REPORT TO THE CONGRESS

BY THE COMPTROLLER GENERAL OF THE UNITED STATES

Policy Changes And More Realistic Planning Can Reduce Size Of New San Diego Naval Hospital

Department of Defense

The Department wants to replace the existing San Diego Naval Hospital with a 900 acute care bed facility at a new location. GAO developed a new hospital sizing model that showed 480 acute care beds would be enough to serve the same projected beneficiary population. Adjustment of the 480 estimate to reflect current population projections increased the size to 575.

The Congress can further reduce the size by telling the Department who should receive care in military medical facilities and directing it to use excess bed capacity in other Federal hospitals. The Department did not believe 575 acute care beds would be enough to meet all of its needs.

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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-183256

To the President of the Senate and the
Speaker of the House of Representatives

This report concerns certain policy and procedure changes that can reduce the size of the planned new San Diego Naval Hospital.

We made our review at the request of the Chairman, Subcommittee on Military Construction, Senate Appropriations Committee. We made our review pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

We are sending copies of this report to the Director, Office of Management and Budget and the Secretary of Defense.

Comptroller General
of the United States

Contents

ABBREVIATIONS

A&E	architect and engineering
BUMED	Bureau of Medicine and Surgery
CHAMPUS	Civilian Health and Medical Program of the Uniformed Services
CNR	Composite Noise Rating
CPHA	Commission on Professional and Hospital Activities
DOD	Department of Defense
FAA	Federal Aviation Administration
GAO	General Accounting Office
NAVFAC	Naval Facilities Engineering Command
PAS	Professional Activity Study
VA	Veterans Administration

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

POLICY CHANGES AND MORE REALISTIC PLANNING CAN REDUCE SIZE OF NEW SAN DIEGO NAVAL HOSPITAL
Department of Defense

D I G E S T

The Department of Defense plans to build a new naval hospital in San Diego, California, consisting of 900 acute care beds and 300 light care beds. Estimated to cost $223 million, it would replace the existing facility at Balboa Park.

The Navy says a new hospital is needed at a new location (Murphy Canyon) because of structural inadequacies, inefficient arrangement of hospital buildings, and noise problems and safety hazards caused by commercial aircraft near the existing site. (See pp. 41 to 45.)

GAO believes that some construction is needed. However, final decisions on size and location should await the policy guidance needed from the Congress which could substantially affect hospital size. (See p. 55.)

GAO found that the criteria used by Defense to size the new hospital did not reflect expected use patterns and results in a planned facility capacity far exceeding the expected medical needs of the projected population. (See p. 29.)

GAO developed a new hospital size planning model. Applying it to the same projected population used by Defense in developing its estimate showed a facility with 600 acute care beds and 300 light care beds would be needed if the beneficiary categories continued to use the new hospital in the same ratios that they have in the past. If, however, the beds provided for retirees and dependents of retired and deceased members were limited to 10 percent of the bed requirements for active duty members and their dependents--as called for under Defense's policy--only 480 acute care beds would be needed.

Of particular importance to the Congress, however, are the opportunities to further reduce the size of the proposed hospital by

--clarifying existing policy regarding whom new military hospitals are being built for, and

--establishing a policy that would require sharing of excess acute care bed capacity at other nearby Federal hospitals.

GAO believes the Congress should provide policy guidance to Defense on these matters. (See p. 10.)

If a 600 acute care bed hospital were built, 48 percent would be for active duty members, and 52 percent for retirees and dependents all of whom have alternatives available for obtaining medical care, through the Civilian Health and Medical Program of the Uniformed Services, Medicare, or the Veterans Administration. (See p. 7.)

Also, the need for 600 acute care beds assumes no sharing with other Federal hospitals in the area which have excess beds. The San Diego VA Hospital and the Camp Pendleton Naval Hospital have about 150 and 160 excess acute care beds, respectively. (See p. 8.) In GAO's opinion, they offer an attractive alternative to constructing new beds.

Depending on the Congress' decisions, acute care bed needs for the new hospital could range from 0 to 600. If the acute care bed requirement is satisfied by using existing excess beds at other Federal hospitals, approximately 250 light care beds would still be needed primarily for active duty members.

If the Congress decides a large hospital is needed, GAO believes either Balboa Park or Murphy Canyon would be appropriate. If the size decreases substantially, Balboa Park may become more attractive because some use can be made of existing structures. GAO believes it would be appropriate for Defense to acquire control of the Murphy Canyon site so it can build at either location if Congress

decides a large hospital is needed. (See pp. 55 and 56.)

GAO recommends that Defense:

--Withdraw its existing hospital sizing criteria and implement a planning model similar to GAO's. (See p. 31.)

--Await the decisions of the Congress before making the final site selection. (See p. 55.)

Defense said GAO's hospital sizing model was a better measure of acute care bed needs than its criteria. Defense adjusted GAO's model to reflect certain factors--including current population projections--which increased the hospital size to 966 acute care beds.

Current population projections increase GAO's 600 bed estimate to 700 and GAO's 480 bed estimate to 575 beds. GAO believes the maximum size hospital Defense should build is 575 acute care beds and 300 light care beds. Defense agrees that the 300 light care bed estimate is appropriate.

Defense did not believe it should use excess acute care bed capacity at the San Diego VA and Camp Pendleton Naval hospitals because a large reduction in the new hospital's size would hurt the medical training program.

GAO believes that:

--Defense can reduce medical costs to the Federal Government and be a leader in demonstrating the feasibility of sharing Federal facilities without adversely affecting the medical training program. (See p. 13.)

--Selecting the final site before the Congress acts would be premature because Congress may require Defense to establish an active sharing program. (See pp. 55 and 56.)

CHAPTER 1

INTRODUCTION

In response to a request from the Chairman, Subcommittee on Military Construction, Senate Committee on Appropriations (see app. I), we reviewed the planning by the Department of Defense (DOD) for the new San Diego Naval Hospital. DOD's current plans call for construction of a new 1,200-bed hospital at a site known as Murphy Canyon for an estimated cost of $223 million. It would replace the existing 1,181-bed hospital located in Balboa Park, adjacent to downtown San Diego.

CONSTRUCTION OF MEDICAL FACILITIES

Section 1087 of title 10 of the United States Code provides that space for inpatient care may be programmed in military facilities for active duty members, dependents of active duty members, retired military members, and dependents of retired and deceased members. The legislation gives the Secretary of Defense authority to limit the space programmed for the various beneficiary categories. Regarding space for inpatient and outpatient care in military hospitals, section 1087 provides:

> "The amount of space so programmed shall be limited to that amount determined by the Secretary concerned to be necessary to support teaching and training requirements in uniformed services facilities, except that space may be programmed in areas having a large concentration of retired members and their dependents where there is also a projected critical shortage of community facilities."

Sections 1074 and 1076 of title 10 provide that dependents of active duty members, retirees and their dependents, and the dependents of deceased members are entitled to receive medical care in military hospitals, subject to the availability of space and facilities and staff capabilities. These beneficiaries, however, are also authorized to receive medical care from civilian sources under the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS).

Generally, before using civilian facilities, dependents residing with active duty members living within 30 miles 1/ of a military medical facility must obtain a nonavailability statement from local military hospital officials certifying that it is not practical, or the facility is unable, to furnish the required inpatient care. All other eligible beneficiaries may use civilian facilities without obtaining nonavailability statements. Most of the costs of the medical care provided in civilian facilities are paid by the Government. All retirees, their dependents, and the dependents of deceased members who become eligible for medical care under the Medicare program upon reaching age 65 lose their CHAMPUS benefits. All of these beneficiaries retain their eligibility for care in military facilities and some become eligible for care in Veterans' Administration (VA) facilities.

HEALTH FACILITIES MODERNIZATION PROGRAM

In February 1972 the Secretary of Defense approved an accelerated military medical facilities modernization program to be carried out over a 5-year period. As originally conceived, the program would have required 20 years, but was later shortened to 5 years to be accomplished in fiscal years 1974-78. Because of delays, the program has now been extended through 1980. The total program is now estimated to cost $2.9 billion.

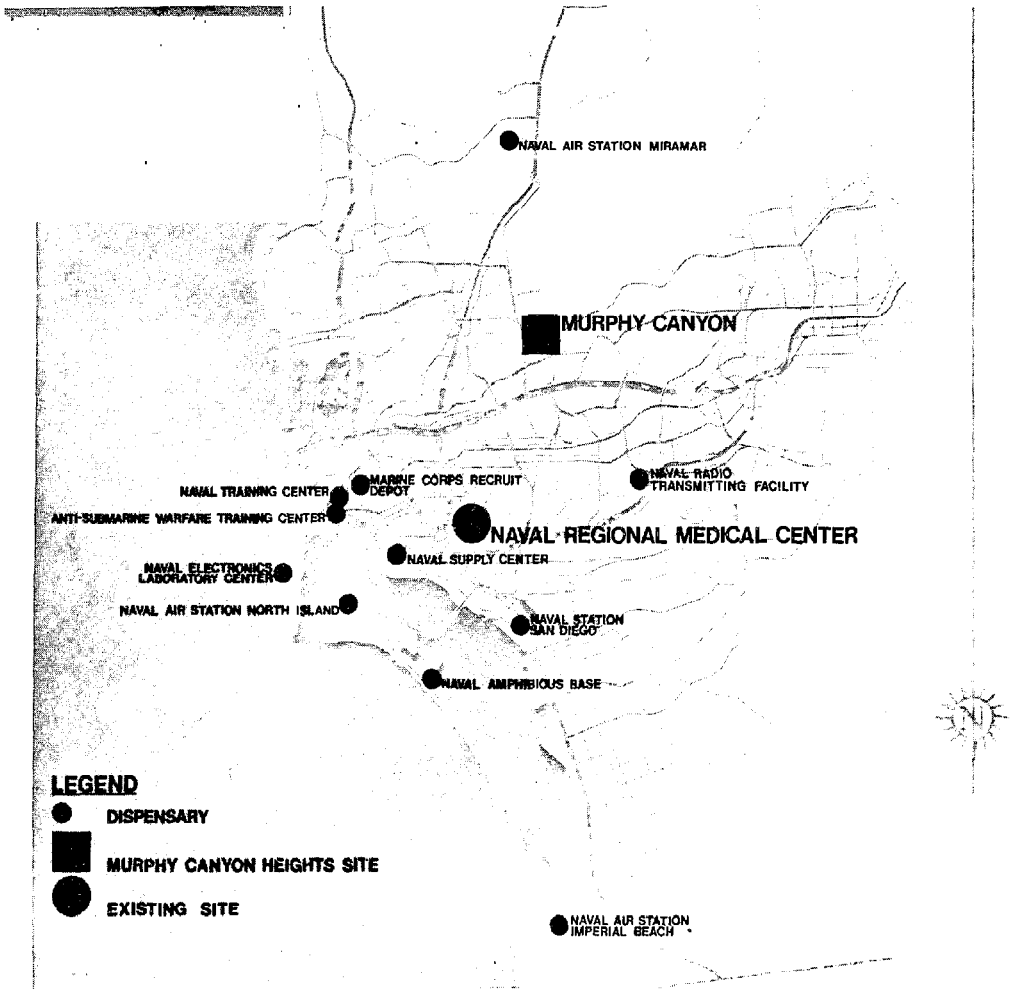
The Assistant Secretary of Defense for Health and Environment is responsible for reviewing health mattters, including the construction of military medical health facilities, and assisting the Secretary of Defense with the health and medical aspects of DOD policies, plans, and programs. The Surgeon General of each military service is responsible for determining requirements for hospitals in accordance with established DOD policies and procedures.

THE SAN DIEGO NAVAL HOSPITAL

The existing San Diego Naval Hospital at Balboa Park was commissioned in 1919 and has grown to become one of the world's largest military medical complexes. It provides inpatient and outpatient care for about 352,000 Navy beneficiaries in the San Diego area, consisting of active duty members, dependents of active duty members, retired military members, and dependents of retired and deceased members.

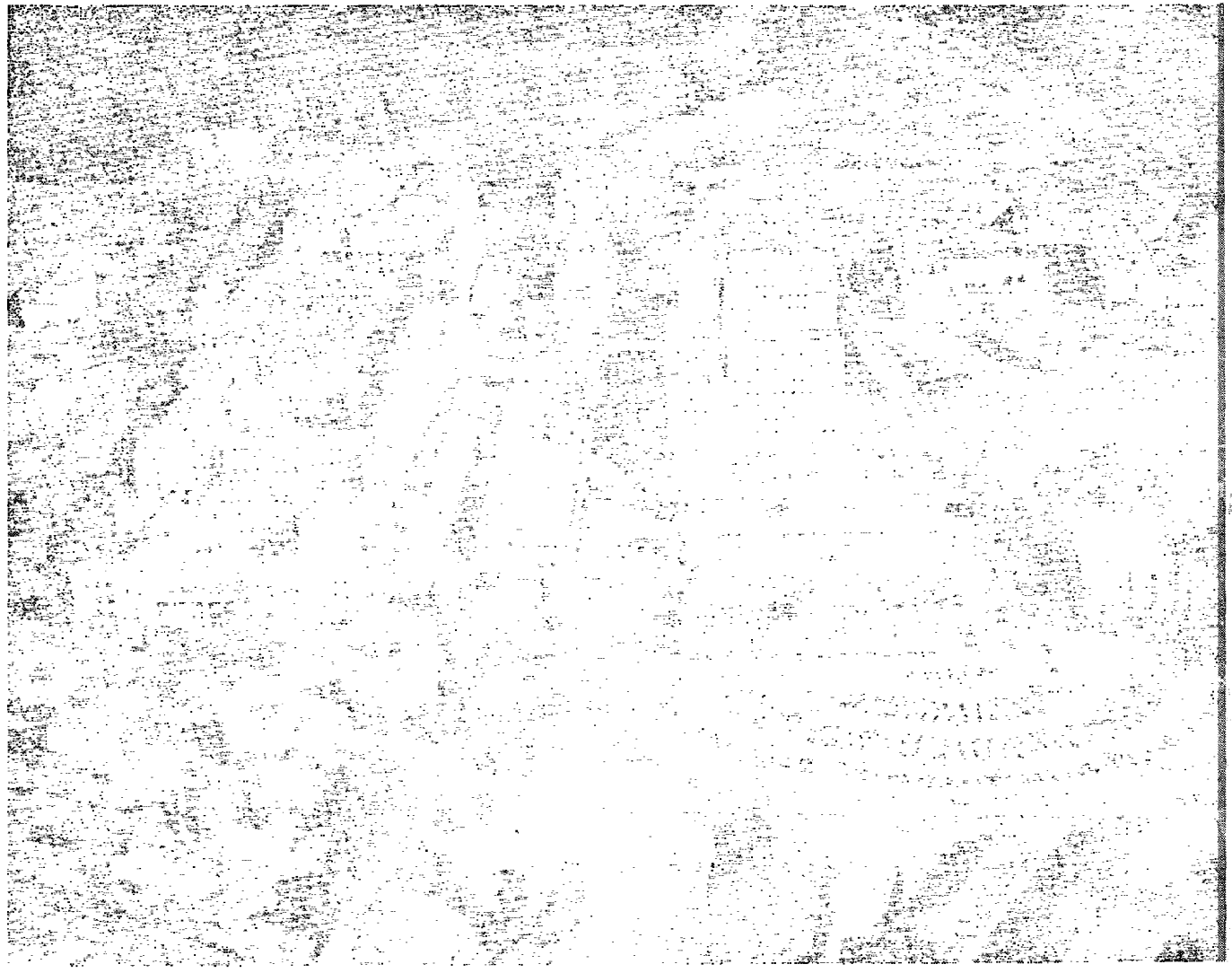
1/On February 9, 1976, the President approved Public Law 94-212. Section 750 increased the distance from 30 to 40 miles.

SAN DIEGO NAVAL HOSPITAL REGIONAL DISPENSARIES



Patient care is also provided by 12 regional dispensaries. A photograph of the hospital complex is on page 4. The map above shows the location of the hospital in relation to the dispensaries.

Balboa Park is a 77-acre site adjacent to downtown San Diego. Accordng to Navy officials, about 62 of those acres would be buildable if all existing structures were removed. Present facilities include 71 buildings which are used for many purposes. The hospital has an authorized capacity of 1,181 inpatient beds and accommodates approximately 2,500 to 3,000 outpatient visits daily. Other



SAN DIEGO NAVAL HOSPITAL, BALBOA PARK SITE

facilities provide space for administration, barracks, Naval School of Health Sciences (Corps School), academic instruction, laundry, library, warehousing, maintenance, recreation, research, Navy exchange, and a variety of other activities.

The Navy believes that the present hospital is inadequate and should be replaced with modern medical and support facilities. The major reasons cited by the Navy include the structural inadequacy of some of the existing hospital buildings, the inefficient arrangement of buildings on the compound, and noise and safety hazards created by commercial jets flying over the hospital on their landing approach to Lindbergh Field (San Diego International Airport).

SCOPE OF REVIEW

Our review was performed at the naval hospital, San Diego, California; the Office of the Assistant Secretary of Defense for Health and Environment and the Bureau of Medicine and Surgery (BUMED), Washington, D.C.; the Naval Facilities Engineering Command (NAVFAC) Headquarters, Alexandria, Virginia; and NAVFAC Western Division, San Bruno, California. We also met with representatives of several architectural and engineering firms who had performed services under contract to the Navy involving the San Diego Naval Hospital. In carrying out our hospital size analysis we looked into

- --historical utilization patterns, with special attention to length of stay statistics and how they compare to community hospital data;
- --the population served by the health facility; and
- --availability of other nearby Federal and non-Federal health care facilities.

