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THE NOVA SCOTIA MEDICAL BULLETIN

A Mid Summer Trail

Whether you spend your vacation by the beach, on the golf course or in mid-ocean, you should save a serious moment to scan the wide variety of topics our authors have contributed. They come from Cape Breton, Newfoundland, New Brunswick, Halifax, and the U.K. Throughout all shines a determined endeavour to relieve suffering, allay apprehension and misunderstanding, and prevent disease by a combination of clinical acumen and modern technology. Some of the new techniques are truly remarkable.

Prenatal diagnosis promises to tackle and possibly eliminate many diseases plaguing our society. Dr. J. Philip Welch reports that amnioparacentesis is safe, and can be used to diagnose chromosomal abnormalities, biochemical disorders, X-linked diseases and open neural tube defects *in utero* before 16 weeks. Although this solves many problems, it may bring controversial issues but there is no doubt that amnioparacentesis and other prenatal techniques are part of our Brave New World.

Preventive screening of the population for cancer is another topical subject. Recently, it was alleged that mammography may be followed by an epidemic of carcinoma of the breast because of local irradiation. The simple clinical study of 770 women revealed one case of carcinoma of the breast and none of the cervix, although there was a lot of pelvic pathology detected. The cost was $12,000 but this should not discourage similar clinics and we look forward to gynecologists and surgeons comments.

That "patients are people" is emphasized in three articles — individuals who behave differently towards their doctors, their illness, and their medication. This is beautifully described by Dr. J. Aldous in "To Comply or not to Comply". There is no doubt that polypharmacy leads to confusion; many patients arrive in hospital with so many medicines and instructions that only by applying homeopathy (infinitely diluting the medicine) can the complainant recover.

The idea that the behavioural response of a patient is all important in psychiatry is presented by Wayne Matheson, Chief Psychologist of Cape Breton Hospital. His different models will strike a familiar note but it is the individual's response to a situation that he is emphasizing.

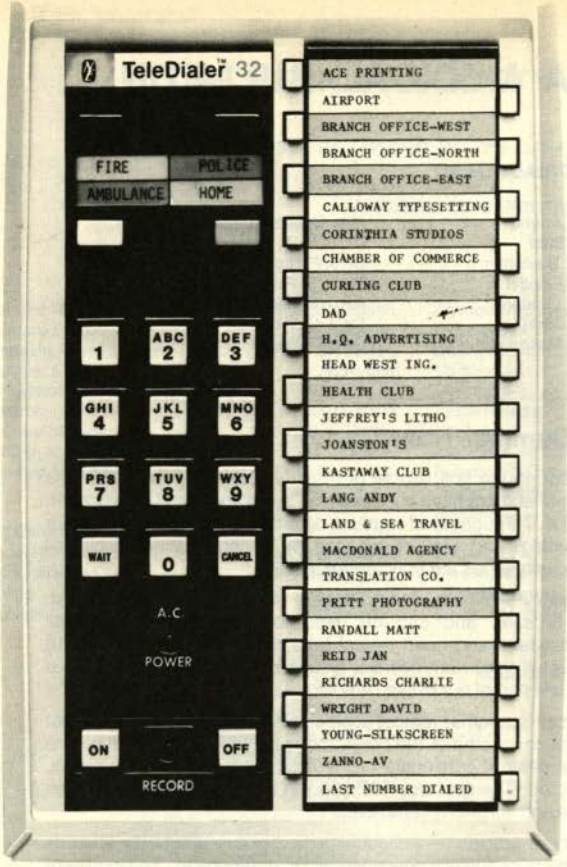
Fortunately nowadays there are individuals and agencies to help those who have fears and unnecessary worries about unpleasant surgical procedures. Terry Rohland, a medical student at Memorial University, St. John's, Newfoundland reviews the problems of Ostomies. People with such devices are no longer social outcasts; they can marry, participate in sports, enjoy life without encumbrance once they are suitably instructed. As a useful reminder of the part the family doctor can play in treating arthritis, Dr. E. C. Huskinson brings a masterly description of drug therapy in arthritis and gives a rational classification of numerous medicaments. Once again, it is an individual choice for each patient that brings the best result. It is exciting to read that Penicillamine can control the disease in some cases although side effects are common.

Finally, three articles describe sophisticated techniques only recently available. Normal pressure hydrocephalus can be diagnosed by intraventricular pressure monitoring, pneumoencephalography and computerized axial tomography (E.M.I. Scanner). All this with a carefully devised "shunt" may prevent the early onset of dementia in a suitable patient.

Hyperalimentation, however, does not require elaborate apparatus. Dr. M. A. Naqvi gives exact information of the technique and indications which may be used in any intensive care unit. These patients are desperately ill, and the combination of subclavian vein transfusion and pump can tide the patient over a prolonged period until his primary disease is corrected.

A somber reminder to our holiday is given by Dr. Albert Prossin. Alcoholism produces more deaths and misery than all other diseases mentioned. No elaborate equipment is needed to fight this disease. We don't all have to be temperance types. Recognition of the condition as a disease and a well organized community service as he suggests, would make a greater contribution to man's welfare then any of our more expensive and elaborate endeavours. □

B.J.S.G.



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MARITIME TEL&TEL

Prenatal Diagnosis in the Maritimes

J. P. Welch,* M.B., Ch.B., Ph.D., and J. M. MacDonald,** B.Sc.,
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Amniocentesis for prenatal diagnosis of many genetic disorders has been available in the Atlantic Provinces since 1972 through the Genetic Prenatal Diagnosis Clinic at the Grace Maternity Hospital in Halifax in conjunction with the laboratories of the Atlantic Research Centre for Mental Retardation[1].

The primary purpose of the Clinic is to offer prenatal diagnosis by amniocentesis for couples with a significant risk of having a child with a severe genetic disease. Ideally, patients are seen at approximately the 12th week of gestation for assessment by an obstetrician and a geneticist; the aminocentesis is done at 16 weeks. The diagnosis is usually made before the fetus is 20 weeks.

The development of the technique of prenatal diagnosis by amniocentesis has added a new alternative to the courses that are open to parents of children with genetic diseases. Previously, adoption was the only way that many parents could be assured of having a future unaffected child. Now, with many diseases, a diagnosis can be made at a stage early enough to allow selective abortion of an affected fetus. Many carriers of recessive disorders only discover they are carriers by having an affected child. The burden of having another such child is tragic and, of course, the risk of such an event is 25% or 1 in 4.

We felt that Maritime physicians would be interested to learn something of the activities and achievements of this new service, together with data on its current utilization and an impression of its acceptance by both physicians and the community-at-large.

SUMMARY OF MARITIME RESULTS

Total amniocentesis (1972 — May 1976)	110
Indications	
Advanced (≥ 37) maternal age	52
Previous neural tube defect	19
Others (biochemical disorders, X-linked conditions, etc.)	39
Outcome	
Therapeutic abortions (trisomy 18, chromosomal rearrangement, neural tube defect)	4
'Spontaneous' abortions* (within 24 hours of amniocentesis)	1

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UTILIZATION OF AMNIOCENTESIS AMONG OLDER MOTHERS

LOCAL — Halifax/Dartmouth Metro area

(Est.) Total pregnancies to women ≥ 37 yr at	
Grace Maternity Hospital (1975)†	74
Halifax Infirmary (1975)†	49
(Est.) Total pregancies to women ≥ 37 yr in Metro area	123

Number of pregnant women ≥ 37 yr in Metro area seen at Genetic Antenatal Clinic

1973—6	1975—7
1974—8 (to May 31)	1976—15

Therefore, approximately 5% of pregnant women ≥ 37 yr living in Halifax/Dartmouth metro area were screened by amniocentesis in 1973-75.

PROVINCIAL

Nova Scotia

Total pregnancies to women ≥ 37 yr in N.S.[2]	1973 — 590
Total women resident in N.S. ≥ 37 yr seen at Genetic Antenatal Clinic	1973 — 7

Therefore, approximately 1.5% of pregnant women ≥ 37 yr living in Nova Scotia were screened by amniocentesis in 1973.

New Brunswick

Total pregnancies to women ≥ 37 yr in N.B.*[3]	1973 — 507
Total women resident in N.B. ≥ 37 yr seen at Genetic Antenatal Clinic	1973 — 1

Therefore, approximately 0.3% of pregnant women ≥ 37 yr living in New Brunswick were screened by amniocentesis during 1973.

†Based on actual deliveries during January and May 1975.
*Estimate made assuming the same maternal age distribution for Nova Scotia also applicable to New Brunswick.

(The numbers of pregnancies in older mothers monitored in 1974 and 1975 in both Nova Scotia and New Brunswick was of the same order of magnitude as that for 1973.)

It is of interest that, in British Columbia, the proportion of pregnancies in women ≥ 40 years monitored by amniocentesis, is 20-fold greater than the proportion of similar pregnancies monitored in the Maritimes.

ESTIMATED OCCURRENCE OF CHROMOSOMAL ABNORMALITIES IN OLDER MOTHERS IN HALIFAX/DARTMOUTH METRO AREA. JAN. 1973—DEC. 1974 (INC.)

GRACE MATERNITY HOSPITAL

Age Group	# of Deliveries (est.)*	Risk of chromosome anomaly†	Expected incidence
35-36	288	0.7%	2.0
37-39	148	2%	3.0
⩾40	50	4%	2.0
Total	486	—	7.0

HALIFAX INFIRMARY

Age Group	# of Deliveries (est.)*	Risk of chromosome anomaly†	Expected incidence
35-36	60	0.7%	0.4
37-39	30	2%	0.6
⩾40	75	4%	3.0
			4.0

Therefore, expected number of infants with significant chromosome anomalies born in metro area 1973-74 to mothers ⩾ 37 yr—11.

*Based on actual deliveries during January and May 1975.
†Based on unpublished data from a recent U.S. survey (4).

Actual Occurrence of Chromosome Abnormalities among Newborn in Metro Area

Available data are fragmentary, since blood samples would not normally be submitted to the service Cytogenetics Lab at the I.W.K. Hospital for Children for all affected infants. This occurs on account of (a) the clinical diagnosis may not be made in the newborn period for conditions such as trisomy E, Klinefelter's syndrome, and (b) the clinical diagnosis may be made (e.g. in Down's) but chromosome analysis may not be felt to be necessary if no further children are anticipated. This is likely to produce a relative deficit of older mothers in the sample.

ORIGIN OF INFANTS WITH AUTOSOMAL TRISOMIES IDENTIFIED THROUGH THE SERVICE CYTOGENETICS LABORATORY

Year	Number	Residence of mother: Metro area	Nova Scotia (ex. metro area)	Maritimes (ex. N.S.)
1973	12	9	3*	—
1974	16	5	7†	4**

*1/3 born to mothers > 37
†3/7 born to mothers > 37
**2/4 born to mothers > 37

Patients Reactions to this Service

In our experience, the response from couples who have availed themselves of prenatal diagnosis has been favourable. Most often — in better than 95% of instances[4] — normal offspring are identified, and the news to the patients is therefore a welcome relief from anxiety. By way of illustration, some of our patients have given us permission to share with you their reactions to their involvement in this program.

Mrs. D. had a brother with Down's syndrome and was extremely concerned about the prospect of having a child like her brother. "I wanted to write you and thank you for all that you have done for my husband and me. I wish I could find the words to tell you how much we appreciate what you have done." Later, after the laboratory results were reported she wrote, "I have to tell you that my husband and I are quite happy and excited now. I have been feeling much better since I got the 'good' news", and she continued to tell us how much she appreciated the prenatal diagnosis.

Mrs. H. did not receive 'good' news — she was carrying a fetus with Trisomy 18. Her husband wrote, "I wanted you and those who have been involved with us to know that we are most thankful that we decided to undergo the test and that the whole experience was for my wife made so much easier by the way in which you and the doctors approached the whole process, with sympathy and thoroughness which gave us every chance to know upon what basis our decision was being made."

Risks and Benefits of Amniocentesis

These are best exemplified by the results of a recent survey involving a number of collaborative centres in the U.S.A.[4] A preliminary report of this survey was given in the Medical Research Council Prenatal Diagnosis newsletter[5], and is given here in condensed form.

The National Institute of Child Health and Human Development, National Institutes of Health (U.S.) presented the results of a major prospective study of the effects of amniocentesis on mothers and offspring in October 1975. The findings show that amniocentesis for prenatal diagnosis is a safe as well as accurate procedure.

The study, initiated in June 1971 and completed in June 1975, showed no significant adverse effects on the women undergoing amniocentesis; and no significant differences in rate of fetal loss, prematurity, newborn status, birth defects, or developmental status at one year of age.

During the two-year intake period of the study, information was obtained from 1,040 women who had amniocentesis performed, and from 992 controls, for whom amniocentesis was not indicated or who declined the procedure. The controls matched the cases closely in race, numbers of pregnancies, and socio-economic status, but tended to be somewhat younger in age.

The rate of fetal loss (spontaneous abortions and stillbirths) for the amniocentesis group was 3.5 percent, compared with 3.2 percent for the controls, a statistically insignificant difference.

Nineteen fetuses with chromosomal anomalies and 15 with metabolic disorders were identified by amniocentesis. In addition, 11 male fetuses were identified as having a 50 percent risk of various sex-linked disorders (for example, hemophilia and Duchenne's muscular dystrophy).

Thirty-five of these women elected abortion. (In addition, four other women elected abortion for other reasons.) Included in the total number of abortions were eight fetuses with Down's syndrome. *Seven women among the control group gave birth to infants with Down's Syndrome.*

"The encouraging results of this study indicate that mid-trimester amniocentesis for prenatal diagnosis, performed by a properly trained physician, does not pose additional risk to the pregnancy."[5]

Review of Indications for Amniocentesis

The following recommendations are a slightly modified and amended form of those given in the report of a joint committee of the Canadian Genetics Society, the Society of Obstetricians and Gynecologists of Canada, and the Canadian Pediatric Society[6].

1. *Maternal Age* — The risk of Down's syndrome (Trisomy 21) alone increases from about 1:2000 live births at a maternal age of twenty to about 1:300 at thirty-five and 1:100 at age forty. Above a maternal age of forty-five, the risk is about 1:40. It is recommended that amniocentesis should be offered to all mothers aged over forty, irrespective of the number or outcome of previous pregnancies, unless there are definite medical or obstetric contra-indications. It is recommended that amniocentesis should neither be offered nor recommended to mothers aged under thirty-five if age is the only consideration. In our present state of knowledge, there is an area between ages thirty-five and thirty-seven where maternal anxiety tends to be high. In these cases, amniocentesis should be discussed with the parents and each case should be treated individually.

