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ALBERTA OCCUPATIONAL MEDICINE NEWSLETTER

EDITORIAL COMMENTS

1985 has arrived and with it a number of new changes have occurred for the newsletter, and for those associated with it. Our thanks to our **new and regular** contributors of articles and reviews is again extended, as well as to in-province and out-of-province readers who have corresponded with us. It appears that the newsletter is read both here in Alberta and abroad! The editor anticipates that the expanded format and content will meet the readers approval—your correspondence is encouraged to give us feedback.

Of interest to our readers is the announcement earlier this year that Dr. Bob Orford, formerly Executive Director, Alberta Workers' Health, Safety and Compensation, Occupational Health Division, has been appointed Deputy Minister, Alberta Social Services and Community Health, effective 1 January 1985. Our congratulations to Dr. Orford, and our appreciation to him is acknowledged for his continued support and contributions to the newsletter since its inception. In this first issue of Volume III, we have included the text from a poster, coauthored by Dr. Orford and B. Alleyne, and presented at the recent XXIst International Congress on Occupational Health, Dublin, Ireland, September 9-14, 1984. The recommendations are self explanatory and require no further comment, and the point is well taken.

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Editor

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THE PATIENT'S OCCUPATIONAL HISTORY MAY AID IN DIAGNOSIS

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SUMMARY:

The value of a complete occupational history in the diagnosis of occupational disease is well recognized,

but a search of the literature revealed no report of how often this is recorded or by whom. A review of the records of 2,643 patients admitted to a teaching hospital in Alberta revealed information about occupation in only 1,148 (43.3%), in most cases recorded by a nurse. In general, and particularly in the case of housewives and retired persons, recorded information was inadequate for reconstructing an occupational history.

METHODS:

- Initial admission to university hospital in 1978.
- Excluded patients less than 16 years of age.
- Reviewed every 10th record (2,643 records reviewed).
- Information sought included:

1. **Particulars of employment (recommended by NIOSH):** Present occupation, job title, type of work, how long at this job, geographic and physical locations, product produced/service provided, previous jobs.
2. **Other information:** Patient's sex, date of birth, date of this admission to hospital, whether first admission for problem, date of discharge, diagnosis on admission, diagnosis on discharge, status of the person who had recorded the information.

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RESULTS

1. Occupational information

- | | |
|---|-----|
| - Occupation not designated ('housewife', 'retired', 'unemployed', 'student') | 48% |
| - No occupation recorded | 8% |
| - Occupation designated | 43% |

2. Designated occupation recorded by

- | | |
|-------------------------|-----|
| Nurse(s) | 81% |
| Clinical Staff | 45% |
| Interns | 29% |
| Residents | 13% |
| Consultants | 1% |
| Status not identifiable | 10% |

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RECOMMENDATIONS

That the training of physicians from medical student to resident, should place more emphasis on the importance of recording occupational histories, stressing the possibility of:

Advantages for the patient:

1. earlier diagnosis
2. earlier treatment
3. removal of patient and co-workers from hazard.

Advantages for Employers/Other Authorities:

1. identification of hazard.
2. methods of prevention/removal of hazard.
3. implementation of control measures and dissemination of information.

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NOTICE BOARD — UPCOMING MEETINGS AND CONFERENCES

MARCH 1985

- (1) Update in Occupational Medicine, The University of Calgary, March 29, 1985.

Contact: Dr. E.J. Love, Department of Community Health Sciences, The University of Calgary.

APRIL 1985

- (2) 1985 Conference—Occupational Safety and Health, April 15-17, 1985.

Contact: Industrial Accident Prevention Association, 31st Floor, 2 Bloor Street West, Toronto, Ontario.

- (3) International Specialty Conference on Indoor Air Quality in Cold Climates: Hazards and Abatement Measures, April 29 - May 1, 1985.

Contact: Dr. D. Walkinshaw, Division of Building Research, National Research Council of Canada, Montreal Road M-24, Ottawa, Ontario.

MAY 1985

- (4) Hazards in the Workplace, May 7-9, 1985. Stanford University, Department of Dermatology and Western Occupational Medicine Association.

Contact: P.H. Jacobs, M.D., Department of Dermatology, Stanford University Medical Centre, Stanford, CA 94305.

(5) Symposium on Environmental Health Risks: Assessment and Management, May 29-31, 1985.

Contact: R.S. McColl, Institute for Risk Research, Department of Civil Engineering, University of Waterloo, Waterloo, Ontario.

JUNE 1985

(6) Third Theodore F. Hatch Symposium—International Conference on the Health of Miners, June 2-7, 1985.

Graduate School of Public Health, University of Pittsburgh.

