

# THE NOVA SCOTIA MEDICAL BULLETIN

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## The Physician as a Preserver of Life

Suicide occurs in every country whether it is a totalitarian state, a capitalist country or a sophisticated, socialized society such as Sweden.

The combination of circumstances that drives an individual, in the depths of his misery, to take the final way out is intensely personal. For every true suicide there are several others who are making a pretense at self destruction. They have usually studied the dose of the proposed narcotic and their act is one of self pity intended to attract attention or sympathy which they desperately need. In this issue three excellent contributions explain to practising physicians both the extent of the problem in Nova Scotia, and the methods of diagnosis and immediate management of these patients.

A spirit of equanimity as proscribed by Sir William Osler is vital. A physician who becomes angry or emotional cannot act with the necessary calm. Knowledge of the signs of serious risk, the commonly used drugs, and the correct procedure for resuscitation, may make the difference between life and death.

Dr. Hirsch *et al* give the suicide rate for Halifax County as 12.5 per 100,000, with the maximum incidence between 15 and 19 years of age. Dr. MacDermott's review from the Victorial General Hospital emphasizes the fact that mood elevators, benzodiazepines, tricyclines and phenothiazines are the drugs most commonly responsible for overdosage. He states that the majority of patients can be treated in the Emergency Department.

The family physician's role is to spot the likely victim, to console and support the patient and his family, and to refer to the psychiatrist those with suicidal intent or mental illness.

Professor Gray's contribution concerning the management of drug overdosage should be carefully studied by all physicians working in emergency departments. Her paper and up to date reference books on drug overdosage should be available in all such departments.

### **Bowel Cancer — Prevention**

Since Burkitt's missionary tour of North America, we are all conscious of the value of bran in our diet in promoting a smooth flow of material through our gut and thus reducing the incidence of many diseases from appendicitis to cancer of the colon. Dr. MacDonald's contribution puts this work in perspective and draws attention the fact that breakdown products of bile acids and nitrosamines may be mutagenic to bacteria and become carcinogens.

There are many facets to bowel cancer but if we stick to whole meal bread, margarine, all bran and vitamin C we'll probably escape the disease even if we are congenitally susceptible to it.

Wouldn't vegetarians such as Ghandi or Bernard Shaw have been amused at this advice.

### Doctors as Recorders

Dr. O'Connor's article on the 'flu epidemic for 1976-1977 shows how physicians can monitor certain diseases. This method can be considerably expanded in future studies of specific diseases and epidemics.

### "Deafness" and its Detection

It has been estimated that there are about 800 people in Nova Scotia with hearing defects. A survey carried out by Elizabeth Doull, sponsored by the hearing handicapped association of Nova Scotia last year, found 200 people with significant hearing defects.

Dr. N. Wali and Susan Rubins' clear account of Impedence Audiometry gives details of a scientific method of analyzing hearing defects which is entirely objective. By careful application, otosclerosis, middle ear disease, perforation of the tympanic membrane, dislocation of the ossicles, fluid in the middle ear and nerve lesions can all be distinguished.

This method is particularly valuable in young children and infants. It marks a great step forward in scientific diagnosis and if applied enthusiastically and skillfully should prevent many sufferers with hearing defects from remaining undetected or being confused with the mentally retarded.

### Mini Laparotomy

Dr. Burrowes makes a good case for this procedure for tubal ligation. Compared with endoscopic procedures the method requires less equipment.

Comments from gynecologists are invited.

B.J.S.G.

### PLEASE NOTE

the New Improved  
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# An Appreciation

## DR. THOMAS W. GORMAN

*Extracts from remarks made by Rev. G. J. Power on November 19, 1977 concerning the late Dr. T. W. Gorman, of Antigonish.*



"Dr. Tom Gorman's selfless service to Saint Martha's is an unforgettable chapter in the history of this hospital. When death came to Dr. Gorman with such shocking and shattering suddenness we were all but overwhelmed by the realization of the grievous loss we had sustained. His colleagues in the medical field, who have a just appreciation of the remarkable surgical skills of Dr. Gorman and his command of his profession gained from long experience, deep insight and unceasing quest for further knowledge, could give an accurate assessment of this extraordinary physician.

As a layman, I prefer to admire rather than to analyze. And in expressing admiration and affection, I speak for the vast number of people who are the grateful beneficiaries of this man's total dedication to the ministry of healing. Though a figure of rather imperious presence and formidable gifts, Dr. Gorman was not at all lacking in the gentler virtues. His great sanity of mind was beautifully complemented by a profound sympathy of heart. Along with his peerless professional competence, he brought to his patients a keen concern for them as persons. Many there are who became better people, restored not only physically but wholly, because theirs was the good fortune to meet this man in their hour of need.

With unwavering dedication and steadfast singleness of purpose Dr. Gorman devoted his towering talents, his nimble brain and agile mind to improve the human condition of all his patients. As a doctor, he was a foremost practitioner of his

craft. As a man, he remains an inspiration. Who could fail to admire his sterling integrity, his deeply rooted faith, his uncompromising adherence to principle? To his patients he brought the wisdom of the wise man and the empathy of the man of compassion, no less than the science of the physician and the art of the healer.

To you who knew him well, what need is there to speak of his stalwart character, his rigorous standards, his pursuit of excellence in every area of endeavour? To the thousands of people throughout the province who receive excellent medical care largely through his courageous efforts, what need is there to speak of his vision and leadership? To those on whom he prodigally bestowed his little-advertised charities, what need is there to speak of his kindness? His life is his eulogy. His monument: the countless people who are indebted to this true nobleman and skilful surgeon for their health, their happiness and their general well being.

In the wider community, Dr. Gorman was a salutary influence who championed worthy causes and showed us the meaning of good citizenship. Honored and reversed by all his fellow men, it was the youth especially to whom he was a hero and an idol, for he lavished on them his time, his support, his zest for life and his fatherly solicitude. Small wonder his death has affected them as no other in recent memory. A graduate of St. Francis Xavier and McGill Universities, Dr. Gorman has given new lustre and renown to both institutions.

Let us remember in joy this man of surpassing excellence, and praise God for giving us so splendid a servant who to the very day of his death spent himself for others. For ourselves, who still journey on our pilgrim way, may the memory of Dr. Gorman inspire us to live life fully and live it well." □

## Dedication

*SAY not he is dead! What messenger  
Could circle round the world so dark a tale,  
Knowing there is no rending of the veil  
Dropped between those that are and those that were?  
Can he be dead, the dear philosopher,  
Master and friend, and pillar of the frail,  
The true knight holding high the holy grail  
The great soul of great souls the interpreter?*

*His torch was lighted at the Infinite  
And steadfast will remain. If men could lose  
The genius of his work, if time could dim  
The vision pure that ever sought the right,  
If death could kill the spirit and refuse  
Immortal life . . . then might we weep for him.*

Marion Osborne



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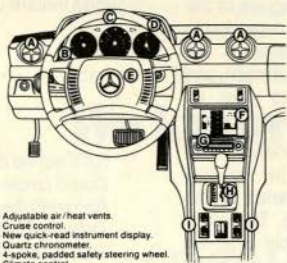
### The ultimate challenge

Probably the ultimate technical challenge an auto maker faces is the appropriate proportioning of size, weight and usable space. In the new 280E, the Mercedes-Benz engineers demonstrate their exquisite sense of proportion.

The new 280E has the look of the future. Lean, low and strong. Its silhouette is sleek and aerodynamic. Visibility is enhanced by an impressive 27.3 square feet of tinted glass. There is ample space for five adults. And the trunk offers a full 17.7 cubic feet of room—all of it usable.

The new 280E's power plant is a refined version of the sophisticated Mercedes-Benz double overhead camshaft six. Its performance has been enhanced with the addition of the new C.I.S. constant flow fuel injection system.

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- (F) Climate control.
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### Handling: An engineering masterpiece

The 280E features fully independent suspension systems. Each wheel has its own system, allowing it to react individually to the road surface. Moreover, each of these systems has its own nitrogen-filled shock absorber and coil spring to dampen road shock. And two separate and exactly designed anti-sway torsion bars keep body roll in check.

The improved zero offset front suspension alone is, quite possibly, an engineering masterpiece. It provides uncanny directional stability and braking. In conjunction with the

Mercedes-Benz recirculating ball power steering, it produces a quick maneuvering response and an incredibly tight 37-foot turning circle. And its ball joints are completely maintenance free.

Overall, the new 280E's extraordinary handling is the result of superbly conceived engineering synergism. A meticulously calibrated combination of power plant, suspension, wheelbase and chassis.

### Safety x 100

A host of Mercedes-Benz engineering achievements have contributed to the unusual safety systems of the new 280E. Each wheel has its own servo-assisted disc brake. The steering column is designed to telescope three ways. Front and rear bumpers are self-regenerative. All told, over one hundred separate safety elements and systems have been combined in the new 280E Sedan.

Along with its new engineering, the 280E offers an extraordinary array of purposeful and luxurious appointments as standard equipment. 4-speed automatic transmission. Power steering. Central door locking system. Electric windows. Cruise control. Anatomically contoured seats. Tinted glass. Quartz chronometer. Steel-belted radial tires. Climate control. AM/FM radio.

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# Dr. John F. Hamm

**PRESIDENT**

**1977-1978**

**The Medical Society of Nova Scotia\***

This year's President of The Medical Society of Nova Scotia is Dr. John F. Hamm, a native of New Glasgow.

Dr. Hamm received his B.Sc., with a major in chemistry, from the University of King's College in 1958. He then studied medicine at Dalhousie University where he graduated in 1963. Since graduation, he has practised family medicine and has become increasingly active in the Medical Society. He is married to the former Genesta Hartling and is the father of three children.

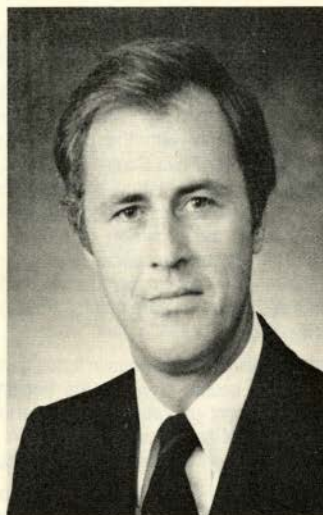
Dr. Hamm practises with five other physicians and two dentists in a clinic in Stellarton and has his hospital appointment at the Aberdeen Hospital. He describes his work as "small town Nova Scotia style family medicine."