2. *Parental Chromosome Abnormality* — Amniocentesis is recommended where either parent is carrying a chromosome abnormality, irrespective of whether this is a balanced chromosome rearrangement or mosaicism. When mosaicism is confined to somatic tissues, there is no increase in risk to the subsequent children. However, since it is impossible to rule out gonadal mosaicism, amniocentesis should be offered in all cases.

3. *Previous Trisomy* — Where a previous pregnancy has terminated in a conceptus with trisomy, subsequent pregnancies should be monitored by amniocentesis, irrespective of whether the trisomic conceptus was a live birth, stillbirth, or spontaneous abortion. At present there is evidence that where a previous pregnancy terminated in a Down's syndrome live birth, there is an increased risk of recurrence in subsequent pregnancies. This risk is probably of the order of 1-2%. There are at present few data on the recurrence risks when a previous conceptus was trisomic for a chromosome other than 21. Until more data become available, subsequent pregnancies should be monitored by amniocentesis.

4. *Biochemical (Metabolic) Disease* — Amniocentesis is recommended for autosomal or X-linked recessive conditions only when the condition can be detected *in utero* and has a high probability of resulting in severe disease, congenital malformation, or severe mental retardation. In general, in the case of an autosomal recessive condition, if there is evidence that both parents are heterozygotes, the risk of affected children approximates 25%. In the case of an X-linked recessive, if there is evidence that the mother has a high risk of being a heterozygote, 50% of male children are likely to be affected. There now are about 60 biochemical defects which can be detected *in utero* and this number is ever increasing with ongoing research. If the practitioner is in doubt as to whether a particular disease can be diagnosed prenatally he should contact the Prenatal Diagnosis Clinic to ascertain the latest information.

5. *X-Linked Conditions in Which the Disease is Not Detectable in utero* — In the case of an X-linked condition, leading to severe disease, congenital malformation or retardation, in which it is at present not possible to determine whether the fetus is affected, it is considered that amniocentesis may be justified in order to determine the sex of the fetus. Under these circumstances, when the mother is known to be a heterozygote, male fetuses have a 50% chance of being affected and could be aborted should the parents so elect. In the case of certain severe diseases such as Duchenne muscular dystrophy, there may be instances in which, due to lack of certainty that the mother herself is heterozygous, the statistical risk to her male children is lower. Such cases need to be evaluated individually.

6. *Open Neural Tube Defects (Anencephaly, Meningomyelocele)* — Recent evidence strongly suggests that the level of alpha-fetoprotein in the amniotic fluid between 14 and 20 weeks gestation is markedly elevated in the presence of anencephaly and meningomyelocele *in utero.* Estimation of alpha-fetroprotein levels in amniotic fluid, plus ultrasonography, is rapidly becoming a standard diagnostic approach in this area. Since there is a significant risk of recurrence of a similar defect in a subsequent pregnancy (5%)[7], we recommend that amniocentesis be offered to patients who have a history of a child with a neural tube defect in a previous pregnancy.

Consideration of amniocentesis may also be given to potential parents when

(a) either one has a significant degree of spina bifida[8]

(b) either one has a documented history of a neural tube defect in a sibling.[7 8]

In addition to the above indications, it should also be pointed out there there is reason to believe that the occurence of influenza in the first trimester of pregnancy may be associated with an increased incidence of neural tube defects[9]. The likelihood of an affected fetus under these circumstances appears to be about 2%[10]. We therefore recommend consideration of amniocentesis and alpha-fetoprotein estimations in such instances.

7. *Anxiety* — There may be cases in which the family and/or obstetric history, in conjunction with severe maternal anxiety, may justify amniocentesis. These instances must be carefully evaluated on an individual basis.

Summary of Current Clinic Procedure for Prenatal Diagnosis

1. Referral from attending physician when pregnancy is confirmed or prior to 16 weeks gestation.
2. Assessment of appropriateness of prenatal testing: this may involve chromosomal or biochemical analysis of affected family members, etc., as well as counselling of both parents. The patient's Rh blood group would also be determined if this information is not already available.
3. If amniocentesis is appropriate, placental localization by ultrasound is carried out prior to the amniotic tap. Both procedures are usually done on an outpatient basis. Hospitalization is not required, but we recommend that out-of-town patients do not travel until the following day.
4. Test results are forwarded to the patient and her physician in 2 - 3 weeks for chromosomal results (a somewhat longer time is usually required for biochemical analyses).
5. If an abnormal fetus is detected, pregnancy termination would be offered immediately. If the pregnancy is continued, a follow-up report on the baby is requested at the time of delivery. □

Acknowledgment

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Breast and Cervical Cancer

Results and Cost of a Screening Facility in North East Nova Scotia

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As a National Hospital Week project and to acknowledge International Womens Year, St Martha's Hospital, Antigonish operated a no appointment, walk in facility to enable women to have a Pap smear and breast and pelvic examination performed.

The facility was open from 13.30 to 17.30 on Monday through Friday of Hospital Week and as the response was greater than anticipated the facility was reactivated for three days in October. It was set up in the St Martha's School of Nursing, in a ward classroom where ample space, beds, examination couches, changing rooms, wash basins, etc. were readily available. It was staffed by R.N.'s, Student Nurses, Ladies Auxillary volunteers, and each patient was seen by one of the Medical Staff of St Martha's Hospital, a Family Practitioner or a Gynaecologist. Any suspicious breast lesion was referred to a Specialist Surgeon who saw the patient before she left the facility.

On each occasion the facility was publicised in the local paper with an article on Cancer of the Breast and an article on Cancer of the Cervix. A Surgeon and a Gynaecologist took part in a one hour open line programme on the local radio answering questions on Cancer of Breast and Cervix respectively. Emphasis was placed on the educational aspect in an attempt to convince women that a Pap smear and a pelvic examination were simple and painless procedures, to encourage them to attend their own Family Practitioners for further examinations in the future and to teach self examination of the breast. A film on self examination of the breast was shown continually in the waiting area.

Each patient had a breast examination, pelvic examination and Pap smear. The Pap smear result was sent to the Family Practitioner indicated by the patient on registration. If the patient had no Family Practitioner the patient herself was notified of the result.

Results

777 women attended the facility, 457 during the five days in May and 320 during the three days in October. No cancer of the cervix was found and one cancer of the breast was indentified. Although many patients had minor pathology noted on their attendance record and were given advice or referred to their Family Practitioner, only 17 were referred for surgical opinion and 31 for gynaecological opinion.

As there has been no recent figures published in Nova Scotia as to the incidence of cancer of breast and cervix and the cost of screening, the results are detailed as follows:

Age Group	below 25	25-35	35-44	45-54	55 & over	Totals
Total Patients	31	174	206	224	142	777
Breast Pathology	4	17	20	19	9	69 (9%)
Pelvic Pathology	7	43	64	79	48	241 (30%)
Vaginal Pathology	2	13	16	13	13	57 (7%)

Of those who came 96% were over 25 and 73% were over 35. Of the 69 who had breast pathology 94% were over 25 and 70% were over 35. 17 were referred for surgical opinion, 13 were operated on and one Cancer was found. Of the 241 who had pelvic pathology 97% were over 25 and 80% were over 35. 28 were referred for gynaecological opinion and 13 operated upon. Of the 57 who had vaginal pathology 96% were over 25 and 72% were over 35. Three were referred for gynaecological opinion.

In calculating the costs no allowance was made for rent, heating and lighting of the facility.

Cost of Screening

Nursing Staff.	$1,146.00	
Supplies	354.00	$4,374.00 i.e. $5.63 per patient.
Laboratory interpretation	2,874.00	
Physicians fees.	3,900.00	
Total costs	$8,274.00	i.e. $10.65 per patient.

Cost of referrals.

	Gynaecology	Surgery
Consultation only	$ 435.00	$ 195.00
Admitted for operation.		
I.P. days at $69.50 per day.	$ 4,586.00	$2,528.00
Surgeon	$ 1,433.00	$ 844.00
Assistant	$ 329.00	$ 105.00
Anaesthetist	$ 364.00	$ 260.00
Total costs	$71,747.00	$3,932.00

Total cost to find and operate on one Cancer of Breast was $12,983.00 which was $15.70 per patient attending facility.

Total costs generated were $19,353.00, $25.00 per patient attending facility.

Discussion

The failure to find even one case of Cancer of Cervix was surprising considering the varied incidence reported from screening clinics. This has varied from 1:50 in one practice[1]

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through 1:66 in Australia,[2] 1:152 in a London Teaching Hospital,[3] 1:167 in a London womens screening clinic[4] 1:280 in Aberdeen, Scotland,[5] to 1:557 in Massachusetts.[6] The incidence of pelvic pathology appears high but those requiring operative treatment (13 out of 777 or 1.6%) compares favourably with the Massachusetts survey (29 out of 26,841 or 1.1%)

The Cancer of Breast finding of 1:777 was much higher than was found in Massachusetts, 1:1596[6] but much lower than was found in the London womens screening clinic, 1:180[4]

The only comparable cost I could find was from Aberdeen, Scotland in 1971 where the cost was £1.15 ($3.00) per patient.[5] After taking account of inflation that would be between 1/3 to 1/2 of the cost per patient here.

The fact than no Cancer of Cervix was found must raise the question of the cost effectiveness of such screening facilities, especially as there has been some doubt expressed as to the effectiveness of these screening procedures for Cancer of the Cervix.[7 8]

The popularity of the facility surprised the medical Staff of St Martha's Hospital and one conclusion that might be drawn is that women patients prefer to come to a womens clinic where only women are present. If further screening facilities for Cancer of Cervix were to be provided there is no doubt that they would be well attended. If the smears could be taken by R.N.'s trained in the technique, the costs would then be halved and would compare more favourable with those of Aberdeen. □

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GUIDELINES FOR AUTHORS

Reference to these guidelines and recent issues of the Bulletin will help authors in preparation of their papers. Send the original typed copy to the Editor and keep a carbon copy.

The entire manuscript (including references and tables) should be typed double-spaced, with a generous margin on the left, on only one side of the pages. Do not underline unless the type is to be set in italics. Standard abbreviations (**e.g.,** hr, mg, ml) are acceptable without definition; less-common abbreviations should be written in full the first time they are used. Give generic as well as proprietary names and the manufacturer's name for drugs.

References. Identify references by numbers within the text, and list them in numerical order on a separate sheet [see (f)].

Figures. Provide an unmounted glossy print of each, clearly marked on the back with a SOFT marker, indicating top, figure no., and author's name. Show scale when relevant. Do not write legends on them [see (h)].

The usual framework of a paper is as given in (a) to (h) below, starting each section on a new page and numbering pages consecutively to the end of (h).

a) Front page, showing title, author(s) and degrees, whether the author is in family practice or the institution where the work was done, and address for correspondence.

b) Brief summary.

c) Introduction.

d) Materials and methods, then Results; **or** Case report.

e) Discussion.

f) References.
Examples: **Journal papers** — EBBERT, A., Jr. Two-way radio in medical education. J. Med. Educ. 38: 319-28, 1963. **Books** — MAJOR, R. H., and OELP, M. H. Physical Diagnosis, 6th ed. Philadelphia, Saunders, 1962, p. 51. **Contributions in books** — Voheer, H. Disorders of uterine function during pregnancy, labor, and puerperium. **In:** Pathophysiology of Gestation, ed. by N.S. Assali. New York, Academic Press, 1972, vol. 1, pp. 145-268.

g) Tables (each, including heading and footnotes, on a separate page).

h) Figure legends (all listed on one page); state magnification of photomicrographs.

To Comply — Or Not To Comply?

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There is abundant evidence accumulating in the literature[1] to indicate that when patients ask themselves this question, many of them — about 50% on average — opt for non-compliance. For reasons that are varied and complex, patients make their own decisions regarding whether they will take a prescription drug as directed. This, obviously, raises some questions that are important to the assessment of drug therapy; for non-compliance may account for the failure of a drug to produce its expected benefit. It may also form the basis of quite erroneous conclusions regarding the efficacy of therapy, for certain patients may derive more benefit from contact with their physician than from the drugs they are prescribed but do not take, while others, after following directions for a short time, decide that the need to continue no longer exists. Since many of these patients regain their health in spite of non-compliance, the physician is left in an untenable position in so far as being able to make valid judgements of drug therapy.

Therapeutic successes in non-compliant patients cause little or no concern; it is the failures that raise the problems. Why should a patient not follow directions for taking a prescribed medicine? One would have thought that regaining one's health would be sufficient incentive to follow the physician's directions without question. Is the problem a failure to communicate directions effectively, in the language the patient understands? Is it a lack of compassion on the part of the physician, that is, a failure to understand the patient, his or her lifestyles, or the complexities that may be due to other therapeutic programs he or she is attempting to cope with? Does the physician really know what he is asking the patient to do — in the patient's view — when he prescribes medication to be taken in a certain specific interval? All these questions have some bearing on the problem of non-compliance, and while in some cases the answers are far from satisfactory, in others they may be so simple they appear obvious. In the latter situation, it should be remembered that what is obvious to one person, may not be obvious to another; things that are taken for granted often from the weakest link in the chain of communication of ideas.

Let us examine first, the likelihood that non-compliance results from a lack of understanding of the directions the patient receives. There are two, and possibly three sources of such information. The first may be verbal, from the physician, when he explains the nature of the medication he is prescribing. The details of this may or may not be remembered, but there is a tendency to associate the prescribed drug with simple concepts of anatomy or function. Thus, the patient may remember that the medicine was "for the nerves", "for the blood" or "for the kidney". These, and other such phrases, become the clue as to what medication must be taken at certain intervals. This information may be reinforced, by the second source, namely, the pharmacist from whom the patient receives his medication.

The third source is the label on the prescription container, but here, strangely enough the directions relate almost exclusively to the frequency of dosing, not to the use of the drug. The name of the drug which may appear on the label, is of little use to the patient as a means of relating medication to function, and so the contents of the container, e.g. shape, size and color become the important clues. In the language of the patient, "the little white pills" are "for the heart", and "the little green ones" are "for the blood". Simple, and straight-forward? Yes, but only effective providing the patient is not already taking a "white pill for his water" or another "green pill for his blood pressure". In this situation, where color or shape do not permit a relation to function to be made, non-compliance may result from confusion over the inability to makes these simple relationships.

Biron and Cagnan[2] have referred to this as "chromo confusion" and Mazzullo and Lasagna[5] suggest that physicians should deal with this problem by making certain that if therapy requires two or three drugs to be taken concurrently, each one be of a different color. The appropriateness of this solution may be questioned on two counts. How is the physician going to be able to remember the colors of different brands of even half a dozen commonly used drugs? Reference to the data of Table I will very quickly convey an appreciation of the magnitude of such a task. Secondly, if it were practical to follow this suggestion, it would mean that the physician would have to specify a brand name when writing the prescription, and this would violate one of the principles which medical students are taught.

