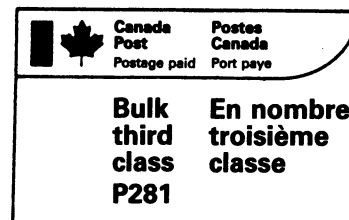
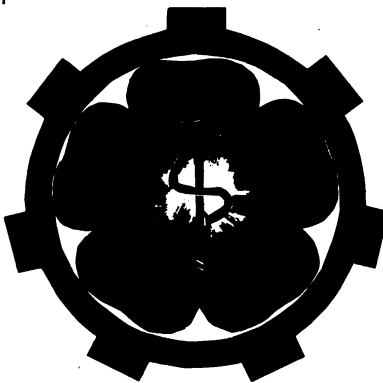


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ALBERTA OCCUPATIONAL MEDICINE NEWSLETTER

EDITORIAL COMMENTS

To date, the Newsletter has been provided primarily to Alberta physicians, and to other health professionals with a direct interest in occupational health. For this volume, we have also been pleased to provide the Newsletter to members of the Alberta Occupational Health Society, who have been able to use it as the framework for an organizational newsletter. Because many Newsletter readers may well be interested in this organization, we have included in this issue a report on the 1987 Society meeting held last November.

Two articles in this issue are of considerable interest to clinicians. Bill Csokony has provided a thorough overview of the preparation required for patients/clients whose employment will take them overseas. A second article in an upcoming issue will discuss post-travel assessment. Our case report, submitted by Dr. J.C. MacAulay of Red Deer, refers to pressure gun injuries, and points out the gaps in knowledge of occupational hazards amongst one of our largest occupational groups in Alberta — the farming community.

Finally, Doug Hamm has written a provocative and timely article which both challenges our often unquestioning acceptance of "wellness programs", and offers some alternatives. This article is essential reading for those involved in workplace health promotion programs.

The editorial staff welcomes your comments on either the content or format of the Newsletter. In addition, some of you

may be contacted by Alberta Community and Occupational Health who, in the evaluative spirit recommended by Doug Hamm's article, are conducting a readership survey of the Newsletter. They, too, would consider your comments valuable.

Heather Bryant, M.D., Ph.D., FRCPC
Editor

* * *

UPCOMING CONFERENCE

"Manager's Role in Occupational and Environmental Health and Safety",
Banff Centre School of Management and the OH&S Heritage Grant Program,
June 7-11, 1988.

For further information, write:
Felicity Edwards, Manager
Resource Management Programs
School of Management
The Banff Centre
Box 1020, Banff, Alberta T0L 0C0

* * *

NEW PUBLICATIONS FROM ALBERTA COMMUNITY AND OCCUPATIONAL HEALTH

Alberta Community and Occupational Health has begun publication of a series of information guidelines aimed primarily for workers. The following four are all brief (less than 5 typed pages), and give the worker a concise overview of personal protective measures, possible hazards, and resources for further information.

1. Health Effects of Lead Exposure
2. Health Effects of Styrene Exposure
5. Health Effects of Organic (Alkyl) Mercury Compounds
6. Health Effects of Pesticide Exposure

The information should be of value to health professionals dealing with potentially exposed workers. In addition, ACOH is encouraging duplication of the documents, which would allow its easy distribution to workers/patients.

* * *

UPCOMING COURSE

"Fundamentals of Industrial Hygiene"
Harvard School of Public Health,
June 13-17, 1988

For more information, write:
Office of Continuing Education
Department A
Harvard School of Public Health
677 Huntington Avenue
Boston, Massachusetts 02115

Prepared in the Department of Community Health Sciences, Faculty of Medicine,
The University of Calgary, through funding by Alberta Community and Occupational Health.

REPORT ON THE 1987 JOINT MEETING OF THE ALBERTA OCCUPATIONAL HEALTH SOCIETY AND THE CANADIAN OCCUPATIONAL HEALTH ASSOCIATION

On 12 and 13 November at the Edmonton Inn, just a few hundred yards from the Airbus Terminal that is so familiar to most of its members, the Alberta Occupational Health Society and the Canadian Occupational Health Association held their 1987 Annual Meetings jointly, as they did in Calgary in 1986. This year the program was not focused on a single theme but rather there were several issues addressed.

