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Maritime Union (of Physicians)

"If things need changing, it is the people, not the politicians, who should change them. If they do not need changing, it is the people, not the politicians, who should decide not to change them"

Eugene Forsey as quoted by Clyde Wells in the Forsey Memorial Lecture of June 8, 1991.

In the news recently, the premiers of the Maritime provinces have been talking about Maritime cooperation in a most serious way. Other than economic cooperation they have also considered decreasing the hindrances that make professional mobility and interactions difficult between provinces.

Certainly this is of utmost importance to the physicians of this province as well as New Brunswick, PEI and maybe Newfoundland.

We have read that our government bureaucracy in the Maritimes is three times the size of the province of Alberta's which has a similar population. That this exists in an economically disadvantaged area is indicative of a real need for change.

Similarly, we must look at change in the administration and organization of the profession of medicine. The three Maritime provinces have much in common.

The majority of doctors in the Maritime region already receive their degrees from the same university and, in many cases, their continuing medical education. The Francophone physicians in Nova Scotia and New Brunswick may relate to Québec universities, but the "French" question is beyond the space allotted for this discussion. However, with political unions as fragile as they are, it may be necessary to consider this question much more extensively in the near future.

Consideration of manpower needs in Nova Scotia, in isolation from, especially the needs in New Brunswick and Prince Edward Island, leads to inaccurate planning. All health care planning makes better sense if done on the basis of the Maritime population as a whole. This has, of course, been occurring for some time at the university level.

Epidemiologically our patient population is a natural unit, with similar occupational problems and problems of small size, geographic isolation, and sometimes poverty.

Many examples of cooperation already exist among the physician population. Referral patterns for tertiary care to one centre are already established. The College of Family Physicians has an annual Conjoint Assembly which has attracted family doctors of all three provinces, and has demonstrated strong and continuing social links between all physicians in the three provinces.

Certainly, Dalhousie's community hospital program has paid little attention to provincial borders and it is of note that funding for Dalhousie University Medical School certainly has been an ongoing concern of all three provinces. For example, recent monies for the renewal of the Sir Charles Tupper Medical Building has come from the Council of Maritime Premiers.

Also in this issue, the article on peer review in the Maritimes notes the cooperation of the four Atlantic Medical Societies as well as the four provincial licensing authorities in examining and planning for future peer review programs. This cooperative effort should be supported for many reasons. The small numbers in any one province and the familiarity between physicians makes a program almost impossible provincially. Performing peer review on friends in impractical.

Much more cooperative effort between provinces can be done. Is it necessary to have three Medical Societies, with each having an administrative structure? For that matter, should there be three bargaining units and three annual meetings all discussing similar problems? More joint meetings of executive, and perhaps a tri-provincial council meeting as a trial to consider mutual problems, might prove worthwhile.

One licensing authority and one licence is not an impossibility. Such a licensing authority would still be administering only a small fraction of the number of physicians to be found in Ontario or Quebec.

Before changing the regulations regarding professionals, it is apparently the intention of the Council of Maritime Premiers to seek the input of the profession, especially regarding mobility. This is as it should be. We should all be considering the question of how far we wish to go toward Maritime interaction.

In this time of political fragility, it is likely the Maritime Provinces will sink or swim as a unit; we as physicians should be aware of the professional opportunity and necessity of cooperation. It is true that if things need changing in the professional sphere, it is the professionals that should change them, as Eugene Forsey has suggested. □

J.F.O'C.

Readers of this issue will note a number of papers by First-Year Medical Students. It is the policy of this *Journal* to encourage students to contribute.

Call for Nominations: Society Officers
The Medical Society of Nova Scotia

An election for the following positions will be held at The Society's Annual Meeting, November 21-23, 1991.

President-Elect

Chairman, Executive Council
(Currently George A. Ferrier, ineligible for reappointment to this position)

Vice-Chairman, Executive Council
(Currently S. George Carruthers, ineligible for reappointment to this position)

Treasurer
(Currently Debora Ryan-Sheridan, eligible for reappointment to this position)

Honorary Secretary
(Shelagh Leahey, eligible for reappointment to this position)

Member-at-Large
(Gerald P. Reardon, ineligible for reappointment to this position)

Nominations must be made to the Nominating Committee which consists of the Past Presidents of the Branches of The Society. The Nominating Committee must report its recommendations at least four weeks prior to the Annual Meeting. Nominations should, therefore, be put before them by the end of September, at the latest. Nominations may also be made from the floor provided such nominations are placed in writing in the hands of the Executive Director not less than one week prior to the Annual Meeting. Such nominations must be signed by ten members of The Society in good standing and such nominations must be accompanied by the written consent of the nominee to serve, together with his/her Curriculum Vitae.

Anabolic Steroids: Effects and Abuse

Paul A. Taillon,* MD, and William D. Stanish,** MD, FRCSC, FACS

Halifax, N.S.

"To be or not to be, that is the question"
William Shakespeare

William Shakespeare unknowingly expressed the fundamental question posed by today's elite athlete in the ultimate quest for international recognition, "How can I be the best?"

Committed to long and rigorous years of training, enumerable sacrifices of even the most rudimentary elements of family and food, the elite athlete tunnels his focus to hundredths of a second or fractions of an inch. In this world of exclusive concentration on becoming the best, many of these athletes face the fact of maximizing at all costs to achieve the competitive edge. Performance enhancing drugs are definitely part of this equation.

The purpose of this brief overview on anabolic steroids is to prod our fellow physicians to recognize the responsibilities of the medical profession in this issue.

HISTORICAL PERSPECTIVE

Anabolic steroids are derivatives of testosterone and were first synthesized in the early 1930s. During World War II, they were used experimentally to increase the aggressiveness of soldiers.

In sport we can look back as far as the third century BC where historical documents indicate that Greek athletes ingested mushrooms to enhance athletic performance. The modern world was woken abruptly to doping in sport in 1960 when Danish cyclist, Kurt Jensen, died of injuries related to amphetamine abuse.

In 1964 the International Olympic Committee (IOC) officially adopted a definition of doping. Sport Canada presently defines doping as "the delibertate or inadvertent use of substances by an athlete for the purpose of enhancing athletic performance". The first classes of drugs banned by the IOC were psychomotor stimulants, sympathomimetic amines, miscellaneous central nervous system stimulants, and narcotic analgesics. Though anabolic steroids were being misused in sport before 1960, the International Olympic Committee did not ban the class until 1975 when suitable methods of analysis had been developed.

Though evidence of doping to enhance athletic performance existed in Canada prior to 1983, it was the occasion of the Pan American Games in Caracas, Venezuela that focused Canadian attention on this problem. Improved methods of detection at these games resulted in the disqualification of nineteen athletes, including two weight lifters from Canada. Sport Canada, at this point, revised its policy on doping in sport. In the 1984 Los Angeles Olympic Games, eleven disqualifications for positive doping tests took place, ten of which were for the misuse of anabolic steroids.

Though not alone, Ben Johnson of Canada was disqualified from the 1988 Seoul Olympiad and stripped of his Gold Medal after testing positive for the anabolic steroid stanazolol.

ANABOLIC STEROIDS: HOW DO THEY WORK?

Although this class of drugs has been known to medical science for over fifty years, there remains uncertainty as to their mechanism of action.

There are two widely held theories as to their action:
1) Anabolic steroids promote protein synthesis in muscle by increasing nitrogen retention.
2) Anabolic steroids block the catabolism of glucocorticoids that are released during periods of stress. It is readily understood that these two mechanisms are both valid and may act synergistically to promote muscle protein synsthesis.

The translation of these theories of biochemistry to physiological facts has not been without barrier. One of the core issues is the question "Do anabolic steroids enhance athletic performance?" Objective medical research, attempting to answer this vital question, has been limited by numerous problems:
a) difficulties obtaining clean, well-controlled, double blind studies due to the obvious ethical considerations.
b) a wide variety of anabolic steroids studied in different doses and dosing regimens, training schedule differences, and varied assessment criteria.
c) the variables of athletic performance become progressively more difficult to assess, as the calibre of the athlete increases (i.e., a small difference in running velocity, though statistically insignificant may mean the competitive edge to that athlete).

In an extensive literature review (1984, Haupt and Rovere) it was concluded that significant strength could result from the use of anabolic steroids if the following conditions were satisfied:
1) the steroids were given to an athlete who was involved in an intensive weight training program before the start

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of the steroid program, and continued so during the administration of the steroid.
2) the athlete must have been on a high protein diet.
3) the strength measurement utilized the single repetition — maximum weight technique for those exercises with which the athlete trained regularly.

A more recent review concluded "neither enhancement of weight or improvement in strength was demonstrated consistently when androgens were administered double blind to athletes". The same review does concede that published studies may in fact be irrelevant as they do not encompass the variety of agents or dosage levels used commonly by athletes. Therein lies the published research gap with the reality being that these agents are utilized world wide and in many sports.

In their 1984 position stand on the subject of anabolic steroids for performance enhancement, the American College of Sports Medicine, stated that: a) steroids can increase body weight often in the lean mass compartment in the presence of an adequate diet; and b) gains in muscular strength achieved through high intensity exercise and proper diet can be achieved by the use of these anabolic steroids in some individuals.

This position paper goes on to state the adverse effects and the unethical use of steroids in competition.

As an aside, aerobic capacity in athletic performance is not enhanced by the use of anabolic steroids.

ANABOLIC STEROIDS: PREVALENCE AND PATTERN OF USE

It is a foregone conclusion that accurate determinations of anabolic steroid abuse by athletes can only be, at best, a guess. A study in Norway on the annual sale of anabolic steroids, as obtained from the Drug Wholesale Monopoly, actually decreased after 1975 when doping tests for steroid use was initiated. Numerous other informal surveys have reported that well over 80% of body builders, weight lifters, and participants in shotput, discus, hammer, and javelin, use anabolic steroids in hopes of enhancing performance. It has been reported that there is widespread use of these agents in athletes participating in American football. There is also suggestive evidence that steroids are used at the high school level. On the Olympic scene, even the untrained eye have noted the masculinizing habitus of many female competitors, distinct from the female athlete of yesteryear.

As to the patterns of use of these substances, it has been widely accepted based on individual athletes testimony, that multiple different steroids can be used by the same athlete. This technique has been referred to as *stacking*. Anabolic steroids are taken in a 10-13 week cycle, starting with both oral and injectable steroids, maximizing both, then tapering to allow the necessary 2-14 day clearance designed to avoid detection.

The side effects and complications of anabolic steroid use and abuse are well documented. Virilizing side effects in women, which include hirsutism, acne, deepening of the voice, clitoral hypertrophy and male pattern baldness, are frequently irreversible when these agents are discontinued. Another study indicated that more than 30% of athletes experience subjective side effects that disappeared following discontinuation of the steroids. The most frequently reported subjective side effects were changes in libido, increased aggressiveness, muscle spasm, and gynecomastia. Studies have also shown decreased levels of testosterone, FSH and LH with exogenous anabolic steroid use. Similarily spermatogenesis is profoundly altered, resulting at times in transient infertility. Testicular size may also be reduced.

Liver disorders have also been reported with steroid use. Nearly all the oral preparations of anabolic steroids cause alterations in liver function, which return to normal when these materials are discontinued. Very serious complications, including benign and malignant liver tumors, have been reported but are rare.

Finally, anabolic steroids are known to alter serum lipid profiles by decreasing HDL cholesterol and increasing LDL cholesterol, thus favoring the development of atherogenesis. These abnormalities also tend to revert to normal after discontinuation of the anabolic steroids.

COMMENT

Anabolic steroids are used extensively by athletes in a desire to not only enhance performance within competitions, but also to favorably benefit the recovery from injuries.

The pattern of use seems largely based on the "more the better" concept and is methodically arranged in a cyclical regimen called stacking.

The adverse effects are predictable and largely reversible it seems. However, no long term studies are available to determine the potential irreversible alterations in hepatic and cardiovascular function.

In light of this knowledge, the medical community is stirred to respond beyond the initial reaction of righteous judgement. No doubt on ethical grounds we would all prefer to reward sport competition at the elite level when it is based on fair play and, of course, without the abuses of doping.

There is no question that world records and Olympic records should be the result of pure human gains in athletic performance. However, some would argue that steroids are ergogenic aids not unlike vitamins and other food supplements. It has been suggested that athletes will continue to ingest this "breakfast of champions" legally or illegally, and will be driven further underground if the medical community does not monitor their use.

