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Better management and control of costly cardiac catheterization laboratories is needed in Veterans Administration (VA) hospitals. Findings/Conclusions: Of 12 laboratories reviewed, 11 did not meet minimum VA workload standards of 150 patients a year. Some duplicated services that were available at nearby hospitals. Eight of the 12 laboratories were not located at hospitals where cardiovascular surgery is regularly performed, thus exposing patients to unnecessary risks. The VA did not adequately plan nor control cardiac catheterization programs to assure their need and success. Recommendations: The Administrator of Veterans Affairs should: close underused cardiac catheterization laboratories; reevaluate the operation of these laboratories at hospitals unable to perform cardiovascular surgery in emergencies; establish sharing or contractual arrangements to provide this service; and revise procedures to require data to justify new laboratories. (HTW)

00507

REPORT TO THE CONGRESS



*BY THE COMPTROLLER GENERAL
OF THE UNITED STATES*

Many Cardiac Catheterization Laboratories Underused In Veterans Administration Hospitals: Better Planning And Control Needed

Many Veterans Administration cardiac catheterization laboratories were underused and some duplicated similar nearby facilities. In the interest of patient care and economy, the Administrator of Veterans Affairs should:

- Close underused laboratories.
- Reevaluate the decision to continue operating laboratories at VA hospitals that cannot provide cardiovascular surgery in emergencies.



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


B-133044

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

This report reviews the operation of cardiac catheterization laboratories in Veterans Administration hospitals. The report discusses the low use of many of these laboratories and the need for better planning and control of this specialized and costly medical service. It is a forerunner of a larger, multiagency study, now underway, dealing with the broad issue of sharing Federal medical facilities and services.

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).

Copies of this report are being sent to the Director, Office of Management and Budget, and the Administrator of Veterans Affairs.


ACTING Comptroller General
of the United States

D I G E S T

Many Veterans Administration (VA) cardiac catheterization ^{1/} laboratories are underused--11 of the 12 laboratories reviewed did not meet minimum VA workload standards (150 patients a year)--and some laboratories unnecessarily provided this costly service, although it was available at other nearby VA and community hospitals. According to nationally recognized medical associations, the quality of care is reduced when patients are catheterized in underused laboratories.

The medical community and VA agree that cardiac catheterization laboratories should be located at hospitals where cardiovascular surgery is regularly performed. Eight of 12 laboratories were not. VA may be exposing its patients to unnecessary risks by performing cardiac catheterizations in hospitals without facilities to handle emergencies.

LITTLE PLANNING OR CONTROL

The VA central office permitted cardiac catheterization laboratories to be established without adequately determining whether they were needed. Some VA hospitals plan to become major regional referral centers for cardiac catheterization and possible cardiac surgery. These plans have not been coordinated at either the national or VA medical district level. Hospitals are planning cardiac catheterization programs with no overall guidance or control to assure (1) the need for

^{1/}In a cardiac catheterization, a thin, pliable tube--the catheter--is inserted into an incision in the patients arm or groin and passed through a vein or artery into the heart chambers. The procedure is usually used to diagnose heart ailments.

the programs and (2) the success of the programs through sharing arrangements with other VA hospitals.

NEED FOR LABS

Most hospital officials justified their laboratories on the basis of (1) a need to have complete diagnostic facilities, (2) a need to provide adequate facilities to train medical students, (3) a need for complete facilities to help recruit and retain staff cardiologists, and (4) plans to become referral centers for cardiac patients. (See p. 11.)

RECOMMENDATIONS

The Administrator of Veterans Affairs should:

- Close VA cardiac catheterization laboratories that are underused because of insufficient patient demand or because they duplicate services at nearby facilities.
- In the interest of patient safety, reevaluate VA's decision to continue operating laboratories at VA hospitals not able to do cardiovascular surgery in emergencies.
- Establish sharing or contractual arrangements to provide this medical service where laboratories are closed.
- Revise established procedures to require justifications for new or modernized laboratories to include data on patients to be served, disease incidence statistics, and number of patients referred elsewhere. (See p. 25.)

AGENCY COMMENTS AND GAO'S EVALUATION

VA did not fully agree with GAO's findings and conclusions on low use of VA cardiac catheterization laboratories nor with most of GAO's recommendations. However, as a result of GAO's study, VA said it was taking actions to:

- Raise its minimum utilization standards.
- Revise its reporting system to better monitor laboratory operations.

- Promote a higher degree of patient safety by requiring that, during catheterization in VA hospitals with facilities for cardiovascular surgery, the surgical suite be reserved for emergencies and a surgeon be on call.
- Obtain better data for planning any additional laboratories.
- Combine existing VA circulars governing cardiac catheterization laboratories into a program manual chapter. (See p. 20.)

These actions should increase VA's management control over its cardiac catheterization laboratories and help make this special program more efficient and effective. However, GAO continues to believe its recommendations are sound. In the interest of patient care and safety and greater economy of operations, GAO urges VA to give further consideration to their adoption. (See p. 20.)

VA also said it is revising its utilization standards to require that not less than 25 percent of the patients catheterized in a VA laboratory be accepted for surgery. GAO recommends that VA reconsider this proposed standard, as it could possibly lead to improper reporting of utilization data or, of more serious concern, unnecessary surgeries. (See pp. 22 and 25.)

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<u>ABBREVIATIONS</u>	
GAO	General Accounting Office
VA	Veterans Administration

CHAPTER 1

INTRODUCTION

The Veterans Administration (VA), through its Department of Medicine and Surgery, administers the country's largest health care delivery system--171 hospitals, 212 outpatient clinics, 85 nursing homes, and 18 domiciliaries. Routine medical services are provided at all VA hospitals, but some hospitals also offer specialized medical services requiring specialized personnel or facilities.

Because of increasing cost to provide health care services, the Congress wants VA medical facilities to be used effectively and efficiently. The Veterans Hospitalization and Medical Services Modernization Amendments of 1966 (38 U.S.C.A. 5053) authorized VA to make agreements with other Federal, State, and community hospitals to share specialized medical resources when (1) this would eliminate the need for a similar VA resource or (2) VA facilities are not being fully used. The law was intended to avoid duplication of costly and highly specialized resources and to provide improved care to patients through more effective use of scarce medical specialists.

VA established a policy in the mid-1960s that specialized medical services be planned and provided on a regional or multiregional basis so that these services available at other VA hospitals would not be duplicated. The objectives of VA's regionalization policy are to avoid or eliminate duplication of costly and underused medical programs and to foster expanded sharing within VA medical districts.

In prior reports to the Congress, we noted that expansion of certain specialized medical programs had not been adequately controlled. In a 1972 report ^{1/} we concluded that most open-heart surgery centers were not performing the minimum number of operations VA medical officers considered essential to permit surgical teams to retain the high degree of technical skill required for this type of surgery.

Two other specialized medical services--supervoltage therapy and kidney transplantation--were discussed in a

^{1/}"Low Use of Open-Heart-Surgery Centers At Veterans Administration Hospitals" (B-133044, June 29, 1972).

1974 report. 1/ In this report, we concluded that VA had established these specialized medical services without adequately determining patient need and the availability of similar resources in the community and that, as a result, existing services at some hospitals were duplicated and underused. VA officials agreed that available community resources had not been adequately considered.

This report, which examines VA's cardiac catheterization program, also discusses the need for improved management of VA's policy for planning and controlling the expansion of its specialized medical services. It is a forerunner of a larger multiagency study now underway, dealing with the broad issue of sharing Federal medical facilities and services.

