The Development and Implementation of An Occupational Health Program Within a Health Maintenance Organization via The Occupational Health Program's Strategic Planning Process

by

RINGO MICHAEL WOOD

B.A. Princeton University (1978)

Submitted to the Department of Urban Studies and Planning in Partial Fulfillment of the Requirements of the Degree of Master of City Planning in Urban Studies and Planning at the MASSACHUSETTS INSTITUTE OF TECHNOLOGY

September 1982

c Massachusetts Institute of Technology 1982

Signature of Author

Department of Urban Studies and Planning September 7, 1982

Certified by Professor Phillip Clay Thesis Supervisor

Accepted by Professor Tunney Lee Head M.C.P. Committee
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>3</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>4</td>
</tr>
<tr>
<td>THE OCCUPATIONAL HEALTH PROGRAM'S STRATEGIC</td>
<td>20</td>
</tr>
<tr>
<td>PLANNING PROCESS</td>
<td></td>
</tr>
<tr>
<td>AN OCCUPATIONAL HEALTH PROGRAM MODEL</td>
<td>45</td>
</tr>
<tr>
<td>CONCLUSION</td>
<td>60</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>69</td>
</tr>
</tbody>
</table>
The Development and Implementation of An
Occupational Health Program Within A Health
Maintenance Organization via The Occupational
Health Program's Strategic Planning Process

by
RINGO MICHAEL WOOD

Submitted to the Department of Urban Studies and Planning
on September 7, 1982 in partial fulfillment of
the requirements for the Degree of Master of
City Planning in Urban Studies and Planning

ABSTRACT

The delivery of comprehensive occupational health services by
a prepaid group practice health maintenance organization is
proposed as an effective means of meeting the occupational
health and safety needs of the employee and the workplace.

Due to the variety of occupational hazards, illnesses, and
diseases concerning the employee and the workplace, the
development and the implementation of an occupational health
program requires a careful assessment of the needs, resources,
and constraints associated with the program.

A study methodology applicable to a prepaid group practice HMO
is presented. This methodology is the strategic planning pro-
cess. This method includes an analysis of environmental,
input, process, and output factors in order to draw conclu-
sions about program feasibility.

This study methodology will aid prepaid group practice HMOs
in the development of occupational health programs.
INTRODUCTION

An HMO-Sponsored Occupational Health Program: Working In Conjunction With Legislation

The purpose of this thesis is to provide a prepaid group practice health maintenance organization (HMO) with a blueprint for the formulation of an HMO sponsored occupational health program. It is important to stress that due to the fact that this thesis is not a study of a particular service area, it will not deal with specific service area occupational health issues but rather provide the HMO with a framework for the implementation of an occupational health program via the use of an occupational health program strategic planning model. This model could be used by any prepaid group practice health maintenance organization.

There are several factors within this thesis that are to be considered in terms of the use of health maintenance organizations as the vehicle for the implementation of an occupational health program. The first factor has to do with the fact that my client, Blue Cross of Massachusetts, is very concerned with the possibility of using their health maintenance organizations as possible vehicles for the development and implementation of occupational health programs. Secondly, while nationwide, HMOs only currently serve 3% of the U.S. population, they are projected to serve over 9% of the population by 1988. Geographically, HMOs are found in many urban areas where private sector industry is located.

While the number of individuals enrolled in HMOs may not appear to be of a sufficient magnitude for the implementation of
occupational health programs within HMOs, there are two other important observations that have to be made when considering the use of an HMO over other health care delivery organizations. First, HMOs serve a predominantly work force population in comparison to other health care delivery institutions; secondly, HMOs have ready access to the larger working community through their current marketing programs. These features indicate that HMOs have great potential for servicing large numbers of workers within manufacturing firms.

The prepaid group practice HMO offers several distinct advantages as a community base for the delivery of occupational health services to industry. With the HMO's access to the business community through their experience in marketing prepaid personal health care to employers and employees, HMOs could reach industry based target populations for occupational health services more readily than other organizations such as hospitals and other fee-for-services institutions. The HMO concept and the discipline of occupational health share the common goal of prevention. In other words, both are concerned with identifying and investigating the conditions that may lead to occupational injury, disease and hazards. The HMO that adds an occupational health program increases its capability to prevent, diagnose, and treat health problems via the HMO's cooperation with other occupational health agencies in performing research to better understand the relationship between the workplace and occupational injury and disease.

In light of the advantages of offering an HMO sponsored occupational health program, there is a principle barrier. The
principle barrier is uncertainty which translates into financial risk.\textsuperscript{5} Due to the variability in the demand and special requirements for different service areas, a formulated body of knowledge to draw upon to plan and forecast demand does not exist.\textsuperscript{6} Predicting long term financial viability under these circumstances is difficult at best as is the program's effect on HMO enrollment rates (positive, neutral or negative). Substantial capital investment would be required given the current shortage and demand for occupational health professionals and the cost of equipment required for biological and environmental measurements. Many HMOs may not be able to meet these capital requirements.

When the HMO is considering the implementation of an occupational health program, it would have to view the benefits as well as the challenges of planning an HMO occupational health program. HMOs represent an excellent opportunity for the expansion of occupational health services to industry, should information and financial constraints be relaxed.

This thesis presents an occupational health program planning methodology which will hopefully aid a prepaid group practice health maintenance organization in overcoming the information barrier to developing a program. This, in turn, will hopefully decrease the financial risk which could serve to be a major disadvantage to the development of HMO occupational health programs in pre-paid practices.

Occupational health programs within a prepaid group practice health maintenance organization in conjunction with government regulations, can be effective in the prevention of occupational
diseases, injuries, and hazards within manufacturing firms. More specifically, occupational health programs within HMOs implemented via an occupational health program's strategic planning process can potentially achieve the following: (1) produce a healthier work population and provide a safer workplace and (2) provide economic benefits to the manufacturing industry.

Within the context of this thesis, an occupational disease is a disease arising out of, and in the course of, employment - resulting from the exposure to, the absorption of, or intoxication from harmful chemical, microbiologic, or physical agents to which the general public would not normally be exposed. An occupational injury is an injury arising out of, and in the course of, employment - resulting from the action of physically or chemically traumatizing agents at the workplace. An occupational hazard is a chemical or physical factor from the workplace which may cause sickness, impaired health and significant discomfort among workers. Occupational injury and disease deals with the individual. Occupation hazards deals with the workplace.

Occupational health problems in America have recently come to the forefront of our health consciousness. By now the figures are well-known to those familiar with the area of occupational health: 100,000 people die each year from occupationally-related diseases and approximately $400,000 new cases of occupational diseases occur annually. It is estimated that 25 million more work-related injuries and deaths due to physical hazards and toxic chemicals go uncounted each year, either through negligence or industrial suppression.
Another reason why occupational diseases go uncounted each year has to do with the nature of diseases within the workplace. Only accidents or extreme exposures to noise, toxic substances, or physical hazards result in acute and easily identified illnesses. But most workers are exposed to low levels of these insults, which may be just as deadly in the long run, though less apparent in the short run. Low-level insults cause chronic illnesses. The onset of these illnesses are often unnoticed. The diseases themselves, such as lung cancer and heart disease, are attributed to non-occupational causes by industry and the medical profession. They therefore go unrecognized, uncounted, and uncompensated.

If present trends continue, it is almost certain that conditions will get worse rather than better. For instance, fifteen thousand chemical agents are already in use within the manufacturing industry. With expanding technology more than 3,000 new chemicals are introduced each year. The introduction of new chemicals is not accompanied by occupational health and safety programs that ensure their safe use. It is important that action be taken to research, diagnose, treat - and eventually prevent the occupational diseases and injuries that could result from new chemicals.

