$10.00 per year

Publications Mail Registration No. 5363
Halifax, N.S.

THE NOVA SCOTIA MEDICAL JOURNAL

VOLUME 72 - NUMBER 6

The Journal is published bi-monthly by
The Medical Society of Nova Scotia
5 Spectacle Lake Drive
City of Lakes Business Park
Dartmouth, Nova Scotia
B3B 1X7
Phone (902) 468-1866
Fax: (902) 468-6578
and printed by
McCurdy Printing & Typesetting Limited

The opinions expressed in *The Journal* are those of the authors.

GUEST EDITORIAL

The Nova Scotia Medical Bulletin (Journal) Changes

B. J. S. Grogono*

The *Nova Scotia Medical Bulletin* was born in January 1922. It was a simple document that had a purpose: namely, to bring together the doctors of the Province into closer cooperation and to inform them of current medical affairs. The *Bulletin* was the result of the combined efforts of Drs. Sullivan and Roy of Cape Breton, and Drs. Stewart and Hattie of Halifax.

The *Maritime Medical News* had become extinct and there was an urgent need to bring the widely scattered physicians and surgeons of the Province together in a more effective manner, and to provide a means of better communication. The Nova Scotia Medical Society had been in existence for a long time and it was at its 69th Annual Meeting in Truro, in 1921, that these vital decisions were made:

1) It was agreed to link membership of the Provincial Medical Society with that of the Canadian Medical Association, for a combined annual fee of $15.00;
2) Regulation of the fee for medical insurance examinations at $5.00;
3) Recognize the Medical Profession as the Custodian of Public Health;
4) Regulation of medical practice to eliminate unqualified and untrained personnel. (The doctors were upset that it was possible to practise as a chiropractor after 600 hours – six months of training – even if the pupil was illiterate);
5) Make amendments to Chapter 103, Revised Medical Act of 1900 accordingly; and
6) The minutes of this and all subsequent annual meetings were to be sent to every doctor, in the *Nova Scotia Medical Bulletin.*

Doctors at this time were dispersed in seventeen different communities from Cape Breton, Queens County, Halifax, Lunenburg to Yarmouth. They were not particularly well rewarded financially but they had great satisfaction from their work. There were some outstanding public health and social problems to face. Tuberculosis was rampant, and an active public health program included an extensive school inspection of children, large numbers of whom were deformed or disabled. The combination of local, Provincial and Canadian Medical Associations encouraged by the *Bulletin* gave a new impetus for cooperation in health care workers.

* former Editor, *Nova Scotia Medical Bulletin.*

The *Nova Scotia Medical Bulletin* was limited initially to current affairs, but it was not long before excellent articles on Public Health, Family Practice and Surgery were included. Poetry and politics spiced its appeal. Since those early days, the *Bulletin* has continued its unique role as a medium for family doctors, academics and the affairs of the Medical Society. Thanks to a team of dedicated editors and contributors and meticulous scrutiny, this journal has retained a consistently high standard over the past seventy years.

However, we live in a changing world. An exponential expansion of medical knowledge is upon us. New journals such as *Molecular Genetics, The Spine, Arthroscopy* and *Endoscopic Surgery* are but a few. Each new subspecialty has its own needs. Computers and compact discs give us instant access to the latest or to the oldest texts. Medical practice and politics become more demanding every day.

I believe that the *Nova Scotia Medical Journal* can play a vital role amid this stormy scene. Thanks to the untiring efforts of Jake O'Connor, our *Journal* has brought together contributions from family doctors, consultants, residents, medical students and historians, in a readable manner. It has provided an opportunity for many a young author and has set them on the road to future journalistic success. The format of the *Journal* is well respected and it has been so well supported by advertisements from reputable companies that it has actually made a profit for the past two years.

Our libraries are full of frustrated readers who have to photostat journals before they can enjoy them. Every week, there are numerous presentations by residents and doctors. Hundreds of visiting professors fire their salvos of wisdom; dozens of Departments show their wares in "open houses" and conferences. Talent abounds!

With the advent of modern desktop publishing, and advances in graphic design, surely our publication can distil this into an attractive, vital, readable and desirable medium! Let us assemble all available talent to ensure our *Journal* a worthwhile future in the new communications structure of The Medical Society. □

Editor's Note:

The above was written as Dr. Grogono, former editor of the *Nova Scotia Medical Bulletin,* became aware of discussions regarding our changing communications systems in the Medical Society. As this is the last issue that I will edit, it seems an appropriate editorial as we move into the future.

The *Journal* has been a good and positive accomplishment of the Society and, in this challenging time in the profession's history, we should build on any positive symbols and traditions.

I wish to thank the Medical Society and the Editorial Board for the opportunity of serving for the past 10 years. Fellow editor Dr. Aden Irwin deserves special thanks from me for the quality, persistence, and caring he brings to his work. Mrs. Tove Clahane, as she leaves the employ of the Medical Society, gets a very special "Thank You" for her outstanding work with the *Journal.* Her dedicated and capable efforts will be remembered and appreciated by all former editors, former executives, and countless members of the Medical Society. □

J.F.O'C.

Calendar of Events Notice

Conference Title:	Evidence & Experience: Rediscovering Practice-Relevant Research
Dates:	Thursday March 3 to Saturday March 5, 1994
Location:	The Westin Hotel Ottawa, Ontario
Phone:	1-800–267-9703 or (613) 731-9331 ext. 2267
Fax:	(613) 731-1779
Sponsored by:	The Canadian Medical Association
Description:	2 day conference designed specifically for key representatives in the health care industry, including physicians, hospital CEO's, health care leaders, health researchers, medical university faculty members, and health professionals.

If you have any questions concerning this request please call Michelle Gravelle at (613) 731-9331 ext. 2267. Thank you for your consideration.

Chronic Obstructive Pulmonary Diseases in Young Hockey Players:

INCIDENCE AND ENVIRONMENTAL RISK FACTORS

T.W. Pelham,* MSc, L.E. Holt,** PhD, and M.A. Moss,† MB, BS, MSc, FRCPC

Halifax, N.S.

A questionnaire-based survey of 799 players in a skill hockey camp was used to investigate the incidence of chronic obstructive pulmonary diseases (COPD) in young male and female hockey players from Atlantic Canada in 1992. 15% were asthmatic, 13% had allergic reactions with respiratory symptoms while playing hockey, 3% reported bronchitis, and 2% had non-specified respiratory disorders. Overall, 23% of the players had at least one respiratory disorder with respiratory reactivity while playing, or immediately following hockey. These results indicate that the incidence of COPD among young hockey players is high and underscore the need to evaluate the environmental conditions within the ice rinks of Atlantic Canada.

Chronic obstructive pulmonary diseases (COPD) have long been recognized as common disorders in childhood. However, the rising incidence of COPD, particularly asthma, has created great concern among health professionals. Speculation regarding the possible role of environmental pollutants as potentiators of COPD has gained increasing attention. To address these issues, epidemiologic studies of young asthmatics has been recommended,[1] as well as, suggestions that research should attempt to identify environmental determinats of COPD.

Although not fully understood, prolonged exposure to several indoor environmental factors has been suggested to increase the risk of COPD in children. Indoor airborne contaminants from gas cooking, tobacco smoke and molds have been identified.[2] In the world of sports, cold and dry environments have been suggested to exacerbate COPD.[3-6] Another potential respiratory distressor creating a great deal of interest is exercise, particularly in suspect environments.

In a recent study, it was found that 16% of young male ice hockey players at skills development camp, had physician-diagnosed asthma.[7] Of these asthmatics, 72% took medication to prevent, or obtain relief from an adverse respiratory episode (ARE). One of the hypotheses generated from this investigation was that the high risk features of the rink environments might lead to the development of COPD. It was speculated that the reduced air exchange, the potential for a high ambient air pollutant concentration and low ambient air temperatures of the hockey rink were potential high risk factors. However, as pointed out by the author, the survey had several experimental flaws including: the informal method of data collection, a lack of medical information of the pulmonary-sensitive respondents, small sample size and identification and description of home rinks.

The present study utilized a questionnaire-based survey to identify the incidence of hockey-induced COPD (ie., asthma with respiratory reactivity while playing, or immediately following hockey, bronchitis with respiratory reactivity while playing, or immediately following hockey, allergic reaction with respiratory symptoms while playing or immediately following hockey and non-specific respiratory disorders with respiratory reactivity while playing, or immediately following hockey) among a group of young hockey players. It was designed to identify rinks with high incidence rates for hockey-induced COPD and to assess possible environmental conditions of the rink as respiratory distressors.

SUBJECTS AND METHODS

Study population

A group of 799 young (range: 5-15 years of age) male and female hockey players, attending a hockey skill camp participated in this survey. Subjects from all counties in Nova Scotia, as well as subjects from New Brunswick, Prince Edward Island and Newfoundland were involved.

Survey procedures

The data in this study were obtained from a questionnaire designed to ask specific questions regarding respiratory health and hockey behavior. It was administered in a hockey skill camp in Halifax, Nova Scotia in June, July and August, 1992.

In the initial stage of the survey, players were identified with or without hockey-induced respiratory disorders or hockey-induced allergies (a regular practice of the fitness coach in developing individualized exercise prescriptions). Parents of players with positive responses (pulmonary-sensitive players, PSP) were asked to volunteer further information by responding to the questionnaire. In addition, the age and address of the remaining players (non-affected) were recorded and home rinks were identified.

*Research Associate, Sport Science Laboratory, Dalhousie University, Halifax, N.S.

**Professor, Sport Science Laboratory, Dalhousie University.

†Professor, Department of Pathology, Faculty of Medicine, Dalhousie University.

Correspondence: L. E. Holt, Sport Science Laboratory, Division of Kinesiology, School of Recreation, Physical and Health Education, Dalhousie University, Halifax, N.S. B3H 3J5

Demographic information included, age, address, number of years of playing organized hockey, and the name and location of the rink where the child played hockey (home rink). Medical information included, the physician's diagnosis (COPD), a description of the symptoms of the respiratory disorder, or allergy, while exercising or playing sports, or immediately following the activity. As well, the questionnaire requested details of the habitat that precipitates the symptoms of the respiratory disorder, or allergy (ie., indoor or outdoor) and the type of activities that most regularly produce the symptoms of the respiratory disorder, or allergy, as well as the season (ie., summer or winter). In addition, questions related to identifying potential ambient environmental conditions that may aggravate the COPD (ie., cold and dry) and a description of the schedule and name of medication (if prescribed by a physician) were included in the questionnaire. As mentioned earlier, a COPD was determined to be hockey-induced (ARE) if a respondent reported that the player had respiratory symptoms during, or within 2 hours after playing hockey, or a premedication protocol was used in an attempt to prevent or limit the severity of these symptoms.

Statistical analysis

Although PSP were identified with one rink (home rink), a conservative approach was used to identify the home rinks for the general player population (all players without a hockey-induced respiratory disorder or allergy). That is, in the heavily populated areas of Halifax and Dartmouth, players were assigned two or more home rinks (eg., a player from central Dartmouth was assigned to the two major Dartmouth rinks, Gray Arena and Bowles Arena, as well as Cole Harbour Place, further details see Table III). In the rural regions of Nova Scotia, rinks with a large number of PSP were assigned large areas to draw players without COPD (eg.,Yartmouth Arena encompassed Yartmouth, Shelburne and Digby counties, additional details see Table III). This approach was followed in order to make conservative estimates of the percentages of COPD.

RESULTS

Table I indicates that hockey players have a higher incidence of asthma than the general population of Canada for each age group investigated. The overall incidence rate for asthma was 15% (121/799) compared with a national average from children of 7-10%.[2] 13% (103/799) had allergic reactions while playing hockey, 3% (26/799) reported hockey-induced bronchitis, and 2% (14/799) had a non-specified hockey-induced respiratory disorder. In fact, 36 respondents of PSP reported that respiratory problems began when the child initially started playing hockey (36/186 = 19%). Overall, 23% (186/799) of the players had at least one hockey-induced respiratory disorder.

The cold environment of the rink was identified as a respiratory distressor by 46% (56/121) of the respondents of hockey-induced asthmatic players and a dry condition by 29% (35/121). Of the respondents for players with hockey-induced bronchitis, 42% (11/26) reported the cold condition, and 31% (8/26) stated the dry condition of the rink interfered with the child's play. An allergic reaction with respiratory symptoms was associated with the cold environment of the rink in 31% (32/103) of the players with allergies, and a dry condition for 28% (29/103) of the players with allergies.

TABLE I
DISTRIBUTION OF ASTHMATIC PLAYERS, PLAYERS WITH BRONCHITIS, PLAYERS WITH ALLERGIES AND PLAYERS WITH NON-SPECIFIC RESPIRATORY DISORDERS BASED ON AGE GROUPINGS

	Age Group			
	5-9	10-14	15	Overall
Asthma				
Canadian population[8]	3.4	3.8		10
Pelham's survey[7]	5	16	29	16
Present study	10	17	31	15
Bronchitis				
Canadian population[8]	3.3	2.9		2.9
Pelham's survey[7]	0.0	2	7	2
Present study	2	4	0.0	3
Allergies				
Canadian population[8]	11.4	14.0		10.7
Present study	6	14	39	13
Non-specific respiratory disorders				
Present study	1	3	0.0	2

It was reported that 76% (95/121) hockey-induced asthmatic players took medication before, during or after playing hockey. Of the remainder, only 16% (19/121) hockey-induced asthmatics did not take medication. 10 players with hockey-induced bronchitis and 34 players with allergies were medication free. However, 55% of the hockey-induced asthmatic players (67/121) and 50% of the players with hockey-induced bronchitis (13/26) experience respiratory problems while playing hockey. As well, 29% of the players (30/103) had allergic reactions (respiratory) while playing hockey.

Ice rinks were identified in 55% of the cases of hockey-induced asthma (66/121), 46% of the cases of hockey-induced bronchitis (12/26) and 32% cases of the allergies (33/103) as a site where respiratory problems occurred. Consistent with the conservative nature of the study, the asthma condition of one player and the allergy conditions of 30 players were considered non-hockey related (hockey-induced) and these players were placed in the general player population pool.

Geographic analysis of Nova Scotia showed that the incidence of COPD in the player populations for the valley (Annapolis, Kings and Hants counties), south shore (Yartmouth, Digby, Shelburne, Queens and Lunenburg), metro (Halifax county) and Colchester county were higher than those in Cape Breton Island (Inverness, Victoria, Cape Breton and Richmond coun-

ties), the eastern shore (Guysborough county), north shore (Pictou and Antigonish counties) and Cumberland county (Table II). Indeed, several rinks in the valley, south shore, metro and Colchester county were identified with high incidence rates of COPD (Table III).

TABLE II
NAMES AND LOCATIONS OF RINKS IDENTIFIED BY RESPONDENTS OF PSP

Rink (location)	
Nova Scotia	
Acadia University Rink (Wolfville)	LeBrun Centre (Bedford)
Antigonish Rink (Antigonish)	Liverpool Arena (Liverpool)
Bridgetown Rink (Bridgetown)	Lunenburg Memorial Arena (Lunenburg)
Bridgewater Memorial Arena (Bridgewater)	Middleton Arena (Middleton)
Bowles Arena (Dartmouth)	Newport Rink (Brooklyn)
Centennial Rink (Halifax)	Port Hawkesbury Rink (Port Hawkesbury)
Civic/Halifax Forum (Halifax)	Sackville Arena (Sackville)
Clare Rink (Church Point)	Sackville Sports Stadium (Sackville)
Colchester Legion Stadium (Truro)	Scotia #1 (Cole Harbour)
Dalhousie University Rink (Halifax)Shearwater Arena	Scotia #2 (Cole Harbour)
Dartmouth Sportsplex (Dartmouth)	Shannon Rink (Dartmouth)
Digby Rink (Digby)	Shearwater Arena (Dartmouth)
Don Henerson Sportsplex (Brookfield)	Spryfield Lions Rink (Halifax)
East Hants Rink (Lantz)	St. Margaret's Bay Arena (Tantallon)
Eastern Shore Rink (Musquodoboit Harbour)	St. Mary's University Rink (Halifax)
Eleanor Pew Memorial Arena (Chester)	IW Akerley/Vocational Rink (Dartmouth)
Exhibition Rink (Windsor)	West Colchester United Arena (Debert)
Gray Arena (Dartmouth)	West King's Rink (Kingston)
Kamaha Rink (Kentville)	Yarmouth Arena (Yarmouth)
New Brunswick	
Gorman Arena (St. John)	Keswick Valley Complex (Fredericton)
Hurley Arena (St. John)	
LB Rink (St. John)	
Newfoundland	
Bruce Arena (Port-Aux Basques)	Gander Gardens (Gander)

DISCUSSION

Although data collection was systematic and controlled, there were experimental concerns. Random selection of players was not carried out and therefore the possibility of bias cannot be ruled out (ie., COPD subjects attended the camp because supervision and instruction was professional and highly sensitive to the needs of the COPD athlete). The following five points, however, strongly suggest that this group is representative of the young hockey population of Atlantic Canada: 1) all regions of Atlantic Canada were represented; 2) a large number of players were involved; 3) there were no direct contacts between the respondents (parents of the players) and the researchers; and 4) there were no special advertisements or promotions directed towards special populations (ie., COPD hockey players) to attend the camp.

Therefore, the question remains – what factors are amplifying the incidence rates for COPD among young hockey players in Atlantic Canada? In this regard, it has been suggested that certain modes of activity are associated with pulmonary dysfunction.[5,6,9] These activities usually have a high aerobic content, such as jogging for extended periods of time at elevated heart rates (85-90% of predicted maximal heart rate).[3,4,9] However, sensitivity and risk to respiratory dysfunction is suggested to be less in activities with both aerobic and anaerobic content (eg., hockey).

TABLE III
THE PERCENTAGE OF PSP IN SELECTED RINKS

Rink (location)	No. subjects with respiratory disorders (per rink)	No. subjects (per rink)	Percentage
Yarmouth Arena (Yartmouth, NS)*	8	20	40
Exhibition Rink (Windsor, NS)†	5	17	29
E. Pew Memorial Arena (Chester, NS)‡	8	29	28
Cole Harbour Place (Cole Harbour, NS)§	32	147	22
LeBrun Centre (Bedford, NS)^	17	79	22
Sackville Arena (Sackville, NS)¶	13	59	22
West King's Rink (Kingston, NS)**	3	16	19
D. Henerson Sportsplex (Brookfield, NS)††	8	45	18
St. Margaret's Bay Arena (Tantallon, NS)‡‡	12	66	18
Spryfield Lions Rink (Halifax, NS)§§	11	66	17
Civic/Halifax Forum (Halifax, NS)^^	32	204	16
Centennial Rink (Halifax, NS)¶¶	31	204	15
Gray Arena (Dartmouth, NS)***	22	147	15
Bowles Arena (Dartmouth, NS)†††	20	147	14
Pt Hawkesbury Rink (Pt Hawkesbury, NS)‡‡‡	3	27	12
Eastern Shore Rink (Musodoquodoit, NS)§§§	2	48	4

Table III Footnotes

* Yarmouth Arena includes athletes from Yarmouth, Shelburne and Digby counties.