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**OCCUPATIONAL
(INDUSTRIAL) HYGIENE,
ITS ROLE IN
OCCUPATIONAL HEALTH**

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History/Information

Occupational Health was defined in 1950 by a joint ILO/WHO Committee as "the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations". Providing a comprehensive Occupational Health service involves a vast array of professionals including physicians, nurses, occupational hygienists (including occupational hygiene technologists), epidemiologists, ergonomists and safety engineers. It is the purpose of this article to identify where and how Occupational Hygiene fits into the Occupational Health network.

Occupational or industrial hygiene is defined as the science devoted to the recognition, evaluation and control of those environmental factors or stresses arising in or from the workplace which may cause sickness, impaired health and well-being, or significant discomfort among workers in the workplace, or among citizens of the community. The occupational hygienist represents that part of the Occupational Health team which identifies and provides information regarding the nature and degree of the hazard to the team so that a co-operative effort can be made to prevent negative health effects.

Although attempts at recognizing the cause of ill health and implementing control procedures (as crude as they may have been) were made as early as the time of Hippocrates, very little was accomplished prior to 1900. The Harvard Medical School established a Master's degree program in industrial hygiene in 1918 and had the distinction of being the first institution in the world to offer such instruction and research to qualified students (those having a medical or sciences background). The number of universities, colleges and technological schools providing varied levels of occupational hygiene instruction have dramatically increased since 1918 and now no fewer than five Canadian universities offer advanced education in this field.

The organization representing the occupational hygiene professional is the American Industrial Hygiene Association (AIHA), an internationally rec-

ognized professional organization with some 6,200 members worldwide. (The local Alberta section of AIHA consists of some 105 members representing industry, education, government and labor). In addition, the American Board of Industrial Hygiene (ABIH) was incorporated in 1960 as a non-profit organization having the primary function of improving the practice and educational standards of the industrial hygiene profession. In carrying out this function the ABIH certifies individuals as to education, experience and professional ability in the comprehensive practise or specialized aspects of the profession. There is also an Industrial Hygiene Technologist Certification program under this administration.

All individuals who are certified by the ABIH are eligible for membership in the American Academy of Industrial Hygiene which has as its purpose "leadership in advancing the professional field of industrial hygiene by raising the level of competence of industrial hygienists and by securing wide recognition of the need for high quality industrial hygienists to ensure healthful work conditions in the various occupations and industries (adopted from ABIH and Academy Bylaws).

The person filling the role of the occupational hygienist normally has an undergraduate educational background of chemistry, physics, engineering, medicine or a related biological science and, in many cases, an advanced degree(s) with specialization in occupational health and hygiene.

Role Definition

The job description of the person taking on the occupational hygiene function can be typically summarized by the definition of industrial hygiene; that is, to identify/recognize hazards; evaluate/measure/appraise risk; and control physical, chemical and biological hazards arising in or from the workplace.

The recognition/identification role involves studying the work processes in order to determine:

- the nature of the products used.
- the byproducts produced and/or released.
- the potential sources of chemical, physical and/or biological hazards.
- the potential routes of exposure/entry of hazards into the body.

- the personal protective equipment utilized and
- the nature of the person's working habits.

The evaluation/measurement/appraisal of risk function is conducted through:

- specific monitoring of the concentration or the intensity of the hazard.
- identifying the frequency of such exposures.
- comparing the monitored results against legislated or known standards and/or researched toxicological data.
- consulting with the plant physician in identifying the appropriate biological tests (i.e., blood and urine analysis, pulmonary function testing, etc.) and
- establishing a judgement as to the degree of hazard in the short and long term.

The third phase of the hazard control function involves recommending, after cost-effective analysis, appropriate design changes or other corrective procedures in order to eliminate the existing or potential health hazard. Such procedures include:

- Engineering controls
 - substitution of the problem agent with a less hazardous agent.
 - ventilation control to remove or dilute the contaminant in the workplace.
 - redesign of the work process or procedure.
 - isolation or enclosure of the worker or the hazard.
- Administrative controls
 - establishing work/rest regimes.
 - job rotations.
 - increasing distances from or times between hazard exposures.
- Personal protective equipment apparel which is worn to provide a physical barrier between the hazard and the person.

In addition, the occupational hygienist is involved in health-related policy development and implementation, education and training, and audit functions.

