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Medical Services at Airports

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A Study of the Need for Comprehensive Medical Programs at Large Airports

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I. Introduction and Purpose

For some time a number of health- and aviation-oriented persons have considered airport populations as unique industrial communities. At a large municipal airport there are many groups of workers, concentrated geographically, and sharing certain interests in a major component of the nation's large transportation industry. Such a population is unique because although a large number of personnel are concentrated in one area, the number employed by a single company is relatively small. This is due to the wide variety of operations and services provided, and the duplication of services and operations by various competing airlines.

Generally no single employer has a sufficient number of employees at a given airport to justify a comprehensive industrial medical program. Thus, benefits from health programs in large industrial communities have not been realized at airports, though thousands of employees may be found there.

This is a report of a study to determine (1) the nature and extent of medical service desirable at large airports; (2) the manner in which such services are now met, and (3) the means by which these services might be provided in a more effective and comprehensive manner. The study was made at one civil airport reasonably representative of other large municipal airports.

In addition to the primary purposes mentioned above, attention was given to 2 other considerations: (1) the possible medical contributions to air safety, especially those which are, or might be, achieved through medical service to airport populations, and (2) the possible role of airport medical services in correcting the general lack of available facilities for the supervised practice of aviation medicine by civilian physicians.

II. Background Information

No attempt will be made to review the extensive literature which provides evidence of the value of employee health programs. It seems appropriate, however, to quote from the 1959 National Health Forum concerning the functions considered essential in any occupational health program [1]:

1. Provide a safe and healthful working environment for each and every worker.
2. Select the best all-around, qualified candidates for employment by providing an evaluation—not a diagnosis—of physical and emotional factors which may be of consequence in the available job.
3. Help management by providing emergency first-aid medical services to employees, wherever the nature of the industrial operation justifies or requires such services and/or these services are not readily available in the immediate vicinity of the plant.
4. Help management by helping employees maintain a state of health compatible with high productivity and job attendance.
5. Help the sick and the injured employees—where indicated—secure the best possible medical service in the community.
6. Help management deal constructively with the medical and social problems of the employees, such as nonproductivity, problem drinking, (partial or total) permanent disability, chronic absenteeism,

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chronic accidentism, and many other social-medical problems.

7. The occupational medical service should help management become or remain a good corporate citizen in areas involving health, for example, atmospheric and water pollution problems, cooperation with official and nonofficial health agencies, cooperation with the health professions, participation in community activities having to do with health programs and facilities.

8. It should help managers plan wisely in the areas of social insurance and welfare by maintaining adequate records concerning disability, use of community health facilities, deaths, incidence or prevalence of disease, and many other things having to do with health.

9. And finally, the occupational health service should help management achieve a profit, not only by making the above contributions, but by doing so in an economical manner—i.e., in the *most* economical manner that is compatible with the highest possible moral and ethical principles of medicine.

Many of the services and operations performed by employees at airports have a direct bearing on (1) the airworthiness of aircraft, and (2) the safety of operation of aircraft carrying the general public.

The quality of performance of employees servicing and maintaining aircraft is a real concern of those charged with assuring the safety of air commerce. It has been adequately demonstrated that quality of performance can be significantly related to the level of physical and mental health maintained. This is especially true when the health status of the employee is specifically related to the job demands.

Also related to air safety are provisions for crash rescue and associated emergency medical care. More than one-half of air transport accidents occur at or near airports. The infrequent occurrence of accidents at a given airport makes it impossible to justify a medical facility solely for this purpose. However, a medical facility in existence for other purposes could render invaluable service in preplanning and providing valuable medical support for such events.

There is an increasing need for qualified civilian aviation medical specialists. Aviation Medicine has been recognized officially by the American Medical Association as a special field of medical practice. Certification in this specialty is granted to applicants who meet certain requirements. Two essential requirements are: (1) supervised residency training to include active participation in an organized program of aviation medicine, and (2) supervised practice of aviation medicine for at least 1 year. These 2 requirements are adequately met for military physicians by established military facilities, but such facilities for civilians are extremely limited.

Certain important observations, in the nature of background material, bear directly or indirectly on the subject of airport health services. First, the cost of providing occupational health programs is prohibitively high for small employee groups. Because of this, only a few of the 3,000,000 small business establishments have in-plant health services beyond elementary first-aid. "Small" business establishments, in this discussion, are those with fewer than 500 employees. Of approximately 50 firms employing a total of 5,000 workers at the airport studied, only 2 have more than 500 employees. This is of practical importance, since accident rates in small industries are 2 to 3 times greater than in large industries with medical programs, and absentee rates are comparably higher for small employee groups.