From the beginning of Dalhousie's preceptorship program, Dr. Hamm has been involved in helping to immerse students in "the realities of practising general medicine in Nova Scotia." He takes four students annually for one week each; they spend the week living in his home and participating with him in all his professional activities. Thus, they become more aware of the demands they will be required to meet.

Throughout his years in practice, Dr. Hamm has been active in professional societies. He is a Past President of the Nova Scotia Chapter of the College of Family Physicians and was chairman for one Conjoint Assembly Meeting in Charlottetown. Recently, however, his increased participation in the Medical Society has forced him to reduce his involvement with the College. He has served on the Executive of the Medical Society for four years and was Vice-Chairman of the Executive for one year and Chairman for three years before becoming President Elect and now President.

In addition to the many demands of his profession, Dr. Hamm has a variety of personal interests and hobbies. Since he has to be away from home much of the time, he tries to structure the bulk of his extracurricular activities around the interests of his children so that his family has time together. Skiing and biking are two of their main activities. He also plays recreational hockey (usually as forward or centre), sails, plays tennis and jogs. He does some carpentry and a considerable amount of amateur sound movie photography, mainly involving his family. He has a long-standing interest in acquiring, restoring and disposing of old cars. However, this is a time-consuming hobby and after owning a number of interesting vehicles, he is down to one 1954 Ferrari which is a special find since the first Ferrari appeared in 1947 and this one is roughly the 200th Ferrari built. Dr. Hamm is a member of the Ferrari Club of America.

Dr. Hamm is also a "compulsive newspaper reader" and although he has never been active in politics, he has a keen interest in the subject as do many physicians. He says, "I think a physician tends to get interested in his patients and what the politicians do will really have an influence on what happens to people you see every day." □



## Dr. Hamm — Talks to the Bulletin

Dr. John F. Hamm, this year's President of The Medical Society of Nova Scotia, has been active in Society business for several years. Formerly from New Glasgow, he was educated at the University of King's College and Dalhousie University. At present he practises family medicine in Stellarton.

We asked Dr. Hamm what he feels is the main problem facing the Society: "I think we have to concern ourselves with maintaining an atmosphere of freedom in which physicians can continue to function as professional people and provide the services for which they have been trained." He went on to say that the "over-zealous application of rules and regulations to physicians" whether by politicians or by hospital boards can be destructive. Many doctors in other parts of Canada who find their freedom to practise as they see fit being eroded by such bodies are leaving the country. However, Nova Scotia has so far remained free of the kind of confrontation that seriously disrupts medical practice elsewhere. The reasons for this as Dr. Hamm sees them are the medicare program itself, the means by which it is administered, and the good relationship doctors have with the people at the various levels of the program.

\*Interviewed by Elizabeth Shapter  
Mailing Address: 5264 Morris St., Apt. 905 Halifax, N.S.

Looking to the future of medicine in the Province, Dr. Hamm says, "I think what we want to do in Nova Scotia is maintain the situation in which physicians as a group can continue to practise the good quality medicine that has gone on in the past, the best quality that's possible depending on the level of medical skills available, and to create a situation in which a professional person can practise his profession here in a satisfying way." To ensure these goals are reached, Dr. Hamm wants to "continue to improve the Society's relationship with government and cooperate with the government in formulating any plans they may have of changing the direction of health care in the province."

New directions are inevitable and many of these will be made on economic grounds. Ottawa's change in its cost-sharing arrangements with the provinces may have serious repercussions for Nova Scotia. A system, based on tax points in a province with a small population and a large unemployment problem, stands a good chance of causing serious restrictions in the provision of medical care. Dr. Hamm states, "This concerns us because in Nova Scotia we have a good system. We have to maintain what we have and improve upon it and we're not sure that the new cost-sharing arrangement is going to provide for that."

Although the results of the changes in funding from Ottawa will not be felt for a couple of years, the Society is giving thought to more efficient utilization of existing facilities, so that costs for additional buildings and equipment which are likely to become necessary can be kept to a minimum.


Other changes may bring greater variety in the provision of health care. Dr. Hamm explained that the emphasis in our hospitals at present is on providing acute care. In future it may be possible to provide increased extended care facilities on a paid basis as well.

In addition to the emphasis that has been placed on the medical care system, Dr. Hamm sees other, subtler changes that involve people's attitudes. He finds a greater willingness among his patients to take responsibility for preserving their health themselves. People are in fact starting to heed the media's health messages. When he began practice in 1963, Dr. Hamm found that patients were not interested in hearing, for example, that they should exercise, whereas today, they are exercising; they are trying to lose extra pounds and they are reducing their consumption of liquor and tobacco. Dr. Hamm finds preventive medicine extremely rewarding. He says, "We'd like to expend more of our energies helping people not get sick than treating them after they do get sick. Unfortunately, until you get the manpower to do this, it isn't possible."

Of particular concern to Dr. Hamm is the child, 12 or 13 years old, who already smokes heavily. He says, "It bothers me that children can get enough cigarettes to establish a habit long before they are able to take a rational look at the evidence as to whether or not they should be smoking. It seems to me that if it is a good idea not to sell alcohol to people until they are a certain age, it is a good idea not to sell tobacco to them either."

Dr. Hamm says the Society is very supportive of programs that promote a healthier life style, and he believes this is an important part of the rational approach to providing medical care. He concluded by saying that the Society must continue to concentrate its efforts on its relationship with government, so that the very fine system of medical care in Nova Scotia will be maintained and enhanced, and the general level of contentment and professionalism among doctors in the province will not be jeopardized. □

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# Adult Drug Overdose in Halifax

A. G. P. McDermott,\* M.D.,  
Halifax, N.S.

Throughout the latter part of 1975, Emergency Physicians working at the Victoria General Hospital in Halifax noted a marked increase in the number of patients being treated for drug overdose. The V.G. Hospital is the primary and referral centre for most of the patients with drug overdose that occur in the Halifax-Dartmouth Metropolitan Area (Population — 270,000). Although statistics were being gathered at the I.W.K. Hospital Poison Control Centre on the pediatric population, no data were being collected on the adult population. For these reasons an on-going chart review of 723 patients, seen in the Emergency Department in the V.G. Hospital from April 1976 to April 1977, was carried out.

A review of the literature, revealed that many different terms have been introduced to explain this type of self-damaging behavior; e.g., attempted suicide, pseudocide, para-suicide, self-poisoning, voluntary suicide, and overdose.<sup>1</sup> We feel terms suggesting "suicide" miss the mark, as a great many of these patients' actions are demonstrative and manipulative and without lethal intent. Further, we feel that the word "poisoning" tends to imply the ingestion of non-pharmaceutical products and this is definitely the exception in the adult population, though quite common with children. Thus, we have adapted the term "overdose" because it is general enough not to connote intent or type of material ingested.

In this study, three criteria were used to define an overdose: the patient had to know the ingested substance was harmful; the actions of the patient had to have been voluntary, not accidental; and the quantity had to have been known by the patient to be excessive.

## PATTERNS OF DRUG OVERDOSE

Figure 1 outlines the age and sex distribution of these patients. There were 453 female patients (63%) and 270 male patients (37%) who took overdoses. Seventy-one percent of all the patients were between the ages of 15-35 years; 34% had taken two or more drugs; and 29% stated they had been drinking alcohol prior to taking the overdose.

The principles of medical management were those of intensive supportive care, as outlined by Dr. Jean Gray in the following paper. In most cases, it was possible to identify the drug involved from the history alone, but at times it was necessary to ask family, friends, family doctor, or pharmacist. Because tablets were usually ingested by the handful, very little reliance could be placed on the patients' assessment of the number taken. Some pharmacists show the number of tablets prescribed on the label and this provided a better 'guesstimate' of the amount ingested. When necessary, blood serum level determinations of alcohol, barbiturates and salicylates were carried out. A complete toxicological screening analysis was available at all times but was used only when patients were unconscious and had taken unknown quantities of drugs.

\*Emergency Department, Victoria General Hospital, Halifax, N.S.

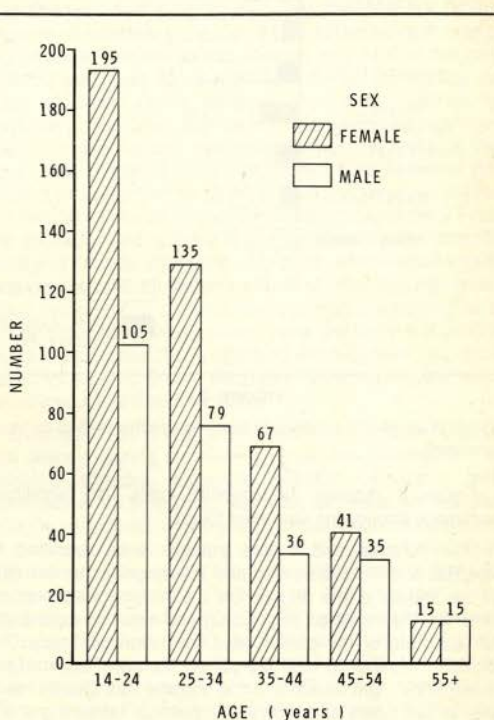


FIGURE 1

Sex, age distribution of adult patients with drug overdoses from April 1976 to April 1977.

Figure 2 outlines the number and types of drugs taken by these patients. If a patient took two or more drugs, they were listed separately under the appropriate heading. Thus a total of 1006 substances were ingested by the 723 patients. The type of drug ingested no doubt reflected its relative availability to the patient. Thus, it is not surprising to see the benzodiazepines lead the list, given the frequency with which these drugs are prescribed. The tricyclic anti-depressants, phenothiazines and nonbarbiturate hypnotics made up the groups of drugs for which there was the highest admission to hospital rate. The miscellaneous category was made up of a vast array of other drugs (antihistamines, analgesics, anti-convulsants, anti-cholinergics, anti-emetics, vitamins, birth control pills, ergot preparations, isoniazid, acetaminophen, antabuse, etc.) and a small percentage of other substances (hydrocarbons, corrosives, plants, and mushrooms, etc.). The number of cases due to street drugs (heroin, speed, cocaine, hallucinogenic agents, etc.) was low and undoubtedly reflected the significant decrease in the use of these drugs since the late 1960's.