While the knowledge of work-related diseases has increased substantially over the past decade due to the advancements in scientific knowledge, there is no data that supports any claim that occupational disease is solely related to the work environment. However, there is great concern about the following diseases and their relationship to the work environment.
They are heart disease, stress, respiratory ailments, neuroses, and cancer.

While most of our time, energy, and funds have been spent exploring the relationship between heart disease and diet, exercise, smoking, and serum cholesterol, a report released by HEW seems to contradict the major thrust of our efforts to combat heart disease. Entitled *Work in America*, the report states:

Research fundings suggest that(diet, exercise, smoking, medical care and genetic factors) may account for only 25% of the risk factors in heart disease. That is, if cholesterol, blood pressure, smoking, glucose level, serum uric acid, and so forth were perfectly controlled, only about one-fourth of coronary disease could be controlled. Although research on the problem has not lead to conclusive answers, it appears that the work role, work conditions, and other social factors may contribute heavily to the "unexplained" 75% risk factors.\(^{17}\)

A number of areas within the work environment may help to explain the 75% "unexplained" risk factors. Research has found that occupational stress increases the susceptibility of workers to a wide range of health problems and diseases, such as angina respiratory ailments and neurosis.\(^{18}\) Research has also found that stress interacts with noxious environmental agents in the workplace to increase the susceptibility of neurosis.\(^{19}\) Other areas within manufacturing firms may also increase the risk of heart
disease through stress. Many forms of anxiety neurosis are related to difficulties encountered at the start of employment, while certain phobias may be related to work or the circumstances in which it is performed (fear of machines, bosses, or occupational injuries previously experienced by other employees). Noise a recognized problem in many workplaces produces stressful reactions in the body. Speed-up of production lines, monotonous jobs and the threat of unemployment induce stress leading to heart disease.

Cancer is one of the leading causes of death in the country. The incidence of cancer has risen dramatically in this century. Whereas in 1900 cancer accounted for 3.7% of all deaths, 19.3% are now attributable to cancer. The idea that 70 percent to 90 percent of all cancers are environmentally caused is gaining more credence as the evidence from epidemiological studies continues to accumulate. Most of the carcinogens that cause human cancer are products of industrial activity: asbestos is mined, benzene is refined from petroleum and aromatic amines are synthesized in the chemical industry. Thus the workers in these industries are at higher risk than the general population.

An HEW study reported findings that at least 20% of all cancer cases are work-related. This information is based on estimates of those workplace chemicals known to cause cancer. Although our knowledge of industrial carcinogens is increasing, there are many industrial carcinogens still unidentified, so figures based on known workplace carcinogens will underestimate the carcinogenic hazards of industrial chemicals.
The affect of occupational accidents has had a tremendous affect upon the amount of money lost within manufacturing.

The statistics have shown that 11.39 billion dollars in earnings have been lost by manufacturing firms due to occupational accidents. These statistics only begin to depict the negative picture of occupational accidents within the manufacturing industry. The majority of these accidents could have been prevented if steps had been taken to educate both employers and employees and to implement preventive strategies.

There are two major reasons for the scarcity of preventive occupational health programs within many firms. They are as follows: (1) occupational health and safety has been an obscure area within the medical arena and (2) legislative attempts to combat occupational injury as well as disease have not been very effective due to political, legal, and industrial impediments.

One of the most important obligations of the scientific and public health community is the continuous improvement of the educational level of physicians regarding occupational problems. Unfortunately, the occupational health and safety crisis has basically remained an obscure area to the medical establishment. Very few medical schools in the country offer occupational medicine as a specialty. In the practice of medicine, the workplace is rarely seen as a primary source of many diseases.

The past obscurity and the present emergence of occupational health as a discipline can be traced in part to the long latency period for most cancers. The use of carcinogenic materials such
asbestos, synthetic products, petrochemical products and uranium has increased dramatically since World War II. The latency period for cancer can vary from a few years to 30 or 40 years for some asbestos-induced cancers, therefore medicine is only beginning to see the harmful effects of work-related diseases.31

Within the past two decades due to the increasing awareness of occupationally-related diseases, various changes have occurred in an attempt to create an atmosphere in which occupational health and safety are priorities. The major changes in occupational health and safety have been legislative.

The two most important pieces of legislation have been the Occupational Safety and Health Act of 1970 and the Toxic Substances Control Act of 1976. The Occupational Safety and Health Act (OSHA) was the first attempt to establish a national policy for overall conditions in the workplace. The preamble of the Act states the basic goals:

To assure safe and healthful working conditions for working men and women, by authorizing enforcement to the standards developed under the Act; by assisting and encouraging the States in their efforts to assure safe and healthful working conditions; by providing for research, information, education and training in the field of occupational health and safety; and for the other purposes.

The Act is designed to provide workers with a general blanket of protection from setting "safe" levels for toxins, to protection against employer discrimination for reporting health and safety
violations, as well as penalizing employers for violating health and safety standards.\textsuperscript{33}

However, various court decisions, such as Continental Can Co. vs the Secretary of Labor, have determined that OSHA cannot concern itself only with health and safety, but must adhere to what is "economically and technologically feasible".\textsuperscript{34} In October, 1978, the Fifth Circuit Court struck down OSHA's proposed benzene standard on the grounds that the health benefits of a lower standard were not qualified.\textsuperscript{35} With the Court's decision came the determination that OSHA will have to qualify both costs and benefits for any proposed standard.\textsuperscript{36} This severely weakens OSHA because the long-term effects of many toxins are unknown for many years after exposure.

Politically, a vivid example of the resistance that has weakened OSHA is the court decision in April, 1978 that stipulated OSHA inspectors must have a search warrant to enter a workplace.\textsuperscript{37} This allows companies extra days or weeks in advance notice to cover up hazardous conditions.

In essence, OSHA's potential has been clamped through major political groups and legal decisions. Research has found that not only were major political groups against the implementation of the OSHA. Industry, itself, was also very responsible for the weakening of the OSHA. Industry's resistance stemmed from the following: (1) industry's fear of profit reduction due to the cost of implementing educational programs, new procedures, and variable amounts of time and paperwork; (2) many small and medium size firms had to seek outside toxicological and otological
consultant assistance which was often not available; and (3) the complexities of OSHA regulations led to many challenges and legal battles which were time-consuming and costly.  

However, due to the increasing number of occupational-related diseases and injury as well as the rising cost of fee for service health care and medical insurance to industry, manufacturing companies are beginning to reconsider their initial thoughts toward occupational health. This is primarily due to the fact that it is less costly for a firm to offer preventive occupational health services as opposed to paying the increasing cost of medical care and insurance programs. Industry is beginning to become more committed to offering comprehensive occupational health programs to its employees.

The Toxic Substance Control Act of 1976 (TSCA) is a significant piece of legislation for a number of reasons. It has the mandate to deal with potential toxins before they reach consumers. Section 6-A of the Act gives the Environmental and Protection Agency (EPA) Administrator the power to ban or restrict production of any chemical which is deemed an "unreasonable risk". The power to ban is an authority which is not granted to OSHA. Section 4 of TSCA states that they can require an industry to test their products for harmful environmental or occupational effects before marketing. In the OSHA, the burden of testing a product is on the regulators, not the industry. A final important distinction between OSHA and TOSCA is that OSHA must set standards according to what is economically and technologically feasible, while TOSCA is mandated to always tip the scales in favor of protection from
environmental hazards. Although TOSCA is designed to be a powerful piece of legislation, in many ways it is a quixotic quest to stem the burgeoning flood of chemicals into our society. Thousands of new chemicals are developed yearly, while the EPA does not have the time or resources to adequately test every chemical.