Occupational health programs significantly and favorably affect the following: (1) accident rate, (2) occupational disease, (3) labor turnover, (4) absenteeism, (5) compensation insurance premiums, (6) employee-employee and employee-supervisor problems, (7) alcoholism, and (8) certain indirect effects, such as efficiency, morale, quality of performance, etc.

A recent survey of airports by the Federal Aviation Agency revealed that of 20 airports with more than 5,000 employees, only 2 had medical programs of sufficient scope to meet most needs. These 2 facilities are private establishments not directly responsible to the respective airport authorities. Other airports meet the need in varying degrees, ranging from many with only on-call emergency services supplied by private physicians, to a few where an airline medical department pro-

vides a comprehensive program for a large concentration of their employees. A current FAA study is designed to develop in more detail the exact status of health service facilities and other safety provisions at municipal airports.

The specific benefits which might be anticipated from a comprehensive medical program at an airport can be considered in relation to the employee, the employer, the airport authority, and the public.

For the employee, benefits would be expected through (1) promotion of health by health education and control of environmental health hazards; (2) specific protection in the form of appropriate immunizations, identifying the need for and recommendation of specific protective devices, recommendations for the removal of health hazards, and selective placement to accommodate health deficiencies; (3) early diagnosis and treatment as a function of availability of a medical facility and the conduct of periodic examinations; (4) limitation of disability due to illness or injury by coordination between medical care given by the employee's physician and the demands of the job; (5) effective rehabilitation, as the result of specific knowledge of job requirements.

For the employer, in addition to the expected benefits listed above (all of which have an associated monetary value), there would be readily available consultation for employee or operational problems having a medical component. The value of the consultation should be greatest if held with medical personnel already an integral part of the airport community.

The airport authority, by virtue of its managerial status, has the potential of assuming the most important role in any medical effort within the airport industrial complex. To the extent that it exercises its managerial prerogatives in assuring the quality of medical service (as it must assure the quality of other airport services), and participates in the establishment and maintenance of such a service, it can determine the amount of benefit to the airport community as a whole. In addition, certain benefits could be expected to accrue to the authority directly. Among these would be the benefits expected for other employers, since the authority is itself an employer of significant numbers of persons working in the airport community. Another benefit relates to the physical presence of very large numbers of the general public on airport property, a factor of importance in the extent of exposure to liability. Many of the services provided by an airport authority have a direct effect on the level of safety provided to the public. Adequate early medical care and proper coordination of subsequent care can be very significant factors in reducing the liability potential in personal injury cases. A further benefit would be a favorable public image resulting from the existence of such a service, both for the prompt and appropriate initial care of illness and injury at the airport and for effective rescue and medical care services in the event of a major aircraft accident. A significant function of airport authorities is service to the general public. There are few areas of public service more likely to be recognized and given appropriate public attention than the humanitarian programs established to save lives and reduce suffering.

III. Procedure Used in This Study

The basic approach to the study was the interview of managers of employee units located at the airport studied. The interview dealt with specific items deemed significant to the purpose of the study, and selected for this purpose. In developing this interview approach the first step was to review published material on industrial health statistics, industrial health programs generally, health programs for small employee groups, workmen's compensation, and airport management.

The interview portion of the study was supplemented by liaison with the Director of Research of the airport authority, who supplied a list of employers and the names of the local managers together with a count of employees, listed by nature of employment. The research director also provided assistance in identifying the types of inquiries likely to

yield results, as determined from his knowledge of the nature and manner in which operations are conducted by various concessionnaires.

The initial descriptive phase of the study, completed with the help of the port authority research director, attempted to determine the total number of employees and the nature of their jobs, using relatively broad descriptive categories for convenience in grouping. Refinements in the data obtained were made in the course of the actual interview with employers. I conducted the interview itself directly with the respective managers or with persons delegated by managers for this purpose. In most cases the interview was conducted with the manager (or "officer in charge") of the particular activity.

Items covered in the original interview are listed in Appendix 1. Preliminary interviews revealed that data on many items generally could not be obtained from employers unless a specific data collection program could be established. This would have required a time period greater than that available. As a consequence, a revised list of interview items was developed (Appendix 2).

Information on each of the items was obtained from all employers with more than 25 employees. This included 19 of the total 47 employers, providing data on 4,758 of the total 5,006 employees. Most of the airlines and all of the major concessionnaires were in this category. Since one of the conclusions which resulted from the study was that a centralized occupational medical facility should be established, the legal, ethical, and public relations considerations relating to each of the several possible methods of establishing the facility were reviewed. The final recommendations concerning possible means of establishing and operating such a facility are limited to those which passed this review.