A panel of delegates discussed impressions of the XII International Conference on Occupational Health held in October in Sydney, Australia. The panelists had very different impressions of the meeting, depending on the sessions which they attended. All agreed that it was an excellent meeting this year and that the scientific content was quite high. Certain themes clearly emerged as worldwide concerns, in particular neurotoxicology, chronic effects of solvent exposure, the design of health services to accommodate the needs of small business, pesticide use and control in less developed countries, and the need for appropriate but internationally-recognized standards for occupational health services and education.

Other activities at the Alberta meeting included a symposium on the Workplace Hazardous Materials Information System (WHMIS), which featured speakers from Alberta and the federal government addressing this new joint provincial-federal initiative. WHMIS will be phased in over the next year and by fall 1988 will be in place as a requirement for Canadian producers, importers, distributors, and users of potentially hazardous substances. A thorough overview of the topic was presented and the steps to be taken between now and the implementation of WHMIS were reviewed in some detail. Participants at the meeting were advised that many of the final requirements for implementation of WHMIS have not been completed. Individuals or firms advertising comprehensive services to enable employers to meet the requirements of WHMIS are therefore premature.

Other topics discussed included information systems pertinent to occupational health studies and the tracking of trends, AIDS in the workplace, drug testing in the workplace, and the handling of special waste in the province with particular emphasis on the new facility at Swan Hills. The discussion on drug testing in the workplace by Dr. Ray Copes drew particular attention. This presentation applied principles of clinical epidemiology

to evaluate drug testing programs and found them wanting in their predictive value and of questionable benefit compared to their cost.

Two luncheon speakers further enlivened the program. Mrs. Maureen Shaw, Chairman of the Occupational Health and Safety Council advising the Minister of Community and Occupational Health, presented a challenge to all present to show that the Occupational Health and Safety system works, and when it does not, to pose solutions to the problems. Mr. Reg Basken, National Director of the Energy and Chemical Workers Union, was asked to speak on Occupational Health and Safety issues from the perspective of labor. He suggested that labor's positions were not necessarily always incompatible with management's but that labor by the nature of its relationship with management was always forced into a reactive position. He addressed a variety of specific issues to illustrate this idea. Both speakers lent considerable wit and energy to the meeting.

Each organization had its business meeting following the first day's program. The Canadian Occupational Health Association is building a Canada-wide organization embracing all occupational health professions and will hold its annual meetings separately in Ottawa next year. Special attention is being given to building strong provincial organizations like Alberta's in support of a strong national organization. Dr. John W. Markham passed the gavel of the presidency to Dr. Graham Gibbs, who will serve in 1988; Mr. Michael Hewitt was announced to have been elected to take office in 1989. With this leadership and an equally strong Executive Board the annual meeting of COHA ended on a note of great optimism.

The Alberta Occupational Health Society at its meeting served notice that it would enter into a far more active agenda in coming years with an emphasis on direct involvement in public policy and enhancing services to members. A committee on public policy was formed and representatives of the AOHS will seek to meet with the Minister of Alberta Community and Occupational Health to address concerns. The organization will also resume to have local meetings and is committed to three interim meetings around the province prior to the next annual meeting. An arrangement has been struck with the Alberta Occupational Medicine Newsletter which has been circulated primarily to physicians, to supply copies to members of the society. Dr. Herb Buchwald, president, who was forced to send regrets because of conflicts with his official duties as Acting Deputy Minister of the Department, passed the gavel in spirit to Dr. Tee L. Guidotti who will serve through 1988 as president, to be succeeded by Ms. Sharon Mathias, who was elected at the meeting.

An equally strong Executive Board was also elected and it would seem that the society is well on its way toward a very active year.

Submitted by Tee L. Guidotti, M.D., M.P.H., C.C.B.O.M.