TABLE I

Colors of warfarin tablets listed in CPS 75

Name	Manufacturer	Dose/mg	color
Antithrombin-K	Purdue-Frederick	2	light green
		5	light blue
		10	white
Coumandin	Endo	2	lavender
		2.5	orange
		5	peach
		10	white
		25	red
Warfilone	Frosst	2.5	green
		5	orange
Warnerin	Warner-Chilcott	5	green

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A much more practical solution would be for the physician to write on the prescription form, under the Label section "for the heart", "for the blood", etc. The pharmacist will transfer this phrase to the container label, and the patient will have the clue he needs. After all, when one buys a non-prescription medication the use appears on the container label as "for sinus congestion", "for upset stomach". Why not do the same thing for prescription drugs? Perhaps this might improve compliance merely by removing a potential for confusion.

The directions used on the container label should always be in the language the patient understands. Failure to observe this obvious comment can lead to non-compliance even in the most conscientious patient. An example of this was brought to my attention recently when an elderly person, required to take three different drugs concurrently, was instructed, in an emergency to take a fourth "sub-lingually"; but the patient did know what this term meant. Grossman[3] wrote recently that "... today's prescription has to be a shining example of the art of communication — the medium has to carry the message loud and clear". Surely if this is true of the prescription, which the patient does not take home with him, it is even truer of the container of his medication, which he does.

An appreciation of the patient's life style may have an important bearing on compliance. How, for example, is the patient to follow the prescription direction that reads "one capsule three times a day with meals" when he, or she eats only two meals a day? or four meals a day? Under these circumstances it would be more meaningful to specify clock times — eg. 8 - 12 - 6.

A frequent observation made by those who have studied compliance is the great number of patients who never finish a five-day supply of prescribed antibiotic. The probable reason for this lies in the patient's observation that in two or three days he is "feeling better", meaning that his temperature has dropped or that an inflammatory reaction has subsided, and so he stops. What is the point, he may ask himself, of continuing to take the nasty-tasting stuff? Besides, if it works that well, he might as well keep some for next time. The physician should be aware of this type of non-compliance, and explain to the patient (a) that unless he finishes the antibiotic at the required time, not just when he feels better, the infection may return in a more virulent form, and (b) that antibiotics should not be stored for future use, for the shelf-life may be limited. Surely this approach would show the patient that the physician understands patients and what they are likely to do with drugs.

Several people I have known have refused to follow their physician's orders for a reason which, for want of a better term, I should call lack of compassion. For example, a patient placed on anti-hypertensive therapy "feels terrible" for the first week or so — and thinking back to how he felt before therapy started — decides to skip every other dose. Or the person who becomes drowsy on the tranquilizer that has been prescribed three times a day and decides on his own to reduce the dose. Patients such as these sometimes take matters into their own hands, because, despite their complaints, the physician insists on their continuing as directed. The wise physician who prescribes antihypertensive drugs will anticipate what the patient is likely to experience, and will tell him so, emphasizing the fact that "feeling terrible" is a passing phase which is likely to disappear once the blood pressure has become stabilized. This sort of advice about a drug's side reactions leads to a healthy therapeutic situation because the patient, when he experiences them, realizes that his physician knows what he is talking about. The problem with the sedation resulting from a tranquilizer may be an indication of a sensitivity on the part of the patient, which can only be resolved by reducing the dose of frequency of dosing. The point in both these illustrations is that the patient feels the physician thinks him stupid when he complains, and the easiest way out is to stop taking his medication. A little compassion or understanding is all that may be needed to improve compliance in these situations.

Undoubtedly, the commonest cause of non-compliance, especially in the elderly, is the sheer number of medications that must be taken during the day; and whereas there is little possibility that this situation will be improved by a reduction in the number of drugs prescribed, compliance can only be improved by an appreciation of the problem faced by the patient. It must be viewed as far as possible, in his terms, and and effort made to help him find his way through the therapeutic jungle he faces.

The examples of non-compliance which have been discussed above all derive from either confusion, or a lack of information as to what will happen if the patient does or does not follow directions for taking his medication; and the suggestions made herein assume that the patient is conscientious, and therefore will respond positively to the efforts made to improve compliance. What are the chances, it might be asked, that complaince will in fact be improved by these suggestions, because certainly not all patients are conscientious? The evidence here is not encouraging. Luntz and Austen[4] found that in the treatment of tuberculosis compliance fell from 82% at the end of the first year to 39% at the end of the fourth year. Sackett *et al*[6] has observed that although hypertensive steelworkers could be taught a great deal about their illness and the necessity for continuous and regular medication, the likelihood of the medication being taken as directed was not increased thereby. The encouragement of certain behaviour-oriented activities seems to improve compliance, again where chronic medication is involved[7]. Hypertensives who are taught to take their own blood pressures at home and to plot the daily readings on a simple chart, seem to experience better blood pressure control.

Perhaps there is no universal strategy by which compliance can be increased, for the solution may depend on the patient, the drug and the length of therapy; but the wise physician will anticipate the possibility of non-compliance and will let his patient know that he anticipates it. This, in itself, can lead to a better mutual understanding and respect. □

Reference on page 125.

On the Need for a Treatment Philosophy in Psychiatry

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People usually learn to be a problem for others. Helpers could be concerned, more actively, with the discovery and remediation of such inefficient, insufficient, or inappropriately learned behavior. This is not where helpers spend most of their therapeutic time. Psychiatry, for example, as it operates most often, concerns itself with issues such as:

(i) **The illness model** — whereby patients don't have to unlearn old behavior or re-learn new behavior, but need to get cured. Patients don't have behavioral difficulty. They are considered sick and have a mental illness.

(ii) **The tender-love-care (TLC) model** — where patients may be kept in a nurturant, palliative environment, surrounded by helpers who feed and care for them (perhaps less and less) as time passes.

(iii) **The irresponsibility model** — where patients can be allowed to excuse their often irritating and disadvantageous behavior on grounds that it is unconscious and they are "unaware of what they are doing" or are "out of touch with reality."

(iv) **The insight model** — were patients are encouraged to discover WHY they behave the way they do. Having accomplished this, or, more usually, having had insight offered to them, they need only to go ahead and **change.**

(v) **The motivational model** — where patients don't even need insight into their problem they simply have to **want to** be different. They just need determination, will power, more get up and go!

(vi) **The emotional disturbance model** — where patients are suffering from an imbalance of emotional forces. Their internal dynamics and controls are considered to be malfunctioning.

(vii) **The evocative model,** or the talking cure, which operates on the premise that patients need the attachment, empathy, and respect as human beings which has previously been denied. They require a situation complete with "rapport" in which to become renewed.

(viii) **The symptom model** — where behavior isn't what it seems, but symptomatic of what is really wrong. The real thing is not as obvious as the problem behavior but more troublesome because it is responsible for the problem behavior.

(ix) **Historical model** — where the patient's dilemma exists in the past and the solution is to unfold the past as one might peel an onion. Find out where the past has its death grip on the present and you can piece together the puzzle. The present is incidental to this model. The present is important only because it happens to be where the past has arrived. The past is everything. The patient's problems are childhood, or adolescent in origin. They are the responsibility of parents, uncles, or orphanages.

(x) **The pharmacy model** — where the dysfunction is chemical in origin and it is a matter of trial and error with several drugs to "overcome" the chemical imbalance and restore equilibrium.

On a psychiatric ward there may be several psychiatrists with admitting privileges, and one can imagine the chaos which could reign supreme. Each psychiatrist may emphasize one, or alternately several, of these previously mentioned models. He may be oriented towards the mental illness model as explanatory in one case, while recommending T.L.C. for someone else. Another psychiatrist in the next interview room is encouraging medication for his patient and alternately supplying insight as the answer for another. If you multiply the number of psychiatrists by the models available and supply thirty patients and an equal number of ancillary staff you have a buffet of ineffectiveness and inefficiency almost beyond comprehension. Perhaps this explains the ancillary staff turnover on hospital psychiatric wards. This turnover is explained to some degree because psychiatrists often don't implement the treatment plans, they may just originate them. The ancillary nursing staff bears the brunt of this plethora of approaches to patients. The same psychiatric diagnosis for two different patients could result in different treatment plans because the two psychiatrists operated from divergent models. The consequent effect upon ward milieu is a feeling of futility for the staff and a growing sense of impotence and inadequacy. They resign in droves, but often without an awareness of what was driving them away. They often give up psychiatry altogether and opt for something more structured like surgery or paediatrics. The staff can feel unfulfilled and dissatisfied with their jobs and begin to vigorously dislike patients with special demands. Eventually they begin to turn upon one another.

What is absent from this therapeutic maze is consistency of purpose and approach. It would seem to be more fruitful to work with co-operation and harmony towards the goal than to attempt to work at cross-purposes and with growing inter-personal factionalism and disagreement.

One answer is to accept a common and sensible understanding about what brings people to a psychiatric facility. It is proposed, at this point, that the ten previously outlined models are not the answer. Some are not even a partial answer. The reason individuals arrive on a psychiatric facility is usually this: *They have gotten into behavioral difficulty in the presence of someone who was in a position to do something about their behavior.* If this behavioral difficulty involved a violation of the law then the agent who could do something about their behavior is the policeman (or

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eventually a judge who may call in a psychiatrist if he has questions concerning the causality underneath the behavior). If the behavior difficulty involved a violation of some moral or social rule then the agent who is called in is a minister or priest, or a mental health professional (usually a psychiatrist.) If, to proceed further, the psychiatrist agrees upon the lack of appreciation, or awareness, or temporary incapacity of this individual who has transgressed a moral, or social, rule then he may suggest that they proceed directly to hospital (in-patient), or indirectly to hospital (day-patient).

The transgression of the moral or social rule rule *involves behavioral action.* Somebody has had to *do* something which has upset their own hierarchy of moral and social rules or has upset someone else's hierarchy of moral and social rules. The behavioral action must have been disconcerting to an extent that the persons involved are willing to exercise some power or influence in terms of controlling the future exercise of this behavior. Often there is a label to go along with the moral or social transgression. "You're crazy", "I must have been nuts or something", "That's not normal", "You're sick", "I'd better see a psychiatrist", "You need help." All of these expressions are available, and many more, as indicators that somebody is exercising a value judgment about their own, or someone else's behavior. This, then, is what most often happens to bring an individual to a psychiatric facility.

Once a patient arrives at such a facility, we have seen that there are a number of models of treatment which could be applied, but which are not really applicable to the specific reasons behind the presence of this patient. Accepting the point of view that there has been a decision made about patient behavior (action), whether by the patient or by a relative, a minister, judge, or psychiatrist, it seems meaningful to take an approach towards the patient which emphasizes that he is here in hospital because of his present **behavior,** not because he is *sick, in need of love, in need of insight, needs a talking to, has underlying and unconscious conflicts, or had an unhappy childhood or adolescence, or has a chemical imbalance.* Even if some of these explanations have some merit they are not the present reasons for his arrival. It is his behavioral action which drew the attention of mental health professionals and resulted in his presence on the psychiatric facility.

The next most reasonable step is to take a clinical history with an emphasis upon *behavior.* WHAT, WHERE, WHEN, AND HOW does the behavior which has resulted in this present predicament manifest, or fail to manifest itself? WHAT is the behavioral repertoire of the individual? Is it enriched, impoverished, stunted, culture bound, complicated, naive? The third step should be towards behavioral remediation. The patient's behavior (and future behavior change) becomes the priority for treatment or attention. The need is to design a treatment plan with behavioral, more than attitudinal, medicinal, or causal objectives.

This three step format seems a meaningful approach to clinical problems. The main accent is on behavior but there remains room for other approaches such as insight or medication. This behavioral orientation can be practical, pragmatic, and productive when used as the primary therapeutic avenue for patient change.[1] □

Reference

1. **Matheson, W. and J. Martin,** *Functional Help,* unpublished text, Cape Breton Hospital, 1976.

SENIOR PUBLIC HEALTH POSITIONS

The Nova Scotia Department of Public Health requires an ADMINISTRATOR, Child and Maternal Health and Communicable Diseases and several HEALTH UNIT DIRECTORS for various regions of the Province.

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CORRECTION

The Medical Society Insurance advertisement which appeared in the February and June issues of the *Medical Bulletin,* showed a Disability premium structure for ages 61 to 75. It should have shown age 61 to 65.

Apologies from the Insurance Department. Please check this issue for corrected version.

The Social Implication of Colostomies and Ileostomies

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Adapting to an Ostomy

People undergo a colostomy or ileostomy for diseases such as carcinoma of the rectum or colon, ulcerative colitis, Crohn's disease, diverticulitis or other disorders of the large bowel. Most adapt satisfactorily to the ostomy but a great many do not and the price paid is physical discomfort and social trauma[1]. From various studies it can be seen that a great many psychological and social problems are experienced. The problems are due both to the actual limitations imposed by the ostomy and to the limitations imposed by the person's interpretation of the meaning of the physical change.[2]

There is an average period of adaption to the ostomy of approximately one year. It has been found that there is no common psychological factor or personality type among the people with problems. Older people tend to have more psychological problems and longer periods of adjustment than younger people.[3] The people who adapted best were those who, during the period of adjustment, had been strongly supported by those persons who were most important to them.[4]

Some of the problems encountered include the following:

Spillage

One author[5] stated spillage to be the event most dreaded by ostomy patients, producing profound feelings of horror, shame and degradation. Depression produced by spillage is often suicidal, and it may lead to social and work withdrawal and to the leading of a hermit-like existence.

Odour

Another author[6] found that spillage was only a minor concern and that fear of smelling was a far greater concern. The odour and sound of bowel wind were very embarrassing and the fear of them sometimes reached delusional or hallucinatory intensity. This resulted in depression, guilt, self blame and feelings of unworthiness. This self condemnation is reinforced by a social environment which places high value on cleanliness, absence of body odour and concealment of bowel functions, and therefore social and work withdrawal often takes place.

Body Image

Some look on the ostomy as mutilation and body disfigurement. They feel that surgery has so weakened the internal structure of their body that it has become fragile and vulnerable to further injury. A patient judges his body by his previous standards of a normal, health body and thus loses confidence in his body which now has an ostomy.[5]

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The results of the actual physical limitations imposed by the ostomy and the fears and frustrations listed above can include depression, self condemnation, embarrassment, prolonged and excessive cleaning and washing routines, withdrawal or lessened participation in social activities, travelling (vacations), work, and sexual inadequacy or undesirability. These fears can thus become psychologically and socially crippling to a greater or lesser degree and can result in a much lower quality of life for the individuals involved.