Our primary source of data for San Diego Naval Hospital use statistics was magnetic tape records maintained by the Naval Medical Data Service Center, Bethesda, Maryland. The magnetic tapes contained information on all patients discharged from the Naval Hospital in 1973 and 1974. The tapes were validated by selecting a random sample of patient data and checking it against medical records on file at the hospital. We also retained a medical consultant whose role is discussed in appendix III.

Regarding community hospitals, the basic data for use in this study was supplied by the Commission on Professional and Hospital Activities (CPHA), Ann Arbor, Michigan. In this data, the identities of individual hospitals were not revealed in any way. Any analysis, interpretation, or conclusion based on this data is ours, and CPHA disclaims responsibility for any such analysis, interpretation, or conclusion.

CHAPTER 2

POLICY GUIDANCE NEEDED FROM THE CONGRESS

The new San Diego Naval Hospital was planned to provide the medical care needs of a military beneficiary population of about 337,079. The Department of Defense is planning a facility with 900 acute care beds and 300 light care beds which is estimated to cost about $223 million.

Based on our analysis, the maximum size hospital needed is 600 acute beds and 300 light care beds. This figure assumes that sufficient space would be provided for retirees and dependents of retired and deceased members so they could continue to use the hospital in the same ratios they have in the past. If space for these beneficiaries were provided in accordance with DOD's established policy for teaching hospitals of adding 10 percent of the beds required for active duty members and their dependents, about 480 beds would be needed.

Of particular importance to the Congress, however, are the opportunities which exist to further reduce the size of the proposed hospital by (1) clarifying the existing policy concerning eligible beneficiaries and (2) establishing a policy which requires using excess bed capacity in nearby Federal hospitals. The policy options to be considered by the Congress involve two basic questions.

1. Should new hospital beds be built to support the medical needs of all segments of the current beneficiary population--active duty members, their dependents, retirees, and dependents of retired and deceased members--or should some limitation be specified?

2. Should some patients be treated at other nearby Federal hospitals which have a large excess bed capacity?

Depending on the answers to these questions, acute care bed requirements for the new San Diego Naval Hospital could range from 0 to 600.

ELIGIBLE BENEFICIARY POPULATION

Based on our analysis which is discussed in chapter 3, a 600-bed naval hospital in San Diego would be used in the following manner by the military's eligible beneficiary population.

Beneficiaries	Expected bed use	Percent
Active duty members	290	48
Dependents of active duty	150	25
Retired members	88	15
Dependents of retired/deceased	62	10
Others (note a)	10	2
Total	600	100

a/This category represents emergency care and specialized care to nonbeneficiaries not readily available at other hospitals.

As shown in the above table, 48 percent of the new beds would be for active duty members and 52 percent would be primarily for dependents and retirees, both of whom are eligible for care in military hospitals on a space-available basis and have alternatives available for obtaining medical care under various Federal programs, such as the Civilian Health and Medical Program of the Uniformed Services 1/ and Medicare, and in Veterans' Administration facilities. The 1974 occupancy rate in general hospitals in San Diego County was about 62 percent. The San Diego regional health planning council estimates there will be 1,219 excess acute care beds in 1981.

DOD is now undertaking an accelerated health facilities modernization program estimated to cost $2.9 billion when completed in 1980. Under existing policy, the new hospitals constructed will be sized to accommodate all the needs of the dependents of active duty members and a considerable number of other dependents and retirees.

On the other hand, the Congress is now considering the desirability of enacting a national health insurance program which could provide military beneficiaries the option of seeing private physicians or being hospitalized in community facilities with the cost being borne by the Federal Government. If this should occur, there is a possibility that many military beneficiaries will take advantage of locally available and convenient community facilities rather than go to military hospitals. Increased use of community facilities by DOD beneficiaries would, of course, decrease the need for military hospial beds.

1/As noted on page 1, the availability of CHAMPUS benefits was changed under Public Law 94-212 effective February 9, 1976.

In view of the considerable cost of DOD's modernization program and the health care alternatives currently available under CHAMPUS and Medicare, we believe the Congress should give additional guidance to DOD concerning who new military hospitals should be constructed to serve. Further, the possibility that action by the Congress on a national health insurance program may tend to increase excess bed capacity in military medical facilities increases the need for this guidance.

SHARING OF EXISTING NEARBY FEDERAL FACILITIES

The 600 acute care bed naval hospital assumes that the military beneficiary population in San Diego would not make use of excess bed capacity at other nearby Federal hospitals. There are two other Federal hospitals in the San Diego area which have excess bed capacity and, in our opinion, offer an attractive alternative to constructing new beds in the San Diego area.

--The San Diego Veterans' Administration Hospital is located in La Jolla about 12 miles from the existing naval hospital and has about 150 excess beds which could provide inpatient care for the naval beneficiary population. (See p. 36.)

--The Camp Pendelton Naval Hospital is about 51 miles from the existing San Diego Naval Hospital and has about 160 beds which could provide inpatient care to eligible beneficiaries not presently served by the facility. (See p. 37.)

Because of the Congress' expressed concern over the unused bed capacity in many regions of the country, we believe it may wish to consider the potential savings available to the Federal Government through an active sharing program among Federal hospitals in the San Diego area.

MATRIX OF OPTIONS

The matrix on page 9 highlights the full range of options available to the Congress using the same population data used by DOD in developing its estimates and the impact these options have on the size of the new San Diego Naval Hospital.

Under option 5, the need for acute care beds can be eliminated by changing the location where acute care is provided from the planned San Diego Naval Hospital to the San Diego VA Hospital and the Camp Pendleton Hospital. About 250 light care beds are still needed, however, primarily to meet the needs of active duty members. Light care could by

MATRIX OF HOSPITAL ACUTE CARE BED REQUIREMENTS UNDER VARIOUS POLICY ASSUMPTIONS

OPTIONS ELIGIBLE BENEFICIARIES	OPTIONS EXCESS BEDS AT OTHER FEDERAL HOSPITALS			
	NO SHARING	USE 150 VA BEDS	USE 160 BEDS AT CAMP PENDLETON	USE 310 BEDS AT VA AND CAMP PENDLETON
1. PROJECTED REQUIREMENT IF NO RESTRICTIONS ON BENEFICIARY USE	600	450	440	290
2. ACTIVE DUTY AND THEIR DEPENDENTS TREATED PLUS 10% ADDITIONAL BEDS FOR ALL OTHERS	480	330	320	170
3. ONLY ACTIVE DUTY AND THEIR DEPENDENTS TREATED	440	290	280	130
4. ACTIVE DUTY TREATED PLUS 10% FOR ALL OTHERS	320	170	160	10
5. ONLY ACTIVE DUTY TREATED	290	140	130	0

be provided in an existing medical holding company or perhaps in other structurally sound buildings that were no longer needed if those policy options were adopted.

MATTERS FOR CONSIDERATION BY THE CONGRESS

Because the Congress' decisions can have a major impact on DOD's $2.9 billion dollar construction and modernization program, we believe DOD should not proceed with the construction of the new San Diego Naval Hospital, or any other new military hospital project, without further action by the Congress.

Specifically, we believe the Congress should provide policy guidance to DOD concerning two basic questions:

1. For whose use should new military hospitals be built?

2. To what extent, if any, should DOD's beneficiary population be required to use excess acute care bed capacity at other nearby Federal hospitals?

AGENCY COMMENTS AND OUR EVALUATION

In commenting on our report by letter dated March 26, 1976 (see app. II), DOD said that our hospital sizing model was a more precise measure of acute care bed requirements than its 4 beds per 1,000 criteria. However, DOD said that a 966 acute care bed hospital was needed to meet the total demand that could conceivably be placed on the new hospital by the current projected beneficiary population.

The 966 acute care bed hospital was developed by DOD using our hospital sizing model, adjusted to reflect several of its concerns. (These concerns are discussed in detail beginning on page 31.) One of DOD's concerns is changing the projected population data.

The hospital sizes shown in the matrix on page 9 were calculated using the same population data the Navy used to develop its 900 acute care bed estimate to insure the estimates were comparable. The calculation of acute care bed needs under either DOD's or our method is very sensitive to the population data. Therefore, for planning purposes, bed needs should be calculated using valid population projections at the time hospital size must be finalized in order to proceed with design. Application of our planning model to the Navy's most recent population data results in the following matrix of sizing options.

MATRIX OF HOSPITAL ACUTE CARE BED REQUIREMENTS UNDER VARIOUS POLICY ASSUMPTIONS

OPTIONS ELIGIBLE BENEFICIARIES	OPTIONS EXCESS BEDS AT OTHER FEDERAL HOSPITALS			
	NO SHARING	USE 150 VA BEDS	USE 160 BEDS AT CAMP PENDLETON	USE 310 BEDS AT VA AND CAMP PENDLETON
1. PROJECTED REQUIREMENT IF NO RESTRICTIONS ON BENEFICIARY USE	700	550	540	390
2. ACTIVE DUTY AND THEIR DEPENDENTS TREATED PLUS 10% ADDITIONAL BEDS FOR ALL OTHERS	575	425	415	265
3. ONLY ACTIVE DUTY AND THEIR DEPENDENTS TREATED	520	370	360	210
4. ACTIVE DUTY TREATED PLUS 10% FOR ALL OTHERS	390	240	230	80
5. ONLY ACTIVE DUTY TREATED	355	205	195	45

DOD said that historically, facilities have been planned to accomodate active duty members and their dependents plus a 10-percent allowance to provide space for retirees and their dependents. Using this 10-percent allowance criteria, the maximum size that should be approved by the Congress for the new San Diego Naval Hospital is 575 acute care beds.

Regarding our matters for consideration of the Congress, DOD said that any considerable reduction in the number of beds at the San Diego Naval Hospital would have a serious adverse effect on the training mission of the Navy Medical Department; rotation of trainees to the VA or Camp Pendelton Naval Hospitals was not considered a practical solution. Also, DOD believed it was not in the best interest of its mobilization requirements to reduce capacity within the DOD system by temporary agreements with other Federal agencies, and that VA had informed it that no capacity for DOD beneficiaries would be available in the San Diego VA Hospital for the foreseeable future.

Medical training programs are carried out in hospitals of various sizes. The 1974-1975 Directory of Approved Residencies, published by the American Medical Association, shows that about 1,750 approved residency programs are in hospitals with over 500 beds, about 1,200 are in hospitals having between 300 and 500 beds, and about 650 are in hospitals with less than 300 beds.

Rotation of medical residents is a common practice in the VA and civilian communities. The necessary prerequisite for rotation is that the hospital in question have an approved residency program for the particular medical specialty involved. The 1974-1975 Directory of Approved Residencies shows that the San Diego Naval Hosptial has 15 approved residency programs and the VA hospital is a teaching hospital with 10 residency programs, 7 of which are also offered at the naval hospital. Furthermore, both hospitals are affiliated with the medical school of the University of California, San Diego.

Using excess acute care bed capacity at the VA hospital, while not the preference of DOD, appears to be a reasonable alternative to constructing new facilities. The main barrier to sharing excess capacity at other Federal hospitals seems to be the attitude of the Federal agencies that their medical facilities should be used solely by their traditional beneficiary populations. We believe that the excess bed capacity in civilian hospitals and in other Federal facilities suggests that the Government should reassess its approach to building hospitals for specific beneficiary categories.

DOD has an opportunity to demonstrate its desire to reduce medical care costs and to take the lead in demonstrating the feasibility of sharing facilities. The San Diego VA and Camp Pendleton Naval Hospitals have about 150 and 160 excess acute beds, respectively, that are available today. If there are savings in bringing the CHAMPUS workload into the Government's direct care system, those savings could be realized today without incurring the cost of constructing new facilities to accomodate them or waiting until a new hospital is completed.

DOD has not argued that the present number and mix of patients at the San Diego Naval Hospital has had any adverse effect on meeting its moblization requirements or its teaching mission, and the 154 beneficiaries currently served each day under the CHAMPUS program are not part of that inpatient population.

We contacted the Veteran's Administration after receiving DOD's comments. VA officials advised us that its San Diego hospital has not completed its activation plan to bring the hospital up to full capacity. (See p. 37.)

CHAPTER 3

HOSPITAL SIZE ANALYSIS

Our review of the criteria used to determine the size of the proposed new San Diego Naval Hospital showed that it overstated anticipated needs by about 300 acute care beds. For example, the Department of Defense has programmed 4 beds per 1,000 population for dependents of active duty members--the largest beneficiary population category. The expected demand is projected to be about 1.3 beds per 1,000. We also found differences between DOD's planning criteria and expected demand for other categories of the beneficiary population.

This chapter presents an alternative method of projecting required hospital needs based on military hospital use data and average length of stay statistics for comparable patients in nonmilitary hospitals. We applied this methodology to the San Diego Naval Hospital, assuming that retirees and dependents of retired and deceased members would continue to use the facility in the same ratios that they have in the past and using the same population data used by DOD to develop its estimate. Our analysis showed that only 600 acute care and 300 light care beds would be required to support the medical care needs of the beneficiary population, rather than the 900 acute care and 300 light care beds estimated by DOD. If only 10 percent of the acute care beds needed for active duty members and their dependents were added for retirees and dependents of retired and deceased members, as provided in DOD's policy, only 480 acute care beds would be needed.

We believe that DOD should revise its planning criteria to recognize what the expected demand for medical services should be, based on the expected size and mix of the beneficiary population in future years.

PROBLEMS WITH DOD'S CRITERIA

Legislation provides the Secretary of Defense with the authority to construct beds in military hospitals for dependents of active duty personnel and deceased members, and for retirees and their dependents where there is a projected critical shortage of community facilities. The specific planning criteria used in sizing the new San Diego Naval Hospital were

--4 beds per 1,000 active duty members,

--4 beds per 1,000 dependents of active duty members, and

--10 percent additional beds to accommodate the needs of retirees and dependents of retired and deceased members. 1/

In a November 1974 letter to the Assistant Secretary of Defense for Health and Environment, we asked how the 10 percent factor to support teaching and training requirements was determined. He replied that the percentage was established as a result of several conferences in 1966-67 between his office and the American Medical Association accrediting boards for the medical specialties. These meetings were designed to assist the Secretary of Defense in rendering an appropriate decision. After considering several alternatives, the Secretary of Defense selected 5 percent for nonteaching hospitals and 10 percent for teaching hospitals as the most appropriate planning factors.

The above criteria do not reflect expected use patterns. When applied to the new San Diego Naval Hospital, they result in a planned facility whose capacity will far exceed the expected medical needs of the projected population. Our analysis showed wide differences between DOD's planning criteria and expected use patterns for the new San Diego Naval Hospital. Dependents of active duty members--the largest eligible beneficiary category--are expected to use just over 1 bed per 1,000, rather than the 4 beds per 1,000 in DOD's planning criteria. Active duty members are expected to use about 3 beds per 1,000. Retirees and dependents of retired and deceased members are expected to use about 25 percent of the beds, rather than the 10 percent provided for by DOD policy.

Beds per 1,000 population criteria were developed for projecting average bed needs of large segments of the general population. They were based on studies of hospital need or demand conducted by several medical professional groups primarily during the 1920s and 1930s and reflect the medical technology and patterns of illness prevalent during that period. Fixed beds to population ratios were used to size hospitals constructed with funds provided by the original Hill-Burton legislation, 2/ however, they are no longer generally accepted in hospital planning and have been dropped from the Hill-Burton program.

1/The San Diego Naval Hospital is a teaching facility. In nonteaching hospitals, 5 percent additional beds are programmed to accommodate retirees, their dependents, and dependents of deceased members.

2/The Hill-Burton National Hospital Survey and Construction Act of 1946.

Recent practice has been to estimate desirable levels of medical care demand for the whole community by observing actual use in controlled settings and extrapolating from these figures. This approach (1) recognizes that varied groups of people may have widely different risks of becoming ill, due to socioeconomic, environmental, occupational, or other differences and (2) has provided the civilian community with greater flexibility in planning facilities that more adequately meet the specific medical needs of different population areas.

PROBLEMS IN USING HOSPITAL USE DATA TO PROJECT FUTURE NEED

At the San Diego Naval Hospital, historical use data would not lead to optimal sizing because active duty individuals have, on the average, occupied too many hospital beds because their average lengths of stay have been too long. Therefore, projections of bed needs based solely on past bed use would produce inflated estimates of hospital size requirements.

During 1975 Navy hospitals came under increasing criticism for having average lengths of stay about two times greater than Army and Air Force hospitals and three times that of civilian hospitals. On May 28, 1975, the Surgeon General of the Navy issued a memorandum requesting a 25-percent reduction in the average length of patient stays in naval hospitals by January 1, 1976. The Navy knows their average lengths of stay have been excessive and that the problem involves excessive stays by active duty patients.

Before the Surgeon General's May 1975 memorandum we examined a random sample of patient records to evaluate lengths of stay at the San Diego Naval Hospital. We asked the treating physicians, where available, or the appropriate chief of service to estimate the length of stay each selected patient would have experienced in a private community hospital assuming he was a civilian. The results, as shown in the following table, indicate that large reductions are possible.

Length of Stay for Active Duty Discharges
Selected at Random

	Total actual acute days	Acute days needed per physician	Unnecessary acute care days
	1	0	1
	57	10	47
	1	0	1
	55	8	47
	12	5	7
	11	4	7
	5	5	0
	74	19	55
	2	2	0
	2	0	2
	a/375	7	368
	12	3	9
	1	1	0
	109	9	100
	34	0	34
	22	0	22
	63	6	57
	1	1	0
	1	1	0
	35	35	0
	b/277	10	267
	122	0	122
	37	37	0
	9	2	7
	16	0	16
Total	1,334	165	1,169
Average	54	7	47

a/This patient was a highly skilled carpenter who, according to his physician, was kept so he could apply his skill throughout the hospital.

b/This patient's records were incomplete, but the long stay was apparently due to a combination of medical and administrative problems.