OCCUPATIONAL HIGH-PRESSURE INJECTION INJURY: A CASE REPORT AND DISCUSSION

J. C. MacAulay, M.D., F.R.C.P.(C).*

Although high-pressure injection injuries have been recognized for over 50 years as an occupational hazard, they are rarely reported in spite of major morbidity and rare rehabilitation (Vinogradov, 1936). This report would appear to be the first report of such an injury as a farming hazard, and is unusual in the site affected.

CASE REPORT

In March 1984, a healthy 33-year-old local farmer was referred because of a presumed cellulitis of penis and scrotum. He had sustained an injury at work when a hydraulic lubricating hose under high pressure came loose, but had concealed the site and type of injury for 10 days prior to hospital admission. A stream of oil had hit his body below the pubis, penetrating his clothes. A small pit on the underside of the penis was the point of entry. The penis itself was grossly enlarged and distorted. The skin was turgid, yellowish in colour and cool to touch. Sensation was apparently normal, but the patient experienced constant painful erections, frequently disturbing sleep. Swelling continued to spread over the pubis and natal cleft, causing acute discomfort.

Incisional biopsies down to Buck's fascia were taken and showed numerous vacuoles and minute cysts, associated with a moderate degree of inflammation, granulation tissue and fibrosis. Infiltrates consisted of lymphocytes, plasma cells and histiocytes; multinucleated foreign body giant cells were rare and eosinophils were absent. An oil red O stain showed fat droplets in the vacuoles and cystic spaces, and polarized light showed refractile crystals in the fat droplets. Immunofluorescence studies showed granular deposits of C3 at the dermo-epidermal junction throughout, as seen in a variety of immunological diseases, which were also present in dermal arterioles along with small quantities of IgG and IgM.

On the basis of these findings, a diagnosis of lipid granulomatosis was made. High-dose oral steroid therapy was commenced, and within a week the swelling was much reduced and painful erections had ceased. However, reduction of the

steroid dose resulted in recurrence of the patient's problems, including a continuing subcutaneous spread of the offending material. Because of this, plastic surgery was performed (Agha, 1978). At operation, thick, yellow indurated tissue was filleted down to Buck's fascia. This damaged tissue covered the testicles, the entire shaft of penis and suspensory ligament of the penis up to the suprapubis and to the perineum caudally. After 750 mg fluorescein had been injected and replacement flaps examined by Wood's light, further excision of tissue down to the suspensory ligaments was deemed necessary. New scrotal pockets were effected and closure done with 4-0 DEXON and haemovac drains. Recovery was slow, but complete, and normal sexual function resumed by 4 months post-operation.

DISCUSSION

In 1937, Rees described the inadvertent injection of fuel oil under pressure into subcutaneous tissues. Since that time less than 60 cases of high-pressure injection injury have been reported in print. Although the majority of reported cases have been industrial accidents (Scott, 1983), the author's practice is largely rural and the farmers open to this class of injury, being self-employed, cannot claim for industrial injury. Their problems have gone thus unnoticed and unreported.

The injury site is usually pin-hole size as lubricating nipples have an average diameter of 1-2 mm. The injury occurs when the nipple is inserted incorrectly, pressure turned on, and the lubricant sprayed out at pressures in excess of 2000 p.s.i. The force can be over 3000 p.s.i. with the engine revving, and up to 1000 p.s.i. when idling (Herrick, 1980). The injury is almost as severe through gloves or clothing as on bare skin. The speed of injection can be up to 1000 feet/s at distances of 1-2 inches from the point of breaking the skin. The pressures can be translated into an average 5-10,000 kilograms at 3-5 cms.

The patient is aware of the injury immediately, but there is a latent anaesthetic period, followed by gradual onset of swelling, pain and ischaemic problems (Gerberman, 1975). To date, all reported cases have involved fingers or palms, except one case where an activated air-pressure nipple was put next to the tongue with subsequent swelling and temporary loss of function. The tools or machinery involved vary extensively. They include paint spray guns, hydraulic pumps, diesel-fuel injectors, compressed air lines, presses for injection moulding of plastics, and, in the case of farmers, the hydraulic injection systems incorporated into their tractors. Farmers use these systems to lubricate their non-power-driven machinery. This work is often done in the open field, at speed, and alone. In spring and autumn, agricultural workers

may be averaging an 18 h work day, and the hazards are obvious.