† Exhibition Rink includes athletes from the western region of Hants county and the eastern region of Kings county to Kentville.

‡ Eleanor Pew Memorial Arena includes athletes from Lunenburg County.

§ Cole Harbour Place includes athletes from Cole Harbour and the City of Dartmouth.

^ LeBrun Centre includes athletes from Bedford, Waverley, Fall River, Lakeside, Windsor Junction and Wellingston.

¶ Sackville Arena includes athletes from Lower, Middle and Upper Sackville.

** West King's Rink includes athletes from the western region of Kings county and Annapolis and Queens counties.

†† Don Henerson Sportsplex includes athletes from eastern region of Hants county and southern region of Colchester county.

‡‡ St. Margaret's Bay Arena includes athletes from Spryfield, Fairveiw and the western region of the Halifax County.

§§ Spryfield Lions Rink includes athletes from Spryfield, Fairveiw and the western region of the Halifax County.

^^ Civic/Halifax Forum includes athletes from the Peninsula of the City of Halifax, Armdale and Fairview.

¶¶ Centennial Rink includes athletes from the Peninsula of the City of Halifax, Armdale and Fairview.

*** Gray Arena includes athletes from Cole Harbour and the City of Dartmouth.

††† Bowles Arena includes athletes from Cole Harbour and the City of Dartmouth.

‡‡‡ Port Hawkesbury Rink includes athletes from Antigonish, Pictou counties and Cape Breton Island.

§§§ Eastern Shore Rink includes athletes from Guysborough county.

Therefore, another approach may be to look at the exercise environment for the etiology of COPD. The hockey rink is an unique environment. Ventilation is elevated while playing hockey, temperatures are maintained below freezing and the air is dry. During a game emotions are high. The majority of stimuli conducive to manifestations of pulmonary dysfunctions are present.[3-6]

Responses from the questionnaire would support the notion that the cold and dry conditions of the rink coupled with playing hockey having an influence. Hyperpnea in the cold, dry air of the rink deserves strong consideration as environmental determinates in COPD. As mentioned earlier, research has shown that airway cooling and water loss can potentiate impairment of pulmonary function.[3-6] However, despite these facts, during the winter months in Atlantic Canada, cold and dry climatic conditions are the norm. In addition, it is common to see children on frozen lakes and ponds throughout Atlantic Canada, playing for hours in wind chills and temperatures far below those inside the rinks.

Although hockey participation and the environmental status of the rink are strong candidates as precipitators for COPD, other more subtle variables may attribute to these high incidence rates, for example, appurtenant environmental features of the rink. The enclosed environment of ice rink increases the likelihood of high concentration of irritants.[7] A multitude of indoor inhalants may be present in the rink. Indeed, the exercise environment of the rink may expose the mucous membranes of the respiratory tree of a player to common allergens and increased concentration of circulating pollutants.

Allergic hypersentivity of the bronchioles to airborne allergens and pollutant-induced respiratory problems have been well categorized in the home environment.[2] By provoking an antibody reaction, allergens act as an irritant in some allergic individuals and induce an ARE.[6] Research has shown that exposure to lung pollutants enhances the likelihood and frequency of ARE and the severity of the attack.[2,3,6] Anecdotal accounts from respondents of PSP have pinpointed several prominent precipitators. One respondent from Cole Harbour stated on the questionnaire felt that "the ammonia in the ice" adversely effects the child's bronchitis. A respondent from Bedford with a child having bronchitis commented that "in some rinks — can smell a lot of ammonia, larger arenas, such as, Metro Centre are better". Another respondent from Cole Harbour reported that the "ammonia and Zamboni fumes" aggravates the child's allergies. A statement from a respondent in Chester supported these comments, "the diesel tractor (the fumes) used to clean the ice in the Chester rink" intensifies the child's asthma and interferes with the child's hockey.

Reinforcing these comments is the unequal distribution of PSP between rinks. The constitutional predisposition of the ambient air in ice rinks would seem to be directly related to the unique design (ventilation) of each rink and the equipment used in ice making and resurfacing. Intuitively, a reasonable starting point in further investigations should be to identify ambient air respiratory distressors of ice rinks with high incidence rates for COPD.

Finally, it is worthy of note, and somewhat disturbing that in this study, a variety of drugs were identified to treat and prevent pulmonary dysfunction in PSP. Although premedication was common, a large number of respondents of PSP reported that symptoms persisted while playing hockey, throwing into play the effectiveness of their pharmacologic prophylaxis.

Proper management of COPD is essential if the pulmonary-sensitive child is to fully achieve his/her functional potential. Attention must be given to the identification of the etiology of COPD. Results from this study tend to suggest that the rink is a potentially hazardous facility for pulmonary-sensitive children, further investigations must examine the environmental profiles of these structures. □

References

1. National workshop on Asthma: Executive summary and recommendations, Ottawa, May 19, 1988. *Chronic Dis Can* 1989; **10(2)**: 33-34.
2. Dekker C, Dales R, Bartlett S *et al*: Childhood asthma and the indoor environment. *Chest* 1991; **100**: 922-926.
3. Gong H: Breathing easy: exercise despite asthma. *Phys Sportsmed* 1992; **20**: 159-166.
4. Kyle JM, Walker RB, Hanshaw SL *et al*: Exercise-induced bronchospasm in the young athlete: guidelines for routine screening and initial management. *Med Sci Sports Exerc* 1992; **24**: 856-859.
5. Stamford B: Exercise-induced asthma. *Phys Sportsmed* 1991; **19**: 139-140.
6. Virant FS: Exercise-induced bronchospasm: epidemiology, pathophysiology, and therapy. *Med Sci Sports Exerc* 1992; **24**: 851-855.
7. Pelham TW: Incidences of asthma and bronchitis in a group of young male hockey players: A pilot study. *NS Med J* 1993; **72**: 21-24.
8. Statistics Canada: *Report of the Canadian Health and Disability Survey, 1983-1984.* Minister of Supply and Services Canada, Ottawa, 1986.
9. Pelham TW, Holt LE: Chronic obstructive pulmonary diseases and indoor ice sports. *National Strength and Conditioning Association Journal (environmental considerations)* In press.

Smoke Inhalation

A MAJOR CAUSE OF DEATH AND INJURY IN HOME FIRES

David T. Janigan,* MD, FRCPC, FCCP, and Margaret Oulton,** PhD

Halifax, N.S.

The manner in which people are injured or killed by fires is varied. However, as a result of the notable advances in the treatment of burns, smoke inhalation is now the major cause of fire-related mortality. This fact is not generally well-recognized. Neither is the fact that the majority of deaths occur in residential fires. The purpose of this brief article is to list these facts, and to provide a limited review of the effects of burning plastics and of other synthetic materials in the home, on the composition of fire smoke and, therefore, on the ways that inhaled smoke may cause lung injury and/or death.

Data about fires are derived from the reports of fire departments to provincial or state regulators and, subsequently, to the federal levels. The National Fire Protection Association in Boston collects a considerable amount of additional information. Data from all sources are not necessarily complete. Fatality records are considered quite reliable, but the recorded numbers of non-fatal injuries are believed to be low because of under-reporting, for various reasons. Here are some facts about fires in Canada for 1989[1] and in the United States in 1990.[2]

		Canada	USA
1.	Total fires reported:	67,182	2,009,000
2.	Fire-related deaths:	500	5,195
3.	Fire-related injuries:	3,763	28,600
4.	Residential fires accounted for the largest percentage of the total fire-related deaths and of total fire-related injuries	85%* 70.2%	79.2% 72.2%

5. Table I[3] indicates that
   a) around two-thirds of total deaths have been attributed to smoke inhalation, and
   b) a steady decline in total deaths from fires over a seven year period is attributable to the decline in deaths from burns and this impressive annual decrease has continued. The decline in deaths from smoke inhalation is quite small.[3]
6. 102 USA fire fighters died in the line of duty: 5 from burns and 19 from smoke inhalation[4]
7. Approximately one-fifth of more than 1000 rescued fire victims suffered both skin burns and inhalation injury. The death rate for those patients was about 20 percent greater than for patients of comparable ages suffering equivalent burns only.[5]

*21 of the 25 deaths in Nova Scotia reported in 1991 occurred in residential fires

*Professor of Pathology and of Surgery, Dalhousie University, and Senior Pathologist, Victoria General Hospital, Halifax, N.S.
**Professor, Department of Physiology and Biophysics, and Professor, Department of Obstetrics and Gynecology, Dalhousie University, Halifax, N.S.

Correspondence: Dr. David T. Janigan, Department of Pathology, Victoria General Hospital, 1278 Tower Road, Halifax, N.S. B3H 2Y9

TABLE I

CAUSES OF DEATHS FROM STRUCTURAL FIRES, 1979-1985.

Years	Total	Smoke Inhalation	Burns
1979	4,926	3,136 (63.6)	1,499 (30.4)
1985	4,159	3,003(72.2)	958 (23.3)
% change	-15.6%	-4.3%	-36%

SMOKE INHALATION RESPIRATORY INJURY

Respiratory damage in persons escaping or rescued from fires can vary from minor to lethal within minutes. In between these extremes are two situations of great clinical relevance, whether or not skin burns are present. In one, a person presents with soot around and in the nose, mouth and larynx with damage to the mucosa. Life-threatening airway obstruction, due to inflammatory laryngeal edema and requiring tracheostomy, may be present by the time of admission or it may develop later. In the other, a person may present with little or no breathing difficulties apart from a cough. Severe and often fatal pulmonary edema may develop within hours or much later. In the 1942 Coconut Grove nightclub fire in Boston, numerous victims went on their own or were brought to different city hospitals without significant respiratory difficulties, only to die hours later of respiratory failure. In the 1980 MGM Grand Hotel fire, 84 of the 86 fatalities were due to smoke inhalation, even though most of those victims were not on the same floor as the fire. Individuals surviving major damage to airways or parenchyma may go on to have chronic respiratory difficulties due to fibrosis.

SMOKE: OLD AND MODERN

Smoke inhalation injury results from direct injury to the respiratory tract by toxic chemicals in the smoke. Obviously, the nature and amounts of these chemicals will depend on the characteristics of the fire. Heat-decomposition or burning of materials may take place in air with or without flaming (oxidative combustion or decomposition) or in the absence of air (pyrolysis). All conditions lead to the release of smoke, a complex mixture of gases, particles and vaporized chemicals. The visibility of smoke is due to particles, both solid (e.g. soot) and liquid (e.g. steam). When the supply of air is low or the temperature is insufficient for flaming combustion, thermal decomposition is incomplete, leading to the release of more solid particulates and of more complex chemical products. The availability of abundant air and high heating temperatures allow for more complete

decomposition with, therefore, "cleaner" fires, i.e. smoke with fewer particulates and with different, and less complex chemicals. Importantly, the smoke characteristics will also depend on the material that is burning. The chemical composition of smoke from a single material is extremely diverse. Obviously, it is infinitely more diversified when it is derived from multiple different materials burning at the same time. Smoke from residential fires is much more complex today than that of years ago because of the today's widespread use of plastic and synthetic products in the home; Table II shows a few examples.

TABLE II

TOXIC PRODUCTS IN SMOKE FROM BURNING POLYMERS

Heat Decomposition Products of Selected Materials*

Materials	Uses	Major Toxic Products**
Polyurethane flexible/rigid	Upholstery, cushions, mattresses/insulation	Isocyanates, hydrogen cyanide
Polyvinyl Chloride	Wall and floor coverings, wire and cable insulation, pipes, furniture coverings	Hydrogen chloride Phosgene
Polystyrene	Wide variety of uses, e.g. coffee cups to insulation	Styrene
Acrylics, Acrilan Acrylonitriles	Windows, clothing, drapes, carpeting, wall coverings, appliances, engineering plastics	Hydrogen cyanide Ammonia, Acrolein
Urea- and Phenol-Formaldehydes	Binders in plywood, chip and particle boards	Oxides of nitrogen Acrolein
Rubber	Tires	Sulphur Dioxide, Hydrogen sulphide
Cellulosics	Wood, paper, cotton	Acrolein, Aldehydes

*Modified from Reference 6
**Carbon monoxide and particulates are usually released from all materials.

Smoke from burning wood is just as toxic to the lungs as that from plastics. However, the chemical or polymeric linkages that hold together the monomeric units of some plastics are thermally disrupted at lower temperatures as compared with compounds in wood, a natural polymer. As a result, volatile and toxic constituents may be released from plastics earlier and without flaming; in some situations, even without evidence of smoke! Additionally, the rate and the extent of the release of constituents from some synthetic polymers may be faster and more complete than from wood at the same temperatures. Some of these polymers are abundantly present in the home (Table II).

Inhalation of smoke from a smoldering sofa or mattress, ignited accidentally by a lighted cigarette, is commonly reported in residential fires. Flexible polyurethane foam is present in most upholstered furniture, some mattresses and pillows, and in the seats of transportation vehicles. Isocyanate is one of the two major constituents of this plastic. In free form isocyanates are highly volatile and toxic compounds—the tragedy in Bhopal, India was due to the accidental release of large amounts of free methyl isocyanate into the atmosphere. Some polyurethane foams depolymerize at relatively low temperatures and significant amounts of isocyanates may be liberated and escape even from smoldering sofas or beds containing this foam.[7] Experimental sublethal exposures to furniture foam smoke at low temperatures results in marked disturbances in both lung macrophages and surfactant.[8,9] At flaming temperatures above 500°C, the isocyanates in the foam are converted to hydrogen cyanide, a powerful depressant and poison.[10] Because of this potential toxicity, the use of flexible foams in furniture was recently banned in the U.K. The obviously concerned plastic and furniture industries in the U.S.A. are researching methods to modify the foams in ways that prevent hydrogen cyanide formation. Styrene is also released rapidly from polystyrene foams before ignition occurs, and it too is highly volatile. It is also highly explosive when ignited. Heating of nitrogen-containing polymers, other than polyurethane, found in the home, e.g. acrylics, can also lead to the release of cyanides (Table II).

ESCAPING FROM FIRES

Risk factors for fatalities in residential fires were reviewed recently.[11] Sleeping, elderly, and/or alcohol-intoxicated occupants may fail to be aroused, possibly because of the narcotic effects of some smoke gases. Such gases may cause irrational behaviour, and this might explain why some sober, physically-abled and intelligent people fail to escape from a fire and are found dead near or at readily accessible escape routes. Vision may be obscured by the density of smoke. Irritating smoke chemicals can cause excessive lacrimation, blepharospasm or laryngospasm, all further interfering with escape. Carbon monoxide intoxication is only one of many mechanisms that may be involved in the pathogenesis of fire-related deaths and is usually the final common pathway.

FIRE FIGHTERS AND SMOKE INHALATION

The health implications of the smoke of modern fires for firefighters are obvious.[4] Limited studies of smoke atmospheres in real fires reveal the potential for exposures to highly toxic materials released from burning plastics or synthetics, as well as from wood.[12] For example, 15 fire fighters were admitted to hospital with smoke inhalation injury after fighting a fire involving a small amount (about 0.5 kg) of polyvinyl chloride wire insulation, a polymer that releases hydrogen chloride when heated.[13] This irritant also appears to have been the cause of fire fighter deaths despite the use of protective devices.[14] Fire fighters may be subjected to subtle forms of smoke inhalation. A "discovery" refers to an inspection of the fire scene after the fire is extinguished, and it is done to determine the cause as well as to assess damages and the completeness of the fire control. While there are no flames and, perhaps, little visible smoke, decomposition products continue to be released from materials that are

still hot. Whether repeated minor episodes of smoke inhalation (as opposed to a single acute exposure to a large amount of smoke) may lead or contribute to the development of chronic obstructive pulmonary disease in fire fighters is under study.[15]

Awareness of the composition of synthetic materials in the home might be useful in dealing with fire victims who present with respiratory problems. The investment into burns research and treatment has led to a notable reduction in burn-related deaths, but deaths due to smoke inhalation have not been reduced significantly (Table I) and research funding remains low. As far as can be determined, the only agency in Canada currently funding basic research on smoke inhalation injury is the Nova Scotia Lung Association. Smoke inhalation is a major cause of fire-related deaths and injury and more research support is needed if effective treatment protocols are to be developed. □

COMBUSTION TOXICOLOGY:

Are there other lessons?

Maybe. Combustion toxicology is the study of products released from burning or thermally decomposing materials and of the adverse effects which these products may have on the respiratory and other body systems. The combustion toxicology of burning tobacco is the best known aspect of this subject.

The most ignored combustion products that may have adverse health effects are those exhausted from gasoline or diesel engines, i.e. from cars, trucks, buses, airplanes, etc. Secondhand or environmental tobacco smoke is trivial as compared with the volume of automobile motor smoke in the immediate environment, especially if you are stuck in snarled urban traffic on a foggy or still day. The incineration of garbage is a new and controversial "branch" of combustion toxicology! In principle, given the appropriate conditions for complete thermal decomposition of garbage, i.e. good air supply, high temperatures and chambers for secondary combustion of rapidly evolving gases and fumes, as well as for trapping of non-combustible effluents, the combustion products from garbage can be no more complex or toxic than those coming out of a diesel engine exhaust. (Cost is another matter!) The U.S. National Institutes of Health has a very large building complex in North Carolina for the study of the environmental health. Huge amounts of disposable plastic laboratory materials are used in its numerous research labs and are incinerated daily . . . on site.

References

1. Annual Report, 1989. *Fire Losses in Canada.* Labour Canada, Government of Canada. Labour Canada Catalogue Number L012-0488-91 B:pp1-48.
2. Karter MJ. Fire Loss in the United States during 1990. *NFPA Journal* 1991; **85**:36-48.
3. Harwood B, Hall JR. What kills in fires: smoke inhalation or burns. *Fire Journal* 1989; **83**:28-34.
4. Washburn AE, LeBlanc PR, Fahy RT. Report on fire fighter fatalities 1990. *NFPA Journal* 1991; **85**:46-59.
5. Shirani KZ, Moylan Jr. JP, Pruitt Jr BA. Diagnosis and treatment of inhalation injury in burn patients. *In*: Loke J, Ed., *Pathophysiology and treatment of inhalation injury.* New York: Mercel Dekker, Inc., 1986:239-280. (LeEnfant C, Ed. Lung Biology in Health and Disease, Vol. 34).
6. Kaplan HL, Grand AF, Hartzell GE. Combustion toxicology-principles and test methods. Lancaster, Pennsylvania: Technomic Publishing Company 1983.
7. Woolley WD. Nitrogen-containing products from the thermal de-composition of flexible polyurethane foams. *Br Polymer J* 1972; **4**:27-43.
8. Janigan D, Moores H, Hajela R. Polyurethane foam smoke inhalation in mice: early decreases in lavagable lung macrophages. *Chest* 1989; **96**:292 (Supplement).
9. Oulton M, Moores HK, Scott JE, Janigan DT, Hajela R. Effects of smoke inhalation on surfactant phospholipids and phospholipase A_2 activity in mouse lung. *Am J Pathol* 1991; **138**:195-202.
10. Levin BC, Pacho M, Fultz ML, Bailey CS. Generation of hydrogen cyanide from flexible polyurethane foam decomposed under different combustion conditions. *Fire and Materials* 1985; **9**:125-134.
11. Runyan CW, Bangdiwala SI, Linzer MA *et al.* Risk factors for fatal residential fires. *N Eng J Med* 1992; **327**:859-863.
12. Brandt-Rauf PW, Fallow Jr. LF, Tarantini T *et al.* Health hazards of fire fighters: Exposure assessment. *Brit J Indust Med* 1988; **45**:606-612.
13. Einhorn IN, Grunnet ML. Physiological and toxicological aspects of combustion of natural and synthetic materials: past, present and future. *Fire Research* 1977/78; **1**:143-169.
14. Dyer RF, Esch VH. Polyvinyl chloride toxicity in fires. Hydrogen chloride toxicity in fire fighters. *JAMA* 1976; **235**:393-397.
15. Sherman CB, Barnhart S, Miller MF, *et al.* Firefighting acutely increases airway responsiveness. *Am Rev Resp Dis* 1989; **14**:185-190.

