THE NOVA SCOTIA MEDICAL BULLETIN

Editor-in-Chief
DR. IAN E. PURKIS

Board
DR. I. D. MAXWELL
DR. D. A. E. SHEPHARD
DR. W. E. POLLETT
DR. A. J. BUHR

Editorial Board

Corresponding Members
Secretaries of Branch Societies

Managing Editor
DR. C. J. W. BECKWITH

Departments
Medico-Legal Column
DR. I. D. MAXWELL
Advertising
DR. D. A. E. SHEPHARD

To Be Or Not To Be

The issue of a hospital for Dartmouth, in the news again, has some similarity to the outcome of pregnancy. Conceived first about 50 years ago, the idea has aborted several times. Once more we are wondering whether we will witness the birth of a mature product of human cooperation, or whether the pregnancy should be interrupted before term.

Although it is mainly a local matter, this parochial debate serves to underline some points which may be of interest both to those within and outside the metropolitan area of Halifax and Dartmouth. Population studies, provincial and municipal relations, regional planning, hospital design and community needs, as well as the provision of medical services, and finally cost, are all of sufficient interest to merit discussion. Pragmatically, too, from this discussion must be found an answer to the question, should a hospital be built in Dartmouth?

Essentially two parts of the question must be answered. First, would the medical needs of the Dartmouth area, already served well by the Halifax hospitals in a University setting, be better satisfied through the creation of a new hospital outside the present complex? Second, can or should the citizens of Dartmouth reasonably afford it?

While the latter question is for Dartmouth tax-payers to answer, it is worth making these observations. Hospital construction costs are rising alarmingly: these have increased by 35% in the past two years. With the probable greater support from the Provincial Government, and the recommendation by the Hospital Insurance Commission of the need for another 200 beds in the metropolitan area, there is a strong argument for the "go-ahead" right now, rather than sometime in the future, when the urgency, but also the cost, will be the greater.

As to the medical needs of the Dartmouth area, there are telling arguments for and against the building of a hospital in Dartmouth. Each doctor will have his own opinion, based somewhat naturally upon his own interests. However, it is most desirable that the citizens of Dartmouth - the final arbiters - should have some idea of the medical implications of such a major undertaking before they reach a decision. It is therefore important that these be clarified.

Put most simply, the argument in favour of a Dartmouth hospital stems from population studies. Dartmouth, the second largest city in Nova Scotia, is at present served, along with Halifax and much of Halifax County, by the Halifax hospitals. But if the recommended ratio of 6.5 beds per thousand population (excepting chronic cases) is to be satisfied, there are insufficient beds presently available. In addition, the function of several of the Halifax hospitals as referral centres for the province and as teaching centres tends to offset this ratio. All agree that more beds must be created: the battle lines are drawn about Dartmouth as the site.

Dartmouth has an annual increase in population of about 2500; in 1961-1966 period there was a 25% increment, making Dartmouth one of the most rapidly growing urban areas in Canada. In 25 years time - the minimal period to consider as far as regional planning is concerned - it is probable that the population of Dartmouth will exceed 100,000, and merely to satisfy the needs of the increase in population between 1967 and 1992, 400 beds will have to be made available. On grounds of population studies, therefore, the project of a Dartmouth hospital is entirely reasonable.

Such studies give the lie to the short-sighted argument that today's facilities are satisfactory as far as Dartmouth patients are concerned, even supposing an additional 200 beds were created now within the Halifax complex. What is vital at this stage in the growth of the Halifax-Dartmouth metropolitan area is to look ahead 25 years. Peninsular Halifax, which has all the plums on the medical tree, is only capable of supporting a limited expansion; indeed it is interesting to note that the population of Halifax actually decreased during the 1961-1966 quinquennium.

A hospital in Dartmouth would have many advantages. Some of the metropolitan traffic problems would be eased through the reduced flow of patients, their visitors and their physicians across the bridge, to say nothing of the greater convenience. Patients would reach hospital more quickly and receive speedier treatment. Doctors would be attracted to Dartmouth, while others would remain who might otherwise consider moving to Halifax. Other less tangible advantages relate to the presence of a hospital within a community, such as the creation of jobs and a feeling of independence vital to a growing city. Serious disadvantages, however, are evident, which must be carefully considered. While the bricks and mortar could be provided to build a hospital, unimaginative and economical although the present plan may look, it is by no means certain that in functioning, it would improve the care of Dartmouth patients. One argument against the Dartmouth hospital is that, through thinning of medical services and redistribution of personnel, the overall result would be a reduction in the standard of medical care, not only in Dartmouth, but also in Halifax. Such a simple matter as the redistribution of nurses, many of whom presently live in Dartmouth but work in Halifax, and many of whom would probably prefer to work in Dartmouth, is one example of the problems and difficulties to be faced in the creation of a first-class rather than a second-class hospital.

The citizens of Dartmouth should be clear that if a good general community hospital is to be built - and it is unlikely at this stage that they will have foisted upon them the idea of a convalescent home instead - it will not be easy. Sensibly, a simple community hospital has been suggested, so that, as far as possible, reduplication of medical services can be avoided. But before a good hospital is created, much thought must be given to the rôle that the hospital should play. Exactly which medical and surgical services are needed? Should the hospital deal with accident surgery, in view of the heavy traffic in this area, and if so, should specialized units be available? Which cases would be referred to the Halifax hospitals? If an obstetric service is to be provided, how will this affect the usage of obstetric beds in Halifax? Another question concerns the possible extension of the hospital to fulfill the needs in ten or twenty years' time.

These are such important matters that we must not be satisfied, to invoke a McLuhanism, with the hospital as the message; the translation of the idea into an efficient unit is what is important. Planning is vital at this stage: it is the only way to solve the problems relating to the most efficient and economical use of medical services in the years ahead. It is to be hoped that the members of The Medical Society of Nova Scotia will help the citizens of Dartmouth find a constructive answer to the thorny issue of a hospital for Dartmouth. □

D.A.E.S.

Dessicated Thyroid USP or Sodium L-Thyroxine?

Bartuska, D. G., et al. Abstract[1]

Three well documented cases of myxoedema, all regularly maintained in Thyroid extract are described. Each had taken his medication regularly in apparently adequate doses for a number of years. All had classical signs and symptoms of uncontrolled myxoedema when seen.

In each case, replacement of the medication with sodium l-thyroxine in normal doses led to prompt and complete return to normal states, which were easily maintained on l-thyroxine in average doses of 0.3 mg daily.

The authors discuss the reasons for the delay in acceptance of the synthetic drug in clinical practice, and find none of them cogent. The principal objection was early reports of poor gastrointestinal absorption of racemic mixtures. There is no evidence that this occurs with the sodium salt of l-thyroxine.

The natural preparation on the other hand suffers from poor biological assay and poor shelf life. While they do not so state, the synthetic hormone is no more costly. □

J.F.F.

[1]Abstracted from the Journal of the American Medical Women's Association, 21, 137-139, 1966.

FORTY YEARS AGO

From the Nova Scotia Medical *Bulletin*

December 1927

I consider it a compliment to the profession that so many of our doctors enjoyed the acquaintance and appreciated the character and temperament of the late Moses W. Murphy of Margaree.

Poor Mose' died the victim of a foolish driver's speed madness, but he died as he had lived, a game sport. In life he had a cheering word and a happy jest for everyone, a faculty for almost faultless repartee and happy retort, and possessed a richer vocabulary than is usual even among the literateurs.

But above all he was a true sport, a real hunter —"A mighty hunter before the Lord." His two great heroes were Nimrod and Esau. His heart went out to both of them, for he was born with the instinct of the hunter in him. Those who are not born with that instinct in them cannot understand it, have no conception of its power, and are utterly incapable of insight into the thoughts and feelings, the temperament and character of those in whom that spirit is implanted from birth.

It is nearly an axiom that the men in whom the spirit of Nimrod has been strongest, have been the most humane, kindly, generous, chivalrous, honorable and lovable of mortals.