Within the occupational setting itself, legislation could be augmented by occupational health services designed to reduce the incidence of work-related disease, injury, and hazards through a combination of preventive medicine, occupational hygiene, research and employee-employer education seminars on hazards.

The exploding costs of health care have forced individuals and industry to search for ways to reduce the amount of money spent on health care. Industry alone spent $35 billion in 1977 as either a consumer, provider or purchaser of health care. Combined with the efforts to cut costs has been the growing realization that work conditions are a major factor to the employee's health. This has lead to a search for different means of providing preventive medicine to workers either in the workplace or in a community-based institution. There have been intermittent attempts at health education in the workplace, both for industrial safety and implementing "positive lifestyle changes". However, the institution that is gaining the most support by industry towards the establishment of an occupational health service is a Health Maintenance Organization.

The integration of occupational health services into a health maintenance organization would seem to make sense for a number of reasons. Purportedly the emphasis of both is on prevention. And
with more medical dollars bringing less returns to industry, a
greater amount of attention is being paid to preventative measures.

For example, HMOs have been proven to substantially reduce
the hospitalization rate from over 1,000 days per 1,000 employees
to around 500 days per 1,000 employees with a potential savings
of more than $15 million per year without sacrificing the quality
of care. This is due to the fact that HMOs stress prevention
which means less hospitalization when compared to fee for service
facilities.

In conclusion, the prepaid group practice HMO sponsored
occupational health program can potentially produce a healthier
work population due to its emphasis on preventive care as well as
the other advantages mentioned earlier in this chapter. The
economic benefits to the manufacturing industry is that with an
emphasis on prevention, there is decreased hospital utilization
as well as reductions in productivity losses due to employee ill-
ness. This substantially decreases the cost of health care to
industry while still providing comprehensive quality health care
to employees.

Chapter two will deal with the mechanism by which an HMO
would implement its occupational health services in order to
provide comprehensive quality care to employees as well as eco-
nomic benefits to employers within manufacturing. This mechanism
is referred to as the occupational health program's strategic
planning process.
CHAPTER ONE - FOOTNOTES


2. Ibid., p. 2.

3. Ibid., p. 2.


6. Ibid., p. 94.


8. Ibid., pp. 3-4.


13. Ibid., p. 3.


20. Ibid., p.196.


22. Ibid., p.17.


25. Ibid., p.450.


30. Ibid., p.21.

31. Ibid., p.21.


33. Ibid., p.2.

35. James S. House, Occupational Stress and Health Among Factory Workers, p.100.

36. Ibid., p.100.

37. Ibid., p.100.

38. Richard H. Egdahl, Background Papers on Industry's Changing Role in Health Care Delivery, pp.31-34.


40. George D. Clayton, Patty's Industrial Hygiene and Toxicology, p.1475.

41. Ibid., p.1476.

42. Ibid., p.1475.


Chapter Two

The Occupational Health Program's Strategic Planning Process

As far as dealing with the prevention and control of occupational illnesses and disease, the HMO-sponsored occupational program should consist of two major components. One component of the occupational health program would primarily affect the workplace such as changing work practices; installation of engineering controls and devices; and the substitution of hazardous substances with a non-hazardous one. The other component would primarily affect the worker such as educating and advising the worker concerning work hazards as well as the use of personal protective equipment; and the medical screening for early detection and management of occupational illnesses and diseases via the use of the individual's occupational history.

Due to the vast variety of occupational hazards, illnesses, and diseases concerning the worker and the workplace, the development of an HMO occupational health program would require an assessment of the needs, resources, and constraints associated with the development and implementation of a program for a service area or region that has been designated to receive occupational health services. It is the strategic planning component of an HMO that would be
used as far as the assessment of the needs, resources, and constraints in terms of developing an occupational health program. This chapter will focus on an HMO sponsored occupational health program with respect to its strategic planning process as well as some of the additional planning and objective setting issues. As in Chapter One, it will also be important to further examine some of the potential problems or issues that the program would have to consider.

In general, as far as dealing with the potential occupational problems of the worker, the HMO's responsibilities or objectives would be as follows:

- **Recognition, Diagnosis, and Management.** To detect cases of environmentally related diseases and injury, and for each case to take appropriate historical information to identify possibly related environmental factors, make the correct diagnosis, and treat the individual appropriately.

- **Prevention.** To take appropriate measures to prevent recurrent episodes of occupationally related diseases and injuries among workers via the use of occupational histories.

- **Education.** To inform employers, employees and other occupational health professionals about
occupationally related diseases and injuries that may be prevalent among certain industries or individuals of a certain age, sex, or other characteristics. The employer and employee would also be educated on the different types of occupational hazards that might be prevalent at their worksite and how to effectively deal with them via industrial hygiene.

- Research. To perform and cooperate with other occupational health professionals in performing research to better understand the relationship between a plant, and human disease and injury. It is hoped that through this research, methods could be developed in preventing such diseases and injury.

As far as dealing with the potential occupational problems of the workplace, the HMO's responsibilities, in general, would be as follows:

- Reducing or eliminating worker exposure to various chemical and physical stresses encountered within the manufacturing plant. In carrying out this function, the industrial hygienist alerts the plant managers to potential environmental hazards, measures the level of danger in
terms of each hazard, recommends proper engineering controls, and periodically monitors the plant.\textsuperscript{5}

It should be stressed that the way in which the HMO would deal with the occupational problems of the worker and workplace would vary, and different situations would require different forms of recognition, diagnosis, treatment, prevention, education, evaluations and control. This would require the physician and industrial hygienist to have a thorough knowledge of past as well as current research being done in the different areas of occupational health and safety problems in order to eradicate various types of occupational hazards, diseases, and illnesses.

In order to effectively determine the ingredients necessary for a successful HMO sponsored occupational program for a particular industry or service area, the HMO would have to employ a planning methodology which would allow them to assess the needs, resources, and constraints associated with the development of a program which would meet the occupational health and safety needs of employees and the worksite. This planning methodology is referred to as the occupational health program's strategic planning process. This process consists of the following components:\textsuperscript{6}

- Environmental factors
- Input factors
- Process factors
- Output factors

The environmental factors for an HMO occupational health program would consist of the following: market demands or requirements, financial risk factors, congruence with OSHA, congruence with the requirements of a prepaid group practice HMO and legal issues. Environmental factors have an important impact upon the other three factors simultaneously. Input factors consist of manpower and capital resources. The input factors have a direct affect upon the process factors. Process factors consist of preplacement examinations and/or screening; periodic health appraisals; industrial hygiene component; outside relationships and research; and education. These five factors have a direct impact upon the output factors of the planning process.

Environmental Factors

In order to develop an effective occupational health strategic plan for the implementation of an HMO sponsored occupational health program, the HMO has to know what forces in the environment must be taken into consideration. These forces are market demand or requirements, financial risk factors, congruence with the requirements of a prepaid group practice HMO, and congruence with the requirements of OSHA and legal issues.
Estimates of the program's growth are based on these factors. The HMO is concerned with not only affect of the program on its current market size, but also in tomorrow's market growth. The forecasting of environmental trends of a particular service area necessitates primarily judgement based on several indicators and will be referred to here as strategic forecasting.\(^7\)

It should be stressed that due to the judgemental factor involved in strategic forecasting, the HMO may possibly receive an enrollment level below that projected for the start of the occupational health program's operations. The reduced enrollment levels due to unforeseen factors within strategic forecasting may cause serious problems to the HMO since expected revenue, capital and manpower factors, and eventual outcomes were partially based on higher enrollment projections.