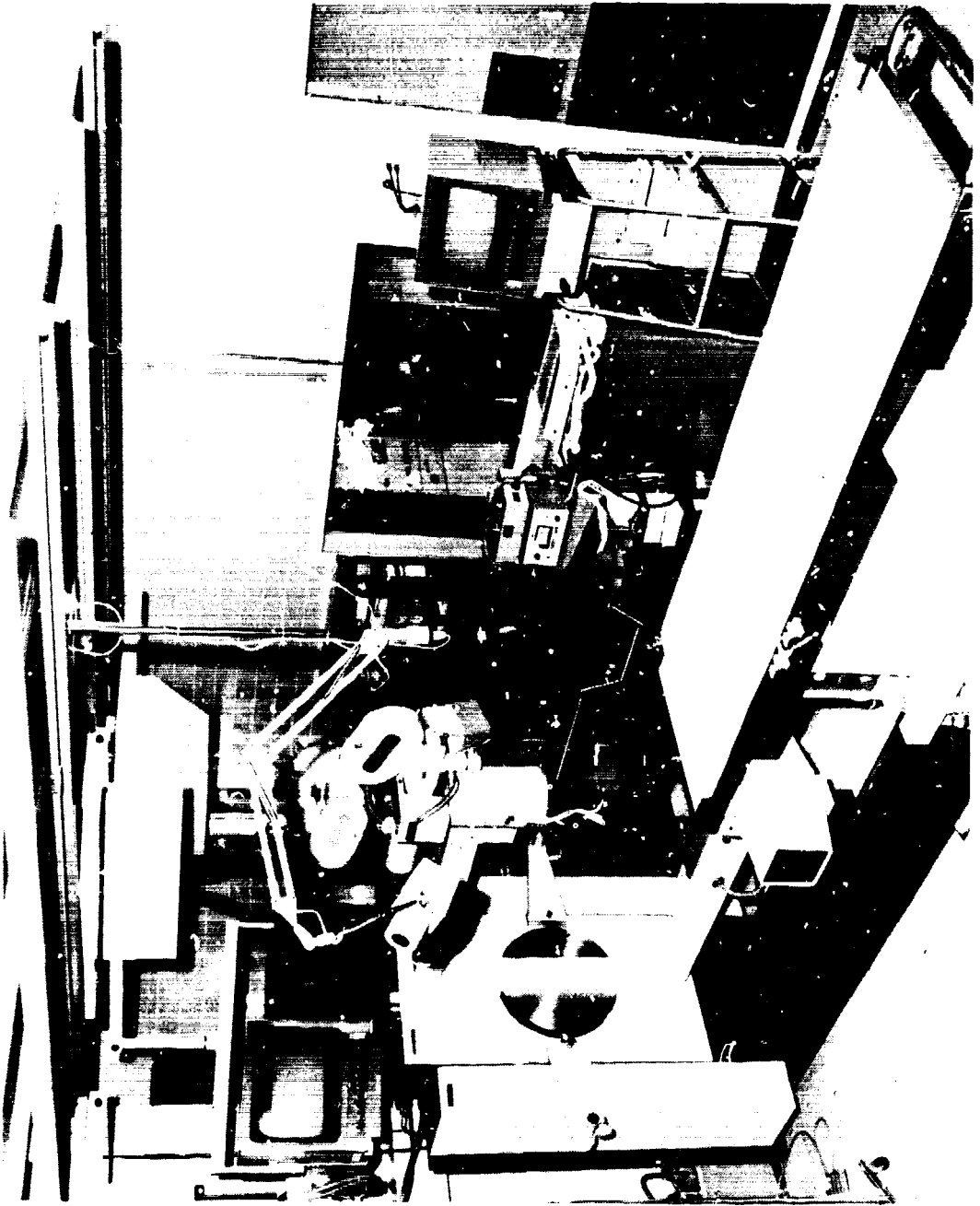
CARDIAC CATHETERIZATION

A cardiac catheterization procedure involves inserting a thin, pliable tube--the catheter--into an incision in the patient's arm or groin and passing the catheter through a vein or artery into the heart chambers. The procedure is usually used for diagnosis of heart ailments rather than for therapeutic reasons. A catheter permits the taking of blood samples and diagnostic measurements which would not otherwise be possible.

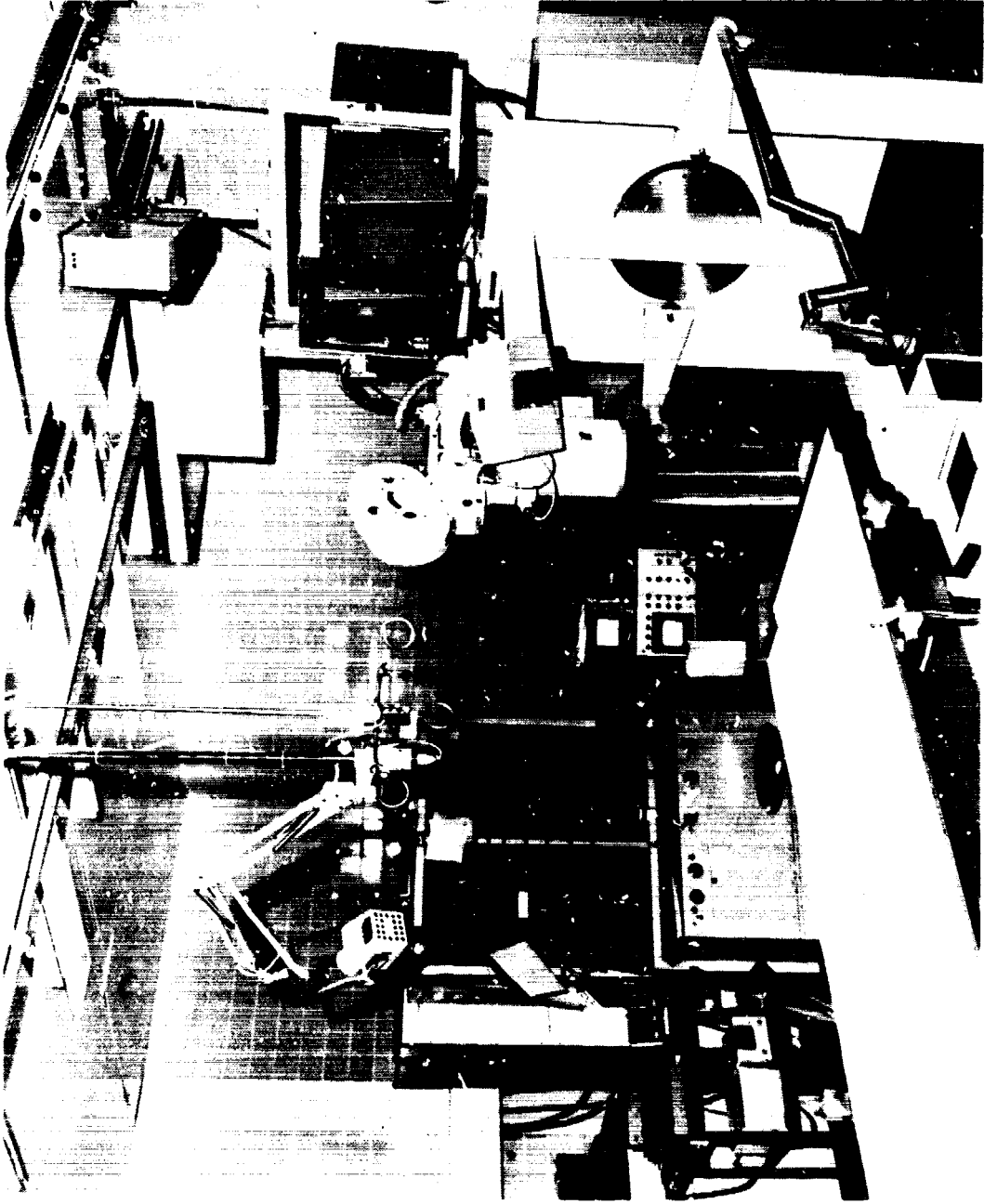
Cardiac catheterizations are performed by a team of specially trained physicians, nurses, and technicians in a laboratory similar to the one shown on pages 3, 4, and 5. Laboratory equipment includes devices for monitoring the patient's physiological condition (for example, heart beat, body temperature, and blood pressure), and devices necessary for the procedure (for example, image intensifier, blood oxygen analyzer, contrast angiocardiography equipment, generators, film processors, and resuscitation equipment and supplies). Additional devices are used to protect both patient and staff from electrical and radiation hazards.

