means the demise of this mechanism. However, the mechanics of RVS are instructive for understanding current physician fees and may influence future pricing patterns.

An RVS describes set value relationships among types of medical services and tends to perpetuate a pattern of high level payment for ancillary services. Ancillary services generally have a high economic value when they come onto the market because high fees are charged to recoup research, development, investment and training costs. This initial value is very difficult to lower because the free market forces of competition simply do not operate in the medical care field for most services rendered.

In contrast to the relatively low value placed on more time consuming consultation services, the high payment value placed on ancillary services offers a large incentive for physicians to provide ancillary services, especially in the ambulatory setting. Even within the primary care field of internal medicine, ancillary services are often provided in addition to and in substitution for consultative care. For instance, a periodic physical examination that takes about 45 minutes of a physician's time carries a charge of approximately $40. On the other hand, the charge for hospital and the physician to administer and read the results of a chest x-ray or of an electrocardiogram (EKG), both of which take no more than a few minutes, is approximately $28. Not surprisingly, one study found that group practice internists derived nearly 50 percent of their income from administering procedures, even though these procedures were only performed on 12-17 percent of patients.10
Thus, under current fee-for-service payment, there are few constraints to order ancillary services. It can be argued, that a physician is medically justified in ordering many of these procedures and that many patients expect these procedures to be part of a routine office visit. It is another matter when the payment system provides the demonstrated financial incentive to do so. Alternatives to fee-for-service payment of physician services such as an all inclusive case reimbursement method may serve to reduce inappropriate financial incentives.

The second feature is the "usual, customary and reasonable" (UCR) method of setting third party payment levels as used by Medicare and most other third party payors. UCR encourages greater use of and higher charges for ancillary services in two ways. First, it bases "this year's" payment calculations on physician charges on a previous year. Thus, it is in the interest of physicians to raise charges this year, even though they will not be paid that amount, in order to ensure higher payment the following year. Given the already high payment levels for ancillary services, this degree of control over what will be paid for services encourages the use of ancillary services as a certain and lucrative source of income.

Second is the concept of separate "fee screens" in the UCR system. For instance, Medicare in California establishes separate fee screens for over 30 specialists in each of 28 different geographical areas.* Thus, for the same service, a specialist can be paid significantly more than a general practitioner and a specialist in one area can be paid more than a specialist in another area, for the same service. Although this does not promote added use of ancillary services in itself, it encourages physicians to become specialists, who in turn tend to order more ancillary services.

The third problem with the current reimbursement system is that it allows hospitals and medical schools to promote the use of ancillary services. As noted, ancillary services are generally reimbursed at a high level. These charges, often set high to pay for research, training and investment costs, do not necessarily represent the actual costs of delivering the services. They subsidize other deficit producing departments—most commonly obstetrical services, social services, ambulatory care clinics and emergency rooms. It is not surprising that hospitals promote (or at least do not discourage) the use of these profitable ancillary services. Financially, it is in their best interest to do so.

Hospital contract or staff physicians who are responsible for supervising ancillary service performance or for interpreting test results also promote use of ancillary services to the hospital. Often, they are paid either a professional fee for each test interpretation or a percentage of revenue from each test procedure done. Thus, they have a distinct financial incentive to encourage additional use of ancillary services. Although these physician hospital agreements are developed and maintained internally, their continued existence is supported by the current reimbursement system.

*Medi-Cal currently does not use the UCR system; it pays all physicians in California the same amount for a particular service, regardless of specialty or location. (However, Medi-Cal did use the UCR system from 1966-1976.)
Issue #2: The Impact of Physician Supply Trends

Physicians direct both the demand and supply of ancillary services. As spelled out in the definition at the beginning of this paper, ancillary services are only provided on the basis of a physician's order. Since physicians act as "brokers" or "managers of care" for their patients, they make decisions regarding demand for ancillary services if and when the patient needs a procedure or laboratory test. Physicians are also the suppliers; that is, they perform and charge for administering many tests and procedures that they prescribe. Thus, physicians direct the demand for the very services they supply and for which they get paid.

Even if physicians do not provide certain services in their offices, some order tests or procedures to be done in clinical laboratories or radiology suites in which they have a financial investment.

Not all physicians prescribe or supply the same types and amounts of ancillary services. In fact, physicians vary widely in their ordering, even for patients with the same conditions. As much as a 20-fold difference in laboratory use costs among physicians treating hypertensive patients has been documented in an ambulatory care clinic; similar variation in physicians' use of laboratory tests has been confirmed in other settings. Reports of unwarranted or excessive ordering of ancillary services have also emerged from research on physician ordering behavior. Thus, there is substantial variation in the practice of clinical medicine and especially in the demand for and supply of ancillary services.

Since highly specialized physicians tend to provide more ancillary services, the proliferation of specialties and subspecialties has significant implications for the increasing use and cost of ancillary services. As of 1975, 22 specialty boards offered 32 types of general board certificates in subspecialties (e.g., gastroenterology or nuclear radiology). Nineteen of these 65 certificates have been established within the last eight years. In Internal Medicine alone, the number of subspecialty exams increased from 4 to 11 in 1972, followed by a marked increase in the number of candidates who applied for and obtained those certifications. Of the physicians who specialize in Internal Medicine, one of the primary care specialties, 60-75 percent now go on to subspecialties. Increasingly, physicians who have been in practice for a number of years are returning to residency to specialize further, most of them leaving primary care practice.

Some of the subspecialties were born in advance of new technology. Robert Chase, former President of the National Board of Medical Examiners, delineated the cycle of specialty certification:

1. As a result of advances in the field, a new group develops a special expertise in this area.
Ancillary Services

2. An organization or society is formed for an exchange of ideas and to display advances to one another.

3. Membership in the organization becomes a mark of distinction in the field, and, in an effort to externalize that recognition, certification of excellence in the field becomes established.

4. Institutions with responsibility for quality of health care soon accept certification as evidence of competence and limit care within that field to those certified. 17

A fifth step may be added to Chase's cycle:

5. The specialty promotes use of its own technologies and the development of new ones, thereby starting the cycle again.

The proliferation of specialties and subspecialties has important implications for the cost of medical care. During an average visit to a specialist in 1966, the cost of ancillary care was about four times greater than that provided during a visit to a general practitioner. 18 According to a survey among gastroenterological specialists in Denver, 60-65 percent of all diagnostic procedures performed by the group were gastroscopies. 19 The high price of these services, usually paid by health insurance, encourages more use and thus continues the cycle.

In summary, an important factor contributing to overuse of ancillary services is the rapidly expanding population of physicians in general and of specialists and subspecialists in particular. As the oversupply of physicians, especially specialists, grows, the use of ancillary services can be expected to proliferate.

CT SCANNER SERVICES

The computed tomography (CT) scanner in the acute care setting is a component of a facility's ancillary services that is subject to CON review. The rapid spread of scanners, the frequency of their use and the expenditure associated with them have combined to focus attention on CT as representative of the diagnostic medical technologies that have increased medical care expenditures in recent years. Although the singular contribution of the CT scanner to rising health care costs is relatively small, the half-million dollar price tag for each standard unit and a comparably elevated patient charge have made CT diagnostic services highly visible. Concern over expenditures and questions regarding the appropriateness and necessity of CT services warrant full consideration of the policy issues involved as a separate section of the Ancillary Services component of the Plan.

The CT scanner is a diagnostic device which combines radiographic and computer techniques to produce cross sectional images of the human body. Unlike conventional...
x-ray (which may be limited to high contrast structures such as bone), a CT scan has the capacity to provide the radiologist with a quality image of soft tissue structures which are readily distinguishable from one another in the cross sectional "slice."

CT scanners are of two types, classified according to their capacity to scan specific body parts. The first machines, introduced in the United States in 1973, were "head scanners," designed to produce images of abnormalities within the skull. By 1974, scanners were available for producing transverse section images anywhere in the body, hence "body scanners."

Relationship to Health Status

The ability of CT to provide improved diagnostic information for such medical problems as cancers, tumors, head injuries and hydrocephalus, frequently with reduced risk to the patient, has made head scanning standard practice in neurology and neuroradiology and has led to rapid diffusion of the technology throughout the United States. Many physicians believe that body scanning also has great potential to expand their ability to diagnose additional medical conditions.

It is difficult to measure the impact of CT on the health status of the population since statistics have not been developed to prove any of the varying hypotheses. The literature permits some inferences, however. CT is known to be an effective modality for identifying pleural masses that may be malignant tumors; it is possible that the technology will result in fewer cancer deaths due to earlier diagnosis resulting in effective therapeutic measures.

Lumbar puncture is now considered a detrimental diagnostic method which frequently has fatal consequences in patients who have intraventricular bleeding. Before CT, there was no other way to diagnose the condition and such patients had an almost universally fatal prognosis.

CT has reduced the number of cerebral angiograms and pneumoencephalograms, both of which carry greater risk to the patient. (Cerebral angiography remains a requirement in most cases where surgery is planned, however, since it provides information critical to evaluation of the brain's blood vessels.)

Many advocates of CT use for screening suggest that psychological benefit is obtained by a negative (normal) scan finding. Furthermore, a positive finding which demonstrates disease or injury so extensive that no therapeutic intervention, including surgery, will benefit patient outcome, may be considered a psychological benefit in preventing the generation of false hope.

To repeat, however, defined, measurable impact on the health status of the population awaits the findings of clinical trials designed to determine patient outcome.
National Trends

CT technology has spread rapidly nationwide because the quantity, quality and type of information which can be obtained from head scanning is unprecedented. Once body scanners were developed, most sales were for this unit since it included head scanning capability. At least half of the scanners currently operational are body scanners.\textsuperscript{20}

The rate of CT unit installation increased steadily after its introduction in 1973, reaching a peak in 1977. The rate of ordering dropped in 1977, presumably reflecting saturation spurred by anticipation of State and federal regulation. Manufacturers reported 921 operational scanners by the end of 1977, rising to 1,043 by May 1978. As of November 1977, the national ratio was approximately 4 scanners per million population. California exceeded this national ratio with 8.4 scanners per million at that time.\textsuperscript{21}

Between 81 and 85 percent of all scanners were located in hospitals in 1977, the balance in private physician offices. In areas where climate permits, mobile vans equipped with scanners also have been available, moving from one location to another, usually on an established schedule.

Several manufacturers began offering units in 1977 selling for less than the minimum price at which a certificate of need would be required. Rate of installation of these less expensive units has increased nationwide.

In 1976, with about 400 scanners operational, \$300 to \$400 million were spent by third party payers or by patients directly on CT scanning procedures. That figure was only partially offset by reductions in other diagnostic procedures.

The price tag for early scanners ranged from \$270,000 to \$325,000. Current prices for standard, state-of-the-art units range above \$800,000. Installation, including necessary construction and related expenses, may easily approach \$1.25 million. The annual cost of operating a CT unit is also high, since indirect expenses are added to the direct expense at a rate usually computed at about 50 percent of the direct expense figure.

Concern over increased medical expenditures has caused widespread examination of the role of modern diagnostic technologies in cost escalation. CT, one of the most visible of the new technologies, has served as the focus for new technology policymaking. In particular, because it was dispersed so widely before prospective clinical trials established its efficacy based on benefit to the patient, government has become concerned over the dispersion of any new technology before it can be adequately assessed.

Although third party payment for diagnostic tests has historically been subject only to the "usual and customary" standards, the seriousness of the economic issues generated by CT and its associated prices have caused Blue Cross and Blue Shield (The Blues) to establish their own investigatory mechanisms.\textsuperscript{22} While the research was being conducted, some
Blue plans refused to pay for scans unless the performing groups had received a certificate of need. Medicare also withheld payment for body scanner claims until a list of specified medical conditions for which the technology is efficacious at the level of diagnostic accuracy was developed. The Blues and Medicare have also begun to link reimbursement of other services to a determination of their efficacy, a development that appears to indicate a new direction in reimbursement policy.23

Various State certificate of need laws have had virtually no inhibiting impact on the distribution of scanners nationwide, due to exclusions, exemptions and high rates of approvals. Some believe that inadequate certificate of need laws have in fact provided an incentive to purchase, since more stringent laws could be passed at any time.

National Policy

Public Law 93-641 requires that local and State health planning agencies address the issues of cost and appropriateness of health care services. According to the National Planning Guidelines implementing that legislation: "Full and appropriate utilization of all existing (CT) units, regardless of location, will prevent needless duplication and limit unnecessary increases in health care costs." In addition, the guidelines set specific standards representing minimum numbers of procedures to be performed (2,500) annually by each scanner, criteria for installation of additional scanner resources and requirements for data collection and utilization review systems.

Lacking more objective reports, Medicare based reimbursement for early head scans on reports of efficacy (at the level of diagnostic and technical accuracy) which appeared in medical journals. Payment for body scans was withheld until after completion of the Institute of Medicine's (IOM) study on scanners. Medicare now pays for all scans on a list of conditions for which the procedure has been determined efficacious at the level of diagnostic accuracy, when performed on specific equipment.

Problems which have developed between California and the federal government concerning CT acquisition and utilization relative to national policies will be discussed in Analysis.

California Trends

Lacking a mechanism for review of capital expenditures for equipment until 1976, California's medical community installed or ordered 145 CTs by May 17, 1977. The rate of installation of CT scanners in California continued to accelerate: by September 8, 1977, 145 scanners were in operation and an additional 31 were on order, for a total of 176. As of April 14, 1980, 151 body and 79 head scanners were in operation for a total of 230.

Concentration of scanners of all types has occurred in the metropolitan and central coast areas of California. Rural areas are also well served, with duplications existing there as
well. The highest scanner density is found in Southern California, where some scanners are located in adjacent buildings. Planned exemptions in current California certificate of need legislation encourage placement of scanners outside the general acute care facility as a means of circumventing certificate of need review. Since there is no mechanism which requires reporting of CT scanner installation regardless the setting, it is not certain that all extra-general acute facility CTs are included in the total number of units.

CT has been responsible for two divergent reactions by the hospital industry in California. In some cases, hospitals participate in sharing agreements in order to avoid duplication of services. In other cases, competing hospitals within a few blocks of each other have used scanner acquisition as a means of attracting new types of patients and physicians to the facility.

In addition to superior diagnostic information, one of the early attractions of CT was that equipment owners, whether hospitals or private physicians, could look forward to very favorable profit margins. In determining what patient charges should be, those institutions with the first operational scanners (usually teaching/research facilities) derived a formula based on equipment purchase and operation but skewed by a lack of experience with the technology. Other facilities acquiring scanners have used the same cost base and charge structure, causing prices for a CT examination to remain high in many areas. Several institutions have lowered charges, however, to more accurately reflect costs incurred.

It is difficult to compare profits among facilities. Depending on method of computing costs and charges, estimated annual profits from operating a CT head scanner in 1976 ranged from $51,000 to $291,000. Bad debts were estimated at 10 percent of gross revenue. For a scanner priced at $450,000, estimated annual profits ranged from 11 to 65 percent of the original purchase price.

The result has been a smaller margin of profit for scanners installed in 1977 and 1978, due, in part, to fewer referrals to these institutions possibly because of extra-general acute care facility CT capacity. This has led to an increase in charges for some examinations at some institutions in order to cover the higher equipment and annual operating costs, resulting from poor utilization.

California Policy

Current certificate of need regulations (Title 22, California Administrative Code CAC, Section 90913) require that a hospital seeking certificate of need approval to install a CT scanner provide evidence of demand for 2,500 head or 1,500 body scans annually. Under present regulation, that evidence involves the use of an "unserved population:scanner" ratio.

Fiscal intermediaries for Medi-Cal report that the State reimburses for CT scans on a more liberal basis than Medicare. Most scan procedures are covered and there are no limitations due to equipment specifications (as there are on Medicare).
Health Systems Plan Highlights

All HSAs will recommend denial of any CON application until utilization reaches approved levels.

The HSPs recommend that the State certificate of need law be amended to require HSA review and approval of acquisition of all medical equipment costing $150,000 or more no matter whether located in a hospital, physician’s office or clinic.

They also state that charges for CT scanning should be reasonable and not excessive and third party reimbursement should be tied to both prospective as well as retrospective review of whole body scanners. HSAs advocate that CT services should be available to everyone regardless of ability to pay.

ANALYSIS OF DEMAND AND SUPPLY OF CT SERVICES

Analysis of Demand

Incidence data useful for predicting medically appropriate need for CT scanning service may be among the most elusive of all health statistics to ascertain. The problem results from the lack of appropriately designed clinical trials to determine the proper indications for use of CT.

Demand, on the other hand, is high, conditioned to a certain degree by medical journal reports, abounding in case histories regarding the multitude of medical conditions for which physicians have successfully used CT. The demand for CT scanning has risen to the point where many neurologists and neurosurgeons refuse to practice without nearby CT scan capability. CT scanning is also increasingly recognized as necessary in emergency room settings. To an unquantifiable extent, physician demand for sources also reflects liability concerns.

Head scanners are primarily used to diagnose mass lesions, cerebrovascular disease (stroke) and diseases with enlargement of the ventricles of the brain. CT is also commonly used for patients with severe headaches and for victims of head trauma.

Most scans of the body relate to suspected abdominal problems, such as pancreatic tumors, abscesses, or jaundice. Scans are used less often for the thorax or extremities; however, as use of the equipment and experience accumulate, use of CT may be expected to increase in all body areas, since it capably differentiates between differences in tissue density.

The initial refusal of Medicare and some third party carriers to reimburse for body scans had a moderating effect on use of body scanners for whole body scanning. The newer and updated machines with 20-second or less scan time, along with a list of conditions for which Medicare and most other third parties will reimburse body scans, are expected to increase utilization. However, the medical community has not adequately defined those
suspected conditions that can best be diagnosed by CT and those for which other modalities may be equally or more appropriate.

Defined service areas for CT depend, to a great extent, on referral patterns for specialized services. Placement of expensive, state-of-the-art CT technology requires that the location be a major receiving center for patients presenting symptoms for which head or body CT has been determined efficacious.

The service area for a given CT unit in urban settings is determined by physician preference, usually resulting in facility staff physicians referring to that hospital. In rural areas, patients are referred to the facility which the physicians consider most capable of treating the suspected conditions.

HSA boundaries are used by most agencies to define the population expected to utilize CT services as required. However, as is the case with other health services, actual referral patterns indicate that patients cross HSA boundaries and are frequently diverted to facilities more geographically accessible.

Analysis of Supply

Community hospital patients generally originate from within a given radial proximity to the facility, depending on the availability of other nearby services. Teaching/research facilities may draw from geographic areas far beyond political boundaries. Service area usually depends on physician referral patterns and the service under consideration. Physicians in one area usually refer patients to the most accessible CT service, irrespective of HSA boundaries. Patient origin studies by service is the most authoritative manner in which to determine viable planning service areas.

Concentration of CT services has occurred widely throughout the State in urban areas. Some cities with less than 150,000 population have two or more operational scanners. This is due largely to the Certificate of Exemption clause in CON legislation. Although this was a one time occurrence, its repercussions and consequences may be felt for some time.

The trend establishing "medical arts centers" could have two diverse effects:

- the initial impact may be to increase costs due to the possible duplication of services; physicians' income may be enhanced by referral to diagnostic (including CT) or therapeutic services in which they have an economic interest

- groups establishing the centers currently are of the opinion that they can provide comprehensive services (no acute care) at less cost and greater patient convenience than is being offered by other health service combinations, such as when a patient visits a personal physician who refers to several others for testing and/or treatment.
It is conceivable that such centers may ultimately serve as the basis for group practice associations of the future, but it is emphasized that such centers are currently not reviewable under certificate of need legislation since they are private physician offices.

ANALYSIS OF ISSUES REGARDING CT SERVICES

Several issues are important to future State planning for CT scanners: appropriateness; efficacy, proper utilization and efficiency; hospital vs. private office location; CT's role in emergency care; and planning methods.

Issue #1: Appropriateness of Proposed and Existing CT Services

The major policy issue in California can no longer be simply defined in terms of need. Previously discussed certificate of need experience in California has amply demonstrated the inadequacy of need based planning and review. The issue, rather, is to define where state-of-the-art technology should be maintained on an ongoing basis while reducing by absolute numbers by identifying and closing inappropriate services. Aspects of CT effectiveness and efficiency must be examined in order to develop review criteria that promote a rational distribution of services as existing units begin to require replacement.

Effectiveness: Defining the effectiveness of a diagnostic technology for health planning purposes is particularly complex because the technology itself cannot directly affect the physical health of patients. However, attention can be given to the potential benefits of CT services, assuming that CT services can be beneficial if they are used appropriately, i.e., for a defined population, for given medical problems, under certain conditions of use, etc.

Four dimensions of effectiveness (or, more appropriately, its "efficacy") can be identified:

- technical accuracy
- diagnostic accuracy
- impact on patient management
- potential impact on health status

It is important that all four dimensions be considered. If diagnostic reliability alone were used as the criterion by which to determine proper utilization, the potential number of scans could be astronomical. For instance, CT is extremely accurate in diagnosing stroke victims and patients complaining of headaches, but it is not clear that routinely scanning all individuals with these conditions will yield potential benefits to health status commensurate with the potential expense involved.
Efficiency: Achieving optimum efficiency in the current operation of CT units is frustrated by two factors:

- Retrospective reimbursement of services by costs or charges
- the large number of CT units already in place which results in a low average volume of patient examinations per unit.

These two factors interact to reduce incentives to limit scanning to cases of relative medical necessity and to utilize scanners in more economical manners (e.g., intensive use, in ambulatory settings, etc.).

The National Planning Guidelines relative to CT scanner operation promote 2,500 annual patient examinations as the level at which a unit would operate more efficiently in terms of cost per patient. These Guidelines are intended to promote full areawide utilization and avoid duplication of services. In fact, it is not likely that efficient utilization of CT for medically necessary scans will ever be experienced on the majority of scanners in California because of the excessive number already in place.

Appropriateness of Service: At a minimum, appropriateness includes the following elements (note exception below regarding location in acute facilities and bed size):

- operates with an adequate number of properly trained radiologic personnel
- hours of operation offer accessibility to working population
- is within reasonable geographic proximity to resident populations
- is located in a facility which is recognized as a preferred receiving site for patients with symptoms for which CT is diagnostically efficacious
- offers ready availability of experienced consultants and other services to diagnose and treat such injuries and diseases
- in metropolitan area with several hospitals, facility should be over 250 beds
- exhibits willingness to cooperate with State and areawide agencies in provision of data required for viable health planning.

Other elements which must be evaluated on an individual basis are:

- need for the unit in terms of diagnostic procedures
- number of annual CT scan procedures
- percentage of annual CT scan procedures with normal findings
Ancillary Services

- base used to compute patient charges
- existence of monitoring programs designed to assure that the proper diagnostic modality is used
- demonstrated effectiveness and/or willingness to institute utilization review procedures
- physician practice patterns
- documentation of qualified community physician accessibility to the unit; sharing agreements; referral policies.

Issue #2: Hospital vs. Private Office Setting

The primary problem relative to CT scanner placement in private settings is that the consuming public needs to be assured that high quality of care is being provided in the private office. Public concerns focus on:

- the usual lack of utilization review in a private setting
- reduced competence in skills in all settings where the increasing quantity of scanners impacts the annual number of procedures performed for each unit in the area
- increasing likelihood of high patient charges due to an insufficient volume to cover the usually high fixed operating costs.

There are reports that private scanners have contributed to quality and cost effective care when such businesses voluntarily reported findings and areawide facilities cooperated in sharing agreements to avoid duplication of services. Such reporting and cooperating are not representative of the average private operation, however. In California, most private scanners have been considered private rather than community resources, as demonstrated by lack of cooperation with planning agencies.

About 20 percent of scanners nationwide are located in private offices. Many office scanners were purchased when moratoriums on certificate of need decisions prevented hospital installation. This subversion of legislative intent contributes to public suspicion of physician motives. Appropriateness review jurisdiction over CT scanning services in nonhospital settings provide an alternative means of quality assurance that may be superior to current CON exemptions.

Issue #3: CT's Role in Emergency Service

CT's importance in an areawide, emergency neurological receiving center gives it a priority role in comprehensive emergency services within a hospital. Generally, neurologists and neurosurgeons believe that head injured patients should be transported
only to facilities with in-house CT services. It should be recalled, however, that studies involving head injured patients wherein neurological examinations were normal found that CT was of no clinical significance. There are some indications that CT may be of value in accidents involving suspected internal injuries to determine traumatic damage to organs. Generally, there are a limited number of preferred receiving centers for patients with demonstrated neurological damage, usually including the areawide teaching/research facility. Such injury related emergency use of CT may be a consideration apart from other demonstrated needs for CT services.

Concerning nonemergent use, some believe CT also has a role in every facility or complex operating appropriately as a neurological or oncology center. Since it has been demonstrated that such capability may be offered effectively and at lower cost on an outpatient basis, some private radiology groups contend that they can more reasonably offer such nonemergent services with better patient access than a hospital. Such placement represents duplication of services, however, and in fact, lowers utilization of all scanners.

One important aspect of CT use, as noted earlier, is determining which is the most appropriate diagnostic modality. This requires adequate clinical workup and the ready availability of alternative modalities. For instance, CT may not be of greater value for extra-cranial diagnosis than ultrasonography. One author has urged selective use of body CT scanning. Therefore, in determining the role of CT in either emergency or nonemergent conditions, use of complementary modalities and variety of services must be considered. The hospital's role in provision of emergency services is a primary criterion in determining placement of CT, since the hospital frequently offers the wide array of consultants and alternative services required for both emergency and nonemergent inpatients and ambulatory outpatients.

**Issue #4: Planning Methodologies**

Existing CT service planning methodologies which rely on current and expected utilization to estimate resource requirements are problematic for these reasons:

- current experience is not likely to be representative of long term experience
- design improvements could alter patient management and increase potential utilization
- obsolescence may decrease future rates of use.

Thus, there is an immediate need to establish guidelines designating an appropriate service which will also set priorities for optimal location and proper use. The best planning methodology is one which will:

- determine the most appropriate locations for state-of-the-art scanners statewide
Ancillary Services

- encourage such scanner owners to maintain their scanners at the level of state-of-the-art
- utilize service areas based on patient origin studies for the service rather than the current HSA boundaries
- facilitate certificate of need review for update maintenance through a standardized form designed to elicit information demonstrating that the location remains an appropriate location for state-of-the-art technology
- encourage closure of inefficient and inappropriate CT services
- mandate data collection required for viable planning.

A change in certificate of need legislation relative to CT scanners is critical to future occurrence of rational distribution and quality standards in scanner services statewide. Such change would require that each service be assessed for appropriateness by criteria listed in that section. Denied updating, units with scanners having slower speeds and poorer images may experience a decline in utilization and recognize the inefficiency of the service, with closure the result. Mandated closure of any scanner operating below the level required to maintain competency (500 patient examinations annually) should be considered.
POLICY RECOMMENDATIONS FOR ANCILLARY SERVICES

Ancillary-1: FEE-FOR-SERVICE PAYMENT SYSTEMS (INCLUDING RVS, UCR, NEGOTIATED FEES, ETC.) SHOULD BE REVISED BY GOVERNMENT AND PRIVATE INSURERS TO REDUCE THE DISPARITY BETWEEN PAYMENT FOR ANCILLARY AND CONSULTATIVE SERVICES BY LOWERING THE VALUATION OF ANCILLARY RELATIVE TO CONSULTATIVE SERVICES.

It is well documented that the reimbursement system is a major source of incentives for ancillary service use.

Ancillary-2: OSHPD AND THE DEPARTMENT OF HEALTH SERVICES SHOULD STUDY THE IMPACT OF REDUCING REIMBURSEMENT FOR ANCILLARY SERVICES ON DEFICIT PRODUCING CENTERS AND TEACHING PROGRAMS IN HOSPITALS WHERE ACCESS TO SUCH SERVICES WOULD NOT BE JEOPARDIZED.

Third party reimbursement systems have traditionally allowed hospitals to subsidize high cost/low profit services, such as maternity and emergency, as well as teaching programs, by paying for low cost/high profit ancillary services. It is necessary to identify need for such subsidized services and to support them directly in some manner where need exists.

Ancillary-3: FUTURE PLANNING FOR AND CERTIFICATE OF NEED REVIEW OF CT SCANNING SERVICES SHOULD BE CHANGED TO REFLECT THE GROWING BODY OF CT KNOWLEDGE, INCLUDING THESE SPECIFIC CHANGES:

- EXISTING SCANNER: POPULATION NORMS AND CRITERIA CURRENTLY USED IN PLANNING AND CON REVIEW SHOULD BE ELIMINATED

- METHODS AND CRITERIA RELATIVE TO "APPROPRIATENESS" OF THE SERVICE SHOULD BE DEVELOPED, INCLUDING DIMENSIONS OF EFFICACY, EFFICIENCY AND PROPER UTILIZATION.

- IN APPROPRIATENESS REVIEW, CONSIDERATION OUGHT TO BE GIVEN TO CROSS DEPARTMENTAL SUBSIDIZATION.
Ancillary-4: ALTHOUGH OFFERING EMERGENCY SERVICES, FACILITY CT SCANNERS WHICH CONTINUE TO OPERATE INEFFICIENTLY AFTER THE FIRST YEAR OF OPERATION SHOULD BE DENIED UPDATE OR REPLACEMENT UNLESS THEY ARE FOUND TO BE "APPROPRIATE" BY OSHPD.

"Inefficient" may be defined as any scanner performing less than 500 appropriate patient examinations in the last one-year reporting period as required to maintain technical expertise; or, in an area with an excess of scanners, units which are operating below the number of medically appropriate examinations required to maintain economic viability of such units at reasonable patient changes and in consideration of other scanners in close proximity with higher utilization as determined by HSA investigation. Eventually such equipment will become obsolete and closure should be encouraged.

Ancillary-5: EVALUATION OF FUTURE CT SCANNING TECHNOLOGY IN CALIFORNIA, IN WHATEVER SETTING, SHOULD INCLUDE EXPLICIT COMPARISON WITH ALREADY AVAILABLE DIAGNOSTIC OR TREATMENT TECHNOLOGY.

Cost effective evaluation of new equipment must include comparison to what is available. It is not altogether clear what CT scanners are substitutes for or complements to, with the result that patient care may include both old and new routines and result in increased total charges.