The mechanism of injury is not established, but is probably vessel spasm from pressure at the point of entry, and subsequent venous obstruction from the progressive tissue swelling, the severity of the injury being directly proportional to the magnitude of the pressure, distance from the source, the materials injected and the time until initial decompression.

The quality of subsequent care and the appreciation of the pathophysiological problems are obviously paramount for return of function, which has to date been poor.

The most irritant material is turpentine, a true tissue fixative, and the least irritant is 'chock oil' (95 percent potable water with 5 percent miscible oil), with lubricating grease giving little local reaction. However, all continue to spread in the subcutaneous tissue as shown in the case described.

Many greases in commercial use contain both radiopaque lead thickening agents, and calcium complex agents to prevent breakdown of the lubricating film under high-compression loads. One half of the internationally listed greases contain lead for this purpose. Pre-operative X-rays are thus extremely valuable if grease is the offending substance. If the grease is not radiopaque then xero-radiology will delineate the affected tissues (Crabb, 1981).

As many of the injuries are produced by hand-held machines, the site of injury is usually the non-dominant index finger. The treatment, as suggested by Kaufman (1968), is 5 min elevation of the affected part, followed by tourniquet.

The offending material in this present case was Hydraulic 50, a lubricating oil which is a mixture of paraffinic and naphthenic hydrocarbons with trace amounts of aromatic hydrocarbons and additives (antirust, antifoaming and antiknock chemicals) all in small amounts (product data, Imperial Oil Ltd). The accompanying brochure included skin and eye contact procedures, describing slight irritation but no tissue damage to conjunctiva.

Historically, oil granulomata have been known for many years. In 1937, Rees described a case caused by the fuel-injection mechanism of a diesel engine, and in 1939, Smith reported a case caused by a high-pressure grease gun. In 1963, Gruner reported cases caused by the high-pressure spray gun, at that time a new industrial tool. The histology of oil granulomata was described by Hess (1925), Dickson (1976) and Vinogradov (1936), as self-inflicted wounds by Russian males to avoid conscription.

The principles of treatment for this type of injury have been outlined by Her-

rick (1980). These can now be amended slightly and include rapid referral to a plastic surgeon, X-ray or, if necessary, xero-radiology, obtaining a chemical breakdown of the offending substance, and decompression and complete cleansing of the affected area, possibly under general anaesthesia. If a limb is affected, this is raised for 5 min, and a tourniquet is applied.

Tetanus toxoid and human tetanus immune globulin may be needed, and high-dose oral steroids may be valuable, particularly if there has been delay in treatment. Careful observation is needed as further decompression, and excision of all affected tissue, may have to be repeated. In the case of digits, amputation may be needed, but the thumb must be preserved if at all possible.

Acknowledgement:

Dr. J. J. San Vicente, Urologist, carried out the biopsies, Dr. John Klassen read the histology, and Dr. Robert Carter, Plastic Surgeon, carried out necessary surgery.

Dr. MacAulay has allowed reprinting of this article, which originally appeared in the British Journal of Dermatology, 1986; 115: 379-381.

References available on request.

**Dermatologist, Red Deer, Alberta*

WORKPLACE HEALTH PROMOTION - Time for More 'Demo' in our 'Promo'?

R. D. Hamm, M.D., C.C.F.P.*

It has been said that psychotherapy is an undefined technique applied to unspecified cases with unpredictable results! Could this also be said of workplace health promotion ('WHP') in its present state of the art?

Readers of this newsletter are likely to be involved in some form of workplace health promotion, or, as it is sometimes called, 'workplace wellness'. Such programs have become widespread during the past decade, having been prompted in large part as a result of the heavy financial involvement of American corporations in the U.S. health care economy which has been consuming an increasing proportion of the U.S. Gross National Product. The American penchant for cost-benefit analysis might suggest that WHP has proved itself south of our border, but definitive conclusions are not yet available for reasons to be noted below.