The time is indeed ripe to consider the debate this problem in the traditional openness of the medical forum. Only then can we wisely advise the involved authorities, our colleagues, and especially our beloved athletes as to the result of our deliberations. □

References on page 108.

Peer Review and Maintenance of Competence in Nova Scotia

IT IS COMING SOONER THAN YOU THINK!

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On February 17, 1991, the Provincial Medical Board of Nova Scotia at its annual meeting announced that they are planning to introduce an auditing system for the Provinces' physicians. *Peer Review* is already a reality in places like Ontario, Quebec and B.C., and it is soon to be introduced in the Atlantic Provinces.

Peer review refers to the assessment of a physician's knowledge and practice of medicine, in the broadest possible context, by a peer skilled in this technique. It is a technique that strives to evaluate objectively a given medical practice against a pre-selected set of mutually agreed upon *standards of practice*, with the goal of educating and reassuring the physician that his methods and knowledge meet acceptable criteria. It has been designed to do this as objectively as possible, so as to be both a useful and non-threatening educational tool. Recommendations can then be made by an *assessment committee* to help the individual physician improve his or her quality of practice. This comes under the heading of *maintenance of competence*, in the jargon of quality assurance gurus.

Peer review has been spawned by quality assurance programs that were designed initially to increase productivity and for risk management in an industrial context. They have now been extended to almost every facet of our society. Patients like it; government wants it; and a recent court case in Ontario decided that a professional licensing body is *obliged* to provide it. Accordingly, this article is an attempt to summarize the history of this phenomenon and describe the sort of program we may see within the next two to three years.

In Canada, the history goes back to 1977, when the College of Physicians and Surgeons of Ontario (CPSO) established a committee to consider a system of peer assessment. Two pilot projects followed in 1978 and 1979, utilizing mostly volunteers, and the findings were significant enough to warrant introduction of an ongoing program in 1981. Originally targeting GPs this program now assesses most specialties and may move into the hospital setting as soon as anesthesia enters the fold.

A review article from *CMAJ* 1990; 143: 11, summarizes findings from the first five years and here are a few significant numbers. Of a total of 923 randomly selected physicians, 82% had no deficiencies, while 7% had only minor problems. However, 11% had significant enough deficiencies, in relation to accepted standards of practice, to warrant further assessment. This 11% translates into 15% of GPs sampled and 2% of specialists. A specialized referral program set up at McMaster assessed 101 physicians from the Peer Review programme and found that 66 had serious deficiencies and that 5 were *high* risk (please note that this translates into 5 out of 923 physicians or less than 1%). Major risk factors were *age* (>70), *CFPC status* (non-members), *solo practice* and *lack of hospital affiliation*.

Currently, the CPSO program audits about 400 physicians per year. Physicians are chosen randomly from CPSO membership files and are informed of the pending assessment. (Note that all physicians who reach their 70th birthday in a given year will be audited.) A trained assessor, who is also a practising physician in the same type of practice (ie: GPs assess GPs, Internists assess internists in the same specialties, etc.), will contact that physician and arrange a mutually agreed date for the assessment. Meanwhile, a pre-assessment questionnaire is mailed to the physician in question and it largely assesses his type of practice, with questions about his CME activities. The assessment follows, usually within weeks of notification and receipt of the questionnaire.

An assessment takes about a half-day, but only involves the physician for about one hour or less. The assessor introduces himself upon arrival and asks to inspect the premises. He is looking at the adequacy of the physical set-up in terms of cleanliness, privacy, available equipment for examination and treatment, emergency preparations, support staff, filing system and retrieval, etc., etc. He then selects 20 to 30 charts at random from a list of patients seen within the preceding 1-2 weeks. These are reviewed and the assessor looks at the adequacy of one's investigations, diagnoses and treatment plans in relation to accepted standards of practice in that area. (This is critically dependent upon one's record-keeping skills.) Finally, the assessor meets with the physician and will discuss his assessment of the physical premises and the chart review. This is perhaps the most crucial facet of the process, because it allows the assessor to evaluate the physician on a one-to-one basis and clarify questions that may have arisen over the chart review and/or physical assessment of the premises. After this, the assessor leaves and submits a report to the CPSO Peer Assessment Committee that is largely a pre-formatted, fill-in-the-blanks record of his visit and investigations. Only, at the very end is there a small section for subjective comments about the visit.

The Ontario Assessment Committee is made up of 6 physicians and 2 lay people. They split into two panels

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of four to review each assessment. The committee attempts to deduce from the assessment whether or not the assessee meets agreed standards and is practising safe medicine. They may ask the physician and/or the assessor to be present to answer specific questions. If the committee is dissatisfied with a physician, and this occurs with 15% of GPs and 2% of specialists, they can be referred to McMaster University's Peer Review and Enhancement Program (PREP). The CPSO funds PREP to the tune of $100,000/year, plus $2000/assessment with the physician contributing $2000 of his or her own money. Currently, PREP reviews about one physician per week and functions as an ongoing assessment and research tool that is constantly looking for better ways to assess physicians and meet their subsequent educational requirements.

The key to the success of the CPSO Peer Review Programme in Ontario is commitment to rigor in all phases of the process. Assessments are carried-out by practising peers, not academic physicians. Assessments are reviewed by a committee that strives to identify physicians' weaknesses early enough to correct them and prevent, hopefully, any bad outcomes. The approach is cooperative and non-punitive. The CPSO Peer Review committee can make educational and practical recommendations to the physicians in question, but it has no authority to revoke a physician's licence or force him to comply. Furthermore, data from the assessment cannot be used in disciplinary hearings by the CPSO. (Whether or not they can be used in a civil suit has not yet been tested in court, however.)

In short, the program depends on the voluntary cooperation of CPSO members with recommendations made by the Peer Review committee. To date, this has not been a problem and no attempt has been made to introduce any teeth into the process. However, this could change at any time and there is no guarantee that such 'teeth' would not be introduced into the Maritime version. The CPSO programme has been well received in Ontario, with over 85% of assessed physicians rating it as a useful, non-threatening exercise that reassured them with regards to their standards of practice. Many admitted to having learned a thing or two from the experience that helped them to upgrade their practice significantly, whether they were referred for further assessment or not.

So much for Ontario. What about the rest of Canada? A modified Peer Review System has been adopted in B.C. and is currently up and running. Alberta is also considering adoption of the CPSO program. Québec has its own system of peer review, whereas Manitoba only audits physicians identified by its disciplinary committee.

At a meeting of the Registrars of the licensing bodies of Nova Scotia, Prince Edward Island, New Brunswick and Newfoundland in May 1991, it was agreed that a similar system for the Maritimes should be instituted collectively for economic and logistical reasons. The legalities, budget and philosophy of the proposed programme have yet to be hammered-out, but the process has begun. The Atlantic Provinces Peer Review Committee is to be the umbrella organization that will oversee the introduction and operation of the proposed programme. The initial goal of this committee is to introduce a pilot project to evaluate the process and content of the proposed programme. Also, this pilot study will be used to help identify and train assessors who will be necessary to keep the programme going. Given the inevitable regional disparities in standards of practice, standards will have to be developed for the Atlantic Provinces and agreed upon by all of the participants before the project goes ahead. Finally, it has been suggested that Dalhousie University Medical School be used as the referral centre for the Atlantic Provinces, if the money and expertise can be gleaned from somewhere to fund a McMaster-like PREP for in-depth assessments.

Alternatives to a peer review system such as this are few. Some states in the US have adopted mandatory re-writing of their certification examinations on a regular basis. Mandatory CME has not been shown to significantly alter physician's methods of practising medicine. An enhanced disciplinary process would be a hit and miss method with no chance of reducing morbidity or reassuring the public about overall quality of medicine in the Maritimes. Whether we like it or not, some sort of peer review system will soon be introduced in the Maritimes, although its shape has yet to be determined. This is an evolving process that has potential for doing considerable good for physicians and patients alike. Nevertheless, it needs the input and cooperation of physicians in all phases if it is going to be useful and ultimately improve the standards and the practice of medicine in the Atlantic Provinces. □

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ANABOLIC STEROIDS

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The biggest mark you make in life
is the mark on your own family.

Late Effects of Polio: Coping Mechanisms

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The introduction of the Sabin and Salk vaccines brought under control the epidemics of poliomyelitis which were common in the first half of this century; acute poliomyelitis now is only reported occurring in Africa and Asia. Increasingly in Canada, due to retirement, few health care personnel have any experience with polio or its sequelae. Attention given to poliomyelitis in curricula of health professions reflects the absence of this once often life-threatening, disabling disease in modern Canadian society.

However, an increasing number of polio survivors are now expressing concerns and seeking assistance for physical symptoms which they attribute to polio. The Rancho Los Amigos Medical Center (RLAMC) in Los Angeles was a major center for care of severely involved poliomyelitis patients during the '50s. Since 1978 an increasing number of polio survivors have been seen seeking solution for decreased function.[1] In 1988, some 250 new cases were seen annually.[2] Regular PPS clinics are now held at RLAMC. In Canada there are more than 6000 poliomyelitis survivors[3]; the number of survivors in Nova Scotia is unknown.

The primary complaints are of fatigue, new weakness and pain. There is real decrease in overall function or fear of a decrease in overall ability to carry out routine daily activities. Decreased endurance, loss of ambulatory ability and difficulties with stair climbing are common complaints.[4, 5] Susceptibility to falling with subsequent fractures are complications. Additionally, polio survivors may complain of increased sensitivity to cold, respiratory and sleep problems. To these must be added the psychological problems of loss, hurt, depression and denial.[6,7]

Conrady *et al* from a study of 93 post-polio individuals showed a significant presence of psychological distress (somatization, depression and psychoticism) but were unable to find a relationship between number of reported new symptoms and the degree of physical impairment.[6] These authors concluded that psychological assessment should be given as well as physical assessment. Typically, individuals seek solutions about 25 to 30 years after the initial infection.

Late effects of poliomyelitis are not a new phenomenon, having been first reported in the literature 100 years ago by Charcot in 1875. A variety of labels have been and are used to describe the new symptoms reported by individuals who had polio: post-polio syndrome, post-polio sequelae, post-poliomyelitis progressive muscular atrophy, late-onset, postpolio muscular weakness[4] and late effects of poliomyelitis. The Post-Polio Task Force in 1984 adopted the term *post-polio sequelae (PPS)*; however, its use is not common.[8] It has been established that PPS is not caused by reactivation of the polio virus[8] or is it a form of ALS (amyotrophic lateral sclerosis).[9] Perry[2] and others,[10, 11] hypothesized that the primary problem was one of overuse. Perry has demonstrated excessive muscle action during walking in polio patients.[2]

ISSUES IN MANAGEMENT

A problem reported by PPS patients has been a tendency for physicians to attribute the new weakness and fatigue reported to inadequate fitness, or psychological difficulties at home or at work.[2, 12] Such diagnoses can aggravate the psychologic distress which has been demonstrated to occur in PPS individuals.[6] Health care provider's understanding of the weakness that polio survivors complain of is affected by the

> "Overgenerous functional interpretation of manual muscle test grades exercised by most clinicians [*that*] has complicated the postpolio patients' ability to generate medical acceptance of their complaints."[2 (p138)]

Despite complaints of new weakness, there is characteristically no significant atrophy. Further, problems are reported not only in muscles affected by the prior polio but also in muscles and limbs not recognized as being affected in the initial attack. Such muscle groups, on manual muscle testing (MMT) may be graded 5, or normal, capable of working against resistance. Work by Beasley demonstrated that MMT grades of normal and good markedly overestimate paretic muscle strength; a grade 5 normal muscle is really only 75% of normal.[13] Sharrard showed that clinicians did not identify any muscle weakness until at least 50% of the anterior horn cells had been lost.[14] Results of MMT must therefore be considered in their proper perspective. Apparently "normal or good muscles, on clinical examination, may have significant denervation or weakness". To meet functional demands these muscles must work harder than a "truly normal muscle".[1 (p880)]

Perry further relates the polio patients' functional decline to results of fatiguing exercise research. The rate of depletion of the muscle's critical fuel, phosphocreatine (PCr) and its recovery time is significant in development of fatigue.[15] PCr depletion rate was proportional to the intensity and persistence of muscular effort. Although partial replenishment was immediate, full recovery following a four minute

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maximal effort required one hour. Fatiguing exercise studies also have shown significant muscle pathology: edema, inflammation and enzyme changes which may partially explain the new pain symptoms.[16] These findings have important implications in the coping strategies and management of PPS patients. Onset of fatigue can occur abruptly and has been described by Halstead as the "polio wall".[17] Cessation of activity also can quickly bring about reduction or absence from pain, clearly indicating the relationship between overuse and pain.