VA initially funded heart catheterization studies as research projects, but by 1967 the technique had developed so well that cardiac catheterization laboratories at 43 hospitals were funded with medical care appropriations as spe-

1/"Better Planning and Management Needed by the Veterans Administration to Improve Use of Specialized Medical Services" (B-133044, June 19, 1974).

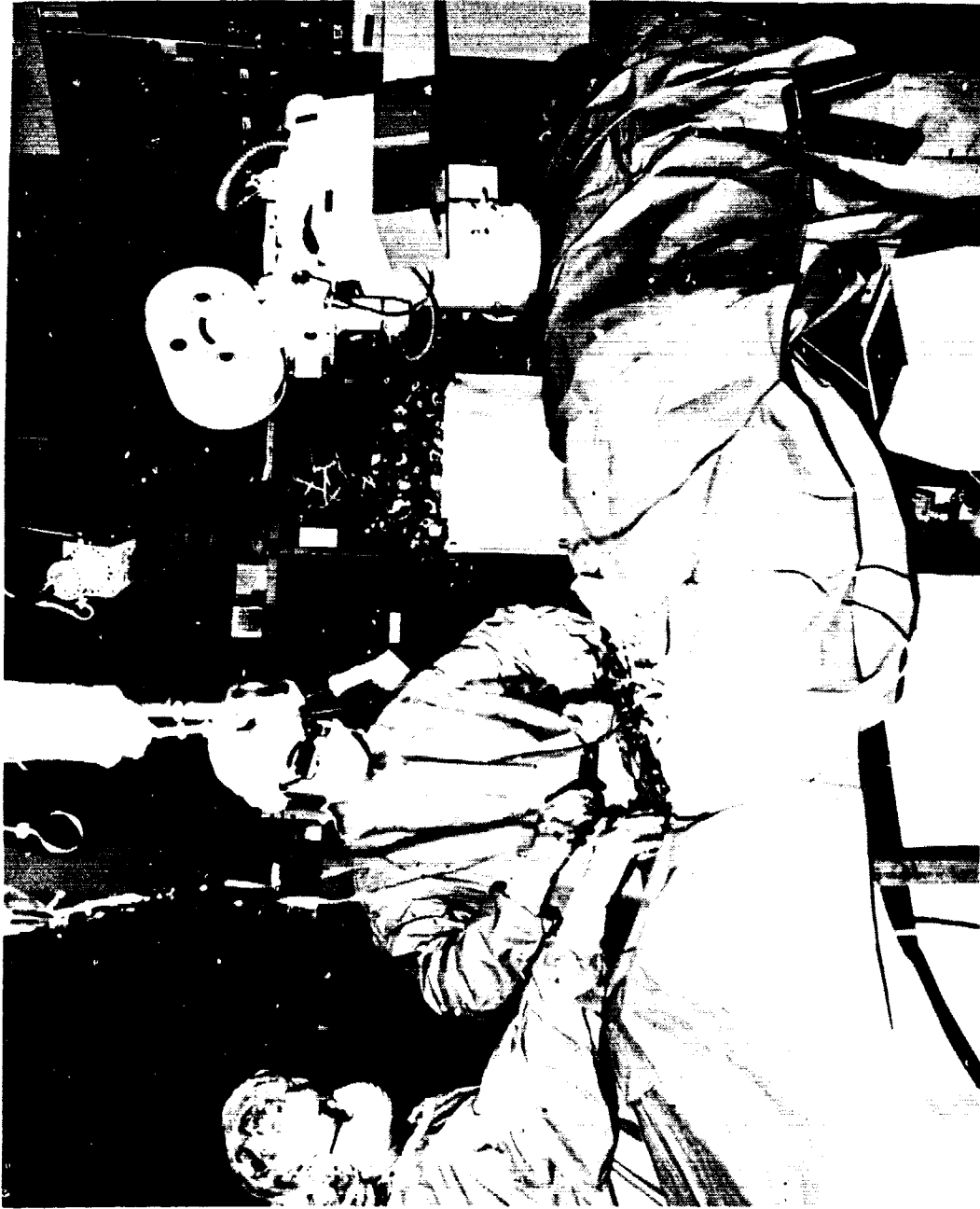


TYPICAL CARDIAC CATHETERIZATION LABORATORY SHOWING X-RAY EQUIPMENT AND CONTROL ROOM
SOURCE: Medical Illustration Service, VA Hospital, Long Beach, Calif.



PATIENT MONITORING EQUIPMENT IN CARDIAC CATHETERIZATION LABORATORY

SOURCE: Medical Illustration Service, VA Hospital, Long Beach, Calif.



PATIENT UNDERGOING A CARDIAC CATHETERIZATION PROCEDURE

SOURCE: Medical Illustration Service, VA Hospital, Long Beach, Calif.

cialized medical services. During fiscal year 1975, VA operated cardiac catheterization units in 67 hospitals for about \$20.2 million.

One test that may be made during a cardiac catheterization procedure is known as a coronary arteriogram. Using a dye fed through the catheter as a contrast medium, technicians can make X-ray images which graphically show obstructions and other damage to the heart and arteries. Coronary arteriograms were part of about 75 percent of the cardiac catheterizations performed in VA laboratories during fiscal year 1975.

Cardiac catheterization and coronary arteriography procedures are not without risks. Patients undergoing catheterization and arteriography may suffer a mild aching in the area where the catheter is inserted, hot flashes, heart palpitations, dizziness, nausea, or a drop in blood pressure. More serious, but less common, complications are blood clots, perforation of a blood vessel by the catheter, catheter breakage within the body requiring corrective surgery, kidney failure caused by dye injection, shock, heart attack, or death. In a 1968 study, sponsored by the American Heart Association, of 12,367 cardiac catheterizations, major complications occurred during 444, or 3.6 percent, of the catheterizations; 55, or 12.6 percent, of these complications resulted in the patient's death.

Generally, the rate of complications decreases as the annual number of procedures performed in a cardiac catheterization laboratory increases. Supported by National Institutes of Health grants, the Harvard Medical School and a Boston hospital made a nationwide study during 1970-71 to determine complication rates resulting from coronary arteriography. Responses from 173 hospitals--performing 46,900 coronary arteriograms--were analyzed by the number of procedures each hospital performed during the 2 years. The findings showed mortality rates in institutions performing less than 200 procedures for the 2 years were 8 times higher than in institutions performing more than 800. Our analysis of the study data also showed the incidence of heart attack or blood clot was 11 times greater in institutions doing less than 200 procedures than in those doing 800 or more.

The Harvard study concluded that the risk of death or serious complication is greatly increased in hospitals doing few procedures. The study also concluded that the maintenance of skills associated with a large continuing caseload is unquestionably a major element in reducing the rate of complications.

CATHETERIZATION LABORATORY STANDARDS

Because catheterization teams should perform enough catheterizations, including coronary arteriograms, to maintain their proficiency and reduce the serious risks associated with the procedures, several professional medical associations have recommended minimum workload standards.