IV. Findings

Though information on a number of items about which information was desired was not available, findings did include certain information descriptive of the numbers of persons constituting the airport population (Appendix 4); the types of work done by employed persons (Appendix 3); the detailed results of inquiries into the items of the abbreviated questionnaire, and the results of a review of certain legal factors. The types of activities at the airport will be apparent from the titles of employers listed in Appendix 4.

From the airport authority, it was determined that approximately 3,000,000 passengers are accommodated each year. It is anticipated that this number will increase to approximately 6,000,000 over the next 10 to 12 years. In addition, it is estimated that, at present, there are 3,000,000 nonpassenger members of the general public who spend some time at the airport each year. This would include relatives, friends, and associates of passengers, as well as suppliers, ground transportation personnel, and other persons having business at the airport but not actually employed there.

The total number of employees considered based at the airport was found to be 5,006. Of these, 4,758 were grouped by type of employment into one of the five general classifications (Appendix 3).

The following discussion deals with the 4,758 persons who work for companies or businesses having more than 25 employees at the airport. The remaining 258 employees fall into a variety of groups. The nature of these groups can be surmised from the titles of the last 28 employers listed in Appendix 4.

Aircrew personnel accounted for 1,266, or 26.6%, of the employees. This classification includes all air carrier pilots and co-pilots, navigators, flight engineers, and cabin attendants primarily based in the local community. It does not include aircrew personnel who fly into or out of this community but are based elsewhere. The duties of aircrew personnel are generally known.

There were 1,482 persons (31.2% of the total) who performed as mechanics or in other technical and maintenance capacities. This category included aircraft and other mechanic personnel, equipment and communications specialists, aircraft servicing personnel, and other shop and line employees.

This group also included the field service and other maintenance personnel of the port authority. For this category of employees there are a variety of exposures to health hazards. Since an industrial hygiene survey was not a part of this study, only the general nature of such hazards was identified. Among these are (1) the physical hazards resulting from the large amount of materials handled, exposure to noise, the presence of many items of moving equipment, the use of motor-driven tools, working at heights and in positions conducive to falls and injury, handling of large amounts of aviation fuel; (2) toxic and chemical hazards as the result of exposure to a wide variety of materials used as solvents, cleaners, servicing fluids, fabrication and machining agents, and those produced by the combustion of hydrocarbon fuels; (3) other environmental factors including weather elements, work under the stress of critical completion times, shift work, etc.

There were 1,165 workers (24.5%) who were classified as administrative and clerical personnel. This classification included administrative staff, office employees, supervisors, ticket agents, dispatchers, and customer service personnel.

The food service personnel classification contained 218 persons (4.6%) and included those engaged in preparing and handling food, such as kitchen employees of the restaurants, snack bar and in-flight food caterers, waitresses and counter girls.

A general group containing 627 persons (12.1%) represented a wide variety of activities. Examples of types of employees included in this group are professional and communications personnel, mail handlers and clerks, truck drivers, domestics, bus boys, etc. Some 400 employees of the Federal Aviation Agency, including air traffic controllers, communications specialists and safety officers, were included in this group. In addition, 132 employees of the U.S. Post Office were included, since the duties of each involve a variety of administrative, clerical and manual activities.

The following is a summary of the more significant findings obtained by interview with employers:

1. No employer has provided health services for employees which could be considered as constituting an integrated occupational health program. The most comprehensive programs found were those of several airlines, especially those having a central medical department. Even the most comprehensive programs, however, included, at the most, preemployment examinations; periodic examinations of flight crew only (usually conducted by an airline medical department located at a base other than the one studied); periodic audiometric examination of selected ground personnel, and provisions for emergency medical care at the offices of appointed physicians in the local area.

Aside from the flight-crew members of the airlines, no employees received periodic health examinations. Three airlines reported periodic audiometric examinations for selected maintenance personnel. Many employers, especially nonairline employers, do not require preemployment examinations of any employees; some others require examination before employment only for selected groups, such as administrative personnel or persons expected to perform heavy work. No employer provided medical inspection of the worker environment.

Although some airlines with central medical departments provided some form of health information for distribution to local employees, this did not involve contact between health personnel and employees. Other airlines and most nonairline employees had no active health information program. Other functions considered vital components of an occupational health program (listed earlier) were essentially absent for all local employers. For 14 of the 19 employers interviewed, programs consisted of only preemployment examination and some provision for emergency care, or provision for emergency care alone.

2. Emergency medical care was obtained chiefly from 3 sources. The majority of pa-

tients needing immediate attention apparently went to a nearby emergency room, a local extension of the city hospital. A significant number were also referred by employers to a doctor in a nearby section of the city, located about 2 miles from the terminal building. This physician had been appointed by at least 2 airlines to conduct company preemployment examinations. It appeared that other employers also used this physician's services when available. However, none considered him the exclusive source of emergency treatment. Most also named the emergency room previously mentioned and the single doctor located at the airport as other sources of treatment.

