

DOCUMENT RESUME

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[Technician Training and Enlisted Medical Course Attrition Rates]. HRD-77-89; B-175773. May 17, 1977. 8 pp.

Report to Secretary, Department of Defense; by Gregory J. Akart, Director, Human Resources and Development Div.

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Contact: Human Resources and Development Div.

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Organization Concerned: Department of the Army; Department of the Air Force.

Congressional Relevance: House Committee on Armed Services; Senate Committee on Armed Services.

A survey of the Army and the Air Force medical education and training programs for enlisted personnel and officers revealed some problems which should receive attention. Findings/Conclusions: In fiscal year 1977, the Army and Air Force plan to train about 35,600 officers and enlisted personnel in 123 occupational skill courses. The Army and the Air Force plan to purchase certain radiological training equipment that will be more expensive and will have energy capabilities greater than are necessary for their training requirements. Overall attrition rates in the medical enlisted occupational skill courses are considerably lower at the Air Force School of Health Care Sciences than at the Army Academy of Health Sciences. This appears to be due to management efforts to identify changes that could reduce attrition rates and to implementing the necessary changes. Recommendations: The Secretary of Defense should direct the Army and the Air Force to determine the type of X-ray equipment needed for radiology training courses with a view toward making optimal use of existing resources and insuring that the capability of any equipment to be purchased does not exceed that needed for training purposes. The Secretary should also monitor the Army's current efforts to address the problem of attrition to ensure that they develop and implement a systematic method to identify, monitor, and deal with the causes of attrition in occupational skill courses at the Academy of Health Sciences. (SC)



UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

MAY 17 1977

02219
HUMAN RESOURCES
DIVISION

B-175773

The Honorable
The Secretary of Defense

Dear Mr. Secretary:

We surveyed both the Army and the Air Force medical education and training programs for enlisted personnel and noted two matters which we believe should receive your attention:

1. The Army and Air Force plan to purchase X-ray equipment which will be more expensive and will have energy capabilities greater than are necessary for their training requirements.
2. Compared to Air Force courses, the Army medical training courses have a relatively high rate of attrition.

The Army's Health Services Command (HSC) and the Air Force's Air Training Command (ATC) are responsible for training and education programs for both officer and enlisted personnel. The Army provides training at the Academy of Health Sciences (AHS), Fort Sam Houston, Texas. The Air Force provides similar training at the School of Health Care Sciences (SHCS), Sheppard Air Force Base, Texas. In fiscal year 1977 the Army and Air Force plan to train about 35,600 officers and enlisted personnel in 123 occupational skill courses.

Our survey concentrated on the management of the enlisted personnel training courses at Fort Sam Houston and Sheppard Air Force Base. We did not visit any of the Navy's training facilities. However, you may wish to determine whether the Navy is experiencing problems similar to those discussed in this letter. We did discuss education and training activities with representatives of all three services in Washington, D.C.

HRD-77-89

NEED TO MATCH RADIOLOGY EQUIPMENT
CAPABILITY WITH TRAINING NEEDS

AHS and SHCS plan to spend about \$1.8 million 1/ to replace certain radiological training equipment. Because much of this equipment will have capabilities greater than are needed to train students as radiological technicians, we found that substantial savings could be achieved if radiological equipment needs were met with existing resources or if equipment with lower capabilities were purchased.

Training equipment capability

During examinations, X-ray images are produced by passing radiation through an individual and recording the image on film. An X-ray machine's ability to produce radiation is expressed in milliamperes (ma). The higher the milliampere capability, the shorter the exposure time during examination. Milliampere capability and related costs are shown below for the machines the Army and Air Force originally planned to buy.

	X-ray machines <u>1/</u>				
	<u>100</u> ma	<u>300</u> ma	<u>500</u> ma	<u>600</u> ma	<u>800</u> ma
Air Force	1	6	0	1	1
Army	1	15	5	1	1
Approximate cost per machine	\$11,700	\$46,800	\$53,000	\$88,000	\$101,100

1/ Ten machines costing a total of about \$400,000 have been purchased.