The following table summarizes the role of the occupational hygienist in health hazard control as it relates to the other professionals involved in Occupational Health.

| ACTION | RESPONSIBILITY |
|---|--|
| Recognition of health effect | worker/hygienist/safety representative/nurse/physician |
| Diagnosis of illness treatment (as required) | physician physician/nurse |
| Identification of environmental cause | hygienist/physician/nurse |
| Evaluation/appraisal of risk | hygienist |
| Control recommendations | hygienist/safety engineer/ergonomist/physician/nurse |
| Health monitoring of workers | physician/nurse/epidemiologist |
| Prevention program development and audit | hygienist/safety engineer/physician/nurse |

It is through the co-operative efforts of all members of this Occupational Health team that the quality of working life for all workers will be enhanced.

(Editors note: This is the first of a series of articles dealing with occupational hygiene).

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PERSPECTIVES: HOSPITAL OCCUPATIONAL HEALTH

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Occupational Medicine is the Cinderella of medicine and Hospital Occupational medicine is the Cinderella of Occupational Medicine. Contrast the following: in an Oil company, one has a beautiful office in a beautiful tower with floor to ceiling windows and wall to wall broadloom. At the Foothills Hospital some five years ago we were bumped by the new and magnificent cardiology department (unceremoniously) from our 8th office floor, with its panoramic view of all the storms coming in from the northwest, to a below ground windowless office—this, in spite of our pleas that occupational health facilities should be shown to have the most mentally healthy office surroundings!

Activities, for example over a winter season for physicians and nurses in the occupational health service, included:

- 1. Pre-employment and periodic assessments and medical examinations.**
- 2. Health promotion:** Lifestyle counselling (chiefly obesity, with or without hypertension, as well as smoking, fitness, etc.), the HELP program (Health Hazard Appraisal), fitness classes (which have been running since 1975 and include stress management), interpretation and counselling services for people with severe language difficulties (immigrants).
- 3. Environmental monitoring and hygiene:** for toxic substances, monitoring for effects of ethylene oxide and some heavy metals and pesticides, where appropriate, and an amazing range of substances potentially hazardous to hospital employees. As well, audiometry forms a major activity for our department, particularly for employees in the Power plant, laundry services, dishroom, switchboard, some areas of maintenance, and other high noise areas as they arise.
- 4. Primary care:** in a typical winter season, for example, respiratory and flu-related complaints made up almost 25% of visits by employees. A further 25% of visits were related to GI and gynecological problems, typical of an industry where a heavy proportion of employees are female.
WCB injuries consisted mostly of dermatitis and back problems. A typical range of third party examinations are also carried out, for example for dental anesthesia preoperatively and so on.
- 5. Immunization and screening programs:** Mantoux skin tests, hepatitis B vaccination, and rubella screening and vaccination have been ongoing, as well as a variety of other immunization depending on the job description, and location in hospital, in the light of provincial, local and hospital policy.
- 6. Hospital Committee membership and planning:** liaison with Infection control committee (policies on rubella, TB, Hepatitis B, Herpes, AIDS, Jacob Creutzfeld disease, etc.), Pharmacy and therapeutics committee (drug biosafety, waste disposal and incineration, antineoplastic waste, radiation safety and waste, etc). We also maintain a close liaison with Calgary Health Services, WCB, and the Provincial dept. of Occupational Health and Safety.

The role of the Occupational Health Nurse:

Nurses do the bulk of the new employee orientation, and the general preventive onsite environmental and safety monitoring (in conjunction with appropriate hospital committees). Their clinical work includes

new employee screening, mantoux testing, allergy shots and other vaccination programs, and general first aid, as well as safety and other counselling.

Special Concerns and Problems:

These include for example:

- 1. New immigrant employees** with language and culture problems who need much help and empathy at first and frequently need interpreters. Their health and continued good hygiene are important in departments such as laundry, dishroom, housekeeping, where they are primarily employed.
- 2. Job security and mental stress:** employee anxiety is a major concern, as well as the area of health effects of shift work.
- 3. Hospital volunteers:** may be encouraged to seek appropriate screening and vaccinations as per hospital policy.
- 4. Literature bank:** hospital occupational health literature comes from the USA primarily and must be interpreted to management carefully as it relates to Canada, due to our provision of public medical care, and not-for-profit hospitals.

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CONCLUSION:

Occupational medicine is 70% ordinary medicine in the hospital, so it is essential to keep up one's clinical skills. There is an ongoing tension within this area as to where hospital occupational medicine ends and Family medicine begins, for three reasons: First, I think the majority of physicians are clinically orientated and enjoy clinical medicine; second, one has to be careful not to encroach on the preserves of the family doctor; third, to maintain one's highest professional standards, one has to have the fullest information possible on the employee's health history and status—if only to avoid the risk of being sued for negligence. This calls for diplomacy all round. With the great shortage of fully trained occupational medicine specialists in Canada in the foreseeable future, and the hesitancy for some organizations to seek out and employ such trained personnel, there will be a great and continuing need for the GP's services in hospital occupational health settings. As well, management must be convinced of the value of evaluation and research as an integral part of a vital service in the institution.

