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## Consensus

"It is important to build within the profession a consensus on what we are and where we are going. Once we have a shared vision, we can start to sell it to others."

The words of Dr. Leo-Paul Landry, as he begins his new job of Secretary General of the Canadian Medical Association show an understanding of the problem facing our profession, and give hope for the solution.

Consensus though will not be an easy objective to reach, among physicians known to be among the most opinionated individuals in our society. Use of logic and scientific method to reach the truth and justice of issues is not always evident in our considerations or actions.

It is surprising that, despite our diversity, the public often views us as a united group, supportive of one another, varying little in our opinions and usually protecting our own interest. If only it were so simple, it would be so much easier to reach the much desired consensus mentioned above.

As educated persons, we continue to promote rich intellectual interaction that fosters learning in all of us. Varying positions and opinions are encouraged and hopefully enrich the profession and improve it. However when political action is necessary it makes solidarity very difficult to achieve, and solidarity, despite the union-like concept it might suggest is really what we are going to need in the future. The anti-professional attitude so rampant in the past few years will require nothing less, even if we are successful in avoiding confrontations similar to that in Ontario.

If in the perception of others, we as physicians promote many different solutions, we will appear only as a group of self-seeking individuals, no different from competing political parties.

Most physicians would agree that priorities in health care are best settled by using principles of ethics, good research and thoughtful decision making, rather than by the most effective public relations campaign. However there will always be those issues that of necessity will be settled in the public forum. If we are to be effective, then, in applying our professional expertise we must remember that too many opinions often confuse the patient and that unified opinion and action will be necessary if we wish to be heard. At present that unity of the profession is threatened by many issues, withdrawal of services being the most controversial. Income differences among specialty groups maybe the next most divisive issue affecting our unity.

We are being attacked in our very role in the health care system by the nursing association, as well as many other health care professionals.

The place of the family practitioner in hospital, in obstetrics and in the emergency room is being debated. The liability crisis is still with us, with increasing differences of premium adding another wedge to our separate specialty groups.

Manpower, postgraduate training positions, fiscal restraint to the Maritime Provinces are more potentially divisive issues. Without consensus we will have little to say in the solution of many of them. University and community physicians or town and gown will have to compromise, as will differing specialty groups. Obviously we will have to use our committees, associations and societies more effectively to promote fair discussion and exchange of opinion.


If the profession as a whole becomes an ineffective voice then the health care system and the patient ultimately will suffer. Dr. Landry sees the problem of consensus and it will be up to the physicians of Nova Scotia to be part of the solution. The Secretary General has our best wishes as he begins his new position.

J.F.O'C.

□



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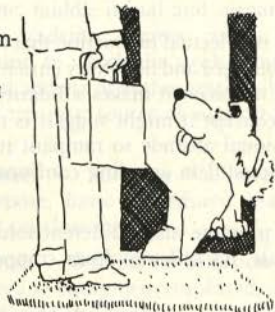
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# Insights and Controversies in Pediatric Epilepsy: How Little We Really Know

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## INTRODUCTION

70% of epilepsy begins in childhood and there are about 900 children with epilepsy in the Province of Nova Scotia. Some of these children outgrow their epilepsy and for others their disorder is life-long. The natural history of epilepsy in childhood, the value of anticonvulsant drug treatment, the role of screening during anticonvulsant treatment for biochemical abnormalities and the time when treatment should be stopped, are all areas of current controversy. Close collaboration between families, family physicians and the neurology services of the IWK Hospital has offered some insights into these issues.

## WHO HAS EPILEPSY?

Epilepsy is generally defined as a tendency for recurrent seizures and most authorities agree that a child should have two unprovoked seizures before the diagnosis of epilepsy is justified. Nonetheless, all epilepsy must begin after a first seizure and the prediction of epilepsy after a first seizure is a matter of major concern to both the family and physician.

helpful in improving the prediction of recurrence. In Table I, these three factors are combined to allow more accurate prediction. For example, a child with a first unprovoked generalized tonic clonic seizure who has a normal neurological examination and normal EEG has about a 30% chance of recurrence, while a child who is neurologically abnormal with an initial partial complex seizure and epileptiform EEG has a 96% chance of recurrence. Seventy-seven percent of recurrences were within one year of the first seizure and almost all by two years.

Strangely enough, in this Nova Scotian series (which probably represents the majority of children with a first seizure in the province during the study period), the prescription of anticonvulsant medication did not seem to alter the recurrence rate (55% of the 115 treated had recurrences, 45% of those untreated recurred). This, of course, was not a controlled study of medication and compliance was not documented, although compliance in taking anticonvulsant medication is generally excellent in Nova Scotian patients.<sup>2</sup>

Once a child had had two seizures, the recurrence

TABLE I

ESTIMATED PERCENTAGE OF CHILDREN SEIZURE-FREE 24 MONTHS AFTER A FIRST SEIZURE

Seizure Type	EEG non epileptiform; neurologic normal	EEG non-epileptiform; neurologic abnormal	EEG epileptiform; neurologic examination normal	EEG epileptiform; neurologic examination abnormal
Generalized Tonic-clonic + secondary generalized	70%	49%	53%	27%
Partial Elementary	50%	25%	29%	8%
Partial Complex	42%	17%	23%	4%

At the I.W.K. Hospital for Children, we have studied the recurrence rates of 168 children who presented to our EEG laboratory between 1977-81 with a first afebrile unprovoked seizure associated with no progressive neurologic disease or acute encephalopathy.<sup>1</sup> The overall recurrence rate was 51%. The EEG, neurological examination and seizure type were very

rate was 79% for further seizures and, therefore, a confident diagnosis of epilepsy really must wait for two seizures.

Our findings were very similar to the NIH Perinatal Study.<sup>3</sup> This study followed 54,000 children from prenatally to age seven. During this time 435 children had a first seizure and 54.7% had recurrences. Again, the prescription of anticonvulsants did not effect the risk of recurrence but again compliance with medication was not assessed.

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These studies of the initial presentation of childhood epilepsy raised several important questions. Most important for the practitioner, is whether or not anticonvulsant medication should or should not be prescribed after a first unprovoked seizure. Given the vast amount of information about the effectiveness of anticonvulsants to prevent seizures it would seem astonishing if they were without success after a first seizure. In principle, the value of anticonvulsants would be to prevent a second seizure and subsequent seizures. The effect of recurrent seizures on children is still unknown, however, following a first seizure there is always the possibility that the second seizure will cause damage from a fall or result in social isolation.

Against the use of medication after a first seizure is the idea that half of such children will be treated unnecessarily and that the drugs might have significant side effects.

To answer these critical issues, we are just beginning a randomized prospective study of carbamazepine following a first seizure. Our study will assess the efficacy of carbamazepine as well as measure possible cognitive effects of the drug, through detailed neuropsychological testing. In addition, the attitude of the family and children about being on or off medication will be carefully assessed through questionnaires involving self-esteem and locus of control. We hope, at the end of this study, to be able to answer in a practical fashion whether carbamazepine is or is not appropriate after a first seizure. This study is to involve 100 children and we welcome prompt referral of any child in Nova Scotia with a first unprovoked seizure.

### HOW WELL DO ANTICONVULSANT DRUGS CONTROL SEIZURES IN CHILDREN WITH EPILEPSY?

Carbamazepine is now the most commonly prescribed anticonvulsant for children with epilepsy in Nova Scotia, followed by phenobarbital, valproic acid and phenytoin. The efficacy of these drugs to completely control seizures is not clear cut. We have prospectively studied 82 children with newly diagnosed, previously untreated epilepsy. To our surprise, 41% had at least one additional seizure on medication and 13% had serious medication side effects requiring a drug change. This left only 46% with the hoped for result of treatment, namely no further seizures and no significant medication side effects. If a child did not have seizures during the first six months of treatment, he/she was very likely to remain seizure free.

Children with the best prognosis were those with generalized seizures who were neurologically normal, while those with focal epilepsy and neurologic impairment had significantly higher rates of drug failure. Drug levels throughout the study documented

that patients took their medication extremely regularly.

A comparable study in adults, involving a much larger sample size, has come to similar conclusions about drug efficacy.<sup>4</sup> Thus, we are far from truly excellent-treatment for a very large number of both children and adults with epilepsy.

### SCREENING FOR ANTICONVULSANT TOXICITY

Rare but catastrophic idiosyncratic reactions have occurred with all anticonvulsants. These reactions appear to occur in 1/20,000-50,000 patients started on almost any anticonvulsant drug and include exfoliative dermatitis, nephritis, hepatitis and aplastic anemia. These serious reactions have led neurologists and drug manufacturers to recommend routine blood and urine screening during anticonvulsant treatment. Implicit in such a recommendation for screening is the untested assumption that serious reactions are preceded by an asymptomatic phase which can be detected by screening and that stopping the drug at this stage will prevent or diminish the full-blown reaction.

We studied 199 children with seizure disorders who were beginning treatment with an anticonvulsant.<sup>5</sup> The children were followed prospectively with blood and urine screening before treatment and at 1, 3, 6, 12, 18 and 24 months on medication. Blood tests included routine measures of hematologic, liver and pancreatic function. There were no serious toxic reactions to the drugs, however, there were a large number of minor abnormalities in all of the laboratory tests seen equally with all anticonvulsants. These

TABLE II

#### SYMPTOMS ASSOCIATED WITH SEVERE REACTIONS TO ANTICONVULSANTS

##### Generalized Allergic:

Rash, fever, lymphadenopathy usually within 2-6 weeks of starting drug (phenobarbital, carbamazepine, phenytoin).

##### Bone Marrow Suppression:

Symptoms from anemia, unexplained infections, bruising, bleeding (carbamazepine, phenytoin, valproic acid, ethosuximide).

##### Nephritis:

Hematuria, nephrotic syndrome (carbamazepine, phenytoin).

##### Hepatitis:

1. Somnolence and repeated vomiting (valproic acid).
2. Jaundice and fatigue (phenytoin, carbamazepine, other drugs).

##### Pancreatitis:

Abdominal pain and vomiting (valproic acid).

abnormal tests, of course, had to be repeated since the assumption of a presymptomatic phase to severe reactions necessitates close attention to any minor abnormality. Two children had severe abnormalities detected by such a screening process, but it turned out that in neither case was the reaction of any clinical significance and in neither case was it secondary to the anticonvulsant drug.

We concluded that routine screening for anticonvulsant toxicity has a significant negative impact on the care of the child with epilepsy with no real hope of benefitting the child. We recommend that routine blood and urine screening be discontinued. In its place, we have recommended that children and their parents be well informed of the symptoms that accompany serious toxic reactions and report these to the physician immediately. (Table II) We hope that such an approach will provide a more comprehensive form of screening, which is more acceptable to children and their families.

### THE VALUE OF ANTICONVULSANT BLOOD LEVELS

There can be little doubt that anticonvulsant serum drug levels document that a patient is taking his medication. The controversy in this area concerns the so-called therapeutic range for anticonvulsant drugs. There is a wide-spread perception that anticonvulsant drug doses should be adjusted so that the patient's serum levels fall within an arbitrary "therapeutic" range. This assumption has not been directly examined. One very striking study found that levels are frequently misinterpreted or misused in clinical practice. In our prospective study of 82 children with newly diagnosed epilepsy, we found that the blood levels did not predict recurrence of seizures i.e. higher drug levels were not associated with fewer seizures despite virtually all levels falling within the usual "therapeutic" range.<sup>2</sup> It would seem unlikely that there is a serum level below which any anticonvulsant drug is completely ineffective and above which side effects are routinely seen. The therapeutic range, at best, must be a statistical concept with many exceptions. Since anti-convulsants may have serious but subtle effects on cognitive function in children with apparently "normal" drug levels there is a real need for psychophysiological tests which could examine the question of intoxication directly.

### HOW LONG TO CONTINUE MEDICATION?

An unknown but substantial proportion of children who develop epilepsy will outgrow their epileptic tendency before reaching adulthood. The question of how to identify such children and how long to treat them has been the subject of recent controversy. The largest study with the longest follow-up has examined the outcome in 148 children with epilepsy whose anticonvulsants were stopped after four years seizure-

free.<sup>7</sup> Overall, 76% of children remained seizure free. Children with focal seizures and neurologic impairment were found to have a less favourable prognosis. In this study, an EEG at the time of discontinuing medication was not predictive of seizure recurrence.

Two more recent studies examined children who had been four years and two years seizure-free prior to discontinuing medication.<sup>8,9</sup> These studies found little relationship between recurrence rate and seizure type or neurologic status but did find the EEG to be significantly predictive of further seizures. Thus, it is unclear, once seizure control is established, how long anticonvulsant drugs should be continued. There remains uncertainty whether the EEG or other factors about the patient are sufficiently precise predictors of recurrence that they should affect the decision to stop medication.

### DO ALL CHILDREN WITH EPILEPSY REQUIRE ANTICONVULSANT TREATMENT?

Some seizure types in childhood are benign in the sense that they are universally outgrown. The most clear cut example of this is benign Sylvian seizures or Rolandic epilepsy. This is a specific seizure disorder usually with its onset before age 10, with most seizures occurring during sleep. The seizure usually involves the tongue and mouth with or without some spread to involve the arm and leg. The children are generally normal and their EEG shows a spike focus over the Sylvian fissure. This special seizure disorder accounts for approximately 10% of childhood epilepsy and is almost always outgrown in the teenage years.<sup>10</sup> For many children, the seizures are very minor and infrequent and the value of treatment with anticonvulsant drugs is not clear cut.

There is speculation that there may be other benign forms of childhood epilepsy. It may be that some of the children with generalized tonic clonic seizures may have a few seizures only at a critical stage of brain maturation. Although there are clearly potential consequences from a large number of generalized tonic clonic seizures, there may well be a group of children who would have 2, 3 or 4 generalized tonic clonic seizures only. If the epileptic tendency is to be so brief, then it seems unlikely that anticonvulsant drugs are needed, provided the public and the families can be persuaded that the disorder is benign. Given the relative inefficacy of anticonvulsant drugs and their potential side effects, considerably more work is required to identify the children who really benefit from drug treatment.