The two principal reasons for excessive hospital stays were the lack of sufficient light care facilities to retain active duty individuals until they could be returned to full duty and administrative delays.

At that time there was generally a 1-week administrative delay in discharging active duty patients, due to a Navy requirement that the narrative hospital summary be completed and inserted into the patient's record before discharge. When medical boards were involved, there was sometimes an additional 2- to 3-month delay due to slow processing of medical board proceedings. Other administrative delays involved surgery scheduling and transferring patients to other medical facilities.

We recognize that certain patients in military hospitals require added days of care because they cannot be discharged home in a manner comparable to civilians. For these patients light care or even dormitory-style facilities would be suitable, and by moving them out of acute care beds, greater operating efficiency can be achieved.

NEW PLANNING METHOD

An alternative method to estimate acute care bed needs is to accumulate the actual patient workload by diagnosis and age group and adjust it to reflect data on average lengths of stay in nearby civilian hospitals. The data is available from the Commission on Professional and Hospital Activities.

The Professional Activity Study (PAS) of CPHA publishes average length of stay statistics by diagnostic category and age for patients discharged from PAS-member hospitals. Statistics are published for regions of the United States and the country as a whole. Member hospitals use PAS data as a measure of their own efficiency in treating patients.

In the Western region 1/ during 1973, 25 percent of all short term, non-Federal, and nonpsychiatric hospitals, constituting 35 percent of the total number of beds, were PAS-member hospitals. In 1975 the San Diego Naval Hospital, as well as several other military hospitals, became a member. Of the total PAS hospitals, about 42 percent have internship programs and about 38 percent have residency programs. The table on the following page is the 1973 Western region data for one diagnostic group and is an example of the type of data used in our analysis.

1/The Western region as defined by CPHA consists of the States of Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, and Wyoming.

178: Acute appendicitis without peritonitis

TYPE OF PATIENT (1)	TOTAL PATIENTS (2)	AVG. STAY (3)	VARIANCE (4)	PERCENTILES 5th (5)	10th (6)	50th (7)	75th (8)	90th (9)	95th (10)	99th (11)
1. SINGLE DX										
A. *Not Operated*										
0-19 YRS	100	2.1	2	<1	1	2	3	4	4	7
20-34	65	2.4	4	<1	<1	2	3	5	7	10
35-49	13	3.1	7	1	1	3	4	7	9	10
50-64	17	2.8	3	1	1	3	4	5	6	6
65+	7	4.4	11	1	1	4	6	10	11	11
B. *Operated*										
0-19 YRS	5776	3.8	4	2	2	3	4	5	6	10
20-34	3346	4.0	3	2	2	4	5	6	7	11
35-49	974	4.4	4	2	3	4	5	7	8	11
50-64	465	5.2	6	3	3	5	6	8	10	15
65+	118	6.4	8	3	4	6	8	10	12	16
2. MULTIPLE DX										
A. *Not Operated*										
0-19 YRS	39	2.6	5	<1	1	2	4	6	7	11
20-34	25	2.1	2	1	1	2	3	4	5	6
35-49	14	5.1	20	1	1	4	7	12	16	17
50-64	8	4.0	5	2	2	3	5	8	9	9
65+	18	8.4	33	2	3	7	9	15	22	27
B. *Operated*										
0-19 YRS	858	5.3	13	2	3	4	6	9	11	22
20-34	634	5.9	24	3	3	5	7	9	12	24
35-49	251	7.0	18	3	3	6	8	12	15	21
50-64	192	8.7	34	3	4	7	11	15	18	35
65+	119	9.7	40	4	5	8	10	18	22	41

The PAS system has 349 primary diagnoses categorized. The average length of stay for a particular patient can be found by knowing (1) the primary diagnosis, (2) if the patient had a single or multiple diagnosis, (3) if the patient received an operation, and (4) the patient's age. The value of the data is enhanced by "variance" figures which allow the user to statistically determine its confidence level. PAS also provides length of stay figures for various percentiles of the population. For example, the length of stay figure at the 95th percentile is exceeded by only 5 percent of the population.

During 1973 statistics were compiled on 1.9 million of the 2.0 million patients discharged from member hospitals. Excluded were patients who died, were transferred to another hospital, or left against medical advice or whose medical records lacked pertinent data items. Patients who stayed over 100 days are not in the average figures but are in the percentile figures. The large data base enables PAS to provide accurate average lengths of stay data.

HOSPITAL SIZING MODEL DEVELOPED USING PAS DATA

Basically, our method for determining hospital size adjusted the Navy's actual use data to bring it in line with the average length of stay of patients with comparable diagnoses in civilian hospitals.

Adjustment of the San Diego Naval Hospital use data was accomplished through the use of a computer program designed to:

--Accumulate the actual length of stay of each patient discharged from the naval hospital during 1973 and 1974.

--Extract from the data each naval hospital patient's primary diagnosis, whether the patient had a single or multiple diagnosis, whether the patient received an operation, and the patient's age.

--Match each naval hospital patient's characteristics with those of corresponding patients in community hospitals listed in the PAS data bank.

--Accumulate the corresponding PAS average length of stay for patients discharged from the naval hospital during 1973 and 1974.

Since the PAS length of stay statistics do not include patients who died or were transferred to other hospitals, we used unadjusted actual length of stay data for these patients.

Special consideration was also given to patients who had stayed in the hospital for 100 days or longer. The PAS average length of stay figures do not include these individuals, but the PAS percentile distribution data does. We determined the community hospital length of stay for each naval hospital patient who had stayed 100 days or longer by using the PAS data corresponding to the 95th percentile. In appendix III our medical consultant discusses the hospital sizing model methodology and the rationale for using the 95th percentile.

Using the above data, the computer calculated the total number of bed-days actually spent by all patients discharged from the naval hospital in 1973 and 1974 and the adjusted total number of bed-days. The computer then calculated the required number of acute care beds by determining the average number of beds occupied on any given day and adding 25 percent to allow for short term random fluctuations. Use of the 25 percent is consistent with DOD policy of projecting hospital size based on 80-percent occupancy.

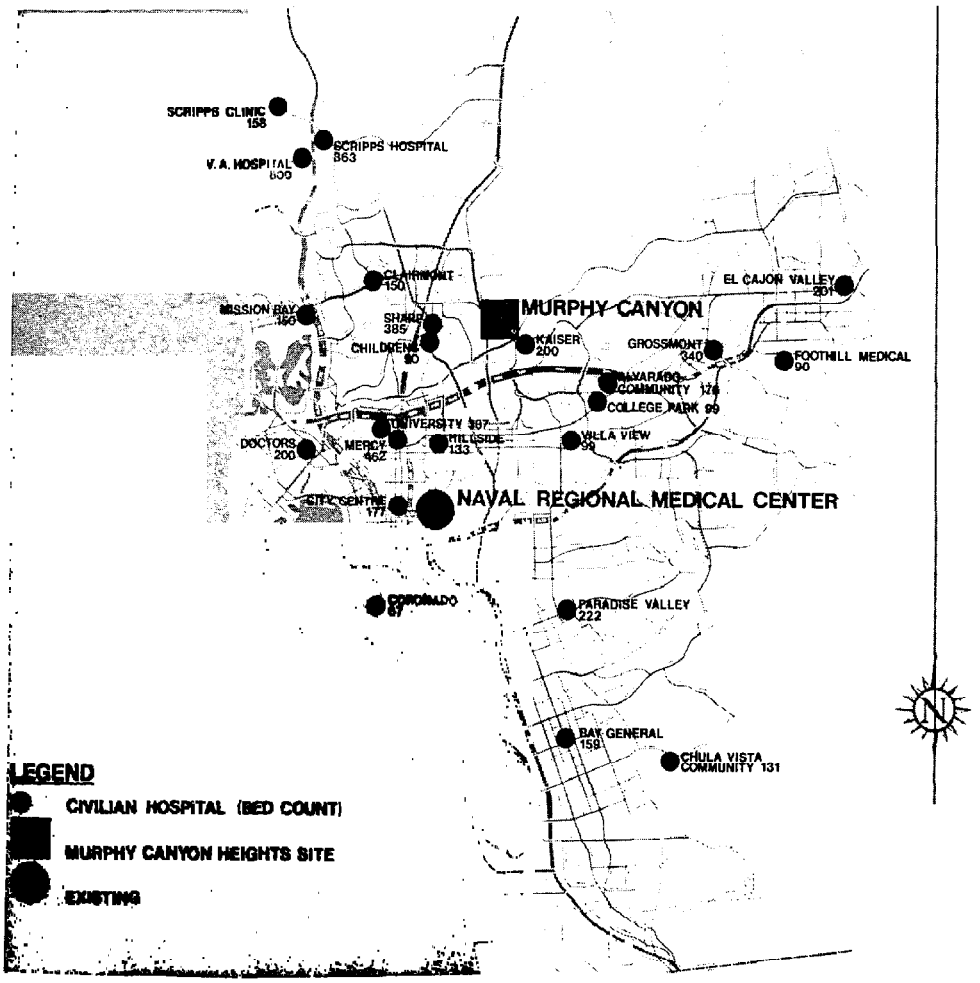
The flow chart in appendix IV illustrates the sequence of computer operations which lead to the hospital size determination.

CHAMPUS WORKLOAD

Our hospital sizing model did not increase the acute care bed capacity of the planned San Diego Naval Hospital to accommodate those persons currently receiving care in community hospitals under the Civilian Health and Medical Program of the Uniformed Services. Under this program, beneficiaries can be treated by private physicians or in community hospitals and are generally reimbursed for between 75 and 100 percent of the incurred fees.

The San Diego regional health planning council said that its area has an oversupply of civilian community hospital acute care facilities. The map below shows the location and size of major San Diego hospitals. The 1974 occupancy rate in general hospitals in San Diego County was 62.4 percent. The council has projected that in 1981 San Diego will have 1,219 excess acute care beds.

MAJOR SAN DIEGO HOSPITALS



The cost implications of the expanded use of CHAMPUS as compared to increased military hospital construction were beyond the scope of this report. However, the December 1975 "Report of the Military Health Care Study" issued by the Office of Management and Budget, Department of Defense, and the Department of Health, Education, and Welfare made the following observations about the reliability of DOD's medical cost data:

> "The difficulties in costing direct care are considerable. The complexities in allocating costs to active duty and nonactive duty patients create significant problems in calculating a meaningful cost per beneficiary for these two groups. Moreover, the lack of uniform rules used by the military departments to distribute costs between inpatient and outpatient activities adds to the difficulties experienced. The failure in this study to develop a facility-based marginal cost analysis was in part a result of the lack of adequate and comparable data and reliable techniques for allocating system-wide overhead costs for individual medical facilities."

Also, available data for military hospital inpatient costs is not comparable to CHAMPUS cost data.

However, excess bed capacity in community hospitals represents a real cost to the Federal Government, since many were constructed with Federal support and operating costs are paid for, in part, through Medicare, Medicaid, and Federal Employee Health Benefit Programs. Future Federal health care legislation could also have considerable impact on the costs and relationships involved in providing medical services at community and military hospitals. Because the CHAMPUS program is served by facilities that represent a real cost to the Federal Government, we did not consider it appropriate to increase the size of the San Diego Naval Hospital to accommodate the CHAMPUS workload.

APPLICATION OF SIZING MODEL TO SAN DIEGO

The application of our hospital size planning model showed that patients at the San Diego Naval Hospital occupied too many acute care beds. Based on the PAS community hospital statistics, we developed statistics comparing actual use with expected use for each patient category treated at the hospital. The analysis reflected average lengths of stay, acute care beds needed, and acute care beds per 1,000 population. Based on the required number of acute care beds per 1,000 naval beneficiaries in the San Diego area in 1974, we

projected the required future demand using the same estimated population data DOD used to plan the new hospital. The analysis showed that only about 600 acute care beds are needed rather than the 900 proposed by DOD if beneficiaries continued to use the facility in the same ratios that they have in the past.

Average length of stay

Analysis of average length of patient stays during 1973 and 1974 revealed a wide difference between PAS community hospital data and San Diego Naval Hospital statistics, both in the aggregate and for specific diagnoses. During fiscal year 1974 the average patient stayed at the San Diego Hospital for 15 days. Based on the community hospital data, the stays should have averaged only 6.4 days. Average length of stay for active duty patients far exceeded that which prevails for patients with comparable diagnoses in the Western part of the United States--31.8 days during 1974 versus 9.3 days in community hospitals.

A difference also existed for retirees using the naval hospital. While their average stay lasted 13.1 days during 1974, patients with comparable diagnoses stayed only an average of 8.1 days in PAS-member hospitals. The following table shows the aggregate length of stay figures for each beneficiary category.

Hospital Length of Stay

Patient category	Actual use		Estimated need based on PAS data	
	1973	1974	1973	1974
	(days)		(days)	
Active duty	33.7	31.8	9.9	9.3
Dependents of active duty	4.4	4.4	3.8	3.9
Retired	13.2	13.1	8.3	8.1
Dependents of retired or deceased	8.0	7.6	5.8	5.6
Other	10.5	14.0	6.4	8.4
Weighted average	16.1	15.0	6.8	6.4

The tables in appendix V illustrate the disparity in lengths of stay for selected nonsurgical and surgical conditions.

Acute care bed needs in 1973 and 1974

The difference between the actual average length of stay of patients at the naval hospital and that which would have been experienced in community hospitals significantly affects acute care bed requirements. When the average length of stay is excessive, more beds are needed because of slow patient turnover.

As shown in the following table, our estimate of beds needed based on PAS data for each beneficiary category was lower than the number that would be needed based on actual use.

Acute Care Bed Requirement for 1973 and 1974 (note a)

Beneficiary category	Actual use		Estimated need based on PAS data	
	1973	1974	1973	1974
Active duty:				
Acute care beds	1,098	1,020	324	299
Percentage of total	72	71	51	49
Dependents of active duty:				
Acute care beds	168	176	145	156
Percentage of total	11	12	23	25
Retired:				
Acute care beds	150	142	95	87
Percentage of total	10	10	15	14
Dependents of retired/ deceased:				
Acute care beds	89	85	64	62
Percentage of total	6	6	10	10
Others:				
Acute care beds	10	16	6	10
Percentage of total	1	1	1	2
Total				
Acute care beds	1,515	1,439	624	614
Percentage	100	100	100	100

a/Figures for each year by beneficiary category were developed by multiplying the average length of stay data (see p. 23) times the total discharges for each beneficiary category and dividing by 365 days. The resulting figures were then increased by 25 percent to reflect an assumed 80-percent occupancy rate.

Active duty patients accounted for about 88 percent of the total bed difference since, as shown in the table on page 23, the average length of stay for active duty members far exceeded other beneficiary categories. Also, more than 25 percent of the total occupied bed-days were accumulated by patients who stayed in the hospital for 100 days or longer.

Bed need per 1,000 beneficiaries

The number of acute care beds required to support each 1,000 beneficiaries in the San Diego area was estimated using our number of required beds and the Navy's estimate of the beneficiary population.

San Diego Naval Hospital
Acute Care Beds Per 1,000 Beneficiaries

Beneficiary category	Population fiscal year 1974 (note a)	Actual use		Estimated need based on PAS data	
		1973	1974	1973	1974
Active duty	94,939	11.6	10.7	3.4	3.2
Dependents of active duty	124,157	1.4	1.4	1.2	1.3
Retired	30,052	5.0	4.7	3.2	2.9
Dependents of retired/dec.	82,645	1.1	1.0	0.8	0.8
Other	20,209	0.5	0.8	0.3	0.5
Weighted average bed requirement		4.3	4.1	1.8	1.7

a/Because PAS data was only available on a calendar year basis, we used fiscal year 1974 population data to calculate bed requirements per 1,000 population. The population data for 1973 and 1975 varied only a small amount from 1974.

As shown above, there was a wide difference between the total beds actually used per 1,000 population and the total beds required per 1,000 population based on community data.

The widest difference was for active duty members. They used about 11 beds per 1,000, while our analysis showed a need for about 3 beds per 1,000. For dependents of active duty members, both actual use and our estimated requirements were slightly more than 1 bed per 1,000. Therefore, DOD's use of 4 beds per 1,000 to determine hospital size does not reflect actual or expected use by these two segments of the beneficiary population and, in our opinion, is not appropriate for planning.

Acute care bed requirements in the future

Once the current acute care beds per 1,000 population has been determined, bed requirements can be projected using future population estimates. The following table compares our projections of bed requirements for the San Diego Naval Hospital with requirements based on DOD criteria.

Estimate of Future Bed Needs

Beneficiary category	Future population	Beds per 1,000		Acute bed needs	
		DOD criteria	Our estimate	DOD estimate	Our estimate
Active duty	90,069	4	3.2	361	284
Dependents of active duty	114,104	4	1.3	457	144
Beds for in-patient transfers		—	(a)	100	(a)
Subtotal	204,173			918	428
Retired	30,052	b/10%	2.9	92	87
Dependents of retired/ deceased	82,645		0.8		62
Others	20,209		0.5		10
Subtract beds at naval training center			(a)	-125	(a)
Total	337,079			885	587
Total (with rounding)				900	600

a/Since our estimate is based on actual naval hospital use statistics, transfers and beds at the Naval Training Center are already taken into account.

b/The 10 percent is applied to the 918 estimate to determine number of beds to be programmed for retirees and dependents of retired and deceased members.

One important difference between DOD's and our estimates is the number of beds for retired military and dependents of retired/deceased members. Our estimate has included 159 beds--enough to accommodate all the acute care needs of this segment of the population. If DOD's criteria of

10-percent additional beds were used, however, only about 43 beds would be included.