REHABILITATION

Perry describes five components to the rehabilitation plan: life-style modification, anti-inflammatory mediation, exercise, functional devises (including orthoses), and reconstructive surgery.[2] The most important element of a rehabilitation plan, in most PPS individuals, is life-style modification.

LIFE-STYLE MODIFICATION

Recognition must be given to the fact that modification of life-style may require significant psychological adjustment by the individual. Following the initial infection, patients underwent intensive rehabilitation with the objective of achieving normalcy of function. Goals were to discard protective aids such as crutches, wheelchairs, respirators and orthoses. A motto of this period was "no pain, no gain". The PPS patient, to maintain function and reduce symptoms may need to accept the use of aids such as crutches and orthoses; this acceptance may be regarded as a failure. Several authors have reported that PPS patients, despite symptomatology, are reluctant to use recommended adaptive equipment.[2,6,5]

Life-style modification, as with other aspects of a treatment plan, should be based on the two principles: *achievement of balance between activity and rest (1:2) and avoidance of pain.* Muscle pain is an important criterion, an indication that damage is occurring.[2] Because weight gain can aggravate functional problems, *weight reduction* in form of a diet, as well as reduction in weight of appliances, if used, is an important aspect of management.

Modern *orthoses*, as one benefit of the space program, are considerably lighter than those of the 1950s and 1960s which may still be in use.[4] Modern orthoses also are more acceptable cosmetically. Use of appliances can reduce weight transmission through painful joints, stabilize unstable joints and reduce joint strain, decrease required muscle activity and energy expenditure. PPS individuals may benefit from use of a cane, elbow crutches instead of a cane, a wheelchair instead of walking aids, possibly an electric cart, and use of sliding boards or electric hoists in transfer activities. Use of a corset, crutches or even a wheelchair may relieve chronic low back pain.

Occupational therapy is valuable in life-style and environmental modifications to enhance energy conservation. Use of reaching devices (requires a good hand), work area rearrangement, use of 'lazy Susans', and mobile arm supports which can be attached to wheelchairs, desks or tables and can be portable, are useful in reducing shoulder strain.[18] "The key to successful lifestyle modification is patient education"[18 (p102)]

As many patients show increased impairment of lower limb function and ambulation, careful selection of lower limb orthoses is indicated.[3] Perry recommends use of hinged rather than rigid AFOs (ankle-foot orthoses). When calf musles are weak, a dorsiflexion stop with free plantarflexion is recommended; a rigid AFO only increases the quadriceps demand. Bracing can preserve knee flexion, give stance stability and limit 'back knee' hyperextension due to weak quadriceps.[1] Use of orthoses and adaptive aids is facilitated by a clear relationship between support and desired function. Device selection may represent a balance between the person's cosmetic concerns and functional demands.

ROLE OF EXERCISE

The role of exercise in PPS is unclear. For some PPS individuals, normal everyday activities provides adequate or greater than appropriate, activity for weakened muscles. Exercise intolerance and muscle pain indicate that there is no disuse to be strengthened. When complaints are limited to weakness and fatigue an exercise program is justified. Perry *et al.* used bouts of short duration (5 to 10 repetitions) with moderate resistance (60% of maximum strength).[2] A secondary value of an exercise trial is demonstration to the patient of their functional limits which may assist in acceptance of some lifestyle modifications. Most authors consider aggressive strengthening programs to be inappropriate, possibly accelerating development of new weakness, fatigue and loss of function. Gross & Schuch however, in a case study of one 59-year old PPS patient, showed no "deleterious effects" secondary to an aggressive, six-week, isokinetic program.[15]

Aerobic exercise programs are only appropriate if the individual has adequate strength in major muscle groups to accept the challenge. Aerobic programs may be performed in sitting rather than standing. PPS individuals may lack adequate power, even in the arms, to sufficiently challenge the heart and achieve cardiovascular fitness. Dean and Ross reported reduction in metabolic and subjective responses in two PPS patients following a modified aerobic walking program.[20] These case studies suggest that carefully prescribed and monitored, individualized exercise programs may benefit some PPS patients who have not been functioning at their full capacity. Further research is required to delineate the role of exercise in PPS individuals.

Attitude is important. PPS individuals need to 'listen to their bodies' and adapt their life styles to maximum function and minimal energy consumption. They should not however, become 'over-occupied' with their physical status.[2] To enable individuals who had polio to be more knowledgeable about PPS and available local

resources, *post-polio support groups* have been formed.* Such groups may be the best advocate for obtaining appropriate health care and needed community services.[8]

As polio survivors age, it is likely that an increasing number will seek solutions for their symptoms and problems which they attribute to poliomyelitis. It behooves health care providers to be acknowledgeable about PPS and caring in their approach to these individuals who seemingly, are fighting the disease for a second time. Intervention is indicated where signs of overuse or chronic mechanical strain are present. □

* Nova Scotia Post Polio Survivors Group, Chairperson Ginny Phillips, c/o The Abilities Foundation of Nova Scotia, 3670 Kempt Rd., Halifax, NS, B3K 4X8, (902) 429 3420.

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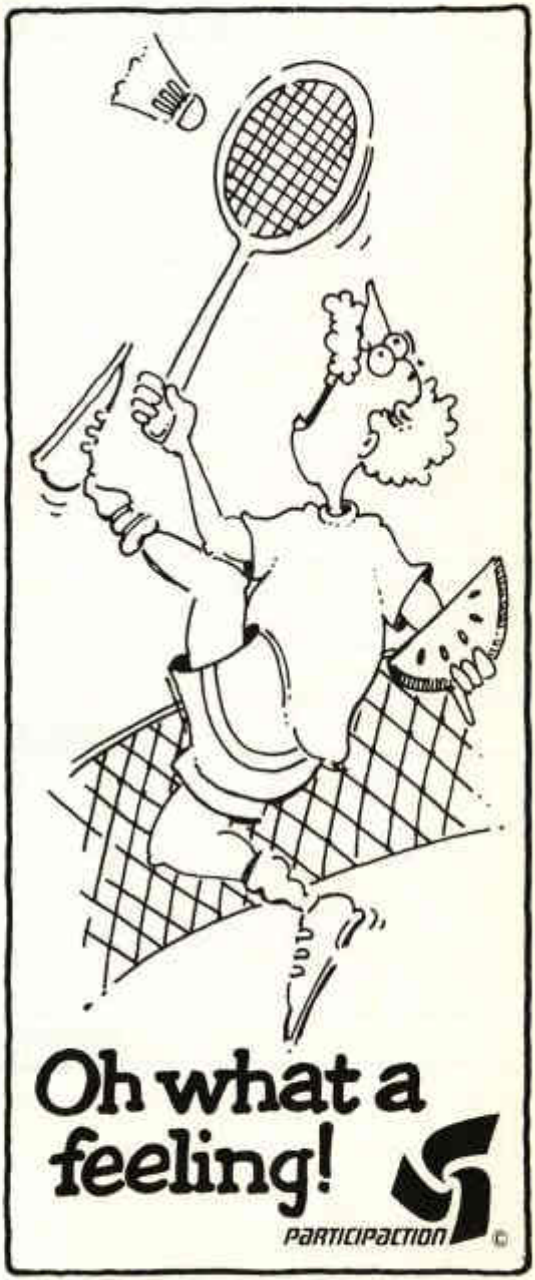

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BAS

Healing Childhood Sexual Abuse and Hypnosis

P. Kent Cadegan, MD

Glace Bay, N.S.

Are you on line, have you access to the network of anamnesis, allopathy, hypnosis, psychosomatics, repression and sexual abuse? Review your system!!

Behaviour is purposeful (Survival) and, if successful, it is repeated. Childhood Sexual Abuse Victims (CSAs) are common, have similar stressful experiences for adaption, and do so in predictable patterns to survive. Repression and psychosomatic illnesses are common successful behaviours for them.

This clinical presentation toys with we Allo-physicians (Allo-P). While being at the frontiers of scientific knowledge, we do not recognize these patients easily. Knowing what an anamnesis is helps these victims. "The patient's anamnesis — their account of their illness and relevant material from their past — constitute the most important diagnostic tool in medicine."[1]

May the Allo-P, comfort the symptomatic CSA patient indefinitely, with medicine and surgery? I think not! In fact, my opinion is that regularily missing a diagnostic and healing opportunity, separating a diseased target organ (Soma) from its psychic origin of illness surgically, or suppressing it medically, results in new or recurrent somatic complaints when the psychodynamic reason is important.

Changing social attitudes are leaving the secrecy of CSA for openness and healing.

Davis and Bass, in their popular guide for survivors of abuse, recommend to their readers in crisis of treatment, calling their counsellor (Psychologist, Social Worker, R.N.) not their Allophysician.[2] Why?

The natural hypnotic phenomena (a meta-consciousness), is a useful diagnostic and therapeutic tool for these victims. Most acutely stressed patients are in the hypnotic state, including CSAs. It is a successful adaptive behaviour which lends itself to repression and psychosomatics. Relegation to scientific immeasurability by Pavlov and clinically not useful to Freud, it is not embraced by mainstream medicine, largely due to their unfortunate misleadings.

THE DIAGNOSIS

Screening for common disease, like diabetes, hypertension and CSA is accepted practice. Cost effective arguments about lost productivity and quality of life are clear. Once the diagnosis enters your differential list, before you lumber through a labile equilibrium, you must consider caveats for the victim:

1. immediate access to able professional and friend (support person) to deal with the crisis to follow;
2. opportunity, to get out of the abusive situation, especially before counselling, "no means no" or "self-defence." Perpetrators may respond with violence, beating, removing from therapy, or killing the victim;
3. familarity with Provincial laws and services;
4. confronting the CSA with the diagnosis may cause personality 'meltdown', especially if hypnotically retrieved, unconscious memory, is used; and
5. building an infrastructure to deal with the diagnosis when it is suspected and before it is disclosed, and allowing disclosure to be voluntary, is probably the best path to follow. (Self relaxation techniques, controlling panic attacks and hyper-ventilation, respecting successful behaviour adaptations, creating the expectation of healthy outcomes, ego strength, etc.).

As in many diseases, the signs and symptoms are nonspecific and common to other illnesses. Since a vocabulary for the forbidden behaviour often does not exist, oblique behaviour and physiological responses are watched for in the clinical setting. Sighing, change of position, expression and feeling occur. If hot on the trail, some or all of the phychosomatic responses may occur, be observed, and described subjectively and objectively. Remember, the patient is actively repressing the memories; likewise does the Allo-P with the clues. Both believe everything that can be done is being done. Suffering is long term or life long.

Criteria may be grouped arbitrarily into long term behaviour, recent behaviour changes, escaping reality and replays of psychophysiological memory.

THE DISEASE

Child Sexual Abuse is sexual use of a non adult by a dominant person, usually excluding mutual sexual experimentation among peers. Prevalence reports vary greatly and increase with time, reflecting the repression of memory, lessening with changing social attitudes — 1 in 5 females and 1 in 10 males is considered a moderate rate.[3a] Higher and lower rates have been reported and vary with definition. Eventually, sexual dysfunction, deviance or other maladaptive behaviours arising from the experience, should be the criteria.

Epidemiologically, recent unemployment, alcoholism and drug dependancy have correlations. There is a social and religious ban against consanguinity, the genetic Russian roulette that spans recorded history, yet this behaviour exists in all cultures and in all strata.[4] Unfortunately social values also exist to allow the use of children as chattels. Many myths aggravate this, particularly the belief that children do not remember the abuse. In reality, most is remembered in repressed

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unconscious memory, which remains psychophysiologically active throughout life. Abusive behaviour patterns are learned, usually lead to more abuse, and are passed on. The perpetrators most commonly are step-fathers, followed by fathers, brothers, uncles, siblings; other relatives in a second group; and less commonly by mothers and strangers. The most damaging abuse is usually caused by violent parents.