Problems could also result from underestimations in terms of enrollment within the HMO's occupational health program. If the HMO underestimated its enrollment level, the HMO could possibly find itself unable to deal with the market demand or the demand from industry for certain occupational health programs. This, in turn, would also put the HMO at a disadvantage as far as being able to meet market requirements or the ability to provide the specific
occupational health and safety needs of individual manufacturing companies or service areas.

Inspite of the potential problems with strategic forecasting, it is still a necessary process through which the HMO would attempt to predict the key elements which would help shape the environmental factors. Within the context of market demands or requirements, the HMO would be primarily concerned with the forecasting of occupational and industrial trends within a specified service area, the average number of employees employed by companies within a specified service area, as well as the most prevalent type(s) of occupational diseases, injuries, and hazards within certain types of industries. Several examples from the State of Massachusetts will be used to illustrate the relevance of the above points.

For example, according to research done by the Massachusetts Division of Employment Security on industrial trends (1976-1985), the Massachusetts economy is and will continue to be dominated by the manufacturing industry. By 1985, it has been predicted that 2 out of every 3 manufacturing workers will be employed in durable goods industries due to the increase
of high technology firms.\textsuperscript{10}

It has also been discovered by the Massachusetts Division of Employment Security on occupational trends (1976-1985), that blue collar occupations will account for both a greater share of employment and a larger number of job openings.\textsuperscript{11} However, it is also important to note that there is a strong rise in the number of job opportunities within white collar occupations.\textsuperscript{12}

Research has also indicated that the most prevalent type of occupational injury within the State of Massachusetts has been within manufacturing where machine operators have mostly endured sprains.\textsuperscript{13} These sprains have taken place within their backs or fingers.\textsuperscript{14}

And finally, to illustrate an example of the average number of employees within a particular service area, research has found that the majority of manufacturing plants within Massachusetts employs below 50 people.\textsuperscript{15}

All of these environmental factors are important to the HMO as far as determining whether or not to have an occupational health program; the types of preventive services to render; the types of industries and occupations that the program would cater to; and finally, the space and equipment that would be needed. These factors are key to the process of determining the market demand or re-
quirements for an HMO sponsored occupational health program.

When we look at the above environmental factors in conjunction with the four illustrations, the HMO sponsored occupational health program would have to consider that their potential current market would primarily consist of manufacturing industries with fewer than 50 employees, blue collar workers, and manufacturing companies whose employees have a high incidence of back and finger sprains. However, in order to be able to effectively serve the future needs of a particular service area having the aforementioned characteristics, the HMO would have to also consider the possibility of implementing occupational health services for white collar workers within high technology firms. If the occupational health problems of white collar workers differ from blue collar workers, then the HMO's strategy would once again have to consider the types of preventive services to be rendered; the types of occupations and industries that the health maintenance program would cater to; and finally the additional personnel, space and equipment that might be needed by the HMO in order to serve white collar workers within the technology firms.

For example, among white collar workers is the prevalence of psychological stress and anxiety, therefore, there
would be a need for the HMO's occupational health program to offer more counseling services along with the occupational injury services being rendered to manufacturing companies.

The second major component within the environmental component of the occupational health strategic plan has to do with the HMO's financial risk factor. In order for the occupational health program to add to the financial security of the HMO, the HMO will have to make continuous budget projections. This is due to the fact that within the occupational health strategic plan, there is a certain amount of judgement within the process. As mentioned earlier, this can cause certain problems as far as determining the expected revenue in order to pay for the operation of this program within the HMO.

The adjustments within the HMO's planning process will be based on actual experience, compared with anticipated original budgets. Analysis will include enrollment, including the potential number of enrollees from a particular area, age, average plant size; rates of rendering service, or productivity; and total cost.

In each area overstated and understated projections will have to constantly be reviewed by the HMO, and assumptions on which the projections were made altered for future projections.
One of the most important tasks of the HMO is to project when the occupational health program's income will equal its expenses—in short, to determine the break-even point. From this projection will flow a number of decisions, including the size of the deficit that must be financed by the HMO and the timing as far as the HMO securing those funds needed to pay for the occupational health program's deficit. This projection will also determine whether or not it is financially feasible for the HMO to implement such a program.

If the financial risk factors involved in the occupational health's strategic planning process are not carefully planned, there is the possibility of the HMO running into serious financial trouble which would not only affect the successful operation of the occupational health program, but would also affect the financial stability of the entire HMO.

The HMO's occupational health program's operating expenses and revenues are related directly, on a per plant, per month basis, to the service area being served. Per plant, per month cost is the amount of money required to provide a given range of occupational health services to an enrolled plant for a month. Under typical prepaid group practice arrangements, a plant periodically
pays a predetermined amount, called a premium, to cover the cost of all of the services covered by the occupational health program. In order for the HMO to develop its per plant, per month cost in terms of developing its premium rates, the HMO via its determination of market demands or requirements by either using a survey or direct contact with plant managers would do the following:

1. Determine the membership level to be served.
2. Determine the benefits that the program will provide.
3. Convert these assumptions into an expense budget.
4. Convert the expense budget to a per plant, per month cost.

Again, the HMO would have to be careful as far as determining the interest of plants, within a specified service area, with regard to the participation within the program. This could present a potential problem since projected utilization and expected penetration are major detriments of the program's revenue. Once again, the program's revenue is a major consideration as far as deciding whether or not to implement the program; determining the size of the deficit that must be financed and the timing with regards to the HMO securing those funds needed to pay for the
occupational health program's deficit; and finally, determining the availability of resources such as manpower, equipment, and capital. Along with the problems of under-enrollment and excess enrollment projections are three other financial risk criteria. They are plantsize and hospital utilization which may potentially impede the implementation of an occupational program as well as endanger the financial stability of the HMO.

Premiums are based on expectations of averaged size of plants enrolling within the program. At any time, actual plants enrolled may vary from the expectation. It would be the responsibility of the program to gear its enrollment efforts to maintain a balance. If, for example, a high proportion of plants with a large number of employees are enrolled, the enrollment efforts of the HMO should thereafter emphasize enrolling plants with a smaller number of employees in order to bring the average size of the plants to projected levels.

If the HMO sponsoring the occupational health program has an agreement with a hospital for inpatient services, the HMO runs into added financial risk. If the hospital utilization of a particular HMO exceeds earlier projections, the HMO will have to pay the extra high cost of hospitalization. However, if the hospitalization utilization of the
HMO fall short of the projected rate, the HMO will experience savings.

The fourth major issue concerning the environmental factors of an occupational health program's strategic plan has to do with the program's congruence with OSHA standards. One of the major purposes of this document is to work with the support of already existing legislation as far as addressing the occupation health care concerns of this country. The HMO could possibly run into serious legal trouble if it violated the statues under the Occupational Safety and Health Act.

The fifth major component within the environmental component of the occupational health program's strategic planning model involves the occupational health program conforming to the definition of a prepaid group practice HMO. In order for the program to fit within a preventive, prepaid group practice HMO, it has to consist of the following basic characteristics:

1. An organized health care delivery system capable of providing or arranging ambulatory, emergency, and preventive medical services.
2. Voluntarily enroll plants who have chosen to contract with the occupational health program within the HMO.
3. A financial plan that guarantees the delivery of services on a prenegotiated and prepaid basis.

4. An organization and staff that can accept responsibility for delivering comprehensive health care to enrolled plants.

The sixth major component within the environmental factor component of the program's strategic plan has to do with the potential legal issues surrounding the HMO's intentions of implementing an occupational health program.

Program decisions based on inaccurate or inadequate legal advice may, if not corrected, lead to delayed program development, financial losses, reduced participation by occupational health professionals and subscribers, and cumbersome organizational structure.