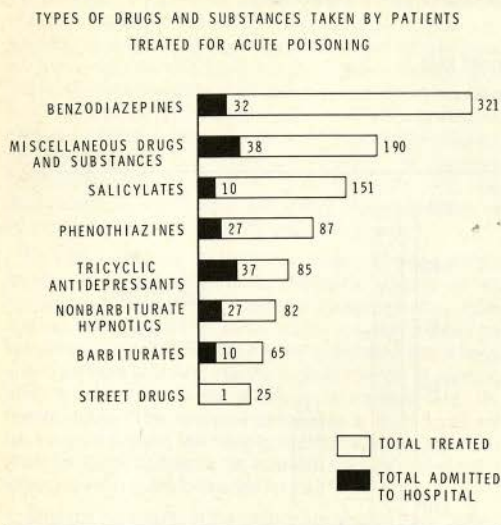


FIGURE 2

Types of drugs and substances taken by patients treated for acute poisoning.

Figure 3 outlines the monthly totals. No significant variations through the year were found.

One hundred and twelve patients were admitted to hospital, and the decision to admit was based on an estimate of the toxicity of the drugs, how much delay was involved between the ingestion of the drug and initial treatment, the clinical state of the patient, and the laboratory data. The decision whether to hold the patient for observation in the emergency room or admit to the hospital was usually made one or two hours after arrival. All patients remaining in the emergency department (85%) were discharged home or to another hospital within twenty-four hours.

In this series one patient died ten days after admission from mediastinitis and tracheo-esophageal fistula, following the ingestion of Drano.

All of those patients treated only in the Emergency Department (85%) were psychiatrically assessed by the emergency room physician, after the toxic effects of the overdose had passed. Of this group, 10% were transferred to the Nova Scotia Hospital (Regional Psychiatric Hospital), and 32% were referred to the psychiatrist on call or the psychiatric out-patients department. The remainder were referred back to their family doctor for follow up. During the year none of those patients discharged initially to the family doctor committed suicide. Of the patients admitted to hospital (15%), all were seen by a psychiatrist before discharge. Thus 47% of all the patients included in this study were seen in consultation by a psychiatrist before leaving hospital.

## DISCUSSION

In Britain, the incidence of drug overdose has increased dramatically in the past 15 years. In 1972, one in ten hospital admissions was due to overdose, making it the second most frequent reason for emergency admission to hospital.<sup>2</sup>

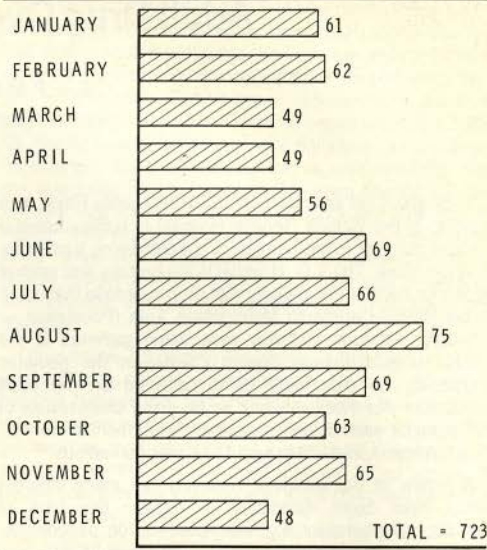


FIGURE 3

Monthly distribution of adult overdoses.

Comparative figures in Canada are difficult to obtain. Data from Poison Control Centres are incomplete and are thought to represent 20 to 25% of the total number of poisonings<sup>3</sup> and furthermore, deal primarily with the pediatric population. However, reports from Hamilton,<sup>4</sup> Montreal<sup>5</sup> and Ottawa<sup>6</sup> have provided additional information about the patterns of adult drug overdosage in Canada.

The overdose rates per thousand adult population were mentioned in only one study (Hamilton = 1.4 per 1000). The total yearly patients treated in the other centres was less than Halifax although they were drawing from a greater population base. Assuming an adult population of 200,000 in the Halifax-Dartmouth area, this would give an estimated rate of 3.5 overdoses per 1000.

In relating the frequency of different drugs used in overdosage with data from the other Canadian centres, a few interesting comparisons can be made. In the Halifax area, the benzodiazepines, tricyclics and phenothiazines were used more frequently, while barbiturates and nonbarbiturate hypnotics were used proportionately less. If the drugs used in overdoses reflect local prescribing habits, then the Halifax-Dartmouth physicians prescribe anti-depressants and tranquilizers more frequently than their confrères in Upper Canada. As in other studies, tricyclics represented the highest ratio of hospital admissions to treated cases. This was due to the cardiotoxic effects of these drugs and the need to monitor any patient with evidence of a cardiac dysrhythmia.

Twenty-nine percent of the patients in this study had been drinking alcohol prior to taking the overdose, whereas in the Hamilton study only 16% mentioned taking alcohol. The relationship between alcoholism and drug overdose was not explored in this review but Kessel, in his Edinburgh study, found 39% of his patients to be alcoholics.<sup>7</sup> He went on to state emphatically that alcoholism was a major factor predisposing to self-poisoning in his community.



Admission to hospital rates were lower in Halifax (15%) than Montreal (33%) or Ottawa (54%). As most overdose patients are usually free from the toxic effects of the drugs within a 24-hour period, the treatment system we have developed in Halifax allows them to be kept in the Emergency Department for this period of time. This frees up much needed in-hospital beds and yet guarantees the patients the benefits of short-term supportive intensive care. We found that the major management problems of these patients were the protection and maintenance of their respiratory, cardiovascular and renal function. With the continued presence of a physician in the Department as well as the presence of experienced nurses, the monitoring of the patient's status was managed without difficulty.

Our reported age-sex distribution rates are similar to other centres, and females took twice as many overdoses as males. Why is the reaction of overdosing used so frequently by females? Some authors have suggested that it is because women tend to use more non-violent means than men.

But more disturbing is the frequency with which those patients, under the age of 35, both male and female, resorted to this type of behavior. Can it be the result of greater familiarity with drugs spawned initially by the drug counter-culture of the 1960's? Or is it because this age group has developed a dependency on drugs to modify their moods — a necessary adjunct to cope with the stress of everyday living? Kressel feels it is a function of present day cultural and social trends that tend to isolate people, retarding their emotional growth by denying them the outlets needed to give expression to their feelings and frustrations.<sup>8</sup> No one knows for certain, but two points are worth noting. In this study over 75% of the drugs used in overdoses were prescribed primarily for mood modifying. Thus the patients had been in contact with their physicians at a prior date and had been recognized as having a need for a psychotropic agent. Hawton, in his study on the general practice aspects of self-poisoning, found that 87% of these patients had been prescribed psychotropic medication within 3 months of the act and that 63% had visited their family doctor within the previous month.<sup>9</sup> Thus the general practitioners seem to be in the position to play a major role in the primary prevention of these acts.

Most physicians will agree that psychotropic agents are prescribed far too frequently and that a careful reappraisal of the indications for their use should be the personal responsibility of every physician. Not only are these drugs prescribed unnecessarily often, but also in excessive quantities.

One case, included in this study, was that of an 18-year old female who took an overdose of Trilafon. She had a previous history of psychiatric illness and had been attending an out-patient department for psychiatric follow-up once each month, where she was given a prescription for 240 Trilafon tablets (2 mgm). When the physician involved was contacted, he stated that she would have to be seen more frequently in order for the amount to be decreased, as she was on social assistance and the prescription had to be filled at the hospital pharmacy. To prescribe such high quantities of a dangerous drug invites human disaster. It is a sad commentary that a health care system can not be flexible enough to include adjustments that will have preventive value. Thus the responsibility to contain this epidemic of overdose lies primarily with the physician and caution should be exercised in prescribing any of these psychotropic agents.

We feel the tendency to refer all of these patients to a psychiatrist should be resisted. Kessel, in his study, concluded that four-fifths of all his patients performed their acts in the belief that they were comparatively safe, and that they would be able to disclose what they had done in good time to insure their rescue. He felt that what they were attempting was not suicide.

The experience of the physicians in the Emergency Department would support this view. We feel that in the majority of overdoses, the intent was to dramatically alter a life situation, and not to die. Though only 47% of the total patients were seen by a psychiatrist, it is our feeling that we were at times overly cautious in making referrals to psychiatry. The basic approach in the psychiatric management of these patients was to determine their intent at the time of the overdose. Dr. Solomon Hirsch has covered this subject more completely in the following companion article, but two points should be mentioned here for emphasis. First, the character and quantity of the substance taken was *not* helpful in determining intent, as patients often had strangely wrong notions about the toxic effects of what they had done. Thus the extent of physical damage was inadequate as a gauge of the need for psychiatric care. Secondly, the actions of the patient *immediately following* the overdose; i.e., steps taken to avoid or insure discovery, were usually the most reliable gauge of their intentions.

Overdoses are a new phenomenon in medicine. People are directly injuring themselves. Thus, the development of negative attitudes, especially hostility, by health care personnel is not surprising. For those who have not wrestled with the intoxicated, abusive and combative overdose patient in the middle of the night, it must be difficult to understand why such hostility exists. However difficult it is at times to tolerate the personality and behavior of such patients, the temptation to lash out at the patient by making procedures (lavage, intubation, I.V.'s, catheterization, etc.) physically uncomfortable should be thoroughly resisted. Any expression of hostility is a great barrier to effective management in these patients. For the medical person to focus on his or her problem of developing hostility detracts from the essential role they play in helping the patients with their problems. Personnel who cannot accept this role should simply remove themselves from treating these patients.

## CONCLUSION

That disturbed interpersonal relationships and adverse social circumstances are predisposing factors leading to overdose is not disputed. Why people choose to use this mode of behavior more and more in response to the stresses of life remains an interesting question.