The future population data shown in the previous table was used by the Navy to develop its 900 acute care bed estimate. We used the same data to insure the estimates were comparable. The calculation of acute care bed needs under either DOD's or our method is very sensitive to the population data. Therefore, for planning purposes, bed needs should be calculated using valid population projections at the time hospital size must be finalized in order to proceed with design. Application of our planning method to the Navy's current population data, dated May 1975, results in acute care bed requirements of about 700.

Our estimate of required acute care beds per 1,000 is applicable only to naval hospital beneficiaries in the San Diego area. These figures should not be considered as general planning factors for Navy or other military installations.

NAVY RECOGNIZES LENGTHS OF STAY TOO LONG

The Navy recently changed its policy and reduced length of stay and the average number of beds occupied at the hospital much closer to projections based on community hospital data. This generally confirmed that our estimates of hospital size based on community data were reasonable.

On May 28, 1975, the Surgeon General of the Navy issued a memorandum requesting a 25-percent reduction in the average length of patient stays in naval hospitals by January 1, 1976, to save funds. To help meet this objective, the Navy authorized the establishment of a medical holding company at the San Diego Naval Hospital in July 1975 to provide extended care to active duty patients whose condition precluded returning to full duty, but permitted light duties. Holding company patients are treated on a less expensive outpatient basis and are not counted on the hospital rolls.

In September 1975 the Navy changed its administrative procedures for discharging patients from its hospitals. It (1) allowed patients to be discharged to their own units on "duty under treatment" status, (2) made it easier to obtain convalescent leave, and (3) made it easier to be discharged from sick list into the medical holding company. The San Diego Naval Hospital Command rapidly implemented these new procedures and developed new innovative methods for streamlining other administrative practices.

The impact of these changes was that from July to October 1975

--the average number of occupied beds decreased from 1,000 to 700 and

--the number of patients with lengths of stay exceeding 60 days decreased from 256 to 49.

The Navy's new management practices, which were primarily directed toward reducing active duty lengths of stay, resulted in the percentage of hospital beds occupied by retirees and dependents of retired/deceased increasing from about 16 percent in fiscal years 1973 and 1974 to over 32 percent in October and November 1975.

PATIENT CARE SURVEY SHOWS LENGTH OF STAY TOO LONG

We asked the naval hospital nurses to categorize patients occupying acute care beds from September 9, 1975, to October 4, 1975, according to the type of care needed. During this period, an average of 675 patients were categorized daily--about 90 percent of all patients in the hospital. This survey disclosed that 18 percent of the patients still occupying acute care beds could have been handled in light care facilities. The remaining 82 percent--patients who required acute care--occupied an average of 603 beds during the period.

The following table shows the results of our patient care survey.

Nursing Study of Patient Levels of Care
September 9, 1975, to October 4, 1975

Category	Percentage
Acute care:	
Intensive/complete care--a patient is unable to feed himself and needs virtually complete assistance	10
Partial care--a patient is able to feed himself and needs some assistance with bathing and walking	35
Limited care--a patient requires no assistance in eating, bathing, or ambulating, but cannot stay in hotel-type facility	37
Light care:	
A patient requires no assistance eating, bathing, or ambulating, and can stay in hotel-type facilities	18

Note: A total of 17,544 patient days, representing approximately 90 percent of all patients in the naval hospital, were categorized by the nursing staff during this study.

ESTIMATE OF LIGHT CARE BED REQUIREMENTS

DOD has estimated that the San Diego Naval Hospital will require 300 light care beds in the future, but was unable to support this figure with a formal planning model. Based on the bed use data for the existing San Diego medical holding company and data obtained from the patient care survey discussed earlier, we estimated the ratio of light care bed requirements to acute care bed requirements for the hospital. These ratios were determined by comparing the number of patients who had a valid need for acute care facilities with those who were, or could have been, assigned to a light care facility. The ratios are 87 percent for active duty members and 12 percent for all other beneficiary categories.

Once the acute care bed requirements for active duty and other beneficiaries are determined based on the planning model, light care requirements for the San Diego Naval Hospital can be estimated by applying the appropriate ratio.

The following table indicates that on the basis of a requirement at the naval hospital for about 600 acute care beds, about 300 light care beds would be needed.

	Total	Active duty	Other beneficiaries
Acute care requirement	587	284	303
Ratio of light to acute care bed requirement		87%	12%
Light care requirement	283	247	36
With rounding	300		

CONCLUSIONS

DOD's current criteria for planning the size of hospitals of 4 beds per 1,000 active duty members and their dependents does not reflect actual or expected use patterns. If applied to the San Diego Naval Hospital, DOD's criteria will result in the construction of a facility whose capacity will far exceed expected medical needs.

Legislation gives DOD the authority to construct medical facilities for active duty members, dependents of active duty members, retirees, and dependents of retired and deceased members. The Secretary of Defense is authorized to limit the space programmed for the various beneficiary categories to that amount necessary to support teaching and

training requirements in military hospitals, except space may be programmed in areas having a large concentration of retired members and their dependents where there is also a projected shortage of community facilities.

Our analysis showed that dependents of active duty members used just over 1 bed per 1,000 in 1973 and 1974 rather than the 4 beds called for under DOD's criteria. The excess capacity built into a hospital because of this difference is considerable because dependents of active duty members constitute the largest category (about 34 percent) of projected eligible beneficiaries for the new San Diego hospital.

In contrast, active duty members occupied about 10 beds per 1,000 rather than the 4 beds provided under DOD's criteria. Although this reflects actual use, it does not reflect need since active duty patients have, on the average, occupied beds much longer than necessary--about 32 days in fiscal year 1974. Comparable patients stayed about 9 days in civilian hospitals. The 23 day difference was attributable to administrative delays and the lack of light care facilities to handle patients not able to return to full duty.

Also, the number of beds actually used by the beneficiary categories of retirees, dependents of retired and deceased members, and others exceeds the number provided for by DOD's criteria. DOD's policy allows the acute care bed requirement for active duty members and dependents to be increased by 10 percent in teaching hospitals to provide an adequate mix of patients to carry out the teaching mission. However, in 1973 and 1974 retirees and dependents of retired and deceased members used over 16 percent of the occupied beds at the San Diego Naval Hospital. They also constitute 25 percent of our 600 bed estimate for the new hospital.

Our hospital size planning model indicates that 600 acute care beds and 300 light care beds are needed to support the projected eligible beneficiary population in the San Diego area rather than the 900 acute care and 300 light care beds planned by DOD. An effort by DOD in the fall of 1975 to reduce the level of occupancy at the San Diego Naval Hospital confirmed that the bed needs projected using our model are reasonable.

Our figures assume that retirees, their dependents, and dependents of deceased military personnel would continue to use the hospital in the same ratios they have in the past. In the planning year, they would constitute 25 percent of the 600 required acute care beds. If only 10 percent of the acute care beds were to be allocated for these individuals, as provided for in DOD's current policy, only 480 acute care beds would be needed.

We believe that there is a need for DOD to revise its planning criteria to recognize what the expected demand for medical services should be based on the expected size and mix of the beneficiary population in future years.

RECOMMENDATIONS

We recommend that the Secretary of Defense withdraw the DOD hospital sizing criteria now used and implement a planning methodology similar to the one described in this report. The method adopted should

--adjust actual bed utilization figures to conform to community data for average lengths of stay,

--use adjusted figures to project acute care bed requirements, and

--provide sufficient light care facilities to meet special requirements of the military which result from the fact that patients cannot always return to their duty station for a normal convalescent period.

AGENCY COMMENTS AND OUR EVALUATION

In commenting on our report, DOD stated that our proposed sizing model offered the opportunity of providing a more precise measurement of expected acute care bed needs than its 4 beds per 1,000 criteria. DOD indicated our model would provide a proper planning tool for sizing the proposed new San Diego Naval Hospital if it was adjusted to reflect certain factors. The hospital size which accommodated all of its concerns was 966 acute care beds. The factors to be considered in reaching 966 beds were:

1. Use current projected beneficiary population data for the San Diego area.

2. Recognize that patients in major teaching hospitals stay longer than patients in nonteaching hospitals.

3. Use national PAS average length of stay data, rather than Western regional PAS data because it is a larger data base and better reflects military hospital staffing practices.

4. Provide enough acute care beds to absorb the entire CHAMPUS workload.

5. Provide sufficient space to permit retirees and dependents of retired and deceased to use the new hospital in the same ratios they have in the past.

The hospital size shown in our matrix of policy options (see p. 9) that conforms most closely to DOD's criteria for sizing hospitals is 480 acute care beds. This size provides space for

--all active duty personnel and those dependents of active duty members currently being served by the existing San Diego Naval Hospital and

--the number of retirees and dependents of retired and deceased members deemed necessary under DOD policy to provide an adequate mix of patients to allow the hospital to fulfill its teaching mission.

As discussed earlier (see p. 27), we believe it is appropriate to use the most current valid projected population data available at the time the size of a hospital must be finalized in order to proceed with design. DOD's current population data increases the hospital size from 480 acute care beds to 575 acute care beds.

The following table shows the hospital size using our model and DOD's 10-percent allowance and the overall effect in terms of beds of the other factors proposed by DOD.

Descriptions	Bed increase	Resulting hospital size
Hospital size using our model and DOD's 10-percent allowance	Not applicable	575
Provide 20 percent additional capacity for data concerns	70	645
Absorb entire CHAMPUS workload	196	842
Additional space for retirees and dependents of retired and deceased members	125	966

Data concerns

DOD proposed that we increase our average length of stay data (see p. 64) by 20 percent to recognize that patients in major teaching hospitals stay longer than patients in nonteaching hospitals and that national PAS data would be more representative of lengths of stay at the proposed San Diego Naval Hospital than Western region data.

Increasing the average length of stay by 20 percent for all beneficiary categories would add about 70 beds to the proposed San Diego Naval Hospital. We believe that our hospital size analysis was made in a manner which already makes allowance for the data concerns raised by DOD and further, because of certain assumptions discussed below, it provides a sufficient margin to avoid undersizing the new San Diego Naval Hospital. Our hospital sizing model:

--Calculated appropriate length of stay at the hospital by comparing each patient with patients having a corresponding diagnosis in civilian hospitals. Over 50,000 patient discharges were considered. As pointed out by the Navy in a November 1975 letter to us, a teaching hospital is an institution to which patients with unusual and more complex medical problems are referred. About 42 percent of the hospitals in the Western region PAS data had internships and 38 percent had residency programs. Therefore, for complex teaching hospital type illnesses, it is likely our patient-to-patient comparison reflected length of stay in teaching hospitals in many cases.

--Used Western region PAS data which was broad and comprehensive. Hospitals of 300 beds or greater accounted for over 17,000 or 35 percent of the approximate 49,000 total beds in the data base. As indicated on page 18, the principal use of the PAS data is for measuring the efficiency of hospital operations.

--Recognized that length of stay is affected by a variety of factors which would be reflected in both the national and Western region PAS data. Such factors are hospital occupancy levels, the reimbursement practices of regional insurance carriers, the incidence of different diseases, and the age distribution of patients. Changing to national length of stay PAS data solely because of military staffing practices seemed inappropriate.

--Used the actual length of stay of all patients who died or transferred. (See p. 20.)

--Adjusted to the 95th percentile all patients who stayed over 100 days, which means that only 5 percent of the patients in the PAS data for the Western region had longer average lengths of stay. More than 20 percent of the patients at the San Diego Naval Hospital fell into this category. (See p. 20.)

--Recognized that not all hospitals in the San Diego area are in the PAS system, and many of those not included are proprietary hospitals which tend to have the relatively shortest length of stay per diagnosis. (See p. 74.)

The inappropriateness of the 20 percent adjustment is seen when it is applied to the average length of stay data for dependents of active duty members.

--Our estimate was 3.9 days.

--DOD's adjustment increases it to 4.7 days.

--Actual length of stay in 1973 and 1974 was 4.4 days.

CHAMPUS workload

DOD proposed that 196 acute care beds be added to accommodate the entire CHAMPUS workload. The beneficiaries being served under the CHAMPUS program in San Diego are dependents of active duty members, retirees, and dependents of retired and deceased members.

Section 1087 of title 10 of the United States Code provides the following with regard to programming space in military hospitals for these beneficiaries:

"* * * space may be programmed in areas having a large concentration of retired members and their dependents where there is also a projected critical shortage of community facilities."

Sections 1074 and 1076 of title 10 further provide that dependents of active duty members, retirees and their dependents, and the dependents of deceased members are entitled to receive medical care in military hospitals, subject to the availability of space and facilities and staff capabilities.

The San Diego area has no critical shortage of community facilities; in fact, it has an excess with over 1,200 acute care beds being projected for 1980. As discussed earlier (see p. 22), the financial impact of constructing beds to accommodate the CHAMPUS workload is uncertain at best and more than likely negative.

It must be recognized that the Government must bear the cost (construction equipment, staffing, etc.) of adding additional beds to the San Diego Hospital to care for those beneficiaries eligible for CHAMPUS. At the same time, the Government will be sharing (through Medicare, Medicaid, and Federal

Employees Health Benefits program) in the increased cost which will occur when civilian hospitals experience a reduced level of occupancy as a result of removing the CHAMPUS patients (that is, higher daily rates will be necessary in the civilian hospitals to cover operating costs which must be spread over a smaller number of users). Ultimately, the taxpayer bears the increased cost at both ends.

Because of the availability of excess Federal and civilian hospital capacity and weaknesses in comparative cost data between military and civilian facilities, we do not believe it is in the best interest of the Government to increase the capacity of the San Diego Naval Hospital to absorb any of the current CHAMPUS workload.

Space for retirees and dependents of retired and deceased members

As discussed earlier (see p. 33), we believe that our hospital sizing model is a more precise method for determining valid bed requirements for active duty members and their dependents and should be used in conjunction with DOD's 10-percent allowance. Therefore, the maximum size hospital that should be approved by the Congress for the new San Diego Naval Hospital is 575 beds. Furthermore, as discussed in chapter 2, we believe the Congress should explore the opportunities that exist to further reduce the size of the hospital through restricting the eligible beneficiary population and using excess capacity at other Federal hospitals in the San Diego area.

CHAPTER 4

SHARING EXCESS BED CAPACITY

In chapter 2 we highlighted various policy options which will have considerable impact on the required size of the new San Diego Naval Hospital. This chapter discusses in detail the opportunities that exist to reduce the size of the planned San Diego Naval Hospital by using excess bed capacity at other nearby Federal hospitals in the San Diego area.

EXCESS CAPACITY AT SAN DIEGO VA HOSPITAL

The San Diego Veterans' Administration Hospital is located in La Jolla, about 12 miles from the existing naval hospital, and is 9 miles from the proposed new hospital site. It has an excess bed capacity which could serve some of the medical needs of the naval beneficiary population. Opened in March 1972, it was designed as an 811-bed facility but currently operates 599 acute care beds and 60 additional nursing home beds. Architecturally, increasing the current bed capacity would require enclosing large areas which are now balconies.

Although the VA hospital has a current capacity of 599 acute care beds, the average daily census in 1974 was 432 and at the time of our review was estimated to be 450 for 1975. The hospital director is optimistic that the veteran population in the San Diego area will increase 2 percent per year. However, this growth in demand should be tempered by the fact that another VA hospital is scheduled to be opened at Loma Linda in about 2 years. The Loma Linda hospital is in the service area of the San Diego hospital and may have a considerable impact on the number of patients coming to San Diego from the San Bernardino/Riverside area.

Only the operating room suite at the San Diego VA Hospital is of questionable capacity if the patient load is increased. Currently, only 6 of the projected 12 operating rooms are completed. These rooms were the site of 3,604 major surgical procedures during fiscal year 1975. More operating rooms would be needed as the patient census approaches 600.

The director of the San Diego VA Hospital doubted whether the facility could ever operate at 811 beds; however, it is capable of operating at a 600-bed level and it is currently operating at about 450 beds. The location and availability of the beds at the San Diego VA Hospital seems to be an

attractive alternative to constructing new facilities. The unused bed capacity at the VA hospital is about 150 beds.

The Deputy Chief Medical Director of VA informed us that the San Diego VA Hospital has been requested to submit an activation plan to VA headquarters by the end of February 1976 which would detail the hospital's plan for bringing occupancy up to the 600-bed level. The alternatives being considered include the conversion of some existing acute care bed space to a spinal cord injury unit and intermediate care facilities. The above official said no consideration is being given to sharing some of the excess acute care beds with the Navy.

We believe that sharing excess bed capacity with the Navy is a viable alternative and should be considered along with the others.

EXCESS CAPACITY AT CAMP PENDLETON NAVAL HOSPITAL

The situation at the Camp Pendleton Naval Hospital is similar to the San Diego VA Hospital, although it is further away--about 51 miles from the existing site. The hospital has a 600-bed capacity and began treating patients in December 1974. At the time of our review, 560 beds were in place and it was staffed to handle 350 patients.

The average daily patient load varied widely in 1975. From January to April it was about 250 patients. In May and June it was about 355 and 345, respectively, of which approximately 50 patients were Vietnamese refugees.

The hospital director said that the hospital has adequate equipment to operate 600 beds and only additional staffing would be required. It should be noted that some of the staff presently assigned to the hospital would be required to move with troops stationed at the base should they be reassigned.

Although the hospital is staffed at this time for only 350 beds, the entire physical plant of the hospital, except for one ward, is open. A second ward is open but is being used for outpatient service.

Looking at the long range anticipated census at the Camp Pendleton Hospital, the hospital director estimates that the facility will achieve an average daily census of 350 patients even without the Vietnamese refugees. Allowing for an 80-percent occupancy rate would raise the anticipated total bed requirements at Camp Pendleton to 440, leaving approximately 160 beds available for patients not presently served by the facility.