The doctor whose office is located in the airport terminal building was named by many of the employers. Apparently, because of the nature of his facility and the hours of attendance, fewer cases are referred to him than to the other 2 mentioned. It appeared that his primary function is the conduct of periodic medical examinations of pilots for FAA certification.

In addition to the 3 chief sources of emergency care, a few employers indicated arrangements with other selected physicians as a supplement to the services of the doctor located at the airport and the emergency room extension.

3. Of the 218 food service employees only 2 (those employed by one of the airlines) were given preemployment examinations. There was no periodic medical examination or medical inspection of any of the food service personnel.

4. Knowledge of the health needs of nonemployee occupants of the airport varied among employers. There was also considerable variety in the methods of disposing of these problems. No standard plan appeared to exist. The reported frequency for such cases ranged from 2 to 3 per week to 4 per year, depending on the employer. None kept actual records of such occurrences. The state police unit at the airport had record of 80 cases for which it furnished transportation to the nearby emergency room extension in the preceding year. The officer interviewed indicated that no record existed on the disposition of many more cases which may have come to the attention of this unit.

A variety of arrangements existed among airlines for handling incoming passengers about whom advance notice of need for medical attention had been received. This usually consisted of arrangements for transportation to a nearby hospital. Occasionally a physician appointed by the company for the performance of preemployment examinations would be summoned to the airport for such cases.

5. The Federal Aviation Agency requires periodic medical examinations of all pilots, co-pilots, navigators and flight engineers. Arranging and paying for these examinations is the responsibility of the individual airman. Numerous physicians have been appointed in the local area by the FAA for this purpose. Two of the FAA-appointed medical examiners are the doctor located at the airport and the one located in a section of the city nearby, previously referred to. No effort was made to determine the various places of examination of pilots based locally, or the numbers examined by the examiners cited.

6. All employers, except Federal government units, had workmen's compensation coverage through private insurance companies. None were self-insured. Employee compensation for Federal employees is administered through a government agency.

7. The employee absentee rate was obtained from a rough estimate made by the interviewed employer. Only one employer had kept records to substantiate the estimate. The range of estimates among all employee units was from 1% to 4% of the work force. Because of a similar lack of availability of accurate data, no effort was made to obtain information on some of the other common indicators of the level of effectiveness of available health services. (Some of these were listed previously.)

8. All employers interviewed had established some form of health benefits program consisting of at least a group health insurance plan. The premiums of most plans are contributed jointly by employer and employee. At least 2 airlines have an additional com-

pany-sponsored medical plan as a supplement to the group health insurance program. All employers also maintain a specific, paid sick-leave policy.

9. All employers maintained some form of safety program for the review of occupational hazards and education of employees in accident prevention. For the smaller employers this tended to be informal but identifiable as a program. The larger employers all had formal programs consisting usually of periodic scheduled meetings of safety committees composed of employees and supervisors, specific safety instruction by supervisors or safety officers, and poster and bulletin programs.

10. Except for employees of the Federal Aviation Agency there was no indication of an attempt, on the part of other Federal agencies, to implement employee health programs such as those authorized by Public Law 658. The FAA is currently developing means by which such services may be extended to its employees. This would include at least periodic health maintenance examinations and on-the-job medical care on a contractual basis at locations where an actual FAA medical facility does not exist.

11. Most employers interviewed indicated a need for a comprehensive medical facility located at the airport. One of the largest employers had written to the port authority recommending the inclusion of a medical facility in plans for a new terminal building. Most employers indicated that they would use it as the source of a more comprehensive medical program. Others stated that the extent of use, other than for emergency care, would depend on central office approval.

The reasons most frequently given for desiring a medical facility at the airport were: (*a*) the availability of immediate emergency care; (*b*) the need for medical service on a 24 hours a day, 7 days a week basis; (*c*) the large amount of time consumed by employees who develop minor ailments while at work and for whom there is no alternative except consulting a family physician at some distance from the airport. Several employers stated that as much as a half to a full day of time was often lost in such cases.

No effort was made to estimate the interest of employers in other specific functions of an occupational health program. It was believed that such an estimate would have no value in the absence of extensive preparatory discussions detailing the more indirect benefits of such a program. The type of study which was conducted did not permit such an approach.