### CONCLUSION

The point of this brief review is to indicate that despite our increasing knowledge of pediatric epilepsy there remain large gaps in our understanding of the natural history of the disorder, both treated and untreated, and major uncertainties about the most appropriate

management. The relative geographic isolation of Nova Scotia coupled with its system of centralization of special services for children offers unique opportunities for improving our understanding and treatment of epilepsy in children. □

#### ACKNOWLEDGEMENTS

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# Some Management Problems In Adult Epilepsy: A Review

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## INTRODUCTION

We have set out here to review some specific problems that frequently arise in the management of the adult epileptic. The principles outlined are general to adults with seizure disorders and it is important to individualize therapy for each patient.

## MONOTHERAPY

The use of several anticonvulsants simultaneously has become nearly standard therapy for many epileptic patients. Although based on a well-intentioned desire to achieve better seizure control, the all too frequent and familiar results are complex drug interactions and increasing chronic toxicity, resulting in disappointing or even paradoxically deteriorating seizure control.<sup>4</sup> Much recent evidence indicates that the careful and patient use of a single anticonvulsant appropriate to the patient's form of epilepsy has much to commend it.<sup>1 2 3 4 5</sup> Polytherapy is much more easily prevented than reversed, a process which is difficult, time consuming, and indeed sometimes impossible. The chief problem is deteriorating seizure control while weaning agents until a steady state is re-established in weeks or months.

Ideally then, only one drug should be used with a minimum of toxicity, allowing the patient to carry on his or her activities of daily living without undue restriction. While this outcome is sometimes elusive or impossible, it is well worth striving for in each patient.

The best approach is first to be certain that epilepsy is the condition being treated and to accurately identify both the seizure type and the underlying etiology (still most often idiopathic).<sup>1-9</sup> When as complete an understanding as possible of the problems has been reached, and therapy is indicated, select the drug which seems most appropriate bearing in mind the seizure type and the age, sex and financial situation of the patient (see Tables I and II). Usually this will be phenytoin or carbamazepine in adults.<sup>10</sup> Sedative drugs (phenobarbital, clonazepam, primidone) are best avoided if possible.<sup>2</sup> Most anticonvulsants are begun at 1/4 to 1/2 of the maintenance dose and increased weekly

until a steady state at maintenance dosage is reached. A notable exception is phenytoin which is begun at maintenance dosages or can be given in a large dose on the first day to "load" the patient. By using blood levels at a steady state (reached in 5-7 times the half life) the dose is gradually adjusted to achieve the therapeutic range. Table III lists the half lives of several antiepileptic drugs.

TABLE I  
SIMPLIFIED INTERNATIONAL CLASSIFICATION  
OF SEIZURES AND EFFICACY OF  
ANTIEPILEPTIC DRUGS (3)

Seizure	Effective Drugs
<b>Partial</b>	
Simple (eg. Jacksonian)	CBZ, PHT, PB, PRM
Complex (eg. Psychomotor)	CBZ, PHT, PB, PRM, (VAL)
Secondary generalized tonic-clonic	CBZ, PHT, PB, PRM, VAL
<b>Generalized</b>	
Tonic-clonic (Grand Mal)	CBZ, PHT, PB, PRM, VAL
Myoclonic	CLON, VAL
Absence (Petit Mal)	ESM, VAL
CBZ=Carbamazepine (Tegretol)	VAL=Valproic Acid (Depakene)
PHT=Phenytoin (Dilantin)	CLON=Clonazepam (Clonipin)
PB=Phenobarbital	ESM=Ethosuximide (Zarontin)
PRM=Primidone (Mysoline)	

TABLE II  
RELATIVE MONTHLY COST OF  
ANTIEPILEPTIC DRUGS (3)

Drug	Cost of Monthly Dose
Carbamazepine	\$16
Phenytoin	\$ 4
Phenobarbital	\$ 1
Primidone	\$12
Valproic Acid	\$18
Clonazepam	\$10-15

Morning drug levels before the first dose are best to use for this purpose.<sup>2 5</sup> If seizures are inadequately controlled, the dose is increased gradually until control is achieved or clinical toxicity develops. Drug levels are used only as a guide; the optimal dose for an individual, which achieves the best balance between control and toxicity, may lay outside the averaged "therapeutic range". Adequate time to achieve a steady state is given before assessing efficacy; impatience is a major pitfall.<sup>2 5 9</sup>

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**TABLE III**  
**HALF LIVES OF COMMONLY USED**  
**ANTIEPILEPTIC DRUGS**

Drug	Half-Life Usual	(hours) Range
Carbamazepine*	30	20-40 (acute)
	15	5-25 (chronic)
Phenobarbital	96	48-120
Phenytoin	24	6-100
Primidone**	16	6-22
Valproic Acid	12	6-20

\*Carbamazepine metabolism is autoinduced, so that its half life decreases with chronic use.

\*\*Primidone is metabolized to Phenobarbital, the half life given here is for the parent compound alone.

If seizures are still inadequately controlled despite clinical toxicity, the dose can be reduced slightly to alleviate side effects and then a second agent added. Of course, it is essential to be certain that lack of compliance is not the source of inadequate control, before adding further medication. The above process is repeated for the second agent, again preferably a non-sedating drug (eg. adding carbamazepine to phenytoin). If seizures come under control after careful adjustment, the first anticonvulsant can be withdrawn very gradually if it was of no benefit, or maintained if it was partially successful. If seizures continue despite the two drugs, a third is added and adjusted, and the second agent withdrawn. Throughout, an aim for monotherapy is maintained, two agents are sometimes helpful, three used with great reluctance.

One common pitfall in the use of phenytoin specifically is to increase the dosage to 400 mg daily after 300 mg has proven inadequate.<sup>2</sup> Toxicity may result, and the drug is then deemed unhelpful. However phenytoin metabolism often becomes saturated above 300 mg a day leading to increases in drug level and toxicity out of proportion to the dosage increment.

The solution is to use the 50 mg pediatric tables which are scored for dividing. By using 50 mg or even 25 mg increments, it may then be possible to achieve a more precisely individualized optimal dosage and successful monotherapy.<sup>1 2</sup>

When using carbamazepine, dosages of more than 1000 mg daily are often necessary, but sometimes feared because of reported serious hematologic or hepatic toxicity.<sup>2</sup> With increasing experience it appears these reports have been over-emphasized<sup>1 2</sup> and the serious toxicity was not dose related at any rate.

Nevertheless, it is prudent to routinely monitor drug levels, CBC, liver function and electrolytes at least every three months while taking anticonvulsants. In particular, when using carbamazepine these studies should be done monthly initially for 3-4 months.

### PROGNOSIS IN EPILEPSY

The decision to begin, continue or discontinue

therapy is largely based upon the probability of recurrence of seizures. About 5 percent of the population have at least one afebrile seizure in their lifetime while the prevalence of epilepsy is much less than this.<sup>12</sup> Some individuals have only two or three seizures in their life. Others have an ongoing disposition requiring life long therapy.

The prognosis of a seizure disorder may be apparent after thorough assessment of the problem through clinical examination, EEG, CT and other ancillary aids. If a brain tumor, arteriovenous malformation or other space occupying lesion is responsible, seizures are likely to continue and the prognosis reflects the underlying pathology. If seizures have occurred secondary to or "symptomatic" of some acute stress or illness extrinsic to but imposed upon the central nervous system, such as sleep deprivation, or an acute metabolic derangement such as hypoglycemia, uremia, or hyponatremia, then correcting or preventing these underlying problems makes the probability of recurrence low.<sup>11</sup> Hence, using temporary anticonvulsant therapy while the provoking factors exist may be helpful, long term therapy would not be indicated.

Some acute CNS disease such as meningitis, mild to moderate head trauma or stroke may cause acute symptomatic seizures but not necessarily a long term seizure disorder.<sup>11</sup> On the other hand, these same diseases, through scarring and gliosis may give rise to "remote symptomatic seizures" occurring months or years after the initial event, these epilepsies often being permanent.<sup>11</sup> This occurs in only a minority: 5% of head trauma overall (usually severe) and in 10% of strokes. The presence or absence of acute symptomatic seizures is often a poor prognostic indicator of the future chance of this occurring and, apart from head trauma, few good figures are available to help predict who will go on to have remote seizures making this particular area somewhat difficult.<sup>11</sup>

An empirical but reasonable approach is to treat an individual who has had significant seizures due to acute CNS disease with anticonvulsants for 1-2 years and then to reassess the situation. Therapy might be very gradually discontinued if no further seizures have occurred and if an EEG is not epileptiform. Reinstitution of anticonvulsants might be necessary if remote seizures then occur.

For the majority of patients whose seizures are "idiopathic" or not associated with progressive CNS lesions, it can be difficult to predict an individual's course.

About one quarter of epileptics do not respond to initial therapy and many agree that subsequent control is elusive or unobtainable despite changes or additions of anticonvulsants.<sup>12</sup> Some of these patients may be surgical candidates.

Perhaps nowhere is the prognosis more unsettling than in the individual presenting with a first seizure. Overall, 25% of patients will have recurrence within



three years.<sup>11</sup> A history of previous neurologic insult (stroke, trauma or meningitis for example) increases the risk to approximately 33%.<sup>11</sup> A generalized spike-wave pattern on EEG increases the risk to approximately 50%. A family history of epilepsy in a sibling increases the risk to more than 50%. Without any of these factors, the chance is roughly only 20% of recurrence. Once a second seizure has occurred, the recurrence rate is at least 75%.<sup>11</sup> Consideration of these recurrence rates allows one to determine if the benefits of treatment outweigh the risks and side effects of anticonvulsant medications. Treatment must be individualized for each patient depending on the circumstances of the seizure, their lifestyle, age and etiology of the seizure.

## EEG IN EPILEPSY

It is unusual to record an actual seizure on routine EEG, which is the only absolutely unequivocal proof of its epileptic basis.

Only about 56% of epileptics have a "positive" first EEG. Additional recordings over time increase the chance of "catching" an epileptiform event and activation methods such as hyperventilation and photic stimulation as well as sleep deprived or sleep EEG's may yield positive results in some.

A small minority (8%) of epileptics have consistently normal EEG's. A negative EEG does not rule out epilepsy.<sup>13</sup>

Some prognostic information may be provided by EEG. While it is probably the case that the pretreatment EEG of a newly diagnosed epileptic does not help predict seizure control<sup>12</sup>, it is also true that an epileptiform EEG after a first unprovoked seizure indicates a high chance of recurrence.<sup>11</sup> While controversial most authorities feel subsequent EEGs are useful in helping make a decision about discontinuing therapy in an individual free of seizures for 2-4 years. Continuing epileptiform EEG activity is felt to be associated with relapse to some extent.<sup>13</sup>

Minor non-specific dysrhythmias are just that and have no special significance for epilepsy, these findings being seen in 15% of normal people.

## EPILEPTIC WOMEN

Hirsutism and coarsening of facial features occur in as many as 30-40% of people treated with phenytoin.<sup>1</sup> Alternative agents, especially carbamazepine, are therefore of special consideration in women,<sup>1-3</sup> particularly if dark haired and fair skinned.

Pregnancy is a problem for epileptic women which should be regarded as high-risk and may require neurological and obstetrical support to care for the patient. The aim is to keep the mother seizure-free with minimal toxicity to her and her fetus. Most are epileptic and under therapy prior to conception. Some experience their first seizure while pregnant and 25%

of these women will have seizures only during their pregnancy (gestational epilepsy) and not necessarily in subsequent pregnancies.<sup>1 2 14 16 17</sup>

Seizure frequency is unaffected in roughly 50% of epileptic women during pregnancy.<sup>1 2</sup> About 25% have improved seizure frequency and in the remaining 25% control deteriorates.

The question of anticonvulsant teratogenicity is complex and emotionally charged and therefore controversial. There is no doubt that trimethadione is highly teratogenic and contraindicated in pregnancy.<sup>15 16</sup> Valproic acid is teratogenic in animals and there has been concern about neural tube defects, however all the facts are not in yet, and it is perhaps best to avoid it if possible at present. The situation with other anticonvulsants is much less clear.

What is known is that the risk of anomalies is increased 2 to 3 fold in epileptic women on treatment, but is still probably less than 10%.<sup>1 2 8 14 16 17</sup> Representative figures for incidence of birth defects are approximately 2.5% in the general population, 4.2% in unmedicated epileptics and 6.5% in treated epileptics.<sup>1</sup>

In general then, if a woman has been seizure-free for several years, gradual anticonvulsant withdrawal over several weeks can be attempted prior to conception otherwise optimized therapy is continued, preferring monotherapy with phenytoin or carbamazepine. Phenobarbital may be used, but most agree that it is not necessary to switch from phenytoin to this drug, as has been advised. The woman is advised that there is 2-3 fold increased chance of malformations but that the majority of these are mild and that the chance of good outcome is better than 90%.<sup>1 2 16</sup> The importance of compliance and rest are stressed. Monthly drug levels and visits are recommended. Dosage increments may be necessary and if they are, weekly post partum levels are recommended as drug levels will rise again as drug clearance returns to normal.<sup>1 2 16</sup>

## MEDICATIONS AND ALCOHOL

Although there is a small risk of adversely affecting seizure control with psychotropic agents, these drugs should not be withheld if indicated. Possible drug interactions should be assessed by monitoring anticonvulsant levels.

Phenothiazines are the best known epileptogenic agents, do occasionally cause seizures, and regularly alter the EEG. High doses or rapid increments are usually involved, and brain damaged individuals are at greater risk. The mechanism is unknown. After a single seizure without other explanation, the dose of phenothiazine should be reduced and the patient observed. After a second it may be necessary to protect the patient with an anticonvulsant, usually phenytoin, if the phenothiazine is truly needed. If the phenothiazine is subsequently discontinued, the anticonvul-

sant should be gradually withdrawn.<sup>1</sup>

Tricyclics are occasionally but infrequently epileptogenic in the usual doses. The above statements also apply to these drugs. Overdosage may cause severe seizures among other problems and intravenous diazepam and phenytoin may be necessary acutely, but not chronically.<sup>1</sup>

Intoxication with monoamine oxidase inhibitors may cause seizures, but this is much less common. There is no problem in the usual doses and the EEG is largely unaffected.<sup>1</sup>

Benzodiazepine withdrawal may precipitate seizures, best treated by reinstatement of the drug with subsequent gradual withdrawal.