Other References

Comprehensive discussions of most aspects of fire smoke inhalation in man can be found in *Pathophysiology and Treatment of Inhalation Injuries* in *Lung Biology in Health and Disease* series, C. Lenfant, ed, Volume 34, New York: M. Dekker Inc, 1988, and in *Respiratory Injury. Smoke Inhalation and Burns,* E.F. Haponik and A.M. Munster, ed, New York: McGraw-Hill, 1990. A concise yet comprehensive and very readable review of the toxicity of fires is the article by Beritic T. The challenge of fire effluents. Poisonous gases are potential killers. *Brit Med J* 1990; **300**:696-698.

Preventing Cervical Cancer

UNFINISHED BUSINESS

Teresa Doyle,* Margery A. Dolphin,** BA and S. C. Robinson,† MD, FRCSC

Halifax, N.S.

The first 15 years' experience in Nova Scotia was reported in the *Nova Scotia Medical Bulletin* in 1976.[1]

At that time, we observed that despite about 100,000 Pap smears a year, the number of invasive cervical cancer cases per year had not diminished. But we had learned that these women came as a rule from the unscreened or not recently screened population (Table I), as had Carmichael, Jeffrey *et al*.[2] The female population, particularly those at most risk - the elderly - was increasing (Fig. 1). Somehow our screening program was missing the women already developing early cellular changes!

TABLE I

SCREENING HISTORY OF NEW CASES NOVA SCOTIA 1973-75

1973 - 1975 Invasive Cases	231
No Previous Pap Smear	180
With Previous Pap Smear	51
More Than 5 Years Ago	20
For Present Diagnosis Only	13
Technical or Management Error	18

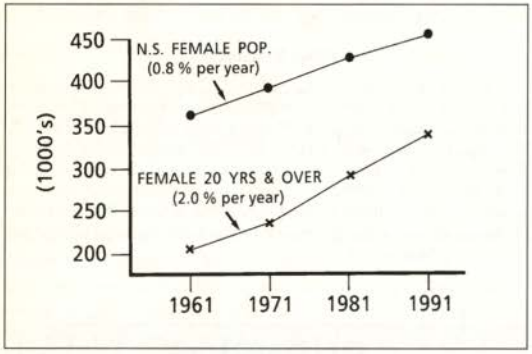


Figure 1: Nova Scotia Female Population 1961-1991

In order to reach these women and ensure successful screening for all, and investigation and treatment of those with cellular abnormality we urged:

Public awareness
Professional commitment
A central registry with follow-up capability
Quality assurance at the laboratory and clinical level

The subject has been raised at intervals since then – in this journal and in sister publications (see references).

DATA PRESENTATION

What does the data from Nova Scotia over the past 30 years tell us?

The *actual number* of invasive cases and deaths from the disease dropped from 1970 to 1980 and has subsequently increased (Fig. 2).

The *incidence* of invasive cases has dropped to about one half the level of the pre-Pap smear era (Fig. 3).

Our expenditure on Pap smears has steadily risen (Fig. 4).

The number of new pre-invasive (carcinoma in situ) cases fell dramatically from 1970 to 1980 and has risen again (Fig. 5).

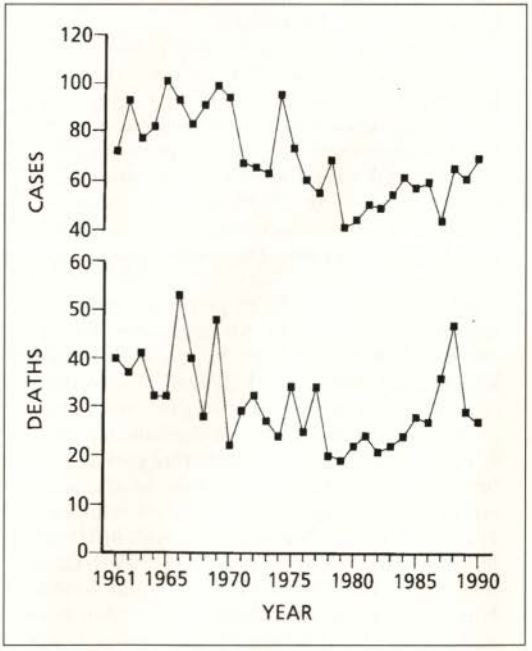


Figure 2: Nova Scotia Invasive Cancer of Cervix 1961-1990

*Supervisor, Data Entry Processing, Central Cytology Registry Victoria General Hospital, Halifax, N.S.

**Programme Coordinator, Nova Scotia Gynaecological Cancer Screening Programme, Department of Health, Halifax, N.S.

†Professor, Department of Obstetrics and Gynaecology, Dalhousie University, Halifax, N.S.

Correspondence: Margery Dolphin, Programme Coordinator, Nova Scotia Gynaecological Cancer Screening Programme,15-5788 University Avenue, Halifax, N.S. B3H 1V8

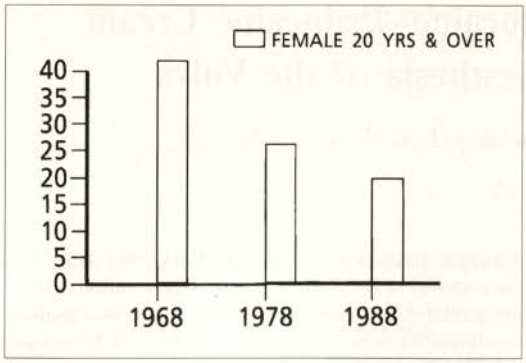


Figure 3: Incidence of Invasive CA of Cervix in Nova Scotia (per 100,000)

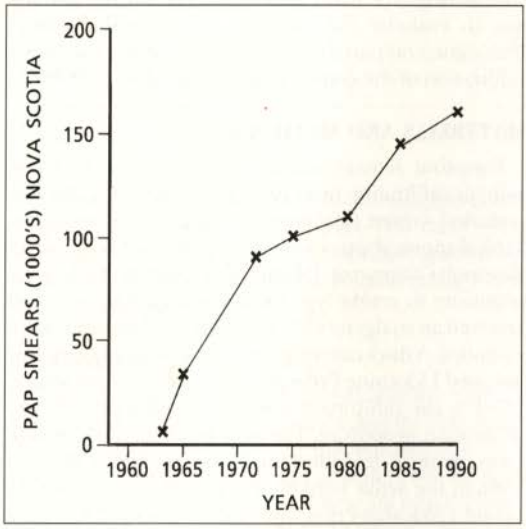


Figure 4: Pap Smears in Nova Scotia 1960-1990

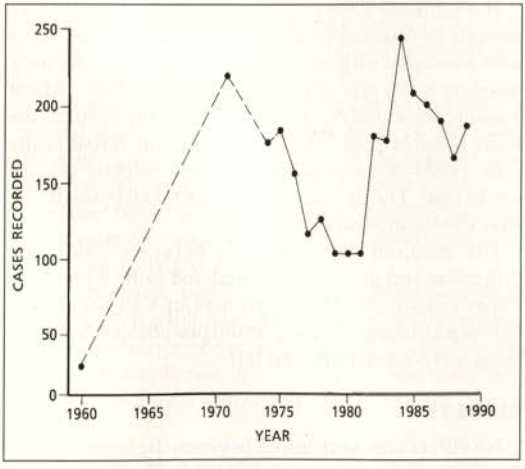


Figure 5: Carcinoma in SITU of Cervix – Nova Scotia 1960-1990

DATA ANALYSIS

Despite the absence of information on the proportion of the population being regularly screened by Pap smears, the 50 percent decline in actual cases from 1970 to 1980 no doubt reflects successful screening. Because of the rising population – especially older women – the actual case numbers has risen since 1980, reflecting our inability to date to screen *all* or almost all women!

Nevertheless, the *incidence* of the disease has diminished as Pap smear numbers have increased (proportionally more than the population).

With increased numbers of Pap smears, the increase in numbers of "Ca in situ" cases has risen as expected. This is because each year a certain number of women will develop dysplastic changes of the cervix. We can do little or nothing to prevent these changes except to advocate total sexual abstinence, a prescription for which compliance would be unlikely! However, the mean age for cervical carcinoma is 10 to 15 years older than for non-invasive disease (dysplasia and carcinoma-in-situ). This biological fact provides the window of opportunity, the time when screening will identify curable dysplastic cellular change.

THE TASK

Success in the future will depend on targetting, identifying, and screening those women we currently miss. In 1990, approximately 163,000 Pap smears were read, representing at most 47 percent of the females 20 and over. *Less than half* of Nova Scotian women are receiving regular Pap smears. This means there is a job for education and motivation. It calls for re-establishing a collaborative effort among health professionals, the Cancer Society, the education industry, women's organizations, and informal and family systems. We should be capable of this in the enlightened society of Nova Scotia! While we are at it, why not also push for breast examinations!

The Pap smear is a screening test – nothing more – but it is harmless and simple to do. It does select those individuals who need investigation and treatment, and reassures those who do not. Investigation of people with abnormal smears has, over the years, become simpler and more effective. Cone biopsy has been substantially replaced by colposcopy (high magnification visual inspection) and focussed biopsy for diagnosis. Treatment for dysplasia and many cases of carcinoma-in-situ has gone through the phases of cone biopsy, laser cautery, cryotherapy, and now "Leep" (superficial excision). The last three are outpatient procedures. As treatment of premalignant disease is now available, simplified and effective, our principle task is to get all women screened frequently enough so none will develop invasive cancer. We must, of course, follow up the treated cases.

We believe that doctors who treat women have a duty to enquire about each woman's Pap smear record, to

Continued on Page 230.

The Analgesic Effect of Lidocaine–Prilocaine Cream Prior to Infiltration Anaesthesia of the Vulva

Arthur W. Zilbert,* M.D., FRCSC and Krista Lewandowski,** R.N.

Halifax, N.S.

Objective: **In a sample of 44 females undergoing biopsy of the vulva, the analgesic efficacy of Lidocaine-Prilocaine cream was evaluated as a premedication for infiltration pain in the vulvar skin.**

Methods: **In a randomized, double-blind fashion, 2-4 grams of either 5% Lidocaine-Prilocaine cream or placebo cream was applied for a period of 6-10 minutes to the site of infiltration. Following cream removal, the biopsy site was infiltrated with 1.5-2.5 ml Lidocaine 1% solution (without adrenaline). The pain of the infiltration procedure was measured by the patient using a 100 mm visual analogue scale (VAS) and a four point verbal rating scale (VRS).**

Results: **The average VAS pain score for the patients who received Lidocaine-Prilocaine (23.38 mm) was significantly lower than for those who received placebo (43.00 mm), $p<0.005$, Wilcoxon rank sum test. Moderate or severe pain (VRS) was experienced by 52.2% of placebo patients compared to 23.8% of those using Lidocaine-Prilocaine.**

Conclusions: **Lidocaine-Prilocaine cream 5%, applied for a period of 6-10 minutes, is an effective analgesic prior to local anesthetic infiltration of vulvar skin.**

Local infiltration anesthesia with lidocaine is commonly used to relieve the pain of minor operative procedures on genital skin. Lidocaine acts directly on the nerve membranes by interrupting specific nerve impulses. However, infiltration, which distributes lidocaine through the tissues, is often accompanied by significant discomfort and pain. The degree of pain is dependent on the type of infiltrate, size of the needle, volume and rate of infiltration.

Application of a topical anesthetic to the genital skin prior to infiltration may reduce the pain associated with this procedure. A topical anaesthetic would be helpful to both the physician and patient. EMLA® (Astra Pharma Inc, Mississauga, Ontario), a eutectic mixture of lidocaine (25mg/g) and prilocaine (25mg/g) in an oil-in-water emulsion, is a topical cream which produces droplets of approximately 80% active local anesthetic substance.[1]

Lidocaine-Prilocaine cream has been shown to reduce the pain of thermocautery and laser removal of condyloma acuminata when applied to the genital skin.[2-5] For the removal of condyloma, the analgesic onset time in the genital skin was found to be 4-5 minutes and application times of longer than 10 minutes reduced the analgesic effect.[2-4]

Application of Lidocaine-Prilocaine prior to infiltration offers a non-invasive opportunity to decrease the pain associated with the procedure. The aim of this study was to evaluate the analgesic effect of Lidocaine-Prilocaine, compared to placebo, prior to local anesthesia infiltration of the genital skin and biopsy of the vulva.

MATERIALS AND METHODS

Forty-four female patients, scheduled for local anesthetic infiltration prior to biopsy of the vulva and who provided written informed consent, were investigated. Ethical approval was obtained from the Halifax Infirmary Research Committee. Patients with a history of allergy or sensitivity to amide type local anesthetics or who had received an analgesic within four hours of the study were excluded. A thick covering layer (2-4 grams) of randomly assigned Lidocaine-Prilocaine or placebo cream was applied to the infiltration site 6-10 minutes prior to the infiltration procedure. The placebo cream was cosmetically identical to Lidocaine-Prilocaine but it did not contain the active ingredients. Twenty-one patients received Lidocaine-Prilocaine and 23 placebo. After the cream was removed, 1.5-2.5 ml Lidocaine 1% solution without adrenaline was infiltrated using a 25-gauge Becton Dickinson needle.

The infiltrate was injected at a rate of 1 ml every five seconds as counted by the investigator. The degree of pain associated with the infiltration procedure was measured on a 100 mm visual analogue scale (VAS), where 0 mm represented 'no pain' and 100 represented 'the worst possible pain' and on a four-point verbal rating scale (VRS) of no pain, slight pain, moderate pain or severe pain. The measurements were taken immediately after the infiltration procedure.

The baseline characteristics between Lidocaine-Prilocaine and placebo were analyzed using a t-test and Fisher's exact test. The differences in VAS pain scores between Lidocaine-Prilocaine and placebo were analyzed using a Wilcoxon rank sum test.

RESULTS

No differences were found between the baseline characteristics in the two groups. (Table I) The difference in the average VAS pain rating between Lidocaine-Prilo-

*Departments of Gynaecology, Halifax Infirmary, and Obstetrics and Gynaecology, Dalhousie University, N.S.

** Research Group, Astra Pharma Inc, 1004 Middlegate Rd., Mississauga, Ont.

Correspondence: Dr. A. W. Zilbert, Department of Gynaecology, Halifax Infirmary, 1335 Queen Street, Halifax, N.S. B3J 2H6

caine (23.38 mm) and placebo (43.00 mm) was statistically significant ($p<0.005$). These results strongly suggest a clinically significant difference between the two treatments. According to patients verbal response, 23.8% in the Lidocaine-Prilocaine group and 52.2% in the placebo group experienced moderate or severe pain of infiltration.

TABLE I

PATIENT DEMOGRAPHIC DATA BY TREATMENT, AGE AND LOCATION OF CREAM APPLICATION. (N = 44).

		Treatment Cream	
		Lidocaine-Prilocaine	Placebo
Age (years)	Mean	37.05	34.39
	Std. Dev.	13.63	14.74
	Range	19-63	18-76
Location	Vestibule	9	8
	Labia Minora	10	14
	Labia Majora	2	1
Total	Number	21	23

Following cream application, mild burning was experienced by six patients in the Lidocaine-Prilocaine group and five in the placebo group. Localized pruritis was experienced by one patient in the placebo group. These were all mild transient reactions.

DISCUSSION

Topical application of Lidocaine-Prilocaine has been shown to be useful for laser treatment and thermocautery of genital warts in women.[2,3] The thin skin and absence of the stratum corneum in the genital skin promotes rapid absorption and penetration of the cream into the nerve endings and vessels in the connective tissues. Ljunghall *et al* found, by pinching the external vulva with forceps, that the anesthetic onset time in this area was about five minutes.[2] Whereas a 60 minute application time is required for analgesia of intact non-genital skin, 5-10 minutes has been shown to provide sufficient anesthesia for thermocautery of warts on genital skin.

Almost all injections in the genital skin are painful. The present study showed that application of Lidocaine-Prilocaine cream prior to injection decreased this pain. Hallen *et al* showed that there is a difference in anesthetic onset time between men and women.[5] Therefore a longer application time may be required to optimize analgesia in the genital skin of men.

In conclusion, local anesthetic infiltration pain was significantly less following a 6-10 minute application with Lidocaine-Prilocaine cream compared to placebo. This provides a simple non-invasive opportunity to decrease the pain associated with biopsy of the vulva. □

Précis

Application of 5% Lidocaine-Prilocaine cream reduced the pain of infiltration anesthesia in vulvar skin prior to biopsy.

References

1. Juhlin L, Evers H, Broberg F. A lidocaine-prilocaine cream for superficial skin surgery and painful lesions. *Acta Derm Venereol* 1981; **60**:544-546.
2. Ljunghall K, Lillieborg S. Local anaesthesia with a lidocaine/prilocaine cream, for cautery of condylomata acuminata on the vulval mucosa. The effect of timing of application of the cream. *Acta Derm Venereol* 1989; **69**: 362-365.
3. Rylander E, Sjöberg I, Lillieborg S, Stockman O. Local anaesthesia with a lidocaine/prilocaine cream (EMLA®) for laser treatment of condylomata acuminata: A placebo-controlled study. *Obstet Gynecol* 1990; **75**: 302-306.
4. Lassus A, Kartamaa M, Happonen H. A comparative Study of Topical Analgesia with a Lidocaine/Prilocaine Cream (EMLA®) and Infiltration Anaesthesia for Laser Surgery of Genital Warts in Men. *Sex Trans Dis* 1990; **17**: 130-132.
5. Hallen A, Ljunghall K, Wallin J. Topical anaesthetic (lidocaine and prilocaine, EMLA®) cream for cautery of genital warts. *Genit Med* 1987; **63**: 316-319.

OBITUARIES

Dr. Carmen Dintino, (72) of Sydney, Nova Scotia died on October 9, 1993. Born in Sydney he received his medical degree from Dalhousie University in 1945. He commenced practise in medicine in Sydney and Louisbourg in 1946 and remained in active practise until his death. He served as chief of the medical staff at the Sydney City Hospital and St. Rita's Hospital. He was a member of The Medical Society of Nova Scotia and the Canadian Medical Association. He is survived by his wife, two daughters, and a son to whom the *Journal* extends sincere sympathy.