Ancillary-6: REIMBURSEMENT POLICY IN ALL PUBLIC (MEDICARE, MEDI-CAL),PRIVATE (ALL THIRD PARTY PAYORS AND THEIR REPRESENTATIVES), AND PUBLIC/PRIVATE COMMISSIONS SHOULD CONTAIN COSTS AND IMPROVE QUALITY OF CARE BY IMPLEMENTING THE FOLLOWING POLICIES:

- REFUSE TO REIMBURSE ALL SCANS FROM ANY UNIT PERFORMING LESS THAN 500 APPROPRIATE EXAMINATIONS IN THE LAST 12-MONTH REPORTING PERIOD (PRORATED FOR THOSE OPERATIONAL LESS THAN 12 MONTHS)

- CONFIRM THAT REPORTING OF CT DATA ESSENTIAL FOR HEALTH PLANNING BE A CONDITION OF REIMBURSEMENT.
The Orkand Corporation has prepared a study which discusses minimum number of procedures per year required for skills maintenance. The figure for standard radiographic multidimensional tomography is used as an approximate level of procedure difficulty.

Ancillary-7: A UNIFORM METHOD FOR DETERMINING THE TECHNICAL AND PROFESSIONAL COST COMPONENTS AND APPROPRIATE RATIOS OF COST/CHARGES FOR ALL CT SCANNING SERVICES SHOULD BE ESTABLISHED IN ORDER TO ELIMINATE EXCESSIVE SURPLUS OR PROFIT.

Patient charges should be based on a uniform method for determining costs. The complexity of determining an equitable cost base should not be used as an excuse to charge high prices and allow inefficient use. OSHPD should develop such a uniform method, with appropriate provider input, and the Department of Health Services should evaluate the method's feasibility for publicly financed programs, including seeking federal waivers.

Ancillary-8: EQUIPMENT SAFETY AND OPERATION SHOULD BE ASSURED IN ALL CT SCANNING SETTINGS, BUT PARTICULARLY IN THE PRIVATE OFFICE SETTING, BY THE FOLLOWING:

- EACH UNIT SHOULD PROVIDE EVIDENCE OF EQUIPMENT SAFETY BY MAKING AVAILABLE REPORTS OF REGULAR MAINTENANCE, EITHER BY CONTRACT WITH MANUFACTURER OR RADIATION PHYSICIST

- EACH UNIT SHOULD WORK ACTIVELY TO MINIMIZE RADIATION DOSAGE AND SCATTER BY:
  - AGGRESSIVE USE OF PERSONNEL SHIELDS
  - CHANGING FILTERS DESIGNED TO REDUCE RADIATION, AS AVAILABLE

- EACH UNIT SHOULD BE OPERATED BY AN ADEQUATE NUMBER OF PROPERLY TRAINED PERSONNEL WITH A REQUIREMENT FOR ONGOING TRAINING TO MAINTAIN COMPETENCE.

Radiation hazard is a matter of increasing concern to all persons.
Indiscriminate use of x-rays for medical diagnosis could be dangerous to the patient. Although federal regulations for the use of x-ray equipment are in effect, dwindling state budgets responsible for monitoring such equipment render such regulations ineffective at the practical level. It should be made the responsibility of the unit operator(s) to provide proof of such equipment safety and operation.

Ancillary-9: THE COLLECTION OF UNIFORM UTILIZATION AND OTHER DATA NEEDED FOR Viable HEALTH PLANNING AND REIMBURSEMENT POLICIES RELATED TO CT SCANNING SERVICES SHOULD BE CONSOLIDATED ON A STATEWIDE BASIS, TO INCLUDE THE FOLLOWING:

- ALL DATA NECESSARY TO IMPLEMENT REIMBURSEMENT POLICIES IN FOREGOING RECOMMENDATIONS
- ALL MEASURES RELATIVE TO APPROPRIATENESS CRITERIA.

There currently exists no uniform data base relative to CT scanning services in California. Obtaining cost, utilization and quality input measures for existing CT services is mandatory to fulfilling the need to contain costs and assuring quality care. This can be accomplished best on a statewide basis. The same data would then be available for each facility in a uniform and workable format.

Ancillary-10: DATA SHOULD BE COLLECTED AND ANALYZED TO DETERMINE UTILIZATION AND COST EFFICIENCY OF MOBILE CT SCANNERS.

Mobile CT scanners may be a viable alternative to fixed CT scanners located in individual facilities. Such scanners are not currently reviewable under CON. Data concerning current use and costs must underlie any potential change in State policy.
NOTES


12. Eisenberg, op. cit.


21. Ibid. All national statistics included were derived from this report.

22. The Blue Cross Association commissioned the Institute of Medicine to conduct a study on scanners. A *Policy Statement on Computed Tomography Scanning*, published in April, 1977, resulted from this study.


30. U.S. Congress, O.T.A., op. cit., p. 63. A note in the O.T.A. document advises the reader that "There are indications that (DHEW) supports more flexibility in the planning process. The Department endorses periodic review and revision of the standards...as experience with their use accumulates." DHEW has, in fact, requested public comments relative to the *Guidelines* pertaining to CT scanners.
AMBULATORY SURGERY

DEFINITIONS AND SCOPE OF SERVICES

Ambulatory surgery is not currently defined in State regulation. For purposes of this Plan, it is defined as:

"a scheduled elective surgical procedure, performed under general, regional or local anesthetic and not requiring admission for an overnight hospital stay in the absence of complications."

This definition does not include emergency surgical procedures performed in a hospital emergency room under local anesthetic, followed by discharge of the patient. It does include certain invasive diagnostic procedures, such as endoscopy and cystoscopy, performed under anesthesia and reimbursed as surgical procedures. Other terms for ambulatory surgery* include: "come and go," "in and out," outpatient, day, short stay and, occasionally, minor surgery.

Ambulatory surgery occurs in five settings:

- hospital operating room (OR) ("integrated unit")
- hospital owned OR in outpatient unit, often physically separate from the hospital ("discrete unit")
- freestanding ambulatory surgical clinic
- hospital emergency or special procedure room
- physician, podiatrist or dentist office.

The last setting will not be directly addressed in this Plan.

* N.B.: "Surgicenter" is a patented trademark of the Surgicenter in Phoenix, Arizona and should not be used as a generic term for ambulatory surgery or ambulatory surgery programs.
BACKGROUND

Relationship to Health Status

Two health status benefits are cited by proponents of ambulatory surgery. First, ambulatory surgical patients are usually defined as "well" rather than "sick." This makes a difference in how they are treated at the facility (e.g., no wheelchairs) and in terms of expectations for recovery (fast). Second, the risk of acquiring a hospital infection is believed to be much smaller than that for inpatients.

Neither benefit has been scientifically documented. A U.S. government study reports "no evidence" for shorter (or longer) recuperation periods for ambulatory surgery. A contributor to a comprehensive text claims a .5 percent infection rate for freestanding centers, but no citation is given.

Of some significance may be claimed differences in medication procedures. Ambulatory surgical patients apparently receive fewer drugs, particularly preoperative sedatives, than inpatients. This claim is substantiated in the U.S. study.

No deaths have ever been reported in connection with ambulatory surgery centers.

Finally, ambulatory surgery is presumed to be a less disrupting experience for patients and their recuperation in a familiar home environment may be beneficial.

National Trends

The development of ambulatory surgical services has occurred over the last decade, growth being moderate and characterized by diversity. Initially stimulated by tight bed supply in many areas, current interest derives principally from concern for cost containment and commitment to improving patient care. The common organizational patterns, none dominant, are:

Hospital Based

- integrated program: utilizes existing operating room capacity; frequently provides separate reception and recovery areas
- discrete program: provides a physically separate suite of operating rooms, reception and recovery areas, adjacent to the hospital or on the grounds (the latter may be termed a "hospital satellite" program)
Freestanding

- anesthesiologist owned: provides operating rooms, anesthesiology, ancillary and support services available to any surgeon who qualifies for staff membership; good practice and some third-party payors require hospital transfer agreements

- surgeon owned: same as above except anesthesiology may be on a contract basis and surgery available may be limited to one specialty.

In 1975, a DHEW study identified 148 (undifferentiated) hospital based programs in 36 states and 38 (undifferentiated) freestanding facilities in 16 states. There are undoubtedly more now, but not as many as one might expect.

One barrier to growth of ambulatory surgery programs has been disinclination of some third-party payors to reimburse for surgical services not performed on inpatients. While this problem is diminishing among private insurers, freestanding centers are not currently eligible for Medicare reimbursement except under special contract arrangement.

The scope (number of surgical specialties involved) and depth (number of procedures in each specialty) of ambulatory surgical programs vary widely. While no national data are available, authoritative lists of acceptable procedures and program reports in the literature indicate that procedures in gynecology, otolaryngology (ENT), ophthalmology and oral surgery are highly prevalent, with plastic surgery, orthopedics, urology, neurosurgery and general surgery also contributing to varying degrees. Plastic surgery is a very common specialty procedure and the majority of plastic surgeons have operating rooms in their private offices and the procedures are done there. Much pediatric surgery also lends itself to the ambulatory mode. Thoracic surgery and proctology would also participate in a comprehensive program. Some indication of steadily increasing confidence in the ambulatory approach is suggested by the inclusion of cardiac catheterization in the procedures which can, given optimal patient condition and physician competence, be performed. Interestingly, length of time to perform the procedures is not a deterrent to ambulatory surgery. While most procedures take an hour or less, procedures taking two hours or more are not unknown and are feasible. Currently, the major procedures not amenable to ambulatory treatment are those involving invasion of the chest cavity, abdomen, brain and spine.

Regarding characteristics of ambulatory surgical patients, national data are again unavailable, but contraindications, acceptable procedures and the literature all point to a predominantly younger age group, otherwise generally healthy, with adequate social support for transportation to and assistance at home. While it is reasonable to expect the chronically ill or those with multiple conditions to be hospitalized, it is not clear whether under-representation of the elderly is due to financial constraints, social factors, or true medical risk.*

* As yet unpublished experience at the Surgicenter in Phoenix with a Medicare contract indicates that removal of the financial barrier does not increase the number of elderly patients receiving outpatient surgery.
It is important to note that availability of ambulatory surgery increases access for elective surgical care for those without health insurance but with some ability to pay. This is particularly true for therapeutic abortion and cosmetic procedures, often not covered even where there is insurance.

**National Policy**

Ambulatory surgery is not mentioned in Public Law 93-641 although it is consistent with Priority 7 in the Law, which states:

"the development by health service institutions of the capacity to provide various levels of care..."\(^\text{14}\)

In addition, one of the findings underlying the Act cites the "inadequate incentives for substitution of ambulatory... care for inpatient care."\(^\text{15}\)

Current Medicare policy excludes freestanding centers from reimbursement* except by special contract under Section 222 of P. L. 92-603 and reimburses hospitals at only 80 percent of costs. While both practices could be construed as disincentives in determining the very low use of ambulatory surgery by the elderly, they may be insignificant.

Voluntary professional support for ambulatory surgery is strong. Ambulatory surgery programs have been endorsed in policy statements by the American Medical Association (1971), the American Hospital Association (1973) and the National Blue Cross Association (1972). The American Society of Anesthesiologists (1973), the American College of Obstetricians and Gynecologists (1974) and most recently the Joint Commission on Accreditation of Hospitals (1978) each provide guidelines or standards for the organization and functioning of ambulatory surgical facilities.

**California Trends**

Most California hospitals reported at least one operating room available for ambulatory surgery in 1976.\(^\text{16}\) There are no data on the organization of such programs, i.e., which are "integrated" and which are "discrete" units, nor on procedures performed. Fifteen percent of all hospital surgery reported in that year was outpatient, ranging from 20 percent in HSAs 3 (North Bay), 5 (East Bay), and 8 (Mid-Coast) to 7.5 percent in HSA 9 (Central).

* California Congressman James Corman introduced legislation (March 1979) to provide 100 percent coverage of ambulatory surgery under Medicare.
Freestanding capability is limited, with a total in 1977 of 12 licensed facilities in eight HSAs containing 35 operating rooms and performing 15,154 surgeries. Assuming the hospital based total did not increase very much in 1977, the freestanding share of the California ambulatory surgery market in 1977 was 15 percent.

One indicator of the current volume of outpatient surgeries is that 17 Kaiser hospitals in California do an average of 31 percent of all surgeries on an outpatient basis. The increasing use of outpatient services is not limited to Kaiser hospitals. There were 32 hospitals each performing more than 1,000 surgeries in 1978 with outpatient surgeries greater than 30 percent of all surgeries compared to a statewide average of 16 percent (excluding Kaiser hospitals). These hospitals are displayed in Table VII-13. Including Kaiser, there were 62 hospitals in the State performing greater than 25 percent of all surgeries on an outpatient basis. (These data do not include the surgical clinics.)

An areawide comparison of the percent outpatient surgeries is shown in Table VII-14. It is noted that HSAs 6, 8, 9 and 14 have lower percent outpatient surgeries than the State average.

Given the experiences above and the excess capacity for services that exists throughout the State, it is not unreasonable to set a target of 20 percent for ambulatory surgeries in 1985.

**California Policy**

State facility and service planning policies appear to conflict with CON review criteria. Sections 90305 and 90309 in Title 22 of the California Administrative Code clearly encourage the use of ambulatory care as an alternative to inpatient care. However, in the same Title and Code, the review criteria applicable to hospital based ambulatory surgery programs seem to deter the establishment of similar programs in neighboring hospitals.

State licensure requirements do not clarify matters. Ambulatory surgery clinics did not exist in State law until 1976 and specific regulations remain to be approved and promulgated. Currently licensed surgical clinics are licensed under general regulations relating to clinics.

A B 1317, September 13, 1979 states, "With respect to the determinations of unmet need in the community or the adverse effect of new or expanded surgical clinics on the utilization of operating rooms in hospitals, it is not the intent of the Legislature to limit the expansion of surgical clinics when the hospitals have not made efforts to fully utilize their ambulatory operating capacity and to provide ambulatory surgical services at a reasonable cost to the community."

Medi-Cal reimbursement practice does not particularly encourage outpatient surgery but at the same time, it does not discriminate between hospital and freestanding programs.
**TABLE VII-13**

**CALIFORNIA HOSPITALS**
**PERFORMING GREATER THAN**
**THIRTY PERCENT OF ALL SURGERIES**
**ON AN OUTPATIENT BASIS  (1978)**

<table>
<thead>
<tr>
<th>HSA</th>
<th>FACILITY</th>
<th>OUTPATIENT SURGERIES (PERCENT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>General Hospital</td>
<td>36</td>
</tr>
<tr>
<td>2</td>
<td>Davies Community</td>
<td>36</td>
</tr>
<tr>
<td>3</td>
<td>S.R. Community</td>
<td>49</td>
</tr>
<tr>
<td>4</td>
<td>French</td>
<td>34</td>
</tr>
<tr>
<td>5</td>
<td>Contra Costa</td>
<td>52</td>
</tr>
<tr>
<td>6</td>
<td>Oakland California Hospital</td>
<td>74</td>
</tr>
<tr>
<td>7</td>
<td>San Jose H.C.</td>
<td>38</td>
</tr>
<tr>
<td>8</td>
<td>Santa Teresa</td>
<td>42</td>
</tr>
<tr>
<td>9</td>
<td>Natividad</td>
<td>32</td>
</tr>
<tr>
<td>10</td>
<td>Monterey Community</td>
<td>31</td>
</tr>
<tr>
<td>11</td>
<td>Bakersfield</td>
<td>43</td>
</tr>
<tr>
<td>12</td>
<td>Parkwood</td>
<td>59</td>
</tr>
<tr>
<td>13</td>
<td>Valley Medical Center</td>
<td>49</td>
</tr>
<tr>
<td>14</td>
<td>Downey</td>
<td>34</td>
</tr>
<tr>
<td>15</td>
<td>Huntington Beach</td>
<td>57</td>
</tr>
<tr>
<td>16</td>
<td>City View</td>
<td>78</td>
</tr>
<tr>
<td>17</td>
<td>Crenshaw</td>
<td>83</td>
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<td>18</td>
<td>Roos Loos</td>
<td>40</td>
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<td>19</td>
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<td>22</td>
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<td>23</td>
<td>Inglewood</td>
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<td>24</td>
<td>Riviera</td>
<td>58</td>
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<tr>
<td>25</td>
<td>Dominguez Valley</td>
<td>31</td>
</tr>
<tr>
<td>26</td>
<td>Long Beach Westside</td>
<td>81</td>
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<tr>
<td>27</td>
<td>Athens Park</td>
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<td>28</td>
<td>Avalon</td>
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</tr>
<tr>
<td>29</td>
<td>Riverside</td>
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<td>30</td>
<td>Mountclair</td>
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<td>31</td>
<td>Anaheim General</td>
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</tr>
<tr>
<td>32</td>
<td>St. Joseph's</td>
<td>33</td>
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*Excluding Kaiser.*
<table>
<thead>
<tr>
<th>HSA</th>
<th>PERCENT OUTPATIENT SURGERY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statewide</td>
<td>16</td>
</tr>
<tr>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
</tr>
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<td>21</td>
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Hospital outpatient departments are reimbursed according to a Schedule of Maximum Allowances (SMA) which specifies rates for the type of room being used, i.e., operating room, treatment room, recovery room, etc. In addition, they are reimbursed for physician services rendered by the hospital according to an SMA and may also bill for such items as supplies. Freestanding clinics are reimbursed according to the same schedule. To the extent that their costs are lower, they benefit. Nine of the 12 clinics currently licensed by the State Department of Health Services have Medi-Cal provider numbers.19

Health Systems Plan Highlights

The 1978 HSPs generally encourage the availability of ambulatory surgery in their HSAs, but tend to prefer hospital based to freestanding capacity, primarily for fear of the economic impact of freestanding centers on already underutilized surgical programs. They use varying methods for assessing need but several attempt to take existing hospital capability into account.20 Some estimate project need requirements under the assumption that "dedicated" rooms will be less costly to patients, thereby deriving a greater "need" than if any existing operating room capacity is used.21

ANALYSIS OF DEMAND AND SUPPLY

Analysis of Demand

The theoretical incidence rate underlying demand for ambulatory surgery is the sum of health problems treatable via surgical intervention on an ambulatory basis, for example:

- uterine bleeding of unknown origin (D&C)
- undesirable pregnancy (TAB)
- severe otitis media (myringotomy)
- suspected breast cancer (breast biopsy)
- unsatisfactory noses (rhinoplasty).

Most ambulatory procedures are elective, but some are more elective than others. Even if data were available for the obvious, accepted problems (e.g., breast cancer), there would remain a varying volume of self-determined problems producing demand for ambulatory surgical treatment.

An alternative to the true incidence rate is a determination of that proportion of surgery which can safely be done on an outpatient basis, coupled with an estimate of the acceptability of this mode to physicians and patients. This is closer to true "demand," in
that demand for ambulatory surgery begins to be seen as a matter of preference for a particular service in face of alternatives (inpatient or doing nothing). Current experience indicates that many surgical procedures, varying with local population and physician mix and predispositions, can be safely and acceptably performed without hospital admission.*

Some examples of diagnostic and therapeutic procedures frequently performed in ambulatory surgical programs are:

- Biopsy
- Excision of breast tumor
- Venectomy
- Dilations and curetage of uterus
- Laparoscopy
- Tubal ligation
- Laryngotomy
- Tonsillectomy
- Adenoidectomy
- Skin grafts
- Revision of scars
- Circumcision
- Testicular biopsy
- Vasectomy
- Endoscopy
- Muscle operations
- Cast changes
- Fracture reductions
- Joint manipulation
- Bronchoscopy
- Esophagoscopy

**Analysis of Supply**

Since historical data on establishment of California ambulatory surgical facilities and programs are not available, it is not possible to comment on development trends.

As noted, hospitals in all HSAs (and in all but 11 HFPAs) report "surgical operating rooms" available for outpatient surgery. Ideally, distance should be considered in addition to sheer number, in particular since ambulatory surgery implies a need to be near medical assistance in case of unexpected complications. More significant, however, would be data on the actual organization of hospital based capability: information on physical separation, reception, and recovery; responsibility for program management; hours of operation; and policy and experience concerning "bumping" elective cases for unexpected emergencies. Such information would facilitate classification of programs and assessment of accessibility and quality.

Supply of freestanding programs is apparently increasing (from the four noted in the 1975 DHEW survey to the 12 currently licensed), but actual freestanding capacity currently is very difficult to ascertain. The reasons are that: licensure of surgical clinics has been required only since 1976 (AB 4001); no licensure regulations specific to such clinics are in use; a physician office, besides being the site of some surgical capability outside State

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* For lists of procedures now performed or able to be performed as ambulatory procedures, see "Other Specialized Surgery" (draft), OSHPD, 1979.
regulation altogether, can apparently include an operating and recovery room without any
licensure whatever; licensed surgical clinics may not, therefore, represent capability even
excluding physician offices. A good example of the problem is Kaiser Permanente
Physician Group offices: large clinical facilities are not subject to licensure because they
are currently defined as physician offices. To a significant extent then, freestanding
supply is a function of licensure definitions and requirements, currently a troublesome
problem.

State interest in quality of care in ambulatory surgical programs suggests the desirability
of a utilization review and medical audit procedure and of yearly reporting on the
following variables:

- deaths
- admissions to hospitals with reasons
- complications by type
- infection rates
- malpractice experience.

ANALYSIS OF ISSUES

Many of the concerns raised by the performance of surgery on ambulatory patients, and
such practice outside the hospital setting, can be condensed into two issues important for
planning: the impact of ambulatory surgery on the utilization and economics of inpatient
care and quality control; and the potential for unqualified practice and unnecessary
procedures.

Issue #1: Impact on Inpatient Use and Economics

The most widespread source of doubt about ambulatory surgery is probably concern for its
impact on already existing inpatient facilities. Ambulatory surgery produces a dilemma
for planning similar to that of HMOs: does the price of potential duplication warrant
restriction of "innovative," allegedly "cheaper" forms of care.

While evidence concerning the precise nature and extent of impact under varying
circumstances is not available, there are some suggestive facts:

- no hospitals report adverse experience with their own ambulatory surgery
  programs and many appear highly satisfied
- ambulatory surgery reduces queuing time for both inpatients and ambulatory
  patients, since a single long line is now replaced by two shorter ones
the proportion of major cases in the OR tends to rise after the introduction and acceptance of outpatient surgery.\textsuperscript{27}

despite the presumably more serious caseload, surgical average length of stay may not rise\textsuperscript{28} and may even fall\textsuperscript{29}
cost per case is lower for the ambulatory case, varying by case but still significant, primarily due to:
- no overnight stay
- reduced ancillary services
- lower labor cost in freestanding setting\textsuperscript{30}
price per ambulatory case is another -- and controversial -- matter:
- the patient or insurer will perceive a lower total price because the inpatient stay is limited
- the price of the procedure itself — use of OR, recovery room, miscellaneous fees — will vary with the pricing policy of the program and could even be higher than the same inpatient components
- where there is competition, as in Phoenix in the early mid-1970s, prices for minor surgery increased only two-thirds as much as prices for major surgery\textsuperscript{31}
- physician fees (prices) do not generally vary by inpatient/outpatient.*
revenue from inpatient surgical care, despite the competitive advantage of outpatient care, does not decline\textsuperscript{32}
- under cost based reimbursement, rising cost per case will be reimbursed
- charge based reimbursement will cover any charges increased to cover increased costs
patient and physician satisfaction are reportedly high.

\* Physician billing practices are primarily a matter of individual discretion. Even when a price setting mechanism such as the Relative Value Schedule (RVS) is used, many procedures do not have unit values assigned. Many prices could therefore, in theory, vary by setting.
This experience suggests the following conclusions regarding impact:

- use of the hospital operating room becomes more appropriate in the sense that only those patients who medically need to be there, are there
- patient and physician convenience are enhanced and opportunity for costs delays, whatever they may have been, are lowered
- total cost of surgery in the community will not decline in the presence of cost based reimbursement or in the absence of incentives or regulations for closure, rate setting regulation or prospective reimbursement mechanisms
- total cost in the community may increase if ambulatory surgery capacity is added by capital investment in a freestanding facility
- cost incidence in the community will shift: the more sick (or their insurers) will be paying more for services that had previously been subsidized by the less sick.

These conclusions are almost certainly applicable to California, but refinements reflecting current and foreseeable State conditions need to be added.

First, virtually all published reports of ambulatory surgery impact come from areas and eras of tight bed supply, lacking (except for Arizona) rate regulation. Reduction of queues, increase in intensity and increased total community costs were predictable outcomes. Where there is unused capacity, however, or where there is a shrinking population base already shared by several hospitals, there may be no appreciable queue to begin with and no one to channel into newly freed capacity — unless physicians are induced to shift their admissions from a facility without to one with an ambulatory surgery program, thereby making their own practice more efficient. The undeniable fact of excess capacity thus adds a dimension to the problem of impact on inpatient care: it will vary according to whether an area is growing, static or shrinking, and with the number of hospitals competing to provide surgical care. Where excess capacity exists, added outpatient capacity in a freestanding setting will raise the price to the inpatient consumer. Consequently, the outpatient fixed cost/benefits to the inpatient operating room are lost.

A second deviation from the average impact picture could come from a change in California reimbursement patterns. If case based prospective reimbursement appears, whether through government or the private sector, then rising cost per inpatient case could become a liability for hospitals and an incentive for cutback or closure.

Third, hospitals operating at relatively low volumes will feel quite different effects from an internal reorganization of patient flow (the major contribution of an integrated unit) vs. establishment of new capacity, whether hospital based discrete or freestanding. It is
likely that a hospital will suffer less if it sponsors a program than if business is siphoned off to a freestanding center. What is most interesting is that in individual cases, the average hospital ambulatory surgical program is believed to improve patient care, regardless of the preexisting occupancy picture. Thus a case seems to exist for ambulatory surgery as an integrated program, regardless of the surrounding financial and occupancy situation. The program availability of hospital operating rooms for such surgery in California seems to bear this out.

Cost effective savings using outpatient rather than inpatient surgery are summarized in the DHEW publication "Planning for Outpatient Services" (March 1979). Significant cost effective savings comparing outpatient to inpatient services were reported by Beaton-Mamak, 1974, Bell, 1974, Davis, 1974, Ford, 1978, Hannon, 1973, Jones, 1974, Lieberman, 1975, Stehling, 1974, and Marks. Marks estimates the nationwide savings of increasing ambulatory surgery from 10 to 30 percent as $774,000,000. Additional cost studies are in progress to compare this analysis.

In summary, while the benefits of ambulatory surgery in California may be less broad than elsewhere due to an abundance of hospitals, there are benefits nevertheless. The introduction of incentives (or sanctions) to eliminate underused operating room capacity (i.e., the variable costs thereof) would furthermore eliminate a principal objection to new programs, namely that they introduce additional costs.

Issue #2: Quality Control: The Potential for Unqualified Practice and Unnecessary Procedures

Unease concerning quality of care in ambulatory surgical programs is a difficult issue for planning.

Fortunately, the problem can be narrowed in scope if quality is broken down into the dimensions of structure, process and outcome. It is widely accepted that both structure and process for monitoring quality are present in hospitals. To the extent that hospitals prevent unqualified practice and inhibit unnecessary care, hospital based ambulatory surgery is protected. The record for hospital based programs will be no better, no worse than for hospital care generally. California hospital malpractice experience with ambulatory care supports the conclusion that safeguards are adequate.

Freestanding centers are, so far, much more difficult to control. Current standards regarding structure and process are voluntary and, in any case, weak. The Joint Commission on the Accreditation of Hospitals (JCAH) standards call for tissue review, but no utilization or audit committees per se; direction, but no qualifications are specified for a director; credentials review, but no staff restrictions (except that staff physicians must have admitting privileges at nearby hospitals unless the facility has a transfer agreement).
Paradoxically, the evidence regarding outcome of ambulatory surgery, derived primarily from freestanding centers, is impressive. The Orkand study found no deaths, no life threatening emergencies, no transfer problems where transfer was called for (3 out of 900 cases), no significant complications and only minimally more frequent signs of patient discomfort.46

Self-reported experience is always good.47 A clinical study of relative inpatient/outpatient outcomes in children yielded no significant differences and high acceptance.48

Carrying the outcome issue a step further to the problem of unnecessary care regardless of outcome, the only data are from the Orkand study, indicating no increase in surgical rates/1,000 population in the study period 1968-1975, independent of national and regional trends.49

The quality issue thus boils down to apprehension concerning unregulated practice.
POLICY RECOMMENDATIONS FOR AMBULATORY SURGERY

Ambulatory Surgery-1: THE DEVELOPMENT OF AMBULATORY SURGERY PROGRAMS IN HOSPITALS AND FREESTANDING CLINICS SHOULD BE ENCOURAGED BY THE STATE THROUGH THE ESTABLISHMENT OF A STATEWIDE TARGET OF 20 PERCENT OF ALL SURGERIES TO BE PERFORMED ON AN OUTPATIENT BASIS.

Ambulatory surgery has been demonstrated to be safe for patients in any setting. It is less expensive than inpatient surgery to the consumer. The concept minimizes the sick role, the intake of drugs and the loss of patient control. The availability of programs enhances access to appropriate levels of care and to outpatient care where inpatient is unnecessary.

Ambulatory Surgery-2: OSHPD, IN COOPERATION WITH THE DEPARTMENT OF HEALTH SERVICES AND THE HEALTH FACILITY COMMISSION, SHOULD ESTABLISH A DATA COLLECTION SYSTEM TO:

- GAIN DETAILED UNDERSTANDING OF THE TYPES OF AMBULATORY SURGERY PERFORMED AND THE ECONOMICS AND EFFICIENCY OF DIFFERENT PROGRAM MODELS.

Data are necessary for sound program evaluation and future health planning.
NOTES


2. T. O'Donovan, Ambulatory Surgical Centers, Aspen Systems Corp., Maryland, 1976, p. 133. (Hereafter Centers.)

3. Ibid., pp. 13, 83.

4. Orkand, Evaluation, p. 34.

5. Ibid., p. 33.


15. Ibid., Section 2 (a)(4).


18. Department of Health Services, "Regulations Relating to Clinics, Excerpts from California Administrative Code Title 17, July 1975." (Hereafter "DHS Title 17 Regulations.)