Alcohol is a frequent problem with epileptics, tending to aggravate their seizures, and should be avoided. In alcoholics withdrawal seizures or "rum fits" occurs 7-48 hours after stopping drinking, may occur as a flurry of tonic-clonic convulsions, with or without other signs of withdrawal, and are best treated with large doses of initially parenteral and then oral benzodiazepines, to which the alcoholic is cross-tolerant. Usually chlordiazepoxide is used in large doses and gradually withdrawn over weeks. Although frequently prescribed, phenytoin is frequently ineffective here and many authorities feel that chronic therapy of the alcoholic with this drug may be dangerous because associated compliance problems may lead to sudden anticonvulsant discontinuation combined with alcohol withdrawal and produce severe seizures or even status epilepticus.<sup>1</sup> Abstinence is the only effective if elusive therapy.

## LIMITATIONS

The epileptic's social life is filled with restrictions, some prejudicial, and some that are reasonable. Heights, dangerous machinery, piloting airplanes, swimming alone, are examples of activities that are dangerous to one who might have a sudden unexpected loss of consciousness and would be precluded by common sense, although this does not always prevail. Jobs involving such activities are reasonably excluded. Unfortunately, many are refused work for much less clear reasoning.

Obtaining life, disability and automobile insurance can be difficult and expensive.

Driving is a difficult problem. The automobile is a symbol of freedom and independence and essential to the employment of some people. It seems unfair to exclude categorically epileptics from driving, so guidelines which select those epileptics with a reasonably low chance of difficulty have been established but may vary from place to place. It is important to know your own provincial rulings on the matter. In general, a person with a solitary seizure but negative neurological examination, EEG and CT, is not restricted. An epileptic who has been seizure-free for one year while on therapy is not restricted,

providing the physician is comfortable that the patient is compliant, reliable and not taking alcohol to excess. Someone who has had purely nocturnal seizures for five years may drive, as the chance of a diurnal seizure is low. An epileptic who has been seizure free for several years who then has a seizure during attempted withdrawal of anticonvulsants is considered capable of driving once the medication is reinstated. Further details are available in the guidelines drawn up by the CMA.<sup>18</sup> □

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# A Blood Pressure Survey in a Rural Nova Scotia Community

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The purpose of this study was to evaluate the viability of a mobile research unit for cardiovascular survey work and to obtain results on the blood pressure profile of a volunteer population in a rural Nova Scotian community. We used automatic devices for blood pressure recording to eliminate the need of a quiet environment and make recording in a public place possible. We found a high degree of cooperation among the local population. The blood pressure profile is comparable to that found in other Canadian volunteer populations. Only 4% of the participants were found with elevated blood pressure and all were aware of their condition; 85% of the persons on antihypertensive medication had their blood pressure controlled.

The organizers of the Whycocomagh Summer Festival 1985 had invited the Heart Research Mobile Unit of the Department of Physiology and Biophysics at Dalhousie University to participate as a static display in the exhibition associated with the Festival. The researchers of Dalhousie used the opportunity to operate a blood pressure recording station for volunteers during the 3-day event. Cape Breton Island is of particular interest to cardiovascular epidemiology for its unusually high mortality from cardiovascular diseases, especially ischemic heart disease.<sup>1</sup> Since elevated blood pressure is one of the major risk factors for ischemic heart disease and since its recording is simple to implement in a field situation, we were very interested in conducting such a survey, despite the many shortcomings in the methodology we had to use.

## METHODOLOGY

The Heart Research Mobile Unit was stationed together with the other exhibition displays in a large community hall. The resulting noise levels made blood pressure measurement by auscultation impractical. We used instead an automatic blood pressure meter (Model Digitronic Printing Digital Sphygmomanometer). Two recording stations were set up in the open hall, outside the Mobile Unit. (Fig. 1) We had previously verified that its readings were generally within a few

mm Hg of the auscultation method. We made two measurements from each subject with an average of 3 or 4 minutes waiting period between measurements. The blood pressure was measured on the right arm with the subject in sitting position. If the automatic device recorded a diastolic pressure greater than 95 mm Hg or a systolic pressure greater than 160 mm Hg, or if the arm circumference was too large or too small for the standard size cuff, an additional set of measurements was made inside the mobile unit with the doors tightly shut, using a regular mercury sphygmomanometer. In addition to blood pressure we collected from each subject information about age, gender, place of residence, knowledge about previous elevated blood pressure and whether any medication for cardiac disorders was taken. All measurements were made in the afternoon between 1:00 pm and 6:00 pm. At the end of the interview each subject received a record of her/his blood pressure measurements and instructions about consultation with their family physician when an elevated measurement was found.



Fig. 1. Blood pressure recording station in front of the mobile research unit. Automatic blood pressure recorders eliminated the need for using a stethoscope.

## RESULTS

**Participants.** We registered 280 survey participants, ranging in age from 6 to 76 years; 60% of them were women. Twenty-nine subjects (10%) identified themselves as tourists from outside the province. For 208 persons (75%) the place of residence was a rural area in Nova Scotia, the rest were from an urban location, 3 did not specify their place of residence.

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**History of blood pressure measurement.** Of the 174 Nova Scotian adults (20 years and older), 11 (6%) claimed they never had their blood pressure recorded; of those 40 years and older, 2% indicated no previous blood pressure measurement.

**History of elevated blood pressure.** Forty-three persons had been told by a health care practitioner on a previous occasion that they had an elevated blood pressure, 20 of them (47%) were still taking antihypertensive medication.

**Present blood pressure.** We chose as the index blood pressure the measurement made with the mercury sphygmomanometer, if it was available. Otherwise, from the two readings with the automatic device we selected the one with the lower diastolic pressure. We defined as an elevated pressure a diastolic index pressure above 95 mm Hg or a systolic index pressure above 160 mm Hg for persons 40 years or younger or 180 mm Hg for persons older than 40 years. Only 7 (4%) of our participants met the criteria of elevated pressure and all were aware of their condition, but only 3 were taking medication. Of the 20 subjects who reported being on antihypertensive medication 17 (85%) had a blood pressure within normal limits at the time of the survey.

The average index blood pressures for 10-year age groups in both sexes is shown in Table I.

## DISCUSSION

The primary purpose of this survey exercise was to gain experience with the operation of our mobile research unit and to test its acceptance by potential research subjects. We were very impressed by the high degree of cooperation from the people in Whycomagh. Although we do not have any official attendance figure, it is our impression that the majority of persons visiting the festival while we operated our survey station also had their blood pressure recorded.

Since we did not set out to collect representative population samples of blood pressures, our data do

not give a true estimate of prevalence in the total community. Nevertheless, some of our findings are of interest, especially for the planners of future surveys in Nova Scotia. The major limitation is imposed by the biased population from which we recorded. The hours of our data collection were from noon to 6:00 pm. During this period a large proportion of festival visitors were families with young children. Furthermore, the Royal Canadian Legion held its own festival nearby which kept many men away from our survey location. Consequently, the ratio of men/women for the adult part of our population is 78/96, instead of the expected equal number from both sexes.

It is significant that only a very small fraction of older participants had no recollection of a previous blood pressure measurement. It indicates that even in rural areas of Nova Scotia monitoring of blood pressure by physicians is being practised. All the persons we found with elevated blood pressure had previously been made aware of their condition. This is quite different from the findings of Handa *et al.*<sup>2</sup> and Silverberg *et al.*<sup>3</sup>, who reported that 1/3 of their hypertensives were unaware of their status. One can only hope that the education campaigns that went on since the mid-seventies have brought about such a change.

The small number of participants severely limits the use one can make of the index pressure distribution in Table I. Typical standard deviations of blood pressure measurements for 10-year age groups are around 10 mm Hg. This implies that the 95% confidence limits for the mean values shown in Table I are  $\pm 5$  mm Hg. Even with this large a range of uncertainty the data show the expected increase of pressure with age and the lower values of systolic and diastolic pressures for women. The data for the men follow very closely the levels Handa *et al.* reported from New Brunswick.<sup>4</sup> Our data are also compatible with the data of the Canada Health Survey,<sup>5</sup> although the significance of the agreement is limited by our small sample size.

TABLE I

DISTRIBUTION OF SYMBOLIC AND DIASTOLIC BLOOD PRESSURES BY AGE AND SEX, IN A SAMPLE OF NOVA SCOTIANS WHO VISITED THE WHYCOCOMAGH SUMMER FESTIVAL 1985.

AGE GROUP	MEN			WOMEN		
	No. of subjects	systolic	diastolic	No. of subjects	systolic	diastolic
10-19	22	116	60	47	118	62
20-29	21	138	68	15	122	66
30-39	13	129	75	35	120	73
40-49	18	131	80	27	124	76
50-59	15	130	81	9	115	76
60	11	151	85	10	143	75

Continued on page 130.

# Exercise Tolerance Changes in a Cardiac Rehabilitation Program

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Heart disease, because of the cost it exacts in morbidity and mortality, has commanded great interest in the medical sphere and in the popular press for several decades. In recent years, there has been a growing awareness of the need for ways to help patients regain or improve upon their physical capabilities after surviving a cardiac event. In response to this need, the Preventive Medicine Centre at the Halifax YMCA established, in 1981, the Change of Heart Post Cardiac Rehabilitation Program.

This ongoing program is designed to help patients alter their lifestyle and reduce certain cardiac risk factors. In regular evening lectures, participants are informed of such things as the dangers of smoking and the importance of proper nutrition and stress management. Through individually prescribed exercise, they attempt to control their weight and improve their activity level. This paper reports the effectiveness of the program in changing patients exercise tolerance, with conclusions based on a non-controlled comparison of successive stress test results for each participant.

## METHODS

Potential participants are referred to the program by their family physician or their cardiologist. Criteria for admission include a clear history of myocardial infarction three months to one year prior to application. Patients are excluded if they demonstrate evidence of heart failure, uncontrolled hypertension, unstable progressive angina, aneurysm, renal or hepatic failure, or any other severely limiting condition.

Once admitted, participants are given an initial stress test to determine their level of physical capacity. Results of this test are used to devise an individualized exercise prescription, meaning each person is assigned a certain distance to walk or jog, a specified time in which to cover that distance, and a target heart rate to reach in that time. As their conditioning improves so they can cover the distance in less time and at a lower heart rate, the prescription is altered accordingly. Participants are expected to attend two supervised

warm-up and walk/jog sessions per week at the YMCA or Dalplex, and are encouraged to follow the same prescription on their own an additional one to three times per week.

To obtain an objective measure of improved functional capacity, participants undergo exercise tolerance tests, using the Bruce treadmill protocol at designated intervals after admission to the program.<sup>1</sup> On the basis of symptoms experienced or significant ECG changes recorded during the procedures, each test is classified as either negative or positive for ischemia; and is ranked according to the New York Heart Association functional classification (Table I). Furthermore, each performance is quantified in terms of metabolic equivalents or METS. This value is a measure of  $VO_2$  and is equivalent to a multiple of the basal metabolic rate. Figures corresponding to each functional class are given in Table I.

TABLE I

NEW YORK HEART ASSOCIATION  
FUNCTIONAL CLASSIFICATION

Functional Classification	Metabolic Equivalents
I Patients with cardiac disease but no limitation of physical activity. Ordinary activity does not cause undue fatigue, palpitations, dyspnea, or angina.	$\geq 7.0$ METS
II Patients with cardiac disease causing slight limitation of physical activity. Comfortable at rest, but ordinary activity causes symptoms listed above.	$\geq 4.5$ but $< 7.0$ METS
III Marked limitation of physical activity. Comfortable at rest, but less than ordinary physical activity causes symptoms listed above.	$> 2.0$ but $< 4.5$ METS
IV Inability to carry on any activity without discomfort. Symptoms of cardiac insufficiency or of the anginal syndrome may be present even at rest. Any physical activity increases discomfort.	$\leq 2.0$ METS

## RESULTS

Of the 51 patients enrolled as of January 1, 1986, 38 had undergone more than one stress test. This study group consisted of 37 males and one female; ages

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ranged from 37 to 72 years, with a mean of 55.3 years. A total of 121 tests was performed; 39 were classified positive, 38 negative, and 41 non-diagnostic. In 110 tests, the patients were receiving heart medication.

Comparing initial and final stress tests, 26 patients (68.4%) showed no change in functional class level (25 stayed at class I, one stayed at class II); 7 (18.4%) improved; 2 (5.3%) worsened (both from class I to class II); and 3 showed variability (going from I to II to I or the reverse). In terms of METS, however (see Figure 1) 23 patients (60.5%) gained 0.5 to 6.5 METS, 4 (10.5%) lost 1.0 to 3.0 METS, and 11 (28.9%) demonstrated no change.

**Changes in METS as an indicator of gain or loss of functional capacity**

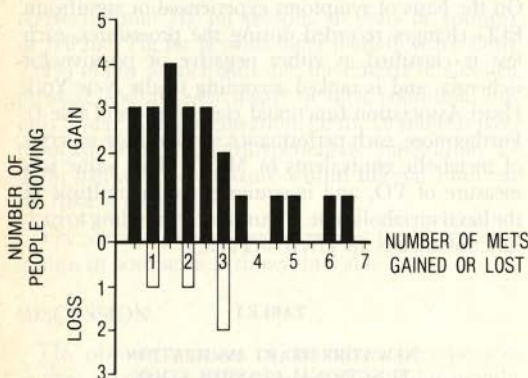


Figure 1

### DISCUSSION

One problem encountered in the evaluation of results was the description of tests as "non-diagnostic". In many instances, this seemed to indicate the test was negative, while in others that results were borderline. To avoid such confusion in the future, it would be useful to classify results as positive, negative, or equivocal.

It has been stated that stress tests are of no value when performed on patients with resting abnormalities when they are receiving cardiac medication.<sup>2</sup> If so, the results of most tests reported here would be questionable. However, it is the belief of the administrators of the Change of Heart Program that patients should be tested under conditions closely resembling normal daily function, which in most cases involves the use of medication.

There is some difficulty inherent in using functional class level as the sole measure of cardiac rehabilitation. In this study, the majority of participants began at level one (the highest level), leaving no room for gain in functional class. By this measure, only 18.4% showed some improvement. However, when using METS as

the indicator, 60.5% showed some improvement. Furthermore, this latter guideline is more sensitive in showing patients with decreased capability; whereas only two patients worsened in terms of functional class, four showed a decrease in METS.