It is important that the HMO, before implementing an occupational health program, review state laws concerning occupational health and safety and regulatory-agency rulings such as OSHA before moving ahead with program development.

Input Factors

Input factors within the occupational health program's strategic planning model refers to human and capital resources that the HMO must have in order to carry out the process factors of the occupational program. Due to the
fact that the input factors are important to the process factors and eventual output factors of the occupational health program, its important that the HMO does a thorough investigation into each component of the environmental factors section. This is especially true for market requirements or demands as well as the financial criteria discussed earlier within this chapter. If these three components of the environmental factor section are not adequately determined, the manpower and capital resources cannot be properly supplied in order to meet the needs of plants within a specified service area.

In order to determine the input factors that should be considered within the occupational health program's strategic planning model, the following issues would have to be addressed: 1) manpower and 2) the basic capital resources that are necessary for the operation of an occupational health program in order to address the problems of the individual and plant. It should be stressed that the amount and type of manpower and capital resources would vary depending on the prevalent occupational health and safety problems, the size of the service area as well as the average number of people to be potentially served during any particular month. It is also important that the HMO be fully aware of the circumstances surrounding the
other environmental factors mentioned in the previous section.

It is also important to stress that the types of services rendered by the HMO's occupational health personnel would also vary depending on the types of occupational health and safety issues which are prevalent within a certain plant or service area.

**Manpower**

The HMO's occupational physician would be concerned with two major basic issues; they are the effect of health on work and the effect of work on health. As far as dealing with the first issue, the occupational physician would be concerned with advising employees on all health matters relating to their working capacity; examination of applicants for employment and advice to their placement; immediate treatment of medical and surgical emergencies occurring at the place of employment and, examinations and continued observation of persons returning to work after absence due to illness or accidents and advice on suitable work.

The issues that the occupational physician would have to address as far as the effect of work on health are: the responsibility for nursing and first aid services; the study of the work and working environment of individual
plants and their effect on the health of employees; periodi
bic examinations of persons exposed to special hazards
in respect of their employment; advice to management re
garding the working environment in violation to health,
occurrence and significance of hazards, accident prevention
statutory requirements in relation to health; and finally,
the arranging and carrying out of such educational work in
respect of the health fitness and hygiene of the employees
as may be desirable and practiced.

The second major person concerning the input factor
is the occupational hygienists. The occupational hygienist
is concerned with the measurement, evaluation and control
of health risk in the working environment. The hygienist has
to utilize knowledge from the fields of chemistry and
physics, toxicology and applied physiology and engineering
(particularly industrial ventilation)\textsuperscript{19} Some hygienists
specialize in one particular field, not necessarily re-
stricted to occupational environments, e.g. acoustic en-
gineers, healthy physicists (dealing mainly with ionizing
radiation), or aerosol scientists.\textsuperscript{20}

This person has the task of being supportive in assist-
ing plant management in identifying problems of environmen-
tal exposure and seeking the appropriate company/group for
solutions. However, if management is reluctant to assisting
the hygienists as well as any other occupational health
personnel from the HMO, his/her effectiveness as far as resolving occupational health issues can be very limited.

The hygienists would be concerned with the physical design of plants, processes and equipment being used by plant personnel in relationship to the particular occupational health risk unique to a particular plant; safety training for management and workers; investigation of accidents; and generally the advancement of all aspects of accident prevention depending upon the hygienists assessment of workplace hazards at each individual plant. 21

The third major person of the HMO's occupational health program is the occupational health nurse. The occupational nurse would be responsible for the following: 1) Routine visits to and surveys of the working environment with an occupational hygienists and informing as necessary the appropriate medical expert when a particular problem requires further specialized investigation, and medical treatment as distinct from nursing assessment; 2) health education activities in relation to groups of workers; 3) the control and safe-keeping on personal health records of each person enrolled within the occupational health program; and 4) the organization of emergency service.
In order to carry out the goals of the HMO's occupational health program, the occupational physician, hygienist and nurse must make an assessment of specific capital resources such as equipment. The type of equipment used by the HMO has to be defined by the type of plant and occupational health and hazard problem that a particular plant is experiencing. It is therefore crucial that the HMO make a careful assessment of a plant or particular service area's market demands or requirements in order to determine what is actually needed. The HMO would also have to be certain that the program's equipment comply with OSHA standards.

The basic diagnostic and treatment instruments and materials are not too different from those used in standard hospitals and physicians' offices.

From the following list of medical material, the occupational health program can select the following instruments: audiometer; curettes, ear, blunt; dynamometer; electrocardiograph, direct-recording; examination table with pad; flashlight or other light source; gloves, rubber or disposable; headband and mirror, and light source of headlight; laryngeal mirror; magnifying light; percussion hammer; proctosigmoidoscope; scale with height measuring rod; skin marking pencil; specula, ear; specula, rectal; specula, vaginal; speculum, nasal; thermometers; and a vision
screening instruments. Other equipment will be needed as the program's patient volume increases or the program is extended to meet new needs. It is for this reason that the HMO's occupational health staff has to make periodic examinations of their health records and plant inspections in order to be abreast of changing needs within industry in terms of occupational health and safety.

Physiotherapy devices for occupational hygiene can be found within a variety of sources such as standard industrial hygiene and toxicology books. The type of device used by the hygienist is determined by the specific problem at a particular plant. As with occupational health, it is crucial that plant safety inspections be done thoroughly and periodically in order to assure that the proper method of treatment is being applied.

One of the major issues that the HMO has to be aware of is the fact that there are many areas within occupational health and hygiene that medical and scientific investigators are still exploring. It is due to the occupational health personnel's lack of understanding of the relationship between some forms of employee illnesses and disease and the workplace that the HMO's must be constantly involved in medical and scientific research in order to de-
termine if their occupational health and hygiene methods are reducing occupational illness and disease within all areas of industry.

**Process Factors**

In determining the occupational health program's strategic plan, a close examination of the program's activities are in order. The activities of a fully developed HMO sponsored occupational health program are:

1. Preplacement examinations and/or screening.
2. Periodic health and industrial hygiene appraisals.
3. Occupational hygiene.
4. Education
5. Performing research and maintaining outside relationships.

Each of these components within the process factor of the program's strategic plan will be discussed in further detail within Chapter Three.

**Output Factors**

Research has shown that an occupational health program aimed at preventive care has decreased hospitalization. Industry has saved millions of dollars due to the lower usage
of high cost hospitalization.\textsuperscript{24}

Evidence has also shown that as a result of preventive measures, people tend to have healthier lives and safer work conditions due to the fact that preventive care stresses the importance of seeking medical and occupational hygiene attention before a suspected occupation health problem or hazard becomes worse.

It is primarily due to the program's stress on preventive measures, its objectives, as well as the advantages of using an HMO that I feel it can potentially accomplish the following:

1. Produce a healthier work population and safer work conditions.

2. Provide economic savings to industry.

The accomplishment of the output factors depends on how well the HMO has assessed the issues, needs, resources, and constraints involved within the environmental, input, and process factor sections with the occupational health program's strategic planning process.
CHAPTER TWO - FOOTNOTES


2. Ibid., p.38.


4. Ibid., p.40.


9. Ibid., p.5.

10. Ibid., p.5.

11. Ibid., p.23.

12. Ibid., p.20.


14. Ibid., p.3.


20. Ibid., p.5.


24. Ibid., p.10.
Chapter Three

An Occupational Health Program Model

As an illustration of the previous points of Chapter 2, I shall now present a hypothetical model for a prepaid group practice HMO occupational health program.