19. Personal communication, Department of Health Services, Medi-Cal Division, January 1979.

20. HSPs of Northern California, North Bay, Central California, Orange County.

21. HSP of North San Joaquin.


23. The American Society of Anesthesiologists' Guidelines propose that patients be no more than an hour's drive to the physician involved for 24 hours. (The San Joaquin HSP also uses this standard.) (American Society of Anesthesiologists, Guidelines for Ambulatory Surgical Facilities, 1973.)

24. The 1978 Annual Report requests data on number of rooms "dedicated" to ambulatory surgery, but the utility of the question is dissipated by the modifier "either on a full-time or part-time basis". OSHPD, Annual Report form (1978), p. 10.


26. O'Donovan, Centers, Part II.

27. See Note 25.


29. O'Donovan, Centers, p. 66.


31. Ibid., p. 45.

32. Ibid., p. 45, and O'Donovan, Centers, pp. 34-38.


34. See Note 25.


42. L. Stehling, and H. Zander, "Outpatient Surgery." Texas Medicine, V 70, August 1974.


44. Personal communication, CHA, Farmers Insurance Program, January 1979.


46. Orkand, Evaluation, pp. 33-34.


DEFINITIONS AND SCOPE OF SERVICES

There are a variety of definitions pertaining to types of burn injuries and types of treatment settings appropriate to each level of care required. These definitions as well as requirements, standards and regulations are issued by Medicare, the Joint Commission on Accreditation of Hospitals, the State of California, the former Bay Area Comprehensive Health Planning Council Regional Burn Care Committee, local building authorities and professional groups.

Title 22 of the State of California Administrative Code defines burn centers as follows:

70421. Burn Center means an intensive care unit in which there are specially trained physicians, nursing and supportive personnel and the necessary monitoring and therapeutic equipment needed to provide specialized medical and nursing care to burned patients.

Since burn injuries are primarily the result of accidents, the victim most often presents for treatment through the emergency medical system to be stabilized, evaluated, treated on an outpatient basis, or referred to a burn treatment facility for admission and care. Many medical specialists may become involved in the treatment management in a variety of possible treatment settings. The following definitions of services were adopted by the former Bay Area Regional Burn Care Committee in January, 1976:

- **Burn Program** - At this level, the hospital has no specialized facilities or areas for burn care. However, a plan for management of burn patients is implemented by an interested and experienced physician (or jointly by several physicians). As a measure of experience, it is assumed that the physician is treating at least 25 burns per year.

- **Burn Unit** - Denotes a burn program being conducted in a specialized area which is used only for burns. It is assumed that there are at least four beds and that at least 35 patients per year are treated. A limited amount of research and teaching may be present.

- **Burn Center** - Denotes a larger unit with special emphasis on research and teaching as well as patient care. The facility provides very intensive burn patient care which requires the support of the research and teaching staffs. In turn, the intensive care environment provides the ideal classroom for teaching complexities of burn care, and serves as a laboratory for research into the many uncertainties of present day burn treatment. It is assumed that the facility has at least six beds, and that at least 50 patients with burns are treated per year.
Burn injuries are categorized according to severity, dependent upon the depth of the burn, the percentage of the body surface involved, the part of the body burned, the age of the patient and state of health prior to the burn. "Partial thickness" burns (formerly called "first" and "second" degree burns) damage or destroy only part of the skin. These burns will heal spontaneously if nothing in the treatment causes further damage. "Full thickness" burns destroy every layer of skin and may damage underlying muscles and bone; regeneration of the skin is not possible in such a case.

Burns have also been categorized as minor, moderate and major, each being treated in different settings. Historically, minor and moderate burns have been treated on an outpatient basis. Recently, as reported in a 1976 American Burn Association annual meeting, major burns have been treated on an outpatient basis at E. E. Irvine's Burn Center in Orange, California.

According to the January 1976, draft of the Guidelines for Transfer: The Critical Burn Patient, endorsed by the Medical Advisory Committee of the Association of Bay Area Governments' (ABAG) Emergency Medical Services (EMS) Project, the following classifications for identifying the magnitude of a burn injury were established using recommendations from the American Burn Association, State Health Department, and the Medical Advisory Committee of the ABAG/EMS Project:

• **Major Burn Injury:**
  - partial thickness burns greater than 25 percent body surface area (BSA) for adults, 20 percent for children
  - full thickness burns 10 percent BSA or greater
  - most deep partial and full thickness burns involving hands, face, ears, feet, genitalia
  - most burns complicated by inhalation injury
  - most electrical and chemical burns
  - burns complicated by fractures or other major trauma
  - burns in poor risk patients (extremes of age, other disease)

• **Moderate Uncomplicated Burn Injury:**
  - partial thickness burns of 15 to 25 percent BSA for adults; 10 to 20 percent for children with less than 10 percent full thickness burn
  - burns not involving specific conditions identified above
• **Minor Burn Injury:**
  - partial thickness burns of less than 15 percent BSA for adults, 10 percent for children with less than 2 percent full thickness

State regulations (Title 22, Division 5, Section 70018) presently define "critical burn" as:

"any one or more of the following types of burns:

1. Second degree burns exceeding 30 percent of the body surface.
2. Third degree burns on the face, hands, feet, and/or genitals.
3. Third degree burns exceeding 10 percent of the body surface.
4. Burns complicated by respiratory tract injury, major soft tissue injury or fractures.
5. Electrical burns.
6. Any combination of second and third degree burns which in the aggregate poses a medical problem equivalent in seriousness to (1) through (5)."

**BACKGROUND**

**Relationship to Health Status**

Skin serves a complex function for the body, both as a regulator of body temperature and as a barrier against dehydration and invasion of bacteria. When a large area of skin is destroyed, large quantities of fluid containing protein escape, upsetting blood chemistry and metabolism. Loss of fluid from the blood into the body tissues or to the body exterior usually results in shock. Even under strict sterile conditions, a burn victim can die from infections caused by his own body functions or from respiratory, kidney or heart failure. Smoke inhalation can cause serious damage or death as well.

In the U.S., burn medicine is still considered a fledgling specialty, and certain procedures are controversial. Nevertheless, advances in treatment which effectively improve the victim's outlook for recovery continue to be made. While the process of healing is slow and agonizing, the first few hours of care are critical. Most patients with burn injuries may be transported safely for several hours immediately following the injury, provided that a diagnosis of severity has been made and proper stabilization techniques necessary for transport have begun. Although several burns are indeed trauma cases, many of the severe systematic complications are not evident until some hours or days following the
injury. The patient can better tolerate transfer within the first 48 hours following injury than later. Prevention of shock in the victim requires large volumes of intravenous fluids in the first 24 hours.

Treatment for severe burn injuries is extremely expensive. Patients with major burns require constant attention. The total staff-to-patient ratio is high: between 15 to 30 hours of nursing care per day is given to each patient. Because of the nature of the injuries and the level of pain experienced by patients undergoing treatment and rehabilitation, there is a high turnover in the nursing staff who have continual care responsibility in the treatment setting.

It has been demonstrated that patients with certain types of burns profit by receiving care within a setting specifically designed and staffed for the treatment of burn patients. Although hospitalization for burn victims has generally been shortened, it is not unusual for a victim to remain hospitalized for 30 to 60 days, and some may stay much longer. The rehabilitation period is another seriously painful crisis period for the victim. Hospitalization for the initial injury is frequently followed by the pain of plastic surgery, reconstructive operations, convalescence, and rehabilitation — not to mention adjusting to the emotional scars of disfigurement. Physical therapy requires regular exercise which is often painful since the grafted skin lacks the elasticity of normal skin and shrinks as it heals. All in all, the psychological damage from the experience is often extensive. The victim may find his/her most awesome challenge in the long-term readjustment and reentry into society.

The medical community is divided on the issue of resuscitation or nonresuscitation of severe burn injury victims, making this a very complex medical ethics issue. Since California State law includes strict rules on informed consent, and because burn patients are usually alert and cognizant after they are burned, physicians can often ask patients if they wish to be aggressively resuscitated.

National Trends and Policy

The development of specialized burn care began as a response to the massive burn casualties of World War II and scenarios concerning nuclear attack. Military professionals at Brooke Army Medical Center in San Antonio, Texas, experienced in specialized burn care during the War, began to promote burn care as a special practice of medicine. As the Vietnam War overloaded facilities with burn victims, the U.S. experienced a great expansion of specialized burn treatment facilities.

During the late 1960's, the Shriners of North America established burn centers in Boston, Cincinnati and Galveston with emphasis on burn research. During that period, effective topical antibacterial agents to be applied directly to the burned area were introduced at St. Louis (silver nitrate) and Brooke Army Medical Center (sulfamylon). By the
mid-1970's, communities were anxious to establish burn centers even prior to the availability of adequately trained specialized staff.

There is no section pertaining to burn care services in the National Guidelines for Health Planning. However, the American Burn Association is the national organization of physicians and burn team members involved in the care, research, teaching and prevention of burn injuries. There is also an International Society for Burn Injuries which meets every four years.

California Policy

Current Title 22 regulations define the general requirements of a burn center as a supplemental service within an acute care hospital setting requiring a special permit to operate.

In addition, there are certificate of need review criteria in Section 90907, Division 7, Title 22.

Health Systems Plan Highlights

Many HSAs advocate that a countywide, regional, or statewide burn registry be developed to collect data and develop patient and discharge data on a comparable reporting basis from each burn center. Additionally, they request that separate cost data for burn centers be reported in the annual Hospital Disclosure Report. Such data would assist the HSAs in determination of need for burn care centers and prevent unnecessary duplication.

Reduction of the incidence of burn injuries through community resource organizations providing education programs, with special efforts to include the elderly and children, is recommended by the HSAs.

Many of the HSAs suggest that the full range of treatment and rehabilitation services be available in the least costly setting consistent with need and quality care. They urge that appropriate triage guidelines and transfer agreements be developed and implemented including formal linkages and coordination of burn units with emergency medical services.

ANALYSIS OF DEMAND AND SUPPLY

Analysis of Demand

The burn problem in the United States, as reflected in published data, is serious. More than 2,000,000 people are injured in burn accidents each year; 70,000 are hospitalized, involving approximately 9,000,000 disability days; and, an estimated 9,000 die from their injuries. A study completed in Pennsylvania in 1972 showed that the incidence of burn
victims treated in emergency rooms and then released was ten times the rate of hospitalized burn injuries.4

There were 2,577 burn patients discharged from burn treatment facilities in California during 1977. Based on nationwide data, estimates for California suggest that approximately 6,000 burn injuries require hospitalization each year. It may be estimated that there are approximately 2,500 to 3,500 burn victims in California hospitalized each year who are not admitted to specialized burn treatment facilities.

Further incidence data are needed for planning purposes. DHEW is currently conducting studies at six demonstration sites throughout the United States to develop incidence, prevalence and etiological data on burn injuries. One of the demonstration sites includes San Diego/Imperial Counties. Initial indications are that the very young, the elderly and the disabled are more frequently burned than other groups. Also, there tends to be a higher incidence of burns in low-income housing. The six demonstration sites will not have the final data for at least another two years.

The California Burn Registry currently provides etiological data from the 18 Burn Centers in the State, but useful data describing the demographic characteristics of burn victims are virtually nonexistent. In 1981, the Burn Registry plans to begin collecting data from all hospital emergency rooms in California. This data will be collected via a short form containing questions on all burn injuries seen in the emergency room. However, based on the data from the Burn Registry for 1978, there are two population groups who require special attention. Of all burn victims, two-thirds are male. Furthermore, the age group (per 100,000 population) most frequently burned is children under five. The age group 20-24 is the second age group most frequently burned and treated in a burn treatment facility. Presumably, these trends will continue.

During 1977, the average occupancy rate for all burn treatment facilities in California was 63.4 percent. The individual rates for each facility ranged from a low of 42.9 percent at the Contra Costa County facility to a high of 124.5 percent at a facility in San Bernardino County.

In general, burn treatment facilities in California are not being fully utilized. According to CON review criteria contained in Title 22, Division 7, of the California Administrative Code, an applicant for a new burn center or an increase in the capacity of an existing burn center must demonstrate that the existing burn centers in the service area or adjacent service areas have an annual occupancy rate of 75 percent or more. Possible explanations for the low utilization include a lack of demand and the impact of a temporary shortage of nurses, during which burn patients are not admitted because they could not be properly treated.
Analysis of Supply

Although the State has a more than adequate supply of specialized burn treatment facilities, it is generally agreed that there is a chronic and critical shortage of burn care nurses.

Treatment for burn injuries is expensive: approximately $20 million annually for acute burn care in the burn treatment facilities of California. Data from the 1978 Burn Registry indicate that Medi-Cal reimbursed for 36 percent of the total number of burn cases; Medicare covered 9 percent; Workmen's Compensation, 22 percent; insurance, 23 percent; and "other payment methods," 21 percent of the burn cases. Data on cost of treatment outside burn treatment facilities are not available.

It should be noted that the cost of acute burn care is frequently only a small portion of the total cost, especially when reconstructive surgery or long-term rehabilitation is necessary (often the case with children, for whom lifetime reconstructive costs can approach $200,000 - $300,000).

The quality of burn care is difficult to measure. Outcomes must be assessed from both a short- and long-term perspective. Mortality and morbidity rates at burn treatment facilities may serve as one index of the quality of short-term care. However, whether or not a person returns to gainful employment, for example, cannot be determined or predicted during the initial acute treatment phase. An improved data base and methodology are needed before any valid comparison of patient outcome by facility can be attempted to assess quality of care of burn victims.

It is generally agreed, however, that the quality of burn care is linked to the quality of nursing care. It is no oversimplification to state that burn care "equals" nursing care. Therefore, the recruitment, training and continuing education of burn nurses is a primary concern in any discussion of quality of care. A secondary consideration is the expertise of the physicians and backup staff at the hospital sponsoring a burn treatment facility. Since burn injuries may require intervention by many different specialists, it appears that large hospitals with multispecialty staffs may be the preferred settings.

Any discussion of the continuity of care of the burn victim is related directly to the discussion of the emergency medical services. It is essential that emergency medical personnel be skilled in providing primary care for the burn victim, accurately assessing the severity of the burn and making the initial judgment as to the appropriate level of care required. Problems may develop if burns are not accurately assessed and the victim is not given the appropriate level of treatment/care. This is especially true in the case where the facility first seeing the victim either incorrectly assesses the burn as not requiring tertiary care or incorrectly feels that their facility is adequately prepared to
Burn Care

care for the patient. Therefore, it is extremely important that personnel skilled in the
treatment of burn injuries have a key role in the development of EMS education/training
programs and provide consulting services to emergency room physicians and emergency
medical field personnel.

ANALYSIS OF ISSUES

There are two issues of particular importance in burn care: prevention of burn injuries to
triage and appropriate levels of care.

Issue #1: Prevention of Burn Injuries

Most burn injuries can be prevented. Those most at risk for burn injuries are infants and
young children, males aged 20 to 24, the elderly and the disabled. Interventions for the
following four problems can eliminate over half of the smoke or burn injuries and deaths
in California:

Fires Caused by Cigarettes: Fires caused by unattended or "dropped" cigarettes can be
virtually prevented altogether. The tobacco industry adds chemical compounds to either
the paper or tobacco and has enabled a cigarette to burn continuously until it is entirely
consumed. If the compounds were not in the cigarette, or, if specially treated paper was
not present to promote this continuous burning, cigarettes would simply not be capable of
starting fires the way they often do. For example, one study has shown that a cigarette
must burn for ten minutes or more after being placed on upholstered furniture before that
cigarette starts a smoldering fire. Since approximately one half of all fire deaths in
California are caused by dropped cigarettes, the leading cause of fire deaths would be
eliminated by mandating that cigarettes be designed to discontinue burning after being lit
unless being smoked. Many burn injuries and smoke inhalation injuries, as well as deaths,
would also be prevented in this way.

Gasoline Explosions in Vehicles: A common cause of severe burns and burn deaths is
gasoline explosions that occur in vehicles. Many makes and models of autos, pick-up
trucks and so forth, are known to explode as a result of collisions, burning the occupants.
An intervention strategy which can prevent most of these kinds of burn injuries and burn
deaths is a rubber lining, or "bladder," inside fuel tanks to prevent fuel spill or leakage
during or after most collisions.

During 1978, about 12 percent of all severe burn injuries admitted to those burn treatment
facilities reporting to the State Burn Registry, occurred in vehicles. The vast majority
of these burns have been the result of gas tanks that ruptured and spilled fuel. It should
be noted that the design and placement of the fuel tanks is also a contributing factor in
the safety of the vehicle.
The rubber lined tank is not a new idea. It is currently used in the U.S. military noncombat vehicles, race cars and some European passenger vehicles. The major reason that such a device has not been developed and factory installed by the U.S. automotive industry is that the market has not expressed significant consumer concern and pressure to warrant the manufacturer's investment in research and development. Currently, at least one U.S. rubber company is researching this problem to investigate possible solutions.

**Tap Water Burns:** Hot tap water burn injuries which occur in the shower or bathtub can be prevented. If water comes out of the shower or the faucet of a bathtub at 140°F, it can cause a deep burn injury to the victim in one second. There are devices available from various manufacturers designed to automatically stop the flow of scalding water. The devices prohibit water from being delivered at the tap or the shower head if the temperature of the water is above 110°F. Once the temperature of the water goes below 110° these devices automatically adjust and allow the water to flow again. If this type of device were installed in all new construction in California, approximately 10 percent of all those scald injuries known to be treated at burn treatment facilities in California would be prevented.

**Building Fires:** Currently, California State law mandates that smoke detectors be installed in all new construction and in homes where there is substantial remodeling. This law has been in effect since October of 1975. This law does not cover old construction of public housing that was constructed prior to October of 1975. Therefore, one way to prevent smoke and fire deaths and burn injuries would be to require the installation of smoke detectors in all dwellings upon resale of each dwelling. Since it has been estimated that approximately 80 percent of all dwellings in California are resold within a five year period, it is not inconceivable that 80 percent of all homes would be protected by smoke detectors within a five year period. It has been well documented in various studies throughout the country that smoke detectors are routinely saving lives and routinely preventing smoke and burn injuries.

**Issue #2: Triage and Appropriate Levels of Care**

It is critical that burn patients be properly triaged. Since burn care is an extremely complex undertaking, there are primarily two reasons for the emphasis on appropriate triaging of patients to burn treatment facilities. First, physicians and nurses who do not routinely treat burn patients can easily be faced with and relatively unprepared for medical problems that can lead to death or unnecessary disabilities. Secondly, the quality of care in any treatment facility is largely dependent on the specialized experience presented to the burn team members by the constant admission of burn patients into that facility. Therefore, if a burn treatment facility is highly underutilized, the nurses and
other members of the burn team fail to get the ongoing experience so important in
successfully treating burn injuries. Consequently, the proper triage of burn patients to
the appropriate level of care is a critical factor in the proper utilization of the expertise
available at burn treatment facilities.

Defining the various levels of care represents one of the more controversial issues in burn
medicine today. The debate involves the criteria for placing victims with burns of varying
degrees at the appropriate level of care. It is difficult to predict the complications which
might arise for a burn victim classified as "moderate," complications which might require
the sophisticated equipment, physical setting, and staff at the tertiary level of care. On
the other hand, a patient treated at an inappropriately high level of care will
unnecessarily incur excessive costs for such specialized care, and may often have to
receive such care at a special location some distance from home and the support of
friends and family. The American Burn Association (ABA) advocates that major burns be
treated in specialized burn treatment facilities; that moderate burns be treated in the
specialized facility of a hospital with special expertise in burn care; and that minor burns
be treated on an outpatient basis.9

Present State regulations provide no directly stated relationship between the authority of
a designated burn center and the definition of a "critical burn" which appears in Section
70018, Division 5, mentioned previously. By definition (Section 70423), burn centers "shall
be used solely for the care of patients with burns or similar and related conditions." It
would appear that present State policy, as reflected in Title 22 regulations, is not specific
about the appropriate placement of burn victims with differing severity of injury; as it
reads now, all burn victims, regardless of severity of injury, are to be treated in burn
centers defined by the State as a supplemental service. This lack of specificity is not
adequate to insure that burn patients are necessarily triaged to the treatment setting
their injuries require. While it is important for severely burned patients to receive
medical treatment from specially trained staff in a specialized setting, cost
considerations suggest the importance of treating less severely injured burn victims in a
less specialized treatment setting whenever possible. State regulations should be
reviewed and adjusted to promote this proper triage of burn victims and to recognize the
appropriateness of establishing different levels of care settings. Such a review should also
consider the need for utilization data from burn treatment facilities for purposes of
estimating need and planning for future services.
POLICY RECOMMENDATIONS FOR BURN CARE

**Burn-1:** PREVENTION OF BURNS THROUGH SAFETY REQUIREMENTS FOR CONSUMER GOODS AND DWELLINGS SHOULD BE ACTIVELY PURSUED THROUGH STATE LEGISLATION AND/OR REGULATION.

One half of all burns can be prevented through safety measures concerning cigarettes, fuel tanks and water taps, and installation of smoke detectors. Many such measures can be taken immediately.

**Burn-2:** THE STATE SHOULD BAN CIGARETTES THAT DO NOT SELF-EXTINGUISH.

This action would significantly reduce the numbers of dwelling fires, forest fires, fire deaths, burn injuries and smoke inhalation injuries that routinely occur due to unattended burning cigarettes.

**Burn-3:** THE STATE SHOULD REQUIRE THAT FUEL TANKS IN VEHICLES BE MORE RESISTANT TO SPILLING FUEL AS A RESULT OF COLLISION.

To mandate the safe placement of fuel in vehicles would require that fuel tanks have safety features designed during their developmental stage, and that all fuel tanks be lined (inside) with a rubber bladder.

**Burn-4:** NEW LEGISLATION SHOULD BE ENACTED TO REQUIRE THAT ALL NEW DWELLINGS IN CALIFORNIA HAVE SCALD PREVENTION DEVICES INSTALLED AT EACH BATHTUB FAUCET AND AT EACH SHOWER HEAD.

See Burn-1.

**Burn-5:** LEGISLATION SHOULD BE ENACTED TO REQUIRE THAT SMOKE DETECTORS BE INSTALLED IN ALL DWELLINGS UPON RESALE OF THAT DWELLING AND THAT ALL PUBLIC HOUSING BE PROPERLY EQUIPPED WITH SMOKE DETECTORS.

See Burn-1.

**Burn-6:** AN INTERDEPARTMENTAL TASK FORCE SHOULD BE ESTABLISHED WITH REPRESENTATIVES FROM THE DEPARTMENT OF HEALTH SERVICES, OSHPD AND APPROPRIATE PROFESSIONAL ORGANIZATIONS TO REVIEW STATE DEFINITIONS, REGULATIONS AND POLICY CONCERNING APPROPRIATE TRIAGE OF BURN PATIENTS.

Elimination of differences between current State and professional terminology is basic to specification and collection of data, to planning and to evaluation of appropriate placement of patients.
NOTES

1. These definitions were based on definitions included in a document by I. Feller and K. Crane, Planning and Designing a Burn Care Facility, the National Institute of Burn Medicine, Ann Arbor, Michigan, 1971.

2. Adapted from "Specific Optimal Criteria for Hospital Resources for Care of Patients with Burn Injury," American Burn Association, April 1976.


4. I. Barancik, and M. Shapiro, "Pittsburgh Burn Study," Environmental Health Program, Department of Public Health Practice, Graduate School of Public Health, University of Pittsburgh, 1972.


DEFINITIONS AND SCOPE OF SERVICE

It is intended that the primary care section of the Plan will ultimately encompass the full range of health services relating to care of the heart and blood vessels excluding cardiovascular surgery services since the full range of services are not subject to the certificate of need process. A section in primary care on cardiac care would bring together all factors of medical treatment of the entire circulatory system and could focus on risk factors and benefits from altering lifestyle. In response to the high cost and the continuing development of new procedures, however, this section now focuses on two procedures closely associated with coronary heart disease (CHD):

- diagnostic procedures
- aorto-coronary bypass (A-C Bypass) surgery.

Questions raised here concerning economics and/or efficacy relate primarily to these two procedures. However, it is emphasized that such questions may and should be raised by health planning about any form of cardiac care (e.g., Holter monitoring, EKGs, diet therapy, exercise).

Coronary heart disease refers to disease of the coronary arteries which interfere with the supply of blood to the heart muscle (myocardium).

Open-Heart Surgery is a surgical procedure in which the patient requires extracorporeal bypass (circulation of the blood by a heart-lung machine) while the heart or surrounding vessels are repaired.

Aorto-Coronary Bypass Graft (A-C Bypass) is a surgical treatment for heart disease in which veins taken from a person's leg are grafted between the aorto and coronary artery, bypassing the narrowed portion of the artery and bringing blood to the heart.

"Open-heart surgery" and A-C Bypass surgery are often used synonymously, but this is technically inaccurate. A-C Bypass is only one form of open-heart surgery, however, it is the most common; others include repair and prevention of acquired and congenital heart disease.

DIAGNOSTIC TECHNIQUES

Cardiac Catheterization is an invasive diagnostic procedure for patients, both adult and pediatric, with heart disease or suspected heart disease. The following procedures are included within the general term "Cardiac catheterization:"
Cardiovascular Surgery

Cardiac Catheterization: A catheter (thin tube) is inserted into the heart chamber with the aid of fluoroscope so that pressure may be measured and blood samples taken. In addition, extensive measurement of cardiac function can be performed to characterize ventricular performance, valve disorders and or intracardiac defects.

Angiocardiography: An x-ray procedure in which contrast material is injected into a heart chamber or vessel to provide outline of anatomic or functional abnormalities.

Coronary Arteriography: An x-ray opaque fluid is injected into the coronary artery while x-ray motion picture photography records passage of the dye, outlining arterial disorders.

Other procedures include:

Treadmill (exercise) stress test: A patient's vital signs, EKG, blood pressure, pulse and physical status is monitored before, during and after levels of stress on a treadmill exercise machine. Standardized data are available for comparison.

Holter Monitoring: The patient wears a belt or shoulder strap with EKG leads to a portable EKG recorder or transmitter in order to monitor the patient's heart response during routine activities. Patients usually keep a log of activities.

Echocardiography: Ultra sound is used to provide a graphic videoscope of cardiac activity. New multidimensional techniques are being studied. Procedure is noninvasive.

Phonocardiography: The heart sounds that are ordinarily heard through a stethoscope are recorded with pulse and response. Procedure is noninvasive.

Radioisotope Scanning: Radioactive isotopes are injected into the blood stream. The rate of movement is recorded as they pass through the coronary vessels and they provide quantitative evidence of the amount of blood being distributed. Procedure is noninvasive.

Electrophysiology and Myocardial Biopsy are also done in cardiac catheterization laboratories.

Closed Heart Surgery and Vascular Surgery standards are not included at the present time in either the National Guidelines or the California State standards.
Cardiovascular Surgery

Cardiac Catheterization Laboratories

- **Dedicated**: one room dedicated primarily to cardiac catheterization and used rarely, if at all, for noncardiac procedures.

- **Multipurpose**: multipurpose special procedure rooms where cardiac catheterization, angiography, and coronary arteriography are performed in addition to other noncardiac procedures.

Cardiac catheterization and A-C Bypass surgery, plus other types of cardiac surgery, constitute "cardiovascular surgery," currently subject to State regulation under Division 7, Title 22, CAC, Section 90010 and 90009:

Cardiovascular Surgery Service means "the performance of laboratory procedures for obtaining physiologic, pathologic and angiographic data on patients and cardiovascular operative procedures, each supported by appropriate staff, space, equipment and supplies. It is the intent of this definition that the two aspects of this service shall not exist separately." (Division 5, Title 22, Section 70431 CAC)

Adult and Pediatric Cardiovascular Services: It is important to consider adult and pediatric services in planning since the nature of the cardiovascular problems for pediatric patients is significantly different from adults; the former being closely related to congenital anomalies and acquired heart disease and the beginnings of various forms of heart disease generally considered adult. State standards for centers providing services to children are published by the California Children's Services.

National Trends

Coronary heart disease is the leading cause of death and disability in American adults. Coronary heart disease accounts for one-third of all deaths in people over 35 years of age. It is marked by the accumulation of undesirable materials in the coronary arteries, causing obstruction in these arteries and damage to the heart (myocardial infarction). Latest estimates indicate that in the United States approximately 29 million persons are afflicted with cardiovascular diseases which are responsible for more than 1 million deaths each year. This represents more deaths than for all other causes combined.

Major diseases of the cardiovascular system include: high blood pressure; arteriosclerosis; stroke; cardiomyopathies; arrhythmias; forms of generalized disease; rheumatic heart diseases and congenital defects. In terms of disability, coronary heart disease problems include chest pains (angina) associated with physical or emotional stress, heart failure and fear of engaging in normal activities. Consequently, heart disease ranks as the leading cause of activity limitation for adult Americans.

There are some definitional difficulties relating to which diagnostic procedures are included in the inventories; these will be discussed later in this section.
For every 1,000 people in our traditional work force, 100 are limited in major activity and of these, 13 have limiting heart disease. This represents a significant loss of life and activity—estimated at $5 billion annually.

Heart disease poses a particularly interesting challenge for health planning policy since a large amount of heart disease and disability can apparently be prevented. Many national programs have been implemented to reduce mortality from coronary heart disease. These have resulted in a decrease of the mortality from this disease by approximately 20 percent during the 1970’s. Many hospitals and clinics have well developed preventive and rehabilitation programs for patients with CHD.

Although it is difficult to determine the true prevalence of CHD, there are a number of risk factors that are thought to be related to the incidence of CHD. The six major CHD risk factors are identified below and are susceptible to management:

- diets high in saturated animal fats and elevated serum cholesterol and triglyceride level
- undetected or inadequately treated hypertension
- smoking
- diabetes mellitus
- obesity
- activity level.