Following the lead of Dr. Terrance Kavanagh's group in Toronto,<sup>3</sup> rehabilitation programs are increasingly common in large Canadian centers. However, since ethical considerations prevent the use of a control group, proper statistical analysis of the results obtained is impossible. This leaves scant evidence in the literature to support their effectiveness in terms of improved functional class or METS. Even so, the results submitted here are encouraging. Eventually, such supervised exercise programs could prove to be an essential component in the management of post-cardiac patients. □

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### A BLOOD PRESSURE SURVEY IN A RURAL NOVA SCOTIA COMMUNITY

Continued from page 128.

Despite all the reservations one has to apply to our data they create quite a positive impression with regard to hypertension control in rural Nova Scotia. It will be interesting to compare them with data that are currently being collected in Halifax County, where the majority of the population lives in an urban setting. □

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# Malignant Hyperthermia: A Review

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## INTRODUCTION

In 1960, Denborough and Lovell recognized unexplained anesthetic deaths in several family members.<sup>1</sup> Since the last review of malignant hyperthermia (MH) in this journal in 1974 many more affected families have been identified.<sup>2</sup> We think that a review of this topic is appropriate as the mortality associated with MH can be reduced from over 60% to less than 10% with early recognition and treatment of the MH crisis.<sup>3</sup>

## CLINICAL FEATURES

The clinical features of malignant hyperthermia reflect a marked increase in both aerobic metabolism with an elevated production of heat, carbon dioxide and lactate. The symptoms may be fulminant or develop more slowly. The syndrome usually occurs during anaesthesia but may rarely be present in the recovery room or without an associated anaesthetic.

Early signs include tachycardia and dysrhythmias (Table I). Masseter spasm or fasciculations in response to suxamethonium may be the initial feature of MH and should always alert the physician to the possibility of an imminent crisis.<sup>4</sup>

TABLE I

### CLINICAL SIGNS OF MH CRISIS:

Tachycardia or Arrhythmias
Unstable blood pressure
Muscle spasm
Hyperthermia
Flushing of skin → cyanosis
Tachypnea

The temperature elevation may be dramatic, rising at a rate of approximately 1 degree Celsius every 5 minutes. Temperatures up to 43°C have been reported but the hyperthermia may not occur until late in the course of the crisis. The peak temperature may occur gradually over several hours or may rise abruptly within 10-15 minutes. MH crises may also occur without fever, but with the other typical clinical and laboratory features.

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Muscle rigidity is seen in about 75% of patients and tends to occur after the onset of the temperature elevation. Muscle permeability to calcium, potassium, sodium, creatine kinase (CK) and myoglobin increases (Table II), and myoglobinuria may result in renal damage.

TABLE II

### LABORATORY ABNORMALITIES DURING MH CRISIS

1. Ca<sup>++</sup> and K<sup>+</sup> (rise early, fall late)
2. Phosphorous, Magnesium, Glucose (rise and remain high)
3. pCO<sub>2</sub> rises, pH falls, lactate rises.
4. End-tidal CO<sub>2</sub> rises
5. Urine myoglobin positive
6. Clotting factors — elevated PT, PTT (late)
7. Elevated CK, LDH, SGOT (late)
8. Elevated Creatinine and BUN (late)

The carbon dioxide tension rises above 100 torr and the arterial blood pH may be less than 7.0. In patients who are breathing spontaneously, marked tachypnea may be noted. The skin may appear warm, mottled and cyanotic.

Late complications can include a depletion of platelets, fibrinogen and other clotting factors. Pulmonary edema and myoglobin induced renal tubular obstruction have also been described.

Autosomal dominant (AD) transmission, is the usual mode of inheritance in MH families although sporadic cases can occur and may be more common than appreciated in the past.<sup>5</sup> The susceptibility to MH may be increased in patients with other myopathic diseases, such as central core myopathy.<sup>6</sup> Adverse anesthetic reactions have also been described in patients with Duchenne Muscular Dystrophy but are usually characterized by bradycardia rather than the more typical tachycardia of MH.<sup>7</sup>

A clinically similar syndrome, the neuroleptic malignant syndrome, has been described in association with major tranquilizers. This syndrome is also characterized by hyperthermia, muscle rigidity and instability of the autonomic nervous system.<sup>8</sup> In contrast to MH, which is due to an intrinsic deficit in the muscle, the neuroleptic malignant syndrome is central or presynaptic in origin, although its management is similar.

The incidence of MH has been estimated to be 1/15,000 anesthetics in children and approximately 1/50,000 adult anesthetics.

## DIAGNOSIS

The diagnosis of malignant hyperthermia susceptibility (MHS) should be sought through a detailed history of anesthetic exposures and reactions in at least two generations. Causes of death in the family should be detailed and may be significant. The patient's anesthetic history may not be helpful as many patients have their first MH crisis during a second or subsequent general anesthetic (GA).

The absence of a clinical phenotype makes the recognition of MH susceptible patients difficult. The physical examination is usually normal, although occasionally an inconspicuous myopathy may be identified.

Laboratory investigations should include measurements of the serum CK. Normal levels are not clinically helpful as at least 30% of MH survivors have CK levels within normal limits following recovery from their crisis. Conversely an elevation of the serum CK may occur in normal individuals following non-specific stimuli such as exercise. In the context of a positive family history of MH, however, an abnormal CK level following a period of rest, usually indicates MHS.

Other biochemical investigations such as abnormalities in platelet function, have been inconsistently able to identify at risk patients.<sup>11 13 14</sup>

The most reliable test which is currently available, is the in-vitro response of skeletal muscle to Halothane and caffeine. MH muscle fibers contract at a lower concentration than normal muscle. The large quantity of muscle required for the test makes it unacceptable for use in young children. The test must be performed within 5 hours of biopsy and therefore older patients must travel outside the Maritimes to centers where this test is available.<sup>15</sup>

## TREATMENT

Anticipatory prevention by the anesthetist must include EKG and temperature monitoring and the immediate availability of intravenous Dantrolene. End-tidal CO<sub>2</sub> monitoring provides the most useful early warning in at-risk patients, who experience a rapid rise in end-tidal CO<sub>2</sub> early in the course of their crisis.

As soon as the diagnosis is suspected, all anesthesia should be discontinued. Patients with the fully developed syndrome require prompt treatment, including hyperventilation with 100% oxygen, intravenous bicarbonate, cooling and diuretics. Dantrolene is the only specific therapeutic agent and appears to have its effect by an indirect action on the sarcoplasmic reticulum.<sup>16</sup> It should be given as soon as the diagnosis is made. The recommended dose is 2.5 mg/kg IV over 10-15 minutes just prior to induction of anesthesia and the same dose for the initial treatment of the MH crisis.<sup>17</sup> It can be repeated every 5-10 minutes to a total dose of 10 mg/kg.<sup>18</sup> The drug should be

continued orally for 24 hours following control. Some patients may require IV Dantrolene infusions for many hours or even days following a serious crisis. The patient's clinical state and laboratory data should be closely monitored in an intensive care unit for several days after the attack as late renal and hematologic complications may occur.<sup>18</sup> When treatment was instituted promptly with Dantrolene the survival rate was 100%.<sup>3</sup> Dantrolene has been associated with hepatotoxicity but this does not occur when the drug is given for less than three weeks.

If susceptibility to MH is recognized prior to anesthesia the patient may be treated with oral Dantrolene, 4-8 mg/Kg/day for 1-2 days before surgery with the last dose being given 2 hours before the anesthesia.<sup>19</sup> Intravenous Dantrolene should be continued in the operating room at a dose of 0.5-1 mg/Kg/hr, preferably by constant infusion.

## ETIOLOGY

The details of the pathogenesis of MH remain unclear. The acute crisis, however, appears to be due to an excessively elevated myoplasmic calcium concentration. The calcium initiates heat-generating mechanisms which include the breakdown of glycogen, uncoupling of oxidative phosphorylation and accelerated hydrolysis of ATP by myosin ATPase. The high myoplasmic calcium also produces muscle contracture. The rise in muscle temperature, together with the fall in muscle ATP concentration perpetuates the contracture.

The defect that underlies the abnormal regulation of intracellular calcium is not known. Several hypotheses have been proposed to explain this biochemical dysfunction; i) defective accumulation of calcium by the mitochondria; ii) abnormal accumulation of calcium by the sarcoplasmic reticulum; iii) passive diffusion of calcium through a fragile sarcolemma; iv) exaggerated adrenergic metabolism; or v) a combination of these factors. Cyclic AMP, which is involved in all of these events has recently been shown to be abnormal in MH.<sup>9</sup> The significance of this finding is not yet known.

The MH crisis is usually precipitated by a general anesthetic. The list of drugs which can initiate a crisis is extensive, although succinylcholine in conjunction with an inhalational anesthetic appears to be the most potent stimulus. It is easier to list, and remember, drugs which are relatively safe for use in anesthesia (Table III). The "safe" drugs include nitrous oxide, barbiturates, benzodiazepines, narcotic analgesics and droperidol. It is recommended that equipment which has never been exposed to the contraindicated inhalational agents should be used while administering a general anesthetic to a patient who is at risk for MH. It is still unclear whether "flushing" the machine with oxygen will remove sufficient drug from the tubing.



TABLE III

## "SAFE" ANESTHETIC DRUGS FOR MH PATIENTS

1. Local Anesthetics:	Procaine, 2-3 Chloroprocaine, Cocaine, Tetracaine
2. Barbiturates:	All
3. Narcotics:	All
4. Sedatives:	Benzodiazepines, Antihistamines, Phenothiazines, Butyrophenones
5. Neuromuscular Blockers:	Pancuronium, Atracurium
6. Ketamine:	
7. Nitrous Oxide:	(probably safe)
8. Sympatholytics:	(eg. Propranolol)
9. Parasympathomimetics:	(eg. Neostigmine, Physostigmine)

Curare may be used with safety for muscle relaxation.

Local anesthesia (LA) with amide anesthetics has been contraindicated because of the ability of this group of drugs to release calcium from the sarcoplasmic reticulum. Ester anesthetics have therefore been preferred. Adragna has recently questioned the validity of this recommendation and states that there are no reported cases of MH caused by Amide LA without epinephrine.<sup>10</sup>

It is known that catecholamines, generated either endogenously (e.g. by stress or exercise) or exogenously by drugs (e.g. epinephrine or sympathomimetics) can precipitate or aggravate a crisis. It should be remembered that even with the use of safe drugs, these patients remain at an increased risk of MH because of the stress of surgery. It is essential, therefore, that physicians who care for these patients should be prepared to treat them appropriately. Ellis has shown that even nitrous oxide may be a weak inducer of MH crisis.<sup>11</sup>

### COUNSELLING FAMILIES

For practical purposes, families should be counselled that the disease is inherited in an AD fashion.

There are two main groups of patients who require counselling regarding MH susceptibility. The first are relatives of patients with recognized MH while the second group are asymptomatic patients who are fortuitously found to have an elevated serum CK.

In both groups the physician should take a detailed family history for two generations including causes of death, exposure to anesthesia, and unusual reactions during anesthesia. A physical examination with primary attention being paid to the musculoskeletal system looking for evidence of a myopathy may occasionally be helpful.

Laboratory investigations should include three measurements of serum CK. If the family is known to contain susceptible individuals, then an elevated CK following a period of rest, should be interpreted as indicating MH susceptibility. Recently it has been reported that the serum CK is of no value in predicting MHS.<sup>20</sup> It may therefore be more appropriate to consider all family members to be MH susceptible. If values for CK are normal, then no conclusion can be reached. For these patients, the choice is a personal one regarding the need for confirmation of their MH status. As noted above, those who wish a muscle biopsy must travel to a centre where such facilities are available. An alternate approach is to assume susceptibility and wear a medical alert bracelet. For these patients, appropriate precautions should be taken for a general anesthesia. In the future, when a reliable and less invasive in-vitro test becomes available, these patients should be reassessed.

### SUMMARY

Malignant hyperthermia is a potentially fatal condition which is usually precipitated by general anesthesia. Its clinical features include cardiac dysfunction, hyperthermia, and muscle rigidity. Awareness of the syndrome, of the "safe" drugs to use and of the appropriate use of Dantrolene can prevent a fatal outcome.

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Continued on page 138.

# Epstein Barr Virus Serological Testing

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Infectious mononucleosis is an illness that usually poses no difficulties in diagnosis. The only laboratory tests needed to confirm this clinical suspicion are a blood film to look for atypical lymphocytes and the Paul-Bunnell-Davidsohn test for heterophile antibodies. This test is considered positive if the sheep or horse erythrocyte agglutination titer is  $> 1:40$  after absorption with guinea pig kidney.

Two new developments necessitate that most practitioners know how to interpret the newer Epstein-Barr virus (EBV) specific serological tests. The first of these is the ready availability of an immunofluorescent test which can measure IgM and IgG antibodies to the EBV capsid antigen; antibodies to diffuse and restricted components of EBV-early antigen; and antibodies to EBV-nuclear antigen. The second development has been studies which show that infectious mononucleosis can "relapse" and that there is indeed chronic EBV infection resulting in a chronic fatigue syndrome.

For these reasons we briefly review the immunology of EBV infections and give guidelines for the interpretation of the specific serological tests.

Epstein-Barr Virus (EBV) is a member of the herpes virus family and like other members of this family, once it infects a host it remains in a latent state in a small number of B lymphocytes for the life of the individual and periodically is excreted in the oropharynx.<sup>1</sup> Control of EBV infection is primarily a function of cell mediated immunity, in the form of suppressor and cytotoxic T-cell activity. Neutralizing antibodies play a supportive role by limiting viremia and the number of B cells infected initially.<sup>2</sup> They cannot, however, stop B cell spread of the virus or prevent transformation of EBV-infected B cells into proliferating immunoglobulin-secreting immortalized cell lines.<sup>1, 2</sup>

However, humoral immunity to EBV provides vital information for diagnostic and research purposes. The mid-1960s saw the advent of EBV-specific serological and virological testing.<sup>3</sup> Readily available now are qualitative and quantitative methods to detect antibody responses to various structurally and virally determined EBV antigens.<sup>3</sup> The order of appearance of these antibodies and the duration of their persistence is shown in the figure.

These tests enable the physician to classify a patient's EBV infection status into one of the following four categories:

1. current primary EBV infection;
2. a persistent EBV infection as seen in those individuals with chronic infectious mononucleosis;
3. a reactivation of EBV infection; or
4. previous EBV infection — not currently active.