Within the context of this thesis, the occupational health program is a service offered by the HMO which would specifically deal with occupationally related injuries and diseases of the worker and worksite. The program's services would be offered to industry as a separate set of rendered services, however, would not be coming from a separate unit or department. In order to receive the services, the individual plant or company would contract to pay the HMO a monthly premium for the HMO's occupational health services over a certain period of time. Each individual within the enrolled plant or company would then have the option to receive the occupational health services if desired. The major disadvantage that the individual plant or company would have to consider is low utilization rates. If the plant or company's prediction of utilization by its employees is lower than projected, the plant or company may possibly incur a financial loss due to the fact that the premium paid to the HMO was based on the assumption that a higher number of the plant's employees would be using the HMO's occupational health services. After the contract expired, the plant or company would probably find it more advantageous to leave the program.

This, in turn, could possibly cause problems for the HMO. This is especially true in the case where many of the plants were discovering within a particular HMO's service area that they too were experiencing low utilization rates. If a substan-
tial number of plants decided to leave the HMO's program after the contract's expiration, this could cause the HMO to experience underenrollment.

As I discussed earlier, when the HMO's enrollment of plants within the program fail to reach a projected level, deficits could result. This could cause the financial collapse of the HMO's occupational health program or even the HMO if deficits go beyond a level which could be handled by the HMO. It is important that within the initial stages of negotiations, the HMO and plant management work closely together in terms of surveying the employees in order to help plant management determine whether or not his employees would be willing to enroll within the HMO's program.

Even with the method of using an employee survey, whether it be via employee interviews with management or responding to written survey questions, there is still the possibility that a substantial number of employees may decide not to utilize the services offered by the program. This could be regardless of whether or not they initially indicated that they would use the program's services. The HMO would have to take this factor into serious consideration within the environment factor component of the occupational health program's strategic planning process as far as determining the potential market demand.

The occupational health program would fit within the preventive framework of a prepaid group practice HMO for the following reasons: (1) the enrolled plants within the occupational
health program would receive the services as a member of the program; (2) the physicians within this program would be salaried; (3) the services would be provided by this program on a prepaid versus fee-for-service basis; (4) the care provided by this program would focus on prevention and early detection of occupation injuries, diseases and hazards; (5) due to the high cost of hospitalization as well as the concern for cost conservation because of the HMO's fixed budget, emphasis is placed on preventive and ambulatory care rather than hospitalization; (6) the program would be provided on a 24-hour basis as well as being long-term and aimed at continuously monitoring, maintaining and improving each enrollee's health and work environment; (7) all services for all employees are covered within the premium that each enrolled company would pay to the HMO; and finally, (8) there would be a periodic employee utilization review in order to assist the occupational health program to assess its past financial performance as well as to plan for the future.

Entry for each individual of the enrolled company into the occupational health program means registering with the HMO and having an initial health assessment made. Several things would happen at this time. The individual would fill out an occupational history questionnaire, indicate where past medical records can be sought, and learns how to use the program as well as what routines will be used to provide care.

On the basis of the occupational history of the individual employee, the individual's health is assessed. Once long-term, chronic, or potential problems have been identified and analyzed,
specific medical treatment routines for each individual are mapped out by the HMO.

Comprehensive care is not possible without follow-up care. A certain amount of follow-up care is dictated by medical and worksite treatment routines. But other follow-up care could dictate hospitalization, home health care, or rehabilitative services. In some cases, it may dictate the program going outside the HMO and arranging for long-term health care with an affiliated hospital. Or, it may simply require the phoning of a patient who has not followed their medical treatment routine and encouraging the individual to come in for a check up or further treatment.

The occupational health program within a prepaid group practice HMO would consist of the following components:

1. Preplacement examinations and/or screening
2. Periodic health and hygiene appraisals
3. Occupational hygiene
4. Education
5. Performing research and maintaining outside relationships.

**Preplacement Examinations and/or Screening**

The first step in the HMO providing services to a plant is to conduct initial screening and assessments of diagnosed occupational health and hygiene problems for enrolled plants. The scope of such assessments will be influenced by such factors as the size and nature of the plant. The initial medical
screening can be done by either the physician or nurse. It could possibly consist of either an examination or a medical questionnaire.

In general, the assessment should include: (1) personal and family medical history in order to give the physician or nurse any indication for potential injury or disease. This would also aid the physician or nurse in determining whether or not any future injury or disease is related to the individual's employment or medical conditions which existed before employment; (2) physical examinations and/or industry or plant; and (3) an occupational history.

All of these assessments are important functions in terms of utilizing preventive measures.

The occupational history of an employee is critical. The detection - and eventual prevention - of occupational disease depends almost entirely on the occupational history. For those patients in whom the physician does not suspect an occupational disease, a brief statement concerning current job title and job tasks, may be sufficient. But as the physician's suspicion increases that a problem may be work related, the degree of detail of occupational history increases.

A complete occupational history includes five parts:
- Descriptions of all jobs since completing education, including summer and part-time jobs. It is important to go beyond the job title of the individual: the physician should have a clear idea of exactly what the
patient does at work. Sometimes it is useful to have the patient "walk through" a typical workday and de-
tail certain work tasks. The physician should record information for each job in which the patient has wor-
ked, including when the job began and ended, type of workplace, geographic location, and work task that may be the most hazardous. It is important not to overlook second jobs and past military service.

- Exposures at work, including biologic, chemical, and physical exposures and psychologic stress currently and in the past. These should include routine exposures as well as unusual exposures such as leaks or spills of hazardous materials. Often a workplace substance is known to workers only by brand name or coded number. But physicians can obtain a list of its ingredients from the employer or the manufacturer of the substance. They should have patients quantify the degree of exposure as accurately as possible. Physicians should also question patients concerning their use of personal protective equipment such as gloves, work clothes, masks, and respirators; their perception of the effectiveness of any protective engineering sys-
tems and devices in the work place (for example, venti-
lation systems); and their personal habits such as eating in work areas, which may increase bodily expo-
sure to certain substances.
Timing of symptoms is often crucial in determining whether or not medical problems are work related. Physicians within the HMO should ascertain when the symptoms begin and end and if they are related to certain routine work exposures or processes, to new exposures or processes, or to certain times of the workday or weekends or vacation periods.

Physicians should determine whether or not the timing and "incubation period" of the individual symptoms are compatible with what is known about the disease in question.

-Epidemiology of symptoms/illness among other workers is useful information. Physicians should question patients about other employees at the same workplace or in similar jobs elsewhere who have the same symptoms/illness. They should also ask workers to describe other things they have in common with these affected individuals.

-Nonwork exposure and other factors should be considered, including smoking, alcohol or drug use, and hobbies or other nonwork activities. Questioning here should be similar to that in section B of the suggested history, and should include current and past exposures in order to help the physician and/or nurse determine if any injury or disease is related to the plant or to the personal habits of the employee.

There are two other types of questions that would be useful:
(a) Does the employer have information from preplacement and periodic examinations - such as pulmonary function and audiometry testing results or environmental measurements such as noise levels - that may be helpful in making the diagnosis and determining whether or not it is work related?  

(b.) Does the patient believe that the symptom or illness is work related?

It is important to be aware of the fact that the employee's responses to the various questions with regard to the occupational history may not be accurate assessments of their situation. Therefore, the physician is going to have to also rely heavily on the report of the industrial hygienist in order to help substantiate the employee's responses to the occupational history questions.