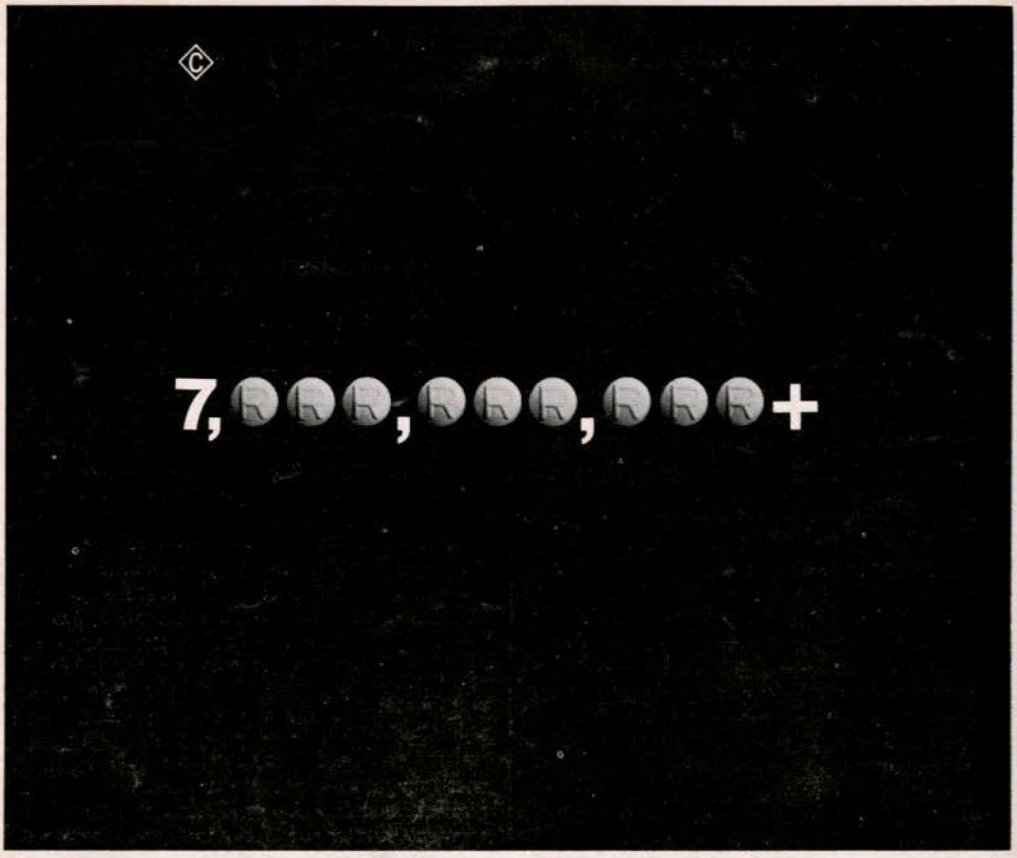
The love of sport has, too, often been allied with the most brilliant intellectual gifts and the highest moral character. Sir Samuel Baker, the greatest hunter of the nineteenth century, thus summed up the result of his own knowledge:

"I have had a great experience of thorough sportsmen, and I can safely say that I never saw one who was not a straightforward man, who would scorn to take a mean advantage of man or animal. In fact all real sportsmen whom I have met have been really tender-hearted men—men who would shun cruelty to an animal, and who are easily moved by a tale of distress."

On the other hand have we not often found the rabid enemies of sport type of the most unamiable disposition, who like Macaulay's Puritans hated sport, not because it gave pain to the animal, but because it gave pleasure to the sportsman.

This spirit of Nimrod is a really wonderful thing, capable even of stimulating the imagination to the point of investing the object of the chase with dimensions worthy of the huntsman's zeal. We have all the feelings of the Mighty Hunter in his chase of the lion—even if we be hunting nothing bigger than a rat.

And this spirit of Nimrod shows itself often where we should least expect it. Samuel Johnson, for example, myopic though he was, loved fox hunting, and he took a delight in telling how he "rode harder than anybody at the chase," and he came down heavily on a gentleman from Cambridge who undertook to disagree with him on the manliness of such sport. □



More Donnatal® is prescribed by physicians than any other antispasmodic.

After more than a quarter of a century and over seven billion doses, Donnatal is still prescribed by more physicians than any other antispasmodic. Consider the effectiveness, dependability, and safety that must characterize a medication for it to achieve such long-lasting and wide-spread acceptance. Seven billion doses! If Hippocrates could have started prescribing Donnatal in 430 B.C., he would have to have given it to over 2,670 patients t.i.d. for them to have taken over seven billion doses by 1966!

For full prescribing information, consult product literature, or Vademecum International.

In each Tablet, Capsule or 5 cc. Elixir		In each Extentab®
0.1037 mg.	hyoscyamine sulfate	0.3111 mg.
0.0194 mg.	atropine sulfate	0.0582 mg.
0.0065 mg.	hyoscine hydrobromide	0.0195 mg.
16.2 mg. (¼ gr.)	phenobarbital	(¾ gr.) 48.6 mg.

A. H. Robins Company of Canada, Ltd., Montreal, Quebec A·H·ROBINS

Tranquilizers for Psychoses and Neuroses

PATRICK FLYNN, MD.*

Halifax, N. S.

Tranquilizers are compounds which temporarily reduce anxiety and tension, help eliminate emotional stress and abolish hyperactive behaviour and excitement without clouding consciousness. It is usual to divide them into major and minor varieties, the former referring to drugs like Largactil and Haloperidol, used primarily in the treatment of major mental illness (i.e. psychoses) and the latter referring to drugs like Librium and Meprobamate used in treating neuroses. While other terms are used to describe these compounds, e.g., neuroleptics, ataractics, anxiolytics, etc., they are still commonly called tranquilizers. Their introduction into medical practice in the early 1950's has revolutionized mental hospital practice and has encouraged treatment programmes for psychiatric patients in the community. The family physician is now taking over the treatment of an increasing number of patients with psychiatric illnesses who have been discharged from in-patient psychiatric services and are carried by him on an after-care basis. This fact, added to the considerable percentage of patients presenting with physical symptoms of emotional origin, has meant that tranquilizers must be one of the most commonly prescribed group of drugs today. The skillful advertising of the drug companies with the limited time available by most physicians has encouraged the tendency to replace the doctor-patient relationship with the prescription of a pill in emotionally disturbed people. There is, accordingly, much criticism of the effectiveness of these drugs because at times medication alone is not sufficient to prevent further decompensation. However, they act as very useful adjuvants in psychiatric treatment and their careful prescription can do much to help emotionally distressed people.

ANTI-PSYCHOTIC TRANQUILIZERS

These are compounds which cause a marked reduction in psychotic symptoms and, when optimum dosages are established, produce tranquility without sleep. Their primary role in psychiatry is in the management of patients suffering from the acute and chronic phases of psychoses when marked depressive features are not prominent. Clinically, schizophrenic illnesses, paranoid states and brain syndromes (acute and chronic) are the emotional illnesses most likely to respond. They are especially effective in calming excited and panicky psychotics and in alleviating agitation and restlessness. Whether or not they have a primary anti-psychotic effect in reducing delusional, referential, hallucinatory and regressive features is hotly debated, although there is at least one comprehensive and well-controlled series of trials reported which concludes that these drugs do have more than a controlling influence on behavioral agitation and excitement.[1]

Although their mode of action is essentially unknown, there is experimental evidence to suggest that they affect those parts of the CNS (rhinencephalon, limbic system, Papez circuit and the RAS) involved in the responsiveness to external stimulation and in the elaboration of feelings. Because of their action on other structures in the brain (extra-pyramidal and hypothalamic nuclear masses) side-effects or adverse reactions are not uncommonly reported. All of these compounds potentiate the action of CNS depressants and a reduction in the dosage of hypnotics, narcotic analgesics and sedatives is necessary with concomitant treatment.

Anti-Psychotic Tranquilizers in Common Use

The commonly prescribed drugs in this category include the phenothiazine derivatives which have been available for about 15 years and the butyrophenone compounds which were introduced more recently. Rauwolfia alkaloids known to Indian medicine for centuries are prescribed infrequently in psychiatry today because of difficulty in controlling side-effects, especially depression and because of delay in the onset of action. Some of the important features of these drugs are summarized in Table I.

Procedure

If, following careful history taking and mental status examination, the clinical findings suggest the possibility of a major functional or organic psychosis, especially if agitation, delusional thinking or hallucinosis is present, then one of the anti-psychotic tranquilizers may be prescribed. If the condition is acute the compound may be given parenterally for more rapid action until symptomatic control is achieved, to be followed thereafter by oral administration. In the less acute and chronic psychotic conditions, the medication may be prescribed in the recommended dosage in tablet form. Since range of dosages for these drugs is large and the individual

*Assistant Professor of Psychiatry, Dalhousie University.

TABLE I

ANTI PSYCHOTIC TRANQUILIZERS

	Trade Name(s)	Daily Dose Range (Adult)	*Preparations Available Tablets and Injections	*Common Side Effects and Precautions
Phenothiazine Derivatives				
	Largactil	25 to 500 mgm.	Tablets - 10,25,50,100,200 mgm	Autonomic - Dry mouth, Hypotension, etc. Extrapyrrmidal reactions. Photosensitivity.
Chlorpromazine	Elmarine	25 to 500 mgm.	Injs. – 2ml (50 mgm) 5ml (25 mgm)	
Promazine	Sparine	25 to 500 mgm.	Tablets - 25,50,100,200 mgm Injs. – 2ml (100 mgm) – 10ml (250 mgm)	
Trifluoperazine	Stelazine	2 to 20 mgm	Tablets – 1,2,5,10 mgm Injs. – 1ml (1mgm)	Prolong central action of C.N.S.' depressants, Careful dosage in elderly debilitated patients. Alcohol best avoided.
Perphenazine	Trilafon	4 to 24 mgm	Tablets 2,4,8, 16 mgm Injs. – 1ml (5 mgm)	
Thioridazine	Mellaril	10 to 400 mgm	Tablets – 10,25,50,100 mgm only.	
Levomepromazine	Nozinan Veractil	6 to 50 mgm	Tablets – 2,5,25,50 mgm Injs. – 2ml (10 mgm) 1ml (25 mgm)	
Butyrophenones				
Haloperidol	Haldol	3 to 15 mgm	Tablets – 1,2,5, mgm Injs. – 1ml (5 mgm)	

*See manufacturers literature for complete information.