- A guide, published by the American Heart Association in 1970, stated that, while a large number of procedures performed in a catheterization laboratory does not guarantee a high level of performance, the laboratory which functions only occasionally cannot expect to produce excellent results, no matter how well staffed and equipped it is. The guide recommended that a cardiac catheterization team perform a minimum average of 3 catheterizations a week (156 a year).
- A 1971 Inter-Society Commission for Heart Disease Resources report, funded by the Department of Health, Education, and Welfare's Regional Medical Programs Service, recommended 300 cases a year--almost 6 a week--as the minimum number required to maintain the expertise of the professional team engaged in catheterizations.
- Another Inter-Society Commission report, published in 1972, recommended 10 coronary arteriography procedures a week--over 500 a year--as the minimum necessary to maintain competence in performance and to minimize risks. The report also stated that the occasional coronary arteriographer should be vigorously discouraged.
- The Joint Commission on Accreditation of Hospitals adopted optimal criteria in 1974 for hospital resources defining the requirements of equipment, qualified personnel, and hospital organization considered essential for providing the best care possible for specific patient categories. For heart disease patients being studied in cardiac catheterization laboratories, the Joint Commission considers 250 catheterizations the minimum annual number necessary for high quality service. The minimum for coronary arteriography is somewhat higher--300 annual procedures.
- VA outlined productivity/utilization standards for various specialized medical services, including

cardiac catheterization, in a July 1975 directive. The standard is 150 patients a year every 4 full-time employees in a cardiac catheterization laboratory; a minimum annual caseload of 125 patients is permitted. VA's Program Chief for Hypertension and Cardio-pulmonary Disease told us the standard relates to 150 different patients and a patient is counted only once even though several tests may be performed during one catheterization.

While these groups do not agree on the exact number of catheterizations a professional team should perform annually, all agree that establishing minimum performance goals as one measure of trying to assure performance excellence is important.

In addition to utilization standards, because complications requiring emergency surgery can occur during a catheterization, the medical community stresses the importance of performing these procedures only at hospitals having cardiovascular surgery capability. Time lost in transferring a patient with a serious complication to another hospital for surgery could endanger the patient's life.

SCOPE OF REVIEW

We made our review at 12 VA hospitals in Arizona, California, Delaware, Louisiana, Michigan, New Mexico, New Jersey, New York, and Pennsylvania. (See app. II.) We also interviewed officials and reviewed documents at the VA central office regarding the Boston, Massachusetts, VA Hospital's laboratory. While the laboratories selected may not necessarily be representative of all 67 laboratories, we believe that the conditions described in this report are widespread in VA's cardiac catheterization program.

We also worked at the VA central office, community hospitals, VA-affiliated medical schools and hospitals, and local health planning agencies.

We examined VA regulations, policies, and procedures relating to specialized medical services. Current industry literature on using specialized medical services was also reviewed.

CHAPTER 2

MANAGEMENT OF VA CARDIAC CATHETERIZATION

PROGRAM NEEDS IMPROVEMENT

We reviewed the activities of 12 Veterans Administration cardiac catheterization laboratories and found that during fiscal year 1975 only 1 met any of the recommended utilization standards. VA has not followed its policy to avoid duplication by providing specialized medical services on a regional or district basis; laboratories have been established which duplicate facilities in other nearby VA hospitals. In addition, 8 of the 12 laboratories were in hospitals that did not have cardiovascular surgery capability.

Most hospital officials agreed that the laboratories at their hospitals were underused, primarily because of a shortage of patients. VA has not adequately assessed the patient demand for cardiac catheterization before establishing new laboratories.

We believe VA patients undergoing cardiac catheterization procedures:

- Are being exposed to greater risks of experiencing complications at hospitals where laboratory teams are not meeting minimum workload standards.
- Are being exposed to serious, unnecessary risks at hospitals where cardiovascular surgery is not available to deal with serious complications in an emergency.

LOW USE OF CARDIAC CATHETERIZATION LABORATORIES

The number of cardiac catheterizations performed during fiscal year 1975 at 11 of the 12 laboratories reviewed did not meet the VA standard. The following table shows the fiscal year 1975 workload statistics for the laboratories we reviewed. Cardiac pacemaker insertions, although not part of the complicated catheterization procedures with which we were mainly concerned, were included by VA as part of the workload because they were performed in the catheterization laboratory. The number of patients studied was lower than the number of procedures because some patients were examined more than once.

VA Cardiac Catheterization Laboratory
Workload--Fiscal Year 1975

<u>VA hospital</u>	<u>Cardiac catheterizations</u>	<u>Pacemaker insertions</u>	<u>Total procedures</u>	<u>Number of different patients</u>	<u>Coronary arteriograms</u>
Tucson	a/69	-	69	64	49
Allen Park	59	22	81	64	43
Ann Arbor	51	38	89	70	53
East Orange	69	23	92	73	44
Wilmington	67	17	84	78	53
Philadelphia	59	36	95	88	41
Northport	102	19	121	92	42
New Orleans	87	23	110	102	45
Wadsworth	a/112	-	112	107	80
San Diego	a/117	-	117	111	92
Albuquerque	125	23	148	135	104
Long Beach	209	103	312	b/180	160

a/Includes pacemaker insertions.

b/Number of patients receiving pacemakers not recorded; total would be higher.

Only the Long Beach laboratory met VA's workload standard of 150 patients. Further, the number of coronary arteriograms performed at all 12 laboratories was far less than the Inter-Society Commission's recommended 500 a year and the Joint Commission on Accreditation of Hospitals' recommended 300.

Concerning cardiac catheterization, a March 1970 VA internal report concluded:

"Some specialized services are utilized far below their capacity, often because of shortages of the specialized kinds of personnel required, or because they duplicate facilities elsewhere in the community, or because the number of patients who require such services is really far below the initial estimates. In this category are some of the cardiac catheterization, super voltage and open heart surgery units. Some of the existing units should be considered for closing, especially where sharing agreements are possible with affiliated medical school hospitals. Regionalization of these units should be maximized to assure economic utilization and perhaps a few centers of excellence should be developed."

A VA official said no cardiac catheterization laboratories have been closed since the report was issued. Rather, 16 more have been opened. Our analysis of a fiscal year 1975 VA report showed that 31 (46 percent) of the 67 cardiac catheterization laboratories performed less than an average of 3 catheterizations a week, the minimum the American Heart Association considered necessary to maintain satisfactory performance. Of the 55 laboratories we did not review, 21 reported less than 3 catheterizations a week and several others were only slightly above this minimum.

Most hospital officials justified their cardiac catheterization laboratories on the basis of:

- A need for complete diagnostic facilities to assure continuity of care between diagnosis and treatment.
- A need to have all the facilities necessary for training medical students.
- A need for complete facilities to help recruit and retain staff cardiologists.

Not everyone we talked to agreed with these justifications. Several physicians stated that complete diagnostic facilities are not necessary in every case. An alternative, they said, would be to have the responsible cardiologist perform a complete workup, including any recommendation for catheterization. Following a decision to catheterize, the patient could be sent to an active laboratory where the catheterization could be performed quickly, safely, and with a high quality examination. This would provide the treating cardiologist with an excellent basis for diagnosing the presence or absence of heart disease so that the best determination on the patient's treatment could be made.

These physicians also believed the effect on affiliated medical school training programs would be minimal if either one or the other hospital--VA or the university--had a cardiac catheterization laboratory. Usually the staff and students at affiliated hospitals are all within the university system, so it would not matter which laboratory the students rotate through for experience. This situation existed at 6 of the 12 VA hospitals; each of the 6 affiliated university hospitals had one or more cardiac catheterization laboratories.

The justification that the laboratories are needed to recruit and retain staff cardiologists may be unfounded because officials at seven hospitals cited inadequate staff-

ing as one reason for the low use of their laboratories. Thus, it appears that having a laboratory does not necessarily improve a hospital's ability to recruit and retain cardiologists or technicians.

DUPLICATION OF CARDIAC CATHETERIZATION FACILITIES

We observed several instances in which we believe cardiac catheterization facilities could be regionalized or facilities at nearby university or community hospitals could be used, through sharing or contractual arrangements, until patient demand is great enough to warrant having a VA equipped and staffed laboratory to do catheterizations. Two examples follow.