After the plant becomes an enrolled member of the HMO's occupational health problem, part of the initial screening process entails an inspection by an industrial hygienist. The basic function of the hygienist would be to inspect the plant in order to determine whether or not there are any potential physical or chemical occupational health hazards. In carrying out this function, the hygienist would also measure the potential hazards, recommend proper procedures for eradicating the potential problem, and periodically monitor the potential problem area in order to determine if there is any progress in eradicating the problem. Because of the hygienist's training in toxicology, he or she would be helpful in assisting the physicians and nurses in treating cases of chemical exposure.
The type of inspection, measurement of potential hazards, recommendations of procedures for eradicating the potential hazard, and periodic monitoring of the process to eradicate the potential problem is totally dependent on the type of occupational hazard at hand. There are certain procedures for certain categories of problems, however there is no one method used to deal with all the occupational hazards within industrial hygiene.

It is very possible that certain medical problems are indications of certain worksite problems. Therefore, it is important that the industrial hygienist work closely with the physician and nurse in terms of helping him to detect and eventually prevent the possible occupational hazards at worksite.

Periodic Health and Safety Appraisals

Health evaluations are performed by the physician or nurse at appropriate intervals to determine whether the employee's health remains compatible with his job assignment and to detect any evidence of ill health which might be attributable to his employment. Certain employees and groups may require examinations more frequently than others as well as additional procedures and tests, depending on their age, their physical condition, intercurrent illness, the nature of their work and any special hazards involved. The individual to be examined should be informed by the physician or nurse of the purpose and value of the examination. The physician should discuss the findings of the examination with the individual as well as with management explaining to them the importance of further medical attention for any significant health defects found.
As with the physician and nurse, the industrial hygienist would perform evaluations at appropriate intervals in order to detect any evidence of a plant hazard which could potentially endanger the employee. The type of periodic appraisal performed by the hygienist would depend on the particular type of potential and discovered problems that have or could occur within a particular plant or industry.

Diagnosis and Treatment

Diagnosis and treatment in occupational injury and disease cases should be prompt and should be directed toward rehabilitation.

Once a medical problem has been diagnosed, a specific treatment routine for the individual should be mapped out. Treatment routines are called protocols. Care is then delivered by the HMO physician or nurse according to the protocol or routine, as the patient needs attention.

Emergency and ambulatory care should be offered on a 24-hour basis. This is especially important to the employee who may be working at night.

The HMO would also provide hospitalization when it would be deemed necessary by the HMO. The type of treatment that would be rendered by the physician or nurse for health problems depends upon the particular problem. The type of service that would be rendered by the occupational hygienist also depends on the particular occupational hazard at hand.

Industrial Hygienist

Due to the many forms of industrial hazards within manu-
facturing, it is impossible to cover all of the specific ways in which the industrial hygienist would deal with each specific problem. However, there are three basic techniques that all industrial hygienist use in their attempt to eliminate health hazards. The three that the HMO would employ are as follows:

- **Recognition**. Recognition that a hazard may exist depends upon the knowledge of the properties, chemical, physical and toxicological, of the substance in question or the physical phenomenon concerned. In order to be aware of the possible problems, the HMO's industrial hygienist must be conversant with the reference literature available and with its significance. The industrial hygienist must also perform walk-through inspections of plants in order to identify materials and processes in use in order to assess potential problems for workers.

- **Evaluation**. Having recognized that a hazardous situation may exist or develop, an evaluation of the position is required. This normally involves the application of measurement techniques to establish existing intensities of contamination of the environment and comparison of the results with standards of acceptability.

- **Control**. Having recognized the possibility of a hazard and evaluated, it becomes necessary for the HMO's industrial hygienist to recommend appropriate methods of controlling the situation to prevent undue exposure of
personnel. This may be achieved in a variety of ways; the options may include substitution of the hazardous agent by a less hazardous one, through segregation of the operations involving the hazard, or enclosure of the process within a booth or by effectively applied ventilation, use of protective equipment to isolate the operators from the hazard. Normally the method of choice should allow continuous operation of the process without need for extensive use of protective equipment.

Education

The HMO would be responsible for making employees aware of possible occupational injuries, diseases and hazards within their particular plant. The basic occupational safety program or seminar would consist of the following elements: (1) detailed description of hazards existing in a work area; (2) eye protection and respiratory protection; (3) smoking regulations; (4) procedures for handling dangerous materials and equipment, and for storing dangerous materials; (5) procedures for the proper disposal of various waste materials; (6) how to handle minor injuries, policy concerning trips to the HMO as well as receiving emergency medical services; (7) location and use of emergency equipment (fire shower, fire blanket, fire extinguisher, fire hose, eye shower, gas masks, and others); (8) location of emergency exits; and (9) location and use of safety manuals and other literature. The occupational safety program would consist of classroom instruction over a certain period of time to be
determined by the plant's management and the HMO.

To be effective in the health of the employee, the occupational health and safety problems that a particular manufacturing plant would be incurring or possibly incur, the educational program or seminar would be designed to meet the needs of each plant.

Outside Relationships

The HMO physician should establish and maintain good relationships also with public health agencies. The physician or occupational hygienist could recommend the use or other agencies which would aid the company in terms of reducing occupational injury disease, and hazards.

For example, The Department of Labor and Industries through the Division of Occupational Hygiene performs an important function in assisting business in the Commonwealth of Massachusetts in the establishment and maintenance of safe working conditions. This service is devoted to aiding employers in achieving compliance with the provisions of the federal Occupational Safety and Health Act. (OSHA). This is accomplished via an on site health consultation service provided at no cost to an employer. At the employers request, a consultant would conduct an inspection using the federal OSHA standards. A written report on potential violations is sent to employers within a two week period. The report contains the specific violations and a description of the action required to eradicate the violation. Under no circumstances are the reports sent to OSHA nor can they be used in any way to warrant an OSHA inspection. The report remains strictly confidential between the Commonwealth and the employer.
There are no penalties assessed and compliance is voluntary. According to the Department of Labor and Industries, employers using the consultation services have increased the level of safety as well as avoid substantial federal penalties.

The HMO would want to establish contact with other appropriate information or research groups. The HMO could possibly choose to inform the National Institute for Occupational Safety and Health (NIOSH), a medical school or school of public health, or some other group with expertise, experience, and interest in researching a possible work-related problem. These outside agencies would hopefully concern themselves with such issues as the most common and most hazardous types of employment as well as research dealing with the health and safety hazards within specific manufacturing industries.¹⁷
CHAPTER THREE - FOOTNOTES


3. Ibid., p.408.


5. Ibid., p.18.


8. Ibid., p.409.


10. Ibid., p.6.

11. Ibid., p.6.


15. Ibid., p.18.


Chapter Four

CONCLUSION

Since the early 1970s, increased attention has been focused on occupationally related diseases and injuries. Beyond the thousands of recorded occupational deaths and injuries within the United States, it has been established that 25 million more work-related injuries and deaths due to physical hazards and toxic chemicals go uncounted each year.

The major reason why so many occupational injuries and diseases have gone uncounted each year has to do with the nature of many diseases and injuries within the workplace. In other words, while certain diseases and injuries are readily identified as occupational in origin, other "occupational" injuries and diseases are clinically indistinguishable from nonspecific diseases or illnesses. It is important that the HMO interested in the implementation of an occupational health program be aware of the need for further medical research and training of physicians as far as trying to diagnose, treat, and eventually prevent the occurrence of all occupational injuries and diseases.

The 1970s brought more government involvement than ever before within the area of occupational health. Of particular importance were the Occupational Safety and Health Act of 1970 and the Toxic Substances Control Act of 1976. These two acts were the first series of attempts to establish a national policy for overall conditions in the workplace.

However, due to various legal decisions and industry; OSHA has not been very effective as far as protecting the worker
against the occupational injuries, diseases and hazards in the workplace, as well as penalizing employers for violating health safety standards.