Dr. W. Farooq Husain, (65) of Amherst, Nova Scotia died on October 11, 1993. Born in India he received his medical degree in Hyderbad in 1951. In 1958 he moved to England to continue his education with a specialty in paediatrics. He practised medicine in England, Pakistan and Libya before moving to Amherst in 1971 where he continued his practise until his death. He was a member of The Medical Society of Nova Scotia. He is survived by his wife, a daughter and three sons. The *Journal* extends sincere sympathy to his family.

Dr. James J. S. Wilson, (78) of Truro, Nova Scotia died on November 5, 1993. Born in Northern Ireland he received his medical degree from Queens University, Belfast. He practised medicine in Belfast before moving to Truro. He was a member of The Medical Society of Nova Scotia and the Canadian Medical Association. He is survived by his wife and two sons, to whom the *Journal* extends sincere sympathy.

Dr. Helen Holden (Quinlan), (78) of Kings County, Nova Scotia died on November 10, 1993. Born in Toronto, Ontario she received her medical degree from the University of Toronto in 1940 and later completed her certification in internal medicine. Most of her medical career was devoted to the treatment of tuberculosis at the Nova Scotia Sanatorium in Kentville. She was a member of The Medical Society of Nova Scotia and the Canadian Medical Association. She is survived by two daughters. The *Journal* extends sincere sympathy to her family.

Skin Cancer and Its Treatment by Radiotherapy

AN ALMOST LOST ART

P. J. Fitzpatrick,* MB, BS, FRCPC, FRCR

Halifax, N.S.

Carcinoma of the skin is the commonest cancer in Canada and some 16,000 new cases are seen annually. Most occur on the exposed surfaces of the head and neck with the most common being basal (BCC) and squamous (SCC) cell carcinomas which tend to arise from actinically damaged skin.[1] The majority grow slowly and, although rarely fatal, can be disfiguring. The keratoacanthoma is an unusual tumour which frequently undergoes spontaneous regression but sometimes will transform into squamous cell carcinoma where it can be described as an acute epithelial carcinoma.[2] Melanoma is the most serious of the primary tumours and accounts for 80% of the 500 deaths from skin cancer annually.

This report concerns only basal and squamous cell carcinomas and their treatment by radiotherapy. This treatment modality is both efficient and cost-effective. Many patients are, however, treated by surgery, chemosurgery, cryotherapy, electrodesiccation and chemotherapy. Optimal treatment for an individual patient is best made by a multidisciplinary oncologic team with decisions based on the probability of cure, cosmesis, function and relative cost, time, and cost of treatment. There are no firm figures for Nova Scotia but in Ontario the rate for new cases per 100,000 population is 77 for males and 59 for females.[1] In Canada there are approximately 43,000 cases of non-melanotic skin cancer annually.[3] Most tumours arise from damaged skin or from existing lesions, and one-quarter of patients develop a second tumour within 12 months.

The most common tumour is the BCC which arises from the basal layer of the epidermis. Untreated they burrow deeply, infiltrate vital areas, and cause hideous deformity. They are commonly known as rodent ulcers and have a predilection for hair-bearing skin above a line joining the ear lobe to the angle of the mouth. At embryological junctional areas they tend to infiltrate the tissues more deeply. There are several clinical types. The most common is the nodular lesion which consists of an ulcer with firm, raised, rolled, pearly edges and telangiectatic vessels. Other types are superficial, pigmented, and a morphea (fibrosing) that has the appearance of a grass fire. BCCs grow slowly at a rate of 5 mm each year.[1] At presentation the average tumour has a diameter of 19 mm and has been present for 3.5 years. The nevoid basal cell carcinoma (Gorlin's Syndrome) is a condition inherited in an autosomal dominant fashion.[4] In addition to multiple skin nevi and BCC that are constantly evolving, many organs including the skeleton, the endocrine and nervous systems develop specific abnormalities.

Most SCC are well differentiated and only about one percent will metastasize to regional nodes.[1] At diagnosis the average tumour is 19 mm in diameter but, with a faster growth rate than the BCC, the median duration from the first sign to diagnosis is 14 months. These tumours arise from the squamous cells of the epidermis or its appendages and produce keratin. Typically, the tumours present as an ulcer with firm, raised, rolled, everted edges. The in-situ phase for some tumours is intra-epidermal carcinoma that is also known as Bowen's Disease.

An aggressive squamous cell carcinoma of the skin for which we have suggested the name acute epithelioma is worthy of separate mention.[2] It is frequently larger than 2 cm and has a characteristic morphology with raised, rolled, vascular but not everted edges. Commonly, there is a central crust covering a foul discharge on a papilliferous base. The biopsy is characteristically ambiguous but often that of a well-differentiated squamous cell carcinoma. Irrespective of the history, which is usually short, all tumours have a period of rapid growth. These salient points on comparison between SCC and acute epithelioma arising from the ear and eyelids is shown in Table I. Although both types of tumour are amenable to local control the latter has a significant impact on mortality with a three year cause specific survival of 79% compared to 95% for the more common tumour.

TABLE I

SALIENT POINTS: SQUAMOUS CELL CARCINOMA /ACUTE EPITHELIOMA OF THE EAR AND EYELIDS

	SCC	Acute Epithelioma
Number of patients	169(88%)	24(12%)
Size > 2 cm	56(33%)	18(75%)
Positive nodes	12(7%)	8(33%)
Death	9(5%)	5(21%)
Local control	160(85%)	23(96%)
3 yr cause specific survival	160(95%)	19(79%)

SCC, squamous cell carcinoma.

*Professor and Chairman, Department of Radiation Oncology, Dalhousie University; Physician-in-Chief, Cancer Treatment and Research Foundation of Nova Scotia.

Correspondence: Dr. P. J. Fitzpatrick, Cancer Treatment & Research Foundation of Nova Scotia, 5820 University Avenue, Halifax, N.S. B3H 1V7

CLINICAL MATERIAL

The demographics of a group of patients with BCC and SCC of the head are shown in Tables II and III.[1] The majority of tumours develop in the 60s and 70s with an overall age range of 22 to 92 years. Tumours are more common in males than females with an approximate ratio 1.5:1. The one exception is the ear where the male ratio is 10:1. Approximately two-thirds of patients have multiple lesions with 25% developing a second tumour within one year.

TABLE II

BASAL AND SQUAMOUS CELL CARCINOMA

Site	Pts	M	F	M:F	M Years	F Years	Multiple Lesions %
Scalp	99	60	39	1.5:1	70(22-87)	66(23-91)	62
Face	100	61	39	1.6:1	72(43-92)	67(43-87)	70
Nose	100	58	42	1.4:1	64(31-91)	69(44-92)	49
Ear	100	91	9	10:1	71(38-92)	61(40-94)	90
Eyelid	99	57	42	1.3:1	61(29-84)	57(23-88)	80

TABLE III

BCC IS MORE COMMON THAN SCC AT ALL SITES EXCEPT THE EAR

Site	Tumors	BCC	SCC	BCC:SCC	Mets	%	Death	%
Scalp	79	50	29	1.7	4	13.7	2	6.0
Face	188	149	39	3.8	2	5	0	
Nose	110	86	24	3.5	2	8	1	0.9
Ear	82	34	48	0.7	4	8	1	1.2
Eyelid	125	114	11	10.3	0		0	
Total	584	433	141	2.9	12** Overall 1.4	8	4*	0.7

*SCC2 BCC 2 **All SCC

RADIOTHERAPY

The results of irradiating 584 patients with BCC and SCC at the Princess Margaret Hospital were analyzed (Table IV). The local control rate was 95%. Approximately one-quarter were treated with a single fraction, one-half with five daily fractions, one-eighth with ten daily fractions, and the remaining one-eighth with 15 to 30 fractions because of the size or complexity of the tumour. The three-year local control rate among 433 patients with BCC was 95% with no patients developing metastases but with 2 (0.5%) tumour related deaths. Among 151 patients with SCC the three-year control rate was 92% with metastases developing in 12 (8%); and there were two (1.3%) tumour related deaths. The cosmesis and function following radiotherapy is generally good and well accepted by patients and physicians. Cosmesis and function in which the patients themselves, a clinic nurse, a radiation oncologist, and an ophthalmologist assessed cosmesis and function in 115 patients with BCC and SCC at one and five years following radiotherapy has just been reported.[5] On a scale of 1 to 10, the combined assessments were rated at 8 and confirm previous reports from the same institute.[6,7]

TABLE IV

FOLLOWING RADIOTHERAPY 533/584 SKIN CANCERS (94.7%) WERE CONTROLLED AT THREE YEARS

Site	No.	Necrosis	%	> 3yr local control	%
Scalp	79	4	5	72	93.5
Face	188	15	8	182	97
Nose	110	2	1.8	103	93.6
Ear	82	5	6	77	94
Eyelid	125	0	0	119	95
Total	584	26	4.4	553	94.7

In general, there are few complications following radiotherapy with a radionecrosis rate of about five percent. This damage is mostly related to large tumours with extensive normal tissue destruction prior to treatment.

DISCUSSION AND CONCLUSIONS

The following cases illustrate what can be achieved by radiotherapy (Figures 1 A&B, 2 A&B, 3 A&B, 4 A&B). It is an effective and simple method for treating skin cancer, it is relatively cheap and can be given on an outpatient basis. Treatment is individualized with the average number of radiation exposures being five and delivered in one week. Extensive cancers require more prolonged treatment and a higher dosage. In nearly every case protection from irradiation can be given to vital structures. Primary tumours, as well as those recurrent after a previous excision, are well controlled. With a consistent control rate of 95% with few complications it should be a treatment of choice for many patients. However, very few patients are referred for radiotherapy in Nova Scotia and hence the title of the paper. □

ACKNOWLEDGEMENTS

This report is based on previous work carried out at the Princess Margaret Hospital in Toronto. Ms. Ann Titus performed the secretarial tasks.

References

1. Fitzpatrick PJ: Skin cancer of the head – treatment by radiotherapy. *J Otlaryngol* 1984; **13**:4.
2. Fitzpatrick PJ, Harwood AA: Acute epithelioma – an aggressive squamous cell carcinoma of the skin. *Am J Clin Oncol* 1985; **8**:468-471.
3. *Canadian Cancer Statistics:* Health and Welfare Canada 1990.
4. Fitzpatrick PJ, Thompson GA: Gorlin's syndrome, or nevoid basal cell carcinoma syndrome. *Can Med Assoc J* 1982; **127**:465-470.
5. Fitzpatrick PJ: Tumours of the eyelids and their treatment by radiotherapy. In: *Medical Radiology – Diagnostic Imaging and Radiation.* Edited by Alberti/Sagerman, Heidelberg: Springer-Verlag, 1993, pp 217-225.
6. Fitzpatrick PJ, Jamieson DM, Thompson GA, Allt WEC: Tumours of the eyelids and their treatment by radiotherapy. *Radiology* 1972; **104**:661-665.
7. Fitzpatrick PJ, Thompson GA, Easterbrook WM, *et al*: Basal and squamous cell carcinoma of the eyelids and their treatment by radiotherapy. *Int J Rad Onc Biol Phys* 1984; **10**:449-454.

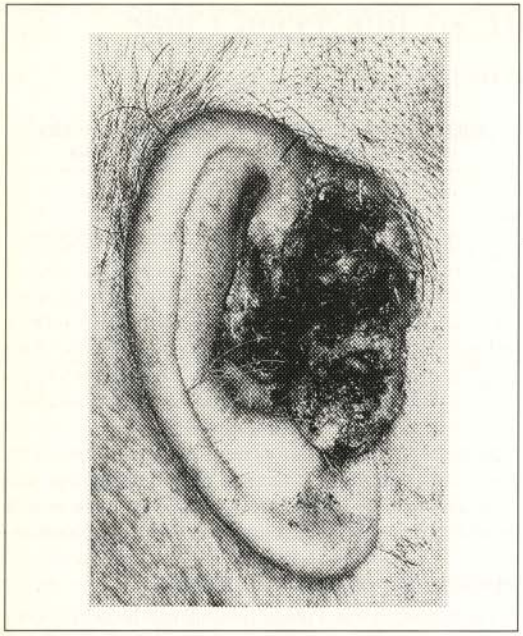


Figure 1A

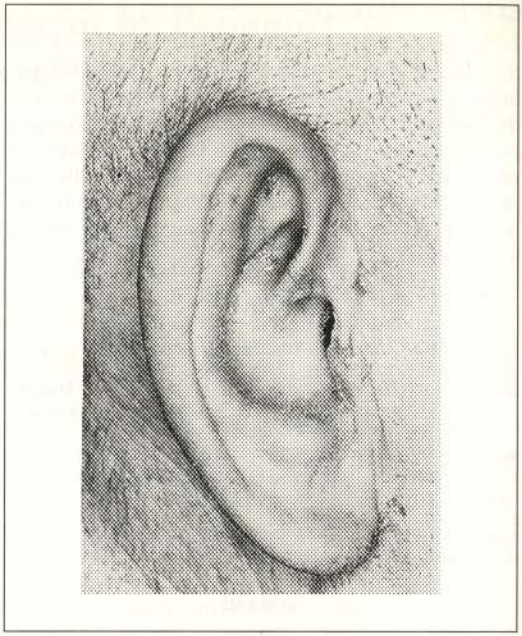


Figure 1B

Figure 1A & 1B – An 82 year old woman with a large squamous cell carcinoma before (A) and after three years (B) treated with electrons to 5100 cGy in three weeks.

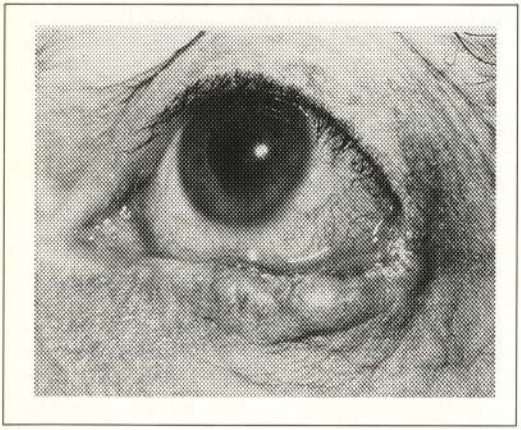


Figure 2A

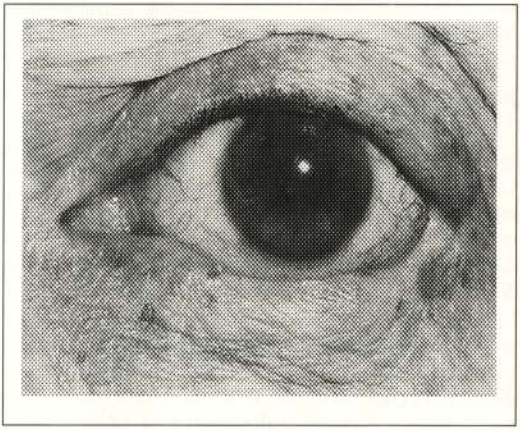


Figure 2B

Figure 2A & 2B – A 62 year old man with an extensive BCC of the lower eyelid before (A) and five years after (B) treated with superficial irradiation to 4250 cGy delivered in 10 days.

Figure 3A

Figure 3B

Figure 3A & 3B – A 63 year old man before (A) and three years after (B) treated with superficial irradiation to 3500 cGy deliverd in five days.

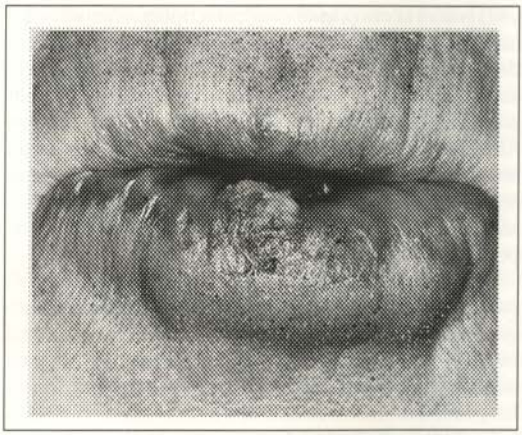


Figure 4A

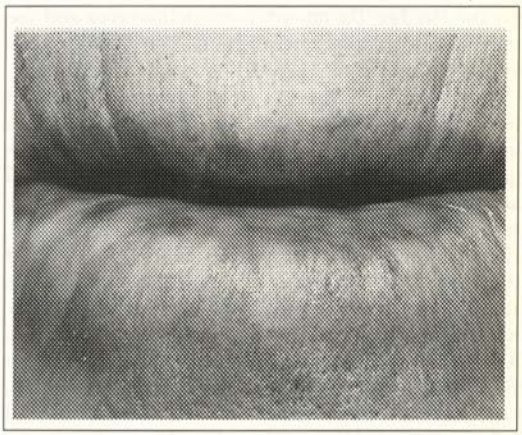


Figure 4B

Figure 4A & 4B – A 85 year old man before (A) and three years later (B) treated with orthovoltage irradiation to 4500 cGy in three weeks.

How Physicians in Halifax County Care for Patients after a Myocardial Infarction

Ronald D. Gregor,* MD, FRCPC, Judy R. Guernsey,** PhD, Lydia Makrides,† PhD and Hermann K. Wolf,†† PhD

Halifax, N.S.

Objective: **To assess how physicians view their follow-up care of patients with acute myocardial infarction (MI) and compare it with the recommendations of the Canadian Cardiovascular Society Consensus Report. To determine what physicians consider barriers to adequate post-MI care.**

Design: **Questionnaire mailed to all internists and family physicians, identified from the address list of the Nova Scotia Medical Society.**

Setting: **The census district Halifax County, which covers the Halifax/Dartmouth metropolitan area and the surrounding suburbs and rural area. The setting is identical to the one for the Halifax County MONICA project.**

Main Results: **Of the 460 questionnaires mailed 218 were returned (194 by physicians, 24 by post office as undeliverable), 183 of which had usable data. For pharmacological post-MI care 88% of physicians included aspirin, 77% used β-blockers, 42.6% prescribed Ca-antagonists, and 47% ordered nitrates. A majority of physicians continued the medications patients received at discharge from hospital (61%). Investigations for risk stratification are being used by 98% of physicians, either by ordering tests themselves, or through consultants. The largest percentages of physicians orders lipid profiles (87%), followed by EKG (63%), stress test (57%), wall motion studies (30%), chest X-ray (28%), and echocardiogram (15%). Counselling for smoking cessation and exercise is practised by more than 90% of physicians. Weight control and nutrition counselling are not quite as popular, since between 15 to 21 % of physicians do not offer this service or do so only in a casual fashion. The lack of community programs and counselling services have been identified as impediment to improved post-MI care by the majority of physicians (68% and 32% respectively).**

Conclusions: **Most physicians in Halifax County who care for patients after a myocardial infarction profess to apply treatment patterns that are in agreement with the recommendations of the Canadian Cardiovascular Society. Whether their apparent awareness of the recommendations translates always into action could not be determined in this study, although data from the Halifax County MONICA project suggest that not all patients receive the medications recommended for post-MI cases.**

Halifax County has shared with the rest of Canada a decline of ischemic heart disease mortality during the past two decades. One of the factors that may have contributed to this phenomenon is the follow-up care that patients receive after their myocardial infarction (MI). Any residual ambiguities about proper drug prescription after acute MI have recently been eliminated by the recommendations of the Consensus Conference of the Canadian Cardiovascular Society (CCS).[1] It is not clear however to what extent physicians adhere to this advise. A study by Eccles showed that 59% of patients discharged from hospital after an acute MI received suboptimal drug treatment, i.e. they received only one of two recommended drugs despite an absence of contra-indications.[2] Similar findings were reported by Gregor *et al.*[3]

Other important factors in the follow-up care of MI patients are exercise and risk factor modification programs that are primarily designed to improve functional capacity but may have the added benefit of reduced mortality and morbidity.[4,5] Although several clinical trials have failed to show a statistically significant reduction of mortality, a recently performed meta-analysis of ten of these trials obtained an odds ratio of 0.76 (0.63 – 0.92; 95% confidence interval) for all-cause mortality.[6]

We conducted a survey in order to investigate how follow-up care of MI patients is administered in the Halifax County MONICA study population by physicians who deliver such care. The Halifax County MONICA project has been described in detail elsewhere,[7] but briefly, it is the Canadian arm of an international collaborative effort to monitor cardiovascular disease morbidity and mortality trends.[8] We also inquired whether the study physicians experience deficiencies in the health care system that limit them from practising adequate follow-up care.