response may vary considerably, the usual procedure is to begin with lower dosages and then to increase the quantity gradually over several weeks to achieve the maximum therapeutic response. The dosage may then be reduced to an optimum level and maintained in this quantity often for periods of months or years. Interruption of intake may increase the risk of relapse and it may be necessary to stabilize the patient once more. It is impossible at this stage of our knowledge to suggest which of these drugs may prove the most useful in an individual patient. The physician should familiarize himself with the effects, technique of administration and side-effects of two or three and confine his prescribing to these. If some dramatic break-through is achieved with a new compound, he is certain to hear about it. Otherwise he can assume that drugs with minor changes in their chemical structure are unlikely to be any better than the ones he uses. I have found the following to be most effective in my practice:

For acute psychotic emergencies I use intramuscular Trilafon 5 mg., to be repeated four to six hourly as required. I like the rapidity of action and particularly the small volume of the injection, especially when one has to control disturbed behaviour. If I decide to start on oral medication my choice depends on whether the psychotic patient is hyperactive or hypoactive. If hyperactivity (agitation, restlessness, panic states, etc.) predominates, I prescribe Largactil up to 200 mg. a day. If, on the other hand, the patient is passive, anergic and lacking in drive, I order Stelazine up to 15 mg. a day. Occasionally when I fail to control severely psychotic symptoms with Trilafon, I use parenteral Nozinan in a dosage of 25 mg. I.M. Nozinan is a phenothiazine derivative with marked sedating properties and I use it as well as a bedtime hypnotic in psychotic patients, (oral dose 25 mg. h.s.). Haloperidol (Haldol), one of the butyrophenones, has recently been marketed in Canada, although it has been used extensively in Europe for several years. It is an interesting compound with therapeutic and side-effects similar to those of the phenothiazine derivatives, but with a very different structural formula. Many psychiatrists are assessing the therapeutic possibilities of this and other butyrophenones at the present time. Haloperidol may prove useful in controlling the psycho-motor agitation found in acute psychotic states and it is reported to be especially useful in the management of acute mania.

Side-Effects and Complications

Especially in the prescribing of psychotropic drugs the physician has the duty to make himself aware of the effects of the drugs he prescribes so that he can use them in effective doses and without danger. The relative incidence of side-effects and complications with anti-psychotic compounds is difficult to assess, although there are some good review articles available in the literature.[2] There appears to be a consensus that the minor atropine-like side-effects (over-sedation, dryness of the mouth, etc.) are fairly frequent and can usually be tolerated by the patient with re-assurance as to their cause. Reduction in dosage may also help. The major side-effects (extra-pyramidal reactions, skin reactions, autonomic effects) may require the prescription of counter-acting medication (for example, Artane for drug-induced Parkinsonism) or a change to another derivative (for example, Largactil to Mellaril for over-sensitivity to sunlight).

Complications (blood dyscrasias, jaundice, seizures, marked hypotension) indicate that the drug must be stopped at once and corrective remedial

therapy instigated. Over-dosages with the anti-psychotic drugs either intentionally or accidentally has rarely led to fatalities in spite of the vast quantities in daily use.

ANTI-~~PSYCHOTIC~~ ANXIETY TRANQUILIZERS

These are compounds used primarily to relieve the anxiety associated with the neuroses and are most effective in tense, apprehensive and panicky patients who show the autonomic accompaniments of fear - pounding heart, dilated pupils, rapid pulse, a frightened look, increased tone in the musculature and so on. When psychological defenses (phobic, obsessive compulsive, dissociative, etc.) have been fully developed by the patient as an adaptive and compensatory technique their usefulness is limited, although they are extensively prescribed for these conditions either alone or combined with some form of psychotherapeutic treatment. Chronic neurotic patients who make up a sizeable percentage of patients attending the family physician probably derive little more than a placebo effect even when these drugs are used in full doses. Habituation, with a tendency to increase the dose, is a very real problem with all of them.

The mode of action of anti-anxiety compounds is still obscure. In full doses a general sedation is produced, but if optimum dosage is employed - and this will vary markedly from patient to patient - a considerable reduction in anxiety is achieved without much drowsiness and confusion. Possible sites of action include the hypothalamic nuclear masses, the septal area of the brain, the RAS and both peripheral and central synapses. The anti-convulsant action of some members of the group is quite marked even at sub-ataxic or sub-hypnotic doses. The net results seen clinically include a marked reduction in the physiological concomitants of anxiety. Presumably, as a result, a patient feels less tense and "nervous," can concentrate better and is now better able to discuss his feelings and conflicts with his physician. Table II summarizes the important features of the commonly prescribed drugs of this group.

Anti-Anxiety (Anxiolytic) Tranquilizers in Common Use

There has been a large number of compounds available over the years which relieve anxiety. The group includes the barbiturates (e.g., Amylobarbitone), the propanediol derivatives (e.g., Meprobamate), Diphenylmethane derivatives (e.g., Benactyzine) and, most recently, the benzodiazepines (e.g., Librium). Many of the common hypnotics exert an anxiolytic action in small doses and practically all of the anxiolytics in full doses can produce sedation merging into sleep. Most physicians now use either a benzodiazepine or a propanediol derivative, but there are some who continue to prescribe a barbiturate as a daytime tranquilizer and at times even small doses of one of the major tranquilizers.

Procedure

If, following careful history taking, mental status and physical examination, a diagnosis of a neurotic reaction is made then the physician's primary task is to discover the emotional causes of the illness. Psychotherapeutic efforts should then proceed to rectify disturbing factors in the patient's environment and helping him to make changes within himself to allow him to live with the environment without becoming ill. Anti-anxiety tranquilizers may be prescribed in full doses to relieve the physiological concomitants of anxiety and, since insomnia is a usual finding, the concomitant administration of a mild hypnotic is helpful. I ex-

TABLE II

ANTI-ANXIETY TRANQUILIZERS

	Trade Name(s)	Daily Dose Range (Adult)	*Preparations Available Tablets and Injections	*Common Side Effects and precautions
Benzodiazepines				
Chlordiazepoxide	Librium Protensin	30 to 100 mgm	Capsules – 5,10,25,50 mgm Tablets – 10 mgm Injs.	Drowsiness Ataxia – vertigo Headache
Diazepam	Valium	15 to 30 mgm	Tablets – 2,5,10 mgm	Skin rashes Blood dyscrasias Reduced tolerance to alcohol
Oxazepam	Serax	30 to 100 mgm	Capsules – 10,15, 30 mgm.	Mild excitement in Eldery patients May Potentiate C.N.S. drugs Contra indicated in Myasthenia Gravis Drug Dependency
Propanediols				
Memprobamate	Equanil Miltown Trelmar	800 to 1600 mgm	Tablets 200 & 400 mgm	As for Benzodiazepines Withdrawal Reactions if Large Doses abruptly stopped. *See Manufacturers Literature for complete information.

plain very carefully to the patient that the medication is a "crutch" and while it will give relief in reducing anxiety, it will do nothing for the basic cause of his illness. I allow him to take the anxiolytic for about four weeks on a regular basis and then I tell him to take it only on days or on occasions when he feels or when he expects to feel anxious or upset. It is surprising how often patients will get by on infrequent doses once they are given some responsibility to adjust the dose themselves. I also encourage the neurotic patient to break up tablets in halves or quarters so that they may take just enough to relieve the uncomfortable mood. With this approach, I hope to avoid the necessity of increasing the dose as the patient develops tolerance. If the patient reports, "doing without pills" for a couple of days or longer I re-inforce his own strength by complimenting him on his mastery. Essentially what I am hoping to achieve is the use of the medication as an adjunct during limited periods of unusual stress, and thereby emphasizing the fact that the medication is not a cure-all and that its continued use over a long period of time may indeed be dangerous.

Side-Effects and Complications

The commonly reported side-effects are listed in Table II. Most of these will abate with reduction in dosage, but the drug rash may necessitate discontinuance of the drug completely. Habituation and drug dependence must be kept constantly in mind with all these compounds. Over-doses, accidental or intentional, are fairly common and fatalities have been reported with Meprobamate in doses as small as 20 grams, although recoveries have occurred after doses as high as 40 grams.[3] It is unlikely that a suicidal attempt will be successful with the benzodiazepines (Librium, Protensin, Valium or Serax) and quantities of Librium up to 2250 mg. have been ingested without death ensuing.[4] The effects of centrally acting compounds, such as antidepressants, hypnotics, analgesics, and anesthetics may be intensified by this group of drugs. Alcoholic beverages must be avoided as the combination may cause disturbing sensorial and behavioural effects.

As a general rule, geriatric patients require extremely small doses of any of these compounds as their tolerance for them is poor.

Conclusion

Major and minor tranquilizers have been used in clinical practice for several years and they have made a major impact on the treatment of psychiatric illness. Their careful prescribing, based on accurate psychiatric diagnosis, has enabled the physician to help large numbers of emotionally disturbed patients. Proper selection of the medication, based on the perusal of carefully documented reports, plus the physician's own experience with the compound, appropriate dosage to produce maximum therapeutic effects, coupled with minimal side-effects and close supervision for signs of toxicity are the factors that make for correct usage and therapeutic headway. Psychotropic drugs are not the ultimate answer to psychiatric illness and may be only a prelude to more effective means of help. Already the drugs have found their worthwhile place in emotional illness and have probably done as much as any other single method of therapy in over a century. Their greatest usefulness can only be achieved if physicians exercise judgment in the selection of them based on the indication, limitations and careful evaluation of the therapeutic results. □

References

1. **Cole, J. D. et al:** Effectiveness of Phenothiazine Treatment of Acute Schizophrenic Psychoses; *Arch. Gen. Psychiat.* **10**: 246-261, (March) 1964.
2. **Ayd, F. J., Jr.:** Phenothiazine Tranquilizers, Eight Years of Development; *Med. Clin. N. Amer.* **45** : 1027-1040, 1961.
3. **Hollister, L. E.:** Toxicity of Psychotherapeutic Drugs; *Practitioner*, **194** : 72-84, 1965.
4. **Hollister, L. E.:** Overdoses of Psychotherapeutic Drugs; *Clin. Pharm. and Ther.*, **7** : 142-146, 1966.