The Toxic Substances Control Act of 1976 has also been somewhat ineffective due to its inability to test the enormous amount of new chemicals which are entering our society on a daily basis.

Within the occupational health arena, I feel that legislation could be augmented by occupational health services designed to reduce the incidence of work-related disease and industry through a combination of preventive medicine, research, industrial hygiene, health care delivery, and employee-employer education of the different types of occupational hazards.

The exploding cost of health care as well as the growing realization by industry that work conditions are a major factor to people's health have encouraged industry to search for different ways in which to reduce the amount of money spent on health care. This has also lead to a search for different means of providing preventive medicine to workers either in the workplace or in a community based institution.

Recently, the institution which has been gaining the most support by industry towards the establishment of an occupational health service is a prepaid group practice health maintenance organization.

The integration of occupational health services into an HMO makes sense for a variety of reasons. Purportedly, the emphasis of both is on prevention which means that industry could possibly save millions of dollars in high cost hospital utilization.
As I discussed earlier, other reasons include the fact that HMOs serve a predominantly working force population in comparison to other health care delivery institutions due to their marketing strategies; and secondly, HMOs are found in many urban areas where private sector industry is located. These features indicate that the HMO has great potential for reaching large number of workers.

The HMO that adds an occupational health program offers greater service benefits and continuity of care to its membership; increases its capabilities to prevent, diagnose, and treat health problems of employees as well as workplace hazards; and may improve its financial position and recognition within the business community.

In light of the above advantages, there are barriers that the HMO would have to consider as far as implementing occupational health services. The major barrier is uncertainty which translate into financial risk. This is especially true within the area of hospital utilization, underenrollment, excess utilization, and unusual procedures in terms of eradicating occupational health and hygiene problems.

A prepackaged body of knowledge to draw upon to plan a standard occupational health program and forecast demand for it does not exist. The prediction of long term financial viability under these circumstances is difficult. Due to the above factors, the prediction of the occupational health program's effect on HMO enrollment rates (positive, neutral or negative) is equally challenging.

In summary, we have seen the benefits and the challenges of planning an HMO occupational health program. Due to the support
of industry; the nature of prepaid HMOs and their compatibility with occupational health and legislation; HMOs could be valuable instruments for greatly and rapidly expanding occupational health services, should current information and financial constraints be carefully analyzed within the planning stages.

The mechanism that is recommended to be used by the HMO in order to overcome the information barriers concerning the development of an occupational health program is the occupational health program's strategic planning process.

The occupational health program's strategic planning process consists of four major components. They are environment factors, input factors, process factors, and output factors. Environmental factors have direct influence upon determining the development of the other three factors, whereas, input factors have a direct affect upon determining the output factors within the program's planning process.

Within each of the four major components, there are several minor components. The minor components of the environmental factor section of the planning process consist of market demand and requirements, financial risk factors, congruence with the requirements of OSHA and the consideration of legal issues. The two minor components of the input factor section consist of the manpower and equipment which would be necessary for the occupational health program's development. The five minor components of the process factor section consist of preplacement examinations and/or screening; periodic health and occupational hygiene appraisals; occupational education; and, the performance of occupational
and safety research as well as maintaining outside relationships with other occupational health agencies and institutions. The output factors consist of reducing a healthier work population and safer workplace conditions; and providing economic benefits to industry.

It should be stressed that the usage of the occupational health program's strategic planning model does not guarantee that the program will overcome all informational barriers. However, it does present an organized approach as far as the HMO attempting to acquire an assessment of needs, resources, and constraints associated with the development and implementation of an occupational health program for a particular plant or service area.

It is also important to stress that the way in which the HMO would attempt to develop and implement its occupational health program in order to deal with the vast variety of occupational health and hygiene issues would vary due to the different forms of recognition, diagnosis, treatment, prevention, education, evaluation and control.

The role of the strategic planning model in Chapter 3 was to serve as an example for the HMO as to what it should do in order to develop an occupational health program.

As discussed within Chapter 2, the occupational program would have to fit within the preventive framework of a prepaid group practice HMO.

The occupational health program within this thesis, is a service that is offered by the HMO; it is not a separate unit or department within the HMO.
The services rendered by the occupational health program would basically consist of the following: (1) preplacement examinations and/or screening with a particular emphasis on occupational histories due to the fact that they are crucial to the detection, diagnosis--and eventual prevention of occupational injuries and diseases of the employee. This would be performed by the physician or nurse. The program would also perform initial screening and test with the workplace in order to determine if there are any possible health hazards due to negative conditions within the workplace. This task would be performed by the occupational hygienist. It is important that the physician, nurse, and occupational hygienist work closely together in terms of helping each other eradicate injuries, diseases, and health hazards in the workplace. This is especially important in view of the fact that many of the injuries and diseases experienced by employees are a result of the workplace; (2) periodic health and safety appraisals to be performed by the physician, nurse and occupational hygienist at various time intervals in order to detect any potential occupational injury, disease, or hazard which may not have been detected during the initial or earlier screening. It is also important that the physician, nurse, and occupational hygienist do periodic health and safety appraisals in order to determine if medical and workplace interventions are alleviating or eradicating any earlier diagnosed problem; (3) the physician, nurse, and occupational
hygienist would be concerned with not only prevention of occupational disease, injury, and hazards in the workplace, but also with the ability to diagnose and treat the problem at hand. A potential problem that the HMO should be aware of is the fact that the occupational hygienist may find his position overbearing due to a vast array of different occupational health hazards within the workplace, the variety of methods in terms of diagnosis or recognition, evaluation, and treatment or control of these health hazards. It is also important to consider the possibility that with the increasing number of chemicals that are being produced within our society, the hygienist may find himself unable to recognize, evaluate, or control a potential health problem due to the fact that the method to treat a suspected problem could possibly be unknown to science; (4) an educational program or seminar for each enrolled plant which would be designed to inform interested employees of the potential workplace hazards within their particular plant, procedures for handling dangerous materials, use of emergency equipment, medical and occupational health services offered by the HMO, etc. Each program would be designed to meet the needs of each particular plant. The service would be done jointly with plant management. The HMO and plant management would have to work jointly in deciding where and at what time periods the plant's employees could participate within the educational seminars; and (4) research and the establishment of outside relationships in order
to gain a better understanding of the relationship to certain
diseases and injuries and their relationship to certain types
of employment. It is also important that the HMO remain abreast
of the research being done at occupational health agencies or
institutions in order to have a better understanding of the re-
relationship between certain occupational hazards experienced by
employees and their relationship to the workplace. This is
especially important for plants which may be dealing with newly
developed chemicals.

Due to the occupational health program's strategic plan-
ing process, the increasing acceptance by industry of HMO's
and preventive care, the compatibility between occupational
health and HMO's in terms of prevention, the fact that HMO's
when compared to other health care delivery institutions
serve a predominantly working force population due to the
marketing strategy; occupational health programs within a pre-
paid group practice HMO can be effective in the prevention of
occupational diseases, injuries and hazards within manufac-
turing firms.

An HMO sponsored occupational health program could poten-
tially achieve the following benefits: 1) produce a healthier
work population and safer workplaces or plants, and 2) provide
economic benefits to the manufacturing industry. The benefits
to be achieved by an occupational program would depend on the
HMO's ability to determine the needs, resources, and con-
straints of a particular plant or service area. The method
which is being proposed as a way of assisting the HMO in determining the needs, resources, and constraints is an occupational health program's strategic planning process.
BIBLIOGRAPHY


1980. Promoting Health/Preventing Disease Objectives for the Nation. Washington, D.C.


1980. All About OSHA. Washington, D.C.

ADDITIONAL BIBLIOGRAPHY