The American WHP movement gained respectability from the Lalonde Report of 1974, 'A New Perspective on the Health of Canadians' and Canadian companies have in turn bought aggressively mark-

eted WHP packages including a variety of proprietary Health Risk Appraisal software systems. Occupational health professionals are often given the responsibility of selecting, implementing and/or administering such WHP programs but less often of evaluating these programs.

From personal experience and literature review, I find that WHP programs are generally not critically evaluated. One should keep in mind that medical therapies have often been uncritically adopted as well, but there are a number of reasons for the lack of outcome evaluation specific to WHP programs.

Many of the earlier workplace health promotion programs did not incorporate formal evaluation mechanisms or even specific outcome goals. When such programs have been 'cloned' and marketed on the bandwagon of growing public health consciousness, their adoption in other corporate settings often includes this same lack of critical appraisal and a propagation of assumptions. Moreover, the rapid rise of WHP has meant that there has been only limited time in which to assess so-called 'distal' health outcomes. The complex causal linkage between health behaviors and health outcomes is only now being defined with epidemiological methods. Even so, in the rapidly developing field of health promotion, WHP programs may be using 'old' epidemiological data.

Health professionals should realize that corporations often have multiple goals in which the evaluation of health outcomes may be only one component in management commitment to WHP. Worker morale and/or satisfaction are often accepted in place of more rigorous forms of evaluation. In fact, once a company's management has made a decision to implement a WHP program, it may consider the evaluation process concluded unless economic constraints force a reconsideration. (In such an event, even a demonstrable WHP program benefit may not ensure survival of the program!) The design and mandate of a WHP program may not include funds and expertise for its evaluation. Occupational health personnel may inherit an existing program in which they have had no input in terms of incorporating an evaluation process. Evaluation itself may pose a threat to job security or the 'ego investment' of proponents of WHP programs. There is generally no financial incentive for the extra work involved in the evaluation of WHP and such evaluations have had limited scope for publication beyond in-house organs.

WHP programs vary greatly in their components, objectives, extent of participation and evaluation criteria (when present). The latter, for example, may focus on selected employee subgroups in specific programs who exhibit "regres-

sion to the mean", making generalizability problematic.

The nature of WHP programs often precludes any form of true experimental design (using control groups). Moreover, controls from the general population may not be appropriate because of the "healthy worker effect" (in which employee standardized mortality ratios are biased towards lower values by recruitment selection, which excludes those chronically sick, and a secondary selection process by which workers becoming unfit during employment tend to leave the workplace).

Finally, lack of clarity in program objectives may reflect changing emphases in health promotion itself and even the contradictory tenets that have arisen in this emerging field. In a rather provocative article in *Public Health Reviews*, entitled "The Tyranny of Health Promotion", Marshall Becker writes:

"I have suggested that the health promotion/disease prevention movement, for all its virtues, has created or exacerbated a number of undesirable developments: devotion of high resources (and often low scholarship) to a relentless search for "risk factors"; premature exhortation of the public to adopt numerous health-related behaviors, with frequent reversals of advice, and with unfulfilled promises concerning what such behaviors would achieve for the adopters; a public generally confused and skeptical with regard to public health advice; a scientific community which rushes tentative findings into print; a mass media community which abets this process and often independently worsens the problem; and an introspective approach to health which fosters victim-blaming and stigmatization, ignores critical social, economic, and environmental issues which have major impacts on health, and further encourages an already unhealthy level in our society for personal, rather than societal, well-being."

With such critiques as the foregoing, it is not surprising that there has been little evaluation of WHP. Why even suggest that efforts be made to evaluate WHP? First, one must remember that the workplace provides significant advantages with regard to both health promotion and the evaluation of health promotion. Participation rates are often much above those in community based programs, and the corporate organizational structure provides facilitative networks for recruitment and follow up.

Furthermore, WHP programs usually collect large amounts of data 'just waiting' to be used in evaluation. Often, in-

house computer systems store such information and it may be readily retrieved for analysis. Although data is often collected without regard to specific research interests, it may not be difficult to organize the collection of information in the course of WHP in order to address specific evaluative questions. WHP programs represent 'natural experiments' in progress which could be used to expand the scientific base in the developing field of health promotion.