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RASH STATEMENTS VI COMPUTER CONTACT DERMATITIS

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In this day and age we are constantly reminded of the great benefits of computerization to our society and no doubt this is true. However, as in all things, there is a dark side. Recently, concerns have been expressed about the safety of continuous exposure to **Video Display Terminals** (computer terminals) particularly during pregnancy. As outlined in a previous newsletter, there appears to be little evidence to support this concern. However, during these studies and others, one of the most common problems discovered was that of a **Facial Dermatitis**. This is not surprising, as it is the skin which is at the interface

between human and machine (if I may be so coarse as to refer to a computer as "a mere machine"). I have investigated three other cases of "Computer Dermatitis" which I would like to share with readers.

Computer operators are required to work with their terminals for prolonged periods of time. Many of these workers have noted the development of a sense of warmth and pruritus in their cheeks and foreheads associated with redness and mild scaling of these areas. The original fears of an ominous form of radiation have been dismissed by careful investigations. The current hypothesis incriminates the low relative humidities that often prevail in computer areas in producing this irritant dermatitis. Many investigators also feel the screen may reflect incident ultraviolet light and advise that the terminal screens be situated to avoid this possibility. A light cream applied to the involved areas and an adjustment of the humidity has solved most problems.

A young female computer operator recently presented with a six month history of a subacute/eczematous rash on the flexural aspects of both wrists. She had always developed a rash when she wore her jewelry and her wrist watch, but denied wearing either for over a year. The rash subsided during her vacation. Patch testing revealed that she was strongly allergic to nickel. Computers still require the use of a keyboard for communication. Operators must maintain flexed wrists often resting them on a desk or on the keyboard itself. This woman's terminal was sitting on a metal desk which tested positive for free nickel. Obvious -eh!

A recurring facial eczema and periorbital eczema occurred in two workers in a local electronics firm. Both individuals assembled printed circuit components, and both clearly noted a distinct relationship of their rash to their jobs although neither could pinpoint the etiologic agent. These individuals were exposed to a great variety of potential irritants and allergens in a relatively restricted and controlled environment. They used power hand tools to weld and solder components. Patch testing revealed one worker to be sensitive to **colophony** and the other to be sensitive to epoxy resin. Another obvious case?

Colophony (resin) is a naturally occurring resin obtained from the distillation of woods. It is used primarily as an adhesive and plasticizer in adhesive tapes, electrical cables and, interestingly in resin-core solder. This was of clinical relevance in this case as the heat during the soldering process liberated the resin into the fumes rising into this workers face.

Epoxy resins are particularly useful in the electronics industry because of the properties of chemical and electrical resistance combined with their adhesive qualities. The second worker was occasionally involved in sealing the circuit boards with an epoxy resin and this proved to be his source of contact.

Both of these individuals were removed from their respective tasks and transferred to other sites on the assembly line and so far they are without a recurrence.

Although the newest apple computer plant is said to be able to produce a new micro computer every few minutes, there is still a human component necessary. Although one associates great minds with this industry, the majority of the workers are production workers involved in semi-skilled assembly occupations. Skin conditions from this industry accounted for 22.8% of the total reports of occupational disease in California in 1977.

This obviously will have increased over the past 8 years as more and more industries have computerized.

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**EMPLOYEE
ASSISTANCE PROGRAMS—
NOW THERE IS
SOMEWHERE TO TURN**

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There is no doubt that on entering this decade corporations, large and small, have found themselves facing uncertainty, rapid change and turbulence. The major challenge for their managements has been first to survive and then to attempt to maintain growth. Phrases such as "lean and mean" become heard with increasing frequency. Improved efficiency and productivity have become important management objectives. However enlightened managers have also recognized that their employees are facing personal stresses aggravated by the same uncertain environment with the effects inevitably impacting their productivity.

Selye defined stress as "the nonspecific response of the body to any demand made upon it" and described a three-stage adaptive process. Stress can be looked upon as an emotional or cognitive or physical response to changes that occur in one's daily life and health. Positive or negative changes are always stressful to some degree and the consequences may be beneficial or harmful.

If one examines the potential impacts on a company when either organizational or individual stress-related problems are not adequately resolved then the implications for efficiency and productivity become clear. Negative outcomes can include a greater incidence of stress-related illnesses, substance abuse (alcohol, drugs or tobacco), increased absenteeism and lateness, high employee turnover, an increased incidence of industrial accidents and poor morale and motivation.