A newborn child learns very early where are its genitals with frequent soaping, washing, drying, creaming, and powdering, usually in a loving context. During the continuum of learning sexual pleasure and arousal, maladaptive behaviour can begin at any time, in many ways.

Severe stress, associated with sexual experience, causes psychophysiological responses that are encoded in state dependant memory. Recreating the state emotionally replays the physiological memory.

Rossie and Cheek have a cybernetic theory of mind-body communication and a proven technique of mind-body healing, ideodynamic signalling in hypnosis, that offers help for these victims.[3]

Recent Behaviour Changes

1. Regression to outgrown behaviour like thumb sucking, bed wetting, going to bathroom frequently.
2. Sudden fears — of the dark, leaving home, staying home, the baby sitter, uncle, step-father, etc.
3. Soiling clothes — from painful urination, or frequency or fear to ask to use facilities, or in defiance.
4. Nightmares.
5. Public masturbation, seductive or precocious behaviour and dressing.
6. Sudden increase in grades (12 year old female, now an avid student with extra curricular activities, since a step-father moved in). Sudden decrease in grades (since step-father unemployed).
7. Vomiting after monthly visit with father.
8. Personality change, acting out, or depression (may mean impending suicide).
9. Infections of and/or foreign bodies in G.U., G.I. tract.

Long Term Behaviour

1. Lack of sense of space perception, lack of sense of self and depersonalization are manifestations of deficiency of neurological organization, secondary to neglect. Abused kids are commonly also neglected (this shows up on psychological testing).
2. Lack of self esteem (mixed message of public punishment for behaviour rewarded in secret).
3. Eroticised by violence, sadism or incest fantasy.
4. Undiagnosed, chronic illness or illnesses — a patient who does not recover from surgery or soon develops new problems.
5. Self sufficient, successful at work, good in crisis, with sense of humour while self abusive with drugs, alcohol, food.

Escaping Reality

1. Running away.
2. Prostitution — very high incidence of sex abuse and rape.
3. Illegitimate pregnancies (very high); running away to a boyfriend.
4. Suicidal tendency (running away to God).
5. Alcohol and drug abuse, obesity, workaholism.
6. Sudden violent hostility in unprovoked situation (teenagers and older).
7. Split personality/multiple personality — feelings escape reality of body.
8. High pain tolerance — if purpose is to protect sibling, mother, etc.

Replays of Psychophysiological Memory

Rossi and Cheek's theory is based on currently understood physiology and biofeedback, including most recent advances in psychoneuroimmunology. The proven signalling technique is useful in diagnosis.[3]

A smell, sight, taste, touch, sound or memory, including dreaming, triggers some or all of the memorized responses that occured during the assaults. Some more obviously understood are:

Vaginismus — from forced vaginal intercourse.

Globus hystericus — from forced fellatio.

Suffocation — from hand over face to quiet the victim, during rape.

Other common stress responses not peculiar just to CSAs are:

"Migraine" from head trauma during assault.

"Colitis" from forced anal intercourse.

Peptic ulcer disease.

Some things to think about are:

Pap smear avoidance (including any genital examination).

Bathing or showering after love making (to wash away the memory of filth!)

A provocative coincidence is raised by Dr. Seva Gold when she asks, "What comes first, the sexual abuse or the temporal and limbic EEG abnormalities, that often co-exist?"[3b] These "epileptics" might be given the benefit of doubt and offered the approach suggested in this presentation.

CLINICAL COURSE AND CASES

The usual course is repression with memory replays recuring. Many victims get on with "normal" life. In a changed environment, such as the death of, separation or divorce from the abuser, or moving away from home, an opportunity for healing may present. An astute physician can observe this.

Making the diagnosis once in 13 years is no boast for me; 13 times these last 13 months is less embarrassing. It may be seen when the patients anamnesis is researched while their body language is observed, in or out of hypnosis.

- 13 years my patient, 7 surgeries and a colostomy later, for Crohn's disease, a 40 year old black

female, being taught pain control and stress management with hypnosis, began having a terrible dream from which she would wake in a panic and rage. She was abused daily from the age of 12 to 18, by her uncle; and on weekends by him and his drunken friends. This information was retrieved this year, using Rossi and Cheek's method.

- 8 years my patient, after tens of thousands of dollars for frequent and prolonged hospitalization for abdominal pain, suicide attempts, depression and thought disorder, a 39 year old mother of two grown children asked me to do hypnosis. She thought she might have been raped when she was 8 years old. She was for six months by her 13 year old brother, until he died in an accident. Rossi and Cheek's method retrieved the memory this year.
- 6 years under my care for mastitis, dyspareunia, while retrieving information from unresolved guilt over the death of a son, a 45 year old mother of six remembered her grandfather raping her for many months during her seventh year of life, thanks to Rossi and Cheek's ideodynamic signalling technique.
- 5 years under my care for hysteria, "epilepsy," asthma, obesity, migraine, dyspepsia, dysmenorrhea, a 35 year old mother of two reported a gang rape at age 16 and she has vague memories of other 'goings on' pending consent from her husband for hypno-therapy.
- After 27 years of suffering drug abuse, as well as migraine, peptic ulcers, dysphagia, dysmenorrhea and cystitis; when seen for the first time in the Emergency Department for narcotic injections, answered "yes" to "were you sexually abused?" Yes, by her grandfather, father and husband. A severe case, now looking forward to healing.
- A 30 year old referred for migraine treatment by hypnosis, using Rossi and Cheek's signals, remembered the repressed assault by her grandfather.
- A 30 year old mother of three reports "inorgasmia all her life" and recurrent cystitis. She was abused by her older brother.
- A 35 year old single girl presents for a pap smear. When her perineum is touched, she screams, jumps up and cries. She was abused by her father for years. She needed a general anesthetic for an examination, when a normal pelvis and severely excoriated mons pubis was found.
- 42 year old female volunteers a rape at age 15, leading to sexual dysfunction in the early years of marriage. Probably, this contributed to marriage failure 25 years later. She had been taught self hypnosis.
- An 80 year old female sleeps with her bed against the door in an old people's home and periodically loses control of her mind. She was abused 70 years ago.
- A 30 year old mother of two was raped by her uncle as a child. Recently assaulted, and could offer no defence. She suffers panic attack.

AND MORE.

TREATMENT

A Near Endless Winning Game of Simon Says

Disclosure of the abuse may be spontaneous, or obtained through a facilitative approach which may include diagnostic hypnosis as mentioned. Included as a possible differential diagnosis, that is alright to talk about, you may be landing a salmon, or jigging a cod.

Intervention is legislated for children and is beyond the scope of this paper. Remember the caveats, optimizing outcomes may include some timing of the intervention.

Forgiving and forgetting and letting bygones be bygones, are classic wisdom which ignores or attempts to control repressed memory, and are wrong advice in my opinion.

Healing has a beginning with disclosure; a process; and an ending of sorts. Recognizing the relationship between abusive experiences and personal behaviour, consciously or unconsciously, interrupts the cycle of the disease. A crisis follows, with memories, feelings, symptoms, self doubt and self abuse, changing life permanently, and obession with the abuse. Flashbacks, nightmares and fatigue. Victims often think, sometimes plan and attempt and, sadly, sometimes succeed at suicide. Advise patients to have close at hand. Davis and Bass "Don't Kill Yourself"[2b] and "Panic".[2c] If steps 1 and 2 in caveats are planned, patients will be comforted. Resolving pathological relationships follows. Eventually, accepting the reality of the experience; the injury located, debrided and dressed; healing begins. Feelings flow more naturally. Guilt, anger, fear and fault resolve, patients forgive themselves knowing it is not their fault and they begin discovering and growing. During this period, they may benefit from hypno-therapy in many ways. One example follows. Sexual arousal, previously anchored to shame, pain, anger, power, panic, gagging, suffocating, etc., may be released. Using the ideodynamic healing method, these physiological memories can be accessed.[5] Next the sexual arousal can be re-anchored to comfort, safety, pleasure, tension release and love. Finally, ideodynamic ratification by the patient may effect a resolution. If you are uncomfortable with this, refer the patient early. Too many messages from different treating figures delay the process.

The spouse or 'significant other' must not be ignored. While under treatment, the patient often vents their feeling on to their partner, taking them on a stressful roller coaster ride that usually lasts many, many months.

CONCLUSION

Do you see the network, and have you upgraded your software today?

By raising your index of suspicion and by looking in the right places, behind repression, underlying psycho-

somatics and within anamnesis, a common illness presenting regularly to the Allo-P, can be found, cared for and healed. Recognizing your medical limits and reconsidering your treatment failures and chronic 'never go away' patients, may keep you up to the changing times and demands. Once having made the diagnosis, participate in managing the emergencies during the crisis phase of healing.

While the theory and technique herein advance the science and art of medicine, I believe it is epistemologic mistake to think that the unity of nature is anything but aesthetic.[6] □

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"The spirit of truth and the spirit of freedom — they are the pillars of society."

— Henrik Ibsen

Creutzfeldt-Jakob Disease, Leukemia and Growth Hormone Therapy

In 1985, Creutzfeldt-Jakob Disease was reported in young adults, who had received pituitary derived growth hormone during childhood. To date, there have been 16 cases reported worldwide, 7 in the U.S.A., 6 in Great Britain, 1 in New Zealand, 1 in Braziland and 1 in France. No cases have been detected in Japan, Australia or Canada. A direct association between Creutzfeldt-Jakob Disease and pituitary growth hormone is strongly suggested by the epidemiological data but has not been proven in laboratory animals yet. The occurrence of 1-2 cases per year worldwide requires continued vigilance by all physicians in reporting unusual neurological deterioration in any person who has received growth hormone.

Since 1988, there have been more than 20 cases of leukemia reported worldwide in children and young adults with GH deficiency, including one from Canada. It is not clear yet whether the risk of leukemia is increased in the growth hormone treated population. Physicians, who note any unexplained neurological signs or hematological changes in persons previously treated with GH, are requested to notify Dr. H. Dean, Chairperson of the Canadian Growth Hormone Advisory Committee, at (204) 787-4553 or (204) 787-3011.

Identification of Organ Donors in Nova Scotia

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With the success of organ transplantation as a cure for some end stage organ failure, and the long waiting lists for some of these procedures, efficient identification of suitable organ donors is extremely important. Based on the five ICD-9 coded diagnoses held by the Nova Scotia Department of Health for each separation from the Province's hospitals, potential organ donors were identified for the year 1989. The number of potential donors was compared with the number of actual organ donors from various Nova Scotia hospitals. The results of this preliminary study were used to determine if there existed a difference between the proportion of donors identified in Halifax (and specifically at the Victoria General Hospital) versus the proportion identified in the smaller centers. No difference was found.

With technical advances in procedures and immunosuppressive drugs, organ transplantation has become a successful and permanent cure for some cases of kidney, heart and liver failure. The transplantation of corneas has been extremely successful in restoring sight to many individuals. The survival rates of grafted organs after one year, as quoted by the Victoria General Hospital Multi-Organ Transplant Program, range from 70% for hearts to 90% for corneas.[1] In light of mounting concern regarding the increasing cost of health care, other benefits of organ transplantation become apparent. As well as being the best available treatment for certain types of organ failure, the procedures are also cost effective. The cost of replacing a failed organ can be significantly lower than the cost of providing ongoing therapy for a potential recipient.[2,3]

With the obvious benefits of organ transplantation, one wonders why only a limited number of procedures are performed in Nova Scotia each year. During 1989, 84 kidneys, 5 livers, and 4 hearts were transplanted.[1] The waiting list as of May 5, 1990, which ranges from 2 for hearts to 150 for kidneys,[1] clearly indicates that there is excess demand for organ transplantation and suggests that the number of procedures performed is limited by the availability of transplantable organs. Although a kidney can come from a living donor, 80% are harvested from cadavers[2] and the cadaveric donor is the only source of heart, liver and cornea grafts. A lack of organs results in the undesirable situation of patients dying despite the availability of effective treatment. It is predicted that the demand for donated organs will continue to grow due to undertransplantation in the past, chronic rejection of previous grafts, improved therapy for maintaining potential recipients, and the increasing age of the population.[4]

There is no indication that donated organs are being used inefficiently. Transplants in the Maritime Provinces are performed at the Victoria General Hospital, and the process from procurement to transplantation is coordinated through the transplant program there. This system ensures efficient use of donated tissues given the circumstances in the Maritime Provinces.