Phase I of the radiology technician training course at AHS involves positioning of the patient. Twelve X-ray machines are devoted solely to this activity. In this phase of training, X-ray exposures are not needed and, in some cases, the X-ray equipment is not even connected to a power source to make it operational. The Army plans to replace these 12 machines with 300-milliampere X-ray machines at a total cost of about \$550,000. One unit has already been purchased. Basic positioning is also taught at SHCS, but no X-ray machines are devoted solely to this portion of the training.

A radiological equipment expert at HSC said that equipment requirements for positioning training could be met with existing Army or DOD resources. X-ray machines which are scheduled for replacement at existing hospitals and clinics could be relocated to AHS for use in teaching basic positioning. Less costly equipment could also meet AHS's needs. A representative of an X-ray equipment manufacturer told us that equipment suitable for positioning training was available for about \$15,000 per unit, compared to the approximate \$47,000 for each 300-milliampere machine.

During phase I students at both AHS and SHCS also learn to take actual X-ray exposures. For certain patients and X-ray procedures, short exposure times are needed and high energy X-ray machines would normally be required. However, since plastic body models are used for this portion of the training, there is no need for machines with short exposure times. A radiological equipment expert at HSC said that capabilities greater than 300 milliamperes were not needed. A similar opinion was expressed by a radiologist at a major university medical center. Both individuals indicated that students can be trained on low energy machines and easily learn to operate high energy X-ray machines during the on-the-job or phase II portion of their training. AHS and SHCS plan to purchase a total of nine X-ray machines with capabilities greater than 300 milliamperes at an estimated total cost of \$648,000. While our survey was underway, AHS officials reevaluated the Army's radiological training equipment requirements and estimated that \$400,000 could be saved by purchasing simulators and obtaining equipment from other installations.

CONCLUSIONS

The X-ray machines the Army and the Air Force plan to purchase exceed the capability needed for their radiology training programs. Before their planned procurement continues, we believe that a comprehensive evaluation of Army and Air Force radiology training equipment requirements is needed and that, where possible, requirements should be met either with existing resources or with equipment having lower energy capabilities. According to Army officials, such changes could save about \$400,000.

RECOMMENDATION

We recommend that you direct the Army and Air Force to determine the type of X-ray equipment needed for radiology training courses. This should be done with a view toward (1) making optimal use of existing resources and (2) insuring that the capability of any equipment to be purchased does not exceed that needed for training purposes.

NEED TO DEVOTE MORE MANAGEMENT
ATTENTION TO ATTRITION RATES AT AHS

AHS and SHCS were scheduled to train about 19,678 and 5,583 enlisted students, respectively, in fiscal year 1976. However, both training centers experienced shortfalls because students failed to complete courses, primarily for academic reasons.

In fiscal year 1975 SHCS and AHS were experiencing attrition rates in occupation skill courses for enlisted personnel of about 8 and 9 percent, respectively. To improve the situation, SHCS undertook a management effort to identify factors that were contributing to attrition. As a result, its attrition rate dropped to about 6 percent in fiscal year 1976. The Army, on the other hand, does not have an overall effort to improve attrition. Its rate increased to about 13 percent in fiscal year 1976.

Air Force efforts

The Air Training Command evaluated the appropriateness of its 8-percent attrition rate by establishing a management

objective to reduce attrition. To carry out this objective the Technical Training Center at SHCS required its staff to

- review student critiques for trends,
- review the special individualized assistance program for quantity and quality,
- review the pass/fail point on tests,
- review the quality of tests,
- review counseling and motivation techniques,
- review and analyze course prerequisites for adequacy,
- analyze instructor experience,
- review the effectiveness of the class advisor program,
- study the curriculum for possible restructuring, and
- conduct progress meetings.

The above actions led to specific changes in training programs such as:

- In the Department of Nursing, special individualized assistance for students was given precedence over all nonacademic activities with the exception of traffic safety training.
- Conflicts between lecture materials and study guides/workbooks in the Medical Service Specialist course were eliminated.
- The radiology curriculum was restructured to provide additional training time for those periods of instruction which consistently gave students problems.