Inquiry into some of the legal aspects was limited to those which might affect the organization and status of a medical facility, should one be established. The more significant legal issues are discussed in some detail in the section dealing with recommendations

The medical component of the existing crash-rescue program was found to consist of an on-call procedure involving a large general hospital, with direct communication from the airport control tower. The hospital is located 8 to 10 minutes from the airport. The route to the airport from the hospital involves driving through a heavily traveled tunnel, with considerable slowing of traffic in the tunnel and approach areas at many periods during the day. In an attempt to facilitate rapid on-the-scene medical service in the event of an emergency at the airport, the airport crash program had been coordinated with the police department for the handling of this specific problem. No drills had been held to determine the effectiveness of this arrangement.

There had been no advance coordination with additional possible resources for rescue and evacuation operations, such as nearby military installations; the U.S. Coast Guard; other city, state and Federal agencies.

V. Comment on the Findings

The airport population was found to be of considerable size, consisting of some 5,000 employees, 3,000,000 passengers per year and 3,000,000 other transients per year. The mere existence of a population of such size at distances somewhat removed from ordinary medical facilities would appear to justify an airport medical facility.

The nature of employment of approximately 70% of the employees (aircrew, mechanic and maintenance personnel, air traffic controllers, and food service personnel) clearly demonstrates the need for periodic medical examinations for reasons of safety, health maintenance and public protection. However, except for aircrew (excluding flight attendants) and control tower operators who are subject at least to periodic FAA certification examinations, periodic examinations are not now performed. The almost complete absence of any form of health maintenance and support for administrative and clerical personnel while at work was also apparent. The types of occupations and numbers of employees identify this population as an industrial community of a size sufficient to justify a comprehensive occupational health program.

That there is now no integrated occupational health program for any employee group cannot be interpreted as lack of interest on the part of employers. It was apparent that the problems referred to earlier in the report, bearing on medical programs for small employee groups, are real ones which have not been satisfactorily solved for this group of employers. Of necessity, all have made some arrangement for the most pressing medical needs, especially for emergency care of on-the-job illness or injury. It is interesting to note that none rely on a single source of assistance even for emergency care. It is perhaps for this reason that most indicated an interest in a full-time airport medical facility for this purpose. It is believed that the extent of interest in other functions considered essential to an occupational health program could be determined only after considerable further study and discussions with employers, or after a facility to provide such a program has been established.

Although the number of persons in need of medical attention at the airport could not be established reliably, the total number of persons using the airport would seem large enough to predicate a sizable chance occurrence of illness or injury while they were on airport property. Another factor which would be expected to increase the number in need of assistance at this airport is the many patients traveling to and from world-renowned medical institutions in the local area. The lack of a standard method of assuring prompt and appropriate care for such persons, even in the absence of an airport medical facility, is clearly a deficiency.

Accident rates among employees were not readily available. However, since all employers have workmen's compensation coverage by private insurance companies, these companies should be a source of data for comparison with the experience of similar types of employers. This study did not explore this potential source of data.

The universal lack of data on the extent of absenteeism would seem to indicate a lack of appreciation of the value of such data for management and evaluation purposes. The lack of data on this and other items considered significant indicators of the effectiveness of health services could probably be corrected over a period of time by a cooperative effort between employers and persons interested in the promotion of occupational health programs.

That all employers have established a health-benefits program in some form indicates that they already contribute significant sums for the medical care of employees. Measures of the extent to which these have increased employee effectiveness are lacking, however. The existence of identifiable safety programs in all employee units—some of them quite comprehensive—indicates a general interest in promoting employee effectiveness, and reducing employee time loss. Although safety programs can be administered for perhaps one-fourth of the cost of administering occupational medical programs, it is believed that adequate justification for medical programs for the same general purposes would promote similar acceptance.

The medical component of the present crash-rescue plan, which was effected during the course of this study, is believed to be a very effective substitute for an even more effective program which should result from

the existence of a medical facility at the airport. An airport medical facility should be able to capitalize on day-to-day knowledge of the types of operations and familiarity with the varied sources of assistance available in planning an effective medical program for crash rescue. This facility, by specific assignment, could be held accountable for developing and operating the program.

One of the more significant observations relates to suitability of airports as sites for the supervised training of specialists in aviation medicine. First to be considered is the fact that large airport populations are generally found just outside (or within) municipalities likely to have medical teaching institutions. This is important to the extent that existing institutions participate in planning a program of instruction for trainees, both at the airport facility, and on assignment to other appropriately selected duties in the area. The existence of such institutions should not be considered prerequisites for such programs, however.

A second consideration is the availability of an environment suitable for the practice of aviation medicine principles and the conduct of research in this field. With an employee population of 5,000, more than half of whom are employed in activities directly related to air operations, more than sufficient material would appear to be available. The actual availability would depend, of course, on the cooperation of employers and employees in any research efforts and on the patronage of the medical facility. A third and most significant requirement would be the presence of an already qualified aviation medical specialist to supervise the training. Such a specialist, as director of the medical facility, is justified by the nature of the employee population.