Genetics and the Physician

Consideration of Some Normal Traits Inherited Multigenically

P. L. Delva, MD.

Kingstion, Ont.

PART VII

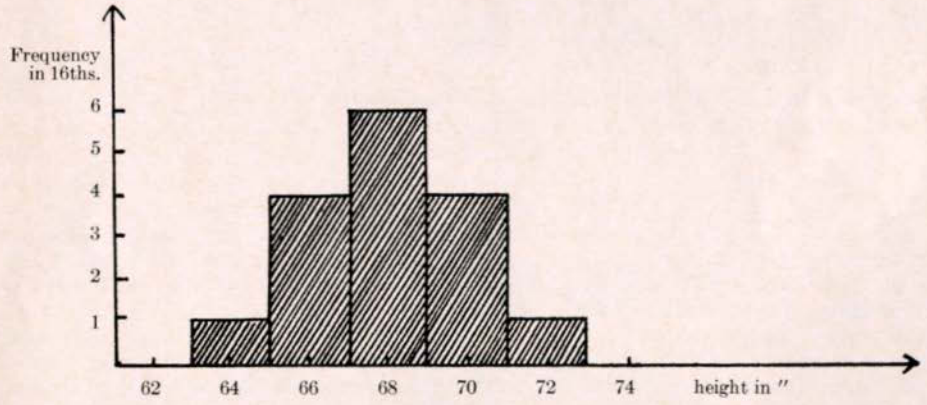
The distribution of the heights of men is a continuous one under multigenic control. A distribution curve with a mean of 68″ and a standard deviation of 2.6″ corresponds to the distribution of the heights of young adult men in South-East England. Let us postulate (Carter) that the height of man is controlled by one set of three alleles at one locus. (fig. I) One allele (H) with a gene frequency of ½ tends to produce an average height of 68″. A second allele (h_1) has a frequency of ¼ and increases the height by 2″, while a third one (h_2) also has a frequency of ¼ and decreases the height by 2″. With such a model, the distribution of heights in the population is shown in the chequer-board diagram (fig. 1). It is still discontinuous, but is starting to look like a normal curve with a mean of 8″ and a standard deviation of just over 2".

Let us now add another similar series of three alleles (T, t_1, and t_2) at a different locus on the same or a different chromosome; (fig. 2) each of these new alleles has the same frequency and the same effect as those of the H series. It will be seen that we now have a more respectable distribution with a mean of 68″ and a standard deviation of 2.8." Thus a simple hypothesis (the true mechanism is certainly more complicated) can account for a nearly continuous distribution.

Studies of twins show that the difference between the heights of identical twins reared apart is rarely more than 1″ (1.5%), so that the environment plays only a little part in the final determination of height; in fact over the past 5,000 years there has been very little change in the height of Britons (Table I): genetically, there has been very

FIGURE 1

DISTRIBUTION OF HEIGHTS PRODUCED BY A SET OF THREE ALLELES AT A SINGLE LOCUS

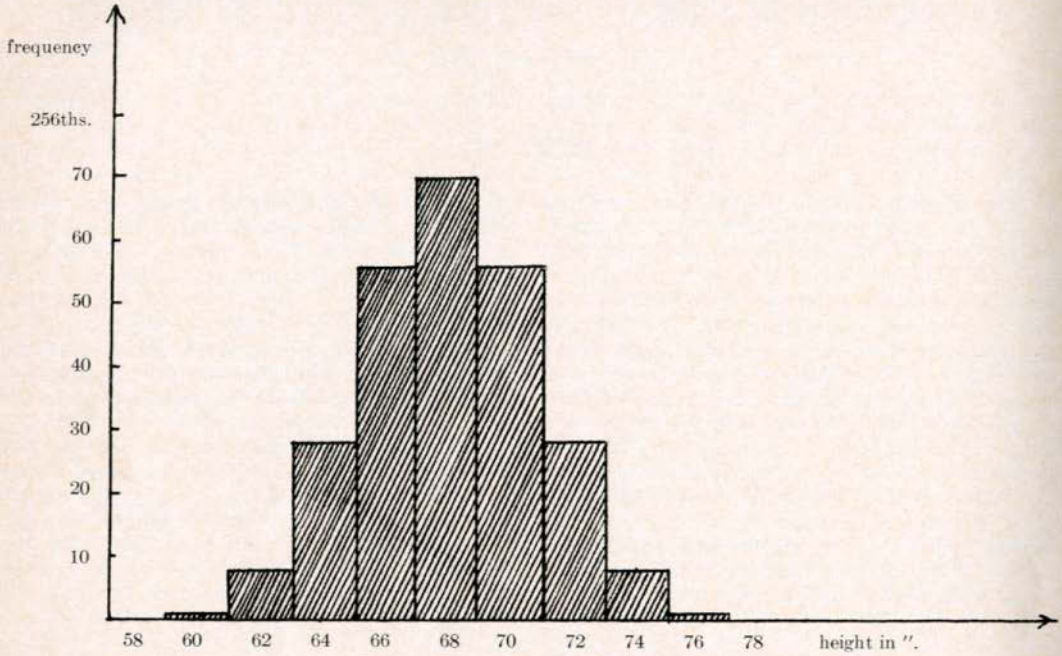


ALLELES ON THE FIRST OF THE PAIR OF CHROMOSOMES

ALLELES ON THE SECOND OF A PAIR OF CHROMOSOMES	Frequency	Gene	Height	Frequency	Gene	Height	Frequency	Gene	Height
	1/4	h_1	plus 2	1/2	H	68″	1/4	h_2	minus 2
Frequency 1/4 Gene h_1 height plus 2	1/16	h_1h_1	72″	2/10	Hh_1	70″	1/16	h_1h_2	68″
Frequency 1/2 Gene H Height 68″	2/16	Hh_1	70″	4/16	HH	68″	2/16	Hh_2	66″
Frequency 1/4 Gene h_2 Height minus 2	1/16	h_1h_2	68″		Hh_2	66″		h_2h_2	64″

FIGURE 2

DISTRIBUION OF HEIGHTS PRODUCED BY 2 SETS OF ALLELES AT 2 SEPARATE LOCI



FIRST SET OF CHROMOSOMES

Alleles at the H Locus			h_1 ($\frac{1}{4}$)					H_2($\frac{1}{2}$)					h_2 ($\frac{1}{4}$)				
Alleles at the T Locus	t_1	($\frac{1}{4}$)	T	($\frac{1}{2}$)	t_2	($\frac{1}{4}$)	t_1	($\frac{1}{4}$)	T	($\frac{1}{2}$)	t_2	($\frac{1}{4}$)	t_1	($\frac{1}{4}$)	T	($\frac{1}{2}$)	t_2	($\frac{1}{4}$)
t_1 ($\frac{1}{4}$)		76″		74″		72″		74″		72″		70″		72″		70″		68″
	1/256 h_1h_1		2/256 h_1h_1		1/256 h_1h_1		2/256 Hh_1		4/256 Hh_1		2/256 Hh_1		1/256 h_1h_2		2/256 h_1h_2		1/256 h_1h_2	
	t_1t_1		Tt_1		t_1t_2		t_1t_1		Tt_1		t_1t_2		t_1t_1		t_1T		t_1t_2	
2nd. Set of CHROMOSOMES	h_1 ($\frac{1}{4}$)		T ($\frac{1}{2}$)															

little selection for height. It is only the height of growing children that is so much greater (up to 4″) now than even 50 years ago. And it is no good arguing that the knights in armour of the Middle Ages were all small: so are to-day's jockeys! !

What happens now when a tall man gets married? By and large, he will tend to marry a woman of average height. To simplify matters, let us suppose there is only one locus involved as in fig. 1. The argument would be exactly the same using a more complex model. The tall man's genotype will be h_1h_1, his phenotype 72″ tall. His sperm will carry the gene h_1. The egg, before fertilization, will carry the gene H $\frac{1}{2}$ the time, h_1 $\frac{1}{4}$ of the time, and h_2 the rest of the time. Thus their son will be 72″ tall $\frac{1}{4}$ of the time (h_1h_1), 70″ tall $\frac{1}{2}$ the time (Hh_1), and 68″ tall the remaining $\frac{1}{4}$ of the time (h_1h_2): by chance alone he will most likely be 70″ tall; his height will then tend to regress towards the mean; this was first suggested by Galton many years ago. Galton also suggested that to convert a woman's height to a man's height all one had to do was add 1″ per foot to the woman's height.