There is no doubt that people in our society have become more dependent on mood altering drugs to function in what at times appears to be an impersonal world. Drugs are not looked upon as poisons but rather as beneficial. In the heat of the moment, they are seen to be an agent for immediate escape from an intolerable situation. Furthermore, such an action is more eloquent than words would ever be. We have repeatedly seen an overdose be used as a lever in opening up feelings and dialogue that had been impossible to express beforehand.

The role of the physician is to identify those members of the population that are high risk and be cautious in the prescribing of psychotropic agents.

Our experience shows that the Emergency Department can be used as an alternative to in-hospital admission without loss of benefit to the patient.

In a substantial number of cases overdose behaviour is a response to stress and does not necessarily imply mental illness. In these cases, the needed supportive and counselling roles are at times better provided by the family doctor. However, psychiatric assistance should be sought for those patients that give evidence of suicidal intent or mental illness. □

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# The Management of the Adult Patient with a Drug Overdose

Jean Gray,\* M.D., F.R.C.P.(C),  
Halifax, N.S.

In the previous paper, Dr. A. G. P. McDermott has reviewed the adult patients with toxic ingestions of drugs seen over a twelve-month period, in the Emergency Department of the Victoria General Hospital. The numbers recorded by Dr. McDermott's study represent a 50% increase over the comparable period in 1975. If this trend is true in other parts of Nova Scotia, it appears relevant to review the medical management of this type of patient and to follow with a psychiatrist's viewpoint on the factors influencing these patients' actions.

The major requirement for successful management of any patient with a drug overdose is intensive supportive care. This involves rapid assessment of the patient's clinical state; maintenance of a clear airway and ventilatory assistance, if required; insertion of an intravenous line to maintain circulating blood volume; and monitoring of urine output, using a catheter if necessary. Once the patient is stable, a more leisurely attempt can be made to identify the drug or drugs ingested, and, if the patient is awake, prevent further absorption by inducing vomiting or by gastric lavage, followed by the administration of activated charcoal down the lavage tube.

Vomiting can be produced slowly but consistently in a conscious patient, using 15 mls of syrup of ipecac, together with one or two glasses of water or milk to drink. Water will reduce the concentration gradient of the drug in the stomach; milk will slow gastric emptying; and both will provide stomach contents once vomiting starts. If no vomiting has occurred in 30 minutes, the dose can be repeated. Apomorphine is not recommended as a suitable agent for producing emesis. Matthews and Lawson<sup>3</sup> feel that the best method of inducing vomiting is to irritate the pharynx with a finger or spoon handle, assuring that the patient is lying on his side in order to decrease the risk of aspiration.

If the drug was ingested an hour or more before the patient is brought to your attention, gastric lavage is the treatment of choice. The unconscious patient should be protected from aspiration by the use of a cuffed endotracheal tube with the cuff inflated. Lavage should always be performed with the patient in the head down position and lying on his left side. Using a large bore tube and warm water, lavage should be continued until the return is clear.

*Note:* Gastric lavage should *never* be attempted in patients who have ingested strong corrosive agents (e.g. concentrated ammonia, lye, etc.) or petroleum distillates, or those having convulsions.

Activated charcoal is recommended for administration to conscious patients if seen early after ingestion. Used as a slurry of 1-2 tablespoons in a glass of water, the charcoal will

prevent further absorption of salicylates, barbiturates, opiates, glutethimide (Doriden<sup>®</sup>), ethchlorvynol (Placidyl<sup>®</sup>), kerosene and syrup of ipecac.

Identification of the ingested drug should now be attempted, provided the patient's medical condition is reasonably stable and adequate nursing assistance is available. History may have to be sought from many sources: i.e. the family, the family physician, the local pharmacist. All empty pill vials should be brought in. Clinical examination may be helpful in identifying salicylate intoxication, opiate poisoning or corrosive ingestion. Blood and urine on admission and gastric contents (either vomitus or return from lavage tube) should be sent for laboratory identification. Although most patients can be handled by the use of intense conservative management, some will require specific therapy based on identification of the drug ingested and all patients initially must be managed as if other therapies may be necessary.

Specific techniques exist to antagonize or speed the elimination of a limited number of drugs. Vomiting or gastric lavage will obviously enhance the elimination of unabsorbed drug and activated charcoal will prevent further absorption of the drug, but increased renal excretion can also be produced if significant absorption of salicylates or long-acting barbiturates (e.g. phenobarbital) has occurred. If renal function is normal and plasma electrolytes can be assessed every 3 or 4 hours, salicylates and barbiturates can be "trapped" in an ionized and nonabsorbable state in an alkaline urine. Hence, excretion of these drugs is directly dependent on urinary pH. Alkalinization of the urine can be accomplished by using a bolus of sodium bicarbonate, carbonic anhydrase inhibitors such as acetazolamide (Diamox<sup>®</sup>), or continuous sodium bicarbonate infusion as outlined by Matthew and Lawson.<sup>3</sup>

In conjunction with urinary alkalinization, a forced diuresis should also be maintained, utilizing appropriate intravenous or oral fluids and diuretic agents such as mannitol or furosemide (Lasix<sup>®</sup>). Serum electrolytes *must* be measured every 3 to 4 hours during this form of therapy and corrections made to IV solutions based on the results of these measurements. Urinary pH and urinary output should be measured hourly and additional alkalinizing agent administered if urinary pH falls below 7 in salicylate intoxication and 7.5 in barbiturate poisoning.

Although not a major clinical problem in Atlantic Canada, amphetamine and quinine poisoning can also be treated by using forced diuresis, but the urine now must be *acid* to trap the ionized amphetamine in the renal tubules. Urinary acidification can be accomplished using ammonium chloride and as above, urinary pH should be measured and recorded hourly and serum electrolytes every 3 to 4 hours. Alterations in intravenous fluids (e.g. addition of K<sup>+</sup>) should be made as required, based on serum electrolyte determinations.

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Antagonists exist only for a limited number of drugs, so that precious time and energy should not be spent looking for an antidote for most drugs. The exception to this rule is the opiates, including morphine, heroin, meperidine (Demerol<sup>®</sup>), levorphanol, codeine, dextropropoxyphene (Darvon<sup>®</sup>), methadone, Lomotil<sup>®</sup>, and pentazocine (Talwin<sup>®</sup>). A highly specific antagonist for this group of drugs is naloxone (Narcan<sup>®</sup>) given as 0.4 mg intravenously and followed 3 to 5 minutes later with 0.8 mg intravenously. Higher doses can be safely administered and the drug repeated if the patient should relapse into coma. Naloxone has none of the antagonist properties possessed by its predecessor nalorphine and therefore does not produce respiratory depression. It should be remembered, however, that it will produce an acute withdrawal reaction in a patient dependent on opiates, and this individual would be best managed with intense supportive care rather than with narcotic antagonists.

Specific antagonists also exist for iron, heavy metals and organophosphorus insecticides. Desferrioxamine (10 gms. in 50 mls. water) can be left in the stomach of a patient poisoned with iron, after gastric lavage using a solution of 2 gms. desferrioxamine in 1 litre of warm water. Parenteral desferrioxamine can then be administered to remove any iron absorbed. Heavy metals can be antagonized in similar fashion using chelating agents whereas pralidoxime (PAM) plus atropine will counter the effects of organophosphorus insecticides.

Some commonly ingested drugs present specific problems and these will be discussed below. For example:

- 1) The benzodiazepines (chlordiazepoxide (Librium<sup>®</sup>), diazepam (Valium<sup>®</sup>), flurazepam (Dalmane<sup>®</sup>), oxepam (Serax<sup>®</sup>), and clorazepate (Tranxene<sup>®</sup>) are relatively safe drugs, and patients presenting with this sort of single overdose require only intensive supportive care and observation. Rarely will this kind of poisoning require hospital admission.
- 2) On the other hand, patients who ingest tricyclic antidepressants (e.g. amitriptyline (Elavil<sup>®</sup>), imipramine (Tofranil<sup>®</sup>)) run a considerable risk of developing serious cardiac arrhythmias and these patients require close observation and cardiac monitoring, often for several days. Cardiac rhythm disorders resulting from this class of drugs should be handled by standard techniques, although there is some evidence that physostigmine salicylate may act as a specific antagonist. The risk of arrhythmias seems to be increased when the drug is ingested in combination with a phenothiazine such as in the Etrafon or Triavil group of drugs.
- 3) Phenothiazines may produce profound effects on both the central nervous system as well as the cardiovascular system. Hypotension and cardiac arrhythmias can prove to be major clinical problems with phenothiazine overdoses so cardiac monitoring is also indicated for these patients. Because the phenothiazines are adrenergic blocking agents, hypotension is best managed by the use of plasma expanders rather than with pharmacological agents.
- 4) Another drug that presents a special problem is Mandrax<sup>®</sup>, a sedative combination containing methaqualone and diphenhydramine. This drug appears to alter cellular permeability and poisoning is often associated with pulmonary edema. No attempt should

be made to force a diuresis in the patient poisoned with Mandrax as severe ventilatory difficulties could result.

- 5) A more recent problem is the British experience with acetaminophen (Tylenol<sup>®</sup>, Atasol<sup>®</sup>, etc.). Although extremely safe in therapeutic doses, this drug, when taken in excess, is associated with a rather high incidence of fatal hepatic necrosis. Overdoses with this drug are one of the commonest forms of successful suicide attempts in the United Kingdom. As yet, we have had little experience in poisoning with acetaminophen, but the literature indicates that rapid removal is the only effective way of preventing liver damage. This can be partially accomplished by hemodialysis or by use of an extremely toxic antagonist, cysteamine.

All management described above can be provided in most community hospitals. Occasionally, however, hemodialysis is indicated and the patient must be transported to a centre where this service is provided. Only those drugs listed in Table I are removed by dialysis, so it should be remembered that transport of patients with poisoning due to other drugs is hazardous and not in the patient's best interest.