**1. Current primary EBV infection** is serologically defined as:

- a) early appearance (in a previously seronegative individual) of circulating antiviral capsid antigen (anti-VCA) IgM and its subsequent decrease to non-detectable levels.
- b) subsequent increase of anti-VCA IgG antibody, which in some cases may continue increasing and persists for life.
- c) a transient increase in early antigen (EA) — anti-D (diffuse early antigen) occurs in 80%.
- d) the absence of Epstein-Barr nuclear antibody (EBNA) during the acute infection, its increase weeks to months later and its persistence for life. A majority ( $>90\%$ ) of patients with acute infectious mononucleosis develop IgM heterophil agglutinins of the Paul Bunnell-Davidsohn type — a highly specific marker.

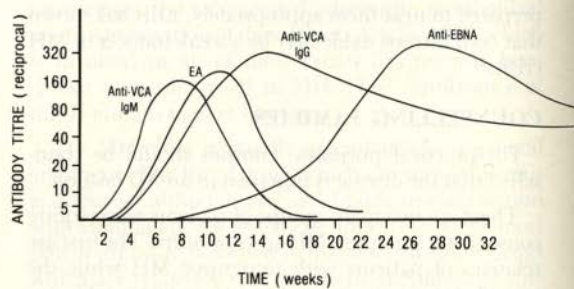


Fig. 1. Time course of antibodies to Epstein-Barr virus antigens.

Anti-VCA IgM:— IgM antibody to the viral capsid antigen

Anti-VCA IgG:— IgG antibody to the viral capsid antigen

Anti-EBNA — antibody to the Epstein-Barr virus nuclear antigen

EA — antibody to early antigen. In uncomplicated infectious mononucleosis this is usually antibody to the diffuse component of the early antigen — see text.

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**TABLE I**  
**TYPICAL SEROLOGICAL RESPONSES:**  
**FOUR CATEGORIES OF EPSTEIN-BARR VIRUS INFECTION**

	Anti VCA IgM	Anti VCA IgG	Anti EBNA	Antibodies to* Anti D Anti R
A. Current Primary EBV infection (acute infectious)	1.>1:5 (positive)  2.<1:5 (negative)	<1:5  >1:5**	<1:5  <1:5	
B. Persistent EBV infection	1.<1:5 (negative) 2.<1:5 (negative)	>1:5  >1:5120 (very high)	>1:5  <1:5	>1:320 (persistently)
C. Reactivation of infection	<1:5 (negative)	>1:5**	>1:5	<1:5** <1:5
D. Long past EBV infection (inactive)	<1:5 (negative)	>1:5 e.g. 1:160 and unchanged in the convalescent sample	>1:5 e.g. 1:80	

\*Currently available only at the National EBV Reference Center

\*\*Usually a four fold or greater increase between the acute and convalescent samples is demonstrable

**2. Persistent EBV infection** may be recognized by:

- a) persistence of antibodies to early antigen (EA) particularly the anti-R (restricted early antigen component) which tends to appear after the anti-D component titres have decreased.<sup>4</sup>
- b) normal serological progression of anti VCA IgM and IgG.
- c) failure of development of anti-EBNA in those with deficient immunity to EBV as those described by Purtillo with the X-linked lymphoproliferative disorder (XLP)<sup>5</sup> or a fall in anti-EBNA titers in patients who become immunologically compromised.<sup>5-7</sup>

**3. Reactivation of previous EBV infection** is shown by:

- a) absence of anti-VCA IgM
- b) a fourfold, or greater rise in pre-existing anti VCA IgG
- c) return of anti EBV-EA IgG titers
- d) presence of pre-existing anti-EBNA titer

**4. A long-past EBV infection** is identified by:

- a) absence of anti-VCA IgG titer
- b) unchanging anti-VCA IgG titer
- c) absence of anti-EA
- d) presence of an unchanging anti EBNA titer

Examples of these serological responses are given in Table I.

The EBV specific serological tests should not be used as first line diagnostic tests for infectious mononucleosis, instead they should be used in these situations:

1. Clinical diagnosis of infectious mononucleosis but Paul-Bunnell-Davidsohn test is negative.
2. Diagnosis of infectious mononucleosis in the immunocompromised host.
3. Evaluation of chronic fatigue syndromes.
4. Diagnosis of reactivation of infectious mononucleosis. □

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# Timing of Obstetric Ultrasonography — Update 1986

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In recent years, obstetric ultrasonography has become widely available in Nova Scotia. Although this examination is not considered "routine", a large majority of patients will have one or more ultrasonographic examinations during the course of their pregnancy.

The purpose of this paper is to examine some aspects of optimal timing of ultrasonographic examinations as a base-line and for specific problems. A five year survey (1980 to 1984) of 122 pregnancies in Nova Scotia with proven neural tube defects, and review of experience in the Department of Diagnostic Imaging at the Grace Maternity Hospital from 1974 to 1986 form the basis of many of the recommendations. In the 122 pregnancies with neural tube defects, 49 patients (40%) had no prenatal ultrasound examination.<sup>1</sup> Recently there has been an increasing trend towards obtaining at least one ultrasound examination in most pregnancies.

Indications for obstetric ultrasonography at certain stages in gestation can be identified as follows:

## IN EARLY PREGNANCY (first trimester)

- i) Is the patient pregnant?
- ii) Is the gestation intrauterine or extrauterine, single or multiple? Is the embryo alive? An early pregnancy with bleeding, pain, previous history of ectopic pregnancy or multiple pregnancy, presence of known abnormality in the uterus, or in the pelvis, recurrent miscarriage, presence of an IUD and suspected pregnancy and possible molar pregnancy may warrant ultrasonographic examination.
- iii) Uncertain dates: Ultrasonographic measurement of the embryo in early pregnancy (crown-rump length) or of the bi-parietal diameter at approximately 12 weeks gives an accurate ultrasonographic dating of gestation, since the standard deviations of the mean measurement are the smallest at this stage compared with any later time in pregnancy. However, after 12 weeks a number of specific fetal parts can be identified and measured, hence an aggregate of a number of morphometric results will provide reliable evidence for dating purposes in a healthy fetus.

If the morphometric pattern is aberrant, this will be a cause of concern for the health of the fetus.

## AT 16 TO 20 WEEKS GESTATION

Ultrasonographic examination at this stage of development will demonstrate clearly the fetal skull and brain, spine, limbs, heart, stomach, kidneys, and usually the urinary bladder. Fetal movement, cardiac rate and rhythm can be documented. Some particular aspects of fetal assessment at this stage can be identified and certain specific "caveats" may apply:

**In the central nervous system:** Anencephaly is virtually always recognizable at 16 weeks. Iniencephaly also should be regularly recognized at 16 weeks. Spina bifida may or may not be evident at 16 weeks, but will be shown more reliably at 18 to 20 weeks.<sup>2</sup> Encephalocele is usually demonstrable at 16 to 18 weeks. Hydrocephalus is often a progressive condition and may not be evident at 16 to 20 weeks unless it is early and severe. Dandy-Walker cyst in the posterior fossa may be identifiable at this stage.

**In the urogenital system:** Potter syndrome with an empty urinary bladder, absence of normal kidneys combined with oligohydramnios can be regularly diagnosed ultrasonographically.

Conditions which produce fetal oliguria such as infantile polycystic disease are less easy to recognize, though in this condition the fetal kidneys may triple their size between 20 and 22 weeks gestation.<sup>3</sup>

Extreme forms of megacystis, megaureter, and hydronephrosis are usually recognizable at 16 to 18 weeks gestation. However less severe forms of hydronephrosis may only become manifest later in pregnancy when there is increasing urinary output. Multicystic kidney is usually recognizable at 16 to 18 weeks.

**Hydrometrocolpos** and variations, ovarian cyst, and urinary ascites may be identifiable at 16 to 18 weeks.

**Abdominal conditions** — Omphalocele has been repeatedly identified ultrasonographically at 16 to 18 weeks. The pentalogy of Cantrell with protrusion of the heart, and liver, and also true ectopia cordis have been recognized at 16 to 18 weeks. Gastroschisis has been more difficult to identify. Gastro-intestinal obstruction such as duodenal atresia, and small bowel obstruction may not be identifiable at this stage, but become progressively more manifest later in pregnancy and are often accompanied by polyhydramnios.

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In the chest, diaphragmatic hernia, and cystic adenomatoid malformation of the lung have been identified although these lesions tend to enlarge and become more easily demonstrable later in gestation.

**Fluid collections**, hydrops fetalis, cystic hygroma and the features of fetal Turner syndrome can be identified. Ascites as an isolated manifestation of specific disorders (e.g. storage diseases) has also been identified.

**In the musculo-skeletal system:** — certain forms of short-limbed dwarfism may be manifest at 16 to 18 weeks but in large measure, the demonstration of such limb and trunk anomalies require adequate amounts of amniotic fluid to act as a background for ultrasonographic visualization. Osteogenesis imperfecta Type II, arthrogryposis and joint contractures are potentially identifiable.

**Miscellaneous conditions** — goiter, and teratoma of the neck, sacrococcygeal teratoma and multiple gross malformations may be identifiable at this stage or later.

**Morphometric assessment:** At 16 to 18 weeks, reliable morphometric assessment can be made of the fetal head, trunk, and long bones of the extremities. Often this is extremely valuable as a baseline for management of events later in pregnancy. In particular, baseline morphometric assessment at this stage is most valuable in multiple pregnancy, and in intrauterine growth retardation from any cause.

**Abnormality of the umbilical cord and membranes** (e.g. amniotic bands) may be identifiable at this stage.

**Oligohydramnios, polyhydramnios** and their causes may be identified at this stage of gestation.

**Location of the placenta** is easy at this stage although it is by no means final, since differential growth of the myometrium forming the upper and lower segments may cause the placenta to "migrate" in a cephalad direction as gestation advances.

#### AT 22 TO 40 WEEKS GESTATION

Ultrasonographic examination at this stage of pregnancy is best performed for a specific indication. Such indications will depend on the individual pregnancy, e.g. suspected intrauterine growth retardation, or because of a specific problem for which the patient may be at risk. When such problems are identified, additional techniques such as Doppler studies, e.g. for circulatory studies in the fetus, umbilical cord, placenta, fetal cardiac abnormalities, possible twin-to-twin transfusion, and amniocentesis for chromosome studies may be indicated. This field of Doppler studies is developing and shows promise.

#### SUMMARY

When obstetric ultrasonography is considered in any individual pregnancy, the following guidelines regarding optimal timing of the examination are suggested:

1. For confirming pregnancy, its location and a live embryo; for bleeding, pain, suspected ectopic pregnancy, abortion, molar pregnancy and associated gynecologic conditions; for early dating of the gestation — examination at 6 - 12 weeks is optimal.
2. Regarding baseline measurements of the embryo or fetus for dating the gestation, these are best obtained prior to 18 weeks, since aberrant growth patterns become increasingly common after this stage. If the examination for baseline assessment is to be restricted to one examination only, then at 16 - 18 weeks would be optimal.
3. Major structural abnormalities can be identified at 16 - 18 weeks. If the patient is at risk for a known condition, e.g. neural tube defect, this should be specifically looked for on one or more occasions in this period, when consideration for altering the management of the pregnancy may be appropriate. Amniocentesis and other investigations may be indicated at this stage.

If the examination at 16 - 18 weeks shows absence of an expected finding normally seen at this stage, e.g. urine-filled bladder, or reveals suspicion of abnormality eg. oligohydramnios, then this aspect should be re-examined within 2 weeks. There is a growing number of instances in which unsuspected abnormalities have been detected by ultrasonography at this stage of gestation. Both families and physicians are usually unprepared for these unexpected findings. This is indeed an unsettling situation and is presently managed on an individual basis. There is a growing body of experience in the Prenatal Diagnosis Clinic\* which is available to all physicians in the province.

4. After 22 weeks: ultrasonography should be performed as indicated in the individual pregnancy.
5. At any stage in pregnancy, ultrasonography is an extremely accurate method of documenting a live fetus. Also ultrasonography will demonstrate a normal or abnormal cardiac rate and rhythm in the second and third trimester. This aspect is particularly valuable in multiple pregnancy, where other methods of monitoring may be less reliable.
6. Special ultrasonographic techniques, e.g. Doppler studies are being developed and may reveal new information in certain disorders.

The safety of diagnostic ultrasonography should be addressed. This form of energy has been in active

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clinical use in obstetrics for the last 25 years. The early embryo is the most sensitive human tissue, but to date no harmful effect in the human fetus, child or adult due to exposure to diagnostic ultrasonography in clinical medicine has been reported. This is a remarkable safety record.<sup>4</sup> In Nova Scotia, radiologists use equipment with a pulsed ultrasonic beam calibrated to be in accordance with the standards of the American Institute of Ultrasound in Medicine. The question of long-term biologic effects on populations exposed to diagnostic levels of pulsed ultrasound cannot yet be answered. In view of their experience with ionizing radiation, radiologists are well aware of possible unforeseen effects of newer forms of energy in diagnostic medicine.<sup>5</sup> Low-level time-dose energies used in diagnostic ultrasonography have shown no ill-effects to date; however one generation has not yet passed.

There is an increasing trend towards obtaining diagnostic ultrasonography in pregnancy, since the findings at certain stages may provide more informed management.

The guide-lines described are based on the principle that obstetric ultrasonography in Nova Scotia is not performed as a routine but as an indicated examination tailored to the individual patient. May it remain so! □

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#### MALIGNANT HYPERTHERMIA: A Review

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#### COFFIN NAILS

It is time for governments to turn smokers into pariahs, by making smoking something that has to be done in private. The legislators have only to treat smoking as they treat sex, usually a far healthier pastime. While there are people who will pay to watch others indulge in the latter, it seems unlikely that anyone will pay to watch tobacco being burnt.

Editorial, *New Scientist*  
January 16, 1986

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# The Extramural Hospital

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In fourth year of medical school the option of elective study allows for an opportunity to pursue a specific area of interest. Many choose to visit locations outside of Halifax to obtain a new perspective within the area they wish to study. My choice in December was to visit New Zealand and become acquainted with a home care system — the Extramural Hospital, in the city of Auckland. In cooperation with the University of Auckland I became the first overseas elective student to work in the E.M.H.

The phrase 'extramural' (meaning "beyond walls") has been applied to an administrative network which provides hospital and ancillary care in the homes of 850,000 people within the city of Auckland. Specifically, through the existence of EMH, nurses, physiotherapists, speech therapists, social workers, occupational therapists, podiatrists, dieticians, meals-on-wheels and home aids, are available to approximately 6,000 of the city's residents at one time. These services provide for two purposes — first, to prevent unnecessary acute hospitalization and secondly, to allow for early discharge from acute care beds.