The use of cardiovascular surgery services has greatly increased in the last 10 years due to the acceptance of aorto-coronary (A-C) bypass surgery, a procedure which relieves, in most instances, certain symptoms of coronary heart disease. This procedure also prolongs life and reduces morbidity. High risk candidates are aided by the use of the intra-aortic balloon pump. Medical treatment is primarily reserved for those patients whose anatomy is not conducive to A-C bypass.

In the single decade since its initial application in clinical settings, aorto-coronary bypass surgery now represents two-thirds of all open-heart surgical procedures performed annually in the U.S.

An estimated 20,000 open-heart surgical procedures were performed throughout the nation in 1971\(^1\) possibly increasing to an estimated 60,000 in 1976 and possibly 70,000 in 1977.\(^2\),\(^3\) The estimated average patient's charge was $12,500.\(^3\)

There has been a remarkable improvement in the use of diagnostic procedures to evaluate risk factors and arterio-physical conditions. In addition to coronary arteriography, the use of treadmill stress tests, Holter monitoring, echocardiograms, phonocardiograms and radioisotope scanning are being used. Recently there has been an increased research emphasis on several of these noninvasive diagnostic techniques.
The evaluation of the benefits of bypass surgery have been the object of considerable ongoing research. Even crude cost/benefit analysis can indicate a path to increased effectiveness of medical/surgical intervention. Some of these benefit/cost reports are discussed later in this section of the Plan.

California Trends

Eighty-one hospitals with 126 operating rooms performed 15,257 cardiovascular surgeries (CVS) (adult and pediatric) in 1977. Ninety-two hospitals with 127 operating rooms performed 15,640 surgeries in 1978.\(^4\) There appears to be a leveling off of demand for adult and pediatric surgery services.

There has been an increased emphasis on the selection and monitoring of patients for CVS as well as appreciable work toward lower diagnostic costs including evaluation of noninvasive techniques. However, the charges for coronary angiography by itself in California in 1978 are estimated as $63,300 using cost data estimated from Hansing.\(^5\)

A statewide total cost of CVS and related angiography which includes hospital charges, cardiologist, surgeons and other specialists is estimated as $279,198,000. The statewide cardiovascular surgery rate was 71.5 per 100,000 population in 1977 and 70.9 in 1978.\(^b\)

The 1978 nationwide rate was 34.1. Comparison should be made with caution since data are not readily available on the number of CVS patients who reside outside the State and receive care in California hospitals.

Table VII-15 displays the number of surgeries in each of the designated service areas. Also displayed here are the number of hospitals providing the service and the cities. Patient origin data are not available which limits the capability of accomplishing systematic analysis. The concentration in urban areas is evident.

Table VII-16 lists the cardiac catheterization facilities by volume of procedures for 1978. It is noted that in 1978, 90 percent of all California laboratories were below the California certificate of need standard volume of 500 adult procedures annually and 52 percent are below the suggested California licensure volume.

Table VII-17 lists the cardiovascular surgery facilities by volume of procedures for 1978. It is noted that in 1978, 85 percent of all California facilities were below the California certificate of need annual volume of 350 adult procedures and 47 percent were below the suggested California licensure volume. For pediatric services only two facilities were above an annual volume of 61 procedures. The statewide average volume for all pediatric service facilities was 38 compared to the California standard volume of procedures for certificate of need of 130.

\(^b\) Finklar gives 1975 data for California CV surgeries as 14,835; the surgery rate was 71.0 (see p. 264, Inquiry, Fall 1979).
<table>
<thead>
<tr>
<th>HSA AREAS</th>
<th>NUMBER OF HOSPITALS WITH CSS</th>
<th>CARDIOVASCULAR SURGERIES PER 100,000 POPULATION</th>
<th>CITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern California #1</td>
<td></td>
<td>1231</td>
<td>Sacramento, Modesto, Stockton</td>
</tr>
<tr>
<td>Golden Empire #2</td>
<td>a</td>
<td>5</td>
<td>Deer Park, San Francisco</td>
</tr>
<tr>
<td>North San Joaquin #6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Bay #3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Bay #4, Alameda/ Contra Costa #5</td>
<td>a</td>
<td>16</td>
<td>Redwood City, Concord, Oakland, Palo Alto</td>
</tr>
<tr>
<td>Santa Clara #7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid Coast #8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central California #9</td>
<td></td>
<td>3</td>
<td>Fresno, Bakersfield</td>
</tr>
<tr>
<td>Ventura/Santa Barbara #10</td>
<td>a</td>
<td>38</td>
<td>Santa Barbara Ventura, Los Angeles</td>
</tr>
<tr>
<td>Los Angeles #11</td>
<td></td>
<td>3</td>
<td>Loma Linda, San Bernardino</td>
</tr>
<tr>
<td>Inland Counties #12</td>
<td></td>
<td>3</td>
<td>Anaheim, Fullerton, Fountain Valley, Santa Ana, Newport Beach</td>
</tr>
<tr>
<td>Orange County #13</td>
<td></td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>San Diego #14</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Statewide</td>
<td></td>
<td>71.5</td>
<td>24 Cities</td>
</tr>
<tr>
<td>Nationwide</td>
<td></td>
<td>34.1</td>
<td></td>
</tr>
</tbody>
</table>

Source: California Hospital Annual Report, Office of Statewide Health Planning and Development. See Notes 15 and 16.

a Joint HSA service areas.
### TABLE VII - 16

CARDIAC CATHETERIZATION FACILITIES BY VOLUME OF PROCEDURES PROVIDED
CALIFORNIA, 1978
INCLUDES BOTH PEDIATRIC AND ADULT SERVICES

<table>
<thead>
<tr>
<th>ANNUAL NUMBER OF PROCEDURES</th>
<th>TOTAL FACILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Facilities</td>
</tr>
<tr>
<td>0 - 49</td>
<td>19</td>
</tr>
<tr>
<td>50 - 99</td>
<td>19</td>
</tr>
<tr>
<td>100 - 149</td>
<td>28</td>
</tr>
<tr>
<td>150 - 259</td>
<td>41</td>
</tr>
<tr>
<td>260 - 299</td>
<td>29</td>
</tr>
<tr>
<td>300 - 399</td>
<td>35</td>
</tr>
<tr>
<td>400 - 499</td>
<td>6</td>
</tr>
<tr>
<td>500 - 599</td>
<td>10</td>
</tr>
<tr>
<td>600</td>
<td>9</td>
</tr>
</tbody>
</table>

Source: Office of Statewide Health Planning and Development.
<table>
<thead>
<tr>
<th>ANNUAL NUMBER OF PROCEDURES</th>
<th>TOTAL FACILITIES</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Facilities</td>
<td>Percent of Facilities</td>
<td>Cumulative Percent</td>
</tr>
<tr>
<td>0 - 99</td>
<td>24</td>
<td>26</td>
<td>47</td>
</tr>
<tr>
<td>100 -149</td>
<td>19</td>
<td>21</td>
<td>73</td>
</tr>
<tr>
<td>150 -259</td>
<td>24</td>
<td>26</td>
<td>77</td>
</tr>
<tr>
<td>260 -299</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>300 -399</td>
<td>13</td>
<td>15</td>
<td>92</td>
</tr>
<tr>
<td>400 -499</td>
<td>3</td>
<td>3</td>
<td>95</td>
</tr>
<tr>
<td>500 -599</td>
<td>3</td>
<td>3</td>
<td>98</td>
</tr>
<tr>
<td>600</td>
<td>2</td>
<td>2</td>
<td>100</td>
</tr>
</tbody>
</table>

Note: Facilities with less than 7 procedures have been deleted since occasional emergencies occurred.
Estimates were made in California Statewide Health Facilities and Services Plan 1980-1985 for the 1985 resource requirements. These are summarized in Table VII-18. The statewide surgery services shown here give a very large excess capacity for adult and pediatric services combined. Recently data for each California Health Services Area report both adult and pediatric services and show large excess capacity for both adult and pediatric CV services. 

National Policy

Current federal policy concerning cardiac catheterization is expressed in the National Guidelines for Health Planning:

- there should be a minimum of 300 cardiac catheterization procedures performed annually in any adult cardiac catheterization unit, of which at least 200 should be intracardiac or coronary catheterization, within three years of initiation
- there should be a minimum of 150 cardiac catheterizations performed annually in any pediatric cardiac catheterization unit within three years after initiation
- there should be no new cardiac catheterization units opened in any facility not performing open-heart surgery
- there should be no additional adult cardiac catheterization units opened unless the projected number of studies per year in each existing unit is greater than 500 based on the current number of procedures. No additional pediatric units should be opened unless the number of studies per year in each existing unit is greater than 250.

Policy concerning CV surgery from the same source:

- there should be a minimum of 200 open-heart procedures performed annually within three years after initiation, in any institution in which open-heart surgery is performed for adults
- there should be a minimum of 100 pediatric heart operations annually within three years after initiation in any institution in which pediatric open-heart surgery is performed, of which at least 75 should be open-heart surgery
- there should be no additional open-heart units initiated unless each existing unit in the health service area(s) is operating and is expected to continue to operate at a minimum of 350 open-heart surgery cases per year in adult services or 130 pediatric open-heart cases in pediatric services.

### TABLE VII - 18

**CARDIOVASCULAR SURGERY SERVICES**  
**RESOURCE REQUIREMENTS**  
**ADULT AND PEDIATRIC COMBINED (1)**

<table>
<thead>
<tr>
<th></th>
<th>Existing Cardiac Catheterization Labs (1977)</th>
<th>Estimated Cardiac Catheterization Labs Needed 1985</th>
<th>1985 Excess</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Statewide</strong></td>
<td>185</td>
<td>94</td>
<td>91</td>
</tr>
<tr>
<td><strong>Existing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiovascular</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgical Units</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1977)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Statewide</strong></td>
<td>116</td>
<td>54</td>
<td>62</td>
</tr>
</tbody>
</table>

(1) 1977 data are not available to separate adult and pediatric services; they are available for 1978 and 1979, however, estimates of resource requirements have not been completed.

**Note:** These resource requirements were based upon the plan development guidelines "Plan Development Manual and Statewide Policies" June 1, 1977 OSHPD. Projection of both cardiovascular surgeries and catheterization were made based on past patterns and the anticipated growth in the population. The number of units for laboratories required for each HSA or group of HSAs was based on the California State Regulations, Division 7, Title 22, CAC minimum annual volumes. The excesses shown on Table VII-9 are the differences between the number of units or laboratories existing in 1977 and the estimated need in 1985.

**Source:** California Statewide Health Facilities and Services Plan 1980-1985, Office of Statewide Health Planning and Development, March 1980.
The Intersociety Commission on Heart Disease Resources, the Joint Commission on Accreditation of Hospitals and other groups have developed voluntary guidelines for individual physicians, physician teams and hospitals, designed to assure maintenance of skills and operating efficiencies.

**California Policy**

Policy concerning minimum volumes and relationships between surgery and catheterization are found in Division 5 and 7, Title 22, California Administrative Code:

<table>
<thead>
<tr>
<th></th>
<th>Licensure (Division 5)</th>
<th>Certificate of Need (Division 7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catheterization:</td>
<td>Minimum of 260 procedures per year</td>
<td>No additional units unless each unit has an annual volume of 500 procedures</td>
</tr>
<tr>
<td>Surgery:</td>
<td>Minimum of 150 procedures per year</td>
<td>No additional units unless each unit has an annual volume of 350 procedures</td>
</tr>
</tbody>
</table>

Title 22 also specifies that the service area for the planning and review for cardiac catheterization and open-heart surgery services shall be composed of specially defined service areas which cover multiple health service area boundaries.

**Comparison of Guidelines**

The Federal Guidelines are somewhat ambiguous in definitions of terms; for example, what constitutes the 100 difference between the 300 minimum and the 200 "intracardiac" or coronary catheterizations?

The California Guidelines are likewise ambiguous since the licensure volumes do not distinguish between adult and pediatric services. It seems reasonable that the regulations should be changed to specify minimum standards for both adult and pediatric services.

It is important to compare these two sets of guidelines despite the definitional problems and differences in volume of procedures. Table VII-19 displays a summary of the Guidelines. The California Guidelines for minimum volume of services for certificate of need review and planning are nearly identical with the Federal Guidelines where the standard is related to "no additional units (should be) opened unless each unit is operating at (stated volume)."
### TABLE VII - 19

**COMPARISON OF GUIDELINES FOR CARDIOVASCULAR SURGERY SERVICES**

<table>
<thead>
<tr>
<th>PROCEDURE</th>
<th>FEDERAL GUIDELINES a</th>
<th>STATE STANDARDS b</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Operational Minimums</td>
<td>(Licensure)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operational</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minimums</td>
</tr>
<tr>
<td>CARDIAC CATHETERIZATION</td>
<td>300</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>Adult</td>
<td>Adult</td>
</tr>
<tr>
<td></td>
<td>150</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>Pediatric</td>
<td>Pediatric</td>
</tr>
<tr>
<td>CARDIOVASCULAR SURGERY</td>
<td>200</td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>Adult</td>
<td>Adult</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>130</td>
</tr>
<tr>
<td></td>
<td>Pediatric</td>
<td>Pediatric</td>
</tr>
</tbody>
</table>

---

a) Published in the Federal Register, March 28, 1978.

b) From Division 7, Title 22, CAC, Sections 90009 and 90010.
Research in support of the Guidelines is an ongoing process. (A brief summary is included in the paragraph "Efficacy," to follow.) There are many supporting studies and some opposing studies concerning the volume of services for rational resource allocation. For future California State Plans a change in volume standards may be advisable; however for this Plan there is insufficient evidence to alter the regulations in regard to volume standards.

ANALYSIS OF DEMAND AND SUPPLY

Currently demand and supply for both cardiac catheterization and cardiovascular surgery are the product of a long and complex chain of events. The following variables appear to influence the demand and supply of these services in significant ways:

- epidemiology of coronary heart disease and other CV disorders: the development of the disease in the population, its incidence, prevalence and how it develops over time
- clinical decision making: the indicators and general approach used by physicians to determine whether a patient should be treated medically or referred to surgery
- health care finance: the economic incentives in patterns of reimbursement
- medical technology development: innovations in the diagnosis and treatment of coronary heart disease which influences types of equipment and facilities available
- public values and beliefs: public knowledge and concern about the coronary heart disease and attitudes towards its treatment
- patient self care: including education; diet; exercise; smoking and stress.

The present methodology used for allocating resources is based on the number of procedures reported in the previous year and projection of the expected utilization in 1985 taking into account the increase in population. Projected needs are presently reviewed annually. It is suggested here that the supply and demand of open-heart surgery are simultaneously determined. It may not be possible to influence supply without influencing demand and vice versa, for the following reasons.

First, the time course in the development of disease is critical for understanding the health system problem. By the time a medical decision is made to refer a patient to cardiac catheterization and open-heart surgery, coronary heart disease has often reached an advanced stage. Service requirements are extensive and costly.
Attempting to simply influence only the facility investment decision or medical decision making, independent to changing other factors, may not be effective or realistic, and certainly comes very late in sequence.

Secondly, the development of adult coronary heart disease and other CV disorders most often extend over a long period of time and is conditioned by physiological, hereditary and environmental variables which influence individual susceptibility. Environmental factors in home, job and community may cause stress that may exacerbate the other predisposing variables. There may be time, over the natural course of the disease, to develop and apply alternative preventive regimens, but until years of public education have been accomplished and further explanation of coronary artery disease and its atherosclerotic process is better understood we must continue to use the benefits of coronary artery bypass surgery.

Third, reimbursement mechanisms influence supply by allowing, at times, inefficient, low volume services to remain economically viable. Payment by procedure based reimbursement creates the incentive to provide the procedure. It is difficult to identify incentives to merge or consolidate services.

In summary, the supply and demand for cardiac catheterization and open-heart surgery exhibit many of the features characteristic of a noncompetitive, technologically oriented, medical care market. Certificate of need and planning enter into the process of medical technology diffusion far too late to play a decisive role.

Despite the complex problems involved, any proposed changes in certificate of need procedures should emphasize minimum regulation.

ANALYSIS OF ISSUES

Six issues are central to policy development for cardiovascular services: Efficacy; Management and Organization of Cardiovascular Surgery Services; Revision of California Regulations; Prevention; Quality; and Regionalization.

Issue #1: Efficacy

Cardiovascular surgery has contributed in a major and salutary way to the management of patients with coronary disease and other CV diseases. It is an accepted therapeutic procedure that requires continuing study of risk factors, survival evaluation and costs. It is not possible in this plan to summarize the vast recent scientific studies on the efficacy of bypass surgery; thus a few research reports have been selected that appear to be illustrative.

The prolongation of life and the risk of mortality following surgery has been evaluated giving survival rates between 81.1 and 91.7 percent after five years. Not only have the CV surgery procedures been effective but rapid progress has also been made in nonsurgical CHD management. In the past ten years the mortality rate has decreased 2.5 percent per year.
Progress in preventive medicine is also related to the scientific analysis noted above. Breslow¹² states that "diseases of the heart and blood vessels are 30 times more common among cigarette smoking men with high blood cholesterol levels, high blood pressure and glucose intolerance than among men without those characteristics" and "aggressive treatment of high blood pressure in a group of men 47 to 54 years of age cut in half the incidence of CHD during a four year period."

In addition to survival, the efficacy of a given medical surgical procedure can be examined in terms of retention or resumption of gainful employment. As with the survival reports above, there are numerous studies of which the Anderson et al.,¹³ and Rimm et al.,¹⁴ are but examples. Anderson¹³ reports that for the age categories 55, 56 to 59 and 60 years or older at the time of aorto-coronary bypass operation, 90 percent, 68 percent and 44 percent respectively resumed employment and were employed four years later.

A third measure of the efficacy of CV surgery in addition to longevity and capability of returning to work is disability status. Many persons having significant preoperative disability have large increases in activity level after surgery independent of work status.

Since the efficacy of aorta-coronary bypass surgery is accepted together with relatively high costs it is essential that the large investment in equipment and skills be managed efficiently. Further, a continuing priority should be placed on epidemiologic CHD research.

**Issue #2: Management and Organization of Cardiovascular Surgery Services**

The Federal Guidelines state that "the safety and efficacy of laboratory performance requires a case load of adequate size to maintain skill and efficiency of the surgical team." In addition there appears to be a minimum number of coronary catheterization and cardiovascular surgeries per year to assure economical operations of the facility.

Since the publication of this guideline, additional evidence both in support of and in opposition to has been reported. The overriding consideration is a question of regionalization, not an exact specific number of procedures. (For equitable distribution in California the certificate of need sets a specific number of procedures for the addition of "new" facilities.) Three reports are summarized here which contain many recent additional references. These were selected to illustrate different viewpoints and are of a recent vintage, (1978-1980). Luft¹⁵ reported a study showing that there is a relationship for CV surgery between a hospital's surgical volume and its surgical mortality. Hospitals with 50 to 100 operations per year had a 40 percent increase in mortality rate over the expected values.

McGregor et al.,¹⁶ examined the size versus cost and effectiveness in open-heart surgery. They report surgical costs as a function of volume of operations per year. "The cost (per operation) can be seen to be extremely high in any center carrying out less than 50 procedures per year. Thereafter it falls more gradually as turnover rises and it is clear that only marginal financial advantage is to be gained by forcing turnover above 100 operations per year."
Hansing et al., 7 reviews a number of studies done to evaluate the relation of the risk or coronary angiography with the volume of procedures. They state "the risks specifically attributable to coronary angiography cannot be easily determined." However, there did not appear to be any correlation between volume and mortality rate. Hansing concludes that "setting a minimum number of cardiac catheterizations necessary for either economic use or safety is not warranted at this time and would adversely affect the current study of this valuable diagnostic study."

McGregor's study 16 is in direct disagreement with Hansing. However, Hansing's data did not include any hospitals having fewer than 200 procedures.

The recent evidence cited above serves notice that the establishment of volume standards is at least an ongoing process where both cost and benefits should be methodically evaluated. Most of the authors support regionalization of cardiovascular surgery services. It is essential that the effort in this direction involve physician specialists, hospital administrators, financial experts and medical research groups. Governmental agencies can assist these persons in establishing the necessary equitable resource allocation standards.

**Issue #3: Revision of California Regulations**

As previously noted, the California regulations specifically limit the allocation of resources to cardiovascular surgery involving extracorporeal bypass. However, there is appreciable concern about differences between federal and State regulations. The Federal Guidelines use the ambiguous term "intracardiac" when describing cardiac catheterization procedures. The California Office of Statewide Health Planning and Development interprets cardiac catheterization as left heart catheterization i.e., left ventriculography and coronary arteriography. Since approximately 2/3 of all adult open-heart surgeries involve left ventricular malfunction, both federal and California statutes focus on this problem. Some revision of definitions and added definitions appears essential for systematic planning.

One complication is that quite a number of hospitals have offered "vascular and closed heart" surgery for many years. Some of these hospitals are using the annual "count" of these procedures to request the addition of "aorto-coronary bypass surgery."

Another complication is that several hospitals are performing both adult and pediatric surgeries as well as closed heart and vascular surgery in the same operating room. A study by specialists is needed to determine adequate volumes of service.

If a statewide task force is appointed to develop revised regulations, it will be necessary to evaluate the possible need for distinction in determining resource requirements between dedicated and multipurpose cardiac catheterization rooms.
A multipurpose laboratory could maximize the use of space and angiographic equipment which is common to all invasive procedures, including cardiac catheterization. The multipurpose laboratory or operating room could be quite cost effective. At present there is no recognition of the benefit of granting a multipurpose room to a hospital with existing high volume to handle the load between 500 and 1,000 procedures, rather than opening a new cardiovascular center with one dedicated laboratory.

**Issue #4: Prevention**

Cardiac catheterization and surgery for coronary heart disease are interventions that are usually performed last in the adult disease process. They do provide relief but carry risks in themselves and are expensive to perform. The procedures do benefit patients but as an approach to the leading cause of death in the United States, California and every California HSA (Chapter IV), they do not offer a comprehensive basis for public policy.

In addition to an ongoing program of cardiovascular surgery and postoperative treatment the principles in Chapter II of this Plan suggest supplementary action: a rigorous pursuit of prevention.

Two preventive approaches are developing, the first expressly related to control of CHD, the second suggesting potential for modification of all stress related disease.

One approach focuses on the control of such major risk factors as diet, exercise, obesity, smoking, elevated blood pressure and elevated cholesterol — through reduction of cigarette smoking, discouraging diets of saturated fats and encouraging exercise. For those who already have CHD, particularly middle aged people, the attempt is to lower risk factors through hypertension control, use of medication, weight loss, exercise and nutritional counseling. Programs aimed at risk factor control generally emphasize mass screening of high risk individuals, patient education and individual behavior and lifestyle change.

Another approach attempts to strengthen social support networks and groups to enable individuals to better cope with and adjust to stress. The conscious use of social networks in prevention is a new development (see Chapter II, Note 10). It focuses on maintaining, strengthening or creating social support networks which buffer individuals and communities from stress caused by critical life events and destructive social and environmental processes.

The distinction between prevention programs based on risk factor control versus those based on social networks is not hard and fast, since both types of programs include aspects of the other. Efforts at risk factor control often use supportive groups, while supportive groups often help individuals modify or change the behaviors associated with the risk factor.
Dr. Russ Egger in Indiana has developed a health hazard appraisal system which has been used since 1965. It is used to quantify the individual life expectancy based on physical tests and health habits. Egger states: "The epidemic of arteriosclerotic heart disease turned a significant corner in 1968, and now this greatest plague that mankind has known has been abating. Mortality from this cause is down nearly 18 percent in the last four years. Dr. Hall believes that this change has resulted from the health advocacy of physicians and others in effecting control of blood pressure, discouraging cigarette smoking, and encouraging an active physical life and sensible weight control."

No systematic information exists at the State level concerning the range of preventive services and programs currently ongoing in California. An inventory is a critical and necessary first step to develop a statewide policy and plan to reduce the need for cardiovascular surgery.

One example of the study of the effects of changing life style and health habits is the effect of reduction of smoking on coronary heart disease.

Kleinman et al. reports that a 20 percent decrease in coronary heart disease mortality took place between 1965 and 1976. This decline was fairly uniform across all four sex/color groups for every five year interval between 35 and 74. Changes in smoking habits accounted for between 8 and 10 percent of the decline for the age group 45-54.

Issue #5: Quality

One of the roles of the California governmental agencies in planning for Cardiovascular Surgery Services (CSS) is to direct attention to and foster resource allocations for those services which would permit physicians, other providers and consumers to monitor quality of care in an increasingly systematic manner.

It is not possible in this Plan to address all of the quality of care issues. Thus, three specific areas of emphasis are examined: (1) identify the level of patient risk; (2) the development of a Statewide Cardiovascular Surgery Registry; and (3) longitudinal data on patient health status.

It appears essential that a minimum set of standardized data be obtained for each California CSS patient. The occlusion score used by Hoffman is one example of the type of data needed. With an occlusion score the patient outcomes in terms of mortality and added complications due to procedures could be evaluated.

Second, the existing individual hospital review committees need statewide data to monitor these CSS programs effectively. It is suggested that a Statewide Registry be developed to emphasize a meaningful balance between risk, benefit and cost.
Third, in addition to the data noted above, longitudinal data are needed for each patient on the status of employment disability, pain alleviation and specific measures of quality of life. These data could be included in the Cardiovascular Surgery Services Registry.

**Issue #6: Regionalization**

A statewide task force is needed to advise OSHPD on the benefits to be obtained from regionalization of cardiovascular surgery services. Since revising the regulations and establishing a Statewide Cardiovascular Surgery Registry are intricately interwoven with the problems of regionalization it is suggested that the same task force address all three issues. Some factors to be considered are:

**Pediatric Services**

- Is there a satisfactory network of transportation services (both air and ground) available to transport most pediatric patients from sparsely populated areas of the State to regional centers where highly specialized teams and equipment are available?

- Specialist developing plans for regionalization should ask themselves: What extra equipment and additional skills are needed for pediatric surgery when compared with adult surgery? Should pediatric and adult surgery services be performed in the same operating room?

- Is it reasonable and prudent to have 9 pediatric cardiovascular surgery hospitals in Los Angeles County performing an average of 38 surgeries per year?

- Is it reasonable and prudent to have 18 out of 24 (75 percent) of the hospitals in California providing pediatric cardiovascular surgery services operate at less than one-half the federal guidelines minimum volume?

**Adult Services**

- Should existing, relatively high volume, well developed facilities be considered for expansion? Some hospitals already performing 200 surgeries per year may be better equipped to expand to meet the needs rather than recommending that a hospital with 40 surgeries expand to an acceptable level?

- Should consideration be given to the promotion of medical teams in a facility with a small volume of surgeries to participate in the surgeries at high volume hospitals? Is it possible and prudent to discontinue operations at some facilities with low volumes?
What criteria can be used to examine consolidation of adult cardiac catheterization services? (In 1978, 38 facilities performed less than 100 procedures.)

What resource allocation guidelines can be developed to explore consolidation of adult CV surgery facilities? (In 1978, 24 facilities performed less than 100 adult surgeries.)

What minimum cost data can be gathered and analyzed in a systematic manner to assist hospital utilization review committees to monitor their cardiovascular surgery services?

Which of the "new" noninvasive coronary diseases diagnostic procedures will be most effective and what volume of services will be needed?

During the period of time for the task force to report their findings and then proceed with implementations, immediate action is needed to encourage consolidation of services in a systematic manner. Given: (1) the present sizeable excess of capacity for CV services; (2) the high costs involved; and (3) the large percent of facilities operating at volumes appreciably below the suggested minimum, immediate action on consolidation appears warranted.
POLICY RECOMMENDATIONS
FOR CARDIOVASCULAR SURGERY

Cardiac-1: Prevention of Cardiovascular Disease should receive increased emphasis: some public education programs should focus on the sizeable effect of self-care on this disease and related premature mortality.

The increasingly high cost of CV Surgery Services will necessitate continuing efforts to reduce the incidence of coronary heart disease through less costly and earlier preventive interventions.

Cardiac-2: The California Office of Statewide Health Planning and Development should take immediate action to encourage consolidation of Cardiovascular Surgery Services, including the preparation of approved Multi-HSA Plans, development of criteria for appropriateness review and the development of incentives.

Sufficient evidence of the potential relative effectiveness and efficiency of regionalization of CV Surgery Services has been made available. Initiation of planning and implementation stages is now appropriate.

Cardiac-3: A statewide task force should be designated composed of physician specialists, other providers, consumers and governmental representatives to advise OSHPD on: (1) changes in Cardiovascular Surgery Services regulations; (2) development of a statewide Cardiovascular Surgery Registry; and, (3) regionalization.

Major planning and implementation strategies will require broad input and consensus through all stages. An advisory mechanism exclusively dedicated to these CV Surgery issues will be necessary. Such a Task Force should specifically consider the feasibility of the Medi-Cal program entering into selective provider agreements in order to regionalize CV Surgery Services to Medi-Cal beneficiaries in appropriate service areas. The goal of such selective contracting would be to increase access to and quality of Medi-Cal reimbursed CV Surgery Services.
NOTES


4. 1977 Inventory of Cardiac Catheterization and Cardiovascular Surgeries UH 064, December 3, 1979, California, Office of Statewide Health Planning and Development.


6. 1978 Inventory of Cardiac Catheterization and Cardiovascular Surgeries UH 554 (78B) February 25, 1980, California, Office of Statewide Health Planning and Development.


DEFINITIONS AND SCOPE OF SERVICES

Establishment of a new licensure category of "general acute care/rehabilitation" hospital in 1978 justifies discussion of "acute rehabilitation" as a distinct service of interest to planning.