A random survey of public attitudes toward organ donation in Ontario revealed that approximately 84% of respondents would want their next-of-kin to give consent for donation of their organs and a similar percentage would give consent for donation of organs from next-of-kin.[5] It is clear that the shortfall in the number of available organs must be due either to a true lack of potential donors or inadequacies in the identification and management of potential donors, rather than to mismanagement of donated tissues or a lack of consent to donate. By looking at data from the Nova Scotia Department of Health, we hope to gain insight into the situation regarding potential organ donors in Nova Scotia.

METHODS

Any hospital can be involved in organ donation. As a minimum, all hospitals can and should participate in the donation of eyes. Perfusible organ donation requires certain resources that may not be available in smaller centres. In order to be able to diagnose brain death and to support donors until transportation or arrival of an organ retrieval team, a hospital requires the following[6]:

- Equipment required to determine brain stem reflexes;
- Physicians who are able to diagnose brain death;
- Equipment and laboratory services such as those required for the care of the critically ill;
- A physician for donor assessment and management;
- Nurses available 24 hrs./day who are familiar with donor support;
- Staff to assist itinerant organ removal teams, if appropriate;
- An individual to act as an organ donation officer to coordinate the procedure;
- Social services, chaplaincy services, clerical services, and training; and
- Office space and a place to deal with the families of donors.

Any hospital with critical care facilities will meet most or all the criteria outlined above and, therefore, be able to identify and support donors. Table I contains a

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list of Nova Scotia hospitals with intensive care units as of 1989.

TABLE I

N.S. HOSPITALS WITH INTENSIVE CARE UNITS (1989)[7]

Hospital	Location	No. I.C.U. Beds
Highland View Regional	Amherst	5
St. Martha's Regional	Antigonish	6
South Shore Regional	Bridgewater	9
Dartmouth General	Dartmouth	4
Digby General	Digby	5
Glace Bay Community	Glace Bay	3
Glace Bay General	Glace Bay	5
Camp Hill Medical Centre*	Halifax	22
I.W.K.	Halifax	8
V.G.	Halifax	33
Valley Health Services	Kentville	7
Soldiers Memorial	Middleton	3
Aberdeen	New Glasgow	10
Roseway H/Shelburne Co.	Shelburne	4
Sydney City	Sydney	5
Sydney Community Health	Sydney	5
Colchester Regional	Truro	13
Yarmouth Regional	Yarmouth	6

*Camp Hill Medical Centre = Camp Hill Hospital + Halifax Infirmary

Criteria were established for selecting potential organ donors from the Nova Scotia Department of Health database, and are outlined in Table II. They are based on those used in the 1986 audit at the Victoria General Hospital and cover various conditions that could result in brain death.[1] The database was polled for terminations during 1989 from Nova Scotia hospitals with intensive care units.

TABLE II

DIAGNOSES USED IN SELECTING POTENTIAL ORGAN DONORS

ICD-9 Code	Diagnosis
348.8	Brain Death
430 to 438	Cerebral vascular disease
800 to 801, 803 to 804	Intracranial injury with skull fracture
850 to 854	Intracranial injury, no skull fracture
331.3 to 331.4	Hydrocephalus
741.0	Spina bifida
742.3	Congenital hydrocephalus
933.1	Asphyxia and poisoning
967 to 970	Sedatives and antidepressives
980	Alcohol poisoning
982	Solvent poisoning
986	Carbon monoxide poisoning
994.1	Drowning
994.7	Asphyxiation and strangulation

Patients over the age of 65 years and those with a hospital stay of over 15 days were immediately eliminated from the list of potential donors. Conditions that preclude donation of organs include malignant disease (with the exception of primary CNS tumors), sepsis, HIV, and hepatitis B infection.[8] Of the 83 potential donors, 17 were eliminated on this basis, and the specific diagnoses leading to elimination are listed in Table III. Two patients were eliminated due to a primary diagnosis of acute myocardial infarction (ICD-9, Code 410). This suggests that the patient was not resuscitated and would therefore not be suitable as a perfused organ donor.

TABLE III

SPECIFIC DIAGNOSES ELIMINATING PATIENTS AS POSSIBLE ORGAN DONORS

ICD-9 Code	Diagnosis
038.9	Unspecified septicemia
156.0	Malignant neoplasma of gallbladder
157.9	Malignant neoplasm of pancreas
162.9	Malignant neoplasm of bronchus/lung
197.7	Secondary malignant neoplasm of liver
197.8	Secondary malignant neoplasm of other digestive organs and spleen
198.3	Secondary malignant neoplasm of brain and spinal cord
198.5	Secondary malignant neoplasm of bone/marrow
199.0	Malignant neoplasm w/o specification of site/disseminated
199.1	Malignant neoplasm w/o specification of site/other
202.4	Leukemia reticuloendotheliosis
205.0	Acute myeloid lukemia
205.1	Chronic Myeloid Leukemia
238.4	Polycythemia vera
238.7	Neoplasm of other lymphatic and hematopoetic tissue
320.1	Pneumococcal meningitis
485	Bronchopneumonia, unspecified organism
486	Pneumonia, unspecified organism
507.0	Pneumonia due to inhalation of food or vomitus
998.5	Post-operative infection

In order to determine the suitability of each potential donor to donate kidney, liver, heart or corneas, the literature was consulted and a set of criteria was established for each organ.[1,8,9,10] The criteria and specific diagnoses resulting in identification of unsuitable

TABLE IV

KIDNEY DONATION

Conditions for Suitable Kidney Donors

Age-65 or less
No long standing hypertension
No diabetes
No renal disease

Diagnoses resulting in Identification of Unsuitable Kidney Donors

ICD-9 Code	Diagnosis
250.00	Diabetes mellitus adult type
250.01	Diabetes mellitus juvenile type
250.09	Diabetes mellitus
401.1	Bening essential hypertension
401.9	Essential hypertension unspecified origin
440.1	Atherosclerosis of renal artery
585	Chronic renal failure
586	Renal failure
V420	Previous kidney transplant
V451	Renal dialysis status

donors for each organ type are summarized in Tables IV to VII.

TABLE V

HEART DONATION

Conditions for Suitable Heart Donors

Age-50 or less
No cardiac disease
Acceptable ecg

Diagnoses Resulting in Identification of Unsuitable Heart Donors

ICD-9 Code	Diagnosis
410	Acute myocardial infarction
414.0	Coronary atherosclerosis
427.5	Cardiac arrest
428.9	Heart failure
E878.2	Complications to anastomosis/bypass/ graft operation

TABLE VI

LIVER DONATION

Conditions for Suitable Liver Donors

Age-55 or less
No alcohol abuse/drug abuse
No liver trauma
Acceptable function tests

Diagnoses Resulting in Identification of Unsuitable Liver Donors

ICD-9 Code	Diagnosis
303	Alcohol dependence syndrome
305.6	Cocaine abuse
571.1	Acute alcoholic hepatitis
573.9	Unspecified disorder of liver

TABLE VII

CORNEA DONATION

Conditions for Suitable Cornea Donors

Age-65 or less
No intra ocular surgery

Diagnoses Resulting in Identification of Unsuitable Cornea Donors

No potential donors were identified as unsuitable for cornea donation

RESULTS

The results of the analysis of our data are presented in Table VIII. Of 64 patients satisfying the criteria for potential organ donors, 12 actually donated tissue of one sort or another. It is true that not all patients identified as potential donors will turn out to be suitable for donation. Conversely, it is also true that some patients identified as unsuitable donors may indeed be used for tissue donation. This was seen to be the case in two instances. These data are therefore unsuitable as an indicator for the efficiency of the identification of donors in Nova Scotia. However, it is believed that these results serve as indicators of the relative proportions of potential organ donors at each centre. Patients that die in the emergency room before being admitted are not accounted for in the Nova Scotia Department of Health database at this time. Therefore, this segment will, unfortunately, be omitted from our results.

TABLE VIII

POTENTIAL ORGAN DONORS AND ACTUAL DONORS FOR 1989

Hospital	Total	Potential Kidney	Donor Heart	Candidates Liver	Cornea	Actual Donors
Highland View Reg.	0	0	0	0	0	0
St. Martha's Reg.	1	1	1	1	1	0
South Shore Reg.	0	0	0	0	0	0
Dartmouth General	1	0	0	0	1	0
Digby General	0	0	0	0	0	0
Glace Bay Community	0	0	0	0	0	0
Glace Bay General	2	2	0	0	2	0
Camp Hill Med. Ctr.*	2	0	0	0	2	0
I.W.K.	6	5	1	5	6	2
Victoria General	42	32	25	28	42	8
Valley Health	0	0	0	0	0	0
Soldier's Memorial	0	0	0	0	0	0
Aberdeen	2	2	0	1	2	0
Roseway H/ Shelburne	1	1	1	1	1	0
Sidney City	6	5	5	5	6	2
Sydney Community	0	0	0	0	0	0
Colchester Regional	1	0	0	1	1	0
Yarmouth Regional	0	0	0	0	0	0
Total	64	48	37	42	64	12

*Camp Hill Med. Ctr. = Camp Hill Hospital + Halifax Infirmary

As expected, the largest proportion of potential donors are at the Victoria General Hospital. This is due to the size of the population base it serves and to referrals from the smaller centres. It was our interest to determine if there existed a difference between the proportion of donors identified in Halifax or at the Victoria General versus the proportion of donors identified in the smaller centres with I.C.U.s, and any difference was found to be not significant. We also found no difference between Halifax (V.G., I.W.K., Camp Hill Medical Centre) and the hospitals in the rest of the province.

CONCLUSION

The results of this preliminary study indicate that there is no difference between the rate of identification of potential donors in the smaller centres of Nova Scotia versus those in Halifax, and specifically at the Victoria General Hospital. This finding suggests that the smaller centres are adequately aware of the need to identify donors and are efficiently referring them to the transplant coordinator or that the number of potential donors arriving at the smaller hospitals is too small to indicate a deficiency in the rate of identification. It is evident that most hospitals should be able to harvest more non-perfusible tissues, specifically corneas. With the long waiting list and the relatively lax criteria for donation, there is little excuse for not acquiring more donated corneas.

Continued on page 124.

Management of Acute Intoxications in the Emergency Department

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In managing a "poisoned patient" a physician has five primary goals: 1) do no harm; 2) decrease absorption of agent; 3) support vital functions; 4) sustain or increase elimination of a agent; and 5) give specific antidotes if required. Minimizing or decreasing the absorption of a agent includes aggressive gastrointestinal decontamination which may consist of three components: 1) evacuation of gastric contents (via gastric lavage or ipecac induced emesis); 2) administration of activated charcoal to absorb the drug before its absorption into the body; and/or 3) cathartics to enhance expulsion of the drug and/or charcoal drug complex. The attempt at preventing absorption of a drug or toxin is of utmost priority in lessening the likelihood that subsequent toxicity will ensue.[2,3,5,17,18] This paper discusses the current attitudes towards the methods of preventing absorption of agents that are ingested orally.

Controversy regarding overdose management has arisen because clinically relevant studies of gastric emptying, activated charcoal, and cathartics have begun only recently. The results have been found to challenge many of the assumptions upon which previous therapy was based and are radically changing peoples concepts about gastrointestinal decontamination.