The problems listed above were taken from various studies and apply to different groups of people of different ages and backgrounds but may not apply to everyone, everywhere. the purpose of this project was to carry out a survey among ostomy patients to determine if the same fears and problems mentioned above were applicable to them.

Survey of Ostomy Patients

The survey was carried out among members of an ostomy club in St. John's, Newfoundland, by means of a mailed questionnaire containing questions relating to the problems discussed above. It required "yes" or "no" type answers except for one or two which asked for comments. No names were required and they were instructed to omit any questions which they felt were too personal. Replies were received from ten of the thirteen club members who agreed to take part in the survey.

Results

The results of the relevant questions in the questionnaire are shown in the following tables:

TABLE I

Age, Sex, Time to overcome Intial Reaction

Age	Number	Sex	Number
16-30	1	Male	2
31-50	2	Female	8
51-70	7		

Time to overcome initial reaction	Number
0 - 6 months	5
7 months to 1 Year	3
1 - 2 Years	1
Never	1

TABLE II

Fear of Spillage; Fear of Smell

Inhibition of social life	4
Inhibition of work	2
Inhibition of travel	5
Fear of Smell	10
Inhibition of social life	8
Inhibition of work	1
Inhibition of travel	6

TABLE III

Adequacy of Present Available Help.

	Number Yes	No
Has your doctor been helpful concerning fears and frustrations since the operation?	5	3
Is the Ostomy Clinic helpful?	5	3
Is the Ostomy Club helpful?	8	0
Is the available literature adequate?	4	3

These results show that the same attitudes and fears exist in this survey group as described in the reports referred to in the introduction. The initial reactions consisted of fear, shock, depression and uneasiness. The average time for a person to overcome this initial reaction was found to be up to one year, although one person never overcame it and another stated that one never adjusts one hundred percent.

The fear of smell was seen to be a greater problem then the fear of spillage, which agrees with the findings of Pryse-Phillips,[6] although there was not much difference. More people were inhibited in their social life and travel but not many people stopped work because of these problems. This was probably due to the fact that a majority who responded were older women and were likely married or on pensions and therefore not employed outside the home. It should be noted that while most people had a fear of spillage, all had a fear of smell. These two problems cause the greatest difficulties among ostomy patients once they have gotten over their initial reaction.

Opinion was pretty well divided on whether the assistance provided by their doctors, the ostomy clinic, and the available literature, was adequate and this perhaps points out a need for improvement in each of these areas. However, all agreed that the ostomy club was helpful to them and that it was of benefit to be a member.

The comments given on the questionnaire point out the problems encountered by ostomy patients much more clearly. Four of the six commenting stated that there is a definite need for preparation before the operation. The patient and his family should be made aware of the type of operation and type of care required afterwards, so that the operation would not be such a shock. Also, the family can offer support and help the patient to adapt psychologically if they know what to expect.

It was stated by several that doctors should be more aware of the psychological and social problems encountered by the ostomy patients, and should prepare patients before the operation and also be available for consultation afterwards. It was pointed out that doctors are aware of the physical problems but may fail to help the patient cope with his emotional problems, especially if not readily available after the operation.

Another suggestion indicated the need for people who have already adapted to an ostomy to talk to the patient before the operation and to show him that things are not as hopeless as they may appear. After the operation these former patients offer help and support to the new ostomy patient individually or joined together in ostomy clubs.

There is also a definite need for an enterostomal therapist who is trained in the care of ostomies and who knows the best methods of care for each individual. These therapists could give help and guidance to the ostomy patient after the operation and in the long term where it is needed.

Finally, several mentioned the need for more and better literature which should be made easily available to the new ostomy patient.

Psychological Support Before and After Operation

From these results and from the findings of others it can be seen that the major psychological problems encountered by ostomy patients include the initial reactions of uneasiness, fear, shock and depression and the long term fear of smell and fear of spillage. These concerns ofter lead to withdrawal from social life, work and travel, and to loss of confidence in the body, embarrassment, self condemnation and depression. In extreme cases this can lead to olfactory hallucinations and delusions and mental illness. Much can be done to alleviate these symptoms such as help and understanding from physicians, nurses, clinics and therapists and better availability of useful literature.

In the opinions of those answering this survey and also the previous authors, one of the most important aids to good acceptance of the ostomy and adaption to it is the proper psychological preparation of the patient and his family before the operation and the support of those close to him afterwards. The procedure should first be explained to the patient and, if possible, he should be given time to get used to the idea. He will usually agree to surgery because it will relieve his pain and discomfort but if he has not had time to become psychologically prepared he may suffer mentally later.

Concerning colostomies and ileostomies in children, one author states that ". . . it is important to wait until the patient is

psychologically able to accept the procedure as being necessary for his well being. The procedure is carried out without psychological preparation of the patient only when complications make the operation mandatory."[7] Menzies[8] stated that " . . . most patients are aware of the existence of a colostomy and dread the thought of having one themselves . . . It is necessary to allay anxiety . . . . about their future capacity for work and ability to return to a normal social life."

Although this need for proper preparation and follow up has been pointed out many times in the past it is apparent from this survey that there is still much room for improvement. In the cases with more serious problems such as extreme depression, hallucinations, delusions and mental illness, professional medical and psychiatric help should be consulted.

Summary

Although the surgical procedures for colostomies and Ileostomies are quite good and the patient is able to return to almost normal physical functioning fairly rapidly, there is often a failure on the part of the medical profession to understand and cope with the traumatic effects of the operation and the social and psychological problems encountered by the patient.

The purpose of this project was to review the available literature to discover what these social and psychological problems were and then to conduct a survey among members of the ostomy club in St. John's, Newfoundland to see if the same problems existed.

It was discovered that these same problems do exist and there is therefore much room for improvement in the care of ostomy patients with regards to psychological and emotional adaption to the ostomy. For these reasons it was concluded that the success of the surgical procedure is incomplete and recommendations were made for improving the situation and the adaption of patients to their ostomies. □

Acknowledgment

I would like to thank Dr. Pryse-Phillips for his help and supervision during this project. Also I would like to thank Mrs McGory at the ostomy clinic at the Children's Rehabilitation Centre and all the members of the Ostomy Club for their help in the survey.

Finally, thanks are due to Dr. Pryse-Phillips' secretary, Mrs. Dowden, who was very helpful in preparing the Questionnaire and handling the subsequent mail.

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The Nova Scotia Ostomy Association was founded in Nova Scotia and had its first meeting in The Halifax Infirmary about five years ago. This was the 189th chapter of over 350 chapters in the United States and Canada of the United Ostomy Association Incorporated of Los Angelos, California. Mrs. Roy Yetman has pioneered this program in Nova Scotia. It has contributed a great deal to the welfare of all those with ostomies in the province. Three additional chapters were formed in Nova Scotia during the past year, Berwick in May 1975, Cape Breton, Sydney in January 1976 and Yarmouth in April 1976.

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Plan to attend this years
Summer Meeting
Keltic Lodge
September 9-12

Drug Therapy in Arthritis — A Rational Approach*

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CLASSIFICATION

There are now so many different drugs available for the treatment of rheumatic disease that an essential first step towards devising a rational approach is to classify them.

A suggested classification is shown in the table. I shall first discuss a plan of treatment for rheumatoid arthritis and then suggest how this applies to other types of rheumatic disease. One must distinguish first between specific and nonspecific or symptomatic treatment. The latter will relieve the symptoms of the disease without having any effect on the underlying disease process. Examples are analgesic and anti-inflammatory drugs which are effective to a greater or lesser extent in any rheumatic condition regardless of its cause.

Specific treatment, on the other hand acts on the basic disease process and relieves symptoms only as a secondary effect and therefore often slowly. Examples include gold and penicillamine in rheumatoid arthritis whose action is accompanied not only by relief of symptoms but also by effects on rheumatoid factor, extra-articular manifestations of the disease and, in some cases, on the outcome of the disease.

CLASSIFICATION OF DRUGS USED FOR RHEUMATOID ARTHRITIS

SIMPLER	and	SAFER
A. NON-SPECIFIC		
1. **Simple Analgesics**		Acetaminophen ASA in small doses Propoxyphene
2. **Analgesics with Minor Anti-inflammatory properties**		"Profens" — fenoprofen (Nalfon) — ibuprofen (Motrin) — naproxen (Naprosyn)
3. **Analgesics with Major Anti-inflammatory properties**		ASA in large doses Indomethacin Phenylbutazone
4. **Pure anti-inflammatory drugs**		Cortico-steroids and A.C.T.H.
B. SPECIFIC	▼	Gold, Penicillamine, Levamisole, Immuno-suppressives
MORE EFFECTIVE	**and**	**MORE TOXIC**

*This paper formed the basis of Dr. Huskisson's talk given while on his Lecture Tour across Canada, April 1976.

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SIMPLE ANALGESICS

Simple analgesics, as for example, **acetaminophen,** simply relieve pain without having any effect on inflammation. They also have little tendency to cause gastric irritation. But it was shown a long time ago that aspirin was more effective in the treatment of rheumatoid arthritis than pethidine, emphasizing the importance of the anti-inflammatory effect. They are used mainly as a supplement to regular treatment, to be taken at times when pain is not well relieved.

The time course of the action of simple analgesics is characteristic. Their action starts within half an hour of administration, reaches a peak after two to three hours and is all over after about six hours. Repeated doses produce exactly the same effect, no more and no less. There is no additional benefit obtained from regular administration. There is therefore no point in giving regular doses of simple analgesics — they should be taken to relieve pain on demand.

ANALGESICS WITH MINOR ANTI-INFLAMMATORY PROPERTIES

The analgesics with minor anti-inflammatory properties represent a new and important group of drugs and the most successful type has been the **propionic acid derivatives or "Profens."** These drugs relieve pain in exactly the same way as simple analgesics and would be effective for the treatment of pain regardless of the cause, as for example, headache and dysmenorrhea. Their analgesic activity is comparable to that of aspirin, but some have slightly less anti-inflammatory activity than full doses of aspirin. Such drugs may therefore be marginally less effective in the very active case of rheumatoid arthritis in which inflammation is particularly prominent. However, they have much less tendency to cause gastric irritation than the traditional anti-inflammatory drugs like aspirin.

ANALGESICS WITH MAJOR ANTI-INFLAMMATORY PROPERTIES

Aspirin, indomethacin and **phenylbutazone** are the traditional non-steroidal anti-inflammatory drugs. They also all have a marked tendency to cause gastric irritation and each has individual side effects of its own.

The time course of the action of anti-inflammatory drugs is quite different from that of a simple analgesic. When aspirin is given in regular doses of at least 3.6 grams daily, the relief of pain develops over the course of the first few days,

reaching a peak after three to five days of administration. Most anti-inflammatory effects are, like aspirin, effective within a few days.

The time course of the development of the toxic effects of drugs is also important. The gastric disturbances which occur within aspirin therapy are most likely to occur within the first week of treatment, and seldom occur after the first month. The time course of the development of both the desired actions and the side effects of drugs must be considered in planning treatment. A drug must be given for long enough to enable its effects to appear but there is no purpose in giving it for longer than it takes to produce its maximum effect. If a compound normally takes one week to produce its maximum effect but has not done so at the end of that time, there is no purpose in continuing that treatment. A period of two weeks' treatment is probably about ideal to determine both the effectiveness and the likelihood of gastric intolerance with most anti-inflammatory drugs. I suggest that they should be given for this period of time and their effect reviewed. If one drug has not proved effective by this time it should be changed for another.

PURE ANTI-INFLAMMATORY DRUGS

The next group of non specific therapy is **steroids.** And I emphasize that steroids benefit only the symptoms and signs of rheumatoid arthritis and that there is no evidence that they have any effect on the outcome of the disease process itself. They are potent anti-inflammatory drugs and relieve pain because of this property, having no direct analgesic action

Steroids have a marked tendency to cause gastric side effects and there are a variety of other problems which are an inevitable consequence of their use in doses of the order necessary to have a worthwhile anti-inflammatory effect (greater than 7.5 mg per day of prednisolone or equivalent). These side effects, or overdosage effects as they should more properly be called, are the manifestations of Cushing's Disease and are well known. Particular problems in patients with rheumatoid arthritis include osteoporosis, skin changes, muscle wasting and increased tendency to infection. So that in most cases of rheumatoid arthritis steroid therapy is not worthwhile. The effects of a safe dose, 7.5 mg daily of prednisolone or less, are usually very disappointing and larger doses produce side effects without altering the outcome of the disease.

Occasionally, steroid therapy is justified where no other treatment has proved effective. However, steroid therapy should be avoided in most cases of rheumatoid arthritis and reserved for those conditions in which there are specific indications. These include polymyalgia rheumatica, temporal arteritis, polyarteritis nodosa, and severe cases of systemic lupus erythematosus.

Local steroid therapy is an entirely different matter. Local steroids are often useful for a single painful joint to relieve pain, as an aid to the mobilization of stiff joints and to the correction of deformities.

PROPIONIC ACID DERIVATIVES

I should now like to take a closer look at one or two areas of drug treatment. The propionic acid derivatives or profens demand closer attention if only because (since their introduction) these drugs have proved extremely popular. They have been shown to be effective in comparisons with placebos, and clearly have an anti-inflammatory effect as judged for example, by relief of morning stiffness, one of the very characteristic symptoms of inflammatory disorders and a cardinal sign of inflammation which seems to have been overlooked by Celsus and Galen.

Their particular claim to fame is the striking reduction in the incidence of gastro-intestinal side effects when compared with aspirin, and the greater number of patients who are able to continue treatment. In our studies of aspirin and fenoprofen, for example, we found that only about fifty percent of patients where able to continue taking aspirin until the end of the study (six months of treatment) and even in those who were able to continue treatment, there were still twice as many side effects as occurred in patients taking fenoprofen. The side effects of "profens" are mainly confined to the stomach and differ from those which occur with aspirin; whereas high-dose aspirin therapy causes indigestion which closely resembles that due to peptic ulceration, the gastric intolerance which occurs with "profens" is usually related to the actual taking of the tablets — patients complain that after taking the tablets they have epigastric discomfort which is usually transient.

Perhaps the most important difference between the gastric intolerance which occurs with aspirin and that which occurs with "profens" is that the latter is very unlikely to lead to withdrawal of treatment.

Which "Profen" is most effective?

We have recently had the opportunity to compare four propionic acid derivatives which are available in the United Kingdom — **ibuprofen (Motrin), Ketoprofen** (not yet available in Canada), **fenoprofen (Nalfon),** and **naproxen (Naprosyn).** We did this in a double blind crossover trial in which ever patient received each treatment for two weeks. (ibuprofen 1.2 g daily, fenoprofen 2.4 g daily, naproxen 500 mg daily and ketoprofen 150 mg daily). We treated a very much larger number of patients than is usual for such studies — 90 patients completed all 4 treatment periods. And because there were a larger number of patients than is usual in such studies we noticed a phenomenon which seems to have been overlooked in previous work of this kind.