Detroit area

Neither of two VA hospitals with cardiac catheterization laboratories in the Detroit, Michigan, area--Allen Park nor Ann Arbor--had performed the minimum workload standard of 150 patients a year. In fiscal year 1975, Allen Park performed 81 catheterizations on 64 patients, and Ann Arbor performed 89 catheterizations on 70 patients. On the basis of their actual workloads from July to November 1975, it is unlikely either hospital will meet the minimum standard in fiscal year 1976. Moreover, cardiovascular surgery capability was not available at either hospital.

Despite the low workloads at both hospital laboratories, VA does not plan to close either laboratory. Although the two VA hospitals are only 36 miles apart, officials indicated that sharing facilities would not be feasible because the hospitals are affiliated with separate medical schools, each having different training needs.

Allen Park hopes to alleviate the patient shortage with its new \$1.2 million cardiovascular diagnostic and training center which opened in March 1976. Originally proposed in 1972 by the Chairman of the Department of Medicine at Allen Park's affiliated university, the center was to be the coordination point for patient care, teaching, and cardiovascular medicine research for VA and the university. Plans called for

- increasing the number of catheterizations performed at Allen Park,
- sharing the facilities with community hospitals, and
- starting a thoracic surgery residency program as a

first step toward achieving open-heart-surgery capability.

Cardiac catheterization workload is expected to increase through referrals of veteran patients from a university-owned outpatient clinic, which is being constructed, and through phasing out catheterization laboratories in three of four community hospitals which are also affiliated with the university. The remaining hospital, however, performed 543 (74 percent) of the 735 catheterizations done at all four hospitals during fiscal year 1975. Seven physicians were performing catheterizations in the hospital's two laboratories, and we were told they could triple their workload easily. We believe it is unlikely closing the three community hospital laboratories will appreciably affect Allen Park's workload, and referrals from the university's still-to-be-completed outpatient clinic are, as yet, an unknown quantity. In addition, 10 other hospitals with catheterization laboratories are in the Detroit metropolitan area, where Allen Park is located.

Philadelphia-Wilmington area

The cardiac catheterization laboratories at the Philadelphia, Pennsylvania, and Wilmington, Delaware, VA hospitals, located about 25 miles apart, were both underused during fiscal year 1975. The Philadelphia hospital had 88 different patients during the year and the Wilmington hospital had only 78, as compared to VA's minimum standard of 150 different patients per year.

A large concentration of hospitals and medical services exists in the Philadelphia area. At the end of fiscal year 1975, 20 hospitals with 23 catheterization laboratories were in the Philadelphia-South Jersey metropolitan area. The Philadelphia VA Hospital is affiliated with two medical schools, each of which has catheterization laboratories. One is located across the street from the Philadelphia VA Hospital and both offer cardiovascular surgery. The Philadelphia VA Hospital does not.

Officials of two Philadelphia health planning organizations told us there were too many cardiac catheterization laboratories and cardiovascular surgery facilities in the area. They said they were not consulted when the Philadelphia VA Hospital's catheterization laboratory was remodeled and updated during fiscal year 1974. Further, they said there was no need for the VA laboratory because the VA-affiliated university hospital across the street offered both catheterization and cardiovascular surgery. In their opinion, VA should have made arrangements with

the university to use its laboratory until a definite need--at least 200 catheterizations a year for 2 years--was established. The organizations are trying to develop six or seven cardiac care centers in the Philadelphia area because more cannot be supported with optimal patient care provided.

The Wilmington area, on the other hand, has no such abundance of medical services. Only two hospitals in the area have catheterization laboratories--the VA hospital and a community medical center. The community medical center originally intended to refer patients to the VA hospital for catheterization, but built its own laboratory instead. Therefore, it is unlikely many private patients will be referred to the Wilmington VA Hospital, and the veteran-patient demand does not appear to be substantial. For example, from July to November 1975, Wilmington VA Hospital performed only five catheterizations on four patients.

Philadelphia and Wilmington VA Hospitals officials said that no attempt had been made at the VA medical district level to consolidate the two catheterization laboratories. No discussions on regionalization have been held even though the Philadelphia VA Hospital plans to develop into a major center accepting referrals from all other VA hospitals in its medical district, including the East Orange, New Jersey, and the Wilmington VA Hospitals, both of which already have catheterization laboratories. Contrary to the Philadelphia hospital's plans, however, VA central office has plans to make the East Orange VA Hospital a district referral center. Wilmington VA Hospital officials believe their catheterization laboratory is necessary for continuity of care and to help recruit cardiologists.

CARDIAC CATHETERIZATION LABORATORIES ESTABLISHED WITHOUT ADEQUATE PLANNING

VA central office has permitted establishment of cardiac catheterization laboratories which are not meeting VA's minimum workload standards because formal procedures have not been established for selecting cardiac catheterization laboratory locations or for determining the need for the service. Some laboratories were established as outgrowths of research programs when cardiac catheterization was a new and developing procedure, and were not justified on the basis of need. Other laboratories were included in the hospital construction plans and were not justified separately. In other cases, hospitals requested laboratories because they felt the service was needed to complement patient care and residency programs.

However, we were unable to find evidence at the VA central office that any of the 12 laboratories reviewed were justified based on information which we believe should be used to determine the service's necessity. This information--estimates of patient demand in an area based on heart disease incidence rates or other factual bases and identification of nearby facilities already providing the services, for example--should be considered to foster regional planning and to avoid duplicating and overlapping facilities.

We believe laboratories are still being established and modernized without adequate VA central office review and control to determine the need for the service. For example, laboratory projects at the Albuquerque, New Mexico; Boston, Massachusetts; Philadelphia, Pennsylvania; and Northport, New York, VA Hospitals were begun within the last 5 years without overall direction and control from VA central office. Albuquerque updated and modernized its catheterization laboratory simply by requesting equipment through normal VA supply channels. Northport's laboratory was included as part of a hospital construction and modernization project. Funds to modernize Philadelphia's laboratory were included in a radiology budget request for other X-ray equipment and space modifications. Boston's laboratory, still under construction in January 1976, was developed using local VA hospital funds; central office approval for funding as a specialized medical service was not obtained.

TWO PROGRAMS NEEDING DIRECTION AND CONTROL

The following two examples show the need for improved VA central office coordination and control over establishing new cardiac catheterization laboratories.

Boston cardiac catheterization laboratory

During a site visit to the Boston, Massachusetts, VA Hospital in December 1975, VA's Program Chief for Hypertension and Cardio-pulmonary Disease first learned that the hospital was performing cardiac catheterizations and that a complete laboratory was being readied. VA central office had not approved or funded the laboratory. The laboratory developed from a radiology program paid from local hospital funds.

Previously, Boston VA Hospital patients whose conditions indicated a need for cardiac catheterization or cardiovascular surgery were referred to the West Roxbury, Massachusetts, VA Hospital, 7 miles from the Boston facility. VA's program chief and West Roxbury VA Hospital officials said that a cardiac catheterization laboratory at Boston might reduce the referrals which had helped keep the West Roxbury laboratory well utilized. They also expressed concern over whether the West Roxbury VA Hospital--VA's designated cardiology center for the New England area-- would continue to receive full financial support for its equipment and staff or whether funds would have to be shared with Boston.

The Boston VA Hospital director, who is also the Medical District director, offered assurance that he would properly coordinate the two programs, and the Boston hospital chief of medicine was confident that at least 150 cases a year could be generated at the hospital without impairing West Roxbury's program. Even with these assurances, VA's program chief believes the Boston laboratory will draw patients away from the West Roxbury facility. Also, the Boston hospital does not have the capability to perform cardiovascular surgery; therefore, patients needing cardiac surgery will still have to be transferred to West Roxbury.