In summary, it would appear that (1) all desired data to determine the magnitude of need for medical services in airport communities are not available; (2) airport populations constitute sizable industrial communities; (3) employers at the airport studied have attempted to assess and provide for their medical needs in various ways, but none has provided more than a few of the elements of an effective occupational health program; (4) employers have demonstrated their interest in promoting health and effectiveness among employees by the means now available; (5) the size of employee groups is generally too small to justify the establishment of a comprehensive medical program by a single employer; (6) an effective occupational medical program has not been started at this airport; (7) the nature of the employee population and extent of needs not now supplied are sufficient to justify the establishment of a medical facility at the airport to provide a comprehensive aviation and occupational health program; (8) an airport medical facility, established for other purposes should be most effective in providing the medical component of crash-rescue plans and operations, and (9) a medical facility at a large municipal airport could be an ideal training site for civilian physicians pursuing aviation medicine as a career.

IV. Recommendations

From the preceding findings and discussion, the following recommendations seem appropriate:

1. A medical facility should be established at the airport to provide a comprehensive program of occupational and aviation medicine.

2. Considering the nature of the employee population, the director of the medical facility should be a physician qualified in the field of aviation medicine. Additional professional staff should include a physician, or physicians, experienced in industrial medicine.

3. Established medical institutions, especially teaching institutions, should be included as active participants, advisors, or consultants.

4. In establishing a medical facility, the need for, and the benefits to be derived from, providing research and training facilities in aviation and occupational medicine should be considered.

5. The medical facility, immediately upon establishment, should develop measures to assess the effectiveness of the subsequent

operation of the program. Among the measures for which a data collection program should be established with all employers are: (*a*) employee injury rate, (*b*) compensation experience, both clinical and financial, (*c*) rate of absenteeism, (*d*) nature and frequency of employee-employee and employee-supervisor problems, (*e*) rate of labor turnover, (*f*) magnitude of alcoholism and other personality problems affecting performance, and (*g*) data on environmental exposures, preferably collected by an industrial hygienist or similarly oriented persons.

Such a program, in addition to serving as an important tool in evaluating the contribution of the medical program, would serve to establish contact with employers, and would demonstrate the skills of occupational medicine.

6. Preliminary data, of the type described in this report, should be obtained for the specific airport population involved, before a decision to establish a medical facility. These data should be used, additionally, to determine the type of facility to be established.

7. In promoting the utilization of an airport medical facility by employers, the contact should be with a physician acquainted with industrial and/or aviation medical problems. Full use should be made of information having a direct bearing on the particular operations. Consideration of the extent to which the employer has already demonstrated an interest in promoting the health and effectiveness of employees should also provide a basis for discussion.

8. The contract for medical service with individual employers should specify the level of service to be provided. Some unit of service should be established to determine equitable charges. The unit could be (1) time required to provide estimated service or (2) a functional unit such as cost of preplacement examinations, estimated treatment demand, etc.

9. The organizational framework of the medical facility should be determined by the airport authority and should take into consideration the nature of needs to be supplied, the local medical environment, the availability of appropriate professional staff, and the quality of medical care desired. Ideally, the airport authority should initially seek the services of a body of informed medical consultants and advisors to study and recommend the most appropriate method of establishing the facility.

10. The airport authority should assume responsibility for, and participate directly in, the operation of the medical facility.

11. Various methods of organizing an airport medical facility should be considered. Some possible methods are discussed below together with their respective advantages and disadvantages:

(*a*) *A cooperative plan initiated and administered by an association of airport company employers who, collectively, would provide a sufficiently large employee group to justify an effective medical program.* The chief advantage of such a plan is the extent of direct control which the user has over the nature, scope, and quality of the service provided. A considerable disadvantage for airport populations is the varied nature of the operations performed by individual employers, making it difficult to reach agreement on the type of service to be provided. Such plans now in existence in other industries have been developed by employers with similar employee populations and types of operation. No significant legal problems would be involved in such a plan.

(*b*) *A private clinic, operating as a concession in a relationship to the airport authority similar to that of other concessionnaires.* This arrangement would have the advantage of preserving the tradition of the private practice of medicine to the fullest and would relieve the airport authority of responsibility for participating in its operation. A disadvantage of this type of program results from the necessity of operating such a program at a profit, thus subjecting it to considerable pressure to minimize potentially nonprofitable functions such as crash rescue, research, etc. No significant legal problems should arise in the establishment of such a

program so long as the professional staff was not organized as a corporation. The more appropriate type of organization would be a partnership-trust association of a group of doctors contracting with the airport authority for space as a concessionnaire.