If a company is able to examine the diagnoses for its sickness absences the average large corporation would probably find that between 5% and 10% can be attributed directly to emotional disorders. This would not include those countless other medical conditions (e.g., gastrointestinal disorders, hypertension, headaches, and certain kinds of muscular spasm and pain) which are either caused in part or made worse by high levels of stress. Further, mental disorders often account for a significant percentage of early medical disability retirements.

Certainly an organization which sets out to help employees resolve their problems will do so in part for humane reasons, but its main motivation will be 'enlightened self-interest'. Most programs developed from this perspective are known today as "Employee Assistance Programs" or EAP's.

Such programs may best be described as assisting employees to effectively resolve problems of a personal or work-related nature, thus minimizing job performance problems and resulting in improved performance, productivity and personal satisfaction. There are published statistics now available on Canadian programs, such as those at Babcock & Wilcox, General Motors and Warner-Lambert, to indicate that services of this type produce substantial savings as measured through decreased sickness and accident costs.

EAP's began in the 1940's as occupational alcoholism programs, and in the 1970's many expanded to become what are known as "broad-brush" programs, i.e., ones in which an employee can bring

forward any problem which is causing him or her distress. Initially, supervisors and managers were trained to identify employees showing the signs and symptoms of alcohol abuse. As more experience was gained with this approach, it was recognized that it would be more effective to use job deterioration as the basis for company intervention. Examples of such deteriorating work performance include absenteeism, lateness, inability to carry out normal tasks, and change in attitude.

The introduction of an EAP should be appreciated as not simply the initiation of another new program into a company, or another way of solving problems, but as representing a major commitment to involvement in a living, evolving process. EAP's are ongoing multi-dimensional programs that continue to develop and change as the company itself undergoes transition.

It is difficult to outline a specific prescription for the introduction and implementation of an EAP, since each work situation is unique and demands an approach that is "tailor-made" to the organization. However, there are key components common to most good programs which deserve special attention:

A. Definition of Objectives

These may be focused solely on individual productivity or, as in today's more sophisticated programs, may also refer to "organizational health". Examples might include:

1. Improved employee health and productivity through prevention and management of stress.
2. Increased corporate skills in recognizing and managing organizational sources of stress.
3. Improved management/supervisory skills in recognizing and managing troubled employees.

B. Policy and Procedures

1. A policy statement should be developed expressing the commitment of the organization to provide confidential help to employees having emotional, marital/family, alcohol and/or other drug problems. This policy should be endorsed by senior management, and should state that alcoholism is a disease responsive to treatment and rehabilitation.
2. Operating procedures should be described in the policy statement. These need to specify the mechanism for employees to access the EAP. It should be clearly stated that participation in the EAP will not effect future employment or career advancement, nor will participation protect the employee from disciplinary action for continued substandard job performance.
3. The organization should decide if services will be available to employees' families as well. If so, this should be clearly stated in the program description.

C. Training and Education

1. Managerial/Supervisory Training Programs to aid in the management of troubled employees should be established.
2. An ongoing marketing effort is required to keep employees (and their families if included) informed about the EAP services. This may take the form of letters, brochures, posters and articles in employee publications.
3. The program should integrate with existing health promotion activities. Health education on such topics as stress, burn-out, problem-solving and human/social problems should be introduced. There should be a strong emphasis on self-responsibility in recognizing personal and lifestyle problems and seeking help.

Clinical Assessment and Referral

1. The EAP Coordinator should have skills in interviewing, problem identification, motivation, and where appropriate, intervention and counselling. An understanding of managerial issues is vital as well as experience in program development and administration.
2. A comprehensive resource bank must be developed to include an up-to-date list of high quality community, mental health, chemical dependency treatment and other available professional services.

D. Evaluation

1. There should be a periodic review of the Program with an attempt to provide an objective evaluation of operation and performance. This will be more easily accomplished if anticipated and planned for at the time of program implementation.

E. Organizational Position

While the service may either be supplied internally or through contract to a consultant, it is imperative that:

1. Responsibility for the EAP should be positioned at an organizational level high enough to involve senior management and/or union leadership in sustaining the Program.
2. The organizational location be such (either within the Corporate Health Department or Human Resources) that employees have confidence in the privacy of the service.

Canadian EAP's saw their start in the 1950's, again predominately as Occupational Alcoholism Programs in such companies as Bell Canada, Stelco, Ford, and MacMillan Bloedel. In the mid-1970's, broad-brush EAP's similar to the model we have been describing were established in industries such as Molson's Breweries, Warner-Lambert and the Toronto Transit Commission, through the Family Service Association of Metropolitan Toronto and the Canadian Mental Health Associations' Project Help. Since that time, the Provincial and Federal governments, and many private corporations, and private consultants have become involved in setting up EAP's.