Through this systematic approach SHCS was able to reduce the overall rate of attrition from about 8 percent in 1975 to about 6 percent in 1976.

Army efforts

Our analysis of attrition rates in occupational skill courses for enlisted personnel in fiscal year 1976 showed that AHS had higher attrition rates in considerably more courses than SHCS. This is shown in the table below.

Occupational Skill Courses

<u>Training center</u>	<u>Total number of courses</u>	<u>Percent of attrition</u>			
		<u>Less than 11</u>	<u>Between 11-20</u>	<u>Between 21-30</u>	<u>Greater than 30</u>
SHCS	47	39	7	1	0
AHS	33	13	7	6	7

As of August 1976 AHS had monitored only 1 out of 33 enlisted courses on a regular basis. This effort involved analyzing test results in one of the larger basic courses to determine whether students understood the material presented. Also, at the request of the Army Surgeon General, two other courses taught at AHS were being reviewed at the time of our fieldwork.

In September 1976 the Army initiated a special study to determine the relationship among course performance, student aptitude, and attrition in five additional courses that provided training for occupational specialties in which the military was short of personnel worldwide. Two of these courses were experiencing attrition rates between 21 and 30 percent; two others had rates greater than 30 percent. This study was initiated because of the concern expressed by field commanders over the inability to fill these positions rather than concern over the high attrition rates in the training courses.

Also, during our fieldwork, AHS initiated a project to address the problem of attrition. The project was divided into three phases,

- compiling attrition statistics for each course,
- determining the order in which courses would be reviewed, and
- outlining the approach for reviewing the courses.

At the time of our fieldwork the first phase of the project had been completed.

AHS did not accumulate or analyze costs in a manner that would correlate a specific cost with attrition. Also, the attrition cost for specific students will vary depending on the overall cost of the course and the percent of the course completed by the student. Nevertheless, we believe that attrition costs are considerable because in fiscal year 1976:

- The dental laboratory procedures course graduated less than three out of every four students at a cost of about \$7,038 per graduate, according to an AHS official. There were 129 students initially enrolled in this course, which had an attrition rate of 28 percent.
- The radiographic procedures course graduated less than two out of three students at a cost of about \$6,975 per graduate according to an AHS official. There were 391 students enrolled in this course which had an attrition rate of 35 percent.

CONCLUSION

Overall attrition rates in the medical enlisted occupational skill courses are considerably lower at SHCS than at AHS. This appears to be due, in part, to management efforts to identify changes that could reduce attrition rates and then taking action to implement the necessary changes. These actions reduced the attrition rate at SHCS from about 8 percent in 1975 to about 6 percent in 1976. In contrast, the attrition rate at AHS was about 13 percent in 1976, up from 9 percent in fiscal year 1975. At the time of our fieldwork the Army had no systematic method for monitoring and dealing with the causes of attrition. We believe that a concerted effort to identify the causes of attrition--as the Air Force

did--could identify those situations where attrition rates are rising above desirable levels and could lead to changes that would minimize those attrition rates.

RECOMMENDATION

We recommend that you monitor the Army's current efforts to address the problem of attrition to ensure that they develop and implement a systematic method to identify, monitor, and deal with the causes of attrition in occupational skill courses at AHS.

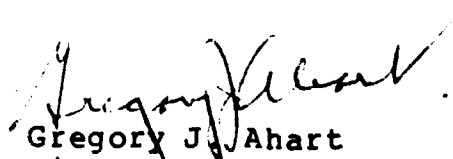
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As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the House Committee on Government Operations and Senate Committee on Governmental Affairs not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We are sending copies of this report to the Chairmen of the House and Senate Committees on Appropriations, House Committee on Government Operations, Senate Committee on Governmental Affairs, and House and Senate Committees on Armed Services; and to the Director, Office of Management and Budget.

We appreciate the cooperation and assistance provided by DOD personnel during our survey. We will be glad to discuss any questions with you or your representatives.

Sincerely yours,


Gregory J. Ahart
Director