This principle of regression towards the mean is of fundamental importance. The inheritance of all continuous traits, intelligence, length of the eyeball, blood pressure, skin colour, follow the same tendency. A group of children with an average IQ

TABLE I

HEIGHT OF MEN (based on skeletal remains)

Perioda	Origin	Height
Old Stone Age	Western Europe	69″
New Stone Age	Britain	66″
Bronze Age	Britain	68″
Iron Age	Celts - Anglo-Saxons	66″ - 67″
Middle Ages	Britain	66″
Present	Britain	67″ - 68″

of 152 were followed-up in California; in 1945 400 of their children were tested, and the average score was 128. Similarly, the I.Q. of the offspring of fathers scoring around 70-80 will be increased. To improve the average I.Q. of a population, it is not necessary therefore to adopt extreme measures; just encouraging the duller of us to limit their families to 1 to 2 children, while encouraging the brighter to have 3 or 4 would gradually be effective As opposed to height, it is estimated that as much as half of the variation in intelligence is environmental; these mild eugenic measures must therefore be coupled with environmental improvements, better schools, more adult education, etc. . . It is also worth mentioning that, like height, there has been little selection for intelligence during the past 5000 years: the capacity of the human cranium has not increased materially in that time. □

MARIJUANA CAUSES "PSYCHIC DEPENDENCE"

Marijuana smokers who believe that the narcotic is a totally innocuous stimulant without habit-forming effects are naive and ill-informed says Dr. Benjamin Kissin in an interview in *Today's Health*.

"This misconception," says Dr. Kissin "has been quoted to me as gospel truth dozens of times by young people. They are wrong and they ought to understand exactly how wrong they are."

Dr. Kissin, New York State University Downstate Medical Center in Brooklyn, says that far from being a "safe lark," marijuana can cause a "state of psychic dependence" that may be stronger than physical addiction.

MEDICAL-LEGAL ENQUIRIES

IAN MAXWELL, M.B., Ch.B.

TRANSPORTATION OF THE DEAD

Q: *When infants or children die in hospital, the parents sometimes request that they be allowed to take the body back to their home town themselves for burial. Is it legal for the hospital to permit this?*

A: Except in the case of persons dying of certain communicable diseases, namely Asiatic Cholera, Bubonic Plague, or Smallpox, there is little restriction on the transportation of bodies of the dead.[1]

The transportation of unembalmed bodies by common carrier is permitted only if the journey will be completed within 72 hours from the time of death[2]; with modern air travel, this would exclude transportation to very few parts of the globe. Even this restriction would not apply to transportation by a private conveyance, provided the dead body were not exposed to the public gaze during transit so as to constitute a "nuisance" as defined in the Public Health Act.[3]

Provided these requirements are met, therefore, the hospital may release the bodies of infants into the custody of the parents for transportation by a private automobile. It would be wise to supply a decent plain cardboard container for the purpose.

MAYHEM

Q: *When I notified a patient that I suspected he was suffering from venereal disease, he subjected his girl friend to vicious physical violence. She now threatens to sue me, claiming I have impugned her good name. Am I liable?*

A: An assault on his paramour by a patient can hardly be laid at the door of the attending physician; nevertheless, you should consult your attorney or Medical Protective Agency without delay.

References

[1]Stat. N. S. (1962) Chap. 13, Sec. 52.
[2]ibid, Sec. 53.
[3]ibid, Sec. 48.
ibid *ibid*

NOVA SCOTIA MEDICAL BULLETIN
Editorial Office

You are invited to contribute questions to our **Medical Legal Enquiries.**

Q.....

.....

.....

.....

.....

Please send completed form to: - Ian Maxwell, M.D.
Medical-Legal Liaison Committee
Department of Pathology
Halifax Infirmary
Queen Street
HALIFAX, Nova Scotia

Bone Tumors

M. Erdogan, MD, FRCS(C).*

Halifax, N. S.

The diagnosis as well as the management of bone tumors still provides a challenge to the clinician. The purpose of this paper is to discuss this subject in a concise manner.

An early accurate diagnosis is of paramount importance for the proper management of these lesions, and requires the close collaboration of the clinician, the radiologist and the pathologist. The patient complaining of pain, swelling and lameness of a limb should have immediate radiographs of the involved region. Quite frequently the symptoms start following an injury which may cause a pathological fracture. The physical injury itself does not cause any bone tumor; this is important from the medico-legal standpoint. There are no pathognomonic radiographic patterns for any bone tumor. A circumscribed area of rarefaction is not necessarily a cyst; it might be filled with fibrous tissue, tumor cartilage, other tumor tissue or pus. The perpendicular striae of periosteal new bone formation considered to be pathognomonic of an osteogenic sarcoma is not present in 50% of these tumors; on the other hand it may be present in metastatic carcinoma, Ewing's sarcoma or even in tuberculosis of the shaft of a long bone. In children the radiographic picture of osteomyelitis or rapidly growing oesinophilic granuloma may simulate Ewing's sarcoma. Therefore it is mandatory that no blind radiation of any bone tumor should be attempted before a definite pathological diagnosis is established.

Relatively few bone tumors cause biochemical changes in the blood. Osteogenic sarcoma causes elevation of the alkaline phosphatase. Prostatic cancer metastases in the bone cause elevation of the acid phosphatase. Multiple myeloma may cause hyperglobulinemia as well as hypercalcemia. Generalized lytic cancer metastases in the bone also may cause hypercalcemia.

Accurate diagnosis of a bone tumor is established only after histological examination of an adequate sample of the lesion. In this respect a needle biopsy often does not secure an adequate sample and may also be misleading. Its usefulness is limited to lesions of the vertebrae except in the hands of a pathologist with wide experience in this type of tissue examination. The problem of diagnosis should be analyzed before the initial operation and the operation is planned accordingly. The procedure of choice may be a conservative biopsy, curetting the lesion, resection or even primary amputation. It is claimed that more mischief is done by overdiagnosis than by failing to recognize a malignant tumor. Fibrous dysplasia. eosinophilic granuloma, aneurysmal bone cyst or myositis ossificans may be mistaken for a malignant lesion. On the other hand, if the lesion is malignant the best chance for cure is the immediate removal of the tumor. It is well known that cutting through a malignant lesion causes seeding of tumor cells in the wound and possibly dispersal through the circulation. The decision is taken following examination of frozen sections of an adequate sample while the initial tourniquet is left on. It is obvious that the pathologist has a great responsibility. If the diagnosis is not one hundred percent certain it is best to close the wound and to wait for the final sections before definitive treatment, which should not be unduly delayed, is undertaken.

Tumors of Cartilaginous Origin

A benign tumor of cartilaginous origin located at the periphery of a bone is usually an *Osteochondroma.* It is an exostosis covered with a cartilaginous cap and is found in the juxtaepiphyseal region. Onset of the growth is in childhood, but may pass unnoticed for a long time. It may be single or multiple. The multiple variety is hereditary. Solitary lesions become malignant in about one percent of cases, multiple lesions in about fifteen percent. These lesions should be excised if they are growing or causing symptoms.

Benign cartilaginous tumors located within bone consist of three pathological entities: enchondroma, benign chondroblastoma and chondromyxoid fibroma. The latter two especially may be mistaken for malignant tumors. *Enchondroma* may be solitary or multiple (Ollier's disease). If the lesion is located in the midshaft of a long bone it has a tendency to become malignant and this is especially true in the multiple variety - close to 50%. *Chondroblastoma* and *Chondromyxoid Fibroma* are most often seen in the second and third decades of life; no malignant degeneration has been recorded except in previously irradiated lesions. All these three lesions are treated by local excision and bone grafting.

The malignant tumor of cartilage-forming connective tissue origin is called *Chondrosarcoma.* It may be located peripherally or centrally within the bone. The median age of the patient is 45 years. It is often difficult to say whether or not a benign lesion preceded its development; the majority probably start as malignant tumors. There are different grades of malignancy depending on the cellularity

*From the Section of Orthopaedics, Department of Surgery, Victoria General Hospital and Dalhousie University.

of the neoplastic cartilaginous tissue, the size and the number of nuclei within a cell and the amount of calcium impregnation of the matrix. Usually pain is the presenting symptom along with the swelling. In most of the lesions growth is slow and metastases are late; therefore it has a relatively good prognosis. If the tumor is confined to the bone, the local resection without entering the lesion may be adequate; if it has already extended into the overlying soft tissues the limb should be amputated. To keep one joint ahead of the lesion is good policy. Radiation has no value as definitive treatment; however, in inaccessible regions it can be used palliatively to relieve pain.

Tumors of Osteoblastic Origin

There are three varieties of benign tumors of osteoblastic connective tissue origin. *Osteoma* as a term is usually restricted to tumors originating in the skull, which quite often extend into the orbit. *Osteoid Osteoma* is a small painful tumor seen predominantly in children and young adults. The radiolucent nidus at the center is about one centimeter in diameter surrounded by rather extensive and dense new bone formation. Aspirin almost invariably relieves the pain. In the differential diagnosis, a solitary enostosis - a dense medullary osteoma which is asymptomatic, and Brodie's abscess should be ruled out. The treatment consists of excision of the nidus which gives prompt relief of pain. *Benign Osteoblastoma* is histologically similar to osteoid osteoma, yet it is bigger in size and is most commonly located in the spine. It does not cause bone formation but destruction of bone, and may therefore be mistaken for an osteogenic sarcoma. The pain pattern is different. It is treated by excision.