In relation to the effectiveness and tolerability of the drugs we found some small differences. In terms of relief of pain and reduction in the duration of morning stiffness, fenoprofen and naproxen were slightly more effective than were ibuprofen and ketoprofen. As for side effects, ketoprofen and fenoprofen were more likely to cause gastric side effects than were ibuprofen and naproxen. Considering effectiveness and the incidence of side effects only, it is clear that of the two more effective drugs naproxen has the advantage of causing a lower incidence of gastric side effects. This advantage is

somewhat reduced, however, by the fact that naproxen has been reported to cause gastric haemorrhage and this may occur in about 1% of patients. Several cases have been reported and we had one in our study.

THE RIGHT DRUG FOR THE RIGHT PATIENT

A much more important phenomenon became apparent in this study. Looking at the distribution of pain scores associated with treatment with these four drugs, it was clear that there was little difference. But when one compared the distribution of pain scores produced by the best and the worst of the four drugs for each individual patient, there was a large difference. It is in fact obvious that *individual variation in response is much more important than differences between drugs.* We saw patients who had little if any response to the first three componds administered, then inexplicably responded very well to the fourth. We were not able to identify in advance the factors determining the patients' response to individual compounds. Blood levels did not seem to be important in this respect, and the only way to determine which drug will produce the best response in a particular patient is to try them all and see.

The same phenomenon was apparent with gastric side effects. Many patients had gastric side effects with one of the compounds, some with none and some with two, but hardly any patients had these side effects with three or all four of the drugs. It should therefore be possible to find at least one which will be well tolerated by every patient.

We must surely discard the idea of one drug being equal to or better than another. Instead, we should think of one being the drug of choice for one group of patients and another drug for another group. This is particularly important when one drug is more effective than another. Fenoprofen and naproxen are more effective than ibuprofen but there is still a small group of patients who respond better to ibuprofen, and for them this is of the greatest importance. It is a matter of finding the right drug for the right patient.

Long-term Preference for "Profens"

In order to test the validity of these findings, we asked patients to choose which of the four "profens" they would like to continue with, or whether they would prefer to return to their previous medication. The patients' first choices were closely related to the relative effectiveness of the drugs which I have already described, and more patients selected fenoprofen and naproxen than ibuprofen and ketoprofen. We reviewed the progress of the patients at the end of a year of treatment. The first and most important finding was that about 60% of patients were continuing their best "profen" and almost nobody was taking their second, third or fourth choice. Some patients had elected to return to their previous therapy which was usually either aspirin, or indomethacin or phenylbutazone. The choice of "profen" again reflected the differences in effectiveness found in the original study — more patients were taking fenoprofen and naproxen than ibuprofen and ketoprofen.

The study seems to have been of particular value to this group of patients who where able to select their choice of antirheumatic drug, and this choice clearly remained constant, at least over the one year follow up after the study. During this period, patients had the opportunity to alter the dosage of these drugs. The doses of naproxen and ketoprofen remained constant and only occasionally did patients increase the dose of ibuprofen above 1.2 g daily. However, half the patients on fenoprofen reduced the dose from 2.4 g. daily to either 1.2. or 1.8 g. daily. More recently, 300 mg fenoprofen capsules have been replaced by tablets of the same size and this has been advantageous in reducing gastric side effects in some patients.

SUPPLEMENTS

I should now like to mention the value of supplements to regular treatment. I have already mentioned the use of simple analgesics taken on demand to relieve pain when times are bad. A second most useful supplement is **indomethacin at night.**

There are three components to the response of this use of indomethacin. First there is relief of pain, secondly there is a reduction in the severity and duration of morning stiffness, and thirdly there is an improvement in the quality of sleep. We demonstrated the last in a study comparing indomethacin and Amytal used at night for rheumatoid arthritis. Indomethacin was clearly superior and this emphasizes the old pharmacological principle that if your have pain at night, the correct treatment is an analgesic and not a hypnotic.

It is of interest that this treatment is effective after the first night of administration and there is no further improvement thereafter. Patients with morning stiffness of more than thirty minutes duration are particularly likely to respond well. When we compared indomethacin given at night with the same dose given in the morning, we found an enormous difference. Indomethacin given at night relieves morning stiffness, gives excellent pain relief lasting until well into the following afternoon and is well tolerated, perhaps because the side effects occur while the patient is asleep. The same dose given on waking in the morning does not relieve morning stiffness, has a rather small effect on pain and causes side effects, often severe, in many patients. I therefore regard nocturnal dosage as the principal indication for the use of this drug and it is a particularly useful supplement to regular therapy with other drugs.

Our patients dislike suppositories and usually prefer to take this kind of treatment in the form of capsules. The capsules are slightly more slowly absorbed and slightly more effective than the same dose administered by a suppository.

"SPECIFIC" THERAPY FOR RHEUMATOID ARTHRITIS

Turning now to more specific therapy for rheumatoid arthritis, we have a group of drugs which have effects which are quite different from the analgesic and anti-inflammatory drugs. A good example is **penicillamine,** whose effects on the manifestations of rheumatoid arthritis are achieved very slowly. The effects are gradual and may not even begin until

after two months of treatment; the maximum effects are not achieved until after six months of treatment. The improvement in pain, stiffness and other joint manifestations of rheumatoid arthritis is accompanied by a reduction in the size and number of nodules and improvement in various other extra-articular features of the disease including vasculitic skin lesions, lymphadenopathy and soft tissue changes like extensor sheath swelling. There is a reduction in the titre of rheumatoid factor and in the erythrocyte sedimentation rate.

This type of effect is also exhibited by **gold** therapy which has, of course, been available for many decades. Unfortunately, recognition of its usefulness was delayed by the mistaken idea that it should be given as a 1 gram course. Only recently did it become apparent that maintenance doses were required to maintain the effects of gold. Gold and penicillamine are equally effective in rheumatoid arthritis in terms of pain, morning stiffness, number of tender joints and other clinical manifestations of the disease. Both reduce the titre of rheumatoid factor and lead to a reduction in the number of nodules and other extra-articular manifestations. There are however, several important differences between these compounds. Penicillamine causes more side effects, especially in the first few months of treatment. However, the side effects which occur with gold are more likely to lead to withdrawal of treatment in many instances.

This type of treatment is of little use if it can only be given for a limited period of time. Since the aim is to control the disease process, this requires that treatment be continued indefinitely. Penicillamine therefore has a substantial advantage, and also has an advantage in effects on X-ray changes. We have recently shown that whereas the X-rays of patients treated with gold deteriorate both in the first and second years of treatment, the X-rays of patients treated with penicillamine deteriorate in the first year of treatment only, presumably when the disease is not yet under control, but in the second year there is no further deterioration. This supports the view that penicillamine therapy, in the fortunate patients who both respond and are able to continue treatment, controls the disease process of rheumatoid arthritis.

When we reviewed our patients taking penicillamine in a comparative study, we found that 44% were well controlled after 2 years and able to continue treatment. The remaining patients had dropped out either because the drug was ineffective or because of side effects or both. The figure of 44%, although a substantial advantage over gold therapy, was nevertheless disappointing.

The side effects of penicillamine are numerous and important. They include rashes, gastro-intestinal distrubances, impairment and loss of taste, thrombocytopenia, neutropenia, proteinuria, nephrotic syndrome and mouth ulcers. Penicillamine therapy, like gold therapy therefore requires the closest supervision. We see patients regularly every two weeks at first; this is convenient since the dose is increased at fortnightly intervals, and this is the time at which side effects are most likely. Delicate management is most important to insure that treatment continues. Once the patient is established on treatment we review once a month; full blood count including platelets and urinalysis are carried out at every visit.

Penicillamine has shown us what can be achieved in the treatment of rheumatoid arthritis and the development of specific therapy for rheumatoid arthritis, which can control the disease process in a higher proportion of patients, is surely one of the most exciting developments we shall see in the next few years. One further advance in this direction is the discovery that **levamisole,** a drug which is capable of restoring or enhancing cell-mediated immune reactions, shows similar properties to those of penicillamine. The effect on the disease is like that of penicillamine, reaching a peak after four to six months of treatment. This effect is accompanied by reduction in the titre of rheumatoid factor and in the ESR.

Our experience so far extends only to about nine months of treatment and it is as yet too soon to say whether this drug will have advantages over gold or penicillamine in the number of patients who are able to continue treatment. So far, it does appear to have some advantage though a few patients have been withdrawn from treatment because of rashes and various other side effects. It is also of interest that both levamisole and penicillamine can be shown to be capable of enhancing cell mediated immune responses. The finding of similar clinical effects and some in vitro properties in common suggest that those properties might be important in the mechanism of action of the drugs. Many of the in vitro effects of these drugs must be unimportant. Penicillamine does not kill worms and levamisole does not chelate copper, suggesting that these actions are not important. The possibility that enhancement of cell mediated immune reactions is important also offers an experimental model by the use of which more drugs could be developed, and it is only with the development of further componds that this hypothesis will be tested.

A RATIONAL APPROACH

Let us now try to suggest a rational approach to the use of these different classes of drugs. I suggest that the most useful policy in deciding which drug to use at any particular time is "safety first." We should use toxic drugs only when it is really necessary and when simpler and safer treatment has failed. If a patient develops some severe toxic effect from a particular compound, it is particularly tragic if the use of that compound was not really necessary. Some patients require only intermittent treatment. Those with mild or intermittent pain require only simple analgesics taken on demand.

Most patients with rheumatoid arthritis however, require regular therapy. Following the policy of using the simplest and safest drug, I suggest that propionic acid derivatives ("profens") are now the first line of treatment. I have shown that they have a substantial advantage, both in the reduction of the number of side effects which occur and in the number of patients who are able to continue taking the treatment. It is clear that any one of them may be completely ineffective in a particular patient. It may therefore be necessary to try all the

available compounds in this group before finding the one that suits a particular patient. Our evidence suggests, we shall be able to control the symptoms in rather more than half of all patients with rheumatoid arthritis by using these drugs.

This type of treatment can be supplemented with simple analgesics on demand and with indomethacin at night for the relief of pain at night and morning stiffness. For patients whose symptoms are still not controlled, we can progress to the major anti-inflammatory drugs including aspirin in high doses.

The progress of the patient should be reviewed at regular intervals. Specific therapy with drugs like penicillamine must be given before visible anatomical changes and deformities have developed. We should therefore look out for the patient whose symptoms are uncontrolled despite optimal anti-inflammatory therapy or whose disease is progressing as judged by clinical criteria, the development of deformities or involvement of new joints, or radiological changes. Perhaps the ideal time to take this decision is after 6 months to 1 year of disease — spontaneous remission is unusual after 6 months and irreversible damage may occur if the decision is further delayed. I suggest that penicillamine is now the first choice of this type of treatment because of the lower incidence of withdrawals and the arrest of radiological progression. Gold is a useful alternative but it is clear that none of these drugs is completely satisfactory and it will often be necessary to change drugs because of side effects. Immuno-suppressive drugs may be useful for patients who fail to respond to penicillamine or gold, especially since response to these two drugs is closely related — patients who fail to respond to gold are unlikely to respond to penicillamine.

Aspirin has traditionally been regarded as the first line of treatment but the high incidence of side effects and the considerable number of patients who are unable to take it in anti-inflammatory dosage suggest that "profens" may be a more appropriate first line. Aspirin has the advantage of low cost and this may persuade some doctors to try it first — this will make little difference as long as treatment progress is reviewed after a few weeks so that patients who have not responded and those who developed side effects can be given the opportunity of trying alternative drugs. The costs of side effects are hard to assess. There is insufficient evidence comparing sophisticated aspirin formulations, including the enteric coated variety, with less sophisticated aspirin and with "profens".

I suggest that systemic steroids do not figure at all in this scheme. They should not be regarded as symptomatic therapy, even as a last resort, but should be reserved for specific indications.

APPLICATION TO DIFFERENT DISEASES

This approach is ideal for the non-specific symptomatic treatment of most rheumatic conditions. Exceptions include gout, in which a brief period of treatment with the most potent anti-inflammatory therapy is required. Indomethacin or phenylbutazone can be given in high dosage for a short time and in this situation seldom give problems. These drugs are particularly effective in ankylosing spondylitis though it may be worthwhile to try simpler drugs first. In very active acute rheumatoid arthritis, it may still be best to start with the drugs which will give the greatest anti-inflammatory effect — perhaps high dose aspirin with indomethacin at night.

Most cases do not have particularly prominent inflammation, require mainly pain relief and can therefore manage with "profens". It is in osteoarthritis and minor rheumatic syndromes including back pain and soft tissue rheumatism that this approach is particularly appropriate. In these conditions, a potent anti-inflammatory effect is not required and the risks and side effects of the major anti-inflammatory drugs are not justified, at least until safer treatment has been tried.

RATIONAL PLAN OF ACTION IN THE TREATMENT OF RHEUMATOID AND OSTEO-ARTHRITIS

"SAFETY FIRST"

STEP 1	PATIENTS REQUIRING INTERMITTENT/OCCASIONAL THERAPY
. . .	Start with a simple analgesic, taken on demand, e.g. low-dose ASA
STEP 2	PATIENTS REQUIRING CONTINUOUS THERAPY
. . .	Start with a "profen" e.g. fenoprofen
. . .	If necessary, supplement with simple analgesics on demand and indomethacin at night
. . .	If ineffective after about two weeks of therapy, switch to a second profen and if necessary, a third
. . .	If still not effective, move on to
STEP 3	
. . .	Use analgesics with major anti-inflammatory properties e.g. high-dose aspirin
. . .	Again, if necessary, supplement with simple analgesics on demand and indomethacin at night
. . .	If still not effective, then for **RHEUMATOID ARTHRITIS ONLY**
Step 4	**RHEUMATOID ARTHRITIS**
	— initate specific therapy e.g. penicillamine, gold
	— NOTE: Continue with anti-inflammatories while specific treatment is being instituted as the latter may take up to six months to achieve maximum effect

Other supportive measures would, of course, be continued as a part of the overall management

CONCLUSIONS

The treatment of rheumatic disease has changed. There are now many effective therapies and instead of encouraging patients to accept the inevitability of their arthritis, we can afford to take a more aggressive approach. This should be directed at finding the right drug for each patient, appropriate to the disease and to the stage of the disease. There are many aspects of the treatment of arthritis other than drugs, including surgery and physical measures. Drug therapy

however has increased and improved so that it now offers a means of relieving symptoms in a substantial proportion of patients and controlling the disease process in some. Perhaps the most important prospect for the future will be the development of more specific drugs for specific rheumatic disease. □

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Normal Pressure Hydrocephalus

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Introduction

In 1965 Hakim and Adams[1 2] described a syndrome of dementia, incontinence and gait disturbance due to an occult communicating hydrocephalus. Although CSF was not under increased pressure, the patients' conditions were improved by a shunt placed into the lateral ventricles that lowered the pressure. Early reports of successful treatment produced great interest in the surgical treatment of dementia, and initiated a much more aggressive policy of investigating and treating patients who would otherwise be permanently institutionalized.