Assembly Bill 2540 (1978) added a new category of facility licensure: General acute care/rehabilitation hospital:

"a health facility having a duly constituted governing body with overall administrative and professional responsibility and an organized medical staff which provides 24-hour inpatient care, including the following basic services: medical, nursing, laboratory, radiology, pharmacy, dietary, occupational therapy, physical therapy, rehabilitation, audiology, speech pathology with surgical and anesthesia services provided through a contract with another facility having such services."\(^1\)

Title 22, Section 70595 of the California Administrative Code defines a "rehabilitation center" as follows:

"A rehabilitation center means a functional unit in a general acute care hospital for the provision of those rehabilitation services that restore an ill or impaired person to the highest level of self-sufficiency or gainful employment of which he is capable in the shortest possible time, compatible with his physical, intellectual, and emotional or psychological capabilities and in accord with planned goals and objectives."\(^2\)

Section 70595 also outlines general requirements for a rehabilitation center, including three categories of service that must be provided as condition of licensure:

- preadmission screening to include at a minimum: medical review; rehabilitative potential of the patient; review of future placement resources
- provision of three services: physical therapy (PT); occupational therapy (OT); and speech therapy (ST)
- an outpatient service including all of the resources of the rehabilitation center.
The Title 22 definition of, and requirements for, a "rehabilitation center" care are considered problematic by established acute rehabilitation service providers because they do not sufficiently integrate the medical/surgical aspects of treatment with the specified rehabilitation.

AB 2540 orders the Director of the State Department of Health Services to adopt regulations covering this new licensure category/bed classification. The intent of this legislation is to clarify the classifications of a number of freestanding rehabilitation facilities which in the past have been licensed as a general acute care hospital, but no longer meets such standards and could only be licensed as skilled nursing facilities.

This Plan section is thus concerned with inpatient rehabilitation services within the general acute care hospital as defined by Title 22, i.e., Rehabilitation Center, and freestanding general acute rehabilitation facilities. Comprehensive, coordinated and intensive medical rehabilitation care is delivered only by a free standing medical rehabilitation facility or a rehabilitation center in a general acute care hospital. Limited aspects of individual rehabilitation services are delivered through skilled nursing facilities, intermediate care facilities, home health agencies or by private practice therapists.

**BACKGROUND**

**Relationship to Health Status**

The major diagnoses requiring intensive inpatient rehabilitation have been listed as: 3, 4

1. Rheumatoid arthritis
2. Head injury
3. Cardiopulmonary disorders
4. Neurological (multiple sclerosis, Guillain-Barre syndrome, Parkinsonism, etc.)
5. Stroke
6. Spinal cord injury (quadriplegia, paraplegia)
7. Orthopedic (amputation, multiple fractures, fractured femur)
8. Chronic pain syndrome
9. Burns

Acute inpatient medical rehabilitation treatment usually involves between four to six hours of medical rehabilitation treatment in the course of the day, which is more intensive than most hospital care. Dr. John Melvin, Chairman of the American Academy of Physical Medicine and Rehabilitation's Committee on PSRO has likened inpatient rehabilitation to other specialized intensive care programs in hospitals, such as coronary care units and stroke units. 5
The health status measure relevant for rehabilitation services is degree of disability, its reduction being the goal. Disability refers to a condition of impairment, physical or mental, temporary or long-term, causing reduction of a person's physical function activity. The National Health Interview Survey in 1972 shows that approximately 12.7 percent of the general population reported some degree of limitation (not able to carry on normal life functions such as going to work or school) due to disability. The 1971 statistics prepared by the National Center for Health Statistics indicates that of those totally disabled, 10 percent report having musculoskeletal diagnoses. It is this percentage of the population with whom acute medical rehabilitation centers are primarily concerned.

The impact of acute rehabilitation services on health status is increasingly being quantified. One expert states:

"For a person with catastrophic disability, normal function is far from possible, but effective performance and re-entry into active society can best be achieved if all the measures which influence a person's capacity to function are provided. This means appropriate medical and surgical management as well as assistance and guidance for the patient and his family..."8

Despite the intensive and costly level of care provided in an acute rehabilitation setting, it is becoming apparent that the cost justifies the benefits in terms of shorter time necessary for recovery, reduced numbers of readmissions for complications, lesser or no time required in long-term care facilities, as well as the economic payoff of returning patients to productive lives and reduced dependency.

The American Hospital Association's Survey reports that 80 percent of those patients treated in acute rehabilitation return home after the inpatient rehabilitation process. Additional references regarding the cost effectiveness of acute rehabilitation may be found in a study which presents data that the mean life expectancy of stroke patients is seven years and that 30 percent of those patients survive up to 10 years. Data also indicates that a person who is discharged from an acute rehabilitation hospital and remains in his home environment for one year has recovered the cost that the initial inpatient rehabilitation. A recently completed annotated bibliography on the cost benefits of rehabilitation identifies studies that have been done to explain the cost benefits of acute rehabilitation.

National Trends

A few years ago it was generally accepted that a spinal cord injury patient who survived the injury would spend the rest of his life in a hospital or skilled nursing facility. This is now considered inappropriate and unnecessary. Now the Federal Government
recognizes the importance of early acute rehabilitation for spinal injury patients and has established the National Spinal Cord Injury Model Systems which is supported by a research grant from the Rehabilitation Services Administration. Two of these systems have been established in California.

While the national trend indicates that there is a decrease in the number of strokes, survival from strokes by persons in the older age categories is increasing and thereby increasing the demand for acute rehabilitation. In addition, there is a trend toward greater numbers of head injuries due to increased use of less expensive forms of transportation, such as two wheeled vehicles. Of those persons receiving head injuries, 50 percent of them do survive and have a full life expectancy which may result in long-term institutionalization. All in all, these trends indicate an increasing need for specialized centers for acute comprehensive multidisciplinary rehabilitation.

National Policy

P.L. 93-641 provides the legal basis for establishing criteria and standards for the review of proposals for rehabilitation services and also requires the development of methodologies to assess need. Medicare under Title XVIII and Medicaid under Title XIX recognize acute rehabilitation as necessary and reimbursable, though the extent is variable, depending on individual state interpretation. The extent of payment seems to vary by state due to some states' attempts to limit Medicaid expenses in the initial acute rehabilitation phase.

Other federal legislation (Rehabilitation Services Act, P.L. 93-112, P.L. 93-516, P.L. 94-230) is primarily related to vocational rehabilitation, with little or no emphasis on medical rehabilitation. These Acts, however, provide for grants for research and development and grants to states for payments to assist in covering a variety of services such as physical and mental restoration, including corrective surgery, therapy and hospitalization. Section 504 of the 1974 amendments to the Rehabilitation Act of 1973 provides that all facilities receiving federal funding must make available and accessible to the handicapped all services in the facility. The deadline for compliance to these regulations is June, 1980.

Nationwide, workers' compensation programs are mandated by Title 5, Section 504 of the Rehabilitation Act of 1973 (P.L. 93-112) to provide medical and vocational rehabilitation. These programs have been the most sophisticated purchasers of rehabilitation services. The National PSRO Council has worked with the Academy of Physical Medicine and the Congress of Physical Medicine and Rehabilitation to develop a guideline document for the reimbursement of acute rehabilitation programs.

California Trends

Currently, because rehabilitation services are not uniformly reported and aggregated for planning purposes, reliable data on rehabilitation bed utilization is not available. Various
Acute Rehabilitation

figures regarding the number of licensed beds have been reported by the State as well as the number of patients days generated by these beds; however, such data are not conclusive.

As noted, legislation is beginning to appear that recognizes and classifies rehabilitation services as a distinct entity, but confusion and fragmentation currently characterizes the field. For example, although acute rehabilitation inpatient services are covered under Medi-Cal, there is no documentation of this legislation in current Medi-Cal regulations.

In California there are currently four freestanding rehabilitation hospitals and approximately 30 units in general hospitals. Unfortunately, in California where there is an excess of acute medical/surgical hospital beds, there is a trend toward low occupancy acute hospitals developing "rehabilitation units," many of which are too small to provide the range and scope of services necessary for intensive multidisciplinary coordinated acute rehabilitation. In some cases, these facilities are not approved as rehabilitation centers by the Department of Health Services.

This is not regarded as a healthy trend because there are inadequate obligatory minimum standards on the type, size and characteristics of programs being established. The current licensing requirements are inadequate to insure quality programs.

The proliferation of "rehabilitation units" causes duplication of services and hampers referral patterns which are regional in nature. Duplication also causes competition among rehabilitation programs/units for specialized and trained professionals. Many acute medical rehabilitation facilities in California voluntarily utilize the Commission on the Accreditation of Rehabilitation Facilities' Standards and accreditation procedure as a means of accruing quality and identity.

California Policy

The State's Medi-Cal reimbursement policies for patients in an acute rehabilitation setting are currently confusing and inconsistent. The Medi-Cal regulations in Title 22 define a Rehabilitation Center as a "facility which provides an integrated multi-disciplinary program of restorative services designed to upgrade, or maintain the physical functioning of patients." The licensure regulations previously cited for rehabilitation center call for a minimum of three services: physical therapy; occupational therapy; and speech therapy. The Medi-Cal regulations call for only two or more of the following: (1) physical therapy; (2) occupational therapy; (3) speech therapy; and (4) audiology. Many of the State's Medi-Cal program staff seem to be uncertain about the reimbursement policies for acute rehabilitation inpatients. The basic policy seems to be, however, that rehabilitation patients in general acute rehabilitation beds are reimbursed as if they were acute medical/surgical patients. Outpatient services such as PT, OT,
speech therapy, etc., are reimbursed separately. Although inpatient rehabilitation payment is now based on the lesser of reasonable costs or the hospital's customary charges, future payments will be based on audited costs.

Providers of inpatient rehabilitation care pointed to inconsistencies in granting of inpatient admissions by Medi-Cal consultants, claiming that some consultants are apparently ill informed about the scope and need for inpatient rehabilitation services. Medi-Cal does have an appeal process which allows a physician to appeal a decision by a local Medi-Cal consultant to a higher authority.

Both Assembly Bill 4431 (1976) and Assembly Bill 2540 (1978) attempts to clarify reimbursement and classification problems, but so far there is little improvement. AB 4431, which attempts to distinguish rehabilitation services in a general acute care hospital and specifies criteria for services, lengths of stay, Medi-Cal benefit schedules and other policies, has not been implemented. AB 2540, which defines a freestanding medical rehabilitation facility as a general acute care/rehabilitation hospital, will apparently be implemented and incorporated into Title 22 as soon as regulations are written and adopted.

The California Children's Services Program (CCS) provides medical care to individuals under age 21 with eligible handicapping conditions. Almost all conditions involving severe or chronic physical disability are eligible for coverage. Financial standards are based on family income and insurance and its relationship to the projected costs of care.

The California State Department of Rehabilitation's main emphasis is with vocational rehabilitation and the promotion of independent living skills in the home and the community. The Department of Rehabilitation occasionally pays for acute inpatient rehabilitation and equipment or outpatient services not otherwise covered. There is infrequent evidence of reimbursement for services in a medical rehabilitation facility. The Department can, through 26 district offices, provide vocational counseling services to inpatients and vocational rehabilitation follow-up, but the intensity of the service varies from district to district.

ANALYSIS OF DEMAND AND SUPPLY

Analysis of Demand

Some of the factors influencing demand for acute inpatient rehabilitation care include:

- lengthening life span
- increasing size of population with the disabilities identified under Scope of Services
increased awareness and rising expectations of consumers and medical providers
broader insurance coverage
increase in vehicular work and recreation related accidents and resulting central nervous system and major musculoskeletal traumas
increasing specialization, technological innovations and improvements in medical technology.

Incidence and prevalence rates of disability have been the subject of review and analysis by federal, State and regional private and public entities over the last decade. A National Health Interview Survey conducted by the U.S. Department of Health, Education, and Welfare (DHEW) revealed:

- approximately 12.7 percent of the general population reported some degree of limitation in activity due to disabling conditions
- three percent under the age of 17 and 43 percent of those over 65 reported limitations of activity
- the percent of the total population limited in some form of activity increased from 11.8 percent in 1970 to 12.7 percent in 1972
- incidence rates for disabling conditions (injury and acute illness) for which medical attention was needed increased from 203.4 per 1,000 persons in 1970 to 219.7 per 1,000 persons in 1972
- incidence rates for disabilities among those over the age of 45 accounted for 136.4 per 1,000 persons in 1972
- ten percent of the population have significant musculoskeletal disabilities as reported in 1971.

A 1972 Social Security Administration Survey showed that 14.6 percent of the labor force between the ages of 20 and 64 who were employed suffered disability.

"Disability" under Social Security means "inability to work because of a physical or mental impairment that has lasted or is expected to last at least 12 months or is expected to result in death . . . ." A similar survey conducted in 1966 concluded that 17.2 percent of the work force was disabled.

The National Center for Health Statistics concludes that low income persons spend more days in bed as a result of illness or injury than do high income persons, and between the ages of 45-64, the differences are almost four-fold, due in part to a declining income which accompanies disabling illness.
The California State Department of Rehabilitation's report, "The Hidden Minority," showed that disabled persons represented 11.7 percent of the total population of California, an increase over the 1970 rate of 10.9 percent. The Department has developed preliminary estimates of the number of disabled persons in California in 1974 between the ages of 16 and 64.

Despite reported disability and estimates of disability prevalence, the actual incidence of disease and disability that requires acute inpatient hospitalization in a licensed rehabilitation unit bed remains unclear. Statewide utilization figures show low demand for services (46.9 percent). At the same time, physicians currently practicing in multidisciplinary rehabilitation centers state that there is a greater demand for acute rehabilitation services than there are services to meet the demand. Explanations for the apparent contradiction may include improper utilization of licensed acute rehabilitation beds, lack of formal referral procedures among general acute care facilities and CRCs in the State, inadequate ancillary service support, inappropriate transfers to skilled nursing facilities, lack of consensus among specialists (orthopedic surgeons, neurologists, neurosurgeons, pediatricians and psychiatrists) as to proper patient management in an acute setting and lack of adequate information about the availability of rehabilitation/acute services within the medical community. Of these, the lack of professional consensus concerning proper management is notable and disturbing for planners.

Many "need estimates" are based on broad definitions that encompass total prevalence rates of specific disease or disability categories, incidence rates of specific disease or disability categories, incidence rates for specific populations at large or conditions that result in limitations on mobility and/or activities. It is difficult to assess "incidence" rates of disability and disease requiring acute inpatient rehabilitation services when such broad indicators are used (for instance, none of the methods currently used for determining the "target population" provide an estimate of the specific number of services required per disability).

Lacking usable incidence data, individual physician opinions may be cited. The national incidence of spinal cord injuries in the population is estimated at 50/1,000,000; head injuries at 7,300,000/year, of which an estimated 1.2 million are severe enough to require prolonged hospitalization. An additional 125,000 will have cognitive dysfunction requiring acute rehabilitation. The incidence of stroke has been estimated at 66,000 that require acute rehabilitation per year.

It can be assumed that the population to be served by acute rehabilitation services is increasing in California as life expectancy advances and mortality rates decline. Changing age composition (see Chapter IV) may well have the greatest effect on the need for rehabilitation services.

According to the Comprehensive Service Needs Study conducted by the Urban Institute in 1975, most California patients are covered by some form of public or private health insurance; however, private insurance did not always cover the cost of treatment at

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comprehensive medical rehabilitation centers. Income maintenance transfer payments underwritten by the federal government and State and local payments including workmen's compensation (income replacement payments), general assistance and State and local employees' retirement programs, reportedly reduce the financial obstacles and motivational barriers to evaluation and treatment of severe, chronic and acute disabilities. The Report did indicate that 67 percent of the individuals in the sample had SSI and Disability Insurance (DI) benefits, and thus would have access to Medi-Cal and Medicare. Third-party coverage for their patient sample was 97 percent. The majority of prepaid health insurance (HMO) plans specifically exclude medical rehabilitation from their limited benefit packages which must be marketed competitively. Government programs eventually pick up the cost of these inadequately covered patients. There currently is a one year pilot project, monitored by the Department of Mental Health, to provide services to the adult brain damaged persons. This project will conduct a program to provide diagnostic services, in-home support services, out-of-home services, counseling and legal services.

There are no generally acceptable methodologies for a determination of demand for rehabilitation services or estimation of long range needs for acute rehabilitation beds. HSPs offer an inventory of acute rehabilitation facilities but little attention is given to services provided to both military and civilian populations.

The State Department of Rehabilitation attempts to identify disabling conditions and their distribution in the general population but the results are not carried through to specific estimates of the number of persons requiring each level and amount of rehabilitation services available in the State. In fact, these estimates fail to provide age and sex specific prevalence rates. Finally, PSRO guidelines are available which identify generally accepted criteria within the medical community for the determination of which patients need what types of services. The recent AHA survey indicates nationwide that there is an 80 percent occupancy of facilities providing rehabilitation.

Analysis of Supply

Although federally mandated rehabilitation programs reflect a national trend toward the development and implementation of vocational rehabilitation programs emphasizing restorative therapy for vocational training, there is inconsistent evidence that the federal focus encompasses provisions for acute medical rehabilitation services.

Problems of definition, appropriate levels of care, types of disabilities, treatment modalities, lengths of stay, appropriateness review, etc., are left unresolved and subject to varying interpretation by the State Department of Health Services, Professional Standard Review Organizations, Medi-Cal consultants and regulations, physician preferences and consumer ignorance. Unless an acceptable planning methodology is
designed and implemented for acute rehabilitation bed and service need estimates, there will be a continuation of the fragmented, uncoordinated system of resource management.

Before any planning methodologies are designed and utilized, however, it is essential that current legislative mandates to assess current supply and appropriate utilization be carried out. Accurate relicensing and reclassification of acute rehabilitation beds and facilities should commence in compliance with the law. Standards for quality and care for acute rehabilitation also should be accepted and implemented.35

Reliable financial data reflecting cost of services provided in an acute rehabilitation facility are not available. The California Health Facilities Commission does not require a breakdown of costs of services in "licensed acute rehabilitation beds." The Commission's Annual Report offers some utilization statistics on licensed rehabilitation beds occupancy rates, length of stay, patient days, service charges; but the data are insufficient. Due to overlap of medical/surgical and rehabilitation definitions for bed licensure, these data are inaccurate.

It has long been stated by those in the field that physiatrists, physicians specializing in physical medicine and rehabilitation are in short supply. The opportunity to treat patients in acute rehabilitation centers may be adversely affected by existing utilization controls.

There are many physicians from the other specialties such as neurology, orthopedics and internal medicine, who have become experienced and knowledgeable in rehabilitation medicine and provide a source of professional direction in rehabilitation facilities throughout the State; however, the concern for the shortage of specialists in physical medicine and rehabilitation is appropriate. Manpower requirements designed by DHEW indicate that physiatrists in California qualify as an undersupplied medical specialty.

The State of California, through its licensing and certification responsibility, provides some control on both facility and service quality. In areas where no PSROs provide service review, Medi-Cal consultants dispatched from one of twelve offices throughout the State evaluate "quality issues" and utilization statistics. A number of Rehabilitation Medical Directors indicated that such reviews performed by Medi-Cal consultants are often inadequate and counterproductive, requiring the referral and/or transfer of patients to lower levels of care when not yet indicated. Several reasons were cited, including unfamiliarity with basic rehabilitation service requirements of disabled patients and the frequent turnover of Medi-Cal consultants.

State mechanisms for insuring both acceptability and continuity are limited to their licensing, certification, accreditation and monitoring functions. However, stringent Medi-Cal and Medicare restrictions on types and amounts of services financially reimbursable have obstructed the continuity of service provision for large portions of the disabled.
ANALYSIS OF ISSUES

Current issues can generally be combined into five major categories: (1) classification and definitions, (2) planning data, (3) reimbursement, (4) coordination and continuity, and (5) quality assurance.

Issue 1: Classification and Definitions

Definitions of acute inpatient rehabilitation facilities differ from source to source. There is no single, acceptable definition currently in common use.

There is confusion on bed classification for acute inpatient rehabilitation services. Title 22 and the Medi-Cal regulations define this level of care under the heading of Rehab Center, under supplemental services. A DHEW monograph for HSAs entitled: "Planning Approach: Criteria and Standards for Comprehensive Physical Rehabilitation Facility Services," defined yet another setting for rehabilitation services, termed a Comprehensive Physical Rehabilitation Facility (CPRF). The California State Plan for Rehabilitation Facilities published by the Department of Rehabilitation classifies and defines Comprehensive Rehabilitation Centers (CRCs) and also Rehabilitation Center-Selected services. Acute inpatient rehabilitation beds are included as general acute beds with no further breakdown by the Certificate of Need Division.

Certificate of need applications are not coded to record general acute care/rehabilitation bed classifications and are simply classified in the "General Acute Care" licensed bed categories.

Clarification as called for by AB 2540 and AB 4432 has not yet been implemented.

Lack of an acceptable medical definition of "disability" and what constitutes eligibility for acute inpatient rehabilitation admission often results in some patients receiving extended services on an inpatient basis, while others with the same conditions may be treated as outpatients.

Issue 2: Planning and Data

Currently there are no acceptable statewide planning methodologies for the estimation of acute inpatient rehabilitation beds or service requirements use by California HSAs or the OSHPD. Current systems for identification of rehabilitation services and needs are inadequate and available statistics inaccurate for these reasons:

- there is no CHFC cost break-out for acute inpatient rehabilitation beds/patients
available population and disability data are limited, of questionable accuracy, reported inconsistently and recorded in varying formats

there is no data break-down for acute rehabilitation inpatients by payment category, i.e., Medi-Cal, Medicare, private, self-pay, etc.

Due to the lack of data, cost/benefit analyses are impossible and review for "need" is only slightly less since the Certificate of Need Division of the OSHPD does not record the number of acute inpatient rehabilitation beds approved or disapproved through California certificate of need process.

Review of the available literature fails to produce any common methodologies for estimating rehabilitation needs. The DHEW monograph offers a method of predicting the amount of rehabilitation service needs both on an inpatient and outpatient basis, incorporating local demographic data, national or area specific incidence of prevalence rates and the opinions of rehabilitation experts. This needs assessment model reportedly does not require extensive data collection or analytical sophistication.\(^6\)

If reliable, accurate and complete data sets are needed for planning, then one State office should be assigned responsibility for their collection and dissemination. P.L. 93-641 calls for this strategy, and the OSHPD would be a responsible repository for this information. Collection would require additional economic and manpower resources. But if uniform data sets were available the stage could be set for comparability and uniform methods.

A final consideration here is the respective roles of the Departments of Rehabilitation and Health Services. The Department of Rehabilitation's primary emphasis is vocational rehabilitation programs. The medical component, particularly acute inpatient rehabilitation services, is neglected and limited in scope.

**Issue 3: Reimbursement**

Reimbursement by third party payors such as Medi-Cal, Medicare and private insurers appears to be restrictive, inconsistent and arbitrary.

The problems with Medi-Cal include the following:

- A B-4431, which calls for acute rehabilitation services such as a covered service under the Medi-Cal program has not been implemented; due to lack of clear definitions, the Medi-Cal Program reimburses acute rehabilitation care under medical/surgical services

- providers of acute inpatient rehabilitation services consistently indicate dissatisfaction with questionable decisions made by the Medi-Cal consultants, due to the absence of any uniformly acceptable policies. Inappropriate level of care designations and admissions to skilled nursing facilities are occurring. Consultants' emphasis is placed on cost control, sometimes at the expense of appropriate patient care
fragmentation of quality of care assessment and responsibility in the PSRO program (PSRO M.D. versus hospital based rotating M.D.) further leads to inconsistencies in admission policies, length of stay and disposition

incidental expenditures for wheelchairs, walkers and other bio-medical engineering devices are often disallowed, to the patient's disadvantage causing unnecessary dependence and additional public cost through extended institutional action

documentation for the Medi-Cal coverage far exceeds that required for other insurance programs.

With private third party insurance, the existence or the extent of coverage is variable, depending on the policy. For example, some policies cover acute inpatient rehabilitation care only on a limited basis, while others do not have policies that cover this level of care. Often the insured party is unaware of specific or general acute rehabilitation exclusions.

Standardization of reimbursement policies for all third party payors is one approach to the current confusion. Although it has drawbacks in terms of flexible response to the patient needs, providers of acute rehabilitation services generally agree that standardization which eliminates existing ambiguity is highly desirable.

Even without reimbursement reform, there is an ethical and legal obligation for insurance carriers to provide full disclosure of benefits to their clients. On the other hand, fuller disclosure may result in greater utilization, escalating the cost of premiums to consumers and reducing financial accessibility for some segments of the population in greatest need. However, a well informed policy holder is better prepared to deal with the economic ramifications of hospitalization for acute rehabilitation and to cope with the consequences than the uninformed.

Issue 4: Coordination and Continuity

There is no centralized management or monitoring authority for rehabilitation services at the State level. Responsibility for acute inpatient rehabilitation is spread throughout a number of agencies in rehabilitation in varying degrees. The Department of Health Services, the Medi-Cal Program, Licensing and Certification, OSHPD and its Certificate of Need Division are all involved in the administration of this level of care. This fragmentation of authority and responsibility has produced a disconnected system of managing inpatient acute rehabilitation resources in the State.

Often the continuity of medical rehabilitation care depends upon the personal relationships established by service staffs. Transfers of patients from one level of care to another are often determined by personal preference of referring staff members.
Issue 5: Quality Assurance

There are a variety of agencies responsible for evaluating the quality of care provided by acute rehabilitation facilities: PSROs; Medi-Cal and Medicare; State licensing and certification; CCS; JCAH; CARF; and Board of Medical Quality Assurance, in addition to internal review mechanisms including medical audit committees, utilization review committees, etc. Although there are many quality review bodies, there are no uniformly accepted clinical standards, criteria or guidelines to govern admissions, lengths of stay, service requirements and discharge requirements for varying levels of care.

There are numerous avenues for the assurance of quality review. If, through the friendly force of persuasion and reason, updating and modernization of quality review criteria occurred with the support of national, State and regional professional associations and State licensing boards, in accordance with formalized and previously agreed upon methodologies and procedures, there would be general agreement and compliance.

Inroads have been made nationally by the American Academy of Physical Medicine and Rehabilitation and the Congress of Physical Medicine and Rehabilitation in the development of review guidelines for acute inpatient rehabilitation facilities. Also, standardization is taking place in California, with some recommended guidelines, criteria, and standards for use in the preparation of local PSRO criteria; i.e., Area 23, Standards for Medical Rehabilitation Facilities.
POLICY RECOMMENDATIONS FOR ACUTE REHABILITATION

Rehab-1: THE LICENSING AND CERTIFICATION DIVISION OF THE DEPARTMENT OF HEALTH SERVICES SHOULD ENFORCE CURRENT REGULATIONS AND EXISTING LEGISLATION REGARDING ACUTE REHABILITATION SERVICES.

Clear policies, definitions and classifications relating to general acute rehabilitation settings are necessary (and legally mandated) for various State activities (i.e., programming, reimbursement and planning). Regulations for AB 2540, AB 4431 and AB 4432 must be implemented as soon as possible.

Rehab-2: PLANNING FOR ACUTE REHABILITATION SERVICES SHOULD EVOLVE BEYOND ASSESSMENT OF BED UTILIZATION IN ORDER TO ENCOURAGE INTELLIGENT ALLOCATION OF RESOURCES.

The multivariate nature of demand for acute rehabilitation services is obvious. Existing general acute care methodologies which are primarily based on bed utilization patterns cannot be easily adapted to specific acute care need estimation.

Rehab-3: HEALTH SYSTEMS AGENCIES SHOULD BEGIN TO REVIEW ACUTE INPATIENT REHABILITATION SERVICE CAPACITY AND ASSESS FUTURE NEEDS.

Although broad State policy direction is a necessary precursor to full implementation of planning and review activities, HSAs can begin to survey existing supply in their respective areas and begin consideration of evolving need.

Rehab-4: A COORDINATING COUNCIL MADE UP OF THE STATE AGENCIES IMPACTING ON ACUTE REHABILITATION, WITH APPROPRIATE PROVIDER INPUT, SHOULD BE ESTABLISHED.

The multiplicity of State agencies involved in acute rehabilitation requires appropriate policy coordination to facilitate effective planning.

Rehab-5: THE COMMISSION ON ACCREDITATION OF REHABILITATION FACILITIES STANDARDS FOR MEDICAL REHABILITATION FACILITIES SHOULD BE ADOPTED FOR USE IN STATE LICENSING AND MEDI-CAL PROGRAMS.

The gradual emergence of acute rehabilitation as a recognized category of general acute care services makes necessary the re-assessment of existing standards.
NOTES


2. California Administrative Code, Title 22, Division 5, Article 6, Sections 70595-70603, pp. 1910-1914.


4. N. S. Namerow, M.D., Medical Director, Center for Rehabilitation and Preventive Medicine, "Standards for Medical Rehabilitation Facilities," PSRO Area 23.


15. Ibid.


18. California Administrative Code, Title 22 (Health Care Services: Medical Assistance Program), Sections 51118 and 512213.


20. op. cit.


32. op. cit. 3
33. op. cit. 4
34. op. cit. 5
35. op. cit. 9
DEFINITIONS AND SCOPE OF SERVICES

End-stage renal disease (ESRD) is that stage of kidney impairment which is virtually always irreversible and permanent, and which requires the following services:

- dialysis to remove toxic substances from the body or
- kidney transplantation to replace the damaged kidney.

Dialysis is a process by which dissolved substances are removed from a patient's body by diffusion from one fluid compartment to another across a semipermeable membrane. The two types of dialysis which are currently in common use are hemodialysis and peritoneal dialysis.

In hemodialysis the patient's circulatory system is connected to a dialysis machine and the patient's blood circulates through the machine. This procedure is usually performed three times a week for 4-8 hours per session.

In peritoneal dialysis, sterile fluid is infused into the patient's abdominal cavity, where it comes into contact with the membranes of the abdominal organs and draws waste products from the patient's blood. The fluid is then removed. Peritoneal dialysis may be done intermittently or continuously.

Intermittent is done at least three times per week for 10 to 12 hours each session. In continuous ambulatory peritoneal dialysis (CAPD), the patient infuses dialysis solution through a permanent peritoneal catheter, and then resumes normal activities, later draining the old fluid and adding fresh. The patient does 4 to 5 of these flushes per day, each one taking about 30 minutes. Thus, the patient is being dialyzed at all times. This type of dialysis treatment can be performed in a variety of settings, and can be performed either by paid staff or by the patient and family members.

A Renal Dialysis Center is a facility which provides the full spectrum of services for ESRD dialysis patients except for transplantation. Under Title 22, California Administrative Code, a chronic dialysis facility must be either a Chronic Dialysis Service within a General Acute Care Hospital or a freestanding Chronic Dialysis Clinic.