As stated previously, each program is, and should be, unique! Some are staffed by health professionals (nurses, psychologists, social workers) who provide counselling, while others are run by trained non-professionals who function as referral agents. There is no fixed formula for setting up an Employee Assistance Program. A company may utilize in-house or external consultants, referral agents or mental health professionals. The program may be alcoholism-focused, or broad-brush. The "flavour" of each EAP depends not only on employee needs and corporate capabilities, but also on the personality and interests of the person(s) who run them. Therefore it is important that a company have considered its objectives before seeking the appropriate staff.

The key to a successful EAP is to establish a program that is responsive to the particular needs of your organization, employees and their families.

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HEALTH MONITORING IN THE WORKPLACE

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Occupational health services vary greatly in their size, organization, and the demands placed upon them. Like any other health delivery system, however, they can best meet the needs of the population they serve if they know the health status of that population; can design preventative or curative programs to address health needs as they are identified, and; are able to measure the effectiveness of those programs. Health monitoring is a technique to provide the information necessary to accomplish those functions. The purpose of this article is to discuss briefly some concerns common to any health monitoring system and some of the steps involved in implementation.

Since there are no hard and fast criteria established for exactly the types and level of data an effective system would gather, any method of organization for discussion is fairly arbitrary. Nonetheless, it might be useful to think of the types of information as falling into four categories: 1. Risk Factors, 2. Health Status Measures, 3. Health Care Utilization Figures and, 4. Health Resources Information.

Risk Factors

The starting point for any monitoring system is a definition and identification of the population that is to be surveyed. This is essential in order to convert the incidence or prevalence of events or conditions into rates; to standardize or adjust those rates for comparisons, and to draw samples for any more detailed studies. In an occupational setting the population might be most simply defined as those persons currently employed by the organization, and identification accomplished easily through some existing function such as payroll ledgers. For others, however, the population that is important to be described might include the members of employees' families, or even past employees.

In an epidemiological sense, the risk factors represent the independent or "explanatory" variables in accounting for differences in health status and health care utilization. It is important, therefore, to give careful thought as to what kinds of information should be collected for every individual, since on the one hand explanatory power is limited to the questions that are asked—but the burden of attempting to ask too much can compromise the entire effort. Although the specific risk factors to be recorded for a particular population would depend upon the nature of the occupational setting, some obvious ones might include sex, age, and length of employment. Others to consider are the employee's place of work, such as site number or physical location within a building; job classification and/or the tasks he or she performs; and the equipment, chemicals, or conditions to which he or she is exposed.

Health Status Measures

Whether a particular occupational health monitoring system records either or both illness and "wellness", information about employees depends on the organization's definition of health, and the role it imagines for its occupational health service. In any event, any system most likely would include measures of both mortality and morbidity—each of which

can be difficult to determine—this, because for an event to be recorded, it must be first defined and then reported. In the case of mortality there is little problem with definition. If the population is to include past employees, however, then some method, such as a survey, must be devised for obtaining reports of both the time and cause of deaths.

For morbidity, definition of an event is less clear cut, and can range from, for example, the employee's report of an illness to company health records to the records of the employee's physician—none of which may coincide. There also is the question of whether to depend upon nominal definitions, such as "bad luck", or rely on strict diagnostic categories. The definition that is arrived at, and the population to which it is to be applied, will help to determine the method of data collection. One alternative, if the employer provides direct medical service or benefits, is to keep "patient" records for each individual. Such information could be appended to personnel records or maintained by the medical services. If the number of employees is large, or resources limited, another technique is to establish a panel to serve as an index for the entire workforce. In this case a representative sample of employees are monitored closely throughout time, and their experience is assumed to represent the experience of the entire population. The drawback of panels, however, are that employees tend to come and go, and that having their actions recorded changes the way they behave. Another alternative is to rely upon the reports of key informants, such as foremen or company medical staff. In this instance the reports that are received might be more dependable, but the coverage achieved remains unknown. In any case, it is important to record the number of hours or days or work lost due to each incident.

Organizations might also be interested, though, in measuring the "wellness" of their workforce. In this case, health practice or fitness surveys of the entire employee population, a sample, or a panel might be appropriate. Ideally such surveys would ask respondents to evaluate their own health condition, and comment on what they feel an occupational health program should provide.

Health Care Utilization

In order to determine whether or not a health delivery system is meeting the needs of its population, it first is necessary to know what services it provides. Important information certainly includes the number and types of health problems that are presented, the treatment that results for them, their ultimate resolution, and the resources that are used, but should include, as well, time spent by personnel on health teaching, consultation and travel. If the employer provides his own medical services, such information may be gleaned from patient or personnel records. Otherwise it may call for establishment of some form of limited "incident" reporting system, and an activity record for health staff.