MATERIALS AND METHODS

The survey was conducted in the spring of 1992. The Provincial Medical Board of Nova Scotia provided us with an address list of physicians in family medicine and general practice with offices in metropolitan and rural areas of Halifax County. We augmented this list with the names of physicians in cardiology or internal medicine, taken from the Yellow Pages directory for the Halifax/Dartmouth/Bedford area. A one-page questionnaire, a

* Departments of Medicine, Dalhousie University, Halifax, N.S.
** Community Health and Epidemiology, Dalhousie University, Halifax, N.S.
†† Physiology and Biophysics, Dalhousie University, Halifax, N.S.
† School of Physiotherapy, Dalhousie University, Halifax, N.S.

Correspondence: Dr. Hermann K. Wolf, Department of Physiology and Biophysics, Dalhousie University, Halifax, N.S. B3H 4H7

This study was in part supported by the Heart and Stroke Foundation of Nova Scotia, the Dalhousie Cardiac Rehabilitation Program, and National Health Research and Development Program grant 6603-1369-53

business-reply envelope and a covering letter, explaining the purpose of the survey, were mailed to all physicians on our address list. The covering letter was individualized for the addressee and personally signed by one of us. The questionnaire was anonymous, and physicians identified only the location of their practice as within or outside the Halifax/Dartmouth metropolitan area.

The questions on follow-up care of myocardial infarction patients were divided into three sections. The part on prescription pattern asked about usual use of aspirin, beta blockers, Ca-antagonists, nitrates, or continuation of hospital discharge regimen. It was also possible to specify any other commonly prescribed drug under an open question. A second portion of the questionnaire asked about use of investigative procedures. Possible answers were stress test, lipid profile, EKG, chest X-ray, echocardiogram and wall motion study. A third segment inquired about intensity of counselling on nutrition, weight control, smoking cessation, and physical exercise. Possible responses were: Intensive counselling provided by the physician herself/himself, referral to other health professional, or no counselling/casual counselling. In addition, the questionnaire invited suggestions for unmet needs in the care of MI patients. The choices for this question were: Laboratory services, community programs on exercise etc., counselling services, access to consultants, or other needs to be specified.

Questionnaire responses were analyzed as two-way contingency tables, using SAS procedures.[9] In addition to the direct responses we also analyzed summary measures of medical treatment, use of investigative procedures, and provision of counselling services. The summary measure for medical treatment, DSCORE, represents the sum of points accumulated for use of aspirin, β-blocker, or ACE inhibitor, where each of these drugs was assigned a value of 1 if used. Thus, DSCORE could range from 0 to 3. If continuation of hospital discharge regimen was specified, a DSCORE of 1.5 was assigned. The summary measure ISCORE for use of investigative procedures was the total number of investigative procedures used. CSCORE was the summary measure for counselling services. It was formed by summing the points achieved for counselling in each of the four subject areas. Two points were awarded for the response *intensive counselling*, 1 point for *referral*, and 0 points for *no or casual counselling*. Pearson correlation coefficients were calculated to assess relationships between different summary measures. We also analyzed the MONICA myocardial infarction register for the prescription pattern of patients discharged from hospital after an MI or admitted to hospital with acute chest pain and a history of previous MI. In particular, we determined the frequency with which various drugs were being prescribed. We focussed on the same drug categories that appeared on the questionnaire.

RESULTS

Response rate

A total of 460 questionnaires were mailed, 394 to the physicians inside and 66 to physicians outside the Halifax/Bedford/Dartmouth metropolitan area. Of these, 24 (21 from inside and 3 from outside the metropolitan area) were returned by Canada Post as undeliverable. Return letters were received from 194 physicians; 154 identified their practice location inside and 26 outside the metropolitan area; 3 did not identify their location. Another 11 indicated that they had retired from active practice or had changed to a career that no longer included following post-MI patients. The response rate for physicians inside and outside was essentially identical at 43.8% and 43.3% respectively. The 183 questionnaires with valid data provide the basis for this report.

TABLE I

PERCENTAGE OF RESPONDENTS (n=183) INDICATING THAT THEY USUALLY PRESCRIBE THE SPECIFIED DRUG.

Drug	Percentage
ACE inhibitor	3.8
Aspirin	88.0
Beta Blocker	77.0
Ca-Antagonist	42.6
Continuation of hospital regime	60.7
Nitrates	47.0

Treatment

The frequency with which the different medical treatments were identified is shown in Table I. A further analysis of the response combinations indicates that only 19% of physicians had checked all choices. We interpret this as a sign that respondents used discrimination in their answer to this question, which enhances the credibility of the data. The analysis of response combinations also shows that only 10% of study physicians continued the hospital discharge regimen without further modification. However, an analysis of the MONICA data base indicated that when patients were discharged after an MI with either β-blockers, Ca antagonists, or aspirin, between 72% to 84% of them were still on this medication at their next admission to CCU.

TABLE II

PERCENTAGE OF RESPONDENTS (n=183), WHO USUALLY ORDER A SPECIFIED INVESTIGATION AS PART OF POST-MI FOLLOW UP

Investigation	Percentage
Chest X-ray	28.4
Echocardiogram	14.8
EKG	62.8
Lipid profile	86.9
Stress test	57.4
Wall motion study	30.1
None	8.7

Investigations

As is shown in Table II, 9% of respondents had not indicated any follow-up investigations but 75% of this group commented that they refer to consultants for follow-up investigation. This leaves only 2% of all respondents, who specify neither follow-up investigation or referral to consultants. The most commonly mentioned follow-up investigations were lipid profile, EKG, and stress tests; 45% of physicians specify the combination of all three tests, sometimes in combination with one or more other ones; 16% used a combination of stress test and lipid profile and 20% preferred the combination of EKG and lipid profile. The less frequently mentioned investigations alway appear in combination with one or more of the three most popular tests.

Using the measures DSCORE and ISCORE we investigated the relationship between medication and investigation pattern. We found a moderate but statistically significant correlation (r=0.36;p=0.0001). This means that respondents with high intensity of investigation, i.e. use of many procedures, also were more likely to choose aspirin, β-blockers and ACE-inhibitors for post-MI prescriptions.

Counselling

We inquired about counselling on four topics. The answers to this question are summarized in Table III. Intensive counselling by the physicians themselves is most often provided for smoking cessation, followed by physical exercise and weight control. Only a minority of physicians provide intensive counselling on nutrition. Instead they indicate that for nutrition counselling they refer their patients to other health professionals.

TABLE III

DISTRIBUTION OF RESPONSES (n=183) TO THE QUESTION ON COUNSELLING SERVICE IN PERCENT.

Counselling topic	intensive	referral	intensive+ referral	none or casual
Nutrition	24.0	51.4	3.8	20.8
Weight Control	51.4	28.4	4.9	15.3
Smoking cessation	83.6	6.0	1.1	9.3
Physical Exercise	70.5	12.6	10.4	6.6

The frequency of referral occurs in exactly the reverse order of intensive counselling. The largest number of physicians refer for nutrition counselling, followed by weight control, physical exercise and smoking. Nutrition and weight control also rank high among the counselling services which are only casually or never done. There existed a fairly strong and significant correlation between the answer to the nutrition and the weight control question (r=0.59; p=0.0001), i.e. the physicians who offered intensive counselling on nutrition, generally also did so on weight control and vice versa.

Unmet needs

By far the most frequently mentioned service requiring improvements were community programs in areas such as exercise, group therapy, and health education. Better counselling services and improved access to consultants was mentioned by 32% and 19% of respondents respectively. There was also a moderate, but significant negative correlation (r=0.2; p=0.009) between respondents asking for improved access to consultants and those who order wall motion studies as follow-up procedure, i.e. they were generally not the same persons.

TABLE IV

PERCENT OF RESPONDENTS (n=183), WHO INDICATE DIFFERENT UNMET NEEDS

Unmet needs	Percentage
Lab services	2.7
Community programs	68.3
Counselling services	32.2
Access to consultants	18.6
Other	4.3

Effect of practice setting

The response of physicians from within and from outside the Halifax-Dartmouth metropolitan area to most questions did not differ significantly. The exceptions were the question on use of chest X-ray and improvements in access to consultants. Chest X-ray is ordered for post-MI patients by 26% of physicians from within and 50% of physicians from outside the metro area ($p = 0.01$). Improved access to consultants is requested by 46% of physicians from outside and 14% from inside the metro area ($p < 0.0001$). There may be additional effects of practice location that were not detected due to the limited statistical power caused by the small number of respondents from outside the metropolitan area.

DISCUSSION

This study documents the prevailing patterns of post–MI care in Halifax County. The results indicate that Halifax County physicians are observing the Canadian Cardiovascular Society guidelines for care following acute myocardial infarction; 77% of them report to prescribe now β-blockers and 88% of them state that they usually prescribe aspirin. Although this appears to be a significantly higher level than was found in 1988,[3] there is some doubt whether the numbers of this survey reflect reality, since the MONICA data show that of the patients with a previous MI who were readmitted to CCU, only 49% were on aspirin and 38% on β-blockers.

Risk stratification is an essential part of post-MI care and an important component of the CCS guidelines. It would therefore be expected that most physicians would request a stress test and some measure of left ventricular function evaluation, such as a wall motion study. The

assumption is that in most cases these studies would be performed in hospital. A correlation between prescribing and use of investigative procedures implies agreement with the recommended management strategies. The high request rate of 87% of lipid profiles reflects the intense interest in cholesterol and coronary disease. However, one has to wonder why there are still 21% of physicians offering no or only casual nutrition counselling, given the high prevalence of hyperlipidemia in Nova Scotia.[10]

The type of counselling offered by most physicians deals with smoking cessation. This represents a welcome reinforcement of the message delivered by the Heart and Stroke Foundation and the Cancer Society for many years. The combined messages appear to have had an effect at least with the male population, where we found a high percentage of previous smokers.[10] A majority of our respondents (68.3%) indicated that they wished an improvement in community services, such as exercise, education and group therapy programs. This high rate is proof that the image of the physician, who is only interested in prescribing pills, is a myth. But the high percentage is also a clear indicator for the deficiencies of our health care system. The data are not surprising considering that post-MI patients have only access to one exercise (Change of Heart at YMCA Halifax) and one risk factor modification program (Hyperlipidemia Clinic at Camp Hill Medical Center). Both of these programs have limited capacity and are geographically distant from many of the 600 MI that occur every year in Halifax County.

Most laboratory services are readily available but access to cardiac investigation and consultants is considered deficient. These findings support the statements made by the Metropolitan Hopital Advisory Committee in its Cardiology Report.[11]

The limitation of this study is that only 44% of physicians responded to the questionnaire. Whenever one finds low response rates the question arises how representative the respondents are of the total population. However, experience has shown that if the questionnaire does not address controversial issues, as in this study, the participation in the survey is less likely to be determined by a particular bias of the respondent and, consequently, the results can be considered as representative of the group,whose opinion has been solicited.[12]

As we asked about their practice behaviour, the answers necessarily reflect the physicians' perceptions. They for the most part in agreement with the CCS guidelines for post-MI patients, Whether this perception is a true reflection of practice behaviour can not be determined by our data. However, the declining mortality rate for the Halifax County MONICA area is at least not in conflict with the assertion that physicians' post-MI care has made a contribution to the improved survival of MI patients in the study area. □

References

1. Fallen E, Armstrong P, Cairns J, *et al.* Report of the Canadian Cardiovascular Society's consensus conference on the management of postmyocardial infarction patient. *Can Med Assoc J* 1991; **144**:1015-1025.
2. Eccles M, Bradshaw C. Use of secondary prophylaxis against myocardial infarction in the north of England. *Brit Med J* 1991; **302**:91-92.
3. Gregor RD, Guernsey JR, MacKenzie BR, Rautaharju PM, Wolf HK. Beta blocker use after acute myocardial infarction. *Clin Invest Med* 1990; **13**(5 Suppl.):C66.
4. Kellermann JJ. Rationale of exercise therapy in patients with angina pectoris with normal and impaired ventricular function. *Chest* 1992; **101**(5 Suppl.):322S-325S.
5. Goble AJ, Hare DL, Macdonald PS, Oliver RG, Reid MA, Worcester MC. Effect of early programmes of high and low intensity exercise on physical performance after transmural acute myocardial infarction. *Br Heart J* 1991; **65**:126-131.
6. Oldridge N, Guyatt G, Fischer M, Rimm A. Cardiac rehabilitation after myocardial infarction. *JAMA* 1988; **260**:945 - 950.
7. MacKenzie BR, Crofts P, Gregor RD, et al. A study of coronary heart disease trends in Halifax County. *NS Med Bull* 1984; **63**:147-148.
8. WHO MONICA Project Principal Investigators. The World Health Organization MONICA project (MONItoring of trends and determinants in CArdiovascular disease): A major international collaboration. *J Clin Epidemiol* 1988; **41**:105-114.
9. SAS Institute Inc. SAS/STAT User's Guide, Release 6.03 Edition.Cary, NC: SAS Institute, 1988
10. Gregor RD, MacKenzie BR, Tan M, Rautaharju PM, Wolf HK. Coronary heart disease and its risk factors in Halifax County. *NS Med J* 1988; **67**:164-168.
11. Metropolitan Hospital Advisory Committee. *Cardiology planning for the year 2000 in the metropolitan area*: Report of the adult cardiology services planning task force. Nova Scotia Department of Health. 1991.
12. Rossi P, Wright J, Anderson A, ed. *Handbook of Survey Research.* New York: Academic Press Inc., 1983:293-310.

Treatment Possibilities for Alzheimers Disease

Kenneth Rockwood,* MD, FRCPC and Laurie Mallery,* MD, FRCPC

Halifax, N.S.

This paper reviews the diagnosis and staging of Alzheimer's disease, and outlines an approach to patients with dementia who exhibit disturbed behaviour. In addition, the status of potential agents for the treatment of Alzheimer's disease is noted, and attention is drawn to anti-dementia drug trials in Nova Scotia.

Dementia is a global progressive acquired impairment of cognition. It is very common in the elderly,[1,2] and the prevalence doubles every five years from the age of 60 so that by the age of 85, between 25% and 40% of older people are affected.[2,3] The most common cause of dementia is Alzheimer's disease.[2,3]

The cost of caring for patients with Alzheimer's disease is enormous. A 1987 study from the United States estimated that the cost of caring for patients with Alzheimer's disease exceeded the combined cost of caring for patients with stroke and cancer.[4] In addition, caregivers of patients with Alzheimer's disease face a variety of burdens and hardships.[5]

In consequence, Alzheimer's disease is very much feared by older people. At the same time, memory complaints are common in the elderly, and often these have no pathologic significance. It is therefore important to differentiate benign memory loss from dementia.

Recently, considerable attention has been drawn to the possibility of treating Alzheimer's disease.[6] The attention generated in scientific journals and in the lay press by tetrahydroaminoachradine (tacrine) has meant that patients are now more commonly asking about treatment possibilities. The purpose of this paper is to provide the family physician with an approach to the treatment of Alzheimer's disease.

To treat Alzheimer's disease of course means establishing the diagnosis. To establish the diagnosis of Alzheimer's disease requires the establishment of the diagnosis of dementia. Dementia is defined, according to the revised third edition of the diagnostic and statistical manual of the American Psychiatric Association, as acquired global cognitive impairment. By *global* is meant an impairment in more than one sphere of higher cortical functions; i.e. memory impairment alone does not meet the criteria for dementia.[7] To diagnose Alzheimer's disease requires that the dementia be present for at least three months, that it be progressive, that the onset have occurred between the ages of 40 and 90, that it does not occur in the presence of delirium, and that there is no reasonable alternative explanation for the dementia.[8]

*Assistant Professor, Division of Geriatric Medicine, Dalhousie University, Halifax, N.S.

Correspondence: Dr. K. Rockwood, Division of Geriatric Medicine, Dalhousie University, 1763 Robie Street, Halifax, NS B3H 3G2

While for many years it was taught that Alzheimer's disease was a "diagnosis of exclusion", it is now well recognized that there exists a characteristic syndrome which may be diagnosed and staged without resorting to the exhaustive lists of tests required even a few years ago.[9,10] In the face of this syndrome, very few tests need be considered routine, although it is prudent to usually obtain a complete blood count, electrolytes, urea, creatinine, liver function tests, thyroid function tests, serum B_{12} and folate. In the absence of focal or lateralizing signs, in a patient with a long established dementia syndrome, who does not have a syndrome suggestive of Binswanger's disease or normal pressure hydrocephalus (e.g. a triad of early gait abnormality, early urinary incontinence and dementia) there is little role for a routine computerized tomogram of the head.

At the Memory Disability Clinic at Camp Hill Medical Centre, we find that the diagnosis and staging of Alzheimer's disease is greatly facilitated through the use of a simple standardized test, the Folstein Mini Mental State Examination[11] and a semi-structured interview with the patient known as the Brief Cognitive Rating Scale.[12] A nurse or trained lay interviewer can complete the MMSE in five minutes or less. It is scored out of 30 and, depending on the level of education, scores below a range of 23 to 27 are considered indicative of cognitive impairment.[14]

The Brief Cognitive Rating Scale is completed by the geriatrician, and takes between 30 to 45 minutes. The BCRS assesses cognitive performance in eleven domains, including concentration, recent memory, past memory, orientation, functioning and self care, speech, psychomotor activity, mood and behaviour, praxis, calculation and feeding. From the BCRS a global deterioration scale can be calculated.[15] The Global Deterioration Scale rates people from stage 1, in which there is no cognitive impairment, to stage 7, in which there is terminal dementia. The BCRS is particularly helpful in that it has the properties of hierarchy and concordance. Hierarchy means that a score of 7 is worse than a score of 6 and so forth, and concordance means that patients who score at one level in one domain should score roughly at that level in the other domains. Non-concordance is often indicative of a pathology other than Alzheimer's disease.