Home Dialysis is dialysis that can be performed in the patient's home. Home dialysis requires installation of special equipment for water purification in addition to the dialysis machine, and the assistance of a trained dialysis helper.

Renal transplantation is a process by which a kidney is removed from a live or cadaver donor, and surgically implanted in an end-stage renal disease patient.
A Transplantation Center is defined by both Medicare and Title 22 regulations as a hospital unit which directly furnishes transplantation, inpatient dialysis and other medical and surgical specialty services required for the care of the ESRD transplant patient.

Although dialysis is performed on a temporary basis to treat patients suffering from acute conditions such as poisoning, the vast majority of dialyses are performed on end-stage renal disease patients. The discussion in this section will be limited to chronic dialysis provided to patients with end-stage renal disease.

A number of services intended to prevent onset of ESRD are also very important and are discussed below.

BACKGROUND

Relationship to Health Status

A number of disease processes can damage the kidneys and result in ESRD. Regardless of etiology, once ESRD is diagnosed, dialysis or transplant are the only remedies.

In patients who are successfully transplanted, there is a high probability of rehabilitation. At one center, 91 percent of patients whose grafts function for five years attain activity equivalent to pre-renal failure. The survival of transplant patients is also good. The five year patient survival is 77 percent. Graft survival, unfortunately, is not as good. While five year graft survival for a kidney donated by identical twins is 95 percent, that for transplants from other living related donors is only 65 percent, and for cadaver transplants is only 40 percent. Transplant recipients experience increased morbidity related to transplant rejections, disease of the immune suppressed host, which includes infections and higher incidences of cancer and diseases associated with long term steroid use such as osteoporosis of the hip, cataracts, diabetes and peptic ulcer disease. Overall, for all transplants, the five year graft survival is about 46 percent. Despite substantial research into tissue matching and the immunology of rejection, these statistics have changed little in the last few years.

The disease category which accounts for the largest group of patients is glomerulonephritis, a form of kidney inflammation whose cause is unknown. This broad category accounted for over 27 percent of the patients on dialysis in California in 1979 and some studies have estimated that it accounts for 40 to 60 percent of all patients in dialysis and transplantation. The second most important condition leading to ESRD is hypertension, which accounted for 21 percent of all hemodialysis patients in Southern California in 1979. Because of the high incidence of hypertension among black persons, the incidence of ESRD is also very high among blacks. This cause of ESRD is the only one for which effective preventive methods are available and where there is real
promise for the prevention of significant numbers of ESRD cases. The Department of Health Services is currently conducting a Hypertension Program with $860,000 per year in federal funds. The program is aimed at detecting and following patients with uncontrolled hypertension primarily through 18 local projects in areas which are medically underserved or have high risk populations. The projects screen about 28,000 patients per year. About 6,000 patients with uncontrolled hypertension were detected in the last year.

Genetic renal diseases account for 10 to 30 percent of all cases of ESRD. Symptoms of this condition appear between the ages of 30 and 60. In almost 50 percent of the patients, this condition progresses over a course of five to ten years to result in ESRD. Because it can be expected that one-half of the brothers and sisters and one-half of the children of affected patients will also have the disease, genetic counseling is important for these patients and offers the only potential for significantly reducing the number of cases of ESRD which result from this cause.

Metabolic diseases, principally diabetes mellitus, account for about 13 percent of all patients on dialysis. Unfortunately the complications of diabetes proceed even when the disease is medically controlled and with current knowledge there appears to be limited potential for prevention of ESRD resulting from diabetes.

A variety of viral and bacterial infections of the kidney result in pyelonephritis and account for nearly 10 percent of patients on dialysis. The potential for preventing ESRD due to this cause is unclear. The Kidney Foundation of Southern California is currently operating a screening program through schools in Southern California which is directed at detecting undiagnosed urinary tract infections in young girls. The program is currently screening about 10,000 children per year at a cost of about $2 per child. While the program does discover undiagnosed infections in two to three percent of the girls screened, the long term results of this work are not clear and the eventual impact on ESRD remains to be demonstrated.

Although hemodialysis is life-saving, alterations of normal life can produce mental health problems for some patients and/or family members.

National Trends

Prior to the early 1960's, treatment that could sustain patients with end-stage renal disease was not available and the fate for such patients was inevitable—death. By 1960 the technical problems in dialyzing a patient's blood outside the patient's body had been solved and hemodialysis became available as a treatment for patients suffering from kidney failure. During the 1960's the resources available for the treatment of end-stage renal disease patients were exceeded by the number of patients requiring treatment. Widespread public attention was given to patient selection committees which made difficult life or death decisions about who would be dialyzed.
In October 1972, Congress amended the Social Security Act (P.L. 92-603, Section 299) to extend Medicare coverage to individuals with end-stage renal disease requiring dialysis or transplantation, a move recommended by the Gottshalk Committee. While most ESRD patients are eligible under the Medicare program there are significant numbers of patients not eligible for a variety of reasons.

Estimates on the basis of mortality data at the beginning of the ESRD program by this Committee set the incidence of treatable ESRD at 35 new patients per million population and projected that nationally the ultimate population of patients on dialysis would stabilize at 40,000. Those estimates have since been revised and the National Kidney Foundation estimates the incidence at 60 per million and the patient population nationwide is expected to grow from the current 40,000 to between 50,000 and 60,000 patients. The Medicare ESRD program currently costs about $800 million per year for 40,000 beneficiaries—an average of $20,000 per patient per year. Some estimates have placed the ultimate cost of the dialysis program at $2 billion per year, far beyond the costs estimated by those who established the program.

National Policy

The Medicare regulations governing the end-stage renal disease program establish a number of requirements for participation of providers in the federal program. All facilities participating in the federal program have been organized into geographically defined ESRD networks. The counties of Northern California are included in ESRD Network No. 3 and the counties of Southern California are included in Network No. 4. The large size of the federal network areas was intended to promote regionalized planning for the whole range of ESRD services, including transplantation.

In order to limit the proliferation of dialysis facilities and assure that facilities perform sufficient dialyses to maintain staff competence, federal regulations also contain minimum utilization standards for facilities participating in the Medicare program. For unconditional participation, these minimum utilization rates are:

- Transplantation facility—15 transplants/year
- Dialysis facility in SMSA—4.5 dialyses/station/week
- Dialysis facility in non-SMSA—4.0 dialyses/station/week

The regulations do not, however, provide guidance on how the future number of patients on dialysis should be projected for planning. The National Guidelines for Health Planning provide that HSAs should be consistent with the Medicare regulations in developing their HSPs.

Medicare benefits cover 80 percent of the cost of practically all services required by persons with end-stage renal disease, in all settings (inpatient, outpatient, freestanding and home). Patient entitlement for dialysis services begins on the first day of the third month after dialysis is initiated. Reimbursement initially was based on the traditional
Medicare mechanism of reasonable costs for hospital based units and reasonable charges for free standing units. The reimbursement method was modified in 1978 and nonhospital facilities are now also required to submit cost reports in order to obtain reimbursement. The Medicare program established payment ceilings, referred to as screens, for the reimbursement of maintenance dialysis costs and charges. The dialysis facility is reimbursed for 80 percent of the amount billed, subject to the applicable screen. Included in this charge are the costs of injectables and disposable supplies. The screen levels, which were established in 1974 and have not been revised since, are:

**Dialysis Facility Billing Method**

<table>
<thead>
<tr>
<th>Type of Dialysis</th>
<th>Unit Method</th>
<th>Comprehensive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemodialysis</td>
<td>$150</td>
<td>$138</td>
</tr>
<tr>
<td>Home dialysis training</td>
<td>$170</td>
<td>$158</td>
</tr>
<tr>
<td>Peritoneal dialysis</td>
<td>$450</td>
<td>$414</td>
</tr>
</tbody>
</table>

Providers with costs above the screen amounts may apply for exemption to the screen amount. Many hospital based units have received exemptions to the screens.

At the beginning of the ESRD program, policies were established that provided that physician services for routine dialysis would be billed as part of the total facility dialysis cost or charge. As a result of strong objection by physicians, this policy was reversed and physicians may be separately reimbursed for services, according to schedules which reflect the prevailing physician's fees in the area.

**Physician's Monthly Payment**

<table>
<thead>
<tr>
<th>Type of Dialysis</th>
<th>Monthly Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center dialysis</td>
<td>$160-240</td>
</tr>
<tr>
<td>Home dialysis</td>
<td>$112-168</td>
</tr>
<tr>
<td>Self dialysis training</td>
<td>$500 (one time)</td>
</tr>
</tbody>
</table>

The initial reimbursement policies of the Medicare program provided reimbursement to home dialysis patients for all of the necessary equipment and supplies for dialysis at home. However, supplies not considered necessary for the operation of the machine, such as syringes, bandages, etc., were usually not reimbursed. Home dialysis patients were therefore faced with certain uncovered expenses which would be covered if they were on outpatient dialysis at a facility.
In June 1978, Congress enacted the Medicare End Stage Renal Disease Program Amendments of 1978 intended to encourage the medically appropriate use of self-dialysis and transplantation. These amendments attempt to promote home dialysis by providing that Medicare reimburse 80 percent of the cost of all supplies for home dialysis and by eliminating the three month waiting period for patients who enter a self-dialysis training program. Renal transplantation is to be promoted by making kidney donors as well as recipients eligible for Medicare coverage and by extending coverage for transplant recipients from one year to three years. Each ESRD network is also required to establish goals for self-dialysis and transplantation in its own area.

California Policy

The 1980-81 Plan Development Guidelines provide that statistics published by the ESRD Networks in California shall be used as the basis for planning for ESRD services. The Guidelines also require that each Health Systems Agency establish appropriate rates for the utilization of chronic dialysis and home training stations in its major planning purposes.

- end-stage renal disease incidence rate: 80 new patients per 1,000,000 population
- mortality rate: 10 percent of patients during the first year of dialysis and 8 percent during subsequent years of dialysis

The certificate of need review regulations also created 44 planning areas for dialysis service, comprised of groupings of the Health Facility Planning Areas (HFPAs) used in planning for hospital and long term care beds.

For patients who are financially eligible, the Medi-Cal program provides reimbursement for dialysis costs during the three month period before Medicare coverage begins and subsequently for the 20 percent of costs which Medicare does not reimburse.

Chapter 5 of Title 22 establishes numerous quality standards for Chronic Dialysis Services located in hospitals. Among these are the requirements that the service have two or more stations and perform a minimum of five or more dialyses per station per week.

Health Systems Plan Highlights

Strict application of the present state formula to determine dialysis station need projection demonstrates a shortage of dialysis stations in most areas, especially in the northern part of the State. However, most HSAs modify the formula and project lower dialysis station need and many will not approve new certificate of need applications until current utilization reaches 85 percent.
In order to more accurately predict need and provide service, the HSAs recommend developing close working relationships with the End-Stage Renal Dialysis Network Coordinating Councils. The HSAs encourage increased use of nonhospital, freestanding units and home dialysis whenever medically appropriate; increased availability of the treatment option of transplantation; and early detection and treatment of kidney disease among high risk populations.

HSAs also suggest that information should be widely disseminated about kidney disease, support services, availability of ESRD and donor programs. Also, recommendations were made that reimbursement disincentives toward home dialysis be modified.

ANALYSIS OF DEMAND AND SUPPLY

Analysis of Demand

The number of patients on dialysis depends on the incidence of ESRD, on the number of patients referred for treatment, the extent of which transplantation can remove patients from dialysis and the mortality of patients on dialysis.

The demand for chronic dialysis sections in California has grown steadily since dialysis became available in the 1960's. The increasing patient population has resulted from two factors.

First, knowledge among physicians of the availability of chronic hemodialysis as a treatment for patients with terminal kidney failure has increased and reimbursement by the Medicare program has made it possible to treat essentially all patients who need the service. This has resulted in a real increase in the incidence of new dialysis patients treated per million population per year, including increasingly older people. For example, 28 percent of the patients on dialysis in Southern California in 1978 were over 65 years of age, while in 1974 only 17 percent were over 65.

Second, the number of patients on dialysis has increased each year because the number of patients who begin dialysis each year has been larger than the number of patients who leave dialysis because of successful transplantation or death. At some time in the future the dialysis patient population will stabilize when the average number of deaths and successful transplants each year balances the number of new patients beginning dialysis each year. Some projections at the national level indicate this will occur when the current dialysis population of 40,000 patients has grown to 60,000.

Figure VII-4, shows projections of the dialysis population in California based on recent statistics provided by the ESRD networks in California.

Advances in renal transplantation paralleled those in dialysis technology. Advances in the problem of graft rejection by 1969 made transplantation an option for many end-stage renal disease patients. Transplantation was initially performed using kidneys from living
FIGURE VII-4

PROJECTED CHRONIC DIALYSIS PATIENT POPULATION
1977 - 1985

Source: State of California, Office of Statewide Health Planning and Development, Research Section.
related donors, but now nearly 75 percent of kidney transplants involve organs from cadaver donors. Table VII-20 shows the number of transplants performed at each Transplantation Center in California in 1976/1979.

Analysis of Supply

Dialysis in California was initially performed primarily in hospital-based units. In recent years, there has been rapid growth in the numbers of freestanding units, but over 60 percent of dialysis facilities are still hospital based. Projects involving chronic dialysis stations have been the most common reviewed under the CON program; Table VII-21 shows the number of stations and the types of actions which were involved in the first year of the CON program.

Renal transplantation in California is now limited by the availability of donor kidneys. There are currently over 600 dialysis patients on waiting lists for transplantation and essentially all suitable kidneys which are available are used. Current research in transplantation is focused on identifying other determinants of tissue type which may make it possible to achieve better matches between donors and recipients which will improve graft survival.

ANALYSIS OF ISSUES

The following issues are significant in developing effective policy for end-stage renal disease services: the cost per patient for dialysis treatment, efficient use of chronic dialysis facilities, minimum quality standards for renal transplantation centers and CON review of expansion.

Issue #1: The Cost Per Patient for Dialysis Treatment

With the cost of the Medicare program at $800 million per year and projected to increase to $2 billion per year, there is a great deal of concern about the large cost of a program which benefits such small numbers of beneficiaries. Two factors determine the total cost of the program, the cost per patient and the number of patients.

The setting in which the dialysis treatment is performed determines the cost of a dialysis treatment. High overhead makes hospital based units the most expensive settings for routine dialysis. Some hospitals have received exemptions to the Medicare cost screen for costs as high as $209 per patient per dialysis. This would result in an annual cost of $32,600 per patient for routine maintenance dialysis.
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>California, Total</td>
<td>351</td>
<td>359</td>
<td>409</td>
<td>442</td>
</tr>
<tr>
<td>NORTHERN CALIFORNIA, TOTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento Medical Center, Sacramento</td>
<td>23</td>
<td>26</td>
<td>29</td>
<td>24</td>
</tr>
<tr>
<td>Presbyterian Hospital, Pacific Medical Center, San Francisco</td>
<td>19</td>
<td>14</td>
<td>38</td>
<td>44</td>
</tr>
<tr>
<td>University of California Hospital and Clinics, San Francisco</td>
<td>140</td>
<td>135</td>
<td>148</td>
<td>153</td>
</tr>
<tr>
<td>SOUTHERN CALIFORNIA, TOTAL</td>
<td>169</td>
<td>184</td>
<td>193</td>
<td>221</td>
</tr>
<tr>
<td>Santa Barbara Cottage Hospital, Santa Barbara</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cedars Sinai Medical Center, Los Angeles</td>
<td>12</td>
<td>15</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Children's Hospital, Los Angeles</td>
<td>31</td>
<td>36</td>
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<td>38</td>
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<tr>
<td>Los Angeles County Harbor General Hospital, Los Angeles</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Los Angeles County USC Medical Center, Los Angeles</td>
<td>23</td>
<td>15</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>St. John's Hospital, Santa Monica</td>
<td>2</td>
<td>-</td>
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</tr>
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<td>St. Vincent's Hospital, Los Angeles</td>
<td>34</td>
<td>44</td>
<td>38</td>
<td>61</td>
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<td>UCLA Hospital, Los Angeles</td>
<td>18</td>
<td>14</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>Riverside General Hospital University Medical Center, Riverside</td>
<td>4</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Loma Linda University Medical Center, Loma Linda</td>
<td>7</td>
<td>7</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>San Bernardino County Hospital, San Bernardino</td>
<td>6</td>
<td>7</td>
<td>15</td>
<td>22</td>
</tr>
<tr>
<td>St. Joseph Hospital, Orange</td>
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<td>12</td>
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<tr>
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Source: ESRD Network Coordinating Council, MIS Facility Survey.
TABLE VII-21

CERTIFICATE OF NEED ACTIONS CONCERNING CHRONIC DIALYSIS
FACILITIES AND STATIONS IN CALIFORNIA
SEPTEMBER 9, 1976 - SEPTEMBER 8, 1977

<table>
<thead>
<tr>
<th>FILING SECTION</th>
<th>NUMBER OF FACILITIES</th>
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<tr>
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<td>278</td>
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<tr>
<td>Section 437.11(a)</td>
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<td></td>
</tr>
<tr>
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</tr>
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<tr>
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<td></td>
</tr>
<tr>
<td>Complied</td>
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</tr>
<tr>
<td>Section 1268</td>
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</tr>
<tr>
<td>Complied</td>
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<td>140</td>
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</tbody>
</table>

na Not applicable.

Note: 437.10 - Certificate of Need
437.11(a) - Underway on September 9, 1976, substantial economic loss if terminated.
437.11(b)(2) - To comply with federal or state law or regulations.
1268 - Previously approved by area health planning agency.

Source: State of California, Office of Statewide Health Planning and Development, Certificate of Need Program records.
Freestanding dialysis facilities can provide dialysis services at the Medicare screen amount of $150 per treatment, which results in an annual cost of $23,400. Although most dialysis stations added in the past five years have been in freestanding facilities, over 60 percent of dialysis facilities are still hospital based units.

A large part of the cost of dialysis is the cost of trained personnel. The Medicare program is attempting to reduce the cost of dialysis by encouraging self-dialysis in which the patient performs dialysis with little or no professional assistance. Self-dialysis can be performed either in a facility or in the patient's home. There is currently little experience with self-dialysis in a facility from which to estimate the annual cost of dialysis.

Home dialysis is the least costly way to provide maintenance dialysis services. The cost for the first year of home dialysis including the cost of patient training, the dialysis machine and equipping the patient's home is estimated by DHEW to be $21,350. Estimates of the average cost per year for subsequent years range from $9,000 to $15,000. This represents a savings of $8,000 to $13,000 per patient per year compared to the cost of maintenance dialysis in a freestanding facility.

Before Medicare assumed primary responsibility for paying for chronic dialysis services, home dialysis was the only mode of treatment which was affordable for many patients. At the beginning of the Medicare program, 40 percent of all dialysis patients were on home dialysis. This has now declined to about 12 percent in 1978. Several explanations are offered for this shift. Proponents of home dialysis argue that Medicare removed any incentives for economy and that for profit dialysis facilities have no incentive to promote home dialysis. For profit facility operators argue that the fraction of patients suitable for home dialysis has declined as the average age of dialysis patients has increased and that when the costs associated with home dialysis are included, there is little difference between the cost of incenter and home dialysis.

Much of the controversy centers on the question of what fraction of patients are candidates for home dialysis. Older patients with complicating medical conditions and individuals without a suitable partner to act as an assistant are not good candidates for home dialysis.

However, the extent of use of home dialysis appears to be largely a reflection of public policy and philosophy. In areas where there is an emphasis on home dialysis, the use of home dialysis is very high. In Great Britain, for example, where government health care policy makes home dialysis the preferred mode of treatment, 70 percent of dialysis patients are on home dialysis. In the state of Washington, where dialysis technology was pioneered and where there has always been strong philosophical support for home dialysis, 70 percent of all patients are on home dialysis. Several factors contribute to this rate:
home dialysis is the preferred mode of treatment among nephrologists in the area and patients are actively recruited into home dialysis at the beginning of their treatment.

- patients travel to the centers for a three week course which involves daily training with audio/visual materials.
- the State provides limited funding for a trained nonprofessional assistant.

There is no comparable enthusiasm for home dialysis in California. In 1978, 113 patients were trained for home dialysis, i.e.; 7 percent of patients who began dialysis that year. Training occurs in 41 facilities in California which have 70 home dialysis training stations. Based on the conservative Medicare standard that each training station should train at least six patients per year, there would be enough stations to train 420 patients per year. However, the goals for home dialysis recently established by the ESRD networks are somewhat less ambitious. These goals would result in a demand for the training of 126 home dialysis patients in 1979, or 7 percent of the patients expected to begin dialysis that year. Realization of these goals will do little to increase the proportion of dialysis patients on home dialysis in future years.

**Issue #2: Efficient Use of Chronic Dialysis Facilities**

Concern about the cost of chronic dialysis services has led to the formulation of some basic utilization standards in an attempt to assure that expensive resources for providing dialysis services are used efficiently. Different utilization standards for dialysis facilities have been established by the Medicare ESRD program and by the California Certificate of Need program.

The Medicare program expresses utilization of maintenance dialysis stations in terms of the average number of dialyses performed per station per week for a one year period. The utilization of home dialysis training stations is expressed in terms of the number of patients successfully trained per year. Each facility is now required to report to the Medicare program the number of dialyses of each type performed at each station.

The ESRD regulations also establish minimum utilization rates (MUR) required for unconditional participation in the Medicare program. These are four dialyses per station per week for facilities in rural areas and 4.5 dialyses per station per week for facilities in urban areas. Self-dialysis training stations which were used to successfully train six or more patients per year and the dialyses performed on those stations may be excluded from the calculation of average utilization.

The California CON program expresses utilization in terms of the average number of patients per station at a point in time. All patients and all operational stations are used in calculating utilization. The utilizations calculated by this method can be strongly
affected by the short term random fluctuations in patient census which inevitably occur. The method also does not take into account the fact that dialyses performed for home training are different from routine maintenance dialyses and that a home training station cannot serve as many patients as a maintenance station. The State method does, however, provide patient census which generally occurs during the year. It also more accurately reflects recent changes, such as loss of patients to a newly opened facility. For both planning and project review, the OSHPD uses a target utilization of 3.4 patients per station, which represents 85 percent of a maximum utilization level of 4 patients per station. The maximum utilization level is based on the assumptions that each patient is dialyzed three times per week, one patient can be dialyzed per eight hour shift and that facilities should operate two shifts per day, six days per week.

By assuming that patients are dialyzed three times a week, it is possible to compare the approaches used by Medicare and the State. Using the State method, the average utilization based on the number of patients as of December 31, 1977 was 81 percent. If this calculation were instead based on the number of dialyses performed in 1977, the calculated average utilization would drop to 71 percent. Even excluding all of the stations reported to be home dialysis stations (but not the dialysis performed at those stations) would only increase the average utilization calculated by this method to 74 percent. A comparison of the federal MURs with the State standard for minimal utilization shows that four dialyses per station per week represent an average of 33 percent utilization and 4.5 dialyses per station per week represents an average of 37.5 percent.

Obviously, the central factor in establishing any target utilization rates is the estimate of the maximum practical capacity of a dialysis station. The State standard was developed at a time when the length of an average dialysis treatment was six to eight hours. It was therefore only possible to dialyze one patient per shift. Recent advances in dialysis technology have made it possible to adequately dialyze many patients in only four to five hours. Thus, centers can reasonably be expected to dialyze three patients per day rather than two. This calculation is substantiated by the observation that in 1977 almost one-third of all centers reported utilization rates which would be over 100 percent based on the standard of two dialyses per station per day.

All dialysis facilities are now required to submit reports to DHEW containing data on the number of hours of dialysis performed. This information should be useful in establishing new utilization standards for dialysis facilities.

**Issue #3: Quality for Renal Transplant Centers**

The quality of ESRD services, like that of most medical care, is difficult to measure. Both federal and State regulations have established standards for ESRD facilities intended to insure that ESRD patients receive high quality care. These regulations include requirements for the various classes of personnel who provide ESRD services and for procedures and practices which facilities must follow.
Both Medicare and State regulations contain minimum utilization rates which were intended to insure that Renal Transplantation Centers perform an adequate volume of transplant surgeries to maintain staff competence. The Medicare standard for Renal Transplantation Centers is 15 transplants per year for unconditional approval. The State regulation also specifies 15 transplants per year.

In 1978, there were 14 centers performing renal transplants in California, of which four did not meet the minimum utilization standard of 15 transplants. Three of the centers did not perform the minimum of 15 transplants required for unconditional Medicare approval in any of the past three years.

**Issue #4: CON Review of Expansion**

Under current CON legislation in California, the addition of dialysis stations to an existing facility at a cost less than the threshold for capital expenditures is not reviewable. Significant numbers of dialysis stations could be added to the statewide inventory by this method. This exemption for additional stations at existing facilities could virtually preempt the location of additional facilities which may be more geographically accessible to the population to be served.

This problem is compounded by the fact that DHS does not license each Dialysis Clinic or Chronic Dialysis Unit of a hospital for a particular number of stations. It is therefore difficult for the CON program to obtain an accurate inventory of stations when projects do come in for review.
POLICY RECOMMENDATIONS FOR END-STAGE RENAL DISEASE SERVICES

ESRD-1: PREVENTIVE APPROACHES TO ESRD SHOULD BE SUPPORTED BY STATE PROGRAMS, BOTH EXISTING AND FUTURE, AS RESEARCH RESULTS BECOME AVAILABLE.

Prevention through hypertension and genetic counseling are particularly important.

ESRD-2: NONFACILITY BASED ESRD TREATMENT REGIMENS THAT ARE EFFECTIVE, SAFE AND ACCEPTABLE TO INDIVIDUAL PATIENTS SHOULD TAKE PRIORITY IN STATE REIMBURSEMENT PROGRAMS OVER FACILITY BASED TREATMENT.

Payment for current and future ESRD victims is jeopardized by the high cost of facility based hemodialysis, particularly hospital units. Cost effective alternatives will protect the public support of chronic ESRD care.

ESRD-3: THE MEDICARE ESRD PROGRAM SHOULD REIMBURSE 100 PERCENT OF THE COST OF RELATED DIALYSIS SUPPLIES FOR HOME HEMODIALYSIS AND PROVIDE PAYMENT FOR HOME DIALYSIS AIDS OR FAMILY MEMBERS WHO ASSIST PATIENTS IN PERFORMING HOME DIALYSIS.

Although Medicare pays for 100 percent of dialysis equipment, it pays for only 80 percent of supplies for home hemodialysis. Current reimbursement regulations thus fail to create adequate financial incentives for patients to undertake home dialysis. Increased financial support of home dialysis could result in overall reduced costs.

ESRD-4: THE MEDICARE ESRD PROGRAM AND THE DEPARTMENT OF HEALTH CARE SERVICES SHOULD PROMOTE THE DEVELOPMENT OF HOME DIALYSIS, INCLUDING, WHERE FINANCIALLY FEASIBLE, SPECIALIZED CENTERS FOR THE TRAINING OF PATIENTS FOR HOME DIALYSIS (BOTH HEMODIALYSIS AND PERITONEAL) IN EACH HSA WHERE THE NUMBER OF PATIENTS RECEIVING TRAINING EACH YEAR WOULD MAKE SUCH CENTERS PRACTICAL, SUCH CENTERS ASSUMING RESPONSIBILITY FOR PROVISION OF SUPPORT SERVICES SUCH AS HOME VISITS BY NURSES, PHYSICIANS, SOCIAL WORKERS AND DIETITIANS.

Regionalizing home training services would make possible the development of more effective home training programs. Such centers could effectively use specialized training materials, such as audiovisual aids, and would assure that training is performed by staff familiar with the problems of home dialysis training.

There are four renal transplant centers in California which did not perform the minimum number of transplants for unconditional Medicare certification in 1978.

ESRD-6: THE OSHPD AND THE MEDICARE ESRD PROGRAM SHOULD REVISE THE CURRENT UTILIZATION STANDARDS FOR DIALYSIS STATIONS BASED ON MEDICARE PROGRAM DATA.

Both the Medicare standard of 4 to 4.5 dialyses per station per week and the State standard of 3.4 patients per station are based on historical trends that are not relevant to current practice. With the shortening of dialysis time and the attendant increased potential to dialyze 3 patients per day rather than 2, it is necessary to update efficiency standards.

ESRD-7: LEGISLATION SHOULD BE ENACTED TO REQUIRE THAT THE ADDITION OF ANY DIALYSIS STATION BE SUBJECT TO CERTIFICATE OF NEED REVIEW REGARDLESS OF WHETHER OR NOT THE PROPOSED PROJECT EXCEEDS THE CAPITAL EXPENDITURE COST THRESHOLD.

Requiring CON review for the addition of stations will allow for approval of needed stations in the most appropriate type of facility and in the most appropriate geographic location to meet patient needs.

ESRD-8: THE DEPARTMENT OF HEALTH SERVICES SHOULD LICENSE A CHRONIC DIALYSIS CLINIC OR SERVICE FOR A SPECIFIC NUMBER OF STATIONS AND SUCH NUMBER SHOULD BE REFLECTED ON THE SPECIAL PERMIT OF THE FACILITY.

Effective planning and CON review is not possible without an accurate determination of the current supply of available resources.
NOTES


DEFINITIONS AND SCOPE OF SERVICES

This section discusses two types of specialized surgery that are defined by an associated technology:

- microsurgery
- laser surgery.

While these procedures present no significant problems for planning or CON review, they represent major technological advances in medical treatment. Intrinsic interest, comparative low cost and notable benefits to patients justify attention in this Plan. As surgical technology evolves, this section of the Plan may expand.

Microsurgery is not defined in State regulation. For purposes of this Plan, it is defined as:

"surgery on humans utilizing microsurgical techniques and microsurgical equipment, in particular, an operating microscope."

This definition does not include: microsurgery on animals; microsurgery utilizing only a pair of loupes (magnifying lenses worn like eyeglasses by the surgeon).

Laser Surgery is not currently defined in State regulation. For purposes of this Plan, it is defined as:

"surgery utilizing a laser source for purposes of coagulation or cutting of human tissue."

Microsurgery and laser surgery may occur in the following settings:

- hospital operating room (OR) ("integrated unit")
- hospital owned OR in outpatient unit, often physically separate from the hospital ("discrete unit")
- freestanding ambulatory surgical clinic
- physician office.