The inspiration for this elaborate system can be traced to 1960 when the New Zealand Board of Health issued a report on outpatient services. In this report, hospital boards were encouraged to expand their services by reaching into the community. It was felt that by assisting family doctors and existing agencies to become more active in the prevention of disease and the maintenance of good health, this would limit the demand for more hospital beds. In 1964 the Auckland Hospital Board formally established the Extramural Hospital in response to this suggestion.

The EMH follows the administrative structure of any public hospital in New Zealand — it has a medical superintendent (a medical doctor), a manager and a principal nurse. Additionally each discipline composing EMH has its own department head with supervisory and research roles therein. Within this city of 2,000 square miles services are extended through four unit stations offering daily, weekly or monthly health care maintenance.

By the nature of its very existence, the hospital's structure functions on the team approach. Patients are admitted to EMH through a family physician's referral. This physician assumes the role of the team

leader and initiates or terminates services as are required. All departments providing services to a particular patient are encouraged to communicate on a regular basis with the family physician to best assess continuing care. Extramural services are delivered to homebound patients and are not meant to substitute for ambulatory care offered in the family physician's surgery (ie. office). This is particularly emphasized as EMH services are provided free of charge while visits to the family physician are only partially subsidized and require a user-pay charge. The budget for EMH is provided by the Auckland Hospital Board which entails a maintenance budget of \$8.5 million and a capital budget of \$240,000.

Over 500 individuals are employed with EMH, the greatest proportion of which are nurses. As well, a large number of people are employed through home aid schemes, that is, provision of homemaker aids, meals-on-wheels, linen services, long term wheel chair loans and nutritional guidance. There is only one medical doctor employed directly by EMH. Clerical staff total 80 with the remainder chiefly paramedical staff.

EMH and its administration play an important role in many health-related agencies. While an elective student I was acquainted with several of these interests. St. Joseph's unit in Mater Hospital composes 12 acute beds for terminally-ill. Sutherland unit is an eighty-bed facility for young physically disabled requiring acute medical attention. These interests are maintained in order to assure continuity of care to the patients upon discharge into the community. I also had the pleasure of a barbeque supper on December 18 with the Auckland Stroke Club — a social gathering of stroke victims and their spouses organized and carried out by two speech therapists!

I was also able to visit many homes with district nurses providing EMH care. Services included: suture removal, post-discharge maternity care, dressing changes on post-surgical patients, blood glucose monitoring of newly diagnosed diabetics, supportive care to terminally-ill patients and their family and services for the elderly.

From the family practitioner's perspective, one person stressed how EMH services had helped him to expand the scope of his practice. He reported that EMH services have allowed him to conduct initial assessment and at times subsequent management of chest pain, stroke or minor injuries in the home, under his direction. He believes EMH services have dram-

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atically reduced the number of medical hospitalizations in his greater-than-average-sized family practice. Unfortunately, Auckland Hospital Board has not the compilation of its statistics available to confirm this fact or EMH's cost effectiveness. However, it was calculated that if a petrol (gasoline) strike occurred the suspension of EMH services would necessitate an additional 700 hospital beds at the end of one week!

One aspect of the effect of increased emphasis of home care, rather than acute hospital admission, can be recognized on home visitations. People are generally very content to remain at home obtaining medical and supportive care rather than go to hospital. Day surgery, for example has grown to a greater magnitude in this city as has an acceptance of this practice. Maternity patients rarely exceed two days of hospitalization despite the availability of seven days postpartum care as funded through the New Zealand Health Plan. The home was indeed the place of convalescence. I am well aware of several services in our own province which emphasize home care as an alternative to hospitalization. The program that I became involved in offered this and more and with the full financial back-up of the Auckland Hospital Board. One quickly recognizes the Hospital Board's Strategic Plan endorses a high priority to these services with an expected growth of 20% projected over the next 10 years.

As a future family physician in Atlantic Canada, I cannot help but feel encouraged by the experience of this elective. It is my personal and professional conviction that the family unit must assume a more active role in the management of illness in one of its members. This requires establishment of priorities in order to ensure the support of allied health professionals within the context of the patient's own home. Whether we speak of the post-surgical or terminally-ill patient the reality is the entire family unit is affected by this patient. To remove illness completely from the home is not compatible with recognition of this fact. When we anticipate funding restraints and other future projects we must not fail to recognize the resources of the home environment.

This elective has provided me great food for thought and I feel I will be influenced by this experience in my future practice. I thoroughly enjoyed the hospitality of the EMH staff and the endless hours of discussion they provided. Specifically I wish to thank the Medical Superintendent, Dr. Alec Warren for his generous cooperation in making this elective possible with the full support of Dr. Franklin White, Department of Community Health and Epidemiology at Dalhousie University.

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### WORKSHOP: AIDS A PUBLIC HEALTH DILEMMA

The Public Health Association of Nova Scotia will sponsor a one day workshop for professionals and interested individuals who wish to learn about AIDS and its public health implications. "AIDS: A Public Health Dilemma", will be held in:

**Yarmouth** — October 21, 1986, 9:00 a.m. - 3:15 p.m. at the Yarmouth Regional Hospital.

**Sydney** — October 24, 1986, 9:00 a.m. - 3:15 p.m. at the Cape Breton Adult Vocational Training Centre.

**Truro** — October 30, 1986, 9:00 a.m. - 3:15 p.m. at the Best Western-Glengarry Motel.

The fee, payable at the door, is \$20.00 for PHANS members or \$25.00 for non-members.

For more information contact the N.S. Department Health Office in Yarmouth, Sydney, Truro or Janet Braunstein 424-4443.

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# Medical Ethics and Ethics Committees

Arthur H. Parsons,\* B.Sc., M.D.,

*Halifax, N.S.*

Morality determines whether something is worth doing or worthy of being done. Ethics determines how something worth doing is to be done right. A code of ethics must describe a philosophical approach to these difficult problems and define the principles which individuals can use to find their own solutions.

In actuality ethics is really a systematic attempt to avoid taking anyone or anything for granted. In our society we face the perpetual issue of how to simultaneously advance the common good and the good of the individual. Our problem revolves around the fact that we live in a morally pluristic society and want that society to remain democratic. How do we maintain the coherence of our community when moral consensus on fundamental issues is beyond our reach?

How do we differentiate right from wrong? Some people prefer not to think about the difference but accept the standards of sources outside themselves. They do not trust the idea that those seeking the truth need not appeal to authority. Thoroughly lacking confidence in the creative moral power of their intelligence to determine right from wrong, these people turn to the law, convention or custom, public opinion, simple spontaneous reactions, or authoritative statements of either religious, ecclesiastic or professional nature.

Others, of a quite different ilk, also find little need for dialogue in ethics. I refer to one-principle persons. They are usually consistent and very sure of what is right. Unfortunately, one-principle persons may know little about bridge building. And that is what ethics is — the art of building bridges between the ideal and real worlds, between what should be done and what can be done.

The root of ethics lies neither in sentences, propositions or judgements but in the dynamic structure of rational self consciousness. Ethics is a function of intelligence. Its true essence is not based upon some code or product of human intelligence, but rather on the same process of asking the right questions that generate good science. When we apply this process to ourselves, to our motives, decisions and actions, we are being rationally self conscious and are acting responsibly.

Because of their special knowledge and the vulnerability of their patients, members of the medical

profession have traditionally been regarded as particularly trustworthy and responsible by the public. From the profession, therefore, society expects high standards, not only of scientific education and clinical skills, but also for professional and humane conduct.

In the earliest civilizations medical practitioners were paid or punished by their results. In Babylon, Hamurabi separated civil from priestly jurisdiction, and in his "code of laws" (1790 BC) regulated the fees of physicians who were at that time still priests, and not yet distinguished from surgeons. For successful treatments, physicians were paid in proportion to the patient's status; but if an operation was fatal, the physician's hands were cut off. There was a scale however, and if the patient was a slave his replacement would suffice. These early laws were harsh but they demonstrate how, from the beginning, organized society has felt the need to regulate the rights and duties of physicians. Regulation of professional standards, not by the state but by the profession itself, can be traced to at least as far as the "Hippocratic Oath" (4th century BC). This oath was a covenant between the physician and his teacher which set out an ideal by which he promised to practice.

Greek philosophy provided intellectual foundations not only for medicine, but for the church. At the beginning of the Christian era, when medical opinion was hardened against suicide and abortion, and surgery was separated from medical practice, the Hippocratic Oath gained a general acceptance. In mediaeval Christian Europe, the spirit of Pre-Christian medical humanism, with its emphasis on human brotherhood, still provided general guidelines for the conduct of physicians. Alongside these flourished the equally ancient traditions of etiquette, medical manners, and professional deportment — factors which have always helped the physician to establish his patient's confidence.

Modern medical ethics emerged towards the end of the 18th century. The aspirations of the middle classes were undermining the aristocratic order, and with it came the tripartite establishment of physicians, surgeons, and apothecaries. New voluntary hospitals not only raised public expectations but showed how far provision fell short of need, particularly during epidemics.

The British Medical Association was formed in 1832 and appointed a committee on medical ethics in 1849. Two years later, following reports by its Committee on Quackery, a committee was appointed

\*Chairman, Committee on Ethics, The Canadian Medical Association, Ottawa, Ontario.

to frame a code of ethical laws. The present Code of Ethics of the Canadian Medical Association was adopted in 1968. It is constantly reviewed and amended by the Committee on Ethics of the Association, as technology and social changes dictate. The committee consists of five physicians from across the country and has two permanent consultants, an ethicist and a lawyer plus several observers who take part in the deliberations.

In the 20th century, wartime experiences have marked a certain loss of innocence and idealism, while scientific progress has created new moral dilemmas in medicine and intensified old ones. Contemporary medical ethics, while retaining some of the etiquette of an earlier era, is faced with new and evermore complex problems to which the past offers no solutions.

While once the critical controversies in medical ethics dealt with personal problems faced by patients or health professionals, the ethics of medicine must now be essentially social. The central and controversial issues involve complex social, political, and economic relationships and increasing lay involvement in medical — ethical decision making. Society is groping for new mechanisms for making decisions that are now much more complex than those traditionally faced by patients, providers, families, and society as a whole.

Although ethics has always had a role in the practice of medicine, only in recent years has it become a subject of intense controversy. This is because of forces both internal and external to medicine. The external causes are: the rise of public concern about the behavior of all professionals; intensified media attention, particularly when the media are drawn to situations of conflict and controversy; and the sheer size and scope of the health care system heavily supported by public funds.

The internal reasons seem to be no less evident; primarily a number of medical and technological breakthroughs have created new moral dilemmas. Had there been no external pressures at all, it is still likely that the internal pressures resulting from rapid technological developments would themselves have created sufficient impetus for a renewed interest in biomedical ethics. Although it might casually be assumed that, for moral purposes the traditional goals of medical care can remain unquestioned, this would be a naive assumption. Moral problems eventually force a confrontation with goals.

How has biomedical ethics progressed and responded during the last decade? Some writers have espoused a radical "situation ethics" or rejection of fixed moral rules and principles. In deciding if a defective neonate should be allowed to die, for example, we should be bound by no hard and fast rules; context and consequences of each specific case alone should be decisive.

In contrast others have emphasized the importance of "firm moral rules". Here we are urged to adhere to the traditional medical and religious moral principles.

Additionally, we have the works represented by those who have tried to find a "different language" with which to talk about ethics and a different way of framing issues. This particular development has had two important consequences: an excessive emphasis on the language of individual rights, and a blurring of the distinction between law and morality. Here we have the development and overuse of the language of "rights". This is a language very congenial to the courts and to the political process. It focuses for the most part on individuals, rather than on society as a whole or on the welfare of an entire community. Terms such as "the public interest" or "the common good" do not seem to have a political "bite" equal to that of claims to individual entitlement. Perhaps one of the most harmful fruits of a permissive society dominated by the language of individual rights is that it is very difficult for a large number of people in our society to make any sharp distinction between the different demands of law and morality. It is far easier simply to talk about the rights of individuals to make their own decisions or about the establishment of public procedures to adjudicate among contending values and interests, than it is to talk about what individuals ought to do when they make their own personal moral choices.

Many in our society now hopelessly confuse the different demands of law and morality, and it is imperative that the differences between them be sorted out once again. If personal morality comes down to nothing more than the exercise of free choice, with no principles available for moral judgement of the quality of those choices, then law will inevitably be used to fill the resulting moral vacuum.

When there is competition for medical resources or conflict between individuals and what they feel is their right in the medical care system, the medical profession often finds itself caught in the middle acting as a referee and, in some cases, decision maker. Doctors as a group could represent all the diverse points of view in our morally pluristic society and in similar situations different approaches to the same problem may be used. There is more to morality however than walking a tight rope between professional codes of ethics and bills of patients' rights. On one hand it is unrealistic to suppose that legal and/or professional codes of ethics can "pinch hit" for personal moral integrity. On the other hand if the physician is already a person of high moral integrity, wherein lies the need for codification of moral principles at all?

Rights are social and relational. Individual freedom is a social reality. Individual rights are rooted in a social reality that antedates them and gives them meaning. Each of us can exercise rights in a

meaningful way only so long as these rights are recognized and respected by others. There are no individual rights outside a social ambience. This social dimension is not a human creation constituted by choice for the convenience of individuals nor is it merely an aggregate of individuals. Sociality is a natural, inalienable state of affairs. We are social by nature, not by choice, and rights are a natural extension of our society. Any morality that treats individuals as autonomous units is incoherent. Not only are rights social in origin, it is the institution and roles of social rights that give to individual rights their purpose and completeness. Without our social framework rights are empty formalisms, lacking in an historical or political meaning.

The choice between individual rights and social obligations is not one between conflicting alternatives but between complimentary decisions. Neither makes sense without the other. If the social ethos of rights is neglected, moral disputes will continue to be antagonistic challenges for individual superiority.

Codes of ethics have been adopted by physicians to control relationships with other physicians and have been promulgated by governments to regulate the relations of physicians with society at large, but seldom have these codes articulated major philosophical principles or tenets.