The usual compromise in terms of WHP program evaluation has been that of a 'process' evaluation, e.g. how many participated in the WHP program, what questionnaire and biometric results were found, what educational materials, counselling was given?, etc. Thus, the more demanding 'outcome' evaluation may be short circuited.

How can WHP outcome evaluation be developed? It is important to recognize that outcomes can only be measured against objectives and the latter may often be vaguely defined (if at all). If WHP program objectives are established, more specific outcome objectives can be developed from them. Jonathan Fielding (1984) has listed a number of outcomes that could serve as criteria of health promotion program success, e.g.,

1. Improvement in employee health knowledge, e.g. re: blood pressure.
2. Improvement in employee health attitudes, e.g. re: exercise
3. Increase in health behavior intentions, e.g. to stop smoking
4. Improvement in health behaviors, e.g. use of seat belts
5. Reduction in risk factors, e.g. cholesterol levels etc.
6. Decrease in illnesses or illness related absenteeism
7. Decrease in disability
8. Decrease in mortality
9. Improvement in job satisfaction
10. Improvement in satisfaction regarding employer
11. Improvement in productivity

At the ultimate outcome level, specific behavioral objectives can be asked in terms of "Who is expected to achieve how much of what behavior by when?" (Feldman, 1984). At a less specific level, program objectives can be set in terms of site specific smoking cessation rates, hypertension control rates, weight control rates, breast self examination rates, Pap test usage rates, exercise activity levels, lipid level control rates, etc. Ideally, such objectives could be set in collaboration with the employee population involved so that they 'own' these objectives.

Outcome objectives will require measurable standards for comparing program effects. Parkinson (1982) has noted four possible sources of such standards:

1. *Historical standards*

Current outcomes may be compared to previous outcomes in the same or a similar group. Perhaps there is data available on the blood pressure measurements of employees in the past, etc.

2. *Theoretical standards*

Such standards are often based on optimum interventions or 'best case' outcome scenarios, perhaps from programs with unusual success.

3. *Absolute standards*

Outcomes are compared to the highest level attainable, e.g., a 100 percent smoking cessation rate.

4. *Negotiated standards*

Frequently, a weighting of the other sources may be used to arrive at some 'compromise' standard. It has been said (Ricketts and Kaluzny, 1987) that "the systematic study of worksite health promotion/disease prevention activities is an exercise in compromise."

Finally, if true experimental designs are often impractical, what design options will yield results with some degree of validity? There are a number of so-called 'quasi experimental designs' (see for example, Donald T. Campbell and Julian C. Stanley's concise booklet "Experimental and Quasi-Experimental Designs for Research") that may be suitable. Since WHP programs usually include periodic observations, some form of time series design is quite feasible. A visit to a medical library, the advice of an epidemiologist and/or help from a colleague with research experience can be quite valuable.

Although this article points out a number of historical impediments to the evaluation of WHP programs, such an exercise is not hopeless, even on small scales. Must those of us who advocate WHP be satisfied with endorsing it as an 'act of faith'? We need to demonstrate where, when, why and for whom WHP works. In terms of proven efficacy, WHP may presently receive the benefit of the doubt, but sooner or later it must be demonstrated that corporate investment in an 'ounce of prevention' saves a 'pound of cure'. If workplace health promotion is to avoid falling into the definition of psychotherapy given earlier, more evaluation must be integral to our WHP programs, i.e., there must be more 'demo' in our 'promo'!

(References of related interest available on request.)

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PRETRAVEL PREPARATION FOR OCCUPATIONAL TRAVEL

W. M. Csokonay, M.D., F.R.C.P.(C)*

It has been my recent impression that the number of Albertans who have been given assignments in developing areas of the world has increased in these recessionary times. This trend has not been completely associated with the activities of the petroleum industry, but has included persons from various vocational backgrounds, travelling alone and with families, on foreign assignments or in search of employment abroad. This brief summary will highlight some of the important areas of pretravel preparation for potential employment abroad; a subsequent article will discuss medical assessment of workers and their families upon return home. It is important at the outset to acknowledge that pretravel preparation for an employee will depend most often upon the geographic destination(s), the duration of stay, the associated health risks of the area where the employment will occur, and the risks inherent in the job.