TABLE I

Drugs removed by hemodialysis:

amphetamine	ethchlorvynol
ethanol	ethylene glycol
methanol	isoniazid
barbiturates	lithium
bromide	salicylates
chloral hydrate	MAO inhibitors
	mysoline
	acetaminophen
	sulfonamides, penicillin

The decision to hemodialyze a patient is made if he or she fulfills one or more of the following criteria:

- 1) ingestion of a potentially fatal dose
- 2) progressive clinical deterioration under good supportive care
- 3) prolonged coma
- 4) impairment of normal routes of excretion

New techniques for removal of excessive drug are becoming available and may enable more rapid clearance of drugs such as acetaminophen or the tricyclic antidepressants in the future. These developments indicate a need to maintain a reasonably up-to-date library of references in the emergency department, and a list of such books found useful to the author is provided at the end of this article.

To summarize the approach to the patient who has taken an excessive quantity of drugs, remember the following points:

1. Treat the patient, then his poison. Most patients can be managed utilizing good supportive care alone.
2. If possible, identify the drug in order to allow the use of specific therapies when indicated.
3. Transfer the patient only if facilities in your hospital make intensive supportive care impossible. Remember that the same care rendered in the hospital must also be provided in the ambulance during transport.

4. It is important to recognize that the care of the patient is not completed with physical recovery. The patient's "plea for help" must also be taken seriously and appropriate psychiatric or counselling services provided. □

**Useful Reference Books**

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# Suicide and Lethal Attempts in Halifax County in 1976: Brief Report

Solomon Hirsch,\* M.D., Margaret Lowman,\*\* R.N. and Roland Perry,\*\*\* M.D.,  
Halifax, N.S.

Completed suicides in Halifax County, Nova Scotia, (population 270,000) were studied in 1976 from data obtained from the Medical Examiner, and by psychological autopsy when possible. Suicide attempts were reviewed and, those considered to have been carried out with lethal intent, were studied in detail from available medical data and usually by interview with the patient. An attempt was considered to be of lethal intent when the victim stated he fully intended to kill himself and behaved in a manner in keeping with this, almost always with dangerous results. The above is part of an ongoing study and more data will be available at a later date.

The completed suicide rate in 1976 was 12.5 per 100,000 — not significantly changed in recent years. There were 33 deaths — 30 men and three women. Between the ages of 15-50, 29 deaths occurred with a roughly uniform incidence throughout this age range. There were more deaths between ages 15 and 19 than over 50. When the rates were averaged for the past five years to obtain more valid statistics, it was noted that the rates for ages 20-29, 30-39 and 40-49 were almost identical — between 20 and 23 per 100,000. There were lower rates in all other age groups, and this is equally true when figures for males alone are used. Thus, the usual statement that the rate goes up with age is not true in Halifax County, Canada.

Eighteen of the suicides, all male, were caused by gunshot. Of the three women, one used poison, one an overdose, and one drowned.

Thirty-seven persons, 19 male and 18 female, made suicide attempts with lethal intent. Drug overdose, often combined with alcohol, was by far the commonest method, used by 12 men and 11 women. However, seven males and one female shot themselves. The age range was slightly lower with the highest incidence in the 20-40 group. The figures are too small for interpretation; but it is interesting that with the criteria we used for lethal intent, the figures for males and females were so close. We plan to continue collecting data in this group. Perhaps one of the factors in the lower incidence of completed suicides in women is the method most commonly used — overdose. With improved medical techniques, it is becoming increasingly difficult to die by overdose.

Although the numbers are too small for valid conclusions, it was noted that there was a marked similarity in the two groups. Many had severe and long-standing personality disorders, the most frequent types being chronic discontent and unhappiness. Alcoholism and drug abuse were common. There was frequently increased stress or a significant loss prior to the suicidal behaviour with a resultant increase in

unhappiness often combined with a feeling of hopelessness or futility. Very few in either group had an endogenous type of depression or schizophrenia.

After all available data were carefully reviewed, it was considered in almost every case of suicide or dangerous attempt that prevention was nearly impossible, even though many persons warned of their intentions.

Some important points in the psychiatric management of patients who take an overdose are:

- 1) Time and an understanding attitude are necessary for a proper evaluation.
- 2) Do not assess patients too soon after an overdose, as they must be clearly fully awake before assessment is reliable.
- 3) Do not discharge too early from the emergency room.
- 4) Make certain that responsible relatives or others are involved in the assessment and after-care. Discharge to a supportive home atmosphere.
- 5) Know the signs of serious suicide risk.
- 6) If you are angry, biased or rejecting, get someone else to do the assessment.
- 7) If there is severe depression, psychosis, a serious situational problem which makes the patient feel hopeless, or if you are in doubt as to what to do, arrange for a psychiatric consultation immediately.

Characteristics of patients who commit suicide or make serious attempts include:

- 1) Depression, futility or hopelessness. These are present in almost all patients who commit suicide or make serious attempts; however, less than one half of these have clear cut depressive illnesses.
- 2) Feelings of loneliness or isolation. Suicide is more common in the single, widowed, divorced or separated persons, particularly in recent bereavement. Not only are the patients more prone to suicide, but they are also more difficult to manage, for they may live alone; and it is very difficult to have someone share the responsibility with the physician.
- 3) Feelings of severe frustration or desperation, with not way out. This is self-evident but it is very important to inquire about it in detail.
- 4) Preoccupation with suicide, particularly if specific plans are made and the means are readily available. One must inquire about this in great detail and it is a sinister sign if, for example, a patient has a gun and bullets, and has decided exactly how he will use them if the impulse to kill himself recurs.
- 5) Previous suicide attempts, particularly if serious in nature.

\*Professor of Psychiatry, Dalhousie University, and Head, Department of Psychiatry, Victoria General Hospital, Halifax, N.S.

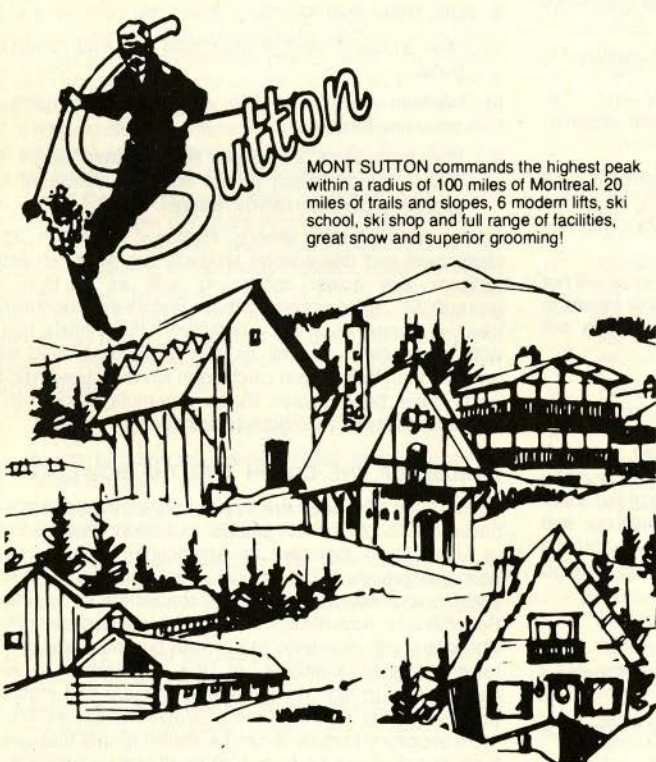
\*\*Liaison Nurse, Dalhousie University, Halifax, N.S.

\*\*\*Chief Medical Examiner, Halifax County, N.S.

- 6) A family history of suicide has some significance. It should be kept in mind that recurrent types of depressive illness have a significant hereditary predisposition and this may well account for the family history being important.
- 7) Unsatisfactory life situations or acute crises.
- 8) Chronic or life-threatening physical illness.
- 9) Excessive use of alcohol or other drugs.

- 10) Refusal to accept help from physicians, psychiatrists or friends. This is one of the most serious problems in terms of management of the suicidal patient and is one of the main reasons why techniques of prevention are so ineffective.

It is important to know the pattern of suicidal behaviour in the area in which you work. Further reports of the ongoing study of suicidal behaviour in Halifax County will be published when available. □



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# Diet and the Origin of Bowel Cancer

Ian A. Macdonald,\* Ph.D.,  
Halifax, N.S.

Epidemiological data have led the way in providing clues to basic scientists in search for the fundamental mechanisms behind clinical disease. Three major dietary factors have been epidemiologically associated with increased risk of cancer of the colon. These factors are:

- Depletion of dietary fiber (the component of the diet which remains unabsorbed through the gut and is not broken down by human digestive enzymes)<sup>1-3</sup>
- Excess consumption of saturated fats and cholesterol<sup>4-6</sup>
- Excess consumption of red meats<sup>7-8</sup>

Of course the problems in these epidemiological observations are:

- These factors are not examined individually but collectively<sup>8</sup> and thus the relative importance of the components remains obscured and very controversial<sup>9-10</sup>
- Epidemiological studies in carcinogenesis *per se* will not elucidate the biochemical and microbiological events in carcinogenesis in the colon, but starting clues are provided.

## THEORIES OF CARCINOGENESIS

Two currently popular theories of the etiology of bowel cancer have been proposed by Drs. D. P. Burkitt and M. J. Hill. Both theories agree that carcinogens are produced by bacteria *in situ* in the large bowel and that genetic factors or precancerous conditions such as multiple polyposis and ulcerative colitis are statistically minor while dietary factors are the major issue. But these theories then diverge mechanistically —

### 1. Burkitt's Theory<sup>1, 2, 10</sup>

- A high fiber diet results in a more rapid transit of material through the gut.
- This reduces the opportunity of bacteria to produce carcinogens.
- It reduces the opportunity of carcinogens to interact with the intestinal cells.
- The amount of dietary fiber will influence microbial populations and/or metabolic activity (carcinogenesis).