Distinctions exist between the treatment of pediatric and adult acute intoxications. Hence, the acceptability and efficacy of the various treatments and even the necessity whether to treat at all will be dissimilar. Children usually present early, from an intake of one known substance, at low toxic amounts. The child is conscious, will take ipecac, will not take charcoal (which frequently causes emesis), and will require small gauge lavage tubes. Adults usually present late and unconscious, from intake mixtures of unknown substances in high toxic amounts. The adult will take ipecac, charcoal (with no subsequent emesis), and will require large gauge lavage tubes.[17]

GASTRIC EMPTYING

Many traditional methods have advocated gastric emptying via gastric lavage (the washing out of the esophagus, stomach and duodenum by copious injections and rejections of fluid) or emesis.[4,10,14] The aim of these methods is to remove the agent from the stomach (following a gastro-oral route) thereby reducing the chance the agent has to be absorbed across the gastrointestinal wall. In formulating a decision as to whether or not to use these techniques one must pay attention to three factors: 1) what is the risk to the patient caused by the ingestion?; 2) what is the likelihood the gastric emptying will remove the agent (or remove at least a beneficial amount); and 3) whether the risks of gastric emptying outweigh the benefits of removing the agent.[5]

Assessing the risk of ingestion requires both consideration of the amount and type of ingested agent, and the clinical course since ingestion. Many researchers believe that the applicability of gastric emptying to high-risk ingestions has not been specifically studied.[13-14]

The likelihood that gastric emptying will effectively remove the agent depends on the length of time in which the agent remains in the stomach and whether gastric emptying can successfully remove it (*ie* concretions of drugs may not pass through the largest size lavage tube).[5] Many agents (*ie* acetaminophen, alcohol) are absorbed so rapidly from the stomach that, even if a few hours have passed, essentially no drug remains and thus gastric emptying would not be indicated.[2,3,5,17] Although this is a difficult issue to examine, clinical benefit from gastric emptying has been demonstrated only in serious overdoses undergoing gastric emptying within one hour of ingestion.[2,3,5,13,15,17] Furthermore through other studies, it has been shown that gastric emptying does not effectively remove all of the agent (*ie* ipecac-induced emesis only removes 1/3 of the stomach contents), and that in the case of lavage it actually may promote the passage of the agent into the small intestine.[11,13-15,17] Anecdotal accounts of spontaneous vomiting before presentation to the emergency department may influence the decision to evacuate the stomach depending on their reliability and the extent of vomiting. It is unusual to be able to remove a significant amount of agent by lavage or emesis after repeated episodes of spontaneous vomiting.[5,13,17]

If the ingestion poses as a potential danger to the patient, and the agent is likely to be present in the stomach, then the risks, contraindications, and alternatives to gastric emptying must be considered. Gastric emptying has been associated with substantial mortality and morbidity. Studies have reported esophageal and gastric tears associated with gastric lavage, as well as nasal, oral and pharyngeal injury.[15,17] Therapeutic use of ipecac has resulted in protracted vomiting, Mallory-Weis Syndromes, intracerebral hemmorhage, and diaphragmatic rupture as well as cardiovascular and neural dysfunctions.[4,5,17] Both modalities share the risk

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This paper is the result of an Elective under the preceptorship of P. Croskerry, MD, Director, Emergency Department, Dartmouth General Hospital, Dartmouth, N.S.

of aspiration of stomach contents into the tracheobronchial tree, and it is perhaps this factor that plays the strongest role in the decision-making process of whether to use gastric emptying at all.[2,13,17] If the patient initially lacks the ability to protect the airway, or it is likely to lose airway protective reflexes during the gastric emptying episode, then gastric emptying (particularly ipecac-induced emesis) must not be performed.[2,3,5] Instead, if indicated for gastric lavage, these patients should be endotracheal intubated initially before the procedure (sedation or neuromuscular paralysis is sometimes required to obtain airway control as part of supportive care, but the use of such measures merely to accomplish gastric emptying is almost never indicated).[5] Any agent capable of causing a decreased level of consciousness, seizures, cardiovascular collapse, neuromuscular collapse may compromise the "gag reflex" and this must be taken into account before the procedure is performed. Examples of these drugs include cyclic antidepressants, narcotics, β-blockers, and in general most serious overdoses.[5,17,18]

Possible contraindications include any situations when gastric emptying is unnecessary (*ie* nontoxic ingestions), ineffective (*ie* fast transit time in the stomach), or potentially dangerous. Contraindications to lavage currently include ingestion of strong acidic or alkalotic agents, significant hemorrhagic diathesis, and nontoxic ingestions. Contraindications to emesis include: children under the age of six months; nontoxic ingestions; comatose patients; seizures; expectations of rapid deterioration; acidic/alkali ingestions; when vomiting will delay administration of an oral antidote; compromised gag reflex; hemorrhagic diathesis (cirrhosis, varices, thrombocytopenia); concomitant ingestion of sharp, solid materials; severe antecedent vomiting; and accidental pure distillate or patient who is symptomatic following a hydrocarbon ingestion.[5,13]

Other gastric emptying methods currently not advocated are: mechanical induction of the emetic response; oral administration of salt water solutions, copper sulphate, mustard water, or detergents/soaps; and intramuscular injection of apomorphine.[2] The latter method is advantageous for it has potent emetic effects within 3-5 minutes of administration, but it has a variety of side-effects (*ie* CNS depression). An area of further study would be the combined use of apomorphine followed by naloxone.[2,5]

Currently gastric emptying is considered to be an unproven therapy. Hence, it's use should be very selective, and not always a routine procedure.[5,13-15] Some researchers believe that patients with either unknown potentially lethal ingestions or known very high-risk ingestions, warrant gastric emptying even if the patient is asymptomatic beyond the time that onset of toxicity would be expected by the patient's history.[2,17] However in a recently published article in the *American Journal of Emergency Medicine*, Merigian *et al* through a prospective, randomized study of over 800 self-poisoned patients, found that there was no clinical benefit from gastric emptying, and that gastric emptying (primarily lavage) was associated with a higher prevalene of medical intensive-care unit admissions, increased duration of stay in the emergency department, and increased the prevalence of aspiration pneumonia (compared with the use of activated charcoal). In this study which is the largest reported controlled evaluation of gastric emptying in overdose patients, it is suggested that gastric emptying is unnecessary for selected asymptomatic overdose patients, and has limited clinical benefit in symptomatic patients.[13]

Currently, the most frequently suggested advice regarding gastric emptying is that if the ingestion is a risk to the patient, if the agent is likely to be still present in the stomach, if gastric emptying is likely to be safe and effective in removing a beneficial amount of the agent (*ie* if the lavage can be performed within the first 60 minutes of ingestion), and if there are *no adequate alternatives* to gastric emptying, then it is appropriate to consider which method of gastric emptying is most appropriate.[5,12,18]

It is accurate to say at this time that no adequately controlled study has shown clear superiority of drug removal by either lavage or emesis, and both are probably equivalent on the average.[5,13-15] Although they are roughly equal, there are certain exceptions related to the size of the agent removed. Large drug packets, pills or pill fragments (*ie* enteric-coated or sustained release), adherent masses of pills, or plant/mushroom fragments will not pass through the largest lavage tube (*ie* 40 French lavage tube). Hence it may be more appropriate to use emesis.[4,5] Furthermore, many agents for which lavage might be effective in an adult cannot be lavaged in a child.[4,5] Researchers currently suggest that the choice of gastric emptying should not be determined exclusively by the amount of drug likely to be removed by the procedure, but rather to include the relative safety of each technique, and its impact on the choice of other therapy such as the use of activated charcoal or antidotes.[12-15]

In addition to replacing gastric emptying in many settings, activated charcoal is useful following gastric emptying in a vast majority of ingestions (in which emptying is indicated), and is absolutely critical in others.[5,9,18,19] Lavage is fast and charcoal can be administered through the lavage tube (completed in less than thirty minutes). With ipecac there is associated a 20 minute delay in onset of vomiting, active vomiting for 30 to 120 minutes, after which patients will still vomit anything (including charcoal) given by mouth for a variable time period.[5] Delayed administration decreases the efficacy of activated charcoal.[17] Since it delays the effective therapy of charcoal, ipecac-induced emesis has been increasingly replaced by gastric lavage in cases of combined gastric emptying/charcoal treatment involving ingestion of agents that are well absorbed to charcoal.[13,14] Some sustained release medications (*ie* theophylline preparations, Theo-Dur) present a special problem because the bulk of the pill matrix remains

largely intact even as the active drug is released. This results in a "persistent pill" lasting for many hours, which is too large to pass through a lavage tube, and may be too massive to rely on charcoal alone. As a result the rare patient who presents *within an hour* of large Theo-Dur overdoses and has not vomited spontaneously *may* perhaps be best served by ipecac administration.[4,5]

At present, the majority of researchers agree that when gastric emptying is indicated, gastric lavage is preferable to ipecac-induced emesis. Settings where emesis continues to have a more important role includes ingestions of objects too large to pass through a lavage hose, and ingestions in infants and small children in whom large-bore lavage tubes cannot be used.[13-15] Ipecac will remain useful for immediate home treatment of *some* ingestions because of its convenience and ready availability within minutes of the ingestion.[15] Telephone advice to parents to induce emesis should make clear that syrup of ipecac should be used and not ipecac fluid extracts, as the latter is ten times more potent. Use of this should not be on an empty stomach and hence, if required, two glasses of water should be drunk.

ACTIVATED CHARCOAL THERAPY

Taking all of the evidence together, it appears that a single dose of activated charcoal has greater efficacy in decreasing the absorption of ingested agents than emesis with both healthy volunteers and overdose patients. Similarly, charcoal is more effective than lavage in patients who present more than one hour after ingestion, and is increasingly being demonstrated to be superior in those patients who present within an hour of ingestion [5,12-18], although more *in vitro* and *in vivo* studies are needed. At present, charcoal is becoming first line therapy in the management of nearly all poisoned or overdosed patients.[5,18] Charcoal is an excellent broad-spectrum gastrointestional absorbent that works almost immediately, and does not require the additional time that gastric emptying takes to perform. The sooner charcoal is administered after an ingestion the more efficacious the intervention will be.[17] Timely administration is even more important for rapidly absorbing drugs. For many agents, *ie* theophylline, there is good evidence that charcoal has important effects on both limiting absorption and enhancing elimination.[16,17]

Activated charcoal is produced by the destructive distillation of various organic materials (*ie* wood, petroleum) and then treated at high temperatures with a variety of activating agents (*ie* steam, oxygen). Activation occurs by removing previously absorbed material, and by reducing particle size thereby increasing surface area. Activated charcoal absorbs the toxic agent within the lumen of the gastrointestinal tract, forming a charcoal-agent complex which cannot be absorbed.[2,3,5] *In vitro* studies have documented that a 10:1 ratio is optimal for preventing the absorption in most cases.[14] The absorption process is theorized to rely on hydrogen-bonding, ion-ion, dipole, and van der Wall forces. This suggests that most agents should be best absorbed in their dissolved, undissociated state. Hence by the Henderson-Hasselbach equation, weak bases will be absorbed at alkaline pHs (and vice-versa). The absorption of the agent to charcoal is a reversible process and, with prolonged gastrointestinal transit time, the process may shift to desorption. This may occur especially for weak acids as the charcoal-acid complex passes from the stomach through the intestine where the pH changes from acidic to basic. Desorption may be minimized by: giving a large enough dose of activated charcoal to overcome the decreased affinity of the drug secondary to the pH changes[5]; promoting the rapid passage of the charcoal-agent complex through the GI tract using cathartics to decrease the time available for desorption[7,21]; and utilizing repeated doses of activated charcoal[12]. While desorption has been demonstrated, it is not thought to be clinically significant.[12]

Activated charcoal has been shown to decrease the absorption of a number of compounds including aspirin, acetaminophen, barbiturates, phenytoin, cyclic antidepressants. Notable exceptions are mineral acids/bases, cyanide, iron lithium, and other small ionized compounds.[5,17]

Risks associated with activated charcoal therapy are constipation, GI obstruction (*ie* formation of briquettes), and diarrhea. Contraindications to its use include situations of caustic ingestions requiring endoscopy (blocks the view of the physician performing the procedure), and situations of petroleum distillate (and other agents) ingestions that are poorly absorbed to charcoal but do carry a high risk of pulmonary aspiration.[5,17] If pulmonary aspiration is possible, then endotracheal intubation should be performed before the instillation of charcoal in patients who have lost adequate airway protective reflexes.[18] Charcoal itself if incorporated into the lungs will remain inert with no inflammatory reaction, hence in this sense it is safe, inert and non-toxic.[5]

Research is continually showing that there is little reason to withhold charcoal, and many reasons to use it.[1,5,14,17] Even agents not well absorbed to charcoal may at least be somewhat absorbed and thus charcoal may be beneficial even for these exposures (*ie* 1 gram of charcoal binds 35 mg of cyanide which is considered poor absorption, but 60 grams of charcoal would absorb 2.1 grams of cyanide which is well above the expected lethal dose).[3] It appears that there are in fact few agents for which charcoal is clearly ineffective.[12,17] Many studies suggest that even when the patient's history describes ingestion of agents unlikely to be absorbed to charcoal, it should be given regardless, since the history obtained may be inaccurate or incomplete, and may actually include co-ingestion of agents that are well absorbed by charcoal.[18] For those agents well absorbed to charcoal, it decreases absorption and increases elimination of drug already absorbed into the body (Gastrointestinal Dialysis). Hence, it has use regardless of the interval since ingestion.[5] Many researchers conclude that, based on its efficacy and safety, charcoal should be adminis-

tered in virtually all cases of potentially toxic ingestions, and after some exposures by other routes (to enhance elimination) unless contraindicated.[1,5,12,17,18]