A malignant tumor of osteoblastic connective tissue origin is called an *Osteogenic Sarcoma*. In its evolution it always forms osteoid or osseous tissue. It may also contain cartilage; however, no matter how much cartilage is present, if in some areas osteoid tissue is being formed, the lesion is considered to be an osteogenic sarcoma. The great majority of the patients with a primary lesion are less than 25 years old. It usually involves the metaphysis of a long bone. Pain and lameness are the main initial symptoms. The patient's general health is usually good until late. The serum alkaline phosphatase is increased, and drops sharply following amputation only to rise again if metastases develop. The amount of ossification varies from the osteolytic to the sclerosing type of osteogenic sarcoma. It may invade the soft tissues and the adjacent joint. It metastasizes mainly by the hematogenous route. The diagnosis must be established by tissue examination before definitive treatment is carried out: this consists of amputation, keeping one joint ahead. Probably it is a good policy not to lose time with radiation treatment, for the tumor continues to grow with the continued potentiality of producing metastases. The sooner amputation is done the better. An osteogenic sarcoma originating at the periphery of a bone is called a parosteal (juxta-cortical) osteogenic sarcoma. It has a relatively better prognosis and should be differentiated from myositis ossificans. A secondary osteogenic sarcoma may develop on the basis of Paget's disease of bone or some years later following radiation therapy.

Tumors of Nonosteoblastic Connective Tissue Origin

In the metaphyseal cortex a small focus containing tissue is called a *Fibrous Cortical Defect*. This is present in children, is usually asymptomatic and tends to disappear spontaneously. If it undergoes proliferative activity attaining a fairly large size it is called a *Non-ossifying Fibroma*. This lesion may become symptomatic spontaneously or following an injury; then the tumor is excised. *Giant Cell Tumor* is seen most frequently in young adults, usually involving one end of a long bone. Its evolution varies from a potentially malignant lesion - Grade one - to a full blown malignant - Grade three. Therefore resection of the whole tumor rather than curettage should be done. If it recurs following resection then the limb should be amputated. Hyperparathyroidism, solitary bone cyst, nonossifying fibroma, aneurysmal bone cyst and chondroblastoma may also have some scattered giant cells and should be ruled out.

A malignant tumor of non-osteoblastic connective tissue origin is called a *Fibrosarcoma*. The primary lesion is seen usually in young and middle-aged persons. Secondary fibrosarcoma may develop on the basis of Paget's disease, fibrous dysplasia or following radiation of bone. In the histologically well-differentiated varieties, resection of the lesion may be tried first; if it recurs amputation is carried out. In poorly-differentiated lesions the treatment of choice is amputation or disarticulation.

Tumors of Mesenchymal Connective Tissue Origin

Ewing's Sarcoma is considered to be derived from the immature reticular cells of the bone marrow. Usually the patient is a child or an adolescent. Since it is multicentric in origin the prognosis is grave. The presence of fever and a high sedimentation rate indicate a fulminating course. In the differential diagnosis eosinophilic granuloma and neuroblastoma metastasising to bone should be ruled out. Radiotherapy relieves the pain and may cause the regression of a lesion locally, but is not curative.

Reticulum Cell Sarcoma is similar to Ewing's sarcoma in origin. The majority of patients are 40-60 years old, but a fair proportion are 11-20 years old. Histologically a silver stain will show the presence of delicate threads in between the cells; these are not present in Ewing's sarcoma. The prognosis is much better. Treatment consists of amputation followed by radiation. □

The Development of an Inhalation Therapy Unit in a Regional Hospital

J. E. MacDonell, MD., P. L. Landrigan, MD, FRCP(C), FACP, and Wilson Brown, C.R.I.T.T.

Antigonish, N. S.

Introduction

St. Martha's is a 200-bed general hospital serving a population of some 30,000 in the counties of Antigonish and Guysborough; and in the adjacent Strait of Canso area of Eastern Nova Scotia.

Until recently inhalation therapy in this hostal was limited to the delivery of oxygen by face mask or nasal catheter; although a Bennett PR-2 Respirator had been obtained in 1964 by the Department of Anaesthesia for use in the Recovery Room. It had also been used in emergencies on the hospital wards under the direction of the anaesthetist.

Progress in the management of respiratory disease had created a need and a demand for the provision of new methods of inhalation therapy, particularly Intermittent Positive Pressure Breathing (IPPB); and for assisted ventilation in respiratory failure. To provide this service, with safety, an Inhalation Therapy Unit was planned.

The original impetus to the development of this unit came both from the medical staff and administration of St. Martha's Hospital and from the Nova Scotia Hospital Insurance Commission. The actual development began in september of 1966 with the advent of an experienced inhalation therapist.

Aims of the Unit

The original goals were fashioned in consultation with the Hospital Insurance Commission and have not changed in their local application. A hospital-based unit was planned which would:

1. Assume responsibility for all inhalation therapy in the hospital, including the Out-Patient Department; and for all equipment.
2. Directly supervise inhalation therapy on all seriously ill patients.
3. Provide IPPB treatment for in-patients and out-patients.
4. Provide assisted ventilation in emergencies.
5. Serve as a continuing source of information on new equipment and new methods in the treatment of respiratory disease, for the medical and nursing staff.

Physical Plan and Equipment

Space for this unit was provided by the hospital in the form of two adjoining rooms, each 10′ x 15′, with a nearby waitingroom area, as shown (fig. 1).

The Treatment Room contains:

1. The therapist's desk and records.
2. An area for the preparation of medications.
3. A two-patient treatment area for out-patients and mobile in-patients.

The Equipment Room contains:

1. A cleaning area (the "dirty side").
2. A repair and storage area (the "clean side").

These two rooms were completed at a cost of $300. The relatively low cost is due to the use of idle equipment stored in the hospital basement.

We have kept a copy of our original equipment list. Nothing substantial has been added.

The list included four (4) respirators:

1. A Bennett PR-2 which is reserved for monitored ventilation.
2. A Bennett PR-1, in use on the hospital wards for IPPB treatment room.
3. Two Bennett Therapy Respirators which remain in the treatment room.

The original Bennett PR-2 remains in the Recovery Room and is under our general supervision.

There are myriad accessories and spare parts. The total cost of this equipment has been in the vicinity of $4,000.

Introduction of the Service

The introduction of new equipment and of new methods required a period of "familiarization." Accordingly a series of formal lectures and practical demonstrations were given to the nursing Staff, both student and graduate.

Many of the members of the medical staff were already familiar with the new equipment and its uses. However, three formal presentations were made at the regular Wednesday Medical Staff Conferences on the following topics:

1. Inhalation therapy with special reference to IPPB.
2. Arterial blood gas determinations by the Micro-Astrup method.
3. A demonstration of respirators.

At the outset the hospital administration purchased equipment for the arterial blood gas determinations by the Micro-Astrup method. This service had not previously been available.

Although this service was provided as a necessary basis for the establishment of an Inhalation Therapy Unit, the apparatus has been placed in the clinical laboratories of the hospital under complete laboratory control. We have not felt that the Micro-Astrup apparatus should be in the Inhalation Therapy Unit for the following reasons:

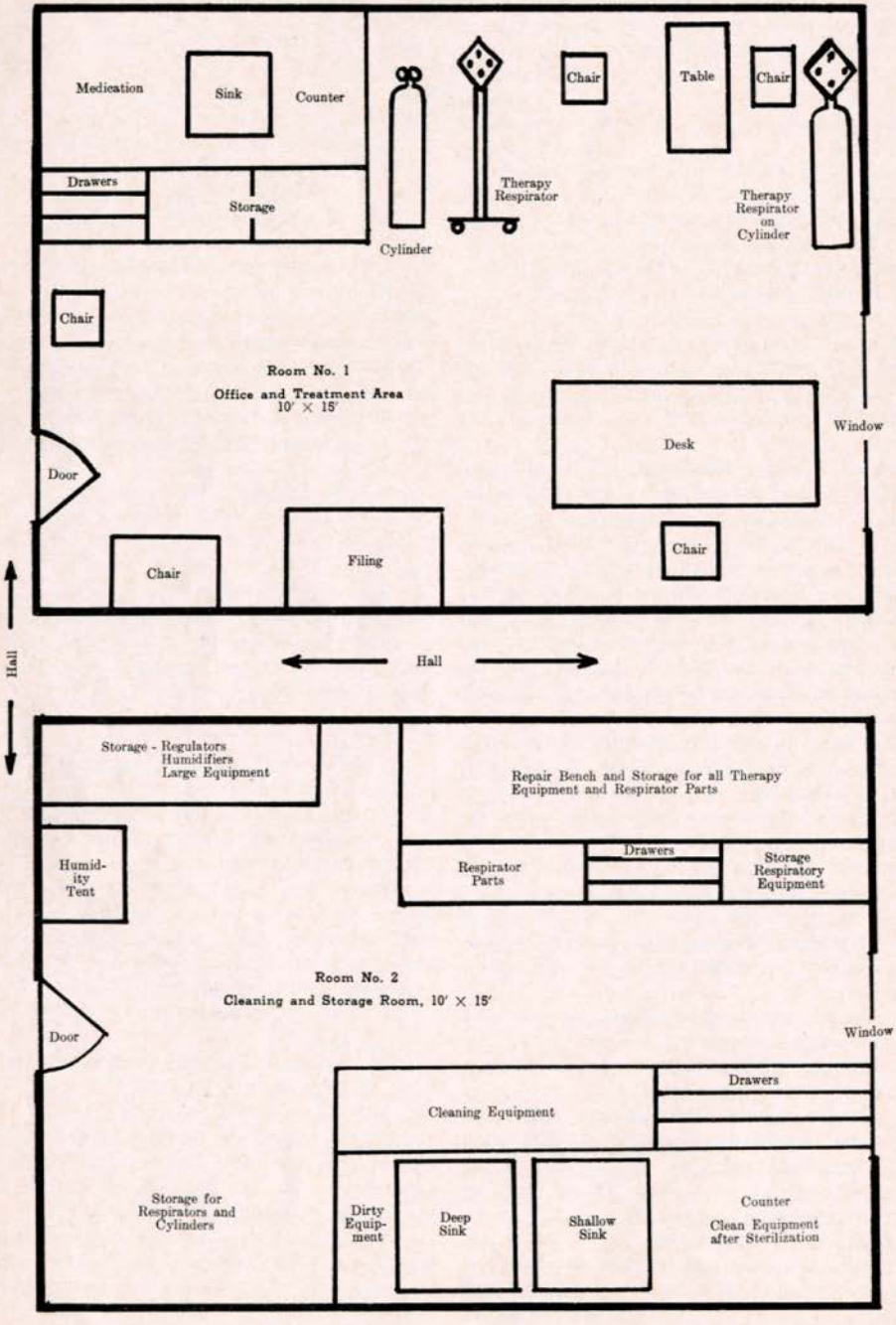


FIGURE 1. Diagram of Inhalation Therapy Unit.

1. The determinations provided are useful in the management of many disorders other than respiratory.
2. The proper care and maintenance of the apparatus is possible in our hospital only in the laboratories.
3. Only the laboratories can provide, in a relatively small hospital, a twenty-four-hour service for arterial blood gas determinations.

In reviewing our experience of the past year we are convinced that the establishment of an Inhalation Therapy Unit has provided a safe method for the introduction of certain new methods in the treatment of respiratory disease.

Medical Supervision

When planning began a Medical Director was appointed. His role has been administrative and advisory, both to the medical staff and especially to the Inhalation Therapist. It has been necessary for this Medical Director to take an active, day-to-day role in the development and administration of the Unit; and to be readily available to the therapist for professional advice.

We feel that the interest and enthusiasm of the Medical Director is, in the long run, much more important than the length and nature of his post-graduate education. We do not feel that he need be a specialist; however, it is imperative he acquire and maintain special knowledge in this field.

The Medical Director's role, in relation to the medical staff is more subtle. He is certainly responsible to his confrères for the maintenance of safe and effective therapy; and for the prudent introduction of new methods. Further, he must maintain a dialogue with these confrères if they are to know what assistance to expect from the Unit; and if the Director is to know the quality of clinical results obtained. It appears clear that the Medical Director must avoid advising physicians directly, about particular patients, unless asked for a formal consultation.

The Inhalation Therapist

The role of the inhalation therapist is central. Indeed it would appear difficult, to us, to develop and maintain an inhalation therapy Unit without a fully qualified inhalation therapist. In a technological age the therapist carries the technological burden and we believe that there are no short-cuts in the training of such therapists. It may be that certain less fully trained personnel may safely perform certain limited functions in the Unit under the direction of a qualified therapist. But it would appear that safe therapy and the adequate care of equipment can only be assured with the provision of at least one fully qualified inhalation therapist.

In this regard we note that our inhalation therapist is a graduate of the Victoria General Hospital School of Inhalation Therapy. It is now possible for interested hospitals to sponsor the training of inhalation therapists in this school and thus provide for their present and future needs.

Utilisation of Services

Our medical staff has had to accept some limitation in the use of equipment and in the methods of treatment offered. We published, when the Unit opened, a list of procedures which we would undertake, and agents which we would use, under the heading: "Inhalation Therapy, Aerosols and Mixtures for IPPB." This list included diluents, mucolytic agents, bronchodilators and antibiotics together with the "usual" concentrations of each agent. This has been helpful. We did, of course, omit some possible agents. Our medical staff has been most understanding in this regard.

Our medical staff has also learned to avoid the temptation of referring patients "to the Unit" for decisions on treatment; and have used the Unit as a facility for the management of selected patients.

We hold no strong views on the type and "make" of equipment to be used in this type of unit. Certainly our own choices were dictated by familiarity and by a wish to "standardize."

Factors which we did take into account and which apply to equipment other than our own include:

1. Simplicity of design.
2. Independent controls.
3. Ease of operation and maintenance.
4. Availability of parts and service.
5. Ease of sterilization.

We have not undertaken, as yet, even the simplest tests of pulmonary function; nor have we contemplated the establishment of a Respiratory Care Unit. These two undertakings would be, in a sense, interdependent; and although they appear to be beyond our present capability, we have not excluded the development of such facilities in the future.

In the first five (5) months of operation of the Unit we have provided some 800 IPPB treatments (including 200 to out-patients); supervised 180 days of oxygen therapy on seriously ill patients; and ventilated seven patients, including three with tracheotomy (two of which were ventilated over a 24-hour period). The demands on the Unit have been steadily increasing.

We have not charted any rigid future course but we hope that the Unit will remain a flexible facility, responsive to the future developments in the treatment of respiratory disease.

It is of interest, however, that it appears unlikely that regional hospitals such as St. Martha's will be able to avoid, for long, the development of Intensive Care Areas and Coronary Care Units. We believe that the establishment of such complex facilities will require the sort of basic inhalation therapy capability that we have described. □

Acknowledgement

We are particularly indebted to Dr. G. Graham Simms, Executive Director of the Nova Scotia Hospital Insurance Commission, for continued interest, advice and support.

Correspondence

Practice Exchange

To the Editor
Nova Scotia Medical Bulletin

Sir,

The four of us are partners in a rural practice in the north of England. We are all interested in learning more of practice in Canada – not with the idea of emigrating, but to improve our own methods of practice. We should like to arrange an exchange with four general practitioners from one or a number of groups for a period of perhaps six months; each of us exchanging with a Canadian general practitioner in turn, and we wonder if you know of anyone who would be interested in spending six months in an English practice. Preliminary enquiries here suggest that there would be no insurmountable difficulties regarding registration, practice under the National Health Service for a Canadian general practitioner, or immigration.

We should be prepared to exchange houses and cars as well as jobs and feel confident that suitable financial arrangements could be made. An account of our practice is attached.

I should be most grateful for any help or advice you could give.

Yours faithfully,
J. M. Kirk
J. Loudon
J. W. Jage
A. M. Smith

Christmas Cards

To the Editor,
Nova Scotia Medical Bulletin.

Sir,

This year, in lieu of sending Christmas cards, the Pharmaceutical Manufacturers Association of Canada is making a donation to the United Nations International Children's Emergency Fund (UNICEF).

We are sure that our many friends and associates will accept this gesture as being in the true spirit of Christmas. If we can advise them of this action through your correspondence columns, we will be most grateful.

With our sincere good wishes for a Merry Christmas and every happiness in the year ahead.

Yours sincerely,
Wm. W. Wigle, M.D., C.M.

President, Pharmaceutical Manufacturers Association of Canada

---

Ode to Parnate

By Nancy Lamplugh

Twelve o'clock. I sit in my mad-house and it's twelve o'clock. The pill is my companion, my love and my marriage. It has become my being, my reason for existing, my covering of all that is evil and wants to rise in revenge of life. Life has become sweet because of the pill; endurable, tolerable and almost worthwhile. But not quite, I know this when I look under the strong transparent cover the pill has grown over my emotions. Impenetrable, but visible through it all, emotional tentacles springing up, desperate to rise through the cover, pushing and prodding – wanting expression – but under control of the pill. They must not have access to life. The pain and torture – if they were allowed to – would not be endurable. A tight grip and they obey. All tears are sweat only, the sweat of existence – the wringing out of emotions that have gone too far into the covering. They must be punished for they have gone against the will of the pill. Freedom must be controlled and kept within the boundaries of the pill. The pill is an anaesthetic for my thoughts and my being. The feeling is there, but the pain is deadened. My soul strives for life and expression but it must not be with emotion, it must be with the mind only. A touch and a word are received by the intellect – not with the heart; for the heart is too full and cannot accept the responsibility of emotional feeling.

Long-Term Oxygen for Hypoxemia

Six patients with chronic airway obstruction with hypoxemia were administered continuous oxygen for long periods. Clinical status improved and exercise tolerance increased, indicating that this type of therapy maybe useful in the rehabilitation of such patients.

In planning a rehabilitation program for the hypoxemic patient with chronic lung disease, the use of continuous oxygen seems a reasonable therapeutic approach.

The development of a liquid oxygen system makes possible ambulatory therapy. Thus, a study was designed to evaluate the effect of continuous oxygen therapy as a part of a program of rehabilitation for the pulmonary cripple.

Six patients receiving an active therapeutic program for chronic airway obstruction with and without oxygen formed the group in the study, which was initiated in the hospital. On leaving the hospital, the patients were followed on an outpatient basis for up to 18 months.

All of the patients had long-standing chronic airway obstruction with hypoxemia, cor pulmonale, and secondary erythrocythemia. All were disabled by their disease and had been living an essentially bed-and-chair existence. The patients had the hypoxemic-bronchitic clinical type of chronic airway obstruction.