The BCRS is particularly helpful because it provides useful insights into staging and prognosis. It also allows a practical approach to the workup of behavioural disturbances which are frequently seen in Alzheimer's disease. For example, behavioural problems typically occur in stage 6. Thus if a patient presents with a behavioural disturbance who otherwise is in stage 3 or 4, the possibility of finding a medical cause underlying the behavioural

disturbance is reasonably high, approximately 1 patient in 5 to 1 patient in 7.[16] By contrast, a medical investigation of medical causes for behavioural disturbances in patients who are in stage 6 is quite low.

With a diagnosis and stage of Alzheimer's disease in hand, it is worth considering treatment possibilities. To date, only tacrine has been shown to have any beneficial effect in the treatment of Alzheimer's disease, but the effect has been very modest, quite controversial and usually not reproducible.[17-20] Moreover, the search for benefit may occur at the expense of considerable hepatotoxicity.[6,17-20] Tacrine is not yet approved for use in Canada, but may soon become available.

All other treatments remain experimental. At the Memory Disability Clinic, we have participated in three drugs trials over the last five years and are currently engaged in a fourth, for which we are seeking eligible patients. Lazabemide is a monoamineoxidase B inhibitor. Whereas most of the initial drug trials sought improvement in patients based on supplementation or replacement of neurotransmitters (typically acetylcholine), the lazabemide trial seeks to slow progression of the disease, through a neuro-protective effect. Having reviewed several potential drug trial protocols, we felt this approach was reasonable in that the beneficial effects of the drugs that have been studied so far more commonly occur by slowing disease progression rather than bringing about symptomatic improvement.

The lazabemide trial is a one year trial, with three arms: placebo, lazabemide in a dose of 50 mg, and lazabemide in a dose of 100 mg. The duration of the trial is one year. The drug has been in trial for Parkinson's disease, and the safety profile appears quite favourable. This is a Phase IIB trial, however, so that one of the chief aims of the trial is to look at safety as well as efficacy.

The trial is aimed at patients in early stages of dementia. Such a patient would typically complain of at most modest memory loss, which is more marked for recent events, or demonstrate consistent slight forgetfulness with only partial recollection of recent events. They would sometimes have difficulty with time relationships, but are usually oriented to place on formal testing, although they may have difficulties with orientation when travelling to new locales. Social judgment would usually be maintained, though occasional deficits in judgment or reasoning might be noted by a family. They usually need no assistance, or at most mild prompting in personal care such as feeding, grooming, bathing and dressing. These patients would have no other competing neurologic disorders such as stroke or Parkinson's disease.

Physicians with patients who might potentially be eligible for participation in this trial may, if they wish, contact the Study Coordinator, Helen Snow, at the Geriatric Medicine Drug Trial Group, 422-0521, or can write to: Suite 305, 5880 Spring Garden Road, Halifax, N.S. B3H 1Y1.

With the speed of developments, particularly since 1987 in our understanding of Alzheimer's disease, the potential for treatment is real. Achieving that potential however will require a massive effort of scientists and clinicians worldwide, and multi-centre trials are an important component of this. □

References

1. Canadian Study of Health and Aging. Methods and Prevalence of Dementia. *Can Med Assoc J*, 1993; forthcoming.
2. Rockwood K, Stadnyk K. Prevalence of Dementia: a review. Submitted.
3. Jorm AF, Korten AE, Henderson AS. The prevalence of dementia: a quantitative integration of the literature. *Acta Psychiatr Scand* 1987;**76**:465-479.
4. Hay JE, Ernst RL. The Economic Costs of Alzheimer's Disease. *Am J Public Health* 1987; **77**:1169-1175.
5. Canadian Study of Health and Aging. Caregiving. *Can Med Assoc J*. Forthcoming 1993.
6. Growdon JH. Treatment for Alzheimer's disease. *N Engl J Med* 1992;**327**:1306-1308.
7. American Psychiatric Association. *Diagnostic and Statistical Manual*, 3rd edition, revised. Washington: American Psychiatric Association, 1987.
8. McKhann G, Drachman D, Folstein M *et al.* Clinical diagnosis of Alzheimer's disease: report of the NINCDS-ADRDA work group under the auspices of the Department of Health and Human Services Task Force on Alzheimer's Disease. *Neurology* 1984;**34**:939-994.
9. Canadian Concensus Conference on the Diagnosis of Dementia. *Can Med Assoc J* 1991;**144**:851-853.
10. Clarfield AM, Foley JM. The Americam and Canadian Consesnsus Conferences on Dementia: Is there consensus? *J Amer Geriatric Soc* 1993;**41**:883-886.
11. Folstein MF, Folstein SW, McHugh PR. 'Mini-Mental State': a practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 1975;**12**:189-198.
12. Reisberg B, Ferris SH. The Brief Cognitive Rating Scale. *Psychopharmacol Bull* 1988;**24**:629.
13. MMSE Review. *J Am Ger Soc*. 1992.
14. Reisberg B, Ferris SH, de Leon MJ, Crook T. The Global deterioration scale for assessment of primary degenerative dementia. *Am J Psychiatr* 1982;**139**:1136-1139.
15. Rockwood K, Stolee P, Brahim A. Outcomes of Admission to Psychogeriatrics 1991. *Can J Psych* 1991;**36**:275-279.
16. Davis KL, Thal LJ, Gamzu ER, Davis CS, Woolson RF, Gracon SI, *et al.* A Double-blind, placebo-controlled multicenter study of tacrine for Alzheimer's disease *N Engl J Med* 1992;**327**:1253-1259.
17. Farlow M, Gracon SJ, Hershey LA, Lewis KW, Sadowsky CH, Dolan-Ureno J. A controlled trial of tacrine in Alzheimer's disease. *JAMA* 1992;**268**:2523-2529.
18. Gauthier S, Bouchard R, Lamontagne A, Bailey P, Bergman H, Ratner J, *et al.* Tetrahydroaminoacradine-lecithin combination treatment in patients with intermediate-stage Alzheimer's disease. *N Engl J Med* 1990;**322**:1272-1276.
19. Tacrine for treating Alzheimer's disease. *JAMA* 1992;**268**:2564-2565.

ADVERTISERS' INDEX

Leisure Time Hobby: On The Walls

David T. Janigan, MD, FRCPC, FCCP

Halifax, N.S.

This article proposes that collecting old maps and prints of the region where you live or work may be a productive leisure-time pursuit for physicians and not necessarily an off-the-wall hobby. In fact, these items are decorative on walls of both home and office, interesting and investments. A late, well-known Toronto ophthalmologist started collecting old maps of Canada in the 1920s while he was training in Paris. His collection, which he acquired for about $30,000 over his career, fetched close to $300,000 in 1981.

No, my collection is not in that league! It started purely by chance during a last year of pathology residency training at Hammersmith Hospital. While walking through the week-end antique market in London's Portabello Road, I met a fellow Canadian who was tending one of the shops, and he sold me a well-preserved 1752 map of northeastern Canada and the U.S.A.—Acadia—by Emanual Bowen for about thirty dollars. Over the next thirty years, a casual interest slowly grew into a collection almost exclusively of Atlantic Canada, in particular Nova Scotia and Halifax. Some weekends spent in the Archives of Nova Scotia and visits to museums and dealers during trips to various North American and European cities provided opportunities to learn about the history of the mapping of North America, to purchase items, including reference books, and to get on dealers' mailing lists. (A recent dealer's catalogue listed an impression of the Bowen map from the same engraving at $350.00 U.S.)

Commercial map-making began with the advent of the printing press. Countries with strong maritime interests became the centers of map-making excellence. The first *atlas* of maps was published in 1477 in Italy, then a seapower, and it marked the beginning of a series of important atlases published over the next few centuries under the title *Ptolemy's Geographia.* Ptolemy was born around AD 150 and his ideas and concepts influenced map-makers for centuries (but he wasn't above mistakes, having badly underestimated the circumference of the world, much to Columbus' grief). Maps were engraved on wood blocks or, later, copper plates from which impressions were printed on durable paper made from rags or linen (paper made from acidified wood pulp in the 19th century is much less durable). The use of copper plates made it easier to engrave more elaborate cartographic details and decorations.

Correspondence: Dr. D. T. Janigan, 5559 Carriageway Crescent, Halifax, N.S. B3K 5K4

There was often no relationship between the cartographic surveyors and the map artists or engravers. For example, the 1548 edition of the *Geographia* was an atlas of maps by Gastaldi, one of the more famous Italian mapmakers. Although he hadn't set foot in North America, his map, *Tierra Nueva,* was based on data of others and it was the first *printed* map to focus on the northeastern part of North America (Fig. 1); P.E.I. is not identifiable (see legend for Fig. 1) and Newfoundland is shown as an archipelago. (This map also shows the name *Larcadia* that de Verranzo, a famous Italian explorer, previously gave to a particularly scenic area somewhere along the Virgina-Maryland coast; either it or an Indian word gave rise to our *L'acadie* or *Acadia*). Likewise, in the 1700s

Figure 1. Part of the 1548 Gastaldi map of the northeastern coast of Canada and the U.S.A., obtained by the author in 1990. For clarity of this illustration the map was copied and the map outline was highlighted. Places are difficult to identify without a map! The numbered arrows 1 to 4 point, more or less, to New England and/or mainland Nova Scotia (he may have left out the Maritimes), Cape Breton Island, Cape Race and Bonavista, respectively. This was one of only five 16th century maps of this area and the only one that was printed, and it was judged to be the "most important" (Ganong, *Crucial Maps in the Early Cartography and Place-Nomenclature of the Atlantic coast of Canada,* Toronto: University of Toronto Press 1964, page 124).

Nicholas Bellin, a French stay-at-home engineer, drew and had drawn numerous maps of the new world based on the surveys of others. In contrast, Champlain explored and surveyed the northeast of Canada and U.S.A. and often drew his own maps.

The early maps were usually attractive because of the decorative embellishments added by the artists. The most eye-catching was often the "cartouche", a corner drawing that usually included the map title, the dedication, the names of the cartographer and engraver, the scale, the year of printing. Handsome ones included

local scenes, local products, cherubs, coats of arms and so on. These components were often "boxed" or framed by elaborate patterns of sculptures and gothic designs. (Lettering also became more elaborate with the "sweeping tails and flourishes" of calligraphy.) The cartouches of two important Atlantic provinces maps - the Blaeu (Amsterdam, 1662) and the Zatta (Venice, 1778) - included codfish to indicate the fishing riches of the Grand Banks (Fig. 2). (A CBC television interview a few years ago with John Crosbie, formerly our Minister of Fisheries, showed

Figure 2. In the 17th century, the Dutch succeeded the Italians as the principal publishers of maps, and the Amsterdam firm of John Blaeu was one of the most famous printing houses. This map is magnificently colored and the geographic details take a back seat to the decorative art. The cartouche in the upper right reflects the local fishing riches. This map was one of many by Blaeu in the twelve-volume atlas published in 1662. The author's wife obtained it 315 years later. This map was also reissued by another Amsterdam publishing house, probably in the early 1700s.

an impression of the Zatta hanging on his office wall). The seas were often elaborately decorated with sailing ships, monsters, waves, mermaids, etc. In addition to these and the cartouches, hand coloring with natural pigments added greatly to the appeal of these maps.

All impressions or copies printed from an engraved plate are considered "original" or "first state" impressions. These were usually limited in number because of the limited durability of the wood blocks or copper plates, as compared with steel plate engravings that were introduced much later. However, some important engravings survived and more impressions were run off for up to many years later, i.e. "reissues".

Plates were sometimes modified before reissue. The map-maker might add new information or more decorations. Sometimes he would remove details, and not always for the sake of cartographic accuracy! For some important maps, this sort of thing could go on for awhile, and the impressions from each successive modification were called "second state", "third state", etc. Recognition of the different states or recognizing the differences between an original impression (whatever the state), and a facsimile or transcript require research.

Some time ago, I had the opportunity to purchase a first state impression of an important 1750 map of Halifax made by John Rocque, a Huegenot commissioned by George Montagu, second Earl of Halifax. At that time, Lord Halifax was president of what was essentially an overseas development corporation and, in that capacity, he had been ordered to establish the city for military purposes. (The Earl was also a hustler; he had taken a family name of his wife's—Dunk—on their marriage day, because it guaranteed a wedding gift of a hundred thousand pounds).

During a visit to the Public Archives of Canada in Ottawa, I learned the map was re-engraved and printed in London, England, in 1893. This "transcript" lacked some of the cartouche details that were present in the original plate. In 1967, a historical society in Ithaca, New York, made a facsimile of the original and printed 500 copies, but all were identified as reproductions. The Ottawa Archives has a first state impression, but part of it had been cut away.

Another impression is in the W.I. Morse collection at Dalhousie University. (He was a notable collector and contributor of historical documents. He was also an uncle of Dr. Bill Morse). That impression is "laid down", a term used to refer to the gluing of a backing to a document for support. This is sometimes a necessity for damaged maps but it may further damage and devalue documents, depending on how it is done. Finally, two other impressions are located in the Public Records Office in London and in a private collection, somewhere in western Canada or the U.S.A. Having established the map's authenticity and rarity and that it was in excellent condition, it was purchased. Not all purchases have turned out so happily!

Copyright protection did not exist for the early map-makers. Pierre Du Val, a son-in-law of a more famous map maker, Nicholas Sanson, somehow obtained an unfinished copperplate engraving of a map of eastern North America drawn by Champlain, probably in 1616. Du Val added a title, more place names and some decorative touches to the plate, and he published the map in 1653 and three more states over the next twenty-four years! (Sound familiar, readers of medical journals?)

Updating of maps was a slow process. The original 1749 town survey plans for Halifax showed that a church was to be located north of the Grand Parade ground, and a city hall to the south. This plan was switched around when St. Paul's was built in 1750. However, maps published years later still sited the Church on the north side (Fig. 3). (Does anyone know why the plan was changed?) By the end of the 19th century maps were much more accurate but were also much more austere and dull than the earlier ones. Some map-makers still used artists to decorate the maps, mainly around the map borders. The maps of Canada drawn and engraved by Rapkin and first published in 1851 were probably "the last of the truly decorative maps issued" (Fig. 4).

Old prints of towns, places or scenes in Atlantic Canada can also be decorative additions to the walls. Because of

the strategic and economic importance of the eastern seaboard and the St. Lawrence River to the early development of Canada, many military and civilian artists painted or sketched pictures of various locations, and many of these were engraved. The names of Short, Serres, Eagar, Bouchett, and Bartlett are among the more notable of those whose works were subsequently engraved and printed. Some are very scarce, e.g. the magnificent engravings of Halifax drawn by Richard Short. (These and the paintings by Serres that were based on these drawings are in the Nova Scotia Art Gallery).

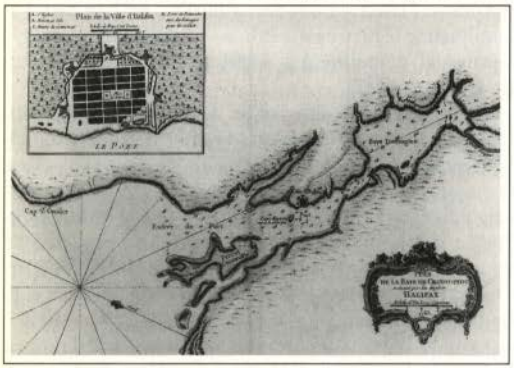


Figure 3. Bellin was probably a workaholic, having overseen the publication of numerous atlases and charts for the Government of France. This map of metropolitan Halifax-Dartmouth (published in his 1763 atlas) shows the Halifax town plan. The locations of "A" (l'Eglise) and of "B" (Maison du Ville) are the reverse of what they are today (see text).

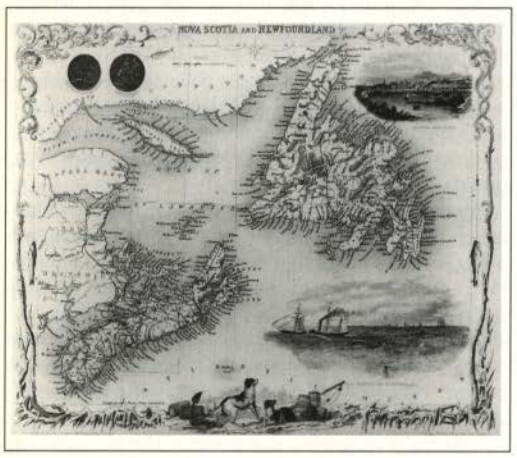


Figure 4. Rapkin's map of eastern Canada. Like his other published maps, this is "bordered with vignettes that illustrated prominent places in the region, events in its history or typical aspects of its life. One illustration highlights Halifax, fast becoming an important maritime centre in the region. Geographical information is limited so as not to clutter the map." (D.P. Lemon in *Theatre of Empire*, Saint John: NBM Publications MNB, 1987). The map was published in 1851, but reappeared in 1852 in Tallis' *Illustrated Atlas.*

Some engravings were printed in relatively large numbers. Bartlett's *Canadian Scenery Illustrated* for example was published in 1840 and reprinted in 1842. However, the availability of the prints of places like Halifax, Windsor, Kentville, Fredericton, Quebec, Montreal and Toronto has greatly diminished, as have complete sets of the provinces (Nova Scotia, New Brunswick, Quebec and Ontario), and the values have increased proportionately. Even well-preserved prints that appeared in old newspapers and magazines are becoming relatively scarce. An early one of some amusement is the famous porcupine print of the harbour and town of Halifax published in an English magazine in 1750. It is unlikely the artist saw the animal live (Fig. 5). Many interesting wood engravings of Halifax were published in the *Illustrated London News* in the 1850s and 1860s on durable paper. Around the same time, prints of Halifax and of other Maritime places also appeared in two Boston publications, *Ballou's Pictorial*

Figure 5. One of the earliest prints of Halifax to appear in a magazine (*The Gentleman's Magazine*, London, England, 1750). It is best known for the "porcupine" at lower right. McNab's Island and the Northwest Arm were named, respectively, Cornwallis Island and Sandwich or Hawk's River. Other local fauna and the Badge of the Baronets of Nova Scotia are shown.

and *Gleason's Pictorial.* These newsprints can be hand-colored with attractive results when done well.

Important maps and prints can be expensive, but there are still a great many charming and interesting issues of Eastern Canada dating from the 1700 and 1800s which may be purchased for between $50 and $300. Others may range from $1,000 to $4,000 or more, and these have been and are continually increasing in value. The demand for old maps and prints tends to be greatest in the places depicted. An internationally known and respected Canadian curator of cartography, Ed Dahl in Ottawa, advises beginners to settle on an interest area, and once having done so to start visiting map collections in museums, public archives, universities and dealers' shops to learn about the maps and about reference sources for further reading. Reference books, including one co-authored by an American surgeon (*The Mapping of America* by Schwartz (surgeon) and Erhenberg), abound in libraries. An interesting approach to the subject is found in *The Mapmaker's Eye, Nova Scotia through Early Maps* by Joan Dawson (Nimbus Publishing Ltd. and N.S. Museum,

1988). Nova Scotia can boast of an international authority on the history of mapping of Canada, Walter K. Morrison. Gary Shutlak is the knowledgable map archivist at the Nova Scotia Archives in Halifax. Reading dealers' catalogues is also educational because accounts of the items are often provided with references. Somebody characterized old maps and prints as "windows on the past". These are also on-the-wall investments in the future.