Complete pretravel preparation generally includes the following items:

MEDICAL ASSESSMENTS

Review of the health history, as well as physical examination, is generally recommended to document a baseline and to identify any personal health risks or conditions which may necessitate individual attention, instruction, or modification. As well, for certain travellers some laboratory testing may be advisable, including a blood group and type, a G6PD screen, and HIV-1 antibody testing.

HIV-1 antibody tests may be required as a condition of entry, or for a work permit, in some foreign countries for certain travellers. Informed consent should be obtained, and appropriate pre/post-test counselling must be given when this test is offered or required. Any "Certificate" of HIV-1 antibody status must bear official markings and the date and place of testing.

For those who have either been born in or resided for long periods in developing countries, the presence of total anti-HAV(IgG) antibodies may be screened for. A positive result in this case would obviate the need for further doses of immune serum globulin. Total anti-HAV is often offered as well for those who have had a past history of an unspecified hepatitis-like disorder, or who have had repeated doses of immune serum globulin in the past and who will be frequent or long term travellers.

HEALTH INSURANCE

All occupational travellers should carry additional health insurance coverage beyond provincial Medicare. A variety of

larger organizations currently carry coverage with international organizations, but of interest, many of these insurance carriers offer both group and personal insurance coverage for travel outside the country for variable periods of time. Medic-Alert or similar tags should be considered for those with ongoing health problems, allergies, or where medication history is critical.

IMMUNIZATIONS

There are no requirements for immunization for re-entry into Canada, and the traveller should be reassured of this fact. It is usual to offer immunization for any traveller on the basis of requirements for entry into foreign destinations (yellow fever and cholera may be required dependent upon the country of destination), and upon perceived or known risks for the individual as well as the health risks at the destination.

Core immunization includes, for adults, boosters (or if applicable the primary series) for tetanus and diphtheria every ten years; polio boosters for travel to developing areas of the world, or where the disease has become epidemic, and a pre-travel Mantoux test to establish baseline status. As well, consideration should be given to vaccination with mumps-measles-rubella vaccine as per Canadian guidelines available from public health sources.

Special vaccines, including some of the newer agents, are worthy of some mention:

i) *Typhoid* - Immunization is generally recommended for travellers to areas where recognized risk of exposure exists, with additional emphasis placed on the meticulous selection of food and water even after vaccination. After the series, boosters are generally given every three years.

ii) *Rabies* - Pre-exposure immunization should be recommended for high-risk persons such as animal handlers, certain laboratory workers and field personnel, and persons planning to be in countries or areas of countries for more than one month where rabies is a constant threat. Persons whose vocations or avocations bring them into contact with potentially rabid animals should also be considered for pre-exposure immunization. Those previously vaccinated should have their serum tested for rabies antibody every two years, and if the titre is inadequate they should be given a booster dose. Chloroquine phosphate for malaria suppression and other unknown factors may interfere with the antibody response to human diploid cell rabies virus vaccine, but using the intramuscular route provides a sufficient margin of safety.

iii) *Immune Serum Globulin* - Generally recommended for workers to developing countries, especially those who will be living in or visiting rural areas, eating and drinking in settings of poor or uncertain sanitation, or those who will have close contact with local persons, especially young children, in settings of poor sanitation. For such travellers, a single dose of ISG of 0.02 ml/kg is recommended if travel is less than three months. For prolonged travel, 0.06 ml/kg should be given every five months.

iv) *Hepatitis B Vaccine* - Should be offered to health care workers employed abroad in developing areas, and might also be considered for persons who plan to reside for greater than six months in areas with high levels of endemic hepatitis B. Two types of vaccine are currently available (Heptavax, and the new Recombivax), and indications and guidelines for administration are available elsewhere.

v) *Meningococcal Vaccine* - Although meningococcal disease is considered endemic throughout the world, the vaccine may be of benefit for some travellers to countries recognized as having epidemic meningococcal disease. Health alerts have advised of such outbreaks over the past few years in Nepal, and more recently in Saudi Arabia. The duration of immunity appears to be at least three years.