Health Resources Information

The fourth category of information needed for the efficient design and maintenance of a health delivery system is an inventory of health resources available to the organization. This should include an up-to-date record of personnel employed or available to the organization, their qualifications, location, responsibilities, and the conditions under which they should be used, and for physical resources such as equipment and facilities. If such an inventory is kept current and available to staff it will aid in planning and reduce the possibility for inappropriate use of resources or confusion in the event of emergency.

In summary, health monitoring provides the information required to make management and medical decisions about the design and delivery of occupational health, as well as the basis for epidemiological studies. As such it should be considered as an essential ingredient in any occupational health program.

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WHY DOES THE WORKERS' COMPENSATION BOARD HAVE TO CONSIDER "HEPATITIS B"?

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Workers' Compensation Board
Alberta

Under the Workers' Compensation Act of Alberta, a worker employed in an industry covered by this Act is eligible for compensation if he/she suffers from disablement caused by an occupational disease.

Under the General Regulations of the Workers' Compensation Act of Alberta, Section 20, we find the definition of "occupational disease":

- (a) a disease or condition listed in Column 1 of Schedule B that is caused by employment in the industry or process listed opposite it in Column 2 of Schedule B, and
- (b) any other disease or condition that the Board is satisfied in a particular case is caused by employment in an industry to which the Act applies."

Item 2 of the list of diseases or conditions of Schedule B reads as follows:

2. Infection caused by
 - (a) Staphylococcus aureus,
Salmonella organisms, Hepatitis B virus

Under Column 2 of the same Schedule B we read,
An Industry or Process

- (a) where close and frequent occupational contact with a source or sources of the infection has been established and the employment necessitates.
 - (i) the treatment, nursing or examination of, or interviews with, patients or ill persons,
 - (ii) the analysis or testing of body tissues or fluids, or,
 - (iii) research into salmonella, pathogenic staphylococci or Hepatitis B virus

The definition of an occupational disease is very broad and it therefore should be remembered that the Workers' Compensation Board Regulations do not restrict our jurisdiction only to Hepatitis B.

This remark is to indicate that a claim by a worker with Hepatitis B or Hepatitis NON-B will not be automatically rejected.

The American Public Health Association, in the 3rd Edition of its book on **Control of Communicable Diseases in Man**, mentions under Hepatitis A that some effort to prevent Hepatitis A should be made among staff, attendants and patients newly admitted to mental hospitals or institutions, and especially to homes for retarded children, who experience intensive prolonged exposure to possibly the agent causing Hepatitis A. In fact, it is mentioned that out-breaks of Hepatitis A are common in institutions and in day-care centres.

Furthermore, under HEPATITIS NON-A, NON-B, it is mentioned that percutaneous transmission has

been well documented and that other means of transmission, similar to those of HEPATITIS B Virus are suspected. In the **September 1983** issue of the **American Journal of Public Health**, a list of occupationally related **Unnecessary Diseases, Disability and Untimely Death** was mentioned.

All the 3 Types of Hepatitis—HEPATITIS A, HEPATITIS B, and NON-A and NON-B, were classified as potentially causing occupationally related unnecessary disease, unnecessary disability and unnecessary untimely death.

Under HEPATITIS A, the list of occupational industries where the diseases might be found included:

Day-care Centre Staff
Orphanage Staff
Mental Retardation Institution Staff, and
Medical Personnel

Under HEPATITIS B, the list included:

Nurses and Aides
Anaesthesiologists
Orphanage and Mental Institution Staff
Medical Laboratory Personnel
General Dentists and Oral Surgeons
Physicians

Under HEPATITIS NON-A, NON-B, the same list of occupations as under HEPATITIS A and HEPATITIS B was repeated.

It therefore seems that all forms of Hepatitis might be considered under certain circumstances as being occupationally related.

As the **mandate** of the Workers' Compensation Board is to **investigate** any cases of diseases which might be related to work and to compensate appropriately, it is therefore the duty of the W.C.B. to consider all forms of HEPATITIS as a potential cause of disablement under the Act.

INVESTIGATION AND ENTITLEMENT

Section 37 of the Workers' Compensation Act states —

"An application for compensation under this Act shall be dealt with and determined in the first instance on behalf of the Board by a claims adjudicator employed by the Board."

A claim might be initiated by a report from a physician, from an employer, or from the worker. The Claims Department will start an investigation and may seek advice from the W.C.B. Medical Department if indicated. Upon completion of an investigation, the Claims Department will make a decision as to whether or not the disease is occupationally related and therefore compensable. The presumption that the disease was caused by work must be established. In cases where some doubts may still exist after serious investigation as to whether or not the disease might have an origin other than occupational, the benefit of doubt will play in favour of the worker. Of course, if it is established that the disease has not been caused by work, then the Compensation Board will deny entitlement to compensation.