Just when investigative techniques and therapy were becoming well accepted, controversies arose about every aspect of the syndrome[3]. The clinical picture appeared less diagnostic and specific, the results of shunting not as good, and the various investigative techniques not always as reliable as had been thought, and the cause of the syndrome remained obscure. The confusion has deepened further but a review of current thinking on normal pressure hydrocephalus (NPH) will be useful to the practising physician.

Etiology and Pathophysiology

The syndrome appears to result from an obstruction to CSF flow and absorption over the surface of the hemispheres; about 50% of patients have a history of significant head injury or subarachnoid hemorrhage. It may also occur after meningitis or craniotomy (particularly after posterior fossa surgery). Many cases, however, have no known cause.

There has been much argument as to why the apparent hydrocephalus occurs without increased CSF pressure. The progressively enlarging ventricles were thought due to the pulsating, water-hammer effect of the CSF-producing choroid plexus. The pressure may have been high initially and reduced when the ventricles expanded. Possibly loss of elasticity around the enlarging ventricles allowed them to remain enlarged even when pressure was normal. Perhaps the levels of pressure in these patients are transiently in the pathologically elevated range long enough to cause symptoms.

It has more recently been shown that the cerebral blood flow is decreased in NPH, and increased again when a shunt is performed[4].

Clinical Features

The mental changes vary from memory distrubance to marked, progressive dementia. Because early recognition of the syndrome is essential, attention must be given to patients who show early changes of memory loss. Mental changes develop rapidly over many months but may fluctuate and initial embarrassment about urinary incontinence, for example, may change to unconcern as dementia progresses.

Gait disturbance varies. Often the patient has a apraxia of gait and shows difficulty using his legs to walk smoothly. His feet may freeze to the floor and he is unable to initiate foot movement. He may also be distinctly unsteady and tend to fall. Some patients are slow and shuffling, and appear parkinsonian.

Although NPH is characterized by dementia, incontinence and gait disturbance, patients may not have the full triad and it is often important to investigate those in whom one symptom develops.

Diagnosis

Originally, diagnosis was made by demonstrating a normal CSF pressure (180 mm of CSF or lower) and dilation of the ventricular system without air evident over the cerebral convexities. Later, radioactive iodinated serum albumin (RISA) cisternography proved an important diagnostic technique[5]. RISA is injected into the lumbar space by an L.P. needle and its course followed by a scanner as it moves into the basal cisterns of the brain and out over the convexities to be absorbed along with the flow of CSF. In NPH, the isotope cannot go out over the hemispheres but instead enters the ventricular system and is retained there for prolonged periods.

When RISA is injected into the lumbar space, blood levels can be measured to indicate the speed of RISA transfer from CSF to the blood. It seems logical that in communicating hydrocephalus, the transfer of RISA would be markedly slowed, indicating whether or not shunting would be useful, but we have not found this a good test[6]; some patients with NPH appeared to have rapid transfer to blood and others did not.

The pneumoencephalogram will show enlarged ventricles with no air over the hemispheres though some may outline the sylvian fissures. The angle made by the two lateral ventricles at the corpus callosum is less than 120 degrees in normal pressure hydrocephalus but greater than 120 degrees in cerebral atrophy due to Alzheimer's disease.

Careful diagnosis to distinguish NPH from dementia due to cerbral atrophy (Alzheimer's disease and senile atrophy) must precede a shunting procedure. Although investigative distinctions are not absolutely clear, we have shown in a study of geriatric patients that the clinical triad of NPH is common and abnormalities in the pneumoencephalogram, RISA cisternogram and serum isotope levels are seen in many elderly patients with cerebrovascular disease, cerebral atrophy, and degenerative disorders[6].

Today, we can monitor intracranial pressure continuously, by intraventricular cannula or subdural cannula plus a transducer and suitable recording apparatus. In patients with the NPH syndrome, the pressure may be generally in the normal range but elevated for 15 to 20 minute peaks several times a day. Since this test requires a cooperative patient, it cannot be done in very demented individuals. It is helpful in diagnosing early cases and is generally more reliable than

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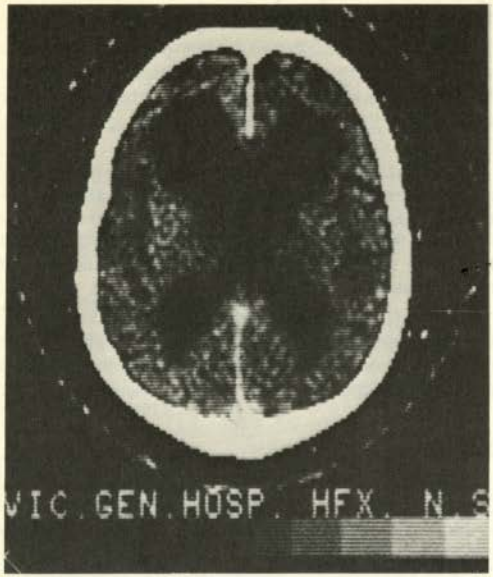

FIGURE 1

The CAT scan in cerebral atrophy shows marked enlargement of the lateral ventricles and widening of the sulci over the surface of the brain.

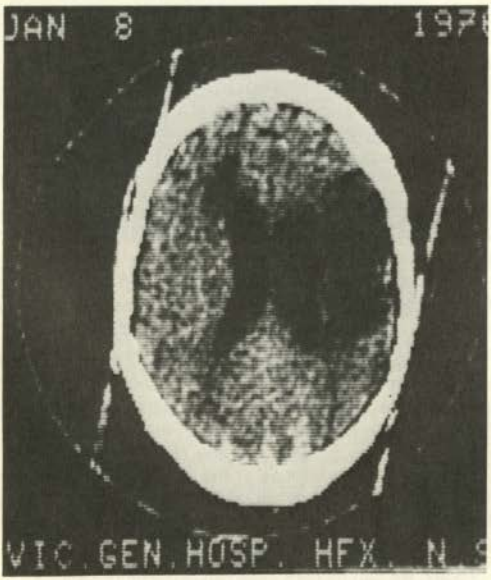

FIGURE 2

The CAT scan in normal pressure hydrocephalus shows some enlargement of the ventricular system but without any evidence of cortical atrophy. This man had a subarachnoid hemorrhage with infarction in the area of the right middle cerebral territory. Later a syndrome of normal pressure hydrocephalus developed.
(CAT scans courtesy of Dr. R. H. James)

the RISA scan; also, it is less prone to aggravate symptoms than is the pneumoencephalogram. However, because a ventricular puncture is required, it carries a small but definite risk of infection and hemorrhage.

The computerized Axial Tomography (EMI SCAN) which is also useful in screening demented patients is now available at the Victoria General Hospital, Halifax. It can demonstrate any ventricular enlargement by a relatively non-invasive technique and show sulcal widening, suggestive of cortical atrophy. Soon, water soluble contrast solutions will be available and allow the CAT Scan to follow the course of CSF flow with clearer resolution than does the RISA cisternogram. Although under study in Sweden, these solutions are not yet available in Canada.

Treatment

The present treatment, following careful diagnosis, is a ventriculo-atrial or ventriculo-peritoneal shunt. This relatively simple procedure may involve various complications, for example, subdural hematoma in patients with cerebral atrophy. Meningitis is rare as is abscess formation. The shunt may become blocked by the choroid plexus or clot at the cardiac or peritoneal end. Emboli may form at the cardiac end of the shunt tube, producing pulmonary infarction. If infected, bacterial endocarditis may occur, particularly in patients with focal sepsis such as urinary tract infection or dental caries.

Prognosis

At present, it appears from the literature that 60% of patients with NPH benefit from shunting. Unfortunately, most reports are of short-term studies and it is becoming apparent that even patients with initially positive responses do not experience long term benefits. However, the temporary improvement may be worthwhile despite the ultimate progression of dementia. Some poor results in the past were due to the shunting of patients with cerebral atrophy and not NPH; we have seen patients who fulfilled the criteria for NPH but were later shown pathologically to have Alzheimer's disease. Patients who are more severely involved tend to do poorly although they may also show the more dramatic changes with shunting.

Conclusion

Although the renewed interest in investigating and treating demented patients is beneficial, the initial enthusiasm for NPH and its therapy is waning; neurosurgeons are particularly disappointed in the long term results of their many shunt procedures. However, every effort should be made to identify treatable problems in the demented patient, because otherwise he will be relegated to a progressive loss of intellectual function; it is unlikely that significant investigation or interest will be displayed in this problem when he has reached the stage of institutionalization. Dementia is a problem in diagnosis, not disposal.

Some of the disappointing long term results in treating NPH probably result from the inclusion of many patients whose problem is really a diffuse neuronal degeneration with cerebral atrophy. Thus the emphasis should be on more careful and specific investigative approaches with appropriate therapy in the clear-cut case of NPH. In many instances, the identification and shunting of a patient with NPH can give good results and extend the patient's active and useful life. □

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TO COMPLY — OR NOT TO COMPLY?

Continued from page 110

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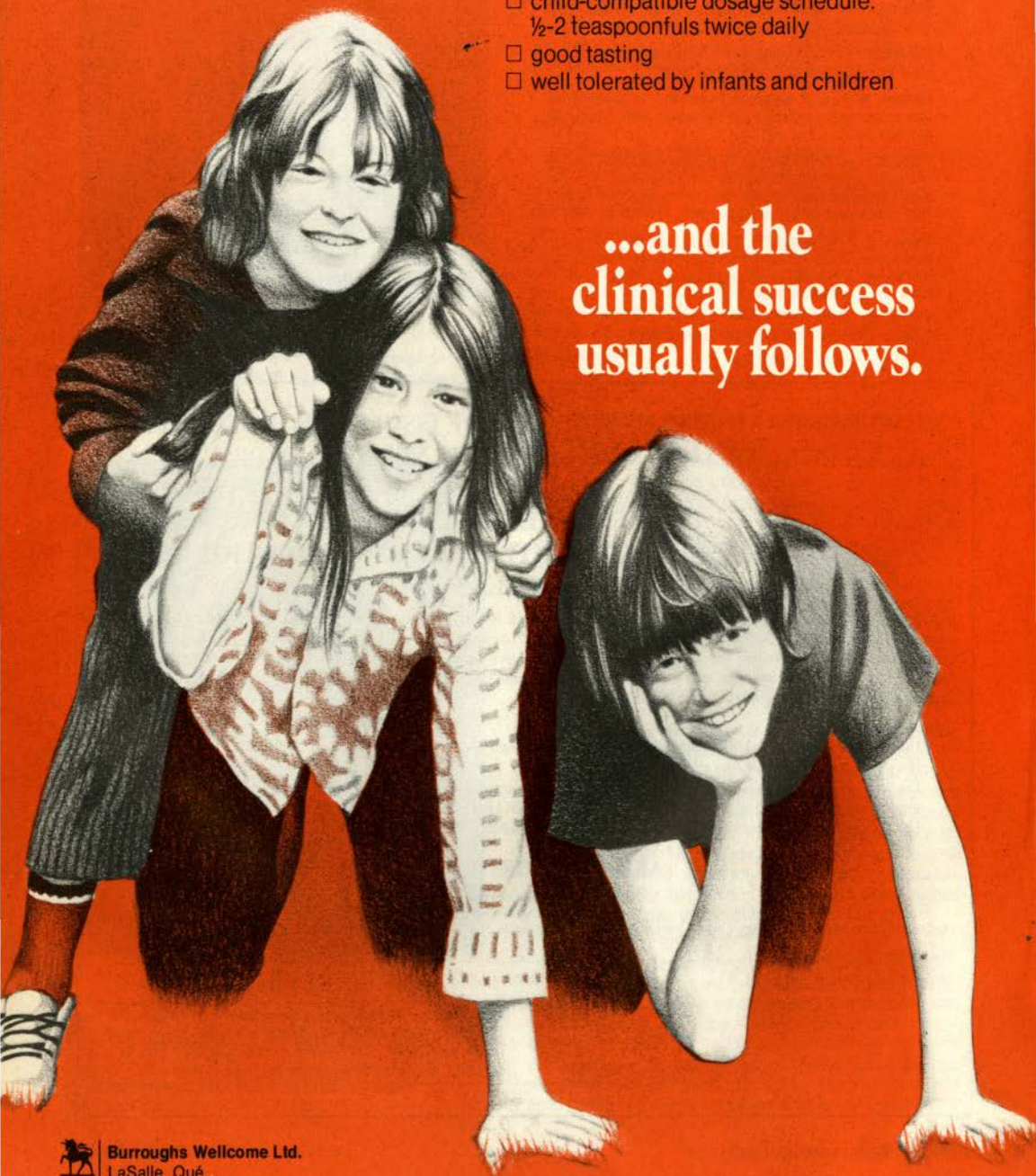

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†complete clearing of localized signs; no subjective complaints
‡partial improvement of drum inflammation; no systemic signs, but usually some residual hearing loss

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SKIN AND SOFT TISSUE INFECTIONS.

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PRECAUTIONS: As with other sulfonamide preparations, critical appraisal of benefit versus risk should be made in patients with liver damage, renal damage, urinary obstruction, blood dyscrasias, allergies or bronchial asthma. The possibility of a superinfection with a non-sensitive organism should be borne in mind.

DOSAGE AND ADMINISTRATION: Adults and children over 12 years
Standard dosage: Two tablets twice daily (morning and evening).
Minimum dosage and dosage for long-term treatment: One tablet twice daily.
Maximum dosage:
Overwhelming infections: Three tablets twice daily.
Uncomplicated gonorrhea: Two tablets four times daily for two days.
Children 12 years and under†
Young children should receive a dose according to biological age:
Children under 2 years: 2.5 ml pediatric suspension twice daily.
Children 2 to 5 years: One to two pediatric tablets or 2.5 to 5 ml pediatric suspension twice daily.
Children 6 to 12 years: Two to four pediatric tablets or 5 to 10 ml pediatric suspension or one adult tablet twice daily.

†In children this corresponds to an approximate dose of 6 mg trimethoprim/kg body weight/day, plus 30 mg sulfamethoxazole/kg body weight/day, divided into two equal doses.