(*c*) *Federal regulation to require and specify the nature of medical services to be maintained by airports.* The Federal Aviation Agency has been concerned for some time with the general lack of medical services for airmen and others directly concerned with the safety of air operations. At the time of this report the Agency is in the process of conducting a comprehensive survey of the facilities of major airports to determine the adequacy of provisions for the safety of air operations, crash rescue, etc. A part of that survey deals with the nature of available medical support at airports. The Agency also knows of instances in which major aircraft accidents might have been averted, or fatality and disability reduced, by the existence of adequate medical support and surveillance.

Legislative authority already exists, in the Federal Aviation Act of 1958, to require this regulation, should it be deemed necessary in the furtherance of air safety. Such a requirement, if adopted, could conceivably be directed toward the responsibilities of airport authorities, operating air carriers, other groups whose activities have a direct bearing on air safety, or any combination of the three.

(*d*) *Independent operation by the airport authority.* The advantage of this type of program would be the extent to which the authority could assure the scope, nature, and quality of the program to suit the purposes of the particular airport. A disadvantage for most airport authorities would be the problems inherent in operating a program ordinarily far different from the types of operations to which it is accustomed. Legal considerations of significance are those pertaining directly to the corporate purposes for which the authority was created and to the legal interpretation which might be made concerning the establishment of a medical facility for provision of service to persons other than its own employees. Since physicians in such a program would assume the status of employees, laws prohibiting the corporate practice of medicine would apply unless the corporate purposes of the authority clearly supported the establishment of such an activity. A fact to be considered, however, is that an airport authority, being a quasi-public body, may be excluded from laws pertaining to the corporate practice of medicine. In any case, the state laws which apply to the corporate practice of medicine and the corporate purposes of the particular airport authority should be carefully reviewed before any attempt is made to establish such a facility. If the corporate purposes do not support such action and/or the state laws prohibiting the corporate practice of medicine apply, the only alternative would be to seek special legislation authorizing this activity at the airport in question.

(*e*) *Port authority operation of the facility, contracting with a local medical society for professional care.* The organizational matters involved would be similar to those discussed immediately above. The contract could assume the form of contracts currently in existence under the Medicare program.

An advantage would be found in the level of acceptance by physicians in the community represented by the medical society. A disadvantage is that medical societies as organizations are not generally accustomed to operating actual medical facilities and would not have the supporting clinical and teaching facilities at their immediate disposal to the same extent that existing medical establishments do. A second disadvantage is the variation of interest in, and supervision of, such a facility—variation which could result from the frequent changes in leadership which are customary in medical societies. The legal aspects of such an organizational arrangement are similar to those discussed under *f* below.

(*f*) *Operation by the airport authority contracting with an established medical institution for professional services.* Several advantages would result from such an arrangement. First, it would avoid the issue of

the corporate practice of medicine by the airport authority. Second, it would permit direct participation by the airport authority at any level desired, short of providing professional services. Participation by the airport authority could include such matters as providing space, equipment, and nonprofessional personnel. Third, control of this activity could be established by the airport authority at any level deemed desirable and accepted by the contracting medical establishment. Fourth, legal control would be maintained by the airport authority. Fifth, both the authority and the contracting medical establishment would be immune from personal liability suit to the extent that the state laws provided immunity from suit. Individual physicians providing service in such a facility would not be immune. Sixth, it would permit the authority to enter into contracts with employers for medical service and would offer a means of ensuring fulfillment of the contract. Finally, it would avoid the employee status of physicians practicing at the facility. Such an organization would presume that the physicians would have representation through a contract with the established medical institution, similar to contracts between participating physicians and Blue Cross-Blue Shield plans. This point should be emphasized in any discussions with local medical associations which might have a concern for the professional relationships involved.

A disadvantage in this type of organizational arrangement is that the airport authority, in planning and contracting for the professional services, would need to possess considerable knowledge of medical policy and professional matters in order to ensure that the medical establishment entering into the contract and the provisions of the contract itself would provide the most appropriate medical service. This problem, and an associated one involving selection of a given medical establishment from a number of competing establishments, could be avoided by initial appointment of a preplanning advisory group composed of representatives of a number of institutions and/or agencies. These advisors could continue, in an unofficial capacity, to advise the authority on specific matters requiring attention after establishment of the medical service. Some sources of advisors might be the local medical society, the local health department, medical teaching institutions, recognized industrial medical specialists, or medical specialists of the Federal Aviation Agency.

The only significant legal issue which would be involved deals with the corporate purposes of the airport authority. It would have to be determined that the establishment of such an additional function is permitted, or at least not excluded, by the corporate charter. If doubt exists concerning the interpretation which might be made of the charter with respect to this matter, the advice of the state attorney general should be sought.

