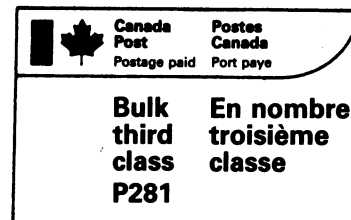
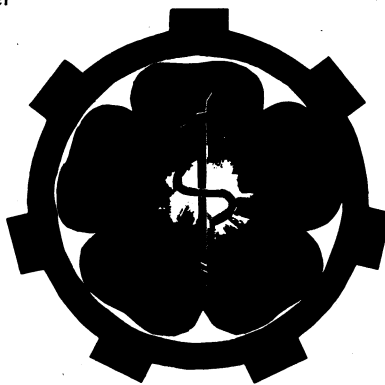


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ALBERTA OCCUPATIONAL MEDICINE NEWSLETTER

EDITORIAL COMMENTS

... With a Little Help from My Friends

The end of a decade and the beginning of editorial responsibilities offer me an opportunity to review the 'shape' this Newsletter has taken during its six year history. As part of this process I have compiled an index from Volumes I through VI in this issue. A glance at the list will reveal the diversity of topics and contributors that have appeared in these pages. We have copies of back issues and would be pleased to send any to you upon request.

This Newsletter is a team effort and I would like to thank Dr. Heather Bryant for diligently 'coaching' the past 12 issues to press. Working tirelessly behind the scenes, Ms. Merle Dalip is responsible for arranging typing and mailing. You, our readers and contributors, are the key players who will meet the challenges and opportunities of occupational medicine in the 1990's. I look forward to serving you in this task through the Newsletter ... with a little help from my friends.

R. Douglas Hamm, M.D., C.C.F.P.
Editor

CORRECTION

In the last issue of the Newsletter (Volume VI, No. 4), we incorrectly stated our source of funding. As this issue indicates below, our funding is provided by ALBERTA OCCUPATIONAL HEALTH AND SAFETY.

CHOLESTEROL SCREENING IN THE WORKPLACE

Hilary Robinson, B.Sc., M.B., Ch.B.*

The use of serum total cholesterol levels as a screening test to identify individuals at risk of developing coronary heart disease has become increasingly common over the last few years and is often included in work place heart health promotion initiatives or even routine medical examinations. However, the expert advice on screening for total cholesterol level is conflicting, with the National Cholesterol Education Program (NCEP) of the U.S. National Institutes of Health recommending screening for all adults over 20 at least every five years and British experts coming out against mass screening. Canadian advisors take a middle position with the Periodic Health Exam Task Force recommending screening of males age 35-59, and the Canadian Consensus Conference on Cholesterol advocating screening of all individuals with risk factors, at the present time. This review attempts to identify some of the reasons for the discrepancies in recommendations and to provide a framework within which existing screening programs should be considered.

THE RATIONALE FOR SCREENING

Screening can be defined as:

"the application of a test to a group of asymptomatic individuals for the purpose of classifying them with respect to their likelihood of having a particular disease."
(Hennekens and Buring, 1987)

To be suitable for screening a health problem must possess several distinct attributes. The health problem must be important in its impact on human life, an efficacious treatment for the condition must exist, early treatment must have an advantage over delayed treatment and the time lag between development of the sign detectable by screening and development of symptoms of disease must be long enough to allow screening to take place. In addition, the condition must be definable, at least to the extent that those who are likely to benefit from treatment can be distinguished from those who are not likely to benefit and resources and a suitable screening test must be available. For a screening method to be effective it must be safe, acceptable, relatively inexpensive and sufficiently sensitive and specific to be able to distinguish those individuals with the condition from those without it.