DOSAGE FORMS: SEPTRA TABLETS, each containing 80 mg trimethoprim and 400 mg sulfamethoxazole, and coded WELLCOME Y2B. Bottles of 100 and 500, and unit dose packs of 100.

SEPTRA PEDIATRIC SUSPENSION, each teaspoonful (5 ml) containing 40 mg trimethoprim and 200 mg sulfamethoxazole. Bottles of 100 and 400 ml.

SEPTRA PEDIATRIC TABLETS, each containing 20 mg trimethoprim and 100 mg sulfamethoxazole, and coded WELLCOME H4B. Bottles of 100.

REFERENCE: 1. Cameron G.G., Pomahac A.C., Johnston M.T.: *Canad Med Ass J 112* (Special Issue): 87, 1975.

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Hyperalimentation in a Regional Hospital

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Mrs. Marilyn MacAskill,**, R.N. and Miss Yolanda D'Intino,*** B.Sc.,
Sydney, N.S.

Introduction

As early as 1942, Brunschwig[1] and co-workers were able to achieve positive post-operative nitrogen balance by simultaneous intravenous administration of a casein digest and glucose as the sole source of nutrition. Dennis and Groscz[2] have used hypertonic glucose solution through central venous lining over the past 25 years. Many others accomplished similar results in the interim, but more recently, Dudrick[3 4] and his co-workers have developed total intravenous nutrition that maintains growth and prevents negative nitrogen balance after injury, operation, or severe illness. Since his original work, hyperalimentation has now become a common practice of administration of nutrient to a patient who is critically ill and requires further support as an adjunct to his total therapy.

Although there are many patients given parenteral nutrition in the hospital, the purpose of this article is to review our experience with the parenteral nutrition at the I.C.U. of Sydney City Hospital for a period of three years.

Case Material

The Intensive Care Unit was originally opened in Jan. 1973, and we were able to maintain a record of all the patients admitted to the unit. A total of 560 patients were admitted into the unit excluding coronary care patients. 350 patients were surgical and the remainder were medical patients. Of these, 40 patients received Intravenous Hyperalimentation.

TABLE I

INTRAVENOUS HYPERALIMENTATION

Total Patient		40
Male		19
Female		21
Ages	25 to 86 yrs.	
Average age	60 yrs.	

There were 19 male and 21 female patients in this series. The ages range between 25 to 86 years with an average age of 60 years. The admission diagnosis of those patients were Colonic Cancer 10, Biliary Tract Problem 4, Peptic Ulcer 3, Carcinoma of the Stomach 7, Ulcerative Colitis 2, Weight loss, Diabetes and Respiratory Failure 5, Pancreatitis 2, Bowel Infaraction 1, Carcinoma of Rectum 4, and Renal Failure 2.

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TABLE II

ADMISSION DIAGNOSIS

1. Colon Cancer	10
2. Biliary Tract Problem	4
3. Peptic Ulcer	3
4. Carcinoma of Stomach	7
5. Ulcerative Colitis	2
6. Weight Loss — Diabetes Respiratory Failure	5
7. Pancreatitis	2
8. Bowel Infarction	1
9. Carcinoma Rectum	4
10. Renal Failure	2
TOTAL	40

55 Operative procedures were undertaken as outlined in Table III. Multiple operative procedures were carried out among these patients because of complications.

TABLE III

OPERATION

1. Right Hemicolectomy	6
2. Left Hemicolectomy	2
3. Total Colectomy and Ileostomy	1
4. Colostomy	3
5. Abdomino Perineal Resection	2
6. Gastrectomy	8
7. Abdomino Thoracic Esophagogastrectomy	2
8. Plication of Perforated Ulcer	2
9. Gastrojejnostomy and Vagotomy	6
10. Cholecystectomy	1
11. Choledocholithotomy	3
12. Subphrenic Abcess	7
13. Pancreatico Jejunostomy	2
14. Small Bowel Resection	4
15. Repair of Ventral Hernia	1
16. Tracheostomy	5
TOTAL	55

A total of 54 complications were treated among these patients. (Table IV)

Common complications encountered were respiratory failure, septicemia, septic shock, abscesses, cardiac arrhythmia, and gastrointestinal fistula.

All of these patients received I.V.H. ranging from 4 to 60 days. The mean duration of treatment was 30 days. (Table V)

There were 5 complications related to hyperalimentation i.e., hyperosmolar coma, pseudomonas sepsis, hypoglycemic reaction, pneumothorax and subclavian vein thrombosis. (Table VI)

TABLE IV

COMPLICATION

1. Respiratory Failure	11
2. Bleeding Stress Ulcer	3
3. Septic Shock and Septicemia	8
4. Subphrenic Abcess	7
5. Duodenal Ulcer	2
6. Colonic Fistula	4
7. Wound Evisceration	1
8. Cardiac Arrest	1
9. Secondary Haemorrhage from Drain	1
10. Ascites	1
11. Renal Failure	3
12. Hepato Renal Syndrome	1
13. Wound Infection	1
14. Pneumonia	3
15. Premature Ventricular Contraction	5
16. Atrial Fibrillation	2
TOTAL	54

TABLE V

DURATION OF HYPERALIMENTATION

Longest Period	64 days
Shortest Period	4 days
Average Duration	30 days

TABLE VI

COMPLICATION OF HYPERALIMENTATION

1. Hyperosmolar Coma	1
2. Pseudomonas Sepsis	1
3. Pneumothorax	1
4. Subclabian Vein Thrombosis	1
5. Hypoglycemic Raction	1

All subclavian catheters were routinely cultured at the time of removal, and, in only one case was catheter removal necessary, due to septicemia caused directly by the subclavian catheter. Two other catheters grew *Staph epidermidis*. The remainder of the catheter cultures were negative. Routine antibiotic ointment like Garamycin was used for dressing over the subclavian catheters. All catheters were checked radiographically to insure their position in right atrium. All solutions were prepared prior to administration, under sterile technique. The formula utilized was Travasol (Amino Acid) 10%, 250 ml and Dextrose 33.3% 750 ml. Regular insulin 10 - 15 units added to each bottle. Vi-certs added once daily. A patient initially received 1000 calories daily which was gradually increased to 2000 calories and additional calories were provided by adding one unit of intralipid. I/V Medication pump was used to maintain constant flow rate. The criteria for discontinuing therapy was either complicating factor like septicemia or patient's ability to eat orally. Once the patient was able to eat sufficient quantities of food, the I.V.H. was gradually stopped over a period of 3 - 4 days to prevent hypoglycemic coma.

The following routine laboratory tests were performed on these patients, blood sugar, done two times a day, B.U.N., Calcium, Electrolytes, and Phosphorus, done daily, Urine specimen for specific gravity, done twice a day, and urine tested for sugar and acetone every 4 hours. In addition to the Insulin in Hyperalimentation solution, Toronto Insulin was administered according to the sliding scale. If intralpids are added, blood is drawn every morning prior to administration to check for fat particles. If they were present, intralipids were omitted on that day.

TABLE VII

MORTALITY

1. Total Deaths	5
No Mortality Directly Related to Hyperalimentation.	

There were 5 deaths in this series, but mortality was not directly related to I.V.H.. the causes of death were: persistent gastric fistula, with multiple subphrenic abscesses, duodenal fistula, stress ulceration, pseudomonas septicemia gastroduodenal fistula and secondary hemorrhage, shock lung, and septicemia with multiple subphrenic abscesses.

TABLE VIII

CAUSE OF DEATH

1. Persistant Gastric Fistula with Multiple Subphrenic Abcess,
2. Duodenal Fistula, Stress Ulceration and Pseudomonas Septicemia
3. Gastro-Guodenal Fistula and Secondary Heamorrhage.
4. Shock Lung
5. Septicemia with Multiple Sebphrenic Abcesses.

COMMENTS

History of Starting the Hyperalimentation in Regional Hospitals

After establishing the I.C.U., we realized that there were patients who could use this type of therapy as an adjunct in order to provide nutritional support. However, it was extremely difficult in a regional hospital such as ours to have the pharmacy prepare I.V.H. solution for administration. During the same interval, Baxter's Company came out with a preparation kit for hyperalimentation solution where a solution of amigen 5% could be mixed with 50% glucose in a vioflex bag and with the addition of drugs like Insulin 10-15 units, Sodium Biocarbonate 15meq, potassium chloride 20meg, multivitamin* 5ml. and magnesium 4 meg.*, be administered to the patient.

We started our hyperalimentation program outlining the standard set of rules and providing an inservice program to the nurses of the unit. Starting this sort of therapy, we realized there was a need for I.V. Medication pump to administer the solution so that the patient receive the solution at a set rate. Now it is common practice that all our patients are given I.V.H. at a constant speed, utilizing the pump supplied by Extracorporeal Incorporated.

The newer hyperalimentation kits supplied by Baxter are

*Added once daily.

extremely simple to prepare for administration to the patient. The solution contains essential and non-essential L-Amino Acids and electrolytes. 250 ml. of 10% amino Acid (Travasol) injection added to 750ml. of 33.3% Dextrose injection in a vioflex bag will provide 850 calories and 4.20 gm. of nitrogen. 10 - 15 units of Insulin can be added to each kit. Multivitamin 5 ml. are added in only one unit daily. Initially patients are given 1000ml. of hyperalimentation solution (Travasol 10% 250ml. and Dextrose 33.3% 750 .m.l.) providing 850 calories and gradually the rate of administration is increased to provide 2000 calories over the 24 hour period.

TABLE IX

(AMINO ACID) TRAVASOL

1.	Essential Amino — Acid	
2.	Non-Essential Amino Acids	
3.	Electrolytes	
	Sodium acetate	n.f. 680 mg.
	Dibasic Potassium Phosphate	522 mgm.
	Sodium Chloride	117 mgm.
	Magnesium Chloride Hexahydrate	102 mgm.
	Sodium	70 meg/l
	Potassium	60 meg/l
	Magnesium	10 meg/l
	Acetate	150 meg/l
	Chloride	70 meg/l
	Phosphate	60 meg/l

Additional calories may be provided by giving one unit of intralipid daily. Blood samples are drawn to detect hyperlipemia. The addition of Insulin is indicated in the presence of elevated blood sugar to encourage more rapid and efficient glucose utilization and positive nitrogen balance in elderly patients with borderline glucose tolerance, in patients with known pancreatic disorders, in the early post trauma period, and in the critically ill, nutritionally depleted patient whose survival seems to depend upon the expeditious achievement of positive caloric and nitrogen balance.

TABLE X

INDICATIONS

1. Prolong I/V Therapy Beyond 10 days
2. Complication of Sepsis, Fistulae and Drainage.
3. Requiring Multiple Operative Procedures due to Complication.
4. Acute Renal Failure
5. Acute Haemmoragic Pancreatitis
6. Hepato Renal Syndrome.
7. Short Bowel Syndrome.

Currently, the indication for Hyperalimentation are for those patients who cannot receive oral intake beyond 7-10 days, and where it is established that due to underlying complications the patient would be on a prolonged intravenous therapy, i.e., patients with a gastrointestinal fistula biliary and pancreatic fistula also patients with septicemia, multiple abscesses and septic shock. Patients with a short bowel syndrome, ileitis, colitis with fistula, also should receive I.V.H. if no other means of support are available. I.V.H. in association with chemotherapeutic agent can significantly improve the response to antineoplastic therapy.

Optimal length of time to be devoted to nutritional preparation prior to non-emergency surgery has not been absolutely determined. It is hoped that 7 - 10 days of I.V.H. can be accomplished before the patient is subjected to catabolic neuroendocrine insult associated with major operation.

As an adjunct to the management of patients with renal failure, a special I.V.H. formulation of essential L-amino acids and the other non-nitrogenous nutrient has been valuable in reducing blood urea nitrogen levels. Because of the chronic lysis of the urea molecule that circulates through the colon by the urease producing bacteria contained therein, there is a constant availability of amide group for synthesis of non-essential amino acids. When all of the essential amino acids are available, the protein synthetic mechanism is capable of utilizing the urea as a source of non-essential nitrogen. Moreover, less catabolism and urea production occurs when adequate protein electrolytes and calories are provided exogenously by vein. The net result of this metabolic phenomenon is reduction in total blood urea nitrogen. The nitrogen that has previously been derived via the mobilization of amino acids from protein is thus returned to the functional lean tissue pool.

I.V.H. has been successfully used to reverse hepatic fatty metamorphosis or infiltration.

In administration of I.V.H. the subclavian vein route is commonly employed, occasionally jugular or axillary vein route is used. All of our members in the unit are trained to insert a subclavian vein catheter. We believe that all physicians should learn to use subclavian route for not only hyperalimentation solution but for other reasons, especially insertion of a central venous pressure lining or an intravenous therapy for a prolonged duration. The subclavian venous catheter route is extremely helpful in emergency situations especially in the event of cardiac arrest where patient has complete peripheral collapse.

The technique of insertion of subclavian catheter is to place the patient flatly in bed. A rolled over sheet is placed in between the two shoulder blades to provide hyperextension. The area is prepared and draped and a subclavian needle is introduced under local infiltration anaesthesia of the mid-clavicular point, directing the needle parallel to the clavicle at its posterior surface pointing toward the sternal notch. The operator places one finger over the sternal notch and the thumb over the mid-clavicular point and inserts the entire length of subclavian needle, then slowly withdraws the plunger and needle until the free flow of blood is obtained. A polyethylene catheter is threaded through the needle into the right atrium. Then the needle is removed and the blood aspirated until free flow is obtained. Position of the catheter is checked by x-ray. Careful attention is paid so that the catheter does not go into the jugular vein as this will cause delivery of the highly concentrated solution into the neck and may precipitate coma.

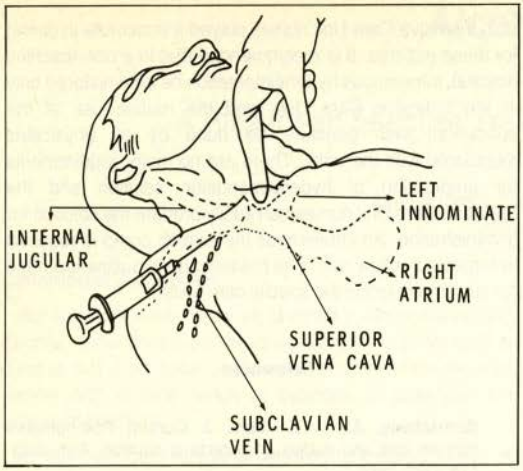

FIGURE 1

Technique of inserting subclavian catheter.

The other complication of catheter insertion is inadvertent entry into the subclavian artery. If this happens one will get pulsatile flow and immediately the catheter is withdrawn. The subclavian puncture is then made on the opposite side and the same procedure is repeated. If the patient develops pneumothorax, this is treated by inserting a chest tube.