We talked with the hospital director and his staff to see if the hospital would be willing and able to absorb some of the patient load at San Diego Naval Hospital. With the provision that additional staff would be needed, the feeling was that there would be no major problems in handling patients up to this 600-bed capacity and there were no major transportation or other logistical problems.

In appendix III, our medical consultant discusses the methodology he used to estimate excess beds at the San Diego VA Hospital and the Camp Pendleton Hospital.

The matrix on page 11, shows the impact of an active sharing program on bed requirements under existing policy and other policy options available regarding who is eligible for care as discussed in chapter 2.

CHAPTER 5

NEED AND PLANNING FOR NEW FACILITIES AT THE SAN DIEGO NAVAL HOSPITAL

As part of our review of the San Diego Naval Hospital, the subcommittee asked us to look into problems with the existing medical facilities and the reasons for selecting the proposed site. The Navy plans to construct a new $223 million medical complex at Murphy Canyon, about 9 miles northeast of the present hospital site. We did not evaluate the reasonableness of the $223 million cost estimate. We believe that a construction effort is necessary due to structural inadequacies and inefficient building arrangements. However, because the matters discussed in previous chapters considerably affect hospital size, we believe the decision on location, as well as size of the new facility, should be deferred until the Congress and DOD consider matters discussed in this report.

This chapter describes the existing naval hospital, problems affecting it, and certain other matters the Navy should reconsider before deciding where to locate the new hospital.

EXISTING FACILITIES

The 71 buildings which make up the present medical complex were constructed during three time periods. The oldest portion consists of about 20 buildings built mainly in the 1920s. It houses nursing units, administration, outpatient clinics, dentistry, radiology, clinical laboratory, physical medicine, and the laundry. The buildings are generally three to four stories, with a reinforced concrete frame, wood frame roof, and unreinforced hollow clay masonry exterior filler walls. About 443 beds (30 percent) of the hospital's 1,181 authorized beds are in these old structures.

The second major phase of construction took place during World War II and included mostly one and two story wood frame buildings used for enlisted men's housing and academic facilities for the Naval School of Health Sciences (Corps School). When constructed, these buildings were to be "temporary" structures.

Several major structures have been erected since World War II, including a 1,000-bed surgical hospital completed in 1957, an outpatient building completed in 1969, a medical library, and several barracks. The surgical hospital is a nine level, 375,272 square foot reinforced concrete structure.

It has been remodeled to accommodate outpatient clinics and doctors' offices, thus reducing its authorized capacity to 738 beds.

The following table summarizes the existing structures at the Balboa site:

	Number of buildings	Predominant type of construction	Total size (square feet)	Percent of total square footage
Old central medical complex	21	Hollow clay masonry exterior filler walls	549,344	40
World War II structures	38	Wood frame temporary	332,470	24
Recent construction	12	Reinforced concrete	498,414	36
Total	71		1,380,228	100

From fiscal years 1972-74, the Navy spent about $3.7 million to remodel and recondition existing facilities. The public works officer said that during this period, almost every area of the compound received some reconditioning. Some of the major projects are listed below:

Project	Cost
Installation of a medical laboratory	$300,000
Renovate ear, nose, and throat clinic	47,000
Rebuild and enlarge pharmacy	151,000
Installation of obstetrical suite	400,000
Lunchroom rehabilitation	40,000
Installation of drug-screening lab	80,000
Complete reconstruction of pediatric services	50,000
Air-condition and rebuild intensive care unit	25,000
Modernize bowling alley	18,400

As of June 1975 projects with an estimated cost of $958,821 were either underway or expected to start soon. Other projects costing $581,240 were awaiting funding.

REASONS FOR NEEDING A NEW HOSPITAL

During the 1975 military construction appropriation hearings, the Navy gave three major reasons for needing a new hospital.

1. Safety problems caused by structural inadequacies of some existing buildings.

2. Inefficiencies in operations caused by poor arrangement of buildings.

3. Noise and safety hazards created by commercial jet aircraft which fly over the hospital on their approach to Lindbergh Field.

Structural inadequacies

A serious structural inadequacy is the vulnerability of older buildings to earthquake damage and the inability of these buildings and others built during World War II to meet fire safety codes.

The recently constructed buildings, including the surgical hospital, have structural problems but no serious fire safety problems. According to officials of the Naval Facilities Command fire protection branch, the wood frame buildings present the greatest fire safety hazard. A fire protection engineering survey made by NAVFAC in May 1973 recommended that sprinkler systems be installed in three of the wood frame buildings and additional exits be provided in various buildings to eliminate dead end corridors. The cost of these improvements was estimated at $172,000. The Navy has delayed these projects pending resolution of the hospital reconstruction plans.

While no major earthquake damage has ever been reported in San Diego, geologists said that there is potential danger. Scientists at the California Institute of Technology's seismological laboratory said they were unable to distinguish any appreciable difference in seismic hazard between the Murphy Canyon and Balboa Park sites. The Navy considered refurbishing the old central medical complex but concluded that bringing it up to seismic and fire safety codes would cost about 75 percent of the replacement cost. Therefore, in subsequent planning, the Navy assumed rehabilitation would be too costly for the limited use which these buildings could serve.

The existing facilities do not meet the 1973 Uniform Building Code of California or new DOD seismic design criteria.

However, testifying at the 1975 Military Construction Appropriation hearings, Navy officials stated that the main surgical building and certain other existing facilities at Balboa Park are structurally sound. Also, the most recent architect and engineering (A&E) study indicated that its structural analysis work on the main surgical hospital did not support prior conclusions that there was a danger of collapse during a major earthquake. The study showed there would be some structural damage, mainly to the piers between the windows. It concluded that about $550,000 would have to be spent on structural modifications to increase the building's seismic resistance for use as a barracks facility.

If the new hospital were constructed at Balboa Park, the Navy should explore the potential for using the main surgical hospital as a light care facility.

Inefficient building arrangement

The buildings which make up the medical complex were constructed over the past 50 years without a master plan. According to naval officials, this causes inefficient operations, necessitates fragmentation and duplication of services, and is an unnecessary hardship on patients.

Some of the problems cited by the Navy follow:

--The medical complex has three main X-ray departments. One serves the outpatient clinic, another the emergency room and the surgical hospital, and the third is used to reduce the demand at the other two X-ray locations by serving primarily ambulatory male patients. Patients from any of nine inpatient buildings must be taken outdoors along covered sidewalks to be X-rayed. Each of the X-ray departments has its own reception area, dark room, equipment, and staff.

--In fiscal year 1975 approximately .6 million meals were individually portioned and manually distributed to patients in nine separate buildings. Ambulatory patients and staff were served approximately 1 million meals in the main dining room. People are exposed to varying weather conditions enroute to the dining room.

--Daily distribution and collection of approximately 10 tons of linen is done by hand truck, traveling along interior hallways, exterior walkways, sidewalks, and streets in competition with pedestrian and/or vehicular traffic.

--Parking on base is highly inadequate. Several sizeable onbase lots exist, but they are a considerable distance from the prime medical facilities. Patients and visitors must park in the city-owned west parking lot. This city-owned lot is isolated horizontally by considerable distance from the patient facilities and vertically by a long flight of stairs. A hospital tram does service the parking lot at half-hour intervals, but only a few are able to use this service.

Problem of aircraft flyovers at Balboa Park site

The medical complex at Balboa Park lies beneath the approach pattern to Lindbergh Field, with the surgical hospital being approximately 2 miles from the main runway. The noise and safety hazard associated with large commercial jet aircraft passing over the complex were major factors which influenced the Navy's decision to relocate at Murphy Canyon. Our analysis indicates that aircraft flyovers do cause noise problems but they can be overcome through proper design of any new facilities with little increase in cost. The Federal Aviation Administration (FAA) said that the aircraft operations at Lindbergh Field do not represent a safety hazard to the naval hospital at Balboa park.

Aircraft noise

DOD has established noise zones for use in planning military facilities. Areas are designated as Composite Noise Rating (CNR) Zone 1, 2, or 3, depending on the intensity of noise. CNR Zone 1 reflects relatively low noise levels, in comparison to zones 2 and 3 which reflect moderate and high levels, respectively.

Current DOD construction guidance indicates the following with regard to medical facilities.

--Facilities shall be cited in zone 1.

--Construction is allowed in zone 2 if a waiver is obtained from the Office of the Secretary of Defense and adequate sound abatement features are included in the design.

--Construction is prohibited in zone 3.

It appears that new construction at Balboa Park, which lies in zone 2, would not violate this guidance.

In June 1975 we asked the Naval Aircraft Environmental Support Office to study aircraft noise intensity inside the outpatient clinic and the surgical hospital. According to Navy officials, these two buildings could remain in use if the Balboa Park site were reconstructed.

The study concluded that the hospital grounds are in CNR Zone 2 and that:

> "The interior hospital noise levels are strongly controlled by hospital self-generated interior noises.
>
> "Aircraft and traffic events although occasionally heard, do not determine the overall noise level in the hospital. Actually hospital generated interior noise levels often exceed aircraft and traffic noise event levels by 15-20 dB inside the hospital building."

The chief physician in charge of audiology believed that aircraft noise at the hospital had no serious adverse effect on patients.

None of the existing buildings at the Balboa Park site were constructed using modern noise abatement techniques. Such techniques were used, however, in the recently constructed Center City Hospital, a 176-bed privately owned facility in the downtown San Diego area. This hospital is also in CNR Zone 2 and is approximately 4,000 feet from the Lindbergh Field runway. Noise abatement techniques included sealed window units with two panes of glass having a 4-inch evacuated space between panes. The building is also centrally air-conditioned. The hospital engineer said that the special window units represent little additional construction cost and yet are very effective. The noise created by aircraft landings at Lindbergh Field cannot be heard inside the building.

Noise levels are expected to decrease around Lindbergh Field because (1) newer jets are quieter and (2) a California noise law requires noise reductions in residential areas by 1985. Regarding aircraft noise around Lindbergh Field, FAA stated that the San Diego Comprehensive Planning Organization has been directed

> " * * * to complete studies on airport influence data by April 30, 1976, from which the County of San Diego can do comprehensive land use planning and identify measures to be taken toward compliance with the California State Noise Standards. Additionally, we believe that developments in aircraft

noise suppression should eventually result in a reduction of noise in the Balboa Park vicinity."

It appears that the installation of central air-conditioning and special sealed window units could effectively abate aircraft noise in the main hospital and any new structures at the Balboa Park site. The most recent Navy cost analysis indicated that sound attenuation measures would cost about $1.1 million. Also, none of the completed or pending projects for remodeling and reconditiong of existing facilities were identified specifically as soundproofing measures, although the installation of acoustical ceilings and some window air-conditioning units would have this effect.

Aircraft hazard

Navy officials said that a major reason for constructing new medical facilities at Murphy Canyon is the safety hazard created by aircraft which fly over the Balboa Park site on their approach to Lindbergh Field. The instrument landing pattern cuts across the compound at a distance of approximately 500 feet from the main hospital and at an altitude of about 355 feet above the tallest buildings. The visual approach path sometimes brings aircraft directly over the main hospital structure.

Responding to our letter of inquiry regarding the aircraft safety hazard at the Balboa Park location, FAA stated the following:

"Operations at Lindbergh Field are safe and do not represent a safety problem to the hospital located at the Balboa Park site."

FAA indicated that the present number and type of aircraft over the Balboa Park site is more of a factor affecting safety than at the Murphy Canyon site.

The Navy commented that we stated that Lindbergh Field operations were safe and further commented that the potential hazard at the Murphy Canyon site was insignificant compared to the Balboa Park site. The statement regarding safety was the official position of FAA and not ours. Also, as stated above, the number and type of operations may have an effect on safety. FAA stated that the number of aircraft operations at Lindbergh Field may eventually be limited to about 250,000 operations per year because of size constraints while 470,000 aircraft operations are projected for Montgomery Field near Murphy Canyon in 1986.

OTHER SITE SELECTION CONSIDERATIONS

Aircraft flyovers at Murphy Canyon

The proposed Murphy Canyon site is near Montgomery Field, a San Diego municipal airport. The site is about 12,500 feet from the end of the main runway and about 3,000 to the side of the runway's extended centerline.

Air traffic at Montgomery Field is primarily small private aircraft. FAA estimated that 146,000 landings--about 90 percent of all landings--use runways which place them near the Murphy Canyon site. FAA stated that it would be impractical to make any major changes in aircraft flight patterns.

City plans call for the extension of Montgomery Field's main runway by 1,900 feet in the direction of Murphy Canyon and the installation of an Instrument Landing System by 1981. This would allow the airport to accommodate small business jets. The proposed expansion could bring aircraft over the area at relatively low altitudes.

According to current DOD directives

> " * * * medical facilities normally shall not be sited within 4,500 feet of the centerline of active runways or of the approach zones thereof, and under no conditions within 3,000 feet of the centerline."

While construction of a new hospital at the Balboa Park site would violate this directive, construction at Murphy Canyon appears to violate it as well.

Regarding the use of the Murphy Canyon site for construction of a new naval hospital, FAA stated the following:

> "We consider the Murphy Canyon site to be safe even with the proposed runway extension."

FAA also expressed concern that construction of a new naval hospital at Murphy Canyon may represent incompatible land use, especially in light of the proposed runway extension at Montgomery Field. They indicated that San Diego County will initiate compatible land use zoning studies for the area in 1977 or earlier.

Proximity to beneficiary population

Of prime concern in choosing between the Balboa Park and Murphy Canyon sites is the proximity of the beneficiary

population to the site. The Navy reported a benficiary population for the San Diego Naval Hospital in fiscal year 1974 of about 352,000 and projects a population of 387,360 by 1980. The following table summarizes the existing and projected beneficiary population.

	Fiscal year 1974 (actual)	Fiscal year 1980 (projected)
Active duty	94,939	110,701
Dependents of active duty	124,157	129,167
Retired military	30,052	32,425
Dependents of retired/ deceased	82,645	91,884
Others	20,209	23,183
Total	352,002	387,360

The Balboa Park site is about 9 miles closer than Murphy Canyon to most naval shore facilities and to the San Diego Harbor, the berthing place for many of the ships of the Pacific Fleet.

Murphy Canyon, however, lies on the residential fringe. San Diego City officials said they expected a general northeasterly shift in the city's population in the direction of Murphy Canyon. However, since the active duty military population will generally remain at existing installations, it is doubtful that such a shift will occur to the same extent for the naval hospital beneficiary population.

There is no public transportation directly serving the Murphy Canyon area, while the Balboa Park site appears to be at the hub of public transportation. Although new bus routes may be added to accommodate a new medical facility demand, the time and difficulty in reaching Murphy Canyon from various surrounding communities could remain a problem. A map showing the existing bus routes and proposed rapid transit routes is shown the following page.

Disruption to ongoing operations

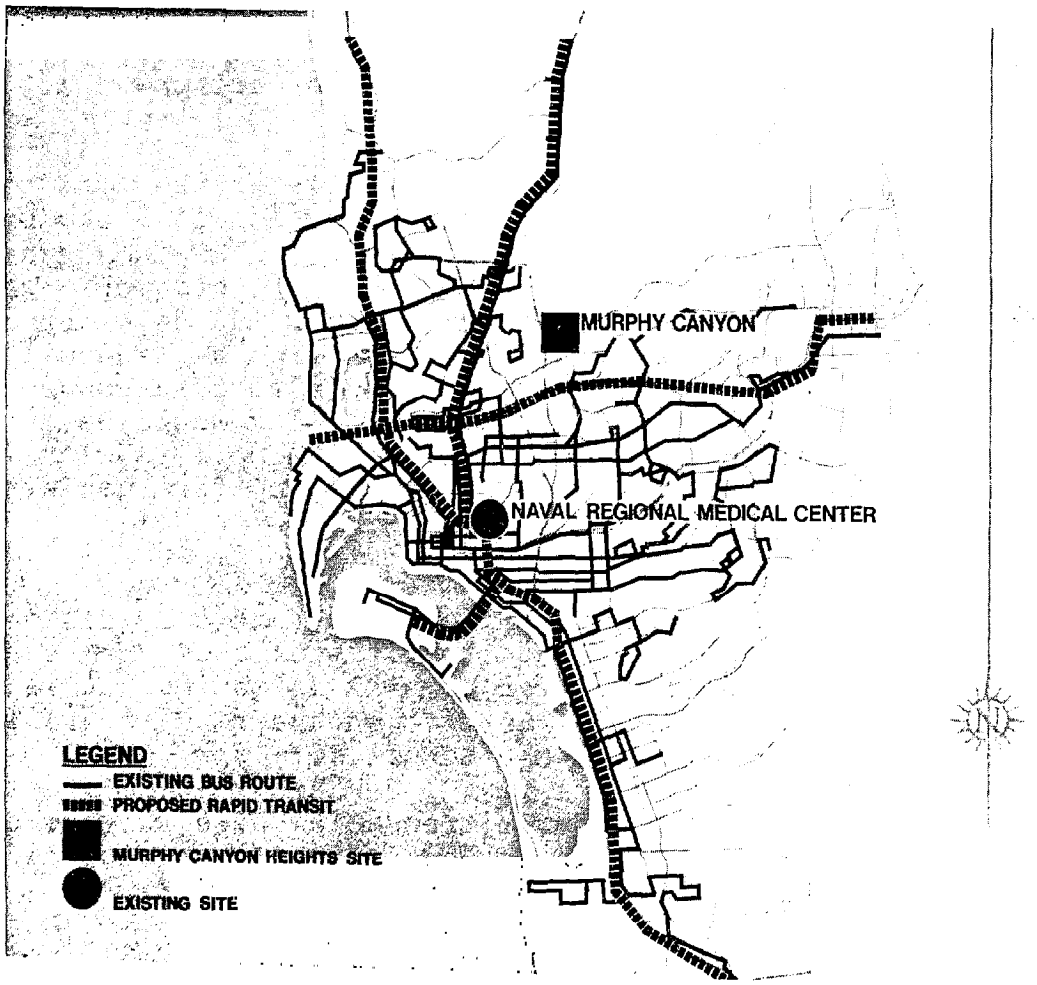
Even though previous studies indicated that considerable disruption would result from construction at the Balboa Park site, the most recent Navy study of the site configuration stated that a fully functional new medical facility can be

constructed on the Balboa Park site while retaining the existing medical complex in operation. By placing the new medical facilities on a section of the site which currently contains only facilities such as barracks, the occupants of which would be transferred to private housing at an estimated cost of about $2 million during the construction period, the hospital can continue to maintain operations. The inconvenience resulting from temporary relocation of certain non-medical activities is considered minimal.