Cholesterol screening rests on the demonstrated association between hypercholesterolemia and coronary heart disease. It must be borne in mind that hypercholesterolemia is only one of a number of risk factors associated with coronary heart disease and, indeed, the risk associated with elevated serum cholesterol in the absence of any other risk factor is small. Screening for hypercholesterolemia differs from other screening tests such as the Pap test and fecal occult blood screening since the screening test is designed to identify a risk factor for the disease outcome rather than an early

**Prepared in the Department of Community Health Sciences, Faculty of Medicine
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sign of disease. This is important since the relationship between a risk factor for a disease and the disease outcome is not as close as the association between an early sign of disease and the eventual development of disease. The NCEP classifies 5.2mmol/L (220 mg/dl) as borderline high and 6.2mmol/L (240mg/dl) or greater as high serum cholesterol. This upper limit corresponds to the 75th percentile of the U.S. adult population 20 years and older. However, using a cut-off this low will invariably include many people in the treatment group who will not go on to develop coronary heart disease. Thus, the positive predictive value of the test (the probability that an individual has the disease if the screening test is positive) is low. This is especially important since a proportion of these individuals will be prescribed cholesterol lowering drugs for the rest of their lives and the long term effects of therapy with these medications are unknown and their ability to reduce overall mortality is in doubt. A second precaution that must be considered in mass screening programs is that the studies which provided the initial impetus for screening almost exclusively used middle-aged males as subjects. Extrapolation of these test results to females or people over 60 years of age may be of dubious value. Many work site screening programs will be dealing with a predominantly middle-aged male population, but interpreting results for women in the program will be complex.

SOME POSSIBLE CONSEQUENCES

Screening for serum total cholesterol is not, in itself, a risk free procedure. Studies have looked at the adverse effects of 'labeling' participants in high blood pressure screening programs and have demonstrated increased absenteeism and psychological distress as a consequence of labeling. These findings have significance for cholesterol screening programs since the insensitivity of the test will lead to mislabeling of a large number of people. Besides the effects of labeling, there is also the problem of unwarranted reassurance for people whose cholesterol test is recorded as normal. As Frank (1989) points out, a substantial proportion of people who test normal will go on to develop coronary heart disease since 75 percent of the population falls into this group and the total cholesterol measurement is not a very specific indicator of coronary heart disease. The NCEP addresses this issue by advising dietary counselling for all people tested, regardless of their serum cholesterol level.

Another feature of a screening program is that people who are identified by the program as being 'at risk' should receive adequate follow-up and appropriate treatment. Pilot studies of cholesterol screening programs in the U.S. have shown that primary care physicians often fail to give appropriate advice to individuals

identified at high risk. In a study by Wynder et al. (1986) 54 percent of individuals who were advised to contact their physicians following screening received no advice, while a British study (1989) to determine whether primary health care workers would give appropriate dietary advice following screening found that 78 out of 128 workers surveyed would give advice likely to confuse or mislead patients. This aspect is important for work site screening programs since participants are often referred back to their own physicians for follow-up. Even if appropriate therapy and advice is given the results will only be as good as the compliance of the patient. Studies have suggested that, while compliance is good for the first years following initiation of treatment, cholesterol levels will gradually rise with time and compliance with dietary advice falls.

As with blood pressure screening programs, the value of a single measurement is limited and ideally two or three tests on different occasions should be taken to account for biological variability. Individuals who are shown to have elevated total serum cholesterol levels should go on to have a lipid profile performed with further therapy based on the results of this test.

SCREENING IN CONTEXT

Cholesterol screening may still be a useful test provided that it is performed in conjunction with an assessment of other risk factors for coronary heart disease. Current thinking is that the risk factors for cardiovascular disease do not follow a simple additive model. Thus, the importance of an elevated screening test result in a female with no other risk factors is extremely limited compared to the same reading in an obese, smoking male with a family history of coronary heart disease. Screening has an importance in personalizing "heart healthy" advice within the context of a larger work site heart health promotion campaign and may provide a good opportunity for counselling on individual risks. However, there is a danger of over emphasizing the results of the screening test, which is a quantifiable number, as compared to other risk factors.