Southern California area cardiac catheterization laboratories

Records at the Wadsworth VA Hospital in Los Angeles showed the hospital's cardiac catheterization laboratory had performed below VA's minimum workload standard of 150 different patients a year even though patients were being referred from the Sepulveda VA Hospital 15 miles away. Despite this, the Sepulveda hospital received VA central office approval in June 1975 to construct its own cardiac catheterization laboratory and a four-bed coronary care unit for about \$650,000.

In a letter report 1/ to the Administrator of Veterans Affairs in September 1975, we pointed out that a laboratory at Sepulveda was not warranted because:

--There was no data on the number of veterans who needed cardiac catheterization in the geographic area served by both Wadsworth and Sepulveda. It was doubtful, how-

1/"Proposed Cardiac Catheterization Laboratory at the Sepulveda, California, Veterans Administration Hospital," (MWD-76-29, Sept. 17, 1975).

ever, that demand supported two catheterization laboratories.

--The Wadsworth laboratory was underused during fiscal year 1975, even though patients had been referred from Sepulveda.

--A catheterization laboratory at Sepulveda would adversely affect Wadsworth's caseload resulting in two underused laboratories instead of one.

We therefore recommended that the Sepulveda laboratory not be constructed.

The Administrator agreed that there was insufficient justification to establish a cardiac catheterization laboratory at the Sepulveda VA Hospital. Approval was withdrawn and the Wadsworth and Sepulveda VA Hospitals were directed to continue sharing the Wadsworth laboratory.

CATHETERIZATIONS PERFORMED AT HOSPITALS WITHOUT CARDIOVASCULAR SURGERY FACILITIES

The medical community, including VA, has recognized the need for locating cardiac catheterization laboratories at centers where cardiovascular surgery is performed regularly. The 1971 Inter-Society Commission for Heart Disease Resources report stated that economy and excellence dictate the need for locating catheterization laboratories at centers where cardiovascular surgery is performed regularly.

VA's Program Chief for Hypertension and Cardio-pulmonary Disease told us that hospitals performing cardiac catheterizations should also have the specialized facilities, personnel, and equipment to perform cardiovascular surgery. He said that complications can arise during a catheterization which require emergency surgery and that the time spent transferring a patient to another hospital could endanger the patient's life.

Although several of the VA hospitals we reviewed planned to eventually achieve cardiovascular surgery capability-- Allen Park, Michigan; New Orleans, Louisiana; and Northport, New York, for example--only 4 of the 12 hospitals studied regularly performed cardiovascular surgery during fiscal year 1975. Also two of the four performed fewer than VA's standard of 50 operations a year. One of these--East Orange, New Jersey--performed only 16 cardiac surgeries during the year, prompting consultants to the VA central office's surgical service to recommend on October 1, 1975, that the program be phased out and patients transferred

to VA hospitals in the New York metropolitan area. VA has since advised us, however, the East Orange VA Hospital's cardiovascular surgery program will remain, with plans for East Orange to become a district referral center.

CHAPTER 3

CONCLUSIONS, AGENCY COMMENTS AND

OUR EVALUATION, AND RECOMMENDATIONS

CONCLUSIONS

Many Veterans Administration cardiac catheterization laboratories are underused--11 of the 12 laboratories reviewed did not meet VA's minimum workload standards--and some laboratories unnecessarily duplicated services available at other VA and community medical facilities. According to nationally recognized professional medical associations, the quality of care is reduced when patients are catheterized in underused laboratories. The medical community and VA also agree that cardiac catheterization laboratories should be located at centers where cardiovascular surgery is regularly performed. Therefore, VA may be exposing patients to unnecessary risks by performing cardiac catheterizations in hospitals without facilities for handling emergencies.

VA central office has permitted cardiac catheterization laboratories to be established without adequately determining their need. VA has also not followed its policy that specialized medical services, such as cardiac catheterization, be planned and provided on a regionalized basis to avoid duplicating or overlapping these costly medical programs.

Individual VA hospitals planning to become major regional referral centers for cardiac catheterization and cardiac surgery have not been coordinated at either the national or VA medical district level. Independent planning of cardiac catheterization programs at the hospital level has proceeded with no overall guidance or control to assure (1) the need for the programs and (2) the success of the programs through sharing arrangements with other VA hospitals.

To assist in achieving the high quality of care desired for veterans, we proposed that the Administrator of Veterans Affairs:

- Close cardiac catheterization laboratories which are underused because of insufficient patient demand or because they duplicate nearby facilities at other VA, medical school, or community hospitals.
- Consider closing cardiac catheterization laboratories at VA hospitals not having cardiovascular surgery capability.

- Establish sharing or contractual arrangements with other VA or neighboring hospitals for the service where laboratories are closed.
- Establish appropriate approval procedures requiring specific justifications in each instance where new or significant changes in cardiac catheterization facilities are proposed. These justifications should identify (1) the location and use of similar VA, other Federal, and community services within a prescribed distance and (2) the patient demand for the service to be provided on the basis of veteran population served by the hospital, disease incidence statistics, and other relevant data, such as the number of patients referred to other institutions for the service over a 2-year period.

VA COMMENTS AND OUR EVALUATION

In commenting on our draft report (see app. I), VA did not fully concur with our findings and conclusions on the low use of VA cardiac catheterization laboratories nor with most of our proposals. However, as a result of our study, VA said it was taking actions to

- raise the minimum utilization standards;
- revise the utilization reporting system to better monitor laboratory operations;
- promote a higher degree of patient safety by requiring that, during catheterization procedures in VA hospitals having cardiovascular capability, the surgical suite be reserved for emergencies and a surgeon be on call;
- obtain better data for planning any additional laboratories; and
- combine existing VA circulars governing cardiac catheterization laboratories into a program manual chapter.

These actions should increase VA's management control over its cardiac catheterization laboratories and help make this special medical program more efficient and effective. However, we continue to believe our proposals are sound and, in the interest of patient care and safety and greater economy of operations, we urge VA to give further consideration to their adoption. Following is a summary of VA's major comments and our evaluation.

Proposal to close underused cardiac catheterization laboratories

VA said its numerical standards for productivity/ utilization, developed during fiscal year 1975 and issued on July 2, 1975, were not intended to be applied retroactively. VA said also the underuse cited in our report was based on fiscal year 1975 performance data, and its statistics show 8 of the 12 hospital laboratories conformed with VA utilization criteria in fiscal year 1976.

Documents from VA's files show that, despite its comments to the contrary, VA did retroactively apply its July 1975 numerical standards. For example, in an October 1975 letter to the directors of 12 VA hospitals, 7 of which were included in our review, the Acting Director of VA's Medical Service made specific reference to the July 1975 standards in pointing out that the cardiac catheterization laboratories at these hospitals had not met the minimal criteria for adequate utilization in fiscal year 1975. Also, a VA summary report on laboratory utilization during fiscal year 1975 stated that 17 catheterization laboratories had performed "marginally" when compared with the July 1975 utilization criteria.

We used VA's July 1975 numerical standards as only one measure of a cardiac catheterization laboratory's effectiveness. Other standards, such as those recommended by the Inter-Society Commission for Heart Disease Resources and the Joint Commission on Accreditation of Hospitals (see ch. 1), suggest higher utilization rates for optimal performance than does VA in its utilization criteria. These other standards were not addressed in VA's comments, but should also be considered when VA management is evaluating laboratory performance and recommending possible corrective action.

We also question VA's statement that 8 of the 12 VA hospital laboratories conformed with its utilization criteria in fiscal year 1976. The same reporting system used in fiscal year 1976 was in operation during fiscal year 1975 when our statistics differed considerably from VA's. Our analysis of actual patient treatment logs, kept by the individual catheterization laboratories, showed significantly lower utilization than reported to VA central office. For example, 341 catheterizations were reported by the Allen Park VA hospital; however, according to patient treatment logs, only 81 catheterizations were actually performed during fiscal year 1975.