vi) *Japanese Encephalitis Virus (JEV)* - is an uncommon but serious arboviral infection endemic through most of the Far East and southeast Asia. The vector is the *Culex* mosquito that breeds in rice fields and is most active at dawn, dusk, and on overcast days. The virus is maintained in animals, particularly in birds and pigs. Immunization in man is considered safe and effective but the vaccine is not licensed in North America. It is available through American embassies in Asian countries, and is generally recommended for persons who plan long term residence in areas experiencing epidemics, especially when activities will include trips into rural areas. Travellers should not overlook important precautions to prevent mosquito bites (covering skin with clothing, sleeping behind screened windows or under mosquito netting, and using insect repellents containing "DEET").

vii) *Other vaccines* - may also be indicated for certain travellers based on personal health history. Influenza and pneumococcal vaccine may require special consideration. It is important to recognize that many vac-

cinations are no longer provided free to the public, and although the costs are not prohibitive, individuals or their employers may be responsible for payment.

TRAVEL KITS

These need not be elaborate for the occupational traveller but should be personalized and tailored to the trip. Table A shows the basic contents of prototype travel kits which may be devised for short term (business trip) travel and longer term (greater than one month) stays abroad.

Table A

Travel Kit for Business/Occupational Travel - core content

Nonprescription:

First Aid Items - gauze, band-aids, roll bandage, adhesive bandage, scissors, tweezers, safety pins, alcohol wipes/disinfectant, elastic bandage, thermometer

Personal Care/Hygiene - napkins/tampons, contraceptives, dental floss, sunscreens, lip balm, nasal spray, "cold" medications

Water Filter, or iodine/chlorine tablets

Insect Netting

ASA/acetaminophen, antihistamine, antinauseants

Anaphylaxis kit (if indicated)

Antimalarials

Antimicrobial skin ointment

Antidiarrheals

Personal prescribed medications

Sterile needles/syringes (with signed letter from personal physician)

MALARIA SUPPRESSIVE THERAPY

All travellers to malarious areas of the world should be advised to use personal protective measures against night-biting mosquitoes, and to use an appropriate drug regimen for malaria suppression. Chemoprophylaxis remains somewhat confusing, and has been complicated recently by the withdrawal of prophylactic availability of the drug "Fansidar" from Canada earlier this year. Current recommendations are complex, but a summary table is available from the author at the Newsletter address.

As recommendations are updated annually by both the World Health Organization (WHO) and the Centre for Disease Control (CDC) in Ottawa, it is recommended that further information be

sought annually early in each new year from both sources for new guidelines.

ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS)

Risk of AIDS to the international traveller is determined by individual behaviour and lifestyle, rather than the geographic destination. Beyond general information about the disease and its transmission, and the possible requirement for an HIV-1 antibody test as a condition of entry or for a work permit, specific advice can be given regarding avoidance of sexual contact, use of condoms, avoidance of recreational (intravenous or other) drug use, and advice about the possibility of blood transfusion in the destination country should it become required in an emergency. In addition, certain travellers such as diabetics or others who require routine or frequent injections for medical reasons, should carry a supply of needles and syringes sufficient to last the entire stay abroad. For emergency use, some travellers are choosing to carry two clean sterile disposable needle syringes which can be produced for medical personnel abroad, for any type of injection.

POST TRAVEL

It has been our practice to recommend to the occupational traveller that they seek examination upon return whenever they arrive home ill, or develop illness within one month of arrival home, as well as if they have had a febrile illness or diarrhea abroad. In addition, those with a length of stay greater than three months, particularly in rural and remote areas, merit some post travel screening. This will be dealt with in a subsequent article in the Newsletter.

The above items are by no means all-inclusive and a variety of other subjects may be addressed as shown below in Table B.

Table B

Additional Items for Discussion Pretravel

Health advisories
Cultural adaptation
Security issues
Acclimatization
Camp living/Remote travel
Geographic endemic disease
Health care abroad
Recommended immunization abroad
Contraception
Animal/insect/marine bites and stings

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