Murphy Canyon land ownership

The Murphy Canyon site consists of 151 acres of land adjacent to a large naval housing area. Due to the terrain's

SAN DIEGO AREA PUBLIC TRANSPORTATION



steepness, only 93 acres are buildable. Ownership of the land is a follows:

Owner	Acres
Navy	47
City of San Diego	24
Private company	77
State of California	3
Total	151

If this site is selected for the new naval hospital, the Navy anticipates that the city of San Diego may give it the 24-acre parcel. The Navy has received congressional authorization to obtain the land owned by the State and the private concern; however, no money has been appropriated for such an acquisition.

Appraisals of the privately owned parcel were made by two independent appraisers in 1973 under a Navy contract. The land has had one owner since its sale by the General Services Administration in 1963 for $385,000. At the October 1973 appraised value of $2.1 million--the most recent appraisal made during our review--the land had appreciated at a compound rate of 18.5 percent over the 10-year period. Based on the appraisal findings and on discussions with officials of the San Diego County Assessor's Office, it appears that the land's value has appreciated consistently with other parcels in the same general area.

PLANNING FOR THE SAN DIEGO NAVAL HOSPITAL

Four major studies, three of which were primarily seeking solutions to the deficiencies at the existing naval hospital complex, were made from fiscal year 1971 through the first half of fiscal year 1976. All were under contract to the Navy and had a total cost of over $170,000. The hospital size in these studies fluctuated from 1,800 to 700 acute care beds. The first three studies were made by one A&E firm. The first concentrated on planning for the reconstruction of the existing Balboa Park site, the second examined and evaluated alternative site locations, and the third developed plans for construction of a new medical complex at Murphy Canyon. The fourth study was made by a joint venture, consisting of three A&E firms. This joint venture was to provide engineering studies relative to the cost and schedule of construction at both Balboa Park and Murphy Canyon.

First study--Balboa Park master plan

This study was made in 1971 and assumed the hospital would be an 1,800-bed facility. This size was provided to the A&E firm by the Navy as a starting point. The study concluded that a time-phased demolition and reconstruction program was needed which would replace all but eight existing buildings. These buildings contain a combined area of 548,764 gross square feet, or 40 percent of the total existing area. Certain activities were to move to temporary locations at various times while new facilities were being constructed. Considerable disruption of ongoing operations was predicted.

In addition to the aircraft safety hazard discussed previously, Navy officials said that the Balboa master plan was rejected because of functional inadequacy, which meant that much more of the existing hospital required rebuilding than originally contemplated. This, in turn, led to a more extensive construction cost for Balboa Park and, due to need for concurrent operations and construction, extended the construction time by approximately 4 years.

Second study--alternative site selection

Because the Balboa Park location appeared to be unsatisfactory, a study was made to find other potential locations. The alternatives were narrowed to 7 sites, including Balboa Park, and each was ranked according to 14 criteria. As indicated in the March 1973 report, the Balboa site had the highest point total with 75 out of a possible 87, and Murphy Canyon received 74.

The study recommended the selection of Murphy Canyon because it had no noise or aircraft hazard and it is the best compromise between the city government's desire to relocate the facility out of Balboa Park and the basic requirement of a location central to the eligible beneficiary population.

Third study--Murphy Canyon master plan and cost analysis

From October 1973 to August 1974 a second master plan was developed based on construction of a new medical complex at Murphy Canyon. The plan called for the design and construction of a new complex over 7 years. Based on revised estimates of the Navy's medical needs in the San Diego area, the planners assumed a requirement of 1,100 beds (800 acute care and 300 light care).

A cost analysis of constructing at both sites was completed in September 1974. The two master plans, however, had been developed under different hospital size assumptions; 1,800 beds at Balboa Park and 1,100 beds at Murphy Canyon. To facilitate the comparison, the square footage of the Balboa Park Hospital was reduced to equal that of the Murphy Canyon plan. For the purposes of decisionmaking in selecting between two alternatives, a comparison was made between present value costs of each alternative. The present value analysis favored reconstruction at the Balboa site by $28.6 million.

The Navy did not believe that this analysis had been performed correctly and performed its own. The Navy assumed that disruption to operations at the Balboa site during the construction period would increase CHAMPUS costs. Also, based on additional information, the Navy adjusted the rates of cost escalation previously used in the A&E study. This analysis favored Murphy Canyon by $31.8 million.

Fourth study--cost and schedule of construction at both locations

In November 1975 a joint venture of three firms completed another study of the construction costs, configuration, and time phasing at each site. These were the same three firms which had been previously selected by the Navy to design and construct the new medical facility, whether it be placed at Balbca Park or Murphy Canyon. Assuming a hospital size of 1,200 beds (900 acute and 300 light care), the construction cost estimates made by the joint venture for each site were considerably different from previous estimates and favored the Murphy Canyon site.

In terms of fiscal year 1978 dollars, the cost difference was $20.9 million. Of this amount, $14 million was due to the cost of additional parking structures. Plans call for building four structures at the Balboa Park site to house 2,952 cars. Only one parking structure would be required at Murphy Canyon since the larger site permits more surface parking. Structured parking at the Balboa Park site is estimated to cost $29.9 million--an average of $9,804 per space. The plan does not envision using the existing 824-space, city-owned public parking lot adjacent to the site which is currently used extensively by hospital staff, patients, and visitors. Other notable cost differences include the $6.7 million additional cost for construction of the hospital building at Balboa Park. Representatives of the A&E firms attributed this difference to a "construction premium," and to the need for additional sound attenuation materials at the Balboa Park site to abate aircraft noise. The construction premium

is required, according to the A&E firms, to allow for the difficulties of working on a site with limited space for construction materials and equipment.

According to the A&E firms, the medical facilities at either site can be completed simultaneously, but final completion of support facilities at Balboa Park would be delayed until January 1985.

Under the new concept, disruption to medical activities at Balboa Park can be minimized by placing the new structures at the southern end of the site. At one point in time, two complete medical facilities--the old and the new--are operational on the site. Patients are then transferred to the new structures, allowing for demolition of the old central medical complex so that new Corps School buildings can be erected in their place.

The table on the following page shows a comparison of the A&E firms' estimated construction costs of a 1,200-bed naval hospital complex at Balboa Park and Murphy Canyon in fiscal year 1978 constant dollars. Constant dollars reflect an estimated cost of total construction if completed in 1978 and does not include any escalation factors for any later years.

The joint venture plans for the Balboa site retain only two (main surgical hospital and the medical library) of the eight buildings which were identified for retention under the original Balboa master plan. The present outpatient clinic constructed in 1969 is not used and the other four structures--three barracks and a warehouse--are demolished since they lie in the area used for the new medical facilities. The joint venture considered use of the existing main hospital building for medical purposes and concluded that the costs of turning the 1957 structure into a modern medical building were prohibitive. Therefore, they decided to use it for barracks. The criteria used in judging the facility were based primarily on recently enacted construction requirements of the California Administrative Code and DOD requirements that new hospital buildings be air-conditioned and contain private, semiprivate, and 4-bed rooms rather than large open wards.

According to the joint venture construction cost estimates, however, very little savings is realized through retention of the existing main hospital as a barracks. They estimate it would cost $35 per square foot to remodel the building for barracks use, while construction of entirely new barracks quarters would cost $39 per square foot.

Comparison of Construction Cost Estimates
For Balboa Park and Murphy Canyon (note a)
Constant 1978 Dollars
1,200-Bed Configuration

Description	Balboa Park	Murphy Canyon	Difference (Balboa-Murphy)
	(millions)		
Site work	$ 5.17	$ 5.17	$ -
Hospital	111.71	105.02	+ 6.69
Outpatient clinic	29.82	28.40	+ 1.42
Light care	7.67	7.38	+ .29
Warehouse	1.21	1.56	- .35
Parking structures	28.94	14.94	+14.00
Energy plant	12.86	12.86	-
Ambulance shelter	.06	.06	-
Corps School	6.09	6.09	-
Bachelor-enlisted quarters:			
Remodel bldg. 26	9.80	-	+ 9.80
New	3.23	14.16	-10.93
Navy lodge	.84	.84	-
Auto shop	.48	.48	-
Enlisted men's club	1.90	1.90	-
Theater	1.77	1.77	-
Fire station	.06	.06	-
Laundry	2.18	2.18	-
Total	$223.79	$202.87	$ 20.92

a/All costs based on joint venture A&E cost study of November 1975.

Based upon the joint venture's construction cost estimates and time-phasing plan for each site, the Navy performed a present value cost analysis comparing the alternatives. In terms of 1978 present value dollars, the results favored Murphy Canyon by $9.7 million for the 1,200-bed plan (900 acute care and 300 light care) and $9.3 million for the 900-bed plan (700 acute care and 200 light care).

We also used the joint venture's November 1975 cost data to perform an economic analysis of the two alternative sites. The results favored Murphy Canyon by about $13 million or 6 percent of the total cost.

The Navy commented that the value of Balboa Park should be considered when cost differences are used in determining site selection. They estimated the land value between $5 million and $25 million. We do not believe a value should be attributed to the land because a large part of the land will revert back to the city of San Diego and the remainder, if excess to the Navy's needs, will most likely be obtained by the city. Therefore, it is unlikely that the Navy would receive any direct economic benefit. Navy officials stated that city requests for the Balboa Park land influenced their decision to perform an alternate site selection study.

CONCLUSIONS

Based upon the structural inadequacies and inefficient arrangement of certain buildings at the existing San Diego Naval Hospital complex, it appears that a construction effort is required.

Construction at the Balboa Park site has the advantage of keeping the medical facilities in an ideal location with respect to the Navy beneficiary population, Navy shore facilities, and available public transportation. It also would permit the continued use of some existing buildings in conjunction with new structures.

The Balboa Park site, however, has the disadvantage of maintaining the hospital in the flight path of commercial jet aircraft landing at San Diego's Lindbergh Field. Using modern construction techniques, the plane noise can be abated and, according to FAA, the planes do not constitute a safety hazard to the hospital.

Selection of the Murphy Canyon concept would allow the design of a new facility and would avoid any disruption of ongoing operations. The resulting hospital, however, would be more remote in location to hospital users. It would lie about 3,000 feet from the approach zone of light aircraft landing at Montgomery Field, a San Diego municipal airport.

The Navy's latest economic analysis was the most comprehensive and comparable of all the cost analyses which have been performed. This analysis and our economic analysis show that Murphy Canyon is the less costly alternative under various economic assumptions.

Any major change in hospital size is an important factor which could impact on the construction cost at either site. Major changes to hospital size will depend on the decisions made by the Congress with regard to (1) use of excess bed capacity at other nearby Federal hospitals and (2) use by various categories of the beneficiary population. We believe that if, as a result of these decisions, the required size of the new hospital decreases considerably from the 600 acute care bed level the Balboa Park site may become more attractive because use can be made of structurally sound existing facilities in conjunction with new structures. However, if the required size approximates 700 to 900 bed size considered in the latest A&E study, we believe that Murphy Canyon as well as Balboa Park is an appropriate site.

We do not believe that the final site selection should be made until the Congress resolves the policy question raised in chapter 2. However, because the issues raised for the consideration of the Congress in chapter 2 are of such magnitude that they may not be resolved in a short period of time. We believe it would be appropriate for DOD to acquire control of the parcels of land necessary to complete the Murphy Canyon site in order to maintain the flexibility to build the hospital at either location, should the Congress decide a large hospital is necessary.

RECOMMENDATIONS

We recommend that the Secretary of Defense await the decisions of the Congress on the matters affecting hospital size which are discussed in chapter 2 before making the final site selection.

AGENCY COMMENTS AND OUR EVALUATION

In commenting on our report, DOD agreed that it should acquire the land necessary to complete the Murphy Canyon site but disagreed with our recommendation to delay final site selection. We believe that the decisions of the Congress could considerably reduce the hospital bed requirements which could have major impact on alternative uses of existing structures and cost comparisons of the two site locations.

Regarding our site location conclusions, DOD stated that Murphy Canyon has an economic advantage of $33 million in terms of budget dollars and requires less travel time for some of the beneficiary population. It also stated that construction at Balboa Park would cause considerable disruption, and since this is in CNR Zone 3, creating a serious noise problem, DOD would not approve construction at that site.

We do not fully agree with DOD's position. Although the Navy's most recent economic analysis is the most appropriate because it compared hospitals of equal bed size, the $33 million economic advantage needs further explanation. Present value dollars should be used for decisionmaking. In arriving at the $33 million, the Navy used budgetary cost dollars and additionally imposed a penalty on the Balboa site for construction delays inherent in that alternative. In present value terms, the Navy's economic analysis of a 1,200-bed facility favors Murphy Canyon by $9.7 million--about a 6 percent advantage rather than a 12 percent advantage based on budget dollars. Also, the largest difference in the cost estimates between the two sites is for parking structures at Balboa Park. (See p. 51.)

DOD's argument that construction at Murphy Canyon will require less travel time for some must be viewed in the context of existing Navy operations and location of the population to be served. The Navy's current duty stations, active duty personnel, and other beneficiaries reside to the west and south of Balboa Park while Murphy Canyon is about 9 miles northeast of this location. Also, DOD does not indicate that only a small percentage of the population eligible for medical care could be accommodated at the Navy housing close to Murphy Canyon.

DOD's statement that the Balboa Park site is in CNR Zone 3 is based on the projections in a 1967 noise study which appears to be outdated in view of subsequent legislation requiring a reduction in aircraft noise levels and technology changes which made aircraft engines quieter. A September 1975 Navy noise intrusion study concluded that the hospital was in CNR Zone 2. Regarding DOD's statement that it would not approve construction at the Balboa site because it is in CNR Zone 3, DOD has not taken a formal position regarding construction at that site and has recently approved medical construction in the area.

We concur that construction at Balboa Park may cause some disruption and displacement of some operations. The most recent A&E study of both site locations addressed the need to relocate some activities at Balboa Park temporarily but concluded that the medical mission could continue. The disruptions caused by construction activities are a frequent occurrence at civilian and other military hospitals.

APPENDIX I

United States Senate
COMMITTEE ON APPROPRIATIONS
WASHINGTON, D.C. 20510

February 18, 1975

Honorable Elmer B. Staats
The Comptroller General of the
United States
Washington, D. C. 20548

Dear Mr. Staats:

In the FY 1975 Military Construction Program, the Department of the Navy requested $3,843,000 to construct a naval hospital at Murphy's Canyon, San Diego, California, During the hearings, it was indicated that this was a downpayment on a hospital project that could possibly cost from $134 to $150 million. The Subcommittee, after a preliminary inquiry as to the need for this hospital, is very concerned that the Navy is overbuilding health care facilities in the San Diego area.

The Subcommittee would like the General Accounting Office to give special emphasis to the planning for the proposed new San Diego Naval Hospital. In particular, we would like GAO to look into (1) DOD's reasons for needing a new facility, (2) the selection of the proposed Murphy Canyon site for the new hospital, and (3) the amount of money spent on upgrading the present hospital and soundproofing of the hospital. Particular assessment should be made using the following criteria:

--population served by the health facility;

--historical utilization patterns, giving special attention to the facility's length of stay statistics and how they compare to similar community standards;

--type of facilities needed (i.e., acute, intermediate, self-care);

--availability of other nearby Federal health care facilities;

--consideration given to staffing requirements in planning health care facilities.

We are concerned about the need for the planned new $150 million San Diego facility, because of the proximity of several underutilized Federal hospitals in the southern California area. It has come to our attention that

APPENDIX I

a new 600-bed hospital was opened at Camp Pendleton in November 1974, and as of the first quarter of FY 1975 the hospital had 181 occupied beds. The Long Beach Naval Hospital recently opened a new 220-bed addition, bringing the total number of beds to 570. As of the first quarter of FY 1975, that hospital had 315 occupied beds. The Veterans Administration opened a new 811-bed hospital in 1973. As of January 1975, that hospital had 410 occupied beds.

The Military Construction Subcommittee staff recently met with members of your staff to discuss in more detail the interests of this Subcommittee.

Thank you for your assistance and cooperation.

Sincerely yours,

Mike Mansfield, Chairman
Subcommittee on Military Construction

MM/rt

cc: Cmdr. Donald Morton, USN

APPENDIX II

ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

HEALTH AND
ENVIRONMENT

March 26, 1976

Mr. Gregory J. Ahart
Director, Manpower and
Welfare Division
United States General Accounting Office
Washington, D. C. 20548

Dear Mr. Ahart:

On behalf of the Secretary of Defense, we have considered the findings, conclusions and recommendations contained in the GAO Draft Report, dated February 6, 1976, "Policy Changes and More Realistic Planning Can Reduce Size of New San Diego Naval Hospital" (OSD Case #4284).

This office concurs with the attached comments of the Department of the Navy but wishes to expand them as shown below:

With regard to the GAO Planning Methodology and Logic for Sizing Hospitals. As expressed in the Navy's response we feel that the logic of the GAO sizing model is especially sound and another step forward in the planning methodology for sizing a hospital system. We were, however, concerned about the size of the hospital sample, the absence of national averages and the failure to adjust the data to standards found in similar teaching hospitals. If the system is to be adopted, the planning data used by GAO would be useful to us in implementing the system.