ACKNOWLEDGEMENTS

I thank Dr. Patrick Chiasson for a helpful review of the manuscript and Joy Douglas for typing it.

Appreciations

DR. MOHAMMED FAROOQ HUSAIN

Farooq Husain, a Family Physician in Amherst, N.S. died suddenly and unexpectedly on the 12th October 1993 at his home.

Farooq was born on 12th June 1928 in Hyderabad. He received his education at the City College and The University of Osmania, from which he graduated M.B., B.S., in 1951.

After initial House jobs in his home state, he moved to Glasgow, Scotland in 1956 for paediatric training, taking his D.C.H. in 1957. He then continued training in paediatrics in Hull and Edenhall, becoming a middle grade registrar in Bury General Hospital from 1959 to 1964. During that time he passed the M.R.C.P.Glas. in 1962. He moved to the teaching unit at St. James' Hospital, Leeds, before being appointed as head of the Department of Paediatrics in Benghazi, Libya. In anticipation of moving to Canada he registered in Nova Scotia in 1968 and went to New Ross in 1970 before moving to Amherst in 1971.

He retained an interest in children's medicine but ran what was to become a very successful Family Practice. He had many devoted patients who enjoyed him as a friend as well as advisor.

Farooq was a very modest man, retiring from the limelight but producing his own very warm glow which affected many people, in whom he always had a great and sincere interest.

A devout Muslim, he was extremely tolerant and unprejudiced. He was less likely to criticize than to defend other people's beliefs or weaknesses. This may have resulted in part from having lived through the horrors of India's partition.

Although he never complained, he had had his share of trouble. His father had died at a young age, leaving him with the responsibility of bringing up his siblings, which continued until some years after his arrival here when he proudly said that he had at last fulfilled his commitment. He then suffered a right sided stroke 19 years ago. This luckily spared his speech, and with great resilience he returned too quickly to his practice with the help of a leg brace which he continued to need, and in spite of a considerable slowing as a scribe. As a result of this he refused all offers of any Medical Staff Executive appointments at the Highland View Regional Hospital. He had been for sometimecutting down his practice in anticipation of retirement very soon, a plan that was not to be due to his sudden collapse and death. Farooq was very proud of his family and their successes, one son, Siraj, graduating in medicine and practising in Amherst until his recent move to a residency in Edmonton, Alberta. His wife, Saeeda, whom he married at a very young age, has been a tower of strength over the years and a very devoted mother, yet finding time to be extremely active in a variety of charitable activities in the community and hospital. To her and her children and grandchildren we express our deep sympathy, for Farooq was a very good man, a true friend, who will be missed and remembered by many.

G.A. Lawrence, M.B., F.R.C.S.,
Chief of Staff, Highland View Regional Hospital.

DR. CHARLES JEROME MACDONALD

Dr. Charles Jerome MacDonald passed away on 29 July, 1993 at the Halifax Infirmary.

He was born in New Waterford, the son of the late Archie Alex and Mary Catherine (MacLennan) MacDonald. Dr. MacDonald had a distinguished war time career. He served overseas during the Second World War as a Royal Canadian Air Force Flying Officer attached to 202 of the Royal Air Force. This Squadron is still active.

On his return from his wartime duties, he attended St. Francis Xavier University. He completed his pre-medical studies there as well as participated actively in their athletic program.

He then studied medicine at Dalhousie University where he graduated in 1953 with his M.D. He then received a Mayo Foundation Fellowship to study surgery at the University of Minnesota. He successfully completed his training in surgery. He obtained his fellowship in general surgery at the Royal College of Physicians and Surgeons of Canada. He returned to Halifax and pursued a medical career from 1958-1993.

Dr. MacDonald was not only an avid sports fan but gave generously of his medical services to athletic teams, particularly at Saint Mary's University. He followed the football and hockey teams for many years and this service was recognized by Saint Mary's University when they awarded him the Robert G. Hayes award for outstanding contribution to the Varsity Athletic Program. Saint Mary's University also recognized this by making him an honorary Saint Mary's University alumnus.

He also served on the Nova Scotia Highways Safety Advisory Board for many years. He was an active member of the Halifax Curling Club and Ashburn Golf Club.

He is survived by his wife, Lucille and two daughters, Judith in Guelph and Kathleen in Toronto.

Dr. Paul Landrigan

Almost Always Wright

THE CONTRIBUTIONS OF SIR ALMROTH WRIGHT, THE ULTIMATE GENIUS OF IMMUNIZATION.

B.J.S. Grogono,* MB, BS, FRCS

Halifax, N.S.

In the dark and dreary days of World War Two, London grimly carried on. Despite the threat of incendiary "oil bombs", and general dislocation of public services, hospitals and medical schools carried on with medical education and research.

One shining light in the corner of gloom was the medical school at St. Mary's in Praed Street, Paddington, London, where the Wright-Flemming Institute was an active inspiration to all.

St. Mary's Hospital was reduced to an emergency centre and the operating room was revised to a single but vast ward on the ground floor. The medical school and Institute of Pathology and Research continued with their pioneer work on bacteriology and immunology. As medical students, my brother and myself augmented our incomes by assisting in the blood transfusion service, established within this institution. Our job was to bleed and collect blood from volunteers. We were rewarded by a free lunch of a sandwich and some chicory coffee. It was during these lunchtime sessions – and a brief period of instruction in bacteriology that we came within the sphere of two leading dignitories of science – Professor Alexander Fleming and Sir Almroth Wright.

Figure 1.
Sir Almroth Wright (right) and Sir Alexander Fleming as I saw them when I was a student in 1944.

Professor Alexander Fleming's star was in the ascendant, with his current clinical exciting trials on penicillin. Sir Almroth Wright's fame was almost a legend because of his work in immunization. We seldom saw this remarkable figure as he mostly remained as a shadow of venerable antiquity, a dishevelled giant with a vast head and whiskers, a genial genius.

Each day he would dictate a few more pages of his textbook on logic. He had been writing this for forty years and had spent thousands of hours in its preparation. John Freeman, one of Sir Almroth Wright's staunchest supporter and colleague describes how in 1904, the manuscript was laid on top of his piano: *The Physiology of Belief.* [1] It had so many corrections that the publisher screamed **"No More Alterations!!"** The book was eventually published posthumously by his grandson, Dr. Giles Romanes, a distinguished ophthalmic surgeon under the title *Alehetiopic Logic,* in 1953 (fifty years after initial script was outlined).

Sir Almroth Wright was a great scholar as well as a distinguished scientist.[2] In fact scholarship was a genetic trait. His grandfather was Dean of Law of the Trinity College in Dublin and his father, Charles Henry Hamilton Wright, was a first class prizeman in Hebrew, Arabic, Erse Logic and Ethics at the same institution. He was also a good Latin and Greek scholar and able to converse German, French, and Swedish. After sometime in Dresden, his father was appointed Vicar at St. Mary's Church in Belfast.

Almroth Wright was named after his mother – a daughter of the Governor of the Royal Mint in Stockholm. The mixture of Irish and Swedish genes produced a genius. Sir Almroth Wright's memory was prodigious. He could quote vast passages from Milton, Dante, and Shakespeare. He graduated with first class honours in modern languages and literature. He was kindly and considerate, biased and open minded, frugal, decrying luxury and the enjoyment of voluptuary pleasures.

He was dedicated to the pursuit of truth and science and would spend hours defining new words and inventing Greek names such as Pinothothetical, Orthoaesthodic, Entethechal and Algedonic. In short, he was the perfect antithesis for Bernard Shaw and they enjoyed a relentless pursuit of controversial issues. In fact, it was the publication by Almroth Wright of the *Unexpected Case of Women Suffrage* which brought him into direct conflict with Bernard Shaw's open support of the rights of women.[3]

His views were particularly Victorian, and he even quoted a famous American historian in saying "there were only 869 eminent women since the dawn of creation".[4] He lived to see that none of the dire consequences of his predictions would occur, but women gained suf-

* Orthopaedic Surgeon, Halifax Infirmary, Halifax, N.S.

frage in 1928. In private life he was very kind to women. He enjoyed their debates and was dependant on them in many domestic ways.

But it is not the philosophical attributes that Sir Almroth is remembered. It is for his scientific contributions in immunology and bacteriology. Although he became one of the world's greatest physicians, he never held a position as a resident in a hospital. In fact, during his first ten years in medicine, he had no clinical experience at all. His training in the laboratories of Leiberg and Strasberg, introduced him to new methods of study in physiology and pathology and he started his research on coagulation of the blood.

After a spell at the University of Sydney, New South Wales, Australia, he returned to research laboratories at the Royal Colleges in London, and was appointed to Chair of Pathology at the Army Medical School at Netley. He had won this post against his rival Sir David Bruce, already famous for his discovery of the cause of Malta Fever – *Micrococcus melitensis*.[5]

Bruce and Wright were to remain rivals for many years. Wright's personality and ebullience had a dramatic effect at Netley, stimulating the interest of surgeons in bacteriology of wounds. He introduced techniques in the laboratory[6] such as using pipettes and glass tubes for the study of blood coagulation, and the sterilization of syringes and needles with hot olive oil at a temperature of 160-180 degrees F – a system still used at St. Mary's Medical Hospital when I was a student!

It was at Netley that Almroth Wright started his study on typhoid. Soldiers invalid home were suffering from undiagnosed fevers – most with Malta Fever but others whose serum gave no reaction with *Micrococcus brucei*.[7] He found Malta Fever in soldiers from India. Wright attempted to inoculate himself with a vaccine against Malta Fever, introducing a living culture of *Micrococcus militensis* after initial inoculation. It did not prevent him from getting the disease but he was able to show that living organisms cause a much higher production of "agglutinins" that his dead vaccine.

TYPHOID

The prevention of typhoid played an important part in the history of the South African War and World War One. Even in England, thousands died from the disease at the turn of the century.

For over four years Sir Almroth Wright perfected his vaccine of Typhoid Bacillus which he was given to 18 men of the Royal Army Medical Corps and Indian Medical Service.[8] Wright himself, and Semple – a fellow bacteriologist – also were inoculated and showed a rise in agglutinins as a result of infected culture of dead organisms. The paper on Typhoid Inoculation was published in 1897. Wright offered to supply any practitioner with a vaccine which included 750-1 million dead Typhoid bacillis followed by inoculation of 1500-2000 million a few days later.

There was one snag – *The Negative Phase*. This followed immediately after the injection of the vaccine and temporarily made the recipient more liable to the disease. This phase was followed a few days later by a rapid increase in "agglutinins".

After the vaccine had been introduced in the South African War, there was so much controversy regarding the interpretation of results that a special mission was set up to assess the typhoid inoculation. The committee was headed by Sir David Bruce (and included a statistician).[9] The conclusions of this committee were not all favourable. And from a scientific point of view the inoculation of soldiers in field conditions was not always a well controlled experiment. How was the diagnosis confirmed? What blood tests were used? What was the dosage? Figures! They were unconvincing to the committee. They recommended discontinuation of the program, were against compulsory inoculation, but advised careful continuation of the study.

Almroth Wright was infuriated and felt the committee was biased.[10] Furthermore, he continued to recommend the inoculation of soldiers in England and made arrangements for his own distribution which he would give soldiers. It was in fact, Sir William Leishman who took over as Head of Pathology at Netley when Sir Almroth Wright left that establishment and moved to St. Mary's Medical School in 1902. Leishman put inoculation on sound footing by improving the quality of the vaccine and lowering the temperature to 53 degrees C instead of 60 degrees C and arranged for careful supervision if the vaccine results of inoculation became incontrovertible. Results at last were convincing.

COMPULSORY VACCINATION[11]

BRITISH ARMY 1904-1909
(INDIA AND MEDITERANIAN)

	No. of soldiers	Cases of Enteric	Deaths	Incidence (per thousand)	Mortality
Inoculated	10,378	56	5	5.39	8.9%
Non-Inoculated	8,936	272	46	30.4	16.4%

RESULTS OF INOCULATION AGAINST TYPHOID[12]

Name of War	Average Strength of Army	Number of Cases of Typhoid	Deaths
South African War	208,000	58,000	8,000
Great War (I)	1,250,000	7,500	170
French Army (not vaccinated)		96,000	12,000
(after vaccination)		2,689	170

The results of typhoid inoculation were summarized by Sir David Bruce in August 1924. These figures showed the tremendous decrease of typhoid in soldiers who had been inoculated by the typhoid vaccine. The standard recommended mode of inoculation was two injections of

typhoid bacilli. One of 500 million and after an interval of ten days a second of a thousand million.

Sir David comments that it was one of the greatest triumphs in the prevention of disease during the war.

INOCULATION OF SOLDIERS (WORLD WAR I)

Wright spoke to Lord Kitchener and urged the need for all troops to be inoculated. As a consequence, no soldier was sent abroad in the Great War without being inoculated. During the South African war there was 50,000 cases of Typhoid. In World War One there were 20,000 in an Army of two million. Thus it took twenty years for the merits of Wright's inoculation to be acknowledged officially.

ST. MARY'S HOSPITAL – INOCULATION INSTITUTE

After resigning from the Army Medical School at Netley, Wright was appointed to a relatively new medical school: St. Mary's Hospital, Paddington, London. It was a gloomy, grubby department. But his personality, ebullience, genius and dedication built up a world famous institution. Extending his idea of "vaccination" with dead microbes against disease, he experimented with staphloccous and streptococcal vaccines. He studied the effect of inoculation on the body's resistance to bacteria. He found a specific effect on leucocytes which ingested them. By comparing the effect of a control serum of that from a person inoculated or infected by bacteria, he found that he could predict the likely outcome of an infection. He washed the leucocytes with saline and then immersed them in a serum from the patient, and that of a control person. He then compared the two, the ratio of bacteria in each leucocyte between bacteria and control which he called the "Opsonic Index".[13] He was given complete clinical control of the Clarence ward and his students spent hundreds of hours counting leucocytes and bacteria to study the "Opsonic Index". It was his theme song for many years.

Figure 2.
Sir Almroth Wright at home in his laboratory from Almroth Wright Leonard Colebrook in *The History of St. Mary's Medical School* London: Heineman, 1954.

Figure 3.
Almroth Wright as a young scientist and scholar talking to Dr. A.C. Klebbs from *Amid Masters of twentieth century Medicine* Leonard G. Rowntree, Springfield (Illinois); Charles Thomas, 1958. p. 422.

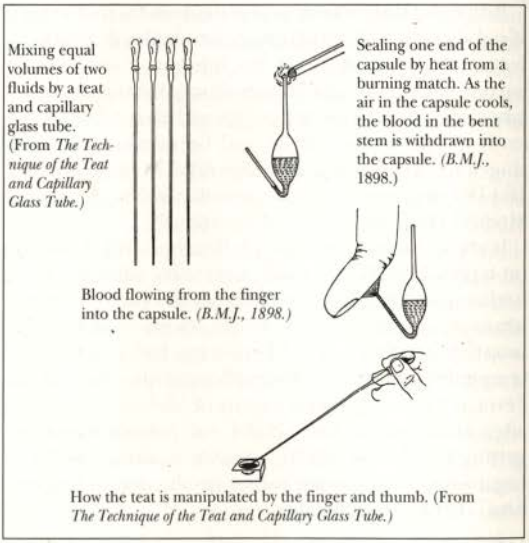


Figure 4.
The simple instruments of a genius. Almroth Wright's basic tools for haematological research. From Almroth Wright by Zachary Cope Heineman.

In his declining years however, in an astonishing abrogation of faith, he revised his early ideas on the "Opsonic Index" and he admitted they were not entirely correct. He acknowledged that the leycocytes themselves had an individual response to bacterial infection and that opsonins did not play the exclusive role he originally envisioned.[14]

PREDICTION OF CLINICAL OUTCOME

In two remarkable instances, Sir Almroth Wright's conviction that the "Opsonic Index" could help the clinician to forecast the likely outcome of infection proved correct.

Doctor J.H. Wells, a physician who worked in the Institute, developed a fever and submitted his blood for estimation of the "Opsonic Index". After several tests, it was found to be raised significantly. The cause was obscure until it was discovered that he was suffering of "glanders", an organism with which he had inoculated himself. He subsequently died of the disease.

On another occasion, Dr. May, an Irish physician, developed a fever of an obscure origin. Although he showed no sign of the disease, Sir Almroth made as diagnosis of tuberculosis which subsequently proved correct.

VACCINE THERAPY

Sir Almroth Wright perfected his technique for the production and the testing of vaccine. The research at the laboratories at St. Mary's became an intimate part of clinical medicine.[15] In the inoculation department he gathered his remarkable colleagues: Captain Douglas Alexander Fleming, Leonard Colbrook amongst them, and he controlled the clinical trials. The institute attracted visitors and patients from many lands. His dynamic personality and enthusiasm also attracted patrons such as Lord Balfour, former British Prime Minister, who lent their financial support.

PRESENTATION OF HIS IDEAS

In 1910, he presented his work at the Royal Society of Medicine.[15] The discussion continued for three days and he declared that medicine should be organized on the basis of bacteriology. Vaccine therapy continued for thirty years, but was largely superseded by penicillin and other antibiotics. Although Fleming was one of Sir Almroth Wright's protegés and made his discoveries in the same laboratory, Wright never whole-heartedly endorsed the use of antibiotics. He saw the possible flaws – resistant organisms, toxicity and that even if initially effective, antibiotics might leave the patient prone to the same disease.

Fleming was not the only scientist in this laboratory to experiment with chemotherapeutic agents, because Colebrook studied the effect of sulphanomides on puerperal fever. Besides the specific simulating of antibodies in typhoid, Wright also showed a non-specific stimulation in other diseases such as pneumonia.

WAR WOUNDS

The First World War produced thousands of terribly mutilated wounds in soldiers. These differed from the relatively innocuous penetrating wounds caused by the Mauser rifle of the Boer War. Wounds of the First World War were ragged, untidy, devastating injuries with severe damage to soft tissue. The combination of delay, dampness, faecal contamination and foreign bodies led to the inevitable complications of tetanus and gas gangrene.

Almroth Wright was appointed Colonel in charge of the Military Pathology Laboratory in Boulogue, France. He had a formidable team to help him including Fleming, Leonard Colebrook, and Perry Morgan. At the time, the officially approved treatment of wounds was with antiseptics: Carbolic Acid, Perchloride, Acridine Compounds, and hypochlorides (such as "eusol" and "Dakin solution"). Many wounds were packed well with B.I.P. (Bismuth Iodoform Powder).

These methods rarely controlled sepsis. Wright and his colleagues found that these antiseptics were inactivated by pus and did not penetrate the minute recesses of wounds. The only effective agent was Dakin's solution because it caused exudation of lymph.

SEROPHYTES AND SEROSAPROPHYTES[17]

As a result of his investigation of the bacterial contamination of war wounds, he found that there were two types of infecting organisms: Serophytes and Serosaprophytes. *Serophytes* were not killed by fresh serum and were usually streptococci on staphlococci.