Subsequent to the acceptance of the claim, the worker will receive 90% of net salary (ceiling level \$40,000), if it is found that he/she is totally disabled. If, at the time of return to work, a permanent disability still persists, then a Permanent Partial Disability Award might be granted. If the worker is experiencing some vocational problems at the time of return to work, the help of our Vocational Rehabilitation Department will be offered.

To illustrate the problem of Hepatitis under the W.C.B.,

In reviewing all the cases which have been submitted to the Board in 1982 and in the first 8 months of 1983,

There were **only 7 cases** submitted to the W.C.B. for Hepatitis during that time.

3 of them were only for **investigation**; the remaining **4** have **received compensation** for time lost due to their disease.

CASES WHERE ONLY INVESTIGATION WAS DONE:

Case #1

A 22-year-old female, working as a laboratory assistant, was suffering from HEPATITIS A. The claim was rejected because the medical laboratory was not covered by the W.C.B.

Case #2

A 39-year-old male, working as a policeman, was suspected of having a contact with HEPATITIS B. While making an arrest, he punctured his skin with a needle which was used by the person being arrested. The person being arrested was suffering from HEPATITIS B. There was no complication or disease in the worker. Therefore, there was no compensation given to him, but the case was brought to our attention.

Case #3

A 37-year-old male, self-employed, working in food services, was suffering from HEPATITIS B. The worker refused to have his claim investigated, and therefore no claim was opened for him.

CASES WHERE COMPENSATION HAS BEEN GIVEN TO A WORKER FOR HEPATITIS:

Case #1

A 30-year-old female rehabilitative-care worker was compensated for HEPATITIS B. There was no complication. She was off work for over 120 days.

Case #2

A 30-year-old female employee of a biochemistry laboratory. It was established that she was suffering from HEPATITIS B. There was no complication and she received compensation.

Case #3

A 38-year-old female hospital worker was suffering from HEPATITIS B and was entitled to compensation.

Case #4

A 52-year-old male hospital worker was suffering from HEPATITIS B and died from complications of his disease.

Even though the number of cases is low, the **average cost** for each one of these cases of HEPATITIS B where compensation has been granted is over \$7,000 per case.

It is also **important to note** that **one of these persons died** subsequent to his disease.

In a recent article (March 1984 issue of the *Journal of Occupational Medicine*), Lohiya and Reesal reported, in a study done in California, that the average costs, including medical care and temporary disability, for **6 cases** of HEPATITIS B, was approximately \$4,000.

* * * * CONCLUSION

As the **Role of the Physician and Other Professionals Specializing in Occupational Health** should be one of **Prevention**, I would like to stress the following points:

- all forms of HEPATITIS are **preventable**
- **create unnecessary disability**
- **create unnecessary death**
- **create unnecessary cost** to society at large, in terms of dollars spent and in terms of morbidity and mortality.

In the October 1983 issue of the *Journal of Occupational Medicine*, the **American Occupational Medical Association Committee on Medical Centre Employees' Occupational Health Services** has listed its **Guidelines for Use in Designing Occupational Health Programs for Employees of Medical Institutions**.

Even though these recommendations were specific for HEPATITIS B, some of them may also apply to the other forms of HEPATITIS and should be used as a guide for physicians in occupational health.

"Guidelines for Use in Designing Occupational Health Programs for Employees of Medical Institutions"

- (1) Institutions should develop and make known to all employees a procedure assigning priorities to the employee groups at risk of acquiring HEPATITIS B, in order to facilitate effective protection of those at highest risk.
- (2) Those whose work assignments will place them at high risk of HEPATITIS B should be tested for HEPATITIS B antibodies at the time of employment.
- (3) There should not be undue reliance on HBIG and/or HEPATITIS B vaccine, for it will not supplant good hygiene practices nor will it protect from the much more prevalent and equally dangerous NON-A, NON-B.
- (4) Both the administration of HBIG following exposure of unprotected individuals and the administration of HEPATITIS B vaccine should be guided by the current applicable centres for disease control recommendations.
- (5) Known HEPATITIS B antigen carriers should be consulted regarding their potential infectivity and placed in proper job settings.
- (6) Institutions should develop a policy for the evaluation and counselling of spouses and other family members of employees known to be carriers of HEPATITIS B antigen.
- (7) Vaccine should be provided to persons determined to be at high risk of acquiring the disease because of significant exposure to blood products or patients of potentially high infectivity."