The alternative, or complementary approach to the individual screening method is an overall campaign aimed at lowering the population's average serum cholesterol. In the work site this might be achieved by a variety of means. Ensuring food services that offer appropriate meals for a cholesterol lowering diet, publication of a "corporate cookbook" including 'heart healthy' recipes, provision of on-site recreational and exercise facilities and attention to other cardiovascular disease risk factors, such as smoking, by offering practical help and advice to encourage smokers to quit, can all contribute

to such an approach. Studies have demonstrated that the potential benefit of lowering the population average serum cholesterol substantially outweighs the potential benefits of screening programs alone, even with ideal compliance and response rates. In the work site setting there is no reason why these two approaches cannot progress simultaneously using the screening test result as a way of personalizing the problem of coronary heart disease more than as an individual measurement of risk.

CONCLUSION

In summary, the context of hypercholesterolemia and its relationship to the risk of coronary heart disease should be fully appreciated prior to the start of any cholesterol screening initiative. The limitations of the test should be understood and the significance of an elevated screening test should be considered in the context of these limitations. Ideally, if a work site is contemplating initiating a screening program, it should be incorporated into a larger project which includes attention to all the risk factors of coronary heart disease. While screening has the temptations of personalizing the risk factors, having a quantifiable result and giving the impression of "doing something" it should always be borne in mind that initiatives aimed at reducing the average serum cholesterol in the work site may be a more effective use of resources.

(References available on request)

**Resident in Community Medicine, Department of Community Health Sciences, Faculty of Medicine, The University of Calgary.*

SUMMARY OF THE ALBERTA OCCUPATIONAL HEALTH SOCIETY NOVEMBER 1989 MEETING EDMONTON, ALBERTA

Kenneth Corbet, M.D., C.C.F.P.*

The Alberta Occupational Health Society held its Annual General Meeting and Scientific Session on November 3, 1989 in Edmonton. Our Executive for 1989-1990 is as follows:

Dr. Ken Corbet	- President
Janis Koehler	- President Elect
Sharon Matthias	- Past President
Carol Eamer	- Secretary Treasurer
Lynn Skillen	- Director
Pat Baylis	- Director
Bryan Alleyne	- Education Committee Chairman
Dr. John Markham	- Policy Committee Chairman

The Alberta Occupational Health Society is a professional and scientific body whose members are engaged in all aspects of occupational health including, but not limited to, occupational medicine, occupational hygiene, occupational health nursing, and radiation health. One of the immediate aims of the Society is to broaden its base of disciplines and attract additional members from the human factors, toxicology, management, and safety disciplines. Those interested in the activities of the Society can direct their inquiries to Dr. Ken Corbet at 220-3362.

For our Scientific Session, titled "New Directions for the 1990's," we were fortunate to have a dynamic and diverse slate of speakers. Dr. Ingrid Vicas, Director of the Poison and Drug Information Service, based at the Foothills Hospital in Calgary, discussed the emerging role of the Poison Centre in occupational toxicology, and specifically as a resource for the medical management of acute chemical exposure. Susan Crozier, an industrial hygiene technologist, described the trials and tribulations encountered in the development of an Alberta wide WHMIS program for hospitals. Alex Gordon, with Syncrude in Fort McMurray, described the evolution and mandate of the new Alberta Safety Association.

As our luncheon keynote speaker, we were privileged to have Maureen Shaw, Chairman of the Board of Governors of the Canadian Centre for Occupational Health and Safety in Hamilton. She described the recent funding dilemma that faces the Centre and discussed short term plans and long term strategies to meet this challenge. She encouraged all Alberta occupational health professionals to communicate concerns and ideas to her.

Our afternoon program began with Dr. Richard Wolfe of the Faculty of Business, The University of Alberta; he presented his original research on processes by which health and safety innovations are achieved within organizations. Dr. Lyle Gross, Medical Director of the Alberta Workers' Compensation Board Rehabilitation Centre, then discussed the emerging strategies for effective rehabilitation of Alberta workers, one of the key recommendations of the recent Millard Task Force Report.