The infection rate has been almost minimal provided aseptic precautions are taken. Throughout the course of administration it is recommended that the dressing at the subclavian catheter site be changed every 3 - 4 days and intravenous tubing is changed every 24 hours to prevent infection as glucose is an excellent culture medium.

Several metabolic abnormalities are associated with hyperalimentation, therefore, it is important that these patients should have the following laboratory work done and the abnormalities be corrected at the earliest, i.e. blood sugar, twice daily, Blood Urea Nitrogen, electrolytes, phosphorus, daily urine specimen for specific gravity, twice daily, urine tested for sugar and acetone every four hours. We commonly see hypopotassemia, hyperpotassemia, and hypocalcemia.

TABLE XI

METABOLIC ABNORMALITIES ASSOCIATED WITH INTRAVENOUS HYPERALIMENTATION

1. **Glucose metabolism**
   - A. Hyperosmolar non-ketotic coma
   - B. Hypoglycemia after cessation of infusion.
2. **Fat and protein metabolism**
   - A. Essential fatty acid deficiency
   - B. Hyperammonemia
3. **Calcium and phosphorus metabolism**
   - A. Hypophosphatemia
   - B. Hypocalcemia
   - C. Hypercalcemia
   - D. Vitamin — D deficiency or excess
4. **Acid — base and electrolyties**

   Abnormalities:
   - A. Hyponatremia
   - B. Hypernatremia
   - C. Hyperchloremic Metabolic Acidosis
   - D. Hypokalemia
   - E. Hyperkalemia
   - F. Hypomagnesemia
5. **Miscellaneous**
   - A. Anemia
   - B. Bleeding
   - C. Elevation in transaminases and alkaline phosphatase

TABLE XII

1. Blood Sugar	B.I.D.
2. BUN, Calcium, Electrolytes, phosphorus	Daily
3. Urine Specimen for Specific Gravity	B.I.D.
4. Urine tested for sugar and acetone	Q.4.H.

Patients should be weighed daily and a careful watch be kept for fluid overload.

Intravenous fat was administered 15 to 20 years ago but due to severe reactions like fever, hemolytic anemia and bleeding tendencies, its use was discontinued. The complications were attributed to hydrogenated phosphatides used as emulsifiers. Intralipids currently in use have been purified. Their use is contraindicated in diabetic patients.

Studies suggest that urinary nitrogen excretion can be lowered and that positive nitrogen balance can be achieved more easily with a combination of 20% aminco acids, 30% fat and 50% carbohydrates than with fat alone or amino acid alone.

The advantages of such a regimen include the ability to administer more calories with less fluid of lower osmolality. It allows the use of peripheral vein because of lower incidence of venous thrombosis.

Blackburn[6] and his associates recently introduced a new concept based on the physiological principle that successful struggle against starvation depends on the development of ketosis and the use of fat for combustion to spare protein. The burning of fat as fuel can only go on efficiently when serum level of insulin is very low. Consequently, although 100 gms of carbohydrates per day may inhibit a small amount of gluconeogenesis, the use of carbohydrate, stimulating the release in insulin, inhibits lipolysis, an event that could actually be detrimental to sparing of protein. This inhibition of lipolysis makes the requirement for glucose greater, thus perhaps defeating its own purpose. Blackburn[6] and his co-workers have actually demonstrated in man that 90 gms. of essential and non-essential amino acids without glucose will provide much more positive nitrogen balance than 100 gms of glucose alone. It is difficult to understand how the prolonged (weeks or months) use of such a regimen would be valuable to the seriously malnourished and complicated patient who is in such clear need of large numbers of calories. Studies are not available to define the efficacy of this modality as a long term measure.

Conclusion

40 patients received Intravenous Hyperalimentation as an adjunct to their total therapy. These patients required multiple operative procedures. The average duration of treatment was 30 days, two to three thousand calories were administered daily. There were five deaths and no mortality was related to hyperalimentation. All intravenous hyperalimentation in regional hospitals should be administered only in the I.C.U.. There are no major requirements for the preparation of hyperalimentation solution. The intravenous medication pump is desirable for administration of the solution. The technique of subclavian vein puncture should be mastered by all physicians engaged in active practice, as this is the fastest method of intravenous administration in an emergency situation. Each I.C.U. should draw up the policy and protocol for hyperalimentation, and all physicians working in these units should follow this accordingly. The Intensive Care Unit nurses play a major role in setting up these hyperalimentation kits and a continuous in-service education should be provided to them. Carefully planned therapy has fewer complications, and should be used more liberally as an adjunct to the total treatment of critically ill patients.

Summary

Forty patients received intravenous hyperalimentation in the Intensive Care Unit of Sydney City Hospital within the past three years. A total of 560 patients were treated in the unit excluding coronary care patients. 350 patients were surgical, the remainder of them were medical. The criteria and protocol were drawn up by the physicians working in the unit. Intensive Care Unit nurses played a major role in caring for these patients. It is recommended that in a non-teaching hospital, intravenous hyperalimentation be administered only in the Intensive Care Unit, and the routine use of the subclavian vein puncture be done by all physicians associated with the units. There are no major requirements for preparation of hyperalimentation solution and the Intensive Care Unit nurses can easily prepare the solution for administration. An intravenous medication pump is required to regulate the flow rate. The present series outline the need for such treatment in the special care units. □

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Alcoholism

A Plea for an Effective Treatment Program in Industry*

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Definition of Alcoholism

By alcoholism we mean an unhealthy, uncontrolled and harmful dependence on the drug alcohol. It is not only a disease but a package of diseases and therefore requires people with a wide range of expertise to deal with the individual problems.

In the past the medical profession has stated "there is nothing to be done for these people", but there is no basis for this statement as Alcoholics Anonymous have shown. It is quite possible to detect, interrupt, or inactivate the alcoholic process as long as we consider that each individual affected has physical, mental, social, and spiritual aspects which need the attention of a multi-disciplinary approach. After the alcoholic has been discovered (it may be by the wife, clergyman, police, shop steward, doctor, or industrial supervisor), the community must provide the basic resources for his detoxification and investigation of his disease.

Alcoholic disease

At first the individual physiological network adapts to alcohol but gradually this adaptation breaks down and leads to a general disintegration affecting the central nervous, gastrointestinal, and cardiovascular systems. Physical, mental, familial, social, and spiritual changes occur until the individual is left with no confidence, unable to concentrate, or think clearly, and becomes emotionally unstable, living in a state of semi-anesthesia.

Basis of attack on alcoholism

The alcoholic must learn that his disease can be arrested and it is his own responsibility. He must help himself. Treatment begun by the community resources must bring a changed attitude for his supervisor and must continue for a long time, probably all his life.

Alcoholic blackouts are dangerous — an airline pilot risks himself and his passengers; a surgeon — his patient. If he is an alcoholic, he is a menace. This is true in industry where the supervisor should spot early symptoms — deviant behaviour, poor attendance and performance. Many lives may be at stake and it is vital to start treatment early when it is most effective. We should not wait until he hits rock bottom to treat him; we must save Charlie's life at an early stage.

*Based on an address delivered on April 1, 1976, as part of a short course: "Occupational Medicine and the Family Physician", held in the Sir Charles Tupper Medical Building, Halifax, N.S.

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The Alcoholic's World

It takes ten to fifteen years to produce an alcoholic. Most are 35 - 55 years old, married with children and have been working for twenty years. Neither sex is immune and any occupation is susceptible. All levels of hierarchy are vulnerable.

The disease is insidious and is identified much earlier by wife, husband or fellow employee than by the doctor. This happens partly because of the cover up and "con games" of the alcoholic, and partly because of the persons concerned being reluctant to take action. Such refusal to refer for active treatment leads to the alcoholic's progressive deterioration and eventual break down.

Prevalence

It has been estimated that Canada has four hundred thousand alcoholics; there are some eight hundred thousand on the verge of a serious drinking problem and some of these (six hundred thousand) are employed. Alcoholism is Canada's number one social problem and the third most prevalent medical disease. Besides this, it is responsible for large numbers of traffic accidents and probably 50% of industrial accidents. Alcoholics are responsible for ten times the number of non-occupational accidents as non-alcoholics. It costs Canadian industries one million dollars a day and each individual problem drinker costs his company twenty-five to forty per cent of his annual income because of his lowered efficiency.

The alcoholic lives on the average twelve years less than the non alcoholic. His shortened life, increased family burden, and short industrial productivity demand our attention.

Industrial program

Companies were reluctant to adopt an Alcoholic Prevention Program, and there are several reasons why companies have avoided the issue. Some felt that hospitals and community agencies should care for this "community problem". Others thought it would be bad for public relations to "keep drunks on the payroll". Interference with private lives and the feeling that the problem just could not be licked were other excuses given.

Companies with Enlightened Attitudes

A number of companies have adopted specific programs to deal with this widespread problem. Management must accept alcoholism as a disease and acknowledge that it has

a responsibility to its employees as it does for other diseases. There need be no more invasion of privacy than there is in cancer control projects. A well developed and thought out program can definitely work, and adequate facilities and a good plan of management are vital to success. These include short term detoxification, out-patient treatment, half way houses, "follow up" services, and institutional care for the hard core skid-row type alcoholic.

Combined Labour — Management Program the Best

Three approaches have been tried:

1. *Management Program* — doomed to failure because it is not trusted and subject to unilateral decisions.
2. *Union Program* — also unsuccessful as although the intent is good, insufficient motivation exists.
3. *Joint Management — Labour Program* — the ideal program because management and labour jointly cooperate to plan and regulate a good program. Emphasis is placed on early recognition and treatment before the person becomes an established chronic alcoholic.

The workers' contract establishes:

a. Alcoholism is a medical disease.

b. The employee is subject to all sick benefits for this disease.

c. During his rehabilitation, his job will be protected.

d. The most effective treatment will be by proper referral.

Ensuring an Effective Program in Industry

Earlier attempts at detecting the alcoholic worker by spotting the obvious signs of alcoholism, missed most of the employees in the early stage of the disease. Even if the supervisor referred each individual with an unsatisfactory job performance, this was not adequate. The only reliable way focuses on monitoring job performance, and when performance falls below the acceptable standards (and is not corrected), the employee is referred for professional counselling, diagnostic services and appropriate treatment. This joint Labour — Management Policy avoids management entering the diagnostic process, prevents direct confrontation between the worker and the layman, supervisors or union representatives about a drinking problem.

Certain principles are necessary:

a. A policy statement worked out by labour-management alcoholism committee.

b. Thorough education and explanation to all the staff.

c. Training of shop stewards and supervisors in early detection of poor job performance.

Signs for the Supervisor (An alcoholic's habits)

Too frequent trips to the warehouse or storeroom
An executive who remains behind closed doors, unkempt and untidy appearance (formerly neat)
Sneaking out every afternoon
Persistent absenteeism on Monday or Friday
Long lunch hours
Hand tremors
Irritability
Frequent use of sweeteners
General decline in work performance
Poor judgement
Erratic performance
Frequent accidents
Material spoilage
Poor interpersonal relationships
Failure to meet schedules
Customer complaints
Countless other instances of poor performance

A good program should produce 80 - 90% good results.

Cape Breton Addiction Program

This consists of:

1. *A detoxification unit* for drying out alcoholics. The staff comprises nurses, counsellor attendants, and doctors on call.
2. *Short term treatment program of twenty-eight days* The alcoholic is exposed to films, discussions, and educational material. He receives visits from his family, relatives, clergyman, and job supervisors. He changes his whole outlook and everyone he is in contact with must realize this — at home and at work.
3. *Outpatient Program* used for follow up therapy, individual, groups and consultation.
4. *Community workers* They follow up alcoholics in their communities on a regular basis and discuss practical every day problems.
5. *Half way house* A place for men and women previously alcoholic, who want to work in the community but have become alienated from their spouse and friends. Therapy continues at this location for three to six months.
6. *Talbot House Farm* Outside Sydney for chronic alcoholics who need longer treatment and rehabilitation — for one to two years.
7. *Institutional Care Program at Cape Breton Hospital* This is for the hard core skid-row alcoholic who is admitted with a Lieutenant Governor's warrant. This is the end of the line — although this lengthens their lives, results are poor.

The entire community program has been developed by Mr. Marvin Burke, Executive Director of the Nova Scotia Commission on Drug Dependency, along with his staff. The Cape Breton Addiction and Rehabilitation Centre was the pilot project.

Summary

The prevalence and severe burden of alcoholism on Canadian Industry is presented.

Emphasis is placed on the early detection and treatment of the alcoholic before he becomes a chronic irreversible wreck. The most successful results can be achieved by establishing a joint labour-management program in industry and by providing adequate facilities in the community.

In such a program the early alcoholic is spotted by the supervisor who is trained to monitor work performance and to recognise the early signs of alcoholism. The deviant is referred for treatment and followed up afterwards in his own community.

An outline is given of a comprehensive program established in Cape Breton by the Cape Breton Development Corporation.

Further recommendations to management to reduce the incidence of alcoholism include:

— reducing noise, stress, heat and pressure
— referring employees for counselling if they show signs of stress
— developing full programs of education and rehabilitation
— introducing comprehensive insurance benefits
— assisting the development of community treatment facilities
— including alcoholism in employee health benefits

We feel if this policy is adopted, as it has been in Cape Breton, that a significant impact will be made on this devastating disease. □

No matter how sophisticated or powerful our thinking machines become, there still will be two kinds of people: those who let the machines do their thinking for them, and those who tell the machines what to think about.

— C. I. Lewis

Direct Dial Surgery

Reported in the Sunday Times, a child suffering from Moya Moya disease in Italy, was successfully operated on by Professor Chiasserini in Italy, guided by precise step by step instructions by Dr. Suzuki in Japan. This rare disease, resulting in constriction of the cerebral artery, threatened to paralyse the three year old girl.

Arrangements previously made for her transfer to Japan had to be cancelled when she became too ill to travel. Professor Suzuki, who is one of the worlds experts in this operation stated, "The technique is not too difficult to master".

What would the M.S.I. arrangements be in similar cases?

What will Neurosurgeons do next?

What about surgery by satellite? □

OBITUARIES

Dr. A. W. Taylor, Medical Director at the Victoria General Hospital, died in Halifax June 15, 1976. Born in St. John's, Newfoundland, he received his pre-medical education at Memorial University and graduated in medicine from Dalhousie University in 1951. He received a diploma in hospital administration from the University of Toronto in 1958. Sincere sympathy is extended to his widow and family.

Dr. A. Robert Ellerker, 52, of Sydney, N.S. died on July 12, 1976. Born in England, he graduated from London University in 1947. He has been an anaesthetist at Sydney and St. Rita's Hospital for the past 13 years. Our sympathy is extended to his family.

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