Moreover, Burkitt<sup>1, 2, 10</sup> and Trowell<sup>11-13</sup> have related the incidence of colon cancer with a number of mechanical disorders to which a relationship with "dietary fiber depletion" is gradually gaining medical acceptance. They are: hemorrhoids, appendicitis, diverticular disease, varicose veins, constipation (where the introduction of bran into a diet is traditionally beneficial), and hiatus hernia. Other disorders which are related epidemiologically including gallstones, ischemic heart disease, deep vein thrombosis and diabetes remain controversial in their physiological relationship with

dietary fiber. It must also be emphasized the dietary fiber is not a single substance but a number of different complex carbohydrates (cellulose, hemicellulose, pentosan, lignin, pectin and gums) whose structure and physical properties in the bowel are different<sup>3</sup>. Even the mode of preparation and the food consumed with the fiber appears to be important<sup>3</sup>.

### 2. Hill's Theory<sup>6, 14, 15</sup>

- High-fat diets result in high fecal bile acid concentrations.
- Bacteria metabolize bile acids to carcinogens or cocarcinogens.
- With appropriate populations of organisms<sup>15</sup> and a high colonic concentration of bile acids an increased carcinogen production can be realized.

In support of Hill's theory, increased fecal bile acids, cholesterol and degradation products are demonstrated in patients with bowel cancer as well as in high risk groups<sup>5, 16, 17</sup>. Not surprisingly these factors are depressed in low risk groups such as vegetarians<sup>17, 18</sup>. Animals treated with carcinogens as well as bile acids developed more tumours than those given carcinogen alone<sup>19</sup>. However, bile acids have been shown to be non-mutagenic<sup>20</sup> by the microbial assay for mutagens (carcinogens) by Ames<sup>21</sup>.

## CANCER OF THE COLON AND THE BOWEL FLORA

A number of studies are available comparing the colonic bacterial flora of high risk groups. Included in this are British vs Ugandans<sup>6</sup>; Japanese vs Americans<sup>22</sup>; wealthy socio-economic groups vs poorer socio-economic groups of Hong Kong<sup>23</sup>; and mixed Western diet consumers vs vegetarian Seventh-Day Adventists<sup>24</sup>. All studies showed remarkably little intergroup difference in the flora but there was a trend toward higher numbers of the anaerobic bacteria, *Bacteroides*, in high risk groups. It appears that metabolic activities of the flora and the available substrates are the more important factors. It can be shown in rats that various fecal enzymes can be turned on or off just by switching the animals from a grain to a meat diet<sup>25</sup>. Higher risk humans have increased microbial fecal metabolic activities including bile acid degrading enzymes<sup>16, 17, 26</sup>.

## MUTAGENS (CARCINOGENS) ISOLATED FROM NORMAL HUMAN FECES

Bruce<sup>27, 28</sup> has isolated some N-nitrosamines from normal human stools which he has demonstrated to be mutagenic for bacteria<sup>21, 29</sup> the extrapolation being that they are in fact carcinogens to the human host. The claim that such compounds may be the chief culprits in bowel cancer<sup>28</sup> tends to focus one's attention on nitrates and nitrites, amino acids and dietary fat which are precursors to this group of compounds<sup>30</sup>. Bruce has subsequently shown that fecal mutagen levels are elevated on a high fat diet, depressed by vitamin C and E and diluted by a high fiber diet<sup>27, 28</sup>. An immunological question now rises: what host factors exist to

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protect the intestinal wall against cells transformed by such substances and is there an immunological defect in multiple polyposis or colitis patients?

## OTHER FACTORS OF IMPORTANCE IN THE ORIGIN OF BOWEL CANCER

Besides bile acids and cholesterol (and their degradation products) and N-nitrosamines, Hill<sup>3</sup> has described other possible carcinogens such as steroid estrogens, tryptophane and tyrosine metabolites. Also of interest are those factors which alter fecal pH value<sup>20,31</sup>.

## CAN WE PREVENT BOWEL CANCER BY DIET?

It is more than likely that bowel cancer is a multifactorial disease and there is little doubt that, by identifying the major environmental risk factors and dealing with them appropriately, one can drastically reduce the risk of such cancer even with a lack of knowledge of all the factors involved, of any of the operating mechanisms. However, it is also evident that, similar to smoking and lung cancer, the institution of a "beneficial diet" must be long term to have any real impact on risk. One of the best "low risk" diets described to date is the leguminous high fiber diet of the Kikuanas of Uganda which is neither available at the local health food stores nor particularly appealing to the Western palate. Such "sensible" habits such as the consumption of whole grain breads, vitamins C and E and decreased intake of saturated fat and red meat may be the first step to a diet designed not only for a decreased risk of bowel cancer but of other apparently related diseases. □

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# The Great 'Flu Epidemic of 1976-77

## An Influenza Surveillance Project

John F. O'Connor,\* M.D.,  
Dartmouth, N.S.

The Great 'Flu Epidemic of 1976-77 did not happen but the connected publicity concerned with the possibility of an epidemic did achieve results, i.e. a surveillance project aimed at identifying early any viral epidemic inflicted on the community, and at documenting the extent and seriousness of that epidemic.

Surveillance projects have always been of interest to practising physicians for many reasons, including the necessity to know what is endemic or epidemic in any community in order to practise knowledgeably and wisely. The College of Family Practice, with its strong interest in research, recently saw surveillance projects as an excellent way of adding to our knowledge of what is occurring in communities and of utilizing Family Practitioner interest in research. Initial surveillance projects took place with College of Family Practice sponsorship in Saskatchewan and the consideration to try a National surveillance project was accelerated by the "swine 'flu scare" of 1976-77.

With encouragement from the Bureau of Epidemiology, Federal Department of National Health and Welfare, it was felt that knowledge of the influenza virus types and how they vary and spread, the extent of the epidemic, and the severity of illness could be useful in both planning immunization and community activities during, before and after any well-documented influenza epidemic. Funds to support a surveillance system were obtained, and the Research Committee of the College of Family Physicians of Nova Scotia planned its participation in a National Surveillance system. Family Physicians throughout the province were asked to volunteer their services and serve as "sentinel recorders." The response was excellent and about twenty physicians distributed geographically throughout the province were recruited. The project was very fortunate in obtaining the encouragement and cooperation of Dr. K. R. Rozee, Head, Department of Microbiology, Dalhousie University and of Dr. Ruth Faulkner, Head, Virology Section, Dr. D. J. Mackenzie Laboratories and Diagnostic Centre, Victoria General Hospital.

### METHOD

Along with the system of merely reporting cases seen in doctors' offices and hospitals, we documented cases according to the type of influenza or viral illness we were encountering. Recording was done on special forms designed by the National Working Party of the Influenza Surveillance System; we attempted to document the first ten cases seen each week in each respective practice, meeting our criteria for diagnosis of influenza. The first two cases seen each week had throat swabs taken and these were forwarded to the Nova Scotia Pathology Institute, for possible isolation and identification of organisms. The first two cases

seen each week were also documented by paired serum, in both the acute and convalescent stage of the illness two weeks following the onset of the illness. Coordination of results, both reported cases and cultures, was done through a Medical Clinic in the Metro area.

### DISCUSSION

The epidemic lasted approximately two months, from April 1 to May 25. The documented cases were distributed throughout the province, including the Halifax-Dartmouth area, Lunenburg, Bridgewater, North Sydney, Truro and Kentville.

The first isolation of A/Victoria, in the Nova Scotia area came from our recorders in the Halifax-Dartmouth area and a gradual spread throughout the province over the above period of time was documented. A/Victoria/75 influenza virus was isolated from 33 specimens received from hospitals and physicians in various parts of the province during the epidemic. In fact, over two-thirds of these were from our "sentinel recorders" in the surveillance project. The first positive throat washing was received on April 3 from Dartmouth, and the last on May 11 from Kentville and Dartmouth. Unidentified myxoviruses were isolated from two specimens received on May 24 from Kentville. There was no other laboratory evidence of influenza in Nova Scotia during this period of time. Table I shows the distribution of cases and isolated organisms.

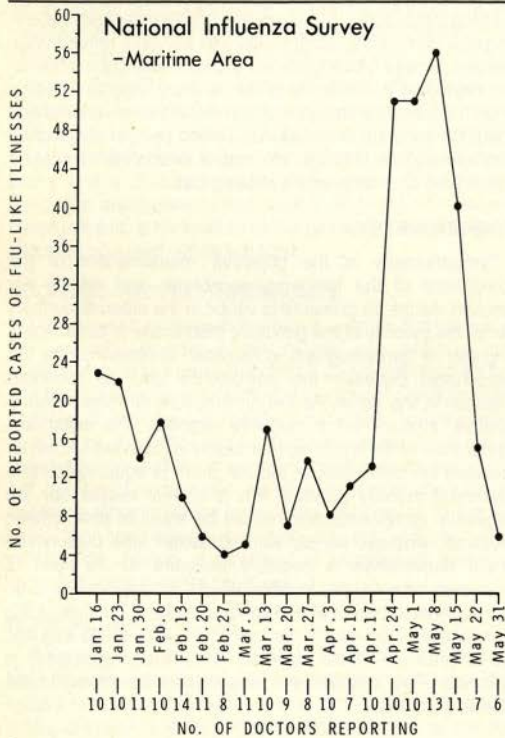
TABLE I

Date	No. of cases reported	No. of isolates	Location
<b>1977</b>			
April 3	8	1	Dartmouth
April 10	11	0	
April 17	13	1	Halifax
April 24	51	5	Lunenburg Halifax Dartmouth
May 1	51	8	North Sydney Truro Bridgewater
May 8	56	3	Bridgewater Lunenburg Dartmouth
May 15	40	1	Kentville
May 22	15	3	Kentville Halifax
May 31	6	0	

The study involved considerable organization and the assistance of many people including Dr. Adrian Pointer, Field Epidemiologist for Nova Scotia. The results from Nova Scotia

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were forwarded to the National Coordinating Centre in Montreal and thus enabled the National Surveillance working committee to identify and solve many potential problems in developing a national sentinel recorder system. The study demonstrated also the interest of Family Physicians in participating in large group research projects and surveillance programs. Future plans include repeating the project in 1977-78 to correct some errors in the system and possibly to try recording in a different area, e.g. drug reactions.