The last setting will not be directly addressed in this section.
MICROSURGERY

BACKGROUND

Microsurgery is of interest to planning less for its immediate financial requirements than for its relationship to bio-engineering and its implications for medical subspecialization. It exemplifies the development of a fairly sophisticated treatment mode of enormous benefit to relatively few.

First used in surgery of the middle ear in Sweden in 1921, microsurgery had application only in otolaryngology and ophthalmology until the mid-1950s. The introduction of the Zeiss operating microscope with adjustable magnification and good illumination in 1953, followed by continuing refinements (electrical foot controls, 1967; diplo- and triploscope, 1961 and 1973 respectively; fiberoptic lighting, etc.) and commercial production of microinstruments and microsutures in the 1960s, created a surgical modality with "revolutionary" potential in vascular, plastic and neurosurgery. The term "microsurgery" was coined in 1960. In the 1970s, additional applications in gynecology, orthopedics and urology appeared. Replantation of severed digits, hands and limbs, reconstruction of severe facial and bodily deformities and the potential for correction of infertility are some of the more dramatic accomplishments that have been attributed to this technique.

Relationship to Health Status

In essence, the contribution of microsurgery is the restoration of function in or to anatomical structures too small for conventional surgery and not sufficiently understood for noninvasive biochemical correction. While the value of microsurgery has been proven, its application in many surgical areas is still in the experimental stage.

In vascular and plastic surgery, the role of microsurgery is clear. At present there is "no alternative" to replantation if the patient and the severed part are good surgical risks and 90 percent patency rates are now achievable for this. "Free flap" transfer (a type of major skin graft) and peripheral nerve surgery are far superior to alternative treatments. About 80 percent of all strokes are believed to be due to atherosclerotic brain lesions, some of which are amenable to preventive "microvascular bypass surgery," reportedly effective and safe.

In gynecology, the impact of microsurgery on health status is less clear. Now used by a small group of surgeons to restore fallopian tube function after sterilization, microsurgery has produced mixed pregnancy experience. A major reason may be as yet incomplete understanding of tubal function: Perhaps there is no organ in the genital tract we know
less about. Consequently, restoration of tubal patency may not solve the infertility problem. The contribution of microsurgery to infertility research and general obstetrical technique is appreciable, however, and all agree on its potential (pregnancy success rates in animals, for example, have been fairly high).

National Trends

The dispersion of microsurgical capability among surgeons varies by age and specialty. While there are no data available, it is reasonable to infer that:

- ophthalmologists and otolaryngologists are most likely to be proficient in microsurgical technique and to use it both in office and hospital practice
- physicians in surgical residency training in the last 15 years are more likely to be familiar with microsurgical technique than those who were not
- physicians in neurosurgery, ophthalmology and otolaryngology are more likely to receive microsurgical training as a matter of course than surgeons in other specialties.

As for the future, attitudes of those now skilled are important for the likelihood of dissemination, since they will be the teachers. In neurosurgery, "microsurgery . . . is a normal, conventional operative technique . . . (that) should be learned by every neurosurgeon." Wherever there are neurosurgeons, then, there is likely to be demand for an operating microscope. In gynecology and reconstructive surgery (vascular, plastic), there is consensus (in the literature) that the technique is demanding, requires considerable practice on laboratory animals and continual use to maintain skill, and may involve cultivation of an operating room team (surgeons, anesthetists, nurses). Dispersion of skills in these specialties may be slower, then, and limited to select major medical centers.

It is noteworthy that none of the devotees of microsurgery claim it to be a "subspecialty" in and of itself. Rather, they view it as having uses across all surgical specialties—no "microsurgeons" are being called for.

There are no data on the number or distribution of operating microscopes in hospitals.

California Trends

There are no data on number or distribution of physicians trained in microsurgery or operating microscopes in hospitals. However, two national centers for microsurgical research and teaching are in this State: U.C. Irvine and Ralph K. Davies Medical Center in San Francisco.
Likewise, no financial or utilization data are reported to the State. They are difficult to obtain informally because "microsurgery" is not a cost center.

Current Policy

None known at the federal level.

No government or professional policies are known in California. At the level of clinical practice and fees, microsurgery as a charge factor in the California Relative Value Study (CRVS) is beginning to be recognized: it appears as a separate procedure or fee factor in ear and neurosurgery.11

Health Systems Plan Highlights

There is no discussion of microsurgery in any current California HSP.

ANALYSIS OF DEMAND AND SUPPLY

Analysis of Demand

The theoretical incidence rate underlying demand for microsurgery is the sum of health problems treatable via this mode. Since experimentation is expanding this number constantly, only an approximation is possible.

Incidence data for two classes of operations, surgery of the peripheral nerves and surgery of the peripheral blood vessels, may serve as examples. Assuming that 1975 U.S. rates are applicable to California in 1977—and lacking State specific rates this is not an unreasonable assumption—it is estimated that surgery of the peripheral nerves accounted for 19,000 discharges and surgery of the peripheral blood vessels for approximately 13,000 discharges in that year.12 Assuming further than ten percent of the peripheral nerve surgery and one percent of the peripheral blood vessel surgery could have benefited from a microsurgical approach, this would mean a very approximate demand of 2,000 cases statewide for microsurgical capability in the vascular and neural surgical specialties. Making the further very generous assumption that demand in the other specialties combined approximates half that in neuro- and vascular surgery, this gives a total microsurgical estimate of 3,000 cases statewide in 1977 (.075 percent of the total surgeries that year). Based solely on population increase, this might increase to 3,400 cases in 1985.13

It is noteworthy that some small proportion of candidates for microsurgery are accident victims (e.g., severed limbs). This has implications for the association of microsurgical capability and emergency transport systems (see Issues, below).

Analysis of Supply

Since there are absolutely no data on supply of operating microscopes, little discussion is possible. Questions of interest would include: distribution by size of hospital, distribution by staff mix, utilization by procedure and specialty, etc.
Some points concerning capital costs may be made. Current operating microscopes cost from $5,000 to $20,000. For highest quality work, specialized operating tables and chairs may be required. Ophthalmology benefits from immovable (heights) tables. Reconstructive surgery may require long hours bent over "inaccessible" body parts, eased by custom designed, irregularly shaped tables. All surgeons require firm arm and hand supports, often individually constructed. Equipping an operating room with a microscope may thus begin a series of purchases to assure satisfactory use to all specialties.

ANALYSIS OF ISSUES

Microsurgery raises a single major issue for planning, a not unfamiliar dilemma: unplanned proliferation of high cost, low volume, highly sophisticated technology with its cost and quality of care implicated.

Issue #1: Unplanned Proliferation of High Technology

The cost of microsurgery is of concern for planning not because of the capital cost per se, which is far below the CON threshold, but because of possible (not inevitable) associated costs of complementary emergency and/or research capability. Some hospitals may view their microsurgery service as only one component in a broad program of emergency services. If this happens, their capability in microsurgery could become a justification for additional investment in large scale emergency facilities: helicopter landing sites, emergency rooms, "trauma beds." Others may see microsurgery as a developing clinical subspecialty and wish to contribute new uses and record new data. This could lead to animal labs and considerable audio/visual needs. Some of these related services could be reviewable under CON or possibly proposed uses of federal (research) funds. All of them cost something, adding to the total bill and raising the potential for excessive duplication.

The quality issue in microsurgery relates to the training of surgeons using the operating microscope. As noted, training is probably differentially available by specialty and in any case is not evenly distributed by age. This suggests the need for some control over use of the equipment to assure patients of qualified care.

In summary, it may be emphasized that microsurgery is typical of a developing clinical approach to diagnosis or treatment requiring investment, training and therefore some attention to planning, even though exorbitant costs may not be (immediately) involved. Since microsurgery is not in itself very expensive and since hospital boards must play a role in assuring the quality of patient care, it seems reasonable that policy relating to dispersion of microsurgery should be cautious at the State level but aggressive in the hospital. It seems unreasonable today to urge a lowering of the CON threshold at the price of additional regulation and foregone research/experimental opportunities. It is likewise unreasonable to ignore the potential for problems. The balance for the present seems to lie in the hospital, where the major uses of microsurgery occur.
POLICY RECOMMENDATIONS FOR MICROSURGERY

Microsurgery-1: ALL GOVERNING BOARDS OF NONPROFIT HOSPITALS AND EQUIVALENT STRUCTURES IN FOR PROFIT HOSPITALS SHOULD VIEW THE USE OF OPERATING MICROSCOPES IN HOSPITALS AS A PROCEDURE REQUIRING A FORMAL GRANT OF PRIVILEGES.

A new technology always raises a concern for prudent application. Hospital governing authorities should assure patient safety and quality of care in microsurgery. The State is not the appropriate agency to address this problem at the present time.

Microsurgery-2: THE OSHPD ANNUAL REPORT OF HOSPITALS SHOULD REQUIRE REPORTING CONCERNING MICROSURGICAL EQUIPMENT AND USE.

There are no data at all concerning availability or use of operating microscopes. The Annual Report form is the easiest place to start collecting this information.
NOTES


3. Ibid., p. xxv.


6. Ibid., p. xi.

7. Ibid., p. 48

8. Ibid., p 240.


13. Ibid., Tables 1.0 and 2.0.
LASER SURGERY

BACKGROUND

The laser is a technological artifact with very broad implications, including several in medicine. Invented in 1960, "laser" is an acronym for "light amplification by stimulated emission of radiation." It consists of a coherent (as compared to the normally scattered) beam of light emitted from an atomic source, from e.g., argon, xenon or CO₂ upon stimulation by an electric discharge. The beam is extremely powerful and easily focused on very tiny targets.

The laser's utility in medicine derives from its ability to heat and thereby destroy any type of tissue by vaporizing cellular water and coagulating protein. A laser thus produces a burn of very small and precise diameter, a virtue appreciated for 15 years in ophthalmology and more recently in many other types of surgery. It is claimed to be of particular value where high blood loss is anticipated (e.g., liver surgery), where wound edges should be carefully sealed (e.g., tumor surgery), where necrotic or infected tissue is to be removed (e.g., burn surgery), and where deep folds or cavities inhibit visualization (e.g., cervical surgery).¹

The use of the laser varies from fairly common application for ophthalmological surgery to highly experimental procedures such as gastric surgery. In most cases, it is a substitute for some other technique, and its current status is generally as an alternative whose relative merits are much discussed in the literature.²

Relationship to Health Status

In all but one case, it is too early for definitive studies on the health status impact of laser surgery to be available. The one case is a national study of photo-coagulation of retinal blood vessels with argon or xenon lasers to inhibit deterioration of vision from diabetes. (Note that this is an outpatient procedure, performed under no or only local anesthetic.) The technique measurably decreases incidence of severe vision loss in certain cases.³ The laser is reportedly effective in a variety of uncontrolled clinical situations, such as:

- destruction of noninvasive cervical or vaginal malignancies with a CO₂ laser is deemed highly effective and less traumatic to the patient than alternative surgeries⁴
- the argon laser shows promise in control of gastrointestinal bleeding, a very common accompaniment to alcoholism⁵
incision of the iris by a laser in certain types of glaucoma is a viable alternative to conventional surgery.⁶

It should be noted that laser surgery may in some cases (eye, vaginal) be used with no or only local anesthetic, and may not require hospitalization (eye). As a procedure, it only takes a few minutes and in and of itself, does not entail hospital care.

National Trends

Training in laser surgery of the eye is becoming more widespread, although postgraduate fellowships are still used to gain this skill. Training in other surgical specialties is virtually entirely at the postgraduate level.

The utility of lasers is currently being explored in surgery, in cancer therapy, in soft tissue visualization but particularly for fetal and breast cancer studies.⁷ The field is clearly in the early experimental stage. A large scale evaluation of laser use in progressive diabetic retinopathy is now underway,⁸ and a variety of similar studies is deemed essential.⁹

There are no national data on the number, types, or distribution of lasers in hospitals or physician offices.

California Trends

None known.

Current Policy

There is some attention to the safety problems inherent in any use of radiant energy. The American National Standards Institute has published the "American National Standard for the Safe Use of Lasers," adopted as a matter of policy by the Atomic Energy Commission.¹⁰ The Standard insures uniform manufacturing practices regarding control of laser hazards, including those in biomedical instrumentation.

At the State level in the voluntary sector, laser surgery of the eye is well established in the CRVS, where it is assigned one of the highest values in the "eye" section.¹¹ Laser surgery does not appear in any other section, confirming its experimental status in terms of other clinical practice.

Health System Plan Highlights

There is no discussion of lasers in any current California HSP.

ANALYSIS

Laser surgery is not sufficiently widespread, capital intensive, or dangerous to have generated any issues requiring the attention of the OSHPD or HSAs at this time.

Lack of data and absence of issues obviate further discussion.
POLICY RECOMMENDATIONS FOR LASER SURGERY

None.
NOTES


4. Stafl, and discussion following this article.

5. Dwyer, op. cit.


ONCOLOGY SERVICES

DEFINITIONS AND SCOPE OF SERVICES

Strictly defined, oncology is the study of neoplastic diseases. For purposes of this Plan, it is defined as any and all aspects of cancer relevant to public health or clinical medicine.

Definitions of the major terms discussed in the following section on oncology services are:

- **Neoplasm** (literally, "new growth") is any abnormal tissue that grows by cellular proliferation more rapidly than normal and continues to grow after the stimuli irritating the new growth ceases. Neoplasms may be benign or malignant. Degree of malignancy is directly linked to the aggressiveness of a neoplasm. Although "benign" neoplasms can also kill, they are much less likely to do so.

- **Cancer** is a general term properly used to indicate any malignant neoplasm. Cancer also refers to a group of more than 100 distinct diseases that vary in causation, behavior and appropriate intervention. The term more accurately is used to describe a process rather than a disease entity. The family of cancer diseases is usually classified in two ways: (1) by the part of the body in which the disease originated (site) and (2) by the appearance of their cellular structure under a microscope.

- **Carcinogens** are agents (chemical, mineral, viral) which have been shown to produce cancer. Examples of strong human carcinogens include tobacco, asbestos, and benzopyrene from tars. Scientists may not be clear on what are the threshold levels for cancer causing doses. A cocarcinogen is an agent which acts with another to cause cancer.

- **Risk factors** are characteristics that put an individual or individuals at a greater than average risk of getting cancer. Risk factors can be of two types. **Host risk factors** are those that involve the body's medical history, immune system, and genetic structure (hereditary genes, previous illnesses, age, etc). **Environmental risk factors** include the broadest range of people's contact with their habitat, including social interaction, occupational and industrial contacts, and individual behavior.

- **Screening** is the presumptive identification of unrecognized disease by the use of tests, examinations or other procedures to examine a population and identify those who either have the disease or are at a certain risk of getting it. This presumptive evidence of cancer must then be confirmed by further appropriate diagnostic procedures.
Treatment is the physical and psychosocial management of the cancer patient during the acute phase of the disease. The nature of the cancerous process is such that close attention must also be paid to the post acute phase. Events such as recurrence at the primary site, metastasis to secondary sites, or the cyclical pattern of remission and spontaneous regression may make changes in treatment necessary. Therefore, treatment does not take place solely during a single acute phase, but may be called upon again during periods of followup care.

There are at the present time four treatment modalities for cancer. These different treatment modes may be used singly or in different combinations depending on the type of cancer involved:

- **Surgery** is the removal of cancerous tissue by invasive procedures in order to cure or palliate (reducing pain without intent of cure)

- **Chemotherapy** is the use of chemical agents to eliminate cancer cells. They can affect both cancer cells and normal cells, but selectively damage the cancer cell population to a greater degree. **Combination chemotherapy** is the simultaneous or sequential administration of two or more chemotherapeutic agents. **Adjuvant chemotherapy** is the use of chemotherapy to support the action of surgical and/or radiotherapeutic treatment modalities.

- **Radiotherapy** is the use of ionizing radiation to destroy or inhibit the growth potential of tumor cells. It may be curative or palliative. The most common type of radiotherapy is carried out by external beams of radiation that are classified by their energy range (superficial, orthovoltage and megavoltage). Other types of radiotherapy involve the application, implantation or systemic administration of radioactive substances.

- **Immunotherapy** is the use of techniques to produce an immune response in the body against specific antigens on the surface of tumor cells. All immunotherapy today must be regarded as experimental.

**Continuing care** refers to all forms of therapy and support given to the cancer patient that follows a treatment regimen. It may be augmented by followup treatment, necessitated by recurrences of the acute phase of the disease.

There are three major forms of continuing care:

- **Rehabilitation** is the process of restoring maximum physical, psychological, social and vocational functions lost as a result of the disease and/or the treatment of the disease. The emphasis of
rehabilitation is the improvement of the functional condition of the patient. Therapeutic techniques used in rehabilitation include physical therapy, occupational therapy, recreational therapy, prosthetic/orthotic services, communication therapy and social therapy.

- **Maintenance** is the provision of support and services needed for those cancer patients whose condition cannot be improved. It is aimed at lessening the burden of recurrent and/or disseminated disease through such services as home health care, nursing home care, family oriented care, and support groups. Its purpose is to maintain the individual with cancer at his/her existing level of function by: (1) preventing deterioration in his/her physical and mental condition through all available resources; and, (2) providing assistance in activities in daily living.

- **Terminal care** is the management of those cancer patients in whom the disease process has been determined to be irreversible and leading to death. The needs of these patients are distinct. Of particular importance in care of terminally ill patients are relief of pain and provision of a caring environment that includes psychological, social and cultural support services for both the patient and the family.

This section of the Plan discusses cancer management, including prevention, detection, diagnosis, relevant technologies and treatment.

**BACKGROUND**

Cancer develops as a result of abnormal cell reproduction. Normal cells reproduce at exactly the rate required to replace dying cells, never at a faster rate. Like normal cells, cancer cells reproduce by dividing. But they have lost the ability to reproduce at a controlled rate.

Whenever anything interferes with the reproductive control of cells, the cells multiply and gradually build up a mass of tissue called a tumor. Some tumors are noncancerous, or benign. A benign tumor does not spread to surrounding healthy tissue or to other parts of the body.

Cancer produces malignant tumors. A malignant tumor invades, compresses, and eventually destroys surrounding healthy tissue. In addition, cells can break away from a malignant tumor. These cells are carried by the blood or lymph (fluid from body tissues) to other parts of the body, where they continue to multiply and so form new tumors. The spread of cancer from the original tumor to one or more other body sites is called metastasis. Cancer's ability to spread to other parts of the body makes the disease extremely difficult to treat unless it is detected early.
Common Cancers by Body Site - The primary body sites that cancer strikes most often are the skin, the female breasts, and the organs of the digestive, respiratory, reproductive, bloodforming, lymphatic, and urinary systems. The occurrence of cancer in these sites varies from country to country. Cancer of the stomach for example, is much commoner in Japan than in the United States. But a far higher percentage of Americans than Japanese develop lung cancer. The following discussion deals with the kinds of cancer that occur most often in the United States. However, each kind also occurs frequently in many other countries.

Skin cancer (e.g., melanoma) occurs more often among Americans than does any other kind of cancer. But most skin cancers grow slowly and do not spread to other parts of the body. As a result, these cancers are easier to treat than are most other kinds. About 95 percent of all persons treated for skin cancer recover completely.

Cancers of the digestive system are the most common kinds of cancer in the United States after skin cancer. The colon (large intestine) and rectum are the organs generally affected. About 45 percent of all people treated for cancer of the colon and rectum survive five years or longer after treatment without a return of the disease. Patients who remain free of cancer this long after treatment have a good chance of remaining permanently free of the disease. Other cancers of the digestive system are those of the esophagus, liver, pancreas, and stomach.

Cancers of the respiratory systems involve the larynx and lungs. Lung cancer is by far the more common of the two kinds. It occurs mainly in men, but a growing number of women also develop the disease. The death rate among lung cancer patients is exceptionally high. In most cases, the disease has already spread to other parts of the body before it is detected. As a result, only about 10 percent of all lung cancer patients are saved. The disease kills more American men than does any other kind of cancer.

Breast cancer occurs in both sexes but attacks far more women than men. It is the chief cause of cancer deaths among American women. But about 60 percent of all female breast cancer patients recover and remain free of the disease five years or longer after treatment.

Cancers of the reproductive system occur at a relatively high rate among both men and women in the United States. The male organ most often affected is the prostate gland. About half the men treated for prostate cancer recover and show no signs of the disease at the end of five years.

The most common cancers of the female reproductive system are those that affect the childbearing organ, the uterus. Most cancers of the uterus affect the organ's cervix (neck). Cervical cancer patients have a five year survival rate of about 60 percent. Some cancers of the uterus affect the main organ. These cancers generally occur much later in life than do cervical cancers. About 75 percent of the women treated for this form of the disease survive five years or longer after treatment.
Cancers of the urinary system occur less often than do cancers of the other major body systems. The bladder is the organ usually affected. Approximately three-fourths of all bladder cancer patients are men. The five year survival rate is about 55 percent.

Leukemia - Cancer of the bone marrow and other blood forming organs is called leukemia. It involves the multiplication of immature white blood cells at the expense of vital blood elements. Cancer of the lymphatic organs, and of other organs composed of lymphoid tissue, is called lymphoma. It involves the overproduction of certain cells in this tissue.

Both leukemia and lymphoma have several forms. One of the most common forms of leukemia is acute leukemia. This disease attacks more children in the United States than does any other kind of cancer. The most common form of lymphoma is Hodgkin's disease. More young adult Americans are struck by Hodgkin's disease than by any other kind of cancer.

In the past, leukemia and lymphoma were among the most difficult of all cancers to cure. But methods of treatment developed since the early 1960's have greatly increased the survival rate. Many children with acute leukemia now survive five years or longer after treatment. Americans treated for early Hodgkin's disease now have a five-year survival rate of better than 90 percent. For advanced cases, the survival rate is about 70 percent.

Cancers are also identified according to the type of body tissue in which they originate. They are divided into two main groups: carcinomas and sarcomas. Carcinomas are cancers that start in epithelial tissue — the tissue that forms the skin and the linings of inner organs. Sarcomas are cancers that begin in connective tissue — the tissue that forms the body's supporting structures, such as bones and cartilage. Leukemia and lymphoma are sometimes classed separately from carcinomas and sarcomas. But they are also classed as forms of sarcoma because the tissues they affect — blood and lymph — are forms of connective tissue.

The great majority of cancer cases are carcinomas. They include most cancers of the skin and breast, of the digestive, reproductive, respiratory and urinary systems. Sarcomas also occur in all these organs and systems but far less often than do carcinomas.

Relationship to Health Status

Patterns and incidence of site and kind of malignant cancer vary with sex, age, race and geographic location. Variables such as lifestyle, occupation, and socioeconomic status have been identified as playing a role in cancer epidemiology.

Cancer strikes people of all ages but especially middle aged persons and the elderly. It occurs about equally among people of both sexes. The disease can attack any part of the body. However, the parts most often affected are the skin, the digestive organs, the lungs, and the female breasts.
Without proper treatment, most kinds of cancer are fatal. In the past, methods of treatment gave patients little hope for recovery. But the methods of diagnosing and treating the disease have improved greatly since the 1950's. Today, about a third of all persons treated for cancer recover completely or live much longer than they would have lived without treatment.

As shown in Figure VII-5, the rise in mortality from cancer has been steady in the United States since 1900. It has been projected that if present rates continue, by the year 2000 there will be over 500,000 deaths from cancer annually.

Cancer incidence and mortality have continued to increase in the 1970's, incidence somewhat more rapidly than mortality — probably reflecting, in part, improvements in treatment and earlier diagnosis. Even when smoking related lung cancers are removed from the incidence data, there were still increases in incidence from 1969 through 1976, the year for which the most recent complete data are available.

There are some important decreases in cancer incidence and mortality, especially in younger persons — people under age 45. The decreases have come about, in part, through reduced incidence of breast cancer in younger women, lung cancer in younger men, and the childhood leukemias and Hodgkin's disease. The survival rates for these two diseases have improved significantly since the early 1950's.

However, the increase in numbers of older people have overwhelmed the decreases among younger people so that when examining the total data, cancer mortality overall is increasing and, parenthetically, it is the only major cause of death which has continued to rise from 1900 through 1976. Recently, though, this rate of increase has begun to decline.

As cancer is not one disease, but many, some are increasing and some are decreasing. Most, but not all, of the increased incidence of lung cancer is due to cigarette smoking. Today, approximately 85 percent of the deaths due to lung cancer are attributable to smoking. If one subtracts the lung cancer deaths related to cigarette smoking, total cancer mortality has been declining overall. It has been steady for men and decreasing for women, whereas the incidence of cancer, even when correcting for smoking related lung cancer, is continuing to rise for all groups. When the data are broken down by age and sex, even the lung cancer situation is not without some signs of improvement. Both the incidence and mortality rates for lung cancer in men are leveling off or perhaps even decreasing up to age 65. This may be due in part to the lowered smoking rates among older men, and possibly to the lower tar and nicotine in modern cigarettes.

However, this is not true for women. Not only is lung cancer going up, but cancer of the larynx, esophagus, and bladder as well. At one time there were 10 deaths among men from laryngeal cancer for each death among women; in approximately 15 years this has dropped 7 to 1. In most countries of the world, the male excess is greater, reaching 30 or 40 to 1 as in Switzerland and France.
FIGURE VII-5

FORECAST OF CANCER DEATHS (U.S.)

source: Epidemiology and Statistics Department, American Cancer Society, June 1977.

* 1975 ACTUAL
Cancer in several other sites continues to increase, both in incidence and mortality. Breast cancer mortality is down significantly in younger women due primarily to improved treatment and detection. In women over age 50, the mortality rate continues to increase, a reflection of the fact that the incidence of breast cancer is still rising in all groups, with the exception of what appears to be a slightly lowered incidence in white women under age 45.

Mortality rates of cancer of the colon, bladder and pancreas, as well as melanoma are increasing. While there now seems to be a leveling off of pancreatic cancer in men, the incidence of the remainder of these cancers continues to go up for yet unidentified reasons. Epidemiological studies are now underway to determine if there is a connection between occupational, dietary, or environmental exposure to carcinogens (including ionizing radiation) and these and other cancers of increasing incidence. However, definitive data are not yet at hand.

In contrast, there are other relatively common cancers that have been decreasing in mortality — including cancer of the stomach, cervix, uterus, and rectum. It is still unclear as to why these cancers are decreasing. The incidence of stomach cancer is perhaps going down because of dietary changes, such as the increase in the consumption of fresh or frozen fruits and vegetables. But, this is a tenuous conclusion. Current research in nutrition is examining the relationship between diet and the various types of cancer.

As a result of earlier diagnosis through Pap smears, the reduced number of cervices through hysterectomy, and possibly better personal hygiene, both the incidence of and mortality due to cancer of the cervix have declined sharply.

The period of time which a cancer patient lives, or is free of new cancer, after the initial diagnosis of cancer is a useful indicator of the success of treatment. Trends in survival indicate whether or not progress is being made in treating a particular type of cancer. There have been small gains in survival in several of the cancers but these gains are not yet reflected in the total mortality statistics. The "survival" charts (Table VII-22; Figure VII-6) are divided into two parts — one part showing cancers of increasing incidence and one part showing cancers of decreasing incidence.

Cancer Management

Cancer management, for the purpose of this Plan, will be defined as including all interventions in the cancer process, i.e., prevention, detection/diagnosis, treatment and rehabilitation/continuing care.

Prevention Cancer prevention is more than the prevention of a single disease. Nearly all measures taken to reduce the incidence of cancer will reduce the incidence of other diseases as well. Examples include cessation of smoking, control of air pollution and reduction of exposure to ionizing radiation. Cancer prevention should be considered in the
### TABLE VII-22

**IMPROVEMENT IN 3-YEAR CANCER PATIENT SURVIVAL FROM 1960 TO 1973**

**ALL RACES AND ALL SEXES COMBINED**

<table>
<thead>
<tr>
<th>CANCER SITES WITH DECREASING INCIDENCE RATES</th>
<th>1960-64</th>
<th>1970-73</th>
<th>POSSIBLE GAIN</th>
<th>% OF POSSIBLE GAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>STOMACH</td>
<td>15</td>
<td>16</td>
<td>85</td>
<td>1.2</td>
</tr>
<tr>
<td>RECTUM</td>
<td>45</td>
<td>51</td>
<td>55</td>
<td>10.9</td>
</tr>
<tr>
<td>LIVER</td>
<td>3</td>
<td>5</td>
<td>97</td>
<td>2.1</td>
</tr>
<tr>
<td>CERVIX</td>
<td>62</td>
<td>67</td>
<td>38</td>
<td>13.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CANCER SITE WITH INCREASING INCIDENCE RATES</th>
<th>1960-64</th>
<th>1970-73</th>
<th>POSSIBLE GAIN</th>
<th>% OF POSSIBLE GAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESOPHAGUS</td>
<td>6</td>
<td>7</td>
<td>94</td>
<td>1.1</td>
</tr>
<tr>
<td>COLON</td>
<td>49</td>
<td>51</td>
<td>51</td>
<td>3.9</td>
</tr>
<tr>
<td>PANCREAS</td>
<td>2</td>
<td>2</td>
<td>98</td>
<td>0.0</td>
</tr>
<tr>
<td>LUNG</td>
<td>10</td>
<td>12</td>
<td>90</td>
<td>2.2</td>
</tr>
<tr>
<td>BREAST</td>
<td>72</td>
<td>75</td>
<td>28</td>
<td>10.7</td>
</tr>
<tr>
<td>PROSTATE</td>
<td>62</td>
<td>70</td>
<td>38</td>
<td>21.1</td>
</tr>
<tr>
<td>KIDNEY</td>
<td>45</td>
<td>50</td>
<td>55</td>
<td>9.1</td>
</tr>
<tr>
<td>BLADDER</td>
<td>60</td>
<td>66</td>
<td>40</td>
<td>15.0</td>
</tr>
<tr>
<td>MELANDOMA</td>
<td>69</td>
<td>73</td>
<td>31</td>
<td>12.9</td>
</tr>
<tr>
<td>THYROID</td>
<td>84</td>
<td>87</td>
<td>16</td>
<td>18.8</td>
</tr>
<tr>
<td>MULTIPLE MYELOMA</td>
<td>18</td>
<td>28</td>
<td>82</td>
<td>12.2</td>
</tr>
</tbody>
</table>

FIGURE VII-6
IMPROVEMENT IN 3-YEAR CANCER SURVIVAL: 1960-1973

CANCERS OF INCREASING INCIDENCE

CANCERS OF DECREASING INCIDENCE

PERCENT OF POSSIBLE GAIN

NO CHANGE

context of a comprehensive disease prevention program aimed at promoting the health and well-being of the general public through such public health measures as maintaining clear air and water supplies, sewage disposal and immunization against infectious disease.