The factors limiting the use of charcoal are the inconvenience of admixture and the repugnant and unpalatable physical characteristics of the substance. Bentonite, carboxymethyl cellulose, and starch have been used as thickening agents which may provide a smooth yet tasteless consistency that may enhance patient compliance without interfering with the binding capacity of the charcoal.[8] Most attempts at flavouring charcoal (*ie* with syrup, saccharin, ice cream, or sherbet) have met with little success because most of these flavouring agents are well absorbed by the charcoal and thereby decrease its available binding sites.[5]

In contrast to a single dose of charcoal, there is also the potential application of multiple doses of activated charcoal (MDAC). MDAC can be indicated to treat any toxic exposure at any age[1], when a significant amount of the agent is likely to remain in the GI tract, or when charcoal would be expected to enhance elimination of the agent.[5,17,18] MDAC is often appropriate regardless of whether or not the ingested agent is known to induce slow motility (*ie* cyclic antidepressants, anticholinergics) or concretions (*ie* barbiturates, iron, glutethimide, meprobamate, extended-release theophylline, salicylates).[12,17]

The activity of some agents, particularly the high-molecular weight polar compounds, can be decreased if their natural cycle of recirculation through the GI tract can be reduced. Interruption of this pathway facilitates fecal elimination of the agent. Most non-ionized agents dissolved in the blood can diffuse across GI membranes, and many agents can be concentrated in GI fluids. Hence there exists a possible concentration gradient favouring the passive diffusion of these agents into the GI lumen. Gastrointestinal dialysis via MDAC is an attempt at using the intestinal wall as a dialysis membrane (comparable to peritoneal dialysis).[5] The large amount of unbound charcoal in the intestine creates a large agent concentration gradient between the blood and intestinal contents, favouring diffusion from the circulation in to the GI lumen onto charcoal. This increases the clearance and decreases the half-life of the agent thereby benefiting the patient clinically.[12] Drugs that have small volumes of distribution, low plasma protein binding, lipophilic (uncharged) structures, high free fractions and/or agents (or active metabolites of) that undergo enterohepatic, enteroenteric recirculation would be predicted to be amendable to therapy with MDAC.[12,17]

Hazards associated with MDAC include diarrhea (especially if cathartics containing preparations are used), vomiting with a risk of aspiration, and reduction of serum concentrations of drugs used for therapeutic purposes. Contraindications are the presence of ileus or GI obstruction.[2,5,12,17] Patients who have been treated with activated charcoal should anticipate "melena-like" stool for a few days afterwards.

THERAPY USING CATHARTICS

The use of cathartics has been applied in GI decontamination in the past. The rationale for their use is to decrease the agent's intestinal transit time, thus minimizing the availability of non-absorbed agent for gut absorption. Currently no benefit has been shown for the use of cathartics alone,[5,21] and most studies have examined the possible effects of cathartics on the efficacy of activated charcoal (as described previously).[7] Most of the evidence suggests that charcoal, plus a single dose of cathartic, is as effective as charcoal alone. Only for a few drugs has the inclusion of a cathartic with charcoal been more effective than charcoal alone (*eg* salicylate absorption).[7] Contraindications to their use include the presence of pre-existing diarrhea, and bowel obstructions.[5] The associated risks are cramping, electrolyte disturbances from the absorption of cathartic components (*ie* sodium sulphate and sodium phosphate are associated with serious fluid and electrolyte disturbances), and dehydration (volume depletion must be corrected before catharsis) from water loss in the stool.[11,21] Some cathartics may interfere with charcoal absorption, although not single cathartic has consistently demonstrated to increase or decrease drug absorption onto charcoal significantly.[5] Appropriate single doses of cathartics are generally safe, and all cathartics in multiple doses can cause significant toxicity (particularly in children).[5,7] Studies show that when not contraindicated cathartics (*eg* sorbitol, magnesium sulphate, magnesium citrate) can remain a standard part of therapy with single doses of charcoal (to decrease desorption), but its combination with MDAC therapy is not recommended (as it is toxic in multiple doses, and does not offer any significant increase in agent clearance).[12]

ADDITIONAL MODALITIES OF GASTRO-INTESTINAL DECONTAMINATION

Other adjuncts of GI decontamination may include whole bowel irrigation (WBI), which initially had its uses in preoperative bowel preparations.[6,8] Rather than inducing diarrhea by drawing water into the stool, or stimulating motility, WBI mechanically washes bowel contents through the GI tract by use of large volumes of liquid (isotonic polyethylene glycol lavage solutions to avoid electrolyte disturbances). Perhaps the greatest utility of WBI will be in the management of life-threatening ingestions of agents not well absorbed on charcoal (*eg* iron, lithium), too massive to rely on charcoal alone (*eg* sustained release theophylline), or foreign bodies (*eg* body packers/stuffers).[6]

In rare instances, oral or enteral administration of binding resins may be useful in preventing absorption of the ingested agent. For a limited number of agents not well absorbed to charcoal, this form of therapy deserves further investigation. For example, cholestyramine binds organochlorine pesticides in the GI lumen.[5]

Endoscopic removal of gastric contents is a further possibility in the management of overdosed patients. Its use is logical when an agent remains in the stomach that is of no significant threat to the patient, cannot be removed by less invasive means, and can be safely removed endoscopically.[2] However, practically speaking, many of the agents likely to be considered for endoscopic removal do not meet these criteria.[2] Frequently the drug masses (*eg* concretions) cannot be effectively grasped through an endoscope.[3] Perhaps its greatest use will be the removal of the most durable drug packets in body packers (*eg* cocaine paste wrapped in four layers of latex and ingested into the GI tract for the purpose of smuggling).[6]

There are few indications for surgical GI decontamination.[3] For example, if there is a rupture of packets containing large amounts of cocaine in body packers, immediate surgical removal of the remaining drug is warranted, following appropriate stabilization.[19]

CONCLUSION

The next step in the evolution of overdose management would be a multicentre, randomized, prospective study of the various modalities of treatment. Since there is considerable variability in patient age, agent ingested, the severity of symptoms, time since ingestion, the presence of coingestants and numerous other factors, it is not appropriate to have overly simplistic guidelines for overdose management. It would seem clear that activated charcoal is becoming the first line of therapy, both in and out of the hospital, if it can withstand the scrutiny of future clinical trials. For those drugs not amendable to charcoal management other therapies will prevail, and alternate treatments should be sought. □

References available on request from author.

IDENTIFICATION OF ORGAN DONOR IN N.S.

Continued from page 119.

Due to the organization of the organ transplant program in the Maritime Provinces, this study is only part of the picture. It would be of interest to couple these results with similar studies in the rest of the Maritime Provinces. A chart review of all potential donors is necessary to improve the validity of these results and provide a clearer picture of the situation in the Maritime Provinces. □

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Current Topics in Community Health

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Please enjoy these three excellent public health papers written by First Year Dalhousie Medical Students and edited for the general readership.

REDUCTION OF VISUAL FATIGUE IN OPERATORS OF VIDEO DISPLAY TERMINALS

Glen A. Fallows, BSc

As of 1987, there were more than 12 million video display terminals (VDTs) in use in the United States, and by 1990, it was predicted that the number would be increased to 60 million.[1] It was also predicted that 40 million employees would be using VDTs on a daily basis and that between 50-60% of office workers would be using terminals.[2] The most common complaint of VDT users is visual fatigue. This paper focuses on the different factors which contribute to visual fatigue, and outlines possible intervention strategies that can be implemented in order to reduce this health risk to employees, as well as increase their productivity.

Visual fatigue can be defined as a combination of both visual discomfort and ocular-motor fatigue. Visual discomfort includes pain or burning in the eyes, blurred vision and headaches, while ocular-motor fatigue includes measurable changes in visual accommodation, convergence, eye movements, blinking and pupil response.

Workers using VDTs for four or more hours per day have an increased prevalence of adverse visual conditions compared with workers who do not use VDTs.[1] This prevalence is higher for workers who use VDTs more than seven hours per day. According to a 1983 report, over 50% of VDT operators complain of eye problems; VDT operators report discomfort or difficulty with their eyes more frequently than other workers with visually demanding occupations.[2] It has been estimated that between 10-15% of operators have almost daily pain or irritations in their eyes, while 40-50% report occasional impairment.[2]

Visual stress is caused by both environmental and personal factors. It has been estimated that up to one-third of the employee population has incorrectly or insufficiently corrected visual defects that affect both visual and general discomfort.[3] Of interest is the fact that most glasses are prescribed for reading at a distance of between 10-14 inches. The usual distance from the eye to a VDT is between 22-26 inches; therefore, reading correction may be unsatisfactory for VDT work.

Another explanation for workers developing sore and itchy eyes is the fact that when working, the workers' eyes get so intensely fixed on the screen that their blinking rate greatly decreases. This is a much greater problem for those who wear contact lenses, since their lenses require additional fluids.[4] There is no evidence that occupational VDT use increases the risk of ocular diseases or abnormalities such as cataracts.[5]

There are many environmental factors that also contribute to visual fatigue. The most common problem, which also causes the most immediate visual effects, is glare on the VDT screen. The intensity of the glare depends on certain factors, such as the size, position, number and brightness of lights. Also affecting the glare are factors such as reflective surfaces, the level of surrounding lights, and the brightness of the surrounding walls or windows in contrast to the screen itself.

Lighting that is designed for and not irritating to employees engaged in traditional desk work, can be quite bothersome for computer operators. The reason for this is the fact that desk lighting is designed for a depressed line of vision, while computer workers have a line of vision that is usually horizontal; this results in a higher amount of glare. According to the National Institute for Occupational Safety and Health, screen glare is reported to bother 95% of all VDT operators.[3]

Glare is also caused by light from windows, lights that are too bright in the offices, and light from desk lamps that are placed such that they produce glare. The brightness of the surrounding walls or windows can cause visual fatigue since the pupil adjusts to a higher total amount of light, making the screen more difficult to read.

Intervention Strategies

Useful intervention strategies have been proposed which reduce factors causing visual fatigue.[2,5,5-7] A properly designed workstation can decrease many of the factors that contribute to visual fatigue. Glare can be greatly decreased by keeping computer screens absolutely vertical, since glare will result from overhead lights if the screens are angled horizontally. This type of glare can also be reduced by installing indirect lighting systems. Terminals should not be positioned such that they are facing windows directly or allowing light to be directly reflected off the screen.

Installation of a partition or screen behind the VDT or covering the facing wall can reduce the amount of background light. This will not only cut down on the visual fatigue but also reduce back and neck problems caused by operators lowering their heads and raising their eyes in order to block out the light. Anti-glare filters are available for installation on VDT screens.

These filters can reduce the amount of glare by 90%, and greatly increase VDT readability.[3]

Other suggestions to reduce excess light have been to install baffles to cover light fixtures, installing screen hoods to shield the screen from reflectors, and placing curtains or blinds on windows. Because many operators have uncorrected vision, regular eye examinations should be made available to employees through the company, with glasses covered under company insurance policies, especially if the glasses are required specifically for VDT use. Prescription VDT lenses are also available and claim to alleviate visual discomfort.[8]

Finally, legislation has been proposed and recommendations have been made concerning visual fatigue and work breaks. The National Institute for Occupational Safety and Health has recommended a 15-minute break be taken after two hours of continuous VDT use under moderate visual demands, and that this break be taken every hour for operators under high visual demands and for those engaged in repetitive work tasks.[6]

Along with these changes, it is necessary to educate both workers and employers about the avoidance of visual fatigue. By increasing their awareness, companies can increase productivity, improve morale and improve the quality of work life of their employees. A small reduction in the adverse effects of VDT operation in a population of 40 million people would be a great accomplishment, and the number of lives improved would well outweigh the small expense of the visual fatigue-reducing interventions.