\*NOTE: Totals taken from N.S.'s 18 Doctors

### CONCLUSION

(1) It is possible to mobilize Family Physicians into an efficiently coordinated reporting system. (2) A minor 'flu epidemic was documented during April and May 1977 and the causative organism isolated in numerous cases. (3) Mortality and morbidity statistics during the period of the epidemic can be viewed now in the light of the findings of this study, and immunization programs and plans adjusted or altered in the light of the findings of the surveillance group. Such programs should be viewed with a perspective based on the epidemiology and the natural history of the influenza virus.

It is hoped that Nova Scotia physicians will play a part in a permanent National Recording System with continuing responsibility for monitoring a variety of diseases and health problems. We would sincerely like to thank all physicians who participated in the project and hope that continuing cooperation from Nova Scotia physicians will be achieved. Special thanks to Dr. Harry Adams, Nova Scotia Coordinator. □

### Sentinel Recorders:

Christopher Childs  
J. G. Seaman  
John Archibald  
Jack Sommers  
J. S. Munro  
John B. Shaw  
Ian MacPherson  
Ewart Morse  
M. P. Quigley

M. S. McQuigge  
J. C. Johnson  
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# Impedance Audiometry for the General Practitioner

Susan Rubin,\* M.A. (Audiology) and M. N. Wali,\*\* F.R.C.S.(C), F.A.C.S.,  
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Impedance audiometry is an objective means of assessing the function and integrity of the peripheral auditory mechanism. In contrast to conventional pure tone and speech audiometric techniques, which rely to a large extent on subjective behavioural responses, impedance audiometry results offer a recording of the physiological responses of the ear without patient participation or cooperation. The combination of audiological results and impedance measurements provide the audiologist and the physician with a complete picture of an individual's peripheral auditory function and its sensitivity to sound.

Impedance audiometry results offer a special benefit to physicians who are unable to complete an otologic examination on an uncooperative child. In addition the audiologist benefits from impedance measurements when accurate hearing thresholds cannot be obtained.

Impedance measures help determine middle ear pressure, tympanic membrane mobility, eustachian tube function, stiffness of the middle ear ossicles, thresholds of acoustic reflexes, nonorganic hearing loss, cochlear and retrocochlear disease, and site of facial nerve involvement in paralysis and its recovery.

When referring to the impedance of a mechanical system, the relationship between three factors, mass, friction and stiffness, is essential. In the middle ear mechanical system the balance of these factors tends to be stiffness dominated. The mass of the middle ear ossicles constitutes minimal weight, and friction is also minimal due to the ease of mobility of the suspensory ligaments and tendons. A large resistance component occurs at the footplate of the stapes, constituting a stiffness which must be overcome in order that the fluid in the inner ear is affected.

The electroacoustic impedance audiometer simply measures and records the mobility of the middle ear mechanism by monitoring sound pressure level as a function of cavity size. An air tight seal, obtained with a probe inserted in the external auditory canal, establishes a cavity volume. The probe has three outlets: one emits a continuous 220Hz probe tone at 85dB Hearing Level; a microphone in the second outlet monitors the sound pressure level of the tone which reflects back off the tympanic membrane into the external auditory canal; and the third is an air pressure pump which can be regulated to create positive, negative or atmospheric air pressure in the cavity.

The cavity size is altered by changing the amount of air pressure with the air pressure pump. The compliance or mobility of the tympanic membrane and middle ear system is thus measured by regulating and monitoring the changes in cavity size and sound pressure level.

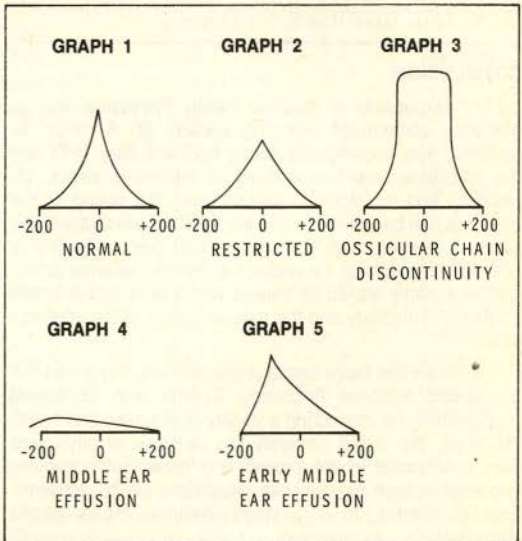
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\*\*Assistant Professor, ENT Dalhousie University, and Consultant Otolaryngologist, Nova Scotia Hearing and Speech Clinic, Halifax, N.S.

## THE IMPEDANCE TEST BATTERY

Three procedures make up the impedance test battery: tympanometry, static compliance and acoustic reflex measurement. These procedures will provide diagnostic information regarding the integrity of the auditory mechanism only when used as a combination. Each test alone will not provide adequate accurate information but when used in conjunction with audiological findings, the results determine the nature and degree of an individual's hearing loss.

## TYMPANOMETRY

Tympanometry is the objective measurement of the compliance of the tympanic membrane and middle ear function. As the air pressure is varied in the external auditory canal, the mobility of the tympanic membrane is determined. A graph or tympanogram is recorded to demonstrate the relationship between the compliance and air pressure changes in the canal. As the air pressure is altered from a positive amount to a negative amount, the maximum compliance of the tympanic membrane is recorded i.e. the air pressure on both sides of the ear drum is equal creating a maximum mobility position. For a normal middle ear the maximum compliance point would be equal to atmospheric pressure; whereas an ear with eustachian tube dysfunction would demonstrate a negative pressure as its point of maximum compliance. In other words, tympanometry is an indirect measurement of middle ear pressure. By plotting the compliance of the middle ear system on the vertical axis and the air pressure on the horizontal axis, the tympanogram is obtained. Five patterns are recognizable as shown in the following graphs.



## STATIC COMPLIANCE

Static compliance measurements are considered clinically insignificant, and are helpful only in conjunction with the results of the other battery tests, in determining the immobility of the middle ear system and the volume of the external auditory canal. In essence, it is the difference between two volume measurements: one taken with a fixed amount of positive air pressure in the external auditory canal and the second taken at the maximum compliance point of the tympanic membrane. The difference cancels out the volume of the external canal and yields the compliance of the tympanic membrane or middle ear system.

Static compliance in units of cubic centimeters is abnormally low when the value is less than 0.28 cc and abnormally high if above 2.5 cc. This measurement can therefore differentiate between a stiffened tympanic membrane and a disarticulated ossicular chain. On the other hand, the measurement can identify, in terms of a volume measurement, a perforation of the tympanic membrane or a patent or occluded ventilation tube.

## ACOUSTIC REFLEX THRESHOLDS

The acoustic or stapedial reflex is a reflex contraction of the stapedial muscle in the middle ear, which occurs bilaterally upon the presentation of a sufficiently loud sound, and the threshold is established at the lowest signal intensity capable of eliciting a stapedial contraction. In impedance audiometry, this reflex can be measured in the probe ear by monitoring the sudden change in compliance of the middle ear system. The acoustic signal is presented through an earphone attached to the impedance audiometer. The probe tip in the contralateral ear picks up the acoustic reflex compliance change, a threshold is established, and it is recorded under the stimulated ear.

## CLINICAL APPLICATION

Tympanometry and the static compliance measurement help determine the mobility of the tympanic membrane and middle ear ossicles. Graph 1 shows a normal tympanogram where the peak is at "0" pressure indicating normal position of tympanic membrane. If the ossicles are stiffened, as for example in otosclerosis, the tympanogram will show a low peaked curve with normal middle ear pressure. (Graph 2)

When the ossicles lose their continuity as a result of middle ear disease or trauma, the curve obtained shows a maximum compliance point at normal middle ear pressure with a very high peak occasionally outside the limits of the graph. (Graph 3)

Presence of fluid in the middle ear cavity will result in a graph where the curve is flat with no specific peak. (Graph 4). Retraction of the eardrum alone results in a peak at a high negative pressure point. (Graph 5). Retraction of the eardrum along with the absence of acoustic reflexes may indicate the presence of fluid. Thus the progression or resolution of serous otitis can be followed by a series of tympanograms.

Perforation of the tympanic membrane or the presence of a functioning ventilating tube can be identified by the large volume of the static compliance measurement.

The diagnostic information provided by the acoustic reflex thresholds significantly outweighs the results of the other battery tests. When a significant conductive pathology is present in the middle ear, reflexes may be eliminated

bilaterally, as the stiffness of the middle ear system prevents a compliance change from being recorded. Elevated reflexes are present when the conductive loss in the stimulated ear is less than 25dB. In unilateral sensori-neural losses, acoustic reflexes may be obtained in the affected ear. If the hearing loss is cochlear in nature, as in Ménière's Disease, stimulation of the impaired ear results in a reflex response 65dB or less above the pure tone hearing threshold in that ear, due to the recruitment phenomenon. Due to an abnormal growth in loudness, reflexes occur sooner than they would for a normal hearing ear.

In retrocochlear impairment, such as an eighth nerve tumor, the reflexes are absent when the affected ear is stimulated, because of the absence of recruitment and the inability of loudness to reach the stapedial reflex threshold. A reflex decay can also be seen in some tumor cases.

The acoustic reflex thresholds are very helpful in determining the site of lesion in facial nerve disease. If the nerve is affected above the stapedial muscle, the reflex will be absent on the affected side. If the nerve has recovered or has been affected below the stapedial muscle, reflexes will be present on the same side. An example of this would be in patients with Bell's Palsy.

## CLINICAL EXAMPLES

A two year old girl presents with a history suggestive of hearing loss. She recently had a cold and a clinical examination was difficult because of the child's apprehension. A pure tone audiogram obtained revealed limited information showing a response of 25dB by air conduction only. Bone conduction responses could not be measured. Impedance audiometry showed a curve suggesting fluid in both ears and reflexes absent bilaterally. Examination of the ears under anesthesia confirmed the findings of fluid in the ear and, following treatment, audiometric findings improved significantly.

A six year old child was seen with a history of inattention in school. Clinical examination revealed normal looking tympanic membranes. Tuning fork tests and pure tone audiometry indicated a conductive hearing loss, and middle ear pathology was thus suspected. Impedance audiometry showed markedly increased compliance or hypermobility, suggesting disarticulation of the middle ear ossicles. (Graph 3) This finding was confirmed upon exploration of the ear.