Dr. Colin Soskolne, with the Department of Health Services Administration and Community Medicine, The University of Alberta, discussed his original research on the chronic human health effects associated with exposure to acidic airborne contaminants. Our wrap-up speaker was Dr. Hugh Walker, Managing Director of Alberta Occupational Health and Safety. He presented his observations of his first six months in this position, and described the short and long term priorities that he sees for his department.

We enjoyed a high degree of audience participation in each of these presentations, and we hope to achieve an enjoyable and thought-provoking session next year. Watch the Newsletter for announcements of the next Scientific Session to be held in Calgary in November 1990.

**Ken Corbet, Assistant Professor, Department of Community Health Sciences, Faculty of Medicine, The University of Calgary, and President, The Alberta Occupational Health Society.*

INFECTIOUS DISEASE HAZARDS IN THE ALBERTA FUNERAL SERVICE INDUSTRY

F. S. Rockwell, B.Sc., M.D.*

Recently there has been growing concern over the disposal of biological materials and their health effects in the workplace. In this regard the funeral industry seems to have been largely overlooked. Consequently, a preliminary survey of Alberta funeral homes was conducted in August 1988 to identify potential infectious disease hazards associated with current embalming techniques. Plans for further study were cancelled when it was learned that individual funeral homes would soon be required to develop codes of practice in conjunction with Alberta Occupational Health and Safety. This article comments on the results of the exploratory study.

Except when prohibited by the Bodies of Deceased Persons Regulation under the Public Health Act, a corpse may be embalmed to disinfect, preserve and restore the body for funeral rites. This preparation involves several steps:

- (a) removing medical devices such as dressings, catheters and intravenous lines
- (b) perfusing the corpse with embalming fluid via a cut-down on the subclavian vessels
- (c) aspirating fluid from body cavities
- (d) cleaning the body surface
- (e) cosmetic retouching of visible portions of the body.

Questionnaires were delivered to twelve funeral homes which operate embalming facilities in Alberta. Six of these were metropolitan; six were located in smaller centers. A 100 percent response rate was obtained.

Two urban funeral homes stated that some of their workers had sustained minor puncture wounds while removing medical devices from corpses during the previous twelve months. Approximate injury rates were 0.6 and 1.5 incidents per full-time equivalent employee per year. Based on the median frequency reported, metallic intravenous needles were found on 5

UPCOMING COURSE

Occupational Health II (MDSC 645.11)
Heritage Medical Research Building,
The University of Calgary.
Tuesday evenings,
January through April 1990.
A course for health and hygiene professionals, addressing workplace and clinical issues in occupational health.

Contact:

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percent of corpses and other penetrating objects on 27.5 percent.

While injuries from these articles seem infrequent when averaged over all twelve funeral homes, they pose a serious health hazard in view of the small inoculum required to produce Hepatitis B infection. Even with the prohibition on embalming corpses known to be infected with Hepatitis B, the possibility of unrecognized infection argues strongly for routine immunization of mortuary technicians. Nevertheless, only eight of twelve funeral homes reported that all or most of their mortuary staff had been vaccinated against this disease. At three sites none had been immunized. Based on the five urban and five rural respondents who gave quantitative data, only 21 of 35 urban and ten of twelve rural staff had received Hepatitis B vaccine.

Disposal of waste is another area of concern. Although hospitals are required to handle articles contaminated with body fluids as hazardous waste, funeral homes are not. All twelve respondents indicated that medical paraphernalia is sent to the local landfill with their general trash; only three make any attempt to disinfect these articles. Sharps, including scalpels used in embalming, are discarded in empty embalming-fluid bottles made of plastic, rather than in approved puncture-proof containers. Body fluids are drained into the community sewage system. Before discharging fluids into the sewer, three of the funeral homes attempt to disinfect the effluent from perfusion and two attempt disinfection of the aspirate from body cavities.