Reference page 13, Matters for Consideration by the Congress.

"Specifically, we believe Congress should provide policy guidance to DoD concerning two basic questions:

-- For whose use should new military hospitals be built?

-- To what extent, if any, should DoD's beneficiary population be required to use excess capacity at other nearby Federal hospitals?"

APPENDIX II

Congress has traditionally supported construction of medical facilities sized to accommodate primarily the active duty population and its dependents. This is based in part on the philosophy that the member of the military who is assured that his family is well cared for is a more productive military member. However, we must caution that the one reason for the existence of the Department of Defense is National Security. We must maintain a defense posture sufficient to deter aggression and to respond if and when required to do so. The manpower required to satisfy our mobilization and contingency plans has organic to it a number of medical care providers. The capability of these medical care personnel exceeds the day-to-day health care requirements of the total active duty force. Since the Department of Defense has the responsibility for insuring the health care of dependents of active duty, retired members and the dependents of retired and deceased members, the Congress in its wisdom has in the past permitted these categories of patients to receive care in military hospitals on a space available basis. In addition, the Congress has recently mandated that most of the beneficiary categories residing within 40 miles of a military hospital must first seek care there before being referred into CHAMPUS. This broad cross-section age, sex beneficiary population with a demographic characteristic similar to the civilian society makes it possible for DoD to recruit and retain the professional health care provider. If a decision is made to disallow the construction of military hospitals to accommodate other than active duty personnel, our ability to return CHAMPUS workload to military hospitals when it is cost effective would be lost; our ability to retain the professional health care provider will be drastically weakened and eventually lost; and our ability to respond with the necessary immediately available beds in time of crisis will be lost. Such a system will not be mission and cost effective nor professionally rewarding.

With regard to the use of other Federal hospital capacities, it is not considered in the best interest of our mobilization requirements, as stated above, to reduce our capacity within the Department of Defense system by temporary agreements with other Federal agencies. Specifically with regard to the San Diego Veterans Administration Hospital

we have been informed that no capacity for Department of Defense beneficiaries would be available in the San Diego Veterans Administration Hospital for the foreseeable future.

Sincerely,

Sherman Lozner for

Vernon McKenzie
Acting Assistant Secretary of Defense

Enclosure

Department of the Navy Comments

on

GAO Report Code 10159 of 6 February 1976

on

Policy Changes and More Realistic Planning Can Reduce Size of New San Diego Naval Hospital

(OSD Case No. 4284)

Summary of GAO findings and recommendations. The GAO has concluded that the Department of Defense (DOD) criteria for sizing new hospitals, using the factor of four beds per thousand active duty members and their dependents, plus ten percent more beds for retirees and their dependents, is not valid. They have proposed a different sizing model which addresses bed capacity predicated upon historical hospitalization rates, but with the patient length of stay adjusted to equate to the community hospital averages. This model addresses only that patient load at Naval Regional Medical Center, San Diego (NAVREGMEDCEN SDIEGO), and makes no allowance for accommodating any of the current Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) work load in the San Diego area.

The GAO has concluded that a construction effort at the San Diego hospital must be undertaken, but that at an acute care bed level of approximately 600, either Murphy Canyon Heights or Balboa Park would be an appropriate site.

The GAO recommends that Navy proceed with acquisition of the Murphy Canyon parcels of land, but that site selection for construction of the replacement medical center be held in abeyance awaiting Congressional decisions on use of new military hospitals and use of excess capacity at other federal hospitals.

The GAO report has suggested that a reduction in the construction costs at Naval Regional Medical Center, San Diego, could be achieved by a program of sharing beds with other federal hospitals in the San Diego area; namely, the La Jolla Veterans Administration (VA) Hospital and the Naval Hospital at Camp Pendleton.

Summary of the Department of the Navy (DON) position. The Navy finds no argument with the GAO proposed logic

for sizing military hospitals, but feels that some of their broad assumptions are incorrect and invalidate the resultant facility requirement. Using this GAO logic, the Navy has applied factors to account for these incorrect assumptions and has developed an alternative model for use in properly sizing the San Diego Naval Regional Medical Center.

The Navy strongly disagrees with the conclusion that both Murphy Canyon and Balboa Park are appropriate sites for the replacement medical center. Each of the analyses undertaken by the Navy and most of the factors considered by the GAO strongly favor the Murphy Canyon Heights site.

The Navy concurs in the prompt acquisition of Murphy Canyon Heights land. The 77-acre parcel of land now owned by a private concern was reported as excess by the Navy to General Services Administration (GSA) in 1961 as part of 13,000 acres excessed in the normal required process following the determination that no DOD need existed at that time. Reacquiring this land now at its fair market value is, likewise, an appropriate and normal procedure in response to a new requirement.

It is the Navy's position that any move to significantly reduce the number of beds at the Naval Regional Medical Center, San Diego, would have a very serious adverse effect on the training mission of the entire Navy Medical Department.

Statement.

A. Hospital sizing criteria. The current DOD criteria of four beds per thousand was developed in an effort to reduce the size of the military departments' replacement hospitals, which had been sized based solely on historical work load. The GAO proposed system disregards the existing demands for care through CHAMPUS. The Navy is not opposed to changing the four beds per thousand ratio, but the need still exists for a uniform prospective planning tool. The GAO model offers the opportunity of adopting a more precise model than the four beds per thousand, and if adjusted as shown below, will provide a proper planning tool for use in sizing the NAVREGMEDCEN SDIEGO.

The philosophy of the GAO model is to equate average length of patient stay (ALOS) in a military hospital to that in the local civilian community. The Navy concurs that in the past, ALOS at NAVREGMEDCEN SDIEGO has been too long and that planning for future needs must incorporate a shorter ALOS. GAO has utilized the Commission on Professional and Hospital Activities' (CPHA) 1973 Professional Activity Study (PAS) data from the Western Region of the United States to

determine the proper ALOS at NAVREGMEDCEN SDIEGO. Direct use of this data is considered inappropriate for two reasons:

(1) Whereas NAVREGMEDCEN SDIEGO is the Navy's largest teaching hospital, the PAS data utilized for comparison reflects 305 hospitals of which only seven have more than 500 beds and only 42 have more than 300 beds. If the PAS data is to be used to size military hospitals, then the comparison should be between hospitals of similar size and with similar missions and/or programs. PAS Reporter, Vol. 7, No. 2, dated 24 February 1969, Subject: "How Much Longer Do Patients Stay in Major Teaching Hospitals," indicates that patients in major teaching hospitals stay 18 percent longer than in nonteaching hospitals, and 11 percent longer than in other teaching hospitals. Some allowance must be made to account for this ALOS characteristic.

(2) Western Region PAS data is less appropriate for use than using the average of all four regions. Typically, military hospitals are staffed with physicians from all over the United States who are stationed there for three to four years at a time. They are not particularly guided by the patterns of practice in a particular region of the United States, but rely on the training and experience they have gained in the practice of medicine in many geographic areas. Thus, practices in a military hospital would not tend to mimic regional patterns. PAS data, however, reflects that there are practice differences from one geographic area to another in community hospitals. Consequently, it is recommended that U.S.-wide PAS data, rather than regional data, be used in any military hospital sizing analysis. As an example of this area varition in ALOS as developed from PAS data, the Western Region shows that, of the 349 diagnoses monitored by PAS, only four resulted in ALOS equal to or longer than the U.S. average. Further, PAS Reporter, Vol. 12, No. 10, dated 10 September 1974, states that of seven operative procedures examined, the Western Region ALOS was 23 percent less than the average of the four regions and 34 percent less than in the Northeastern Region, which had the longest reported ALOS.

To account for these two factors, some adjustment to the GAO model is necessary.

Since PAS data for 500-bed-and-over teaching hospitals are not readily available, and an analysis using U.S.-wide PAS data is not available, the GAO-derived ALOS data has been adjusted upward by 20 percent to account for the mission and characteristic differences between the Western Region PAS data and a major military teaching hospital over 500 beds.

The GAO model developed a beds-per-thousand factor for each beneficiary category based on only the patients cared for at the NAVREGMEDCEN SDIEGO and did not include any allowance for the community hospital CHAMPUS-sponsored bed use of that beneficiary population. In the Navy's analysis, this inpatient demand, unmet at NAVREGMEDCEN SDIEGO, was added to the NAVREGMEDCEN's work load. The result was a greater beds-per-thousand factor for all beneficiary catagories, except active duty who are not a part of the CHAMPUS program. This CHAMPUS work load must be included in any analysis to reflect the total need of beneficiaries, rather than an artificially reduced need due to existing inadequacies and inefficiencies.

The following is a sizing model which uses the GAO logic and philosophy, but adjusts for the fact that NAVREGMEDCEN SDIEGO is a major military teaching hospital; reflects a factor for U.S.-wide ALOS experience, rather than the Western Region; and includes data to reflect the total beneficiary need by including both NAVREGMEDCEN SDIEGO experienced work load and San Diego area CHAMPUS work load.

Adjustment to GAO-developed ALOS Data-
ALOS Increased by 20 Percent

Patient Category	GAO ALOS	Adjusted ALOS
Active Duty	9.3	11.1
Dependents of Active Duty	3.9	4.7
Retired	8.1	9.7
Dependents of Retired & Deceased	5.6	6.7
Other	8.4	10.0

The following table shows a revision to the GAO calculation of acute care beds per thousand beneficiaries. This revision incorporates the increased ALOS shown above and adds the CHAMPUS work load to the NAVREGMEDCEN SDIEGO workload used in the GAO model.

NAVAL REGIONAL MEDICAL CENTER, SAN DIEGO
ACUTE CARE BEDS PER THOUSAND BENEFICIARIES

Patient Category	(1) 1975 Discharges From NRMC	(2) 1/ ALOS	(3) 1975 ADPL CHAMPUS 2/	(4) (1) x (2) Patient Days at NRMC	(5) (3) x 365 Days Patient Days CHAMPUS	(6) (4) + (5) Total Patient Days	(7) 1975 Population in 1,000	(8) (6) ÷ (7) Patient Days/ 1,000 Population	(9) (8) ÷ 365 Days Patients/ 1,000 Population	(10) (9) x 1.25 (Dispersion Factor) Dispersed Patients (Beds)/ Day/1,000 Population
Active Duty	9,781	11.1	-0-	108,569	-0-	108,569	105.9	1,025	2.80	3.51
Dependents of Active Duty	9,848	4.7	66	46,285	24,090	70,375	122.3	575	1.58	1.97
Retired	3,591	9.7	25	34,833	9,125	43,958	32.4	1,357	3.72	4.65
Dependents of Retired and Deceased	3,745	6.7	63	25,091	22,995	48,087	91.9	523	1.43	1.79
Other	241	10.0	-0-	2,410	-0-	2,410	23.3	103	0.28	0.35

Footnotes:

1/ ALOS for 1973 and 1974 as developed by GAO were nearly identical, thus the 1974 ALOS was used as a base, then increased by 20 percent to appropriately reflect NAVREGMEDCEN SDIEGO's requirements.
2/ Excluding NP ADPL

Explanatory note:

Discharges from NAVREGMEDCEN SDIEGO for 1975, (1), are multiplied by the average length of patient stay (ALOS), (2), to obtain patient days for 1975 at NAVREGMEDCEN SDIEGO, (4). The CHAMPUS average daily patient load (ADPL), (3), is multiplied by 365 days per year to obtain CHAMPUS patient days for 1975, (5). Total patient days, NAVREGMEDCEN SDIEGO plus CHAMPUS, (6) are divided by the population, (7), to obtain a factor of patient days per year per thousand population, (8). Dividing this by 365 days per year gives the number of patients (beds) per day per thousand population, (9). This is increased by 25 percent to provide for an occupancy rate of 80 percent and thus becomes the number of acute care beds per thousand population needed by beneficiary population category, (10).

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To determine the number of acute care beds needed, these beds-per-thousand factors are used with the projected FY-80 population data, as follows:

Beneficiary Category	Beds per Thousand	FY-80 Population	Beds
Active Duty	3.51	110,701	389
Dependents of Active Duty	1.97	129,167	254
Retired	4.65	32,425	151
Dependents of Retired & Deceased	1.79	91,884	164
Other	0.35	23,183	8
		387,360	966

The Navy's philosophy of care has been to provide care for all active duty and their dependents, and care for retired, their dependents, and dependents of deceased personnel in the amount necessary to support teaching and training requirements. The Congress has historically supported this concept as one which leads to retention of medical personnel by having the mix of patients conducive to a rewarding medical career. Further, care for the retired and their dependents has been one of the benefits of a military career, implied, though not specifically defined in law.

Historically, facilities have been planned to accommodate active duty members and their dependents, plus a ten percent allowance to provide space for retirees and their dependents. This would require 707 acute care beds. Actual experience, as documented by GAO, shows that NAVREGMEDCEN SDIEGO has provided for retirees and their dependents to the extent of 25 percent of their total work load. This would require 803 acute care beds. To care for all beneficiaries, assuming no CHAMPUS work load, would require 966 acute care beds. The GAO has validated the previous Navy position that 300 light care beds are needed in addition to the acute care bed requirement.

B. Replacement medical center site analysis. The Navy has completed an economic analysis comparing the construction of a new medical center at Balboa Park with construction at at Murphy Canyon Heights, The Navy regards this analysis and the engineering study upon which it was based as complete, authoritative, and objective. The GAO has examined this

economic analysis in detail and concurs in its methodology and accuracy. The conclusion of the analysis is that there is a significant economic advantage ($33 million) to constructing the replacement medical center at Murphy Canyon Heights compared to Balboa Park. The magnitude of this advantage remains approximately the same when considering either a 900-acute-care-bed medical center or a 700-acute-care-bed medical center. While the economic analysis did not originally consider a facility as small as 600 acute care beds--because the Navy does not consider this size to be adequate--a cost comparison has subsequently been obtained. This shows that even at this scope, it is more attractive economically to build at Murphy Canyon Heights.

The higher cost for construction at Balboa Park can be attributed primarily to three factors: (a) the need for sound attenuation; (b) the need for structured parking; and (c) the premium costs attributable to working on a small, restricted site occupied by a function that must be kept operational during construction of the new facility. These factors will be present regardless of the size of the facility ultimately provided.

The Balboa Park site has been viewed favorably due to its location with respect to the active duty forces and their dependents. While it is true that much of the beneficiary population is somewhat closer to Balboa Park than Murphy Canyon, for many, particularly those families residing in Murphy Canyon Navy housing and in the vicinity of Miramar Naval Air Station, the proposed new site at Murphy Canyon will require less travel time. A distinct disadvantage to the Balboa Park location is its proximity to San Diego International Airport (Lindbergh Field). While the GAO states that Lindbergh Field flight operations are safe-the Navy would certainly acknowledge that such would be true at a major international airport serving some of the largest aircraft in use commercially--this does not reduce the specter of an aircraft disaster at the Balboa Park site, which is directly beneath the primary approach zone to the airport. While an airfield serving small, private aircraft is in the general vicinity of Murphy Canyon, its operations and hazard potential are insignificant compared to the potential danger at Balboa Park.

The proximity of Lindbergh Field to Balboa Park creates another serious problem, that of noise pollution. Although the GAO has stated that Balboa Park is in Composite Noise Rating (CNR) Zone 2, an authoritative, fully-documented engineering study performed for the Navy projected Balboa Park as being in CNR Zone 3, a far greater noise hazard. However, regardless of whether Balboa Park lies in CNR Zone 2 or 3, DOD criteria dictate that medical facilities

must be sited in Zone 1. Exceptions may be made if the site is in Zone 2 and no other alternative exists, but siting in Zone 3 is prohibited. The DOD has previously stated that new medical facility construction would not be approved at the Balboa Park site.

The GAO has indicated that an advantage to the Balboa Park site would be continued use of some of the existing facilities. In making this evaluation, the GAO uses the now-superseded 1970 Uniform Building Code (UBC) of California as its criteria. The current edition of this Code is the 1973 UBC, which is approximately equivalent to the DOD seismic design criteria. Most notable in the new code is the requirement that hospitals must remain operable to fully serve patients both during and after an earthquake. The recently completed engineering analysis performed by the Joint Venture firms of Welton Beckett, Gibbs and Gibbs, and Syska and Hennessey, evaluated the Balboa Park buildings with respect to their future potential use. The conclusion was that only the main surgical building (Building 26) could be retained for use, and then only as a Bachelor Enlisted Quarters (BEQ) and messing facility, if it were structurally modified to increase its seismic resistance. The cost of converting it to meet seismic and other requirements necessary to retain it as a medical facility would equal or exceed the cost of a new facility. In the comparative cost analysis for the two sites, this building is planned for use as a BEQ. This cost analysis favors Murphy Canyon, even considering building reuse at Balboa Park where feasible.

The GAO makes little mention of the disruption caused to the existing medical center operations if a new hospital were constructed at Balboa Park. Although the current medical center will remain operational, there will be significant disruption to these operations. There will be between 600 and 1,200 construction workers on this site, a considerable amount of noisy construction equipment, many daily deliveries of construction materials, and a constant influx of personnel to the site. These activities will create considerable additional congestion, dust, and noise on the site.

The current inpatient spaces are not air conditioned, but depend upon ventilation and cooling from outside air flows through open windows. This condition of operation in a medical center that provides complete secondary and tertiary medical care is wholly incompatible with the disruptive construction operation described above. Recent experience at the National Naval Medical Center, Bethesda, Maryland, and the Army's experience at Walter Reed Army Medical Center, Washington, D.C., indicates the highly undesirable and all but prohibitive nature of a complete medical center construction

program undertaken adjacent to an existing, fully operational medical center. Further, experience indicates that some operations must be displaced when construction operations expand to full scope.