Each patient was hospitalized for two months. Treatment included oral and inhaled bronchodilators, expectorants, diuretics, cardiac glycosides, antibiotics, and other medications as needed. Physical therapy included postural drainage after inhaled bronchodilator and steam, breathing training, and a daily graded exercise program. Management of each patient was continued unchanged during both the control and oxygen therapy months.

Oxygen by Nasal Prongs

During the first month, oxygen was used only for short periods for severe respiratory distress, its use being carefully monitored. This was the control month. During the second month oxygen was given 24 hours a day, supplied by nasal prongs at controlled flows.

Constant clinical observation was maintained. Exercise tolerance was measured daily during training, which consisted of corridor walks and climbing stairs for two patients, treadmill exercise for the others. Arterial blood gases were tested at least weekly; ventilatory tests were given weekly; resting and exercise steady-rate diffusion capacities were performed every two weeks; red cell production was evaluated regularly; and right heart catheterizations were performed at the end of both months in the hospital.

Management of these patients without oxy- was difficult, and in the first month little in the way of rehabilitation could be done.

During the month of oxygen therapy the patients were more comfortable, management of respiratory and cardiac problems was simpler, and active participation in the rehabilitation program was possible in five of the patients. The sixth patient was never well enough to exercise.

Of four patients at home on oxygen by nasal prongs, two have had sustained clinical benefit. Although unable to work, they are both fully ambulatory and able to perform moderate, useful activity. A third did well for a time but later died from respiratory failure. The fourth patient died in respiratory failure 14 months after the study.

Increased Exercise Ability

Among the patients as a whole, oxygen therapy markedly increased their ability to exercise; lung function was essentially unchanged; there was no significant carbon dioxide retention and no narcosis; and serumbilirubin measurements did not suggest any change in the rate of red cell destruction due to oxygen therapy.

In all patients a potentially reversible vasoconstrictive element in the pulmonary vascular bed was noted at the first catheterization by a fall in pressure during acute administration of oxygen or tolazoline or both. Giving oxygen during the second catheterization resulted in further lowering of observed pulmonary arterial pressures.

Long-term continuous oxygen therapy caused significant clinical improvement in every patient. Those with initial improvement gained at an accelerated rate, and those with no improvement during the control month achieved a measurable increase in exercise tolerance once oxygen was begun. Viewing each patient as his own control, continuous oxygen appeared to bring demonstrable improvement in every case.

The value of continuous oxygen is further

*Reprinted from the Abstracts of the National Tuberculosis Association, November 1967.
Printed through cooperation Nova Scotia Tuberculosis Association.

suggested by the fact that on termination of the hospital study all six patients experienced clinical and exercise tolerance deterioration at home on only intermittent oxygen.

In general the potential for physical rehabilitation of these patients was related to the degree of ventilatory impairment measured by spirometry. Patient motivation and intercurrent illness were other factors. Mechanical lung function did not change with oxygen therapy. The effect of oxygen apparently was simply to relieve the toxic effects of hypoxemia and to support patients in reaching their highest possible level of activity. This type of supportive therapy can make the difference between a bed-bound existence and full activity at and away from home.

Effect of Therapy

Lowering of pulmonary arteriolar resistance after a month of constant therapy is a significant benefit demonstrated by this study. Whatever the mechanism of decreased resistance, the importance the patient with cor pulmonale is apparent.
of a diminished work load on the right ventricle to

Hematologic studies showed clear-cut evidence of diminished red blood cell production during oxygen therapy. The hematologic data support the concept that oxygen is an effective therapeutic agent for patients with erythrocytosis secondary to hypoxemia.

Oxygen was found to be safe and well tolerated as well as effective. Oxygen therapy caused no significant alteration in arterial Pco_2 acutely or chronically. Carbon dioxide retention due to oxygen therapy is rarely seen if dosage is controlled to maintain normal arterial Po_2.

Constant use of nasal prongs was well tolerated by the patients. The fact that patients can eat, sleep, and talk while receiving oxygen would appear to make this a reasonable method of delivering continuous therapy.

The data show that relief of hypoxemia is an important step in the rehabilitation of patients with chronic airway obstruction. □

Reference

Bernard E. Levine, M.D.; D. Boyd Bigelow, M.D.; Roger D. Hamstra, M.D.; Henry J. Beckwitt, M.D.; Roger S. Mitchell, M.D.; Louise M. Nett, R.N.; Theresa A. Stephen, B.S.; and Thomas L. Petty, M.D. *Annals of Internal Medicine*, April, 1967.

Insurance, the Physician and the Medical Society

EDWARD B. GRANTMYRE, M.D.

Chairman, Committee on Insurance

The Medical Society of Nova Scotia has three group insurance programs available for its members. These are Group Life, Disability Insurance and Office Overhead Expense Protection. All these plans are carried by large well known insurance companies and some years ago achieved the minimum numbers for group benefits. The relative cost of any of these programs is low, due to the size of the group and the fact that the Medical Society does some of the bookkeeping. Your Insurance Committee is surprised that there are a number of members who do not participate in any of these programs, and feel that a brief review of each plan would be of interest.

Group Life

This program of level term convertible insurance is carried with North American Life Assurance Company. Level term means that protection remains constant while premiums increase with increasing age. The convertible aspect of the program enables a member to obtain from the insuring company regular whole life or other policies at any time up to age 65 to almost the same amount of the term policy without medical examination.

The main advantage of this type of policy other than the convertible aspect is the high protection at low rates ($3.00 per $1,000.00 per year under 40 years of age) for the young physician when he needs it most. The disadvantages of this specific policy are that you can only obtain a total amount of $28,000.00, and that as you get older the cost increases significantly ($20.00 per $1,000.00 per year at age 65) until at age 75 it expires altogether. This is a pure protection policy, not unlike the fire insurance on your house, and hence has no cash or savings value. This type of insurance should be used only as a means of protecting your dependents during a period when an estate of sufficient size is being established by other means.

At present there are 245 members of the Society insured for various amounts, totaling a volume of over $4,000,000. The participation in this group has been increasing rather slowly considering the need and value of this type of coverage.

Disability Insurance Program

A physician, when disabled by accident or illness, suffers unavoidable loss of most or all of his income. A substitute source of income is necessary to carry him through such a period of financial emergency.

A long term disability income plan carried by Mutual of Omaha is available to all members. This policy will pay a maximum of $600.00 per month for a life-time from the 1st day of a disabling accident. Sickness benefits are payable up to five years from the 1st day of hospitalization, or from the 16th day of an illness at home. A sickness benefit extension rider is available so that benefits from a disabling illness may continue to age 65. This rider includes 3 months partial disability benefits for sickness, to enable a physician recuperating from a coronary occlusion, for example, to do a portion of his usual practice and still receive some disability benefits. The basic policy also includes a $10,000 accidental death benefit. The physician chooses the amount of monthly benefit (up to $600.00) for which he would like to be insured and the basic policy costs approximately $45.00 per year per $100.00 under age 50. The average policy cost diminishes from $49.50 for $100.00 monthly benefit to $223.00 for $600.00 monthly benefit (that is, $37.17 per hundred) so there is a definite saving in buying larger amounts. The sickness benefit extension rider may be added to this policy, at a cost under age 50 of $4.20 per $100.00 of benefit.

There are 383 members of the Society insured in this program and from July 1, 1966 to June 30, 1967 the insurance company paid out claims totaling $72,954.13. This is a relatively large participation considering that many salaried physicians are protected by their employer's disability programs.

Office Overhead Expense Protection

Many physicians, when disabled, are burdened with the additional cost of their offices, and this program has been made available to cover this eventuality. It is also underwritten by Mutual of Omaha and is available in amounts from $200.00 to $800.00.

The policy pays for rent, electricity, heat, utilities, salaries of employees, taxes, equipment depreciation and such other fixed expenses as are normal and customary in the conduct and operation of the insured's office. Benefits are paid for as long as 18 months, beginning after a 30 day elimination period up to the amount for which the policy is issued, but cannot exceed the average monthly amount of expenses incurred during the 6 month period prior to the disability.

Premiums are deductible as a business expense, and the premium cost, unlike the Group Life and the

Disability Programs, does not increase after policy issue because of increase in age. The cost to a physician joining the program who is under 40 years of age is $20.00 per $100.00 of monthly benefit.

There are 99 members of the Society insured in this program, and during the 12 month period from July 1, 1966 to June 30, 1967 the insurance company paid out claims totaling $4,962.03.

Conclusion:

An outline of the various group insurance programs negotiated by The Medical Society of Nova Scotia has been made in an attempt to acquaint members with the plans available to them. Premium rates quoted are those in effect as of December 30, 1967. In a short article such as this, it will be appreciated that many minor details have been excluded but it is felt by the Insurance Committee that the fundamental features of the three plans have been presented. Any member wishing further information on any of these programs should contact Mrs. Clahane at the Medical Society office in Halifax, or representatives of the insurance companies carrying the specific policies. □

ADVERTISER'S INDEX

Nova Scotia Medical Bulletin

GENERAL INDEX

Vol. 46 - 1967

ABBREVIATIONS USED: Abst. - Abstracts; Corr. - Correspondence; C.R. - Case Reports, Edit. - Editorials, Rev. - Review; 1000 - Thousand Word Series.