VA said it does not view its utilization standards as being absolute and inflexible, but essentially as management guidelines to notify program directors of the need for evaluation and possible corrective action. However, VA is concerned about all laboratories which perform tests on less than 150 patients a year, particularly where less than half of these procedures involve the more difficult transfemoral (left heart) catheterizations. Accordingly, VA said it is preparing a new circular issuance raising the utilization standard by (1) removing the previous 25 percent allowable variance--the minimum acceptable utilization level will now be 150 patients a year--and (2) reducing to 3 months the previously permissible 6-month "grace period" for underuse.

VA also said it was instituting an improved reporting system, effective October 1, 1976. Under the revised system, the catheterization laboratories' quarterly utilization reports will now include all invasive and noninvasive procedures, pacemaker insertions, and consultations; the number of catheterization procedures followed by surgery; and information on complications. VA believes the revised reports will provide accurate, inclusive data and permit monitoring the laboratories qualitative and quantitative performance. The reports, according to VA, will also be used to control unnecessary procedures because they will show how many led to surgery. In this regard, VA intends to stipulate in its new circular that not less than 25 percent of the patients catheterized must be accepted for surgery.

Removing the allowable variance for laboratory use and reducing the grace period for underuse are necessary and responsible decisions by VA. Coupled with the revised reporting system for utilization, these actions should help provide VA management a clearer, more accurate basis for monitoring cardiac catheterization laboratory activities. To obtain better reporting of utilization data, we believe VA should consider thoroughly briefing the hospital technicians and clerks who will be compiling and submitting the input data on the revised reporting instructions and periodically reinforcing those instructions.

We do not believe, however, that VA should stipulate, as it now plans, that not less than 25 percent of the patients catheterized in a VA laboratory must be accepted for surgery. Although it may not be VA's intention, tying a numerical surgery requirement to a diagnostic procedure could possibly lead to inaccurate reporting of performance data, to meet the minimum catheterization/surgery ratio or, of more serious concern, unnecessary surgeries.

Proposal that VA consider closing catheterization laboratories at VA hospitals lacking cardiovascular surgery capability

VA disagreed with our proposal, stating that it is not supported in the report by an analysis of adverse experiences at hospitals having this in-house capability as well as those have other arrangements, including contract cardiac surgery, a sharing agreement, or a vascular or thoracic surgeon on the staff.

According to VA, its statistics on actual experiences with deaths, complications, or surgery needed in conjunction with catheterization laboratory procedures for the 12 hospitals showed a lower incidence than we quote for national experience. (See p. 6.) VA said that, since 1971, newly developed procedures and safeguards have substantially minimized the necessity for having cardiovascular surgery ability immediately available in the same facility:

Our report does not cite specific statistics on complications at the 12 VA hospitals because accurate data was not readily available during our review. However, VA acknowledges that serious complications, resulting in emergency surgery and deaths, have occurred at hospitals performing cardiac catheterizations and/or coronary arteriograms without cardiovascular surgery capability. Therefore, in the interest of patient safety, we continue to believe that cardiovascular surgery should be immediately available at VA hospitals where cardiac catheterizations are performed and, accordingly, VA should reevaluate its decision to continue operating those laboratories at hospitals not having this capability.

Our belief is reinforced by an updated report of the Inter-Society Commission for Heart Disease Resources, published in the February 1976 issue of Circulation, an official journal of the American Heart Association, which reiterated the Commission's position that, in the interest of patient safety and excellence of examination, cardiac catheterization laboratories should only be located in institutions where cardiovascular surgery is immediately available.

Our belief is further reinforced by VA's recognition that cardiovascular surgery should be immediately available, as shown by its stated intention to require that, in hospitals now having cardiovascular surgery capability, the surgical suite be reserved for emergencies and a surgeon be on call during catheterization procedures.

Moreover, despite VA's comments that newly developed procedures and safeguards have substantially minimized the necessity for cardiovascular surgery capability being immediately available in the same facility, VA stated that it is placing a moratorium on opening additional laboratories in hospitals not having this surgical capability.

Proposals to establish sharing or contractual arrangements for catheterization services where VA laboratories are closed

VA said sharing or contractual arrangements to replace or supplement its cardiac catheterization laboratories are issues of great complexity. As a matter of policy, VA stated, it is committed to regionalization of its own facilities and sharing of community and other Federal agency resources. As an example, VA cited its San Diego hospital--one of the hospitals in our review--as assuming some catheterization work for the San Diego Naval Hospital. This sharing effort, if continued, would result in improved utilization at VA's San Diego laboratory. We were recently informed, however, that the sharing arrangement was later terminated because of interagency funding problems.

Also, VA said its Philadelphia and Wilmington hospitals have been requested to investigate possibilities of a sharing arrangement or contract if combining their catheterization workload at either hospital does not resolve the issue of underuse.

VA took exception, however, to our recommended alternative of contracting for a fee with community resources for cardiac catheterization and coronary angiography procedures. VA said this might not yield the economies suggested because the average costs of performing these procedures in the private sector exceed VA's costs. While average private sector costs may be higher than VA's costs, we believe economies can still be achieved through sharing of facilities, particularly among VA and other Federal agencies using or in need of these costly specialized diagnostic procedures. Also, use of community resources could prove to be more economical than VA's continued operation of significantly underused catheterization laboratories, such as those in the New Orleans and Northport VA hospitals.

Proposal to require specific justifications for new or significantly changed cardiac catheterization laboratories

VA agreed that it is not good planning to create new cardiac catheterization laboratories where they are not

truly needed, and VA acknowledged that not all VA special medical programs were optimally established and deployed in the past. To prevent recurrences, VA agreed that specific justification data reflecting veteran population density and dispersal, as we proposed, must be generated. VA said most of this information is not yet compiled, but it is possible that VA's membership in the Health System Areas (as recently mandated by Public Law 93-641) will facilitate regional or community planning.

VA pointed out that the establishment of cardiac catheterization laboratories is a product of the endeavors of individual VA health care facilities, with controls by the VA medical district councils (composed of the directors of each health care facility within the district) and VA central office direction. VA said the new circular will reemphasize adherence to the established guidelines for initiating special medical programs. In this regard, we believe VA should revise its established guidelines to specifically require the compilation and evaluation of the justification data as we proposed and make specific reference to this data requirement in its new circular.

RECOMMENDATIONS TO THE ADMINISTRATOR OF VETERANS AFFAIRS

We recommend that the Administrator

- reconsider the proposed utilization standard that not less than 25 percent of the patients catheterized in a VA laboratory must be accepted for surgery, as this standard could possibly lead to improper reporting of utilization data or, of more serious concern, unnecessary surgeries;
- close cardiac catheterization laboratories which are underused because of insufficient patient demand or because they duplicate nearby facilities at other VA, medical school, or community hospitals;
- in the interest of patient safety, reevaluate VA's decision to continue operating cardiac catheterization laboratories at VA hospitals not having cardiovascular surgery capability;
- establish sharing or contractual arrangements with other VA or neighboring hospitals for the service where laboratories are closed; and

--revise established procedures to require justifications for new or modernized laboratories to include data on patients to be served, disease incidence statistics, and number of patients referred elsewhere for service.

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VETERANS ADMINISTRATION
 OFFICE OF THE ADMINISTRATOR OF VETERANS AFFAIRS
 WASHINGTON, D.C. 20420

OCTOBER 8 - 1976



Mr. Gregory J. Ahart
 Director, Human Resources Division
 U. S. General Accounting Office
 441 G Street, N. W.
 Washington, D. C. 20548

Dear Mr. Ahart:

We have carefully reviewed the draft report, "Many Cardiac Catheterization Laboratories in Veterans Administration Hospitals are Underused: Better Planning and Control Needed," dated August 13, 1976, and appreciate the opportunity to comment.