Funeral directors obtain information from a variety of sources. The availability of general information about the occupational risk of infectious disease was rated as very good or better by six of twelve respondents, about precautions to reduce this risk by four of twelve; and about waste disposal by one of eleven. Four cited the Alberta Funeral Service Association (AFSA)

as one of their sources of information. In addition, two cited serial publications (some of which are published by AFSA). Other sources mentioned were:

- medical examiner
- medical community
- company policy and procedure manual
- suppliers
- health units
- other funeral homes

CONCLUSION

The results of this study suggest that there is a need for improved health protection in the funeral industry. I believe this can be accomplished by:

- (a) promoting immunization of workers against Hepatitis B
- (b) establishing and following codes of practice that address worker safety and waste disposal
- (c) providing relevant information through AFSA and other constituencies that have the industry's ear.

**Resident in Community Medicine, Department of Community Health Sciences, Faculty of Medicine, The University of Calgary.*

A MEDICAL INFORMATION SYSTEM (MIS) FOR RURAL PRACTICE: AN ONGOING CME SERVICE

Penny A. Jennett, Ph.D.*
I.J.T. Parboosingh, M.D.**
William Maes, M.L.S.***
Jocelyn Lockyer, M.H.A.****
David Lawson, M.D.*****

Physicians most often use the medical literature, discussions with their colleagues, and consultants' advice to learn of innovations in clinical practice. However, because medical information is growing exponentially, it is increasingly difficult for practitioners to readily access up-to-date, practice-related information from printed material or fellow physicians. As we approach the 21st century, it is evident that physicians can no longer be dependent on memory in their attempts to stay current. Services which can aid physicians to optimally utilize and manage medical knowledge, as well as provide networks between colleagues and experts on a day-to-day basis, are critically needed to assist physicians to practice optimal medicine in the 1990's and beyond.

Rural practitioners, when compared to urban, are often at an added disadvantage when trying to locate clinical information related to day-to-day non-emergency practice needs. In addition, they experience a higher degree of daily isolation from expert and collegial advice, as well as from centralized medical libraries with established retrieval services.

A Medical Information Service (MIS) designed to assist rural practitioners retrieve information specific to their daily practice needs is one service which can provide an exchange of information between rural and academic centres, and which would result in a better two-way understanding of rural practice needs. It should also motivate physicians to keep more current in their medical knowledge, thereby delivering higher quality care. The MIS has the potential to provide just such opportunities for prompt, low-cost, efficient, and relevant learning.

A pilot MIS, funded by the MSI Foundation of Alberta, has been in operation at The University of Calgary for the past nine months. The pilot service has been offered to 64 physicians in ten Alberta communities, and will terminate in December 1989. To date, 44 practitioners have used the MIS. A total of 210 practice questions have been processed. The average number of submitted questions per physician and per community are 4.2 and 18.5 respectively. To date, seven individual practitioners have received local assistance with searching medical computerized databases.

Commencing in January 1990, the MIS will be offered as an ongoing CME service to rural physicians in Southern Alberta under the direction of Continuing Medical Education and the Medical Library at The University of Calgary.

ACCESSING MIS

Physicians phone in non-emergency practice-generated questions to a centralized telephone answering service (1-220-8275) located at The University of Calgary Medical Library. One or two key articles related to the question are retrieved and forwarded to the requesting practitioner, as well as to a clinical consultant in the area. The consultant offers opinions on the articles and, if appropriate, recommends alternate reading materials. Feedback from the consultant is forwarded to the practitioner. Interested physicians are offered one-hour small group training sessions on the use of basic techniques which facilitate efficient searching of computerized databases.

A monthly newsletter is circulated to participating physicians and clinical consultants as a means of sharing information requests and communication regarding the service. Questions in the newsletters can be shared with other CME services, for example, the teleconference, visiting specialty programs and short course programs. They represent "true needs" of the rural communicators and as such should be given high priority in future CME offerings.