- Water and Disease - Although no longer a common source of infectious disease, public water supplies are once again a focus of concern as a potential cause of many diseases including cancer. Various potentially carcinogenic compounds such as asbestos, halo-ethers, halogenated organic compounds (e.g., bromodichloromethane, bromoform, and chloroform, arsenic, cadmium, dioxanes and certain thioureas) are present in many water supplies. In extensive tests on tap water in one American city, for example, some 432 different chemicals have been identified. Such materials may not only be direct carcinogens but many also act as carcinogens or promoters which enhance the effect of other materials in drinking water, thus resulting in added insult to the exposed organism.

Other than their known or suspected carcinogenicity, very little is known about the toxicologic or pathophysiologic effects of long term, chronic exposure to low doses of these water borne chemicals.

- Air and Disease - The total effect of air pollution upon public health has not been determined though there is a direct and immediate causal relationship between heavily polluted air and ill health, particularly respiratory and cardiac disease. Airborne contaminants including combustion products, motor vehicle exhaust fume and industrial by-products, can have a deleterious effect on the upper or lower respiratory system. Many airborne contaminants which are initially inhaled into the respiratory tract are trapped or absorbed in mucous secretions, swept upward by ciliary action, and subsequently swallowed, thereby exposing the body to their action through alimentary rather than the respiratory tract. Asbestos and cadmium are examples. The effect of high doses of these airborne contaminants on the gastrointestinal tract is not known but they are highly suspect as etiologic agents in some types of digestive diseases.

Air also contains known or suspected carcinogens, especially in the form of polycyclic aromatic hydrocarbons. The role of these pollutants in the induction of lung or other cancers has not been clearly defined, but the potential for these agents and others to act as cocarcinogens or promoters with other chemicals in the air does exist.

- Radiation Induced Cancer - Ionizing radiation is a known potent carcinogen. It has caused a significant number of childhood cancers among children exposed in utero; workers who are exposed to ionizing radiation; and individuals previously irradiated for such minor diseases as adenoids and acne. In addition, ionizing
radiation is known to be a potent mutagenic and teratogenic agent. Ultraviolet radiation (for instance, exposure to the sun) is also a human carcinogen and is known to cause skin cancer in men.

While a certain amount of ionizing radiation does occur naturally, most exposure can be controlled by government regulations which define acceptable exposure levels and by avoiding unnecessary use of diagnostic x-rays. Protection against excess ultraviolet radiation however, is another matter and is largely a matter of personal preference and lifestyle choices.

Occupational Exposure and Disease - It has been estimated that some 80 percent of all human cancers are caused, or their origin strongly contributed to, by factors in the environment and therefore are theoretically preventable. Although less than 5 percent have been attributed directly to occupational exposure, this may be an underestimate in view of the difficulty in identifying causes. Regardless of the proportion, however, occupational carcinogens constitute a group of environmental factors that, when identified, are subject to specific regulations and engineering controls, which offer the possibility of nearly total prevention of new cases. California in particular has presently identified approximately 20 chemicals as occupationally carcinogenic and thus subject to State regulation.

However, it is assumed that all occupational carcinogens have not yet been identified. For example, Tomatis, in 1975, reported on an International Agency for Research in Cancer programs to evaluate the carcinogenic risk of chemicals to man. At that time the chemicals selected for assessment were among those for which there was some evidence of suspicion of carcinogenicity in experimental animals and/or man, and to which human exposure is known to occur. Of the 196 compounds evaluated, carcinogenicity to man, or a strong suspicion thereof, was found for 14 compounds associated with occupation. Of 94 compounds found unquestionably carcinogenic in animals only 78 are present in some occupational environments. Of 41 found to have "limited" carcinogenic activity in animals, 34 are present in the workplace.

Lifestyle and Disease - Smoking is responsible for approximately 40 percent of all cancer in U.S. males and a smaller but rising proportion in U.S. females. It is a major contributor to cardiovascular disease, hypertension, emphysema, as well as cancer of the lung, urinary bladder, esophagus, larynx, pharynx, and pancreas. Although the risks associated with the use of tobacco are well known and accepted, tobacco usage itself has declined little. In fact among teenage girls and women, there is an alarming increase in cigarette smoking.
Although the evidence that alcohol alone is carcinogenic is equivocal, there is strong reason to believe that alcohol serves as a cocarcinogen with cigarette smoke in increasing the rate of pancreatic and esophageal cancer. Alcohol use is also associated with an elevated incidence of oral, gastric and liver cancers.

Diet - Though the evidence is not yet entirely convincing, dietary factors are likely to be contributors to cancer. Some investigators believe that high levels of fat in the diet lead to cancer of the breast and colon; others believe that reduced fiber or bulk in the diet causes colorectal cancer. High fat diets are also associated with obesity which in turn is associated with heart disease, hypertension, arterial disease, and diabetes. It is known that persons who restrict their intake of saturated fats and cholesterol are at a reduced risk for heart disease. It may be that modification of the diet to reduce fats, refined sugars and carbohydrates will reduce the incidence of cancer also. Increased fiber in the diet may be helpful not only in reducing colonic cancer but in reducing diverticulitis and colitis and other noncancerous gastrointestinal syndromes.

There are other examples of the effect on cancer of variables related to lifestyle. City dwellers are known to have more lung cancer which may be associated with increased exposure to air pollution or increased use of tobacco and alcohol or from a combination of these and other factors. Women in the lower socioeconomic brackets have more cervical cancers; blacks have above average incidence rates for pharyngeal cancer. These higher incidence rates may be related to increased use of alcohol and tobacco, nutritional status, poor health, and hygiene practices, later diagnosis and treatment (perhaps because of the cost, quality or availability of health care) or to combinations of any or all of these and other factors. Although there are many close correlations among these various factors and increased incidence of a number of diseases, it has not been possible to sort out the causes, effects, and concomitant variations through epidemiologic studies of various lifestyles. A lack of understanding of the complex nature of the disease process has probably contributed to the inability to specify the role of single elements as causative factors in the increased disease incidence noted in these populations.

Detection and Diagnosis: It is a common, pervasive assumption that cancer cases detected and presumably treated "early" will have a better result than cases diagnosed when they become symptomatic. What is meant by "better results" is variously defined; however, in evaluating the effectiveness of screening, a "better result" is a reduction in the morbidity and mortality from cancer. At this time, the only cancers for which such data are available are cancer of the breast and of the cervix. Reduction in mortality as a result of early detection has not been convincingly demonstrated for any other cancer site.
"Early" has two connotations: first, "early" in the life cycle of the tumor, and second, "early" relative to the time of diagnosis. If the cancer can be found before metastases occur, then there may be significant benefit from screening. This appears to be happening with the use of mammography in screening for breast cancer. If, on the other hand, one finds the disease before symptoms occur but not before metastases are formed, then the benefits of "early" detection are much less certain. This situation has occurred in screening for lung cancer.

Another assumption is that screening has no harmful effects, yet several have recently been suggested. For example, early detection of a cancer may prolong life or may only give the patient additional years to live with disease, with its consequent anxiety and posttreatment morbidity. The patient with screen detection disease will have treatment sooner and any consequent morbidity will last longer than otherwise expected. While this seems a small issue in the context of cancer of the cervix, consider the price paid by someone who must have a colostomy or urine diversion procedure because a screening program detected a colon or bladder cancer. If such a person does not gain useful years of life, then screening has only led to prolonged serious morbidity.

A further disadvantage to screening is that a high proportion of those people whose tests are positive may be shown upon further diagnostic testing not to have the disease. Such false/positive tests may result in significant psychic costs of patients told they may have cancer, and also in considerable expense for the diagnostic tests necessary to establish that they do not. The diagnostic procedures themselves may result in some morbidity, particularly if exploratory surgery is required.

Prerequisites for Successful Screening - Two basic elements must be present in any screening situation: a disease suitable for screening and a suitable test.

Disease suitable for screening has three characteristics:

- the disease should have serious consequences and be so recognized by members of the target population
- the disease must have a treatment which, when applied to the screen-detected stage of the disease, is more effective than treatment given when symptoms have led to diagnosis
- the prevalence of the detectable preclinical phase (DPCP) of the disease should be high among the persons screened. The DPCP of the disease is the period between the time when the disease can be detected by the screening test and the time when it would be clinically evident.

A good screening test is expected to designate persons with early disease as positive (sensitivity) and those without as negative (specificity).
For practical purposes, it is nearly always true that sensitivity and specificity must be traded off against one another. If one opts for high specificity, then the test will pick up many cases which, in fact, are not cancer.

Other considerations regarding a screening test relate to practical matters. A screening test should be low in cost, both because the large numbers of individuals who must be tested make cost minimization essential, and because cost must be minimal if asymptomatic persons are to agree to be tested. Second, a test should be safe, convenient and painless to ensure participation by screenees. Cancer screening procedures which meet all of these criteria are unfortunately rare. Except for physical examination, only the Pap test for cervical cancer and the hemoccult test for occult blood in the stool have escaped major criticism for failing to meet one or more of these criteria.

It is apparent that not all cancers can be appropriately screened. In some cases, such as lung cancer, it has not been possible to improve mortality by earlier detection; in others, the necessary tests are either of limited effectiveness or do not yet exist. The cancers for which screening is a feasible consideration are few. Fortunately, they include some of the major types.

Limitations of Screening Studies - There are some limitations derived from the methodology of screening studies which may make it difficult to interpret the evidence for or against screening for a particular cancer.

The first of these problems is self-selection. Commonly a cancer screening test may be offered to appropriate members of the public, some of whom accept. However, virtually every screening program attracts volunteers, persons who are self-selected on one basis or another. Selection factors may relate to the risk of developing a particular cancer, to having an unusual form of the disease or to health consciousness and compliance with a therapeutic regimen. For these reasons the case fatality experience and the cancer mortality rate of volunteer screenees cannot be compared validly with those of the general population.

A second limitation results from the concept of lead time. Lead time is the average time by which the conventional diagnosis of cancer is advanced among the cases detected by the screening program.

Two points are important to remember about lead time. First, every asymptomatic case detected by screening experiences some lead time, perhaps days, perhaps years. Therefore, a part of each case's duration of survival reflects not only a delay, if any, in death, but also the advancement in time of diagnosis. Even more important, the lead time factor makes it impossible to compare the survival experience of symptom diagnosed cases directly with the survival of screen detected cases, because what appears superficially to be extended survival may be an artifact of earlier diagnosis.
A third limitation in evaluating the results of a screening program is length bias. This bias results because slow growing lesions, with a favorable prognosis, have a longer detectable preclinical phase than the rapidly growing lesion with an unfavorable prognosis. Since the prevalence of a type of lesion is a function of the average duration of such lesions, it follows that slow growing lesions will have a disproportionately higher prevalence than fast growing lesions. Thus, there will be overrepresentation of slow growing lesions among those detected by an initial screening examination which picks up both new and old cases of disease. This overrepresentation of slow growing lesions with a favorable prognosis means that in the aggregate, cases detected on an initial examination will appear to do well even if early treatment is no more effective than treatment given when symptoms are present.

It should be clear from the foregoing discussion that screening is not a simple and direct solution to cancer control. It must be done with a clear understanding of its actual and potential costs, and with less than absolute certainty about benefit. Screening should be done, but everything reasonable must be done to maximize benefits, lower costs and minimize adverse effects if the new result is to be positive.

Treatment: Most cancers receive a combination of medical treatments (surgery, radiation therapy, chemotherapy or immunotherapy) and sometimes, nonmedical treatments.

Surgery: Surgery continues to play a dominant role in the treatment of solid tumors (as opposed to leukemias and lymphomas) and is increasingly being combined with the other modes of therapy discussed below.

Radiation Therapy: Living cells are variously sensitive to different forms of energy. Ionizing radiation is capable of penetrating cells and depositing large amounts of energy within them. Cells vary markedly in their ability to tolerate exposure to such ionizing radiation.

Some tumors are extremely radiosensitive i.e., relatively easy to destroy with radiation (e.g., seminomas); others are only moderately radiosensitive (e.g., ovarian cancer); and some are quite radioinsensitive (e.g., melanomas).

The inherent sensitivity of a tumor to radiation is only one important treatment consideration. Also important is the radiosensitivity of the surrounding normal tissue, for this tissue, too, will be exposed in some part to radiation, and, in practice, this is frequently an important factor in treatment.

Besides radiosensitivity and location, presence of metastases and size of tumor are important factors in determining whether or not a given patient will receive radiation therapy. Even if cure appears impossible, radiotherapy may be used for palliation. About 60 percent of patients treated with radiation therapy receive it with curative intent, and 40 percent for palliation.
Radiation therapy is performed in various ways, with various types of equipment:

- external radiation delivered by machines
- local radiation delivered by radioactive substance
- systemic irradiation where a radioactive substance is injected into the bloodstream.

Of these, external is the most commonly used type. Further advances in the effectiveness of x-ray therapy will probably result from manipulation of treatment or host variables.

Chemotherapy: Chemotherapy is most widely practiced and often combined with other therapies. It is especially valuable in treating widespread disease because drugs are widely distributed in the body. This quality is in contradistinction to surgery and radiotherapy, which are directed, at most, at a few specific regions of the body.

Thus, if for any reason, cancer is not well treated by one of the more direct assaults, chemotherapy becomes the only method of treating the patient's cancer.

Immunotherapy: Since 1972, sizable efforts have been devoted to testing the effect of boosting immune defenses against tumors. While in general results with nonspecific immunotherapy, such as BCG, have been disappointing, there are exceptions when BCG has been combined with other treatment modalities, usually chemotherapy. Encouraging results have been reported with acute leukemia, melanoma, and lung cancer with use of BCG. Other immunostimulants such as levamisole and thymosin have recently been reported to improve survival of treated patients. These pilot studies require confirmation, and such trials are in progress. If positive, they will represent a significant advance in cancer treatment.

Rehabilitation and Continuing Care: Success in treatment of cancer can most readily be gauged by an increase in the quantity of survival. An analysis of the quality of survival is more complex, but of major significance in evaluating the success of cancer treatment.

Rehabilitation of the cancer patient should begin as soon as diagnosis is made and the definitive treatment is planned. In some cases, such as an early skin cancer, for which a plastic surgical procedure may be utilized, no other rehabilitation is required. In other cases, rehabilitation needs must be assessed individually on the basis of the anatomic site, histologic type, stage of disease, treatment modality or modalities used, presence of metastasis, age, and overall prognosis of the patient. Although accurate prognostication is difficult, certain goals must be established initially in order to prescribe appropriate rehabilitation procedures. It is most important that the attending physician consider all
potential disabilities which may be produced by the disease or treatment, so that every effort can be made to lessen the disability. It lengthens the rehabilitation period to wait until a disability actually exists.

The goals that may be established are: (1) a "restorative" goal, for cases in which recovery from the initial handicap is expected with little or no disability, such as the patient who has undergone a radical mastectomy and experiences postoperative shoulder dysfunction; (2) a "supportive" goal, for patients in whom some form of permanent deformity or dysfunction is expected, but who, with adequate rehabilitation methods, can be returned to a self-supporting status (rehabilitation of an amputee represents such a goal); (3) a "palliative" goal, which is applicable to patients with progressive advanced disease who, through proper rehabilitation efforts, can maintain some form of independence in the activities of daily living with a reasonable degree of comfort. The goals in an individual patient may change during the course of treatment or followup evaluation. It may be necessary to shift from a restorative or supportive goal to that of palliation or, more hopefully, vice versa.

The psychologic, social, vocational, and economic impact of the disease, on the cancer patient and on his family, must be evaluated as an integral part of rehabilitation, in addition to the attention devoted to physical restoration.

Relevant Technologies

New technologies in cancer management include new drug development and cooperative clinical trials, new chemotherapy infusion techniques and prosthetic devices, exploratory usage of bone marrow transplants, tumor markers, hyperthermia, mammography and thermography, and high technology equipment (e.g., CT and ultrasound scanners, linear accelerators, neutron generators, laminar flow rooms, new cell separation devices and techniques, etc.).

The variety and number of developing, relevant technologies are great. This discussion however, will focus only upon those primary health planning issues of high cost and complex system design. In terms of cancer management, high cost technology pertains most specifically to advances in radiographic and radiotherapeutic equipment. Regarding radiographic (diagnostic) equipment, the most relevant new technological advance has been the development of head and whole body CT (computerized tomography) scanners. These machines when used judiciously, can provide more precise information relative to the patient's pathology and physiologic abnormalities. There are several "generations" of these machines available, each newer generation providing better resolution and faster operating time (and so subject less to patient movement) than the generation before. CT scanning has developed as a complementary technique to ultrasound and standard radiologic techniques; together they can provide better diagnosis, staging and followup of selected cancer patients. Ultrasound is cheaper than CT scanning, but does not
necessarily provide the same information. Ultrasound also requires more physician time, so that the operational cost differences between ultrasound and CT scanning in relation to their individual capital outlay requirements are lessened.

There are two general types of high energy radiotherapeutic equipment being applied or investigated today: those producing electromagnetic radiation, and those using particulate radiation. The former include primarily Cobalt 60 machines (producing a defined energy spectrum, comparable to high quality gamma rays), and linear accelerators (producing a high quality gamma ray or high energy x-ray beam). Cobalt machine radiation sources require replacement when they decay; some linear accelerators allow changing energy emission levels, do not require replacement of the radiation source but do require more regular maintenance than cobalt. Other generators of electromagnetic radiation are also used today, including the Betatron; however, their usage is small compared to the cobalt machines and linear accelerators. Some linear accelerators can also be used to produce electrons, a form of particulate radiation.

Equipment designed exclusively to produce particulate radiation include those for Pi-Mesons, neutrons, or heavy atoms. These extremely sophisticated machines are now used experimentally and for highly controlled research endeavors.

National Trends and Policy

Increased federal consciousness about carcinogens in the environment is indicated by organized governmental activities of the Environmental Protection Agency, Food and Drug Administration, and Occupational Safety and Health Administration. The limits of federal activities are evident in:

- banning of cigarette commercials on TV, and continued advertising in other media
- overall increased rates of smoking and continuing subsidy of tobacco farms
- dependence of many states on tobacco sales tax revenues
- continuous weakening of federal regulation of auto pollutants, food additives, and exposure to asbestos and polyvinyl chloride.

However, many federal research activities are valuable in epidemiological and etiological studies of cancer. The federally funded National Institute of Health End Stage Cancer Reporting Systems provides the most reliable national trend data; the identification of carcinogens in food additives is less controversial than similar research into tobacco products.
California Trends and Policy

California faces many political problems in attempting to regulate the currently known environmental sources of cancer. Although the agricultural sector is not dependent upon tobacco production, the State benefits from tobacco sales tax revenue. California does maintain relatively rigorous standards of air quality and occupational safety, despite recent challenges to the efforts of the Air Resources Board and the California Occupational Safety and Health program (CAL-OSHA).

The State maintains a number of programs that focus on cancer etiology and epidemiology, including laboratory and statistical units. The State of California Tumor Registry is a valuable epidemiological resource that collects cancer incidence data by site, age, sex and ethnicity, in five Bay Area counties. These data are then used to project statewide and county specific estimates. However, the problems with State projections from these data are obvious. They do not reflect the possible influence of environmental conditions outside the Bay Area.

With respect to DHEW's National Guidelines for Health Planning and California's Certificate of Need regulations, the National Guidelines specify that a megavoltage radiation therapy unit should serve a population of at least 150,000 persons and at least 300 cancer cases annually, within three years after initiation.

The number of treatments also varies, as the federal standard is 6,000 treatments per year while the State standard is 7,500 treatments per year.

State regulations designate the radiation therapy service area as the individual Health Planning Areas designated by the Advisory Health Council. The regulations also stipulate that for each proposed megavoltage machine, documentation must be provided that 300,000 or more persons are not adequately served by existing radiation therapy services in the service area or adjacent service areas. Furthermore, the regulations state that existing equipment in the service area provide an average of at least 150 patient treatments per machine per 40 hour week. This required minimum shall be proportionately adjusted upward for machines which are available for use more than 40 hours per week (CAC, Title 22, Division 7, Chapter 1, Section 90923).

ANALYSIS OF DEMAND AND SUPPLY

The demand for cancer detection and treatment resources is the product of the interaction of economic and social forces with the actual need for such services. Need is determined by the actual (or in the case of screening, potential) incidence and prevalence of cancer multiplied by the resources necessary to provide effective and efficient cancer
services for these cases. Supply of resources is determined by the medical market place's perception of need and demand as modified by licensure and planning constraints. The analytic issues are: how to determine need, with the best estimates of need and, how modified to best serve optimum demand. The related policy issues in a period of declining/static resources are:

- how can the capacity to perform cost benefit and epidemiological analysis of need and utilization be established in both private and public sectors to better inform decision makers?

- how will priorities be established which specify which individuals/populations will receive the maximum benefits of specialized oncological services?

- to what extent will regionalization of oncological services improve the effectiveness and efficiency of service delivery? (Are there parallels between current trends in cardiovascular surgery service research and planning and potential research and planning issues in oncological services?)

- if it is acknowledged that some 70 to 80 percent of childhood cancers receive the best state-of-the-art care (due to the influence of research groups and the willingness of pediatricians to refer young cancer patients to specialized treatment facilities), what is the obligation of the public and private sector in identifying and serving those portions of the population that are not detected and treated or are treated inappropriately?

Current research and planning activities in both public and private sectors have yet to address these significant supply and demand issues.

Determining means to influence the supply of cancer care resources so as to optimally and most cost effectively meet needs is a public policy and planning task that must take into consideration factors beyond the essentially biomedical determination of the disease burden and optimal treatment. It is also important to acknowledge the dynamic state of development of cancer therapy, for instance the prospects of interferon as an effective cancer therapy. Issues #2, 3 and 4 below, and their associated Recommendations will attempt to initiate a process which will consider the above resource issues in State research and planning activities.

Issue #1: Cancer Prevention and Public Policy Options

Many environmental agents have been found to have a clear relationship to the development of cancer, including saccharin, benzene compounds, exogenous estrogens, asbestos, polyvinyl chloride, radiation and several others. As evidence has developed
about the specifics of the carcinogenicity of these agents, preventive measures and public policies, particularly at the federal level, have been developed.

Definitive evidence is lacking as to the cancer risks associated with atmospheric pollution, diet, sexual practices, alcohol consumption, genetic inheritance, and socioeconomic status. Public policies aimed at preventing cancers presumed to be caused by these factors may be premature given the limited knowledge of their specific action.

The development of any specific public policy options in cancer prevention must address four specific considerations:

- balancing research resources between preventive and curative efforts
- reduction of cancer caused by personal behavior without unduly infringing individual choice
- limitation of industrial exposures without stifling economic development
- achieving a certainty that public policies intended to prevent cancer are based on good scientific evidence and yet are not unnecessarily delayed.

These considerations must be weighed in developing policy options regarding cigarette smoking which is currently foremost among behavioral and environmental agents known to be associated with the development of malignant cancers. The use of tobacco has been empirically associated with lung cancer, oral cavity cancer, oropharyngeal and laryngeal cancers, esophageal cancers, and bladder cancers. Since smoking clearly increases the probability of contracting cancer, the remaining considerations that must be accounted for prior to developing policy options revolve around preventive vs. curative research, undue infringement upon personal choice and improper stifling of economic development.

A statewide cancer prevention policy, focusing on smoking behavior may be justifiable as long as sufficient resources are preserved for basic research, education is used instead of coercion, and existing economic interests are not unreasonably constrained.

**Issue #2: An Adequate Cancer Data Base for Epidemiological and Etiological Analysis**

Establishment of a comprehensive cancer data collection and analysis system is a reasonable goal despite State and local revenue limitations as long as current voluntary efforts are encouraged to expand.
There are currently two major cancer epidemiologic and data gathering programs in California, the Bay Area Resource for Cancer Epidemiology operated by the State Department of Health Services and the Cancer Surveillance Program operated by University of Southern California in cooperation with the County of Los Angeles Department of Health Services. However, these programs do not collect data outside of a five county area of northern California and Los Angeles County in the south. It would be worthwhile to explore the possibility of expanding tumor registry activity on a statewide basis.

Bay Area health care providers are already subject to compulsory reporting requirements regarding cancer incidence. Some of those involved in epidemiologic work feel that the quality of the reporting is presently quite good and that a compulsory State law requiring reporting of cancer incidence by physicians would not result in as good a data base. Others feel that a mandatory collection scheme would be beneficial. Experience gained in other states with mandatory schemes would provide insight into the issue. If it were going to be a mandatory scheme, the data should be provided from those who do the microscopic diagnosis of the cancer, i.e., from the pathology department of the laboratory analyzing the tissue samples.

Issue #3: Early Detection, Screening and Outcome

Issues in cancer detection involve determination of who should be screened, how often, and at what cost. The number of tests conclusively proven to be feasible and cost effective for the detection of cancer in well populations is probably only two and there is still debate about the optimal periodicity of the tests. One of these, and probably the best accepted and most widely used cancer screening test is the Papanicolaou (Pap) smear for detection of cancer of the cervix. The other reasonably well recognized test is mammographic examination of the breast for women over age 50. For younger women there is still controversy about the risks and the benefits of this test.

Self-administered exams of the breast, testes and stool samples (hemoccult tests) are being evaluated in demonstration programs around the country. The incorporation of various relatively simple cancer screening techniques into the routine practice of physicians and dentists is apparently a reasonable approach for some cancer screening.

Early detection during the growth of a malignancy would seem logically to result in improvements in morbidity and mortality; however, the scientific evaluation of each method is required particularly in light of the cost implications of the widespread screening of essentially well populations. Epidemiologic research can help to target these test modalities toward populations at high risk for particular cancers.

Issue #4: Effectiveness and Efficiency of Diagnosis and Treatment Services

A major policy issue facing Californians is the need to establish criteria of effectiveness and efficiency to guide health resource allocation.
Early and accurate recognition of cancer is an obviously desirable objective. For most cancers, the earlier the recognition and appropriate treatment, the more favorable the outcome. In many instances, the early symptoms of cancer are much like those of much more common illnesses. In other instances, the early stages of cancer may produce no symptoms that are apparent to the patient or to the physician without extensive evaluation. Coupled with these difficulties is the fact that the average primary care physician sees only a handful of early cancer patients each year among the hundreds of examinations he or she performs. The dilemma then becomes one of how to find the early cancer without overburdening service delivery with expensive diagnostic studies or unduly creating anxiety for the patients. One potential objective is the capability of physicians to recognize early cancer among the many patients they see. This would require improved training in cancer diagnosis during their medical education and in continuing medical education for practicing physicians. It also requires research into more accurate and cost effective diagnostic tests as well as epidemiologic studies to better discriminate what factors place people at high risk for various cancers.

Recently, a journalist initiated a heated debate by arguing there is a curious contradiction apparent when national trends in cancer epidemiology and oncological services over the last 20 years are compared: The increasing investment in cancer research and the increasing differentiation and specialization of physicians providing cancer treatment despite a slowdown (and in the majority of cases, a halt) in the improvement of cancer survival rates that characterized the 1940-1959 period. Cutler, et al., responded by pointing out a slight improvement in one-year survival rates for 49 percent of cancer patients when 1960-64, 1965-69 and 1970-71 time frames were evaluated.

If the limits to effective medical treatment of many cancers are emerging as this debate may imply, comparative evaluation of the various costs and health status outcomes associated with current institutional services, treatment modes and practitioners (either on an individual basis or by relevant categories such as level of education, age, specialty status, organizational affiliation, etc.), would provide valuable data for appropriate policy responses.

Such epidemiological and economic evaluations could be facilitated by comprehensive cancer data collection activity in California. Such data could provide guidance in the consideration of many potential policy issues that have yet to be sufficiently grounded in empirical research, i.e., whether regionalization of oncological services is appropriate, the feasibility of reducing exposure to behavioral, environmental and occupational risk factors and the appropriateness of current publicly funded cancer research, prevention and treatment services.
POLICY RECOMMENDATIONS FOR ONCOLOGY

Oncology-1: STATE POLICY SHOULD EMPHASIZE AND IMPLEMENT, WHERE FEASIBLE, CANCER PREVENTION THROUGH LEGISLATION THAT:

- PLACES A "HEALTH TAX" ON CIGARETTES TO GENERATE FUNDS FOR CANCER EPIDEMIOLOGY AND PREVENTION RESEARCH
- PROHIBITS ALL CIGARETTE ADVERTISING
- MANDATES SCHOOL HEALTH EDUCATION PROGRAMS IN THE AREAS OF PREVENTION AND EARLY DETECTION OF CANCER TO INCLUDE:
  - SMOKING BEHAVIOR AND CANCER INCIDENCE
  - WARNING SIGNS OF CANCER
  - BREAST SELF-EXAMS
  - RESPONSIBILITY FOR PERSONAL HEALTH

Early intervention is the best way to discourage cancer risks and encourage self-care.


To encourage useful methods and discourage those of dubious value.

Oncology-3: THE STATE SHOULD ESTABLISH, AND INITIALLY SEEK VOLUNTARY STATEWIDE COMPLIANCE WITH CANCER REPORTING PROCEDURES THAT IMPROVE THE STATE TUMOR REGISTRY'S CAPABILITY TO GATHER DATA ON ALL CALIFORNIA CANCER INCIDENCE IN COOPERATION WITH THE SOUTHERN CALIFORNIA CANCER SURVEILLANCE PROJECT.

Rational health resource allocation requires epidemiological data on total cancer incidence and prevalence in California. Such a data base can provide a basis for health status monitoring, evaluation of relative treatment effectiveness and efficiency and etiological/epidemiological research.
NOTES