The underutilization of cardiac catheterization laboratories (CCL) cited in the report was based on Fiscal Year (FY) 1975 data. However, statistics show that eight of the twelve study hospitals conformed with Veterans Administration (VA) utilization criteria in 1976. Our numerical standards, developed during FY 75, were issued July 2, 1975, as Circular 10-75-138, "Specialized Medical Services - Productivity/Utilization." They were not intended to be applied retroactively.

We do not see our standards as absolute and inflexible, but essentially as management guidelines to notify program directors of the need for evaluation and possible corrective action. However, we are concerned about all laboratories which perform tests on less than 150 patients per year, particularly where less than half of these procedures concern transfemoral catheterizations. A Department of Medicine and Surgery (DM&S) Circular, now in preparation, will raise the current standard for CCLs by removing the 25% allowable variance. The minimum acceptable level of utilization will now be 150 patients per year. In addition, the previously permissible six-month "grace period" for underutilization is being reduced to three months.

Monitoring methods used in 1975 and 1976 are essentially the same--the quarterly performance reports are analyzed and any laboratory showing a marked deviation from either the standard or past performance receives a letter of inquiry. Since the "grace period" is being reduced, those letters will be issued after three months' underutilization instead of six. The health care facilities' responses to these letters of inquiry must give reasons for the low utilization and list planned or implemented remedial actions. Inadequate responses are returned to the director of the submitting hospital and brought to the attention of the Medical District Council with instructions to make a decision on closing the CCL, enter into a sharing agreement, or propose some other solution. VA Central Office (VACO) will conduct a monthly follow-up on proposed solutions and, in certain instances, make an inspection visit.

We recognize that circumstances such as staffing shortages, equipment breakdown, or length of time in operation may adversely affect a laboratory's performance, but consistent low performance is cause for combining or closing laboratories. It is VA policy to terminate any specialized medical program which fails to conform with utilization criteria on a consistent basis. At present, it seems unlikely that more than two CCLs may require this drastic action in the immediately foreseeable future.

We attempted to verify the 1975 data used by the General Accounting Office by directly canvassing each of the twelve hospitals studied but found many discrepancies. This could be due to several factors: inconsistent reporting practices caused, in part, by insufficient or unclear instructions; inadequacies in our reporting system, or maintaining separate records on certain procedures and not incorporating them into reported workload.

This study was beneficial because it pointed up the need for clarifying and improving our reporting procedures. We are pleased to say that the revised reporting system which we began developing in FY 75 went into effect with the new fiscal year on October 1. The quarterly reports will now include all invasive and non-invasive procedures, pacemaker insertions, consultations, the number of catheterization procedures followed by surgery, and information on complications. They will provide accurate, inclusive data and permit monitoring the qualitative and quantitative performance of CCLs.

The revised reports will be used as a "control" over unnecessary CCL procedures because it will show how many led to surgery. The DM&S Circular mentioned earlier will contain the stipulation that not less than 25% of patients catheterized must be accepted for surgery.

Sharing or contractual arrangements to replace or supplement CCLs are issues of great complexity. As a matter of policy, the VA is committed to regionalization of its own facilities and sharing of community resources, including other Federal agencies. For example, the VA hospital in San Diego is assuming some CCL work for the San Diego Naval Hospital. Also, DM&S has asked the Philadelphia and Wilmington hospitals to investigate possibilities of a sharing arrangement or contract if combining their workload at either Wilmington or Philadelphia does not resolve the issue of underutilization. An alternate to providing a specialized service, contracting for fee, may not yield the "economies" suggested by the draft report since average costs for cardiac catheterization and coronary angiography in the private sector exceed the VA costs of performing these procedures.

The recommendation to consider closing the CCLs at all VA hospitals lacking cardiovascular surgery (CS) capability is not supported in the report by an analysis of adverse experiences in hospitals with CS capability, contract cardiac surgery, a sharing agreement, or a vascular or thoracic surgeon

on the staff. The statistics on actual experiences with deaths, complications, or surgery needed in conjunction with CCL procedures for the twelve hospitals included in this study show a lower incidence than the report quotes for national experience. Since 1971, newly developed procedures and safeguards have substantially minimized the necessity for having CS ability immediately available in the same facility.

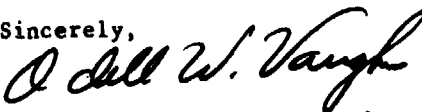
While the VA has placed a moratorium on opening additional CCLs in hospitals not having CS capability until the Department of Medicine and Surgery determines the best policy to follow in establishing new units, we do not agree that the lack of such capability in-house is sufficient cause for closing existing CCLs because provisions have been made for managing complications. There is one fallacy in the safety features of having open heart surgery and CCLs in the same facility because it is not a requirement that the surgical suite be reserved for emergencies and a surgeon be on call during catheterization procedures. DM&S plans to correct this in order to promote a higher degree of safety.

We concur with GAO that it is not good planning to create new CCLs where they are not truly needed and recognize that not all VA special programs were optimally established and deployed in the past. To prevent recurrences, data reflecting veteran population density and dispersal must be generated. Most of this information is not yet compiled, but it is possible that VA's membership in the Health System Areas will facilitate regional or community planning.

The establishment of CCLs is a product of the endeavors of individual health care facilities, with controls by the Medical District Councils and VACO staff direction. The circular being prepared will reemphasize adherence to the established guidelines for initiating special programs. In addition, the existing circulars governing CCLs will be combined in a Manual chapter.

As GAO has recommended, we will continue to monitor and control the CCL program very carefully. Our actions in the past year are consistent with this intent.

Sincerely,



Deputy Administrator - in the absence of

RICHARD L. ROUDEBUSH
Administrator

VA HOSPITALS AND CARDIAC CATHETERIZATIONLABORATORIES REVIEWED

<u>Hospitals and laboratories</u>	<u>Location</u>
Medical District 3: Northport Hospital	Northport, New York
Medical District 4: East Orange Hospital Philadelphia Hospital Wilmington Hospital	East Orange, New Jersey Philadelphia, Pennsylvania Wilmington, Delaware
Medical District 14: Allen Park Hospital Ann Arbor Hospital	Allen Park, Michigan Ann Arbor, Michigan
Medical District 19: New Orleans Hospital	New Orleans, Louisiana
Medical District 25: Albuquerque Hospital Tucson Hospital	Albuquerque, New Mexico Tucson, Arizona
Medical District 26: Long Beach Hospital San Diego Hospital Wadsworth Hospital	Long Beach, California San Diego, California Los Angeles, California

PRINCIPAL VA OFFICIALS
RESPONSIBLE FOR ADMINISTERING
ACTIVITIES DISCUSSED IN THIS REPORT

	<u>Tenure of office</u>	
	<u>From</u>	<u>To</u>
ADMINISTRATOR OF VETERANS AFFAIRS:		
R. L. Roudebush	Oct. 1974	Present
R. L. Roudebush (acting)	Sept. 1974	Oct. 1974
E. E. Johnson	June 1969	Sept. 1974
W. J. Driver	Jan. 1965	May 1969
DEPUTY ADMINISTRATOR:		
Vacant	Jan. 1977	Present
O.W. Vaughn	Nov. 1974	Jan. 1977
Vacant	Oct. 1974	Nov. 1974
R. L. Roudebush	Jan. 1974	Oct. 1974
F. B. Rhodes	May 1969	Jan. 1974
A. W. Stratton	Nov. 1967	May 1969
Vacant	Sept. 1967	Nov. 1967
C. F. Brickfield	Feb. 1965	Sept. 1967
CHIEF MEDICAL DIRECTOR:		
J. D. Chase, M.D.	Apr. 1974	Present
M. J. Musser, M.D.	Jan. 1970	Apr. 1974
H. M. Engle, M.D.	Jan. 1966	Jan. 1970