VII. Summary and Conclusions

1. The value of medical programs in improving the performance and effectiveness of employees in industry is well known and has been extensively demonstrated.

2. Airport populations constitute sizable industrial communities. The nature of the operations conducted has important implications for the safety of air operations.

3. Employers at the airport studied have attempted to assess their medical needs in various ways, but thus far none have provided more than a few of the basic elements of an effective occupational health program.

4. Employers have demonstrated, in a number of ways, their interest in promoting the health and effectiveness of their employees by the means now available.

5. The size of individual employee groups is generally too small to justify the establishment of a comprehensive medical program by a single employer.

6. The nature of the employee population and the limited nature of medical services now provided are sufficient reasons to justify the establishment of a comprehensive occupational health program at the airport.

7. An airport medical facility, primarily established for other purposes, should be

most effective in providing the medical component of crash rescue plans and operations.

8. A medical facility at a large municipal airport could be an ideal training site for civilian physicians pursuing a career in aviation medicine. Such facilities for civilians are not now available.

9. Medical facilities should be established at airports to provide comprehensive programs of occupational medicine and for other related purposes.

Much advice and counsel were obtained from Dr. Ross A. McFarland, Professor of Environmental Health and Safety at Harvard School of Public Health. Additional assistance on certain legal questions was obtained from Professor William J. Curran, Director of the Law-Medicine Institute of Boston University.

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Appendix 1

Suggested Outline for Assessing Needs for Medical Service at Airports

I. Nature of employee population

II. Employee health provisions
  1. Workmen's compensation
    (*a*) Type and carrier
    (*b*) Premium
    (*c*) Experience past 2 years
      (1) Number and types of claims
      (2) Case examples
  2. Physician services
    (*a*) Direct
    (*b*) Referral
    (*c*) Examinations (preemployment, etc.)
    (*d*) Immunizations
    (*e*) Consultation
  3. Health benefits program
  4. Health information activities
  5. Medical surveillance of work environment

III. Employee health experience
  1. Accident rate
  2. Absenteeism
  3. Occupational disease
  4. Labor turnover
  5. Employee-employee and employee-supervisor problems
  6. Alcoholism
  7. Health insurance claims

IV. Interest in medical program
  1. Preplacement
  2. Preventive
    (*a*) Consultation
    (*b*) Periodic examination
    (*c*) Immunization
    (*d*) Environmental medical surveillance
  3. Treatment
    (*a*) Occupational injury and disease
    (*b*) On-the-job illness
  4. Certification

V. Knowledge of nonemployee medical needs
   1. Patrons
   2. Passengers
   3. Transients

VI. Safety program
   1. Description—scope, type, technique
   2. Level of supervision and administration

Appendix 2

Outline of Interview Used

Nature of employee population
Compensation, type
Physician services, scope (examinations, treatment, consultation, etc.)
Health benefits program, type
Absenteeism, estimate
Interest in formal medical program (preplacement, preventive, treatment)
Knowledge of nonemployee medical needs, handling
Safety program, type and coverage

Appendix 3

Airport Population

Passengers	3,000,000/yr.
Nonpassengers (general public)	3,000,000/yr. (est.)
Full-time employees (total)	5,006
Type of occupation (4,758 employees)	
Aircrew	1,266
Mechanics, other technical and maintenance	1,482
Food service	218
Administrative and clerical (including airline customer service)	1,165
Other	627
	4,758

Appendix 4

Operators and Concessionnaires at Airport Studied

Airline A	1,602
Airline B	740
Airline C	449
U.S. Federal Aviation Agency	447
Airline D	230
Airline E	219
Air National Guard	169
U.S. Post Office	132
Airport Authority	130
News Company	130
Motel	83
Aviation Service	78
Caterer	70
Airline F	62
Airline G	60
U.S. Weather Bureau	39
Airline H	33
Airline I	31
Airline J	28
Motor Transport	28
Cocktail Lounge	25
Express Company	21
Hertz Corporation	21
Avis Rent-a-Car	20
State Police	18
Aviation Service	16
Railway Express	14
Air Freight Company	13
Air Freight Line	12
Airline K	11
State Aeronautics Commission	9
Insurance Company	9
Airline L	9
Barber Shop	9
Chapel	6
U.S. Department of Justice	6
Air Charter Service	4
National Bank	4
U.S. Department of Agriculture	3
Air Charter Service	3
Flower and Gift Shop	3
Airline M	3
Transportation Company	3
Air Freight Service	2
U.S. Dept. of Health, Education and Welfare	2
Physician	1
Travelers Aid	1
	5,006

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