REPORTED BENEFITS OF SYSTEM

Rural practitioners have indicated that the information obtained through the MIS has been helpful in many ways. It has

directed them to a new expert in the field, helped to answer a patient's questions, provided the incidence of a disease in Canada, facilitated decisions as to what equipment to buy, reassured them of their management approach, assisted in the modification of protocols, and helped in referral decisions. Those physicians carrying out computer searches at their local sites report an increased interest in accessing information locally and from the The University of Calgary central service. Nurses, residents, and clinicians report using information on rounds.

Consultants have reported that the MIS has helped them to gain a clearer understanding of the nature of non-emergency questions in rural practice. It is a source of ideas for relevant Continuing Medical Education sessions as well as providing a two-way educational communication network between rural practitioners and academia.

Benefits have also been noted for the medical library. The MIS stimulates an "outreach" approach to service rather than a "come to us" approach, resulting in an increase in practitioner ease in accessing library resources. The service also helps the librarian gain a better appreciation of physician user environment which assists in library purchases.

Administratively, input from the MIS has been valuable. Questions which are raised in practice and triggered by patients seen by physicians in rural areas can serve as a "curriculum" for practice. The questions which arise, serve as a needs assessment for CME activities, and can form a bridge with current CME networking opportunities such as teleconferences, visits to rural communities and CME courses. In addition, learning can be pursued without leaving the practice area and, as such, is efficient in both time and money.

CONCLUSION

In summary, the MIS has been useful to practitioners, consultants and medical libraries. Not all enrolled physicians directly use the service. Some prefer to delegate requests to a local colleague, who either calls in centrally, or independently searches the questions. Those who have used the service have been pleased with its efficiency. Initial responses to the practitioners have been within 24 hours. The average time required to complete individual searches, and the costs involved, have been reasonable, approximately nine minutes and \$6.00 respectively. The average initial turn around time to practitioners is 18 hours. Such time and cost data suggest a useful and efficient MIS system could be maintained by interested parties and professional bodies, once this funded project concludes.

Current appointments of the authors are given on page five.

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5	(3)	1988	15-17	R. Douglas Hamm	Workplace Health Promotion - Time for More 'Demo' in our 'Promo'?
5	(3)	1988	17,18	William Csokonay	Pretravel Preparation for Occupational Travel
5	(4)	1988	20,21	W. Andrew Harrell	Variables Influencing Self-Reported Safety Practices in Farmers
5	(4)	1988	21-24	Ronald M. Dufresne Brian C. Alleyne Michael R. Reesale	Noise Induced Hearing Loss: Part II - Characteristics and Costs of Claims Submitted to the Alberta Workers Compensation Board for Hearing Loss
6	(1)	1988	2,3	William Csokonay	Medical Examination and Screening of Workers after Overseas Assignments
6	(1)	1988	4	Tee L. Guidotti	AOHS Mid-Year Meeting in Edmonton: "A New Look at Health Promotion"
6	(1)	1988	4,5	Tee L. Guidotti	Occupational Health in the 1990's: Developing a Platform for Disease Prevention
6	(1)	1988	5,6	J. Don Johnston	Chemicals and the Food Chain
6	(2)	1988	8-10	R. Douglas Hamm	Workplace Health Promotion - Benefits, Costs and the 'Dr. Faustus Effect'
6	(2)	1988	11	Robert R. Orford	Occupational Overuse Injuries
6	(2)	1988	12	Tee L. Guidotti Shona J. Kelly	Guidelines for Safe Use of the Chlorophenoxy Herbicides (2,4-D and Related Compounds)
6	(3)	1989	14-16	R. Douglas Hamm	Occupational Cancer: DNA Adducts and Prospects for "Molecular Epidemiology"
6	(3)	1989	16	Brian C. Alleyne	Autobody Shop Survey 1986-1987
6	(3)	1989	17	Brian C. Alleyne	An Analysis of the Fibrosis of the Lung Program
6	(3)	1989	18	Wilfred Ntiamoah	A Critical Review of "Occupational Medicine - A Syllabus for Alberta"
6	(4)	1989	20-24	R. Douglas Hamm	Occupational Cancer: Oncogenes and Insights from "Molecular Oncology"