One item was not considered at all by the GAO report--the residual value of the Navy-owned Balboa Park land if the new medical center were sited at Murphy Canyon. As indicated in the Navy economic analysis, some value to this land should be shown as a credit against the costs of the Murphy Canyon alternative. This value could result from another Navy or other government agency use, or by net proceeds from either a land sale or exchange. This value is estimated at between $5 million and $25 million. Whatever the value assigned, it serves to strengthen the Murphy Canyon alternative.

C. Site selection. The Navy does not concur in further delaying the site selection. The GAO report, along with the engineering study by the Joint Venture and the Navy's economic analysis (concurred in by GAO), all clearly indicate that the preferred site is Murphy Canyon Heights.

D. NAVREGMEDCEN SDIEGO training mission impact. In keeping with ASD(H&E) guidance and as a result of an overall reduction in military manpower, the Navy has been in the process of consolidating its major medical personnel training programs into four regional medical centers--Bethesda, Portsmouth, Oakland, and San Diego. Of these, San Diego serves the largest DOD beneficiary population and has the largest number of doctors in training. Consequently, the training mission of this hospital is essential to the Navy Medical Department.

Optimum training in medical specialties, as defined by the appropriate certifying boards, requires an adequate patient mix to assure exposure to the total range of the specialty involved. A diversion of significant numbers of beneficiaries to the Veterans Administration or to Camp Pendleton would seriously disrupt this mix. Rotation of trainees to the several sites to provide the necessary exposure to these patients would not be a practical solution. The various residency review committees are particularly concerned that a continuity in progressive responsibility in providing supervised patient care be achieved. Rotation away from the parent institution is normally considered appropriate only when the other institution provides a unique concentration of a particular group of medical problems. For example, a general hospital may not have sufficient numbers of pediatric patients with orthopedic problems to provide adequate training in this area. Out of a total of four years of training, orthopedic residents from naval hospitals spend approximately six months at a hospital

specializing in pediatric orthopedics. This same principle applies to a few other specialties as well. The feasibility of rotation, therefore, is limited to specific conditions and situations.

In addition to the proper patient mix, the training of physicians required the presence of a group of well-qualified teaching physician specialists. Essential to any physician training program is the interaction within and across related specialties providing a sufficient depth and breadth of experience which leads to the development of mature judgment. The staffing requirements generated by a fractionation of patients as suggested by the GAO report could not be satisfied from the Navy's relatively small pool of qualified teaching physicians.

Besides physician training, the Naval Hospital at San Diego conducts extensive inservice training programs for nurses. These include, among others, programs in coronary care, adult and pediatric intensive care, operating room supervision, and psychiatric care.

In addition to physician and nurse training, the hospital corps school operated in conjunction with the naval hospital provides basic and advanced training to a large number of enlisted paramedical personnel. These individuals are trained to provide direct patient care, both at shore-based facilities and aboard ship, and advanced technician skills in a wide variety of specialties. Such training programs depend heavily on the professional staff of physicians and nurses as well as on procedures learned at the bedside, in the operating room, in various outpatient clinics, and in a number of laboratory, X-ray, and other diagnostic areas.

APPENDIX III

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SANTA BARBARA • SANTA CRUZ

SCHOOL OF PUBLIC HEALTH
LOS ANGELES, CALIFORNIA 90024

5 February 1976

Victor Ell, CPA
Audit Manager
United States General Accounting Office
Los Angeles Regional Office
Room 7068, Federal Bldg.
300 North Los Angeles Street
Los Angeles, California 90012

Dear Mr. Ell:

It has been my pleasure over the past 6 months to be closely involved in the design of the GAO study of Balboa Naval Hospital, the implementation of that study, and anlaysis of the study results. I also participated in visits to the San Diego Veterans Hospital and Camp Pendleton Hospital to evaluate possible excess bed capacity at these two facilities. There are several matters related to the GAO report on Balboa Naval Hospital which I feel deserve further comment. I will touch on these matters briefly here.

First, in regard to the methodology for determining optimal bed size at the Balboa Naval Hospital. Traditionally hospital bed requirements in a community have been measured in terms of medical "need" or "demand". Measuring "need" is time consuming, expensive, and subject to considerable subjective opinion. Further, data related to "need" are tied to a particular period of time and a particular state of medical care technology - both subject to change. Adjustments to reflect the direction and magnitude of these changes are not readily made. The present methodology therefore is not based on need.

"Demand" studies of hospital bed requirement have traditionally been based on an analysis of observed past utilization which is then projected forward into some future time period. The present study of Balboa Naval Hospital is a "demand" study but it departs from traditional methodology in that it does not use observed past utilization at the Balboa Facility or at any other military hospital as the basis for its projection into the future. Rather, the raw data on utilization at Balboa Naval Hospital is first adjusted to prevailing standards in the

neighboring civilian community and this is projected forward into the future. The methodology assumes that present acute care bed utilization at military hospitals is not optimal and therefore is a poor basis for projection. The alternative chosen - using community prevailing standards of practice to project optimal future utilization of acute care beds at a military hospital makes assumptions not only in regard to what will happen in the future to the demand for medical care, but also it assumes major changes in the practice of medical care in the entire health care system run by the military. One must view this projection methodology as very innovative. The approach has not, to my knowledge, been previously employed.

Despite the innovative features of the present methodology, it seems to be theoretically sound. It is widely recognized that lengths of stay by active duty personnel at acute care military fixed medical facilities are currently on the average far in excess of accepted standards in the civilian sector. While it is clear that there are certain system constraints in the military which are the principle underlying cause of this excessive use of acute care beds, it is equally apparent that such system constraints cannot be built into a planning methodology. The use of acute care beds for other than acute care is inefficient, and therefore undesirable. The very essence of planning is to rationalize decision making as much as possible. To base the planning for acute care military fixed medical facilities on a projection of a different system that appears to make rational use of its acute care beds seems eminently justified then, as long as the system chosen for comparison is, in logic, related to the military hospitals under study. The present study, basing military projections on prevailing standards in the nearby civilian community, meets these criteria.

The figures for optimal bed size at Balboa Naval Hospital derived in this study are much lower than the figures requested under the DOD's plan for new naval bed construction in the San Diego area. Despite this fact, the figures derived in this study appear to be on the generous side. In the first place the study makes an adjustment for the exceptionally large percentage of patients who were observed to stay at Balboa Hospital for more than 100 days. The adjustment is to the 95th percentile of the PAS figures. To make such an adjustment is to assume that all patients who were observed to stay more than 100 days at Balboa Naval Hospital were like that 5% of civilian patients in the area who had the absolutely

longest observed hospital stay. If the military patients are in reality comparable to civilian patients in the area (and one must assume that they very likely are), then the projection methodology in this case will inflate bed requirement figures since it is assuming maximum illness where in reality a spectrum of severity prevails. The tendency to err on the high side is compounded by the fact that at Balboa Naval Hospital more than 20% of the patients observed were in the category staying in the hospital over 100 days.

A second reason for assuming that the figures derived in the present study are generous is that they are tied to current practice in the civilian sector. At this moment, however, some broad scale measures are being introduced in the civilian sector which presumably will act to reduce average length of hospital stay there. Specifically, the introduction of PSRO review at civilian hospitals throughout the country in the immediate future will bring lengths of stay in acute care beds in civilian hospitals under increasing scrutiny and will likely reduce them. The present projection methodology nonetheless assumes that there will be no such reduction and, derives its figures based on current practice standards. An overstatement of acute care bed needs results.

Finally it is to be noted that the present methodology uses PAS figures to represent current hospital practice in the civilian sector. Not all hospitals in the San Diego area are accounted for in the PAS inventory, however. Many of the hospitals which are not included in the PAS survey are proprietary hospitals which tend to have the relatively shortest length of stay per diagnosis. It is to be anticipated then that the civilian factor usedin this study methodology contains somewhat inflated average length of stay figures through the fact that not all civilian hospitals are represented in the figures from which it was derived. Again, an over generous estimate of bed requirements at Balboa Naval Hospital results, and again one must conclude that the optimal bed complement figures contained in the present study are more than adequate - even though they fall far short of DOD estimates.

Another aspect of the GAO study should be commented upon. Military hospitals have a mission uniquely different from civilian hospitals in that they must be prepared to provide all possible military medical care requirements in the event of a military emergency. There could in theory be a need on very short notice for many additional beds to meet such an emergency. Civilian hospitals by contrast

do not routinely plan for such a contingency. The question that arises is whether the present study's methodology has provided sufficient standby capacity to meet the military's unique medical need. It appears that the methodology definitely does make adequate provision in this regard. The study projects a need for 25% more beds than are shown to be required by the projection methodology alone. The civilian sector, however, has largely abandoned the old concept of sizing a hospital to operate at 80% of projected capacity for anything other than emergency services. For elective services beds are built to operate at 90-95% capacity. For emergency services, operation at 80% of capacity on the average is considered ample sizing. By planning the total Balboa Naval Hospital size to achieve average operation at 80% of projected capacity (for elective as well as emergency services) a very substantial standby capacity has then been built into the planning by the present study's methodology.

Should an actual military emergency arise it is presumed that the Naval Hospital in San Diego could evacuate its non urgent in-patients to nearby civilian hospitals. San Diego has been demonstrated to have a large excess civilian hospital bed capacity. It would then be a very simple matter to transfer even large numbers of patients out of Balboa Hospital and to provide beds for a military emergency far beyond the already present 25% standby capacity. Again the conclusion must be that the present methodology, looking toward 80% overall average occupancy at Balboa Naval Hospital, provides a very generous excess capacity for any conceivable emergency. Indeed it might be argued that the hospital, running most of the time at only 80% capacity would be unnecessarily inefficient and therefore unacceptably expensive to run on a day-to-day basis. The present study does not, however, take this particular hard line of reasoning. It chooses instead to be conservative, estimating acute care bed need at Balboa on the generous side - providing excess bed capacity at the price of some reduction in day-to-day operating efficiency.

The GAO report makes reference to excess bed capacity at the San Diego Veterans Administration Hospital and at Camp Pendleton Hospital. Both of these modern new facilities were visited by myself in the course of the present study. The Veterans Administration Hospital currently has 599 acute care beds in place and staffed. Construction now under way will provide adequate support service capacity (laboratory and x-ray facilities) for 600 beds, although some further expansion of operating

room capacity might be required to accommodate this level of patient load. The current average daily census of San Diego Veterans Administration Hospital is 430, and likely to drop when the new Veterans Administration Hospital at Loma Linda is completed. On this basis I estimate that the San Diego Veterans Administration Hospital has a minimum excess capacity of 150 acute care beds. This capacity might be an attractive alternative to additional naval bed construction in San Diego.

Camp Pendleton Hospital is built to have a 600 bed capacity. Adequate support facilities are available, but the hospital is not fully staffed at present. The average daily census at Camp Pendleton Hospital (excluding Vietnamese refugees) is now around 300, and appears likely to peak no higher than 350. Allowing a full 25% standby capacity (90 beds), there would still appear to be 160 excess beds at Camp Pendleton Hospital which need only be staffed to be fully available for acute care patients. The staff at Camp Pendleton feel that the logistics of patient transfer between San Diego and their hospital present no great difficulties. Again, an attractive alternative to new military bed construction in San Diego presents itself for consideration. The combined excess bed capacity identified at the two hospitals visited amounts to 310 beds - all new and of high quality construction. In addition San Diego has much excess bed capacity in civilian hospitals.

I trust these comments will be useful in shedding some additional light on the findings of the GAO report.

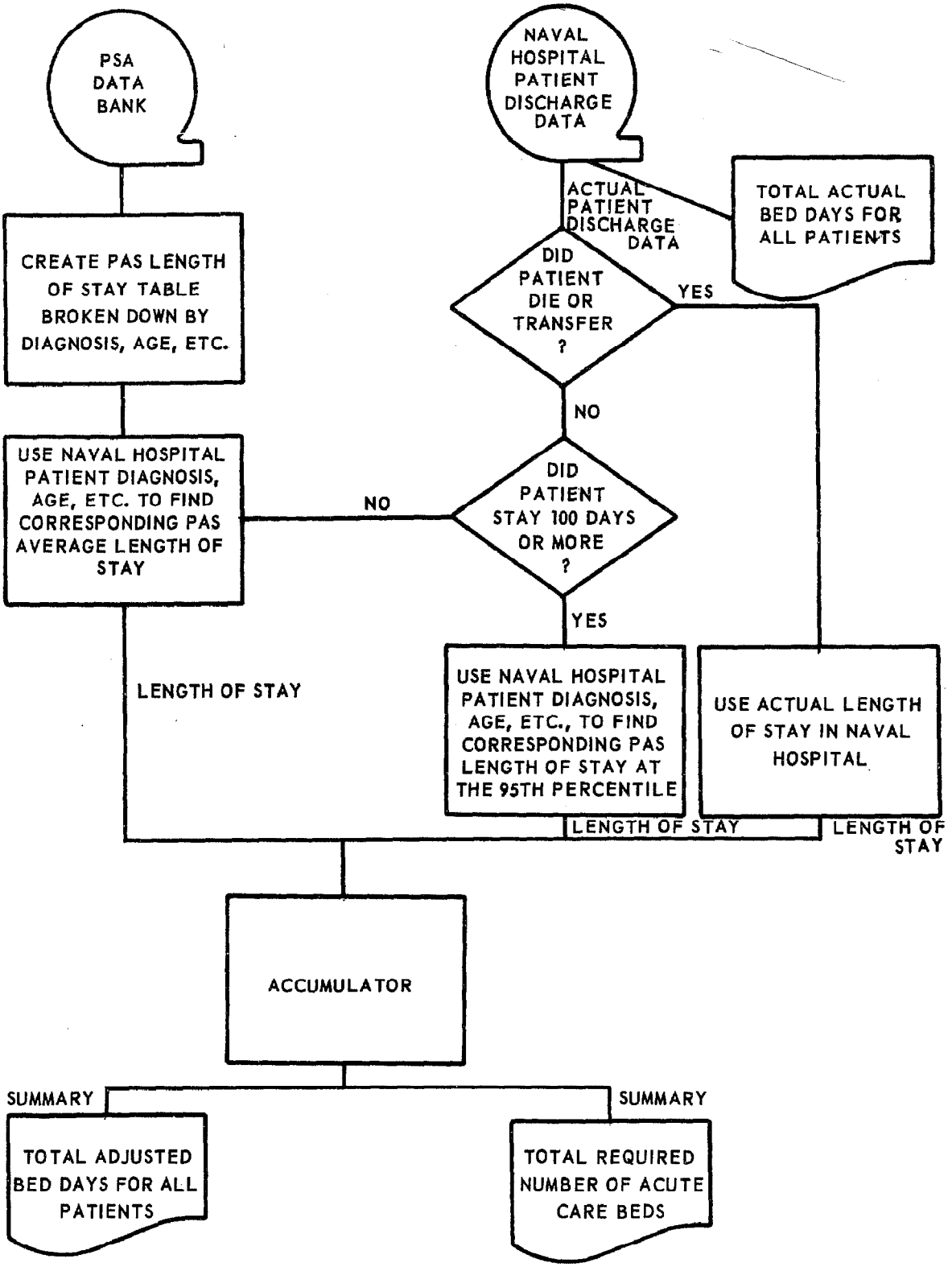
Sincerely yours,

Arnold I. Kisch, M.D.
Director
Interdepartmental Program in
Comprehensive Health Planning

AIK:1st

APPENDIX IV

SEQUENCE OF OPERATIONS IN DETERMINATION OF HOSPITAL SIZE



APPENDIX V

SELECTED NONSURGICAL CONDITION FOR WHICH AVERAGE LENGTH OF STAY AT SAN DIEGO NAVAL HOSPITAL EXCEEDED THAT OF WESTERN REGION COMMUNITY HOSPITALS (note a)

Diagnosis	Number of patients treated at Balboa in 1973	Average lenth of stay at Balboa 1973 (days)	Average length of stay, Western region community hospital 1973 (note b) (days)
Concussion	398	5.2	2.5
Diabetes mellitus without complications	133	17.3	6.6
Miscellaneous alcoholism	126	20.6	3.8
Miscellaneous disease of upper respiratory tract	391	10.1	2.5
Miscellaneous hypertensive disease	144	17.2	4.8
Observation without further need of medical care	164	8.2	2.2
Orchitis and epidydemitis	107	16.7	4.6
Otitis media (chronic, unspecified)	174	5.3	2.0
Pneumonia	510	26.4	5.9
Special admission and examinations without complaint or reported diagnosis	138	10.9	3.0
Viral hepatitis	167	30.2	7.3

SELECTED SURGICAL CONDITION FOR WHICH AVERAGE LENGTH OF STAY AT SAN DIEGO NAVAL HOSPITAL EXCEEDED THAT OF WESTERN REGION COMMUNITY HOSPITALS (note a)

Diagnosis	Number of patients treated at Balboa in 1973	Average lenth of stay at Balboa 1973 (days)	Average length of stay Western region community hospital 1973 (note b) (days)
Acute appendicitis without peritionitis	287	16.1	4.0
Deviated nasal septum	171	7.5	2.5
Dislocation of knee	131	33.5	4.4
Hemorrhoids	241	12.8	5.0
Hypertophy of tonsils and adenoids	496	6.5	2.4
Inguinal hernia without complications	644	19.2	3.5
Miscellaneous fractures of lower extremity	166	20.2	4.3
Pilonidal cysts	242	18.7	3.8

a/Figures for both community and Balboa hospitals exclude patients who stayed in the hopitals more than 100 days.

b/Based on Commission on Professional and Hospital Activities, Professional Activity Study, 1973.

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