Codes such as the CMA Code of Ethics and the Hippocratic Oath serve a useful function in ethics similar to that of a number of equally useful rules in medical practice such as "treat high fever with aspirin". But, relying solely on such rules without understanding the nature of its problem in depth is like practicing black box medicine; "if the liquid in the little glass rod moves past 37°C then give the patient the pill marked A". It results in a superficial treatment just as relying on ethical codes results in shallow ethics.

Good medical ethics must be developed slowly. The principles of autonomy, dignity, justice and partnership must be found a place. Good medical ethics must provide for a weighing of the interests of the group as well as and sometimes against the interests of the individual.

The principle of a patient-centered ethic will have to be placed in the context of a number of other contemporary moral principles and social reality. Is it desirable to elevate any single moral principle to a position of overriding importance? It should be asked whether the very idea of a single value morality can be adequate for a fully balanced professional ethic. In medicine many physicians must now serve legitimate interests and values in addition to those of individual patient's welfare. Those in the field of public health are charged with the welfare of whole groups of individuals, as are those who serve in administrative roles. Even the physician in private practice must consider, on occasion, the welfare of the family, and not necessarily only that of a single patient

in that family. Difficult decisions of allocations of resources sometimes must be made. There are in fact many imaginable circumstances in which a physician's duty to the public, to a family, or to a valuable policy could take precedence over obligation to an individual patient. None of this is to deny the value of a patient-centered ethic. But can it always be the inevitably superior value? Eventually, only a deeper analysis of the relation between the good of individuals and the good of communities will be helpful.

Ethics must be taught in the schools of the health professions. For, if prior to confronting situations the health care professional has been introduced to the rigors of ethical analysis and has been assisted in untangling competing and conflicting claims, the practitioner will be that much more prepared to deal with the situation when it arises.

The doctor has to make ethical decisions in many such situations. We need no longer feel that we must make the decision alone and unaided. Equally, we may no longer substitute our own idiosyncratic sense of right, if by doing so we offend against that which the wider society has indicated as its rights.

Ethics committees should be able to provide a useful perspective as a resource for physicians, relatives and others. A multi-disciplinary approach is recommended so that the committee will have sufficient expertise to apply and evaluate all pertinent information, and because representation of viewpoints from the community is desirable to contribute to better decisions. An ethics committee should be large enough to represent diversity, but not so large as to hinder candid discussions and deliberations.

Ethics committees can study issues and provide guidelines. These guidelines are not slide rules that make decisions. They are less than that. However they do allow a communication within a profession and between different professions. They can serve as a consciousness-raising stimulus for the individual member. Perhaps one of the greatest sins of a health care professional is the failure to recognize an ethical problem that exists. Knowledge is not lost by giving it to someone, as happens with other commodities. The recipient gains and you lose nothing.

A common allegation against formal ethical analysis is that little, if any, progress is ever made in the field; nothing gets decided and disputes are endless. But that allegation makes sense only if one expects a clean-cut, decisive resolution of ethical conflicts here and now, with one side accepting the arguments of another side or one view becoming so rationally persuasive that all instantly adopt it. That happens infrequently. Nevertheless, if the past decade has made anything clear, it is that a number of ethical disputes have been resolved, although in ways that can best be seen only retrospectively. In short, life does not stand still in ethics any more than anywhere else. The experience of the past decade should indicate that the question

is not whether ethical conflicts get resolved or ethical questions answered, but how well they get resolved and how good the consequential answers are.

The next round of ethical problems may be far more resistant to practical consensus than those that captured attention during the past decade. They will

be resistant precisely because they will force much more directly a grappling with theoretical issues of morality and medicine, and they will, more than ever, reveal the shortcomings of the language of "rights", of individualism, and of merely procedural solutions to problems of deep principle. □

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## Current Topics in Community Health

Prepared by: Dr. Frank M.M. White,  
Department of Community Health and Epidemiology  
Dalhousie University, Halifax, N.S.

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### PSYCHIATRIC EPIDEMIOLOGY: AN IDEA WHOSE TIME HAS COME

A workshop held in Halifax April 29 and 30, 1985 reflects the growing interest of psychiatrists in epidemiology. Co-sponsored by the Departments of Psychiatry and Community Health and Epidemiology at Dalhousie, its participants included representatives from academia, clinical practice and government, with shared interest in the applicability of epidemiological research to their own endeavors. The workshop was envisaged as having three primary goals: to articulate a development plan for the future application of epidemiology to the study of mental illnesses and related services in the Maritimes; to identify ways and means of sustaining Dalhousie University as a centre of excellence in Psychiatric Epidemiology; and, in particular, to identify and encourage developments in this field which will be clinically and policy relevant for the Maritime Provinces.

Organized as a series of presentations punctuated by whole group discussions, the workshop addressed a wide variety of topics. Overviews on the role of epidemiology in etiologic studies, health services research, and clinical epidemiology; the interdisciplinary approach to psychiatric epidemiology; the role of epidemiology in psychiatric training and practice; provincial and municipal perspectives on the uses of epidemiology, including those epidemiological principles and practices of relevance to government planning; and (not to be ignored), sources of funding for epidemiological research were among the major areas of discussion.

It was clear by the second day of discussion that among the participants, there was widespread agreement on the importance of epidemiology but also a growing appreciation of the potential scope of

epidemiological research and its complexity. The heterogenous composition of the group was reflected in the comments made during the discussion periods. Whereas those participants who were primarily involved in research emphasized the increasingly sophisticated methodology, policy makers while cognizant of the value of careful longitudinal study require, in the words of one government epidemiologist, "quick and dirty" results from studies of service delivery needs and program evaluation. The need for heightened awareness of epidemiology by clinicians was emphasized by Dr. Alistair Munro, Head of the Department of Psychiatry, Dalhousie. More effective interchange of information between epidemiologists and clinicians should result in a better allocation of clinician resources. Repeatedly, past studies have shown that only a small percentage of those people recognized as having clinically significant mental illnesses ever see a mental health specialist.

Epidemiologists may be able to direct clinicians to that segment of the ill population most in need of their specialized services. Dr. Munro also commented on the potential for developing a resource centre at Dalhousie for epidemiological investigation. The Atlantic Region offers a relatively stable population for study. The type of research conducted by epidemiologists is also more suitable to a smaller university centre as it requires people resources more than it does high tech equipment.

Although the ambitious goals of the workshop were not met in their entirety, the level of interest of the participants suggested that further efforts were certainly worthwhile. Clinicians, investigators and administrators all felt that they could benefit from the establishment of an epidemiological resource centre. A recommendation that a steering committee be established has been implemented and this group is

currently composing a timetable for further meetings and seeking submissions from the various interest groups regarding their specific positions and needs. An Atlantic inventory of interested persons, their research interests, and publications is being compiled. Hopefully, this marks the beginning of a major role for psychiatric epidemiology in Atlantic Canada.

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**Source:** Dr. Pam Forsythe, Secretary, Atlantic Psychiatric Epidemiology Working Group, Dalhousie University.

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## THE USE AND ABUSE OF INCIDENCE AND PREVALENCE RATES

Incidence and prevalence rates are probably the two most frequently misused epidemiological concepts in medical and health publications and discussion. Their correct usage is important if we accept the premise that to communicate accurately and effectively, one should use the right term at the right time. These are two quite distinct terms with their own precise meanings and should not be used interchangeably. Acceptable definitions are presented below.

### Incidence Rate

An *incidence rate* of a disease, disorder or other biological abnormality is a measure of the frequency of *new* cases or events in a particular population during a specified period of time. This is usually expressed as the number of cases per population unit per specified period of time, and may be expressed as age- or sex-specific, or as specific for any other characteristic of the population.

Incidence rates which are calculated for narrowly defined populations during short intervals of time, as in epidemics, are often called *attack rates*. *Attack rates* are usually expressed as a percentage. A *secondary attack rate* is the incidence of a disease among family, institutional, or other contacts whose population is definable within the accepted incubation period following exposure to a primary case, and is used only in reference to communicable diseases. The *case rate* expresses the incidence of clinically recognized cases, while *infection rate* refers to the sum of manifest and inapparent cases.

### Prevalence Rate

The *prevalence rate* of a disease, disorder or other biological abnormality is a measure of the frequency of all current cases of a disease (old and new) within a particular population, either at a specified point or during a specified period of time, hence the terms *point prevalence rate* and *period prevalence rate*. This is usually expressed as the number of cases per population unit, or sometimes more simply as a

percentage. In contrast to incidence rates, which describe the rate of onset of new cases or events, prevalence rates are measures of what prevails or exists.

### Incidence and Prevalence

Incidence and prevalence may be expressed as simple numbers when the required population denominator in order to calculate a rate is not known. *Incidence* refers to the number of *new* cases which occur during a specified period of time, while *prevalence* refers to the number of cases (old and new) which exist at a designated point or during a specified period of time. These are less accurate than their respective rates and only if the population denominator is not known should they be regarded as useful measures.

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**Source:** Dr. Frank White, Dalhousie University.

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## ANNOUNCEMENT

The Canadian Hypertension Society invites all interested health professionals to attend a forum on: *Community Approaches to High Blood Pressure Prevention and Control* Sunday, September 21st, 1986, 1-5 p.m. Harbour Castle Hotel, Toronto.

NO Registration Fee — Preregistration desirable but not essential.


To preregister or obtain further information, contact:

Community Approaches to High Blood Pressure Prevention and Control, c/o Dr. Karen Mann, Hypertension Unit, Camp Hill Hospital, 1763 Robie Street, Halifax, N.S. B3H 3G2, 420-2325.

The forum acknowledges the financial support of an educational grant from Frosst, a division of Merck-Frosst Canada, Inc.

The Canadian College of Family Practice has allocated four (4) credit hours for the forum. □

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# Appreciations

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## DR. ELEANORE BERGMANN PORTER



With the passing of Dr. Eleanore Bergmann Porter, the medical profession in this province has lost a very loyal supporter. Eleanore passed away at the age of 79 on May 29, 1986 at the Yarmouth Regional Hospital. She had been in failing health for the past six years, but bore her illness with strength and courage as displayed throughout her life.

Dr. Porter was born on May 12, 1907, in Laupheim, Wurttemberg, West Germany. She graduated in Ulm, as a registered nurse in 1925, and obtained her medical degree in 1933 in Munich. In July 1933, she left Germany to escape Naziism and underwent another year of training in Edinburgh, receiving her British qualifications. Following this, she entered general practice in London which included running a private twelve-bed obstetrical unit with over 3000 deliveries to her credit.

On May 18, 1961, Eleanore arrived in Yarmouth, and opened a General Practice Office and had the distinction of being the first lady doctor in the area. Over the next 25 years she provided medical services to approximately 3500 families. During that time, she has been an active member of Yarmouth Hospital, a member of the Canadian College of Family Physicians, and was made an honorary member of this college in 1977. In addition, she was a member of The Medical Society of Nova Scotia and The Canadian Medical Association and became the first lady with Senior Membership in The Medical Society of Nova Scotia.

Eleanore was a dedicated physician, and always placed the patient's welfare before her own. She never failed to answer a call at the office or house at any

hour of the day or night, and continued treating her patients until a week before her death.

She was always a champion of freedom and a courageous lady and was so honoured at a banquet in New York for helping 24 people to escape from Nazi Germany during the war. Help in many cases included sacrificing her own needs to obtain the funds to help others start life in a new country.

Eleanore was a rare breed, a warm and generous woman with complete dedication to her patients, family and friends. Her vivacious manner, dedication, courage and no nonsense approach to life will continue to be an inspiration to all those who knew her.

She is survived by her husband, Lofty and a son, Tony in Edmonton, and a sister, Ruth in New York.

J.K. Little, M.D.  
Yarmouth, N.S.

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## DR. ANGUS EDWARD MURRAY



To his colleagues he was "Eddie".

In Nov.-Dec. when I had a minor illness which kept me at home, Eddie's first house call when he left from Armview Ave., was to stop at my home to inquire the state of my health, which in due course fully recovered.

Thus it was on the morning of Feb. 23rd that I met him, as frequently happens, in the little corner grocery and with our initial mutual comment "I'm fine", and having discussed world and local affairs,

we took off to our day's work. So my shock and surprise when I read in next morning's paper that he had died during the night.

Dr. Murray was born in Earltown, Pictou County, the son of the late Rev. Robert and Isobel (Sproull) Murray. One of a family of six — 4 physicians, 1 clergyman and 1 teacher — he was educated in the public schools in P.E.I. to which his parents had moved, and Prince of Wales College. He taught school in Labrador and then returned to Nova Scotia and entered Pine Hill College with the thought in his mind of Theology. There were several medical students in Pine Hill residence at that time and after two years Eddie decided that he was not cut out for Theology, but became tremendously enthusiastic about Medicine. He graduated from Dalhousie in 1930 and joined Dr. Judson Graham in general practice and surgery.

In spite of a rapidly increasing practice, he acted as Medical Examiner for Halifax and Dartmouth for 29 years and taught Ethics and Medical Jurisprudence at the Medical School at Dalhousie.

In addition he served as President to the Medical Staff of the Children's Hospital, the Halifax Infirmary, the Halifax Medical Society, the Medico-legal Society; and was a member of the Provincial Medical Board and the Executive of The Medical Society of Nova Scotia. He was made a Senior Member of The Medical Society of Nova Scotia in 1975. He was a member of St. Matthew's United Church, Armdale Kiwanis Club, Saraguay Club, Ashburn Golf and Country Club, the Halifax Wildlife Association and a Life Member of the Mayflower Curling Club.

His hobbies, which he pursued with vigor and enthusiasm, were golf, curling, poker: and he was a fascinating conversationalist which is rapidly becoming a lost art.

In his early days he developed a very large practice in the areas of Ketch Harbour, Portuguese Cove and environs and frequently, at the end of a day's work in the city, a call from a patient in the country would come in. He thought nothing of driving there at two o'clock in the morning to make that house call, only to find four or five families patiently waiting for him at the house. Having treated all present he set off for the city, for a few hours rest, ready to start again the next day. He was always available, patient and understanding.

The service was held at St. Matthew's, Barrington St., the Rev. E.P. Thompson officiating. It was simple and beautiful. The Church was filled. There were only a few of his medical colleagues — mostly those in the 65 and over group who knew him well by "Eddie"; the rest of the Church was filled by his friends from the country: great-grandparents, grandparents, parents and teenagers. As one elderly woman her eyes filled with tears said to me, "He was a blessed man; God will welcome him with wide open arms."