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OPTIMIZING FLUORIDE INTAKE IN INDIVIDUALS CURRENTLY RECEIVING INADEQUATE AMOUNTS THROUGH THEIR WATER SUPPLY

David Juurlink, BSc, PhD

Roughly fifty percent of the population of Nova Scotia does not benefit from consuming water from a supply in which the fluoride concentration is controlled.[1] The beneficial effects of community water fluoridation have been recognized since at least the 1930s. In 1956, the United States Surgeon General officially declared that dental caries prophylaxis through controlled water fluoridation placed it among the most conclusively proven health benefits known.[2] Controlled fluoridation has been proven to decrease the incidence of caries in children usually by 50-60 percent, and when supplementation is begun at birth, reduction rates of up to 80 percent have been quoted.[3]

Ingested fluoride which is bound to organic material is almost exclusively excreted in the feces. Fluoride existing in the diet as the free ion appears in the blood within minutes and is excreted in the urine after roughly two hours.[2] While in the circulation, fluoride may be incorporated into actively mineralizing tissues to form fluorapatite. Deposition in enamel continues until it is fully mineralized, whereas dentinal deposition occurs until roughly 50 or 60 years of age.[2]

At least three mechanisms have been suggested through which the beneficial effects of circulating fluoride are manifest.[2] The first (and foremost) mechanism is the formation of fluorapatite, a less soluble and less acid-labile analogue of hydroxyapatite. Exposure to the ion throughout the period of tooth mineralization (ie, preschool and school years) is a prerequisite for this effect. A maximum of 5% fluorapatite is tolerated without fluorosis. Fluoride has been shown more recently to promote remineralization of carious lesions through the deposition of fluoride salts in the small spaces of subsurface enamel. Finally, fluoride is thought to inhibit the growth of microbes which contribute to tooth decay.

With respect to the daily fluoride dose, it has been shown that for children 3 years of age or older, a controlled daily consumption of 1 mg fluoride will provide optimal benefits to the teeth and will not elicit adverse effects.[4] This amount of fluoride is contained in one 2.2 mg NaF tablet, or in one litre of water fluoridated at 1 ppm. Dosage guidelines for fluoride supplements have been adopted by the Canadian government and are based upon age and water fluoride concentration.[5]

Community water fluoridation is the most effective and efficient way to increase fluoride intake, and hence decrease the incidence of dental caries.[2,5] Optimal fluoride content of community water supplies is considered to range from 0.7 to 1.2 ppm.[5,6] and fluoride supplementation is not recommended by most authorities if the fluoride concentration is in excess of 0.7 ppm.[5,6]

A number of obstacles exist which may reduce sufficient fluoride intake in a population. Water supplies may by unfluoridated such as those from wells; this poses a major problem in rural areas.

Antifluoridation campaigns have hindered implementation of water fluoridation programs in certain

communal water supplies. Such local areas include Truro and Yarmouth; they remain unfluoridated due largely to political pressure.[1]

Traditionally, antifluoridationists have cited three main reasons why public water supplies should not be fluoridated: fluoride is not effective in reducing the incidence of dental caries; fluoride is biologically harmful; and fluoridations of one's water supply deprives the individual of the freedom to choose not to accept medication.[5]

A third barrier is a lack of education concerning fluorides. In a series of surveys of elementary school teachers in Minnesota conducted between 1973 and 1981, "drinking fluoridated community water" was rated sixth in 1973 and seventh in 1980, out of 11 possible measures to prevent dental caries.[7] Although somewhat antiquated, these surveys were conducted in a presumably educated segment of the population, and it can be inferred from the results, along with others, that the public's understanding of the benefits of fluoridation may be less than desirable.[8]

A further barrier may be a lack of recognition of dental caries as a major health problem related to its lowered incidence over the past few decades (ironically due in large measure to community water fluoridation).

How then may these obstacles be overcome?

Distributing fluoride supplement tablets for home use is initially an attractive proposal, but studies have consistently shown that this type of program meets with little success, largely due to poor compliance over the time frame involved.[3,5] School-based supplementation programs have met with somewhat better results due to improved compliance,[3] but the supplementation is neither year-round nor available to those under five or six years of age.[5]

Fluoridation of school water systems to higher concentrations of fluoride (up to 6.3 ppm) has been shown to be of significant value in reducing the incidence of caries. Increased incidence of fluorosis has been demonstrated only when the level of fluoridation in school water was 5.6 times optimal *and* home water contained 2.0 ppm or more fluoride. Health and Welfare Canada now states that fluoridating school water 4.5 times the optimal concentration should be considered by public health officials.[5] Efficacy and safety having been demonstrated, schools in the "intervention target area" should all be fluoridated in this manner.

Tackling the problem of antifluoridation campaigns may not be an easy one, even though fluoride's effectiveness has been demonstrated repeatedly and the claims of 'harmful' effects disproved.[9] Education of community officials would be of the utmost importance in countering antifluoridationist attitudes, and general public sentiment may be swayed in favour of fluoridation by tactful education and promotion, capitalizing on the increased interest in personal fitness which has overtaken society during the last number of years. It appears that education, in one form or another, is crucial, and should form the basis of an intervention strategy aimed at optimizing public fluoride consumption.

Educating physicians, and perhaps pharmacists, to the local fluoridation patterns would likely prove helpful, as they might then discuss the issue with those involved. Stressing the benefits of fluoridation in the doctor's office may accomplish even more than a well-run media campaign. But to assume that all physicians and pharmacists fully appreciate the importance of proper fluoridation may not be wise. Upgrading the general knowledge of health professionals through seminars and newsletters on fluoridation can only serve to benefit the target population.

Finally, once the target population has been educated to the existence and gravity of the problem, a series of visual reinforcers (posters, for example) could be distributed to pharmacies, doctors' and dentists' offices, and other appropriate areas. These should serve to alert additional people to the problem, improve compliance with at-home fluoridation regimens, and stimulate discussion between health professionals and the public.

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THE POTENTIAL VALUE OF SELF-HELP SUPPORT GROUPS FOR FAMILIES OF CHILDREN WITH CONGENITAL HEART DISEASE

Susan Moffatt, BSc

Over the past several decades, the management of congenital heart disease (CHD) in children has become much more scientific, the diagnostic tests more sophisticated and the surgical treatment greatly advanced. It remains important, however, to be aware of the total needs of the child with CHD and to understand the problems faced by the whole family.

When a child suffers from CHD a great strain is placed on the parents. Consequently, the family needs support from relatives, social workers, doctors and other parents of CHD children to avoid total disruption of family life.

The presence of CHD has been shown to have emotional effects on the child and on family interrelations.[1] The anticipation of grief over possible loss of a child is described by most CHD parents[2] and this is accompanied by difficulty in leaving the child for any period of time, inappropriate concern about his/her crying or about minor illness and either withdrawal or overinvolvement during or after hospitalization.[2] In fact, some parents feel an unconscious anger towards their child which accentuates their feelings of guilt.

Parental attitudes towards the child with heart disease may interfere with the child's development and with the ability of the family to cooperate with his/her therapeutic regimen.[3] Poor psychological adjustment and anxiety in the child with CHD has been shown to relate more to maternal anxiety and pampering than to his/her degree of incapacity or severity of disease.[1] It has been postulated that observed early mental retardation in cardiac children may be associated with several factors including; inability to perform motor tasks, lack of exposure to normal school and play experiences and most importantly, family attitudes of over protectiveness, pampering and anxiety.[3] In addition, the normal development of the healthy siblings may be affected by the disturbed family relations.

It has also been documented that by talking problems over with other people who have lived through similar ones can provide support and help people to cope with anxieties and deal with future stresses.[4] At a time when the family unit is disrupted by the occurrence of CHD, the need for stability and support is overwhelming.[5] A Self-Help group for CHD families could provide this stability and support. If parents of a newly diagnosed CHD child are able to interact with other parents in a similar situation, as in the form of a Self-Help support group, the sense of isolation and helplessness may be eliminated. A Self-Help group could help allay fears through open and frank discussion.

Self-Help is what happens between people; it is people who talk and act together in order to help themselves and each other.[4] The purpose of all Self-Help groups is to provide emotional support and practical help to a group of people who share the same troubling experience.[6] Being a member of a Self-Help group, one can hope to obtain help in dealing with a crisis, getting help that is not available from professionals and gain understanding of their personal and family needs. As a group, the members can learn from each other, provide guidance and join together and build on the strengths of individuals sharing a similar experience.[4] In short, a Self-Help group provides an atmosphere of acceptance that encourages its members to share their sorrows, fears, joys and frustrations.

Numerous research studies have shown that participation in a Self-Help group can help people to better cope with new situations and stressful life circumstances, change behaviour patterns and improve the quality of their lives significantly.[4] In fact, it has been demonstrated that confiding in others, as occurs in Self-Help groups, seems to have long-term health benefits. Moreover, those who bear troubled feelings or traumatic events in silence are more vulnerable to mental and physical illness.[4]

A Self-Help group for the families of CHD children could provide a means by which an affected family could regain their optimism for life, hopefully resulting in a better psychological adjustment for the CHD child and the family as a whole. As well, a Self-Help group could provide personal contact with people who have shared a similar experience, provide an extended family and help to clearly demonstrate to the newcomers the various stages and phases of adjustment. A Self-Help group cannot "treat" the congenital heart defect, nor can it take the problem away, but it can help to provide support and strength for families affected with congenital heart disease.

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Correspondence

To the **Editor:**

GUARDIANS OF THE WORK ETHIC

I have just found time to read the June '91 issue of our Medical Journal and I must write while memory still serves me and congratulate you and your editorial entitled "Guardians of the Work Ethic" an excellent editorial and one that strikes at the heart of a burgeoning and amoeba-like problem. We the physicians have, in fact, become the policemen for a large body of people who do not wish to work; perhaps for all of the reasons you have mentioned but certainly the over-riding presentation is they feel someone "owes them a living."

The question that always occurs to me when presented with one of the countless forms is who should pay. Does the client pay? Does the employer pay? Or as I suspect is largely the case, is it billed to MSI on most of the occasions? It is completely unfair for the employer to demand proof of illness of the employee and expect the employee to pick up the bill for information that is desired and needed by the employer and for which the employee has little use and even less time to scurry around completing the needed forms. Often I find the employee to be apologetic, but quite adamant in the fact that they have no intentions of paying to have the medical evidence form completed. This usually leaves me, the physician, in the unenviable position of either agreeing to absorb the cost myself of attempting to collect from the employer who usually writes me a small note saying the employee was advised that the cost of preparation of such a document was the responsibility of the employee. The physician then having exhausted the two avenues that one should have expected him to collect from will undoubtedly say, "To Hell with it?" and he will collect from MSI.

If all of us in the Province agreed that we will accept no forms without prior payment, then I suspect to a certain extent, they would decrease; or at least we would transfer the burden of cost directly to where it belonged both on the employee and the employer and away from the overburdened tax payer.

As you are aware, approximately 30% of my practice is now dealing with industrial (occupational) medicine. I am the Company Doctor for approximately five companies and I have ample opportunity to see the workings from behind the scenes. In many cases these forms that are completed by family doctors are woefully inadequate, obviously written in haste and contain little or no meaningful information that could be used by the employer. I have always suspected that these forms are so badly prepared by frustrated physicians who see in it no financial remuneration whatsoever and are tired of being placed in the position of being the workplace policeman.

Speaking as one of those physicians who at least a portion of his income is arrived at by salary, I would wholly support a fully salaried position. I think most physicians when they reach a certain age would certainly opt to go on fulltime salary which carries with it such benefits as sick leave, paid vacations, and so on. It also allows those physicians who having reached a certain age and status in life and wish to work a normal eight hour working day, to do so.

The last part of your editorial deals with the obvious envy many of the allied health professions bear to physicians. Often this is based on fabricated ideas of a physician's income. Many of these people take little or no effort in determining how many hours a physician works to accomplish those ends and pay even less attention to the percentage of our incomes that go for office overhead. We will never convince these people as they are polarized in their decisions and in their misguided beliefs. We can *try* but I suspect we will never succeed as every effort to explain is interpreted as self-serving.

The future of medicine in the next ten to fifteen years will indeed be a turbulent, but an exciting one. I would like to register my small vote now in favor of a salary.

Yours sincerely,

E.G. Nurse, MD.
Family Physician,
110 Woodlawn Road,
Dartmouth, N.S.

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