A four year old child, who has congenital deafness and wears binaural hearing aids, recently had myringotomies and the insertion of ventilation tubes. Two months later it was noticed that the child's hearing aid was not providing adequate amplification. Clinical examination showed the tubes to be in place, and acoustical analysis of the aids proved the aids were in good working order. Impedance audiometry demonstrated a flat curve and a small static compliance measurement (Graph 4), indicating an occluded ventilating tube and possible recurrence of fluid in the ears.

## CONCLUSION

Direct objective diagnostic information is obtained regarding the integrity of the peripheral auditory mechanism when impedance measurements are made. Impedance audiometry is thus an essential clinical tool for an audiologist and physician in the diagnosis and evaluation of hearing loss and is particularly useful in the audiological evaluation of young children and infants. □

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# Mini-Laparotomy for Tubal Ligation: Operation of Choice

James T. Burrowes,\* F.R.C.O.G., F.A.C.O.G., F.A.C.S.,  
Yarmouth, N.S.

Although Mini-Laparotomy has been recommended by some writers<sup>1</sup> for tubal ligation the spotlight had been captured by the laparoscope and at least one powerful association of laparoscopists has been formed to ensure that laparoscopy loses none of its claimed territory.

On the other hand it does not take much experience to realise that Mini-Laparotomy may well be the operation of choice for tubal ligation. The reasons, though obvious, are often overlooked.

## MINI-LAPAROTOMY

- 1) Avoids expensive and delicate equipment.
- 2) Avoids electricity and its dangers.
- 3) Avoids complications related to blind puncture e.g. haemorrhage and damage to bowel.
- 4) Permits direct handling of the tubes and permits the use of any method of occlusion e.g. ligation, clip, band (or cautery).
- 5) Requires simple instrumentation.
- 6) Employs routine surgical techniques.
- 7) Is suitable as an out-patient procedure.
- 8) Requires no special training on the part of the nursing or operating room staff.
- 9) Permits other useful surgical procedures e.g. ovarian cystectomy, ovarian biopsy, excision of small myomata.
- 10) Is easily extended without delay if necessary.
- 11) Is cosmetically excellent.

At the Yarmouth Regional Hospital, 61 tubal ligations have been done in the past eighteen months by Mini-Laparotomy on an out-patient basis.

The operations were done during routine lists with operation time of 15 to 20 minutes.

The following requirements deserve mention:

- 1) Good relaxation anaesthesia is very helpful.
- 2) The patient is draped in a combined Trendelenberg and low lithotomy position.
- 3) A uterine elevating device is necessary (a Salpingogram cannula and Volsellum tied together are adequate or a Hulka elevator with a shortened tip).
- 4) A small Pfannenstiel incision of 2-3 cm., 2-3 cm above the S. pubis is ideal.
- 5) Gentleness which reduces post operative discomfort.
- 6) Suction tip or narrow Peanut Sponge holder to pick up the tubes are most suitable.

Recovery in all cases was uneventful and patients were able to return home in 4-5 hours. Each patient was given a suitable analgesic eg. Tab 292, Tylenol or Pentazocine, to take 4-6 hourly if necessary, and were encouraged to be active at home. After 24 to 36 hours patients resumed normal bowel function and normal diet. Stitches were removed in 5 days and normal activities were rapidly resumed.

There have been a few complications:

- 1) Superficial wound infection 4 cases.
- 2) One small incisional hernia repaired in out-patient's.
- 3) One perforation by Hulka elevator repaired on the spot with one figure of eight 00 chromic cat gut suture.
- 4) One case involved extension of the incision in order to mobilise one tube which was partly buried in post inflammatory adhesions.

## COMMENTS

Mini-Laparotomy is probably the operation of choice if tubal ligation only is planned. Yet easy extension is immediately available.

It is safe, simple and economical from the operating room point of view.

Convenience to the patient and economy in beds and dollars are handsomely achieved. □

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- b) Brief summary.
- c) Introduction.
- d) Materials and methods, then Results; or Case report.
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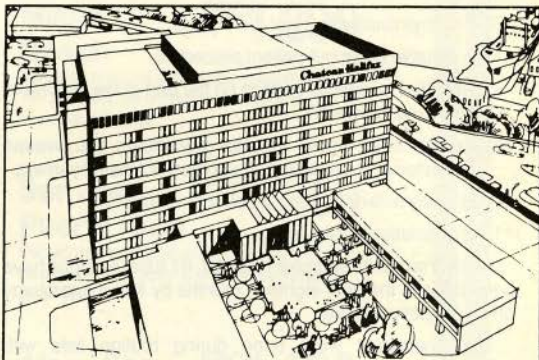
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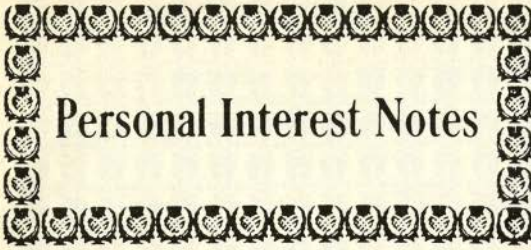
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## Personal Interest Notes

**Dr. John Wickwire**, M.D., C.M., M.L.A. was recently honored by a testimonial dinner and awarded the Distinctive Citizen Recognition Award by the Liverpool Lions Club. A quote from Dr. Thomas Raddall, the guest speaker: "We people of Queens County have been blessed by having this good man and his wife in our midst — and we hope they continue to enjoy good health in our midst for years to come." The Bulletin could do no better than to second this statement and wish.

Dalhousie Faculty of Medicine is pleased to welcome aboard **Miss Barbara Hinds**, who has been seconded to the Faculty by the Mail Star & Chronicle Herald. She will work as a consultant in Public Relations with special interest in medical research.

The Dalhousie Medical Alumni honored **Dr. Percy McGrath** of Kentville by naming him as the Alumnus of the Year. Tribute was paid to Perce's many years of cheerful service to the people and his outstanding contribution to the medical community. He is still in practise and says himself that he reads the paper every morning and if his name is not among the obituaries, he goes to work. May he long continue.

Old friends will be glad to learn that our distinguished author and playwright, **Dr. Arthur Murphy** has joined the Theatre Department of Dalhousie and conducts a class in writing for stage and screen.

**Dr. Dave Janigan**, spent most of a sabbatical year in Cardiff, Wales, in the hospital which serves as a regional centre for occupational diseases. He is now in the process of gathering information on lung disease problems in Nova Scotia.

Congratulations to **Dr. Duncan Murray**, formerly of Halifax and now Vancouver, on the co-authorship of a new and highly recommended book *Handbook of Spinal Cord Medicine*. A quote from Dr. Sidney Hicht's review: "a great bargain (\$5) for any physician who sees only an occasional patient with spinal cord injury. For those who manage paraplegics, particularly in the weeks following onset, the book is mandatory . . . . the book could serve as a model for thrifty medical writing."

**Dr. William O. Coates**, 78, died in Amherst, Sept. 19, 1977 following a long illness. He was born in Corn Hill, N.B. and graduated in 1929 from the University of Manitoba. Following further surgical studies in Edinburgh, he began his practice of Surgery in Amherst, N.S. in 1933. He served with the R.C.N. during World War II. He retired from practice in 1970. The Bulletin extends sincere sympathy to his widow and family.

**Dr. Gordon M. MacDonald**, 60, died in Yarmouth, Dec. 18, 1977. Born in Glace Bay, he received his early education there, then graduated from Mount Allison University. In 1944 he graduated from Dalhousie University Medical School. He had been practising medicine in Yarmouth since 1954. Our deepest sympathy is extended to his widow and family. □

### ANNUAL MEETING

Canadian Lung Association

Canadian Thoracic Society      Canadian Nurses' Respiratory Society

June 12-14, 1978

Holiday Inn/Winnipeg Convention Centre

For further information: Mr. Hubert Drouin, Executive Secretary  
Canadian Lung Association  
75 Albert Street, Suite 908  
OTTAWA K1P 5E7 Canada

## Correspondence

### To the Editor:

I would like to bring to the attention of the readers a little error in an article entitled Slipped Capital Femoral Epiphysis appearing in the December *Bulletin*. The treatment of this condition requires early pinning which can be done using the Knowles pins or Moore pins. The error in question refers to the use of Moore prothesis as a method of the treatment and this is certainly not a method of treatment within the context of the article.

Yours Sincerely,

D.C.S. Brown, M.D., F.R.C.S.(C),  
5991 Spring Garden Rd.,  
Halifax, N.S., B3H 1Y6

**JAMES R. JONES, M.D.**

Orthopedic Surgeon

1440 Swamps de St.  
Gottingen, N.S.

Phone 999-4230

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# NEW MEMBERS

The Physicians listed below have joined The Medical Society of Nova Scotia between November 1, 1977 and December 31, 1977. A most cordial welcome is extended by the Society.

- |                      |                         |
|----------------------|-------------------------|
| Dr. J. D. Amirault   | Liverpool, N.S.         |
| Dr. E. B. Barrett    | Glace Bay, N.S.         |
| Dr. L. M. Costello   | Shearwater, N.S.        |
| Dr. W. R. Deagle*    | Vancouver, B.C.         |
| Dr. D. C. Fiander*   | Willowdale, Ont.        |
| Dr. B. D. Filliter   | Springhill, N.S.        |
| Dr. J. G. Forbes     | New Glasgow, N.S.       |
| Dr. A. N. G. Freeman | Sydney, N.S.            |
| Dr. F. C. Guy        | Halifax, N.S.           |
| Dr. P. S. Hingley    | Port Hawkesbury, N.S.   |
| Dr. V. H. Martens    | Dartmouth, N.S.         |
| Dr. R. J. Muise      | Halifax, N.S.           |
| Dr. K. A. Murray*    | London, Ont.            |
| Dr. Jeffrey Rees     | Halifax, N.S.           |
| Dr. C. E. Vaughan*   | Ottawa, Ont.            |
| Dr. R. D. Wayne*     | Oregon, U.S.A.          |
| Dr. J. B. West       | Cambridge Station, N.S. |

\*Recent Dalhousie Graduates.

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