We extend our heartfelt sympathy to his wife Olive, his daughters Olive and Anne, a sister Dr. Anne, a brother Dr. Foster, and five grandchildren.

F. Murray Fraser, M.D.  
Halifax, N.S.

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## SURGEON REAR ADMIRAL R.H. ROBERTS



Surgeon Rear Admiral R.H. Roberts, of the Canadian Armed Forces, died suddenly on March 8 in Ottawa, Canada.

Richard Howell Roberts was born in Liverpool in 1915 and graduated from Liverpool University in 1938. After a short residency in orthopaedics at Alder Hey Childrens' Hospital, he joined the Royal Naval Volunteer Reserve early in the war, serving mainly in aircraft carriers and at Fleet Air Arm stations in Great Britain and later in India. He served with distinction and was twice mentioned in dispatches. Shortly after the end of the war he joined the Royal Canadian Navy and emigrated to Canada in 1948, where he continued in service with the armed forces until retirement in 1976. His career with the forces was distinguished: he became successively commanding officer of the Halifax Naval Hospital, command medical officer of the National Defence Medical Centre and, finally, Surgeon-General of the Canadian forces, the first non-Canadian born doctor to hold the post.

He took a special interest in tropical diseases and was actively involved in research pertaining to the prevention of smallpox, poliomyelitis, cerebrospinal meningitis, malaria, amoebiasis and other conditions of particular military importance. Among his own publications were two of special note: one dealt with viral Cocksackie pericarditis affecting a recruit; the other was an epidemiological study of a crop of Hepatitis B cases involving a tattoo parlour.

He was a keen clinician and taught many medical students and resident doctors through his affiliations with Dalhousie University and Ottawa University, in whose faculties he held the honorary posts of associate professor.

I was fortunate to have many associations with Dr. Roberts over a variety of research projects during his time of service in both Halifax and Ottawa. During the period when Dr. Roberts was posted to Halifax at H.M.C.S. Stadacona for 17 years, I took the opportunity of inviting him to lecture on human parasitology to undergraduate medical students in the Dalhousie University class of Microbiology. He was an excellent teacher, who could convert a dull topic into an interesting and exciting one, often re-inforced by his personal experiences gained during the course of military operations. In addition to Microbiology, he gave freely of his time to teaching in the Department of Medicine. The Canadian Society of Tropical Medicine also flourished under his leadership, and in 1964-65 he took part in a scientific and research Canadian Medical expedition to Easter Island, accompanied by his distinguished pediatrician wife, Dr. Maureen, well known to many in Halifax.

Most recently Dr. Roberts participated in July 1985 in the opening ceremonies of the new Dr. A. McCallum Hospital at H.M.C.S., Stadacona.

He was married in 1940 to Dr. Maureen McWilliam, who survives him, along with one son and one daughter. Although he lived in Canada for the last 38 years, he maintained a close relationship with England, particularly with his classmates from Liverpool University, and he was for many years a fellow of the Royal Society of Medicine.

All his colleagues bemoan his passing. Canada has lost a great service officer, a gentleman, scholar and physician.

C.E. Van Rooyen, M.D.  
Halifax, N.S.

## DR. LLEWELLYN THOMPSON STEAD



Nova Scotia lost a dedicated physician with the death of Dr. L. T. Stead earlier this year. Llew died on March 22, 1986 at the age of 69 while on a holiday in Britain. He was well known for his ever present smile and sense of humour, his dedication to his patients and his commitment to his work.

He was born in 1916 in Bell Island, Newfoundland. After completing his schooling, he worked for several years in the Royal Bank. He then joined the 7th Antitank Regiment in 1940 and served overseas in Italy and North Africa with the Canadian Army, first as a troop officer, then intelligence officer and finally as Captain Adjutant of that Regiment.

After the war he entered Dalhousie University and graduated with his M.D. degree in 1952. He then practised Family medicine in Halifax until 1966, when he began a residency in psychiatry. Upon its completion in 1970, he joined the staff of the Nova Scotia Hospital, where he practised until his retirement in 1981.

Not one to remain inactive, he began working on a part-time basis at the Pictou County Mental Health Centre in New Glasgow early in 1982. He played a vital role in the amalgamation of the Mental Health Centre with the Aberdeen Hospital, and the creation of the hospital Department of Mental Health Services. He remained active there until his death. He was a member of both The Medical Society of Nova Scotia and of the Canadian Medical Association at the time of his death.

He is survived by his wife, the former Joan Matthews, three children, Gordon (Dartmouth), Kathryn (Mrs. John Spurdakes, Lower Sackville), and Sandra (Mrs. Richard Capon, Halifax), and five grandchildren and two sisters. The Medical Society of Nova Scotia extends warm sympathy to his family.

I.M. Slayter, M.D.  
New Glasgow, N.S. □

## Rakesh Jain

Chartered Accountant

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## Correspondence

### To the Editor:

I should like to take this opportunity to applaud the report of Brian Hennen's Committee on Home Care in Nova Scotia that appeared in your April issue. From my point of view (health administration/health economics) the statement appeared well thought-out. I too would like to see the Province spend some of its scarce health dollars on more and better home care. From a dollars-and-cents point of view, I think there is broad agreement on the eventual pay-off from investment in home care so long as it is a substitute for more expensive forms of care and not an add-on. The problems in actually doing it should be obvious: (1) if money has to be spent before savings are realized without creating a deficit, then some other expenditure will have to be postponed; and (2) the administrative considerations have to be thought out as carefully as the medical and economic issues.

The Hennen Committee thoughtfully numbered its paragraphs from 1 to 77, and it is to their credit that I do not have a word to say about paragraphs 1-44! Let's look at the rest now:

Paragraph 45 notes that payments by patients for services that do not clearly avoid hospitalization may be required on a progressive scale depending on ability to pay. This is fine from the economic point of view because it puts a penalty on the add-on type of service. Administratively, this brings up two areas where judgment has to be exercised — determining how much different people can afford to pay, and determining (with periodic review as the state of the art changes) which services clearly do not avoid hospitalization. This sort of thing is easy to say, but the Department of Health or the Directors of a free-standing program will have to make a set of specific rules and hire people to apply them. This costs money too.

Paragraph 46 calls for stable funding arrangements for participating volunteer agencies. It is easy to understand that the agencies want to have their funding assured if participating in a new home care program obliges them to make heavy commitments (like hiring new personnel or buying a fleet of cars). From the viewpoint of the provincial government, however, stable funding in the face of unpredictable demand makes for an unpredictable call on provincial resources. Judging by experience in other countries (e.g. Germany), if the government insists on a predictable quarterly or annual expenditure at negotiated contract rates, the providers must face up to the fact that if unexpected peaks in demand occur they will either have to settle for a lower rate per unit of service or else turn away some patients.

Paragraph 48 says that existing agencies (mainly the VON) should obviously be a major component of the services contracted by the Department of Health. While the administration of the VON varies from province to province, it is worth noting that the New Brunswick Extra-Mural Hospital does *not* use VON nursing services. The reason appears to be that when their participation was first discussed, the New Brunswick VON wanted a larger say in the administration of the nursing component of the program than the provincial authorities were willing to concede. While the Nova Scotia VON may have told the Hennen Committee that they were willing to provide the service (see paragraph 70), and the Department of Health may have said that they were willing to use VON, and both parties were being completely honest and above board, the promises may well evaporate when it comes down to negotiating the specifics. This is an argument against the Medical Society committing itself to any individual agency in advance, because there is a risk it may not work out.

Paragraph 51 refers to coordination and observes that cooperation between provincial government departments, and among these, key providers, and municipal governments, does not currently exist in Nova Scotia. This is quite true, and deserves further exploration in a historical context:

When federal-provincial cost sharing arrangements for health services were first set up, it turned out that some items not allowable for cost-sharing as health services were allowable as social services under the Canada Assistance Plan. A number of provinces promptly transferred (or initiated) these activities under their Departments of Social Services to take advantage of federal cost sharing for homes for special care and the like. In Nova Scotia this has led to an added complication, since the philosophy of the Department of Health involves the direct purchase of services (i.e., by sending cheques to the hospitals to cover their running expenses and maintaining a staff to supervise them), while the Department of Social Services prefers to pay counties and towns to run the services rather than pay directly to the institutions that provide them. Other things being equal, coordination between two dissimilar systems is bound to be difficult. Some provinces have consolidated health and social services in a single department, and in recognition of the fact that the financial ground rules have changed, New Brunswick transferred a good many functions back from Social Services to Health a few months ago. Is this a sign that Nova Scotia will do likewise? There is really no way to tell.

Jumping ahead to paragraph 62, this is the one place I found myself frankly irritated. The Hennen Committee would have us believe that concern about loss of jobs is not warranted because as hospital positions are eliminated new jobs outside hospitals will open up. Admitting that this may be a true statement, it

is nevertheless misleading because we don't know whether *as many* new jobs will open up, whether they will be in the same localities and require the same or similar skills and training, whether they will pay as well as the jobs they replace, and whether people past a certain age will have to retire early or go on welfare because they cannot be retrained or relocated. The changes can represent a personal catastrophe for many even if the numbers manage to balance out.

Paragraph 74 suggests a director of home care services to be jointly responsible to the Departments of Social Services and Health with an illustrative diagram. The regional hospital affiliation of regional or district offices appears in the diagram but is not discussed in the text.

While the medical profession is taking a praiseworthy initiative for better patient care by making this proposal, the relation of the doctors to the home care program is not considered in detail in any of the 77 numbered paragraphs. In New Brunswick, individual doctors can apply for admission to the medical staff of the extra-mural hospital. While in practice most of their contact is by telephone, the home care workers can at least identify the patient's responsible physician and have someone to call when medical problems arise. This is a distinct advantage over many Canadian home care programs, and it is to be hoped that a similar arrangement can be set up in Nova Scotia.

Finally, I do not feel that the present government is *against* the provision of home care through a well-coordinated program, but wonder whether the political will exists to grant this program priority over other health activities and other provincial expendi-

tures outside the health field. Would the government, for example, be willing to consider the proposed home care program if it meant postponing the start of new hospital construction in Sydney? Should home care be given priority over institutional facilities for extended care? There are, after all, home situations to which no-one in his right mind would want a patient to be returned. There are also old people without families who lose their rented room while they are in hospital and have no place to go on discharge, as well as other appropriate candidates for institutional care. For patients with minimum incomes (Canada Pension, Old Age Security, Guaranteed Income Supplement), one should also consider whether paying for their own food, laundry, and other services at home is necessarily within their means.

In a society like ours, the free expression of interest groups is one of the building-blocks of future policy. In this sense, the Hennen Committee has made a valuable recommendation, and I hope the Medical Society will give it their enthusiastic backing. Do not be surprised, however, if other interest groups do not necessarily come down on the same side, nor if the provincial government, while agreeing in principle, cannot find the money for the initial expenditure or cannot find the agreement among MLAs to give this project absolute priority over other equally legitimate interests.

Yours truly,

A. Peter Ruderman, PhD  
Professor of  
Health Administration

□

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## Personal Interest Notes

A best seller, compiled and edited by faculty members of Dalhousie Medical School's Family Medicine Centre, is about to run to a second edition in English.

*Family Medicine: A Guidebook to Practitioners of the Art*, written by **Dr. David B. Shires, Dr. Brian K. Hennen and Dr. D.I. Rice**, has already been translated into a Spanish edition and can be bought in Madrid or Buenos Aires. About 20,000 copies of the text book have been sold in English and Spanish. A French edition is also under consideration by the publishers, McGraw Hill, New York. In South America, where the eminently readable text book has been widely sold, there has been a massive increase in the teaching of family medicine programmes in hospitals, universities and medical schools.

A scant four years ago, there were about 12 such teaching programmes. Today, there are more than 180 in Latin American countries from Argentina to Mexico, according to co-author Dr. Shires.

The text book provides young family physicians (and even elderly ones) with clear, modern techniques in the continuum of care they give to patients in treating their wide ranging diseases from childhood to old age. It also advises on ways of developing the subtle art of successful medicine, which is both compassionate and competent.

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### OBITUARIES

**Dr. Laverne E. Cogswell**, (79) of Berwick, N.S. died on May 28, 1986. Born in Kings County he received his medical degree from Dalhousie University in 1932. For many years he was a family physician for the Berwick area and on staff at the Western Kings Memorial Hospital. He also served as coroner for the County of Kings and medical health officer for the Town of Berwick. He is survived by his wife, three sons, and three daughters, to whom we extend sincere sympathy.

**Dr. Eleonore Bergmann-Porter**, (79) of Yarmouth, N.S. died on May 29, 1986. Born in West Germany she received her medical degree in Munich, Germany.

She was a senior member of The Medical Society of Nova Scotia and the Canadian Medical Association. She was an honorary member of the Canadian College of Family Physicians; and the first female doctor at the Yarmouth Regional Hospital. She is survived by her husband and a son. The *Bulletin* extends sincere sympathy to her family.

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**Dr. Edward D. MacArthur**, (66) of Berwick, N.S. died on June 29, 1986. Born in Pictou, he received his medical degree from Dalhousie University in 1952. He practised in Berwick for 34 years and was President of the medical staff at Western Kings Memorial Hospital. He was considered a valued member of the House during his term as a member of legislature for Kings West from 1960 to 1963. He is survived by his wife, five sons, and two daughters. Our sympathy is extended to his family.

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**Dr. Robert Mair**, (60) of Yarmouth, N.S. died on July 16, 1986. Born in Scotland he received his medical degree from Aberdeen University in 1954 and earned a diploma in psychiatry from Edinburgh University in 1963. He moved to Canada in 1974 and practised in various places before moving to Yarmouth in 1982. He is survived by three sons, a brother and two sisters to whom the *Bulletin* extends sincere sympathy.

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**Dr. Olding C. MacIntosh**, (72) died on August 9, 1986 at Jimitown, N.S. Born in Antigonish, N.S., he graduated from Dalhousie Medical School in 1940. He served with the Royal Canadian Air Force during the Second World War, then continued his post graduate training in radiology at the Toronto-Western Hospital. He practised radiology at St. Martha's, Antigonish until 1966, then he was appointed head of the Department of Pathology at the Halifax Infirmary and Assistant Professor of Pathology and Microbiology at Dalhousie University retiring in 1969. The *Bulletin* offers sincere sympathy to his wife and family. □

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