Serosaprophytes were killed by fresh serum but not by corrupted or stale serum. He found that very fresh serum contains proteins for those serosaprophytes such as tetanus and gas gangrene organisms to utilize. In fresh serum, there is an "anti-tryptic" substance which prevents the break down of complex proteins. If however, the serum is neutralized, then trypsin is activated. The proteins are then broken down and the organisms flourish. Such conditions occurred in old "stale" wounds.

Early débridement of wounds by the surgeon prevented this breakdown of protein, thus depriving the sero-saprophytes of their nourishment. The dreaded and fatal complications of tetanus and gas gangrene could thus be eliminated by meticulous and thorough early treatment of wounds. This principle of early wound toilet was universally accepted and it was the most important discovery in contaminated soft tissue injuries.

Treatment potentially contaminated war wounds. Following surgery, he advocated 5% sodium chloride which caused a voluminous flow of lymph which kept the wounds free of "sero saphrophytes". A dressing soaked in 5% saline prevented the desiccation of wounds. This system never ousted the "Carrell Dakin" system of sodium hydrochloride but Wright's researches stimulated surgeons to treat wounds physiologically. His idea of holding casualties back from the front line for early surgery resulted, but the reorganization of the casualty system under control of a special scientific staff was not accepted. In 1942, however, a directorate of medical research staff was established as an advisory body.

PREVENTION OF DISEASE

Almroth Wright's eloquence as a speaker and his skills as a writer had a great influence on British medicine. His letter in 1905 described "disease" as the world's greatest problem. He appealed directly to the public for the establishment of a Research Institute. He believed that

vaccine therapy proved effective against infections. His appeal bore fruit.

In 1909, the Clarence Wing of St. Mary's Hospital was opened for in-patient treatment by inoculation.[18] The inoculation department supplied vaccine inoculations to the Army in the First World War. After the war he organized the Institute of Pathology and Research which, after the discovery of penicillin, blossomed into the Wright-Fleming Institute. He remained financially independent of the National Health Service.

Almroth Wright continued at his post until he died in 1947. His work continued in the achievements by his colleagues William Leishman, his legacy S. R. Douglas, and Alexander Fleming.

Today, we are still sending troops abroad to inhospitable environments. The United Nations and American Forces in Somaliland and Bosnia-Herztogovinia are being exposed to the dangers of typhoid, tetanus, and malaria. If injured, their wounds are likely to be contaminated by serophytic and serosaprophytic organisms.

Thanks to the genius of this Irishman, inoculations will protect many of them from disease. Yet much remains to be done to avoid infections. Today's researchers will need all Wright's powers of logical, scientific inspiration and dogged determination as well as his oratory, to solve problems such as AIDS.

One cannot help but wonder whether he would still defend his arguments against the capacities of women. Surely, the only aberration of his logical intellect. □

References

1. Cope, Sir Zachary. *Almroth Wright: Founder of Modern Vaccine Therapy.* London: Nelson, 1966; p.171-172.
2. *ibid* p. 2.
3. Wright, Almroth. *The unexpurgated case against women suffrage.* London: Constable, 1913.
4. Cope, Sir Zachary *Almroth Wright: Founder of Modern Vaccine Therapy.* p. 140.
5. Bruce D., Surgeon Capt. Note on the discovery of the micro-organism in Malta Fever. *Practioner* 1887; **39**:161.
6. Wright A E. *Technique of the teat and capillary glass tube and its application in medicine and bacteriology.* London: Constable, 1912.
7. Wright, A E and Smith S. *Brit Med J* 1897; **i**:911.
8. Wright, A E. *Brit Med J* 1897; **i**:256.
9. Bruce, D. Advisory Board for the Army medical services Report, Sept. 25th, 1902, p. 242-255.
10. Wright, A E. *Brit Med J* 1904; **ii**:1343.
11. Bruce, Sir David. Prevention of Disease *Science* , Aug. 8th, 1924, p. 12.
12. Bruce D. *J Instit Pub Health* 1910; **18**:527.
13. Cope, Sir Zachary. *Almroth Wright: Founder of Modern Vaccine Therapy.* London: Nelson, 1966. p. 42-45.
14. Wright, A E. *Studies in immunisation.* 2nd series, 1944; p. 120.
15. Cope, Sir Zachary. *The History of St. Mary's Medical School.* London: W. Heinemann, 1954; p. 1003-108.
16. Wright A E. Vaccine therapy: Its administration. Royal Society of Medicine, 1910.
17. Wright A E. *Pathology and treatment of war wounds.* London: Heinemann, 1942; p. 15.
18. Cope, Sir Zachary. *The History of St Mary's Hospital Medical School.* London: Heinemann, 1954; p. 107.

Preventing Cervical Cancer

Continued from Page 209

motivate her, to provide information as needed, and to urge her to encourage her relatives and friends to take responsibility for their own screening.

Other professionals can help and women themselves will help each other through informed discussion.

OTHER CONCERNS

As all the papers referred to have pointed out, and as Cameron has recently reiterated, we need to ensure clinical and laboratory quality and to use the Registry, both to reduce wasteful and too frequent repeat smears and to provide guidance in increasing coverage of *all* the at-risk women.

Both the new (1992) office manual *Screening for Cancer of the Cervix* and the revitalized Nova Scotia Gynaecological Cancer Screening Programme can help to achieve the goal established so long ago of virtually eliminating invasive cancer of the cervix in Nova Scotia.

We also need to pursue demographic, epidemiological, and behavioural research to ensure that we target the highest risk groups particularly and that our investigation and treatment programs are optimal. Particularly, we need annual published data on all newly diagnosed cases of invasive disease showing screening and treatment history, age and other risk factors. This information can easily be collected prospectively and will guide the future of the program.

SUMMARY

Since 1961, when the Uterine Cancer Detection Program was first instituted by the Medical Society of Nova Scotia, there have been a number of reports. These are reviewed and data presented to show that Pap smear screening to prevent cervical cancer by early treatment of pre-invasive disease is effective. The task is to extend this to all women who are currently not being screened. We have all the resources to complete the "Unfinished Business". □

References

1. Robinson, SC. Uterine cancer detection program, The Medical Society of Nova Scotia, A 15-year experience. *NS Med Bull,* 1976; 174-177.
2. Carmichael JA, Jeffrey JF, Steele HD, and Ohlke ID. The cytologic history of 245 patients developing invasive cervical cancer. *Am J Obstet Gynecol* 1984; **148**:685-690.
3. Anderson GH. A central cytology registry for Nova Scotia. *NS Med Bull,* 1978; **57**:95-96.
4. Tupper WRC, Tompkins MG, Nolan M. Cancer of the cervix in Nova Scotia, *NS Med Bull,* 1984; **63**:17-22.
5. Anderson GH. Cytodiagnosis in the detection of cancer. *Annals RCPSC,* 1984; **17**:411-415.
6. Miller AB, Anderson G, Brisson J *et al.* Report of a national workshop on screening for cancer of the cervix. *Can Med Assoc J* 1991; **145**:1301-1325.
7. Cameron S. More effective cervical cancer prevention, A review of the new provincial cytology manual. *NS Med J* 1993; **72**:99-101.

Medical Humanities

T. J. Murray,* OC, MD, FRCPC, FACP

Halifax, N.S.

The Characteristics of Medical Humanism

"... They have in common an emphasis on man as a person, as an individual who has ideals and values; who faces conflicts and disappointments; who experiences joys and fulfilment; who lives in a world of qualities and meanings, the rich real world portrayed in novels and poetry and drama and art ... Humanism, emphasizing the world of quality and value, holds that training in these subjects is essential to the physician".

LS King, *Humanism and the Medical Past*

THE TEACHING OF ETHICS IN MEDICAL SCHOOL

I'm embarrassed to say that although I took a course on medical ethics in undergraduate studies, I did not have a course or any specific teaching of medical ethics in medical school. Ethical practice was just something that came from a medical education, it seems, something that became part of you when you became a doctor, like caring, communication and knowing oneself. Now, medical education takes none of these things for granted, and there are specific components and objectives and evaluation of these things in the experiences of a medical student. As curricula become more progressive (and effective) we don't measure these things in lecture hours, as learning goes on in a number of patient centered discussions, but there is much more attention to the things that the person in the street expects of every physician.

Many years ago, ethics courses, like courses in medical history, were given a number of lecture hours, and one or more senior (they were usually senior) professors read from notes on the important issues, and indicated what students should believe about them. These were an educational failure for many reasons, not the least of which was they were boring and forgetful, clearly not taken seriously by the administration, and did not teach the students how to think and struggle with new issues they would meet – and we have met with many vexing and difficult issues in the last few decades, that we can only deal with if we have been taught how we can think through such quandaries.

To measure how medical schools are doing on the teaching of ethics, there has been a recent study that indicates ethics is now incorporated within the curriculum of most North American medical schools, with many approaches and innovations. It is now clear that it is being taken seriously, and evening television tells students and the public of the day-to-day importance of ethical issues.

The principles of ethics are taught in various settings in every year of medical education at Dalhousie, and are part of the learning experience of every postgraduate residency program, required by the Royal College and the Canadian College of Family Practice. This fall will begin an additional informal program, open to all physicians and students, and to the public, on "Ethics and Film", on Sunday nights, 7 pm, in Theatre A of the Tupper Building. Films that have ethical dilemmas featured in the plot will be viewed and then discussed in an open forum.

Dean John Ruedy hosted the first, Sinclair Lewis', *Arrowsmith*, on September 26. This classic film of the late 1930s is based on the novel that won Lewis the Nobel Prize for literature. The young idealistic physician, Martin Arrowsmith, lives some of the difficult decisions involved in community practice, in laboratory medicine and patient research.

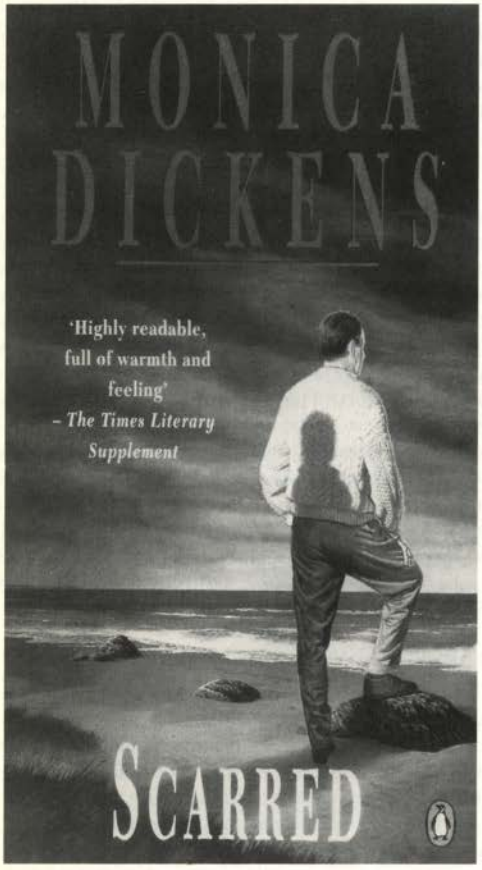
SCARRED

When she was a child, my sister was badly burned at a Saturday morning art class, seated near an open fireplace. Her new skirt suddenly burst into flames. Monica Dickens' story *Scarred* (Toronto: Penguin Books Ltd, 1992, $6.99) begins with a similar scene. A young girl is badly burned and brought to the hospital where she is met by the plastic surgeon, Mr. Peter Freeman. (Remember that English surgeons do not use the title Dr.) As the story unfolds we see a borderline dysfunctional family disintegrating as they try and deal with this tragedy, and then reforming. The martyred mother manages when she is the centre of attention, telling friends bravely that one just has to manage, doesn't one? She berates her weak husband, ignores her other child, and attempts to manipulate the plastic surgeon. When things really become prolonged she can no longer cope, and flies off to Canada to live with a sister. The milktoast husband quietly takes over and does what really needs to be done. Like my sister, the young burned Annette courageously weathers all the procedures, the pain, the disappointments and the return to her life as a changed person.

In the meantime, a young man with a facial scar from a motor vehicle accident begins to pursue the heroic Mr. Freeman that he has read about in the paper because he believes all of his repeated failures in life are due to his facial scar, and his hero will make the scar disappear and his life will turn around. All surgeons know this patient,

*Professor of Medical Humanities, Dalhousie Medical School, Halifax, N.S.

and can anticipate the disaster that is coming. He is immediately disappointed with the scar revision, even though he has been told it would be exactly as it was. He begins to haunt the doctor's office and even stalk his home and family.



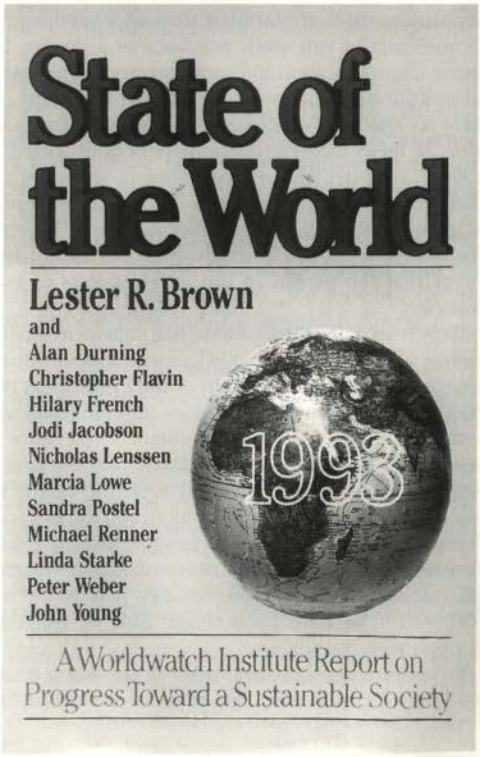
The ending is a little melodramatic but physicians and surgeons will enjoy this fast moving book and the well told medical tales. Dickens' feeling for patients and physicians and hospitals is genuine, and there will be a repeated ring of familiarity in many of the encounters.

Incidentally, I noted one passing comment that suggests Dickens' research on plastic surgery was better than on professional ethics. The surgeon's wife worked with him. They met when she consulted him for her facial hemangioma, then dated and married. It was written romantically but we now regard this as unethical.

I previously read her excellent book, *Kate and Emma*, and felt it had more depth. Each of her books is based on her experiences in part of her life, moving from cook-servant employment to wartime nursing to newspaper reporting. She lived for many years in Cape Cod with her US Navy Commander husband, but has now returned to a thatched cottage in Berkshire Downs, England.

MEDICINE AND THE ENVIRONMENT

A few years ago Dalhousie Medical School gave an honorary degree to Dr. Douglas Waugh, former head of pathology at Dalhousie, Dean of Medicine at Queens and well known for his regular column in the *CMAJ*. He is a charming, urbane man who laughs a lot but, on this occasion looked uncharacteristically stern. His graduation speech was about the coming disaster of world overpopulation. Afterwards, many people mumbled that they thought the talk was a "downer" and could have been on a more upbeat topic. It is now clear that he was warning the graduates about an impending disaster that will affect their future, and evidence comes in the latest report from World Watch Institute, that publishes an annual *State of the World* (Editor Lester R. Brown. New York: W.W. Norton and Company, 1993. $13.99) This highly regarded and widely translated and studied annual report keeps tabs on how we are doing on Planet Earth. Our report card is dismal, and many issues are getting worse since World Watch began its reports ten years ago. The amount of tropical rainforest we are losing each year is increasing. Countless thousands of plant and animal species are disappearing. World grain harvests are going down. Soil erosion is reaching disastrous proportions. The ozone hole is worse than predicted. And we are adding 92 million people to the planet per year.



Not all is bleak. Chernobyl seems to have sounded the death knell for nuclear power and alternate forms of energy production, such as wind and solar energy, are moving rapidly ahead. There is increasing world concern about all these ecological problems which is a necessary first step. One measure of this concern is the distribution of this book by concerned citizens to local and world leaders, heads of corporations and decision makers everywhere.

This current report is well balanced and sober reporting on what is happening on our planet and in our societies. The chapter on water scarcity was particularly disturbing, perhaps because Canadians take water so much for granted. It was not surprising to see many African and Middle East countries listed as water scarce, but would you have expected Belgium, Hungary, Netherlands, Singapore and Barbados listed? This report has chapters on the state of the coral reefs; gender bias within societies; the support of indigenous peoples; providing energy in developing countries; the rediscovery of rail transportation; the state of war and peace; reconciling trade and environment, and the shape of the next industrial revolution.

A few years ago Dalhousie Medical School had a annual theme and a major symposium based on *Medicine and the Environment.* The premise was that all environmental issues are essentially health issues, and that there must be some role for medical schools, the medical profession and the health care system in addressing these questions.

Many of the questions will be answered by political means, but it was Virchow who said politics is just medicine on a grand scale.

THE CULTURE OF PAIN

> *The obligation of physicians to relieve human suffering stretches back to antiquity. Despite this fact, little attention is explicitly given to the problem of suffering in medical education, research or practice.*
>
> Eric J. Cassell
> *The Nature of Suffering and the Goals of Medicine* (1982)

Recently on a trip to Ottawa I ran out of things to read. I develop withdrawal symptoms when I haven't got adequate reading material for the hotel or plane flight home, and found an excellent book store. After browsing for a half hour, I selected *The Culture of Pain.* I don't know why I haven't heard of this before, because it is a major contribution to the understanding of pain.

In recent years we have come to understand the nature of pain to a greater extent, and to understand the complexity of its meaning to sufferers. We know now that it is not just a neuronal chain reaction to be understood in physiological terms, but has emotional, psychological and cultural meanings. We have also come to understand how we can manage pain patients much better. Sadly, we have also come to recognize that the medical profession has not been very effective at managing patients with pain because many physicians retain the simplistic concepts of pain they learned. Although the recognition of the inadequate management of pain patients is widely known, we have a long way to go to improve the way most physicians treat their pain patients.

An unusual book, *The Culture of Pain,* (by David B. Morris, Berkley: University of California Press, 1991. $17.95) explains the broad meaning of pain and the complexity of it. He emphasises, "Pain, in effect, is no mere physiological event. It is simultaneously emotional, cognitive, and social". The book is unusual because of the breadth of the approach, the erudition the author displays in reviewing pain in various cultures, as portrayed throughout the history of art, and various other guises. His research is impeccable, and the book is a tour de force. Morris is not a physician. Perhaps if he were he could never have written such a book. He was a Professor of English and so his approach has been more liberal, broad and refreshing.

I found this a wonderful book to read, and I highly recommend it to any physician who deals frequently with pain patients.

CRACKING THE ARMOUR

There has been a lot of talk, many self help books and a whole movement that wants to help males get in touch with their masculinity. I found a lot of the pop pseudo-psychology confusing, but it certainly is getting a lot of attention. The most popular of the breed of books is *Iron John* by American poet, Robert Bly (*Iron John: A Book About Men*; Redding (Maine): Addison-Wesley, 268 pages, $24.95). It seems to have a view that women have distorted masculinity and we have to get back in touch with maleness through weekends in the woods discussing, telling stories, drumming and singing around the campfire and getting back to men teaching men. Although it discusses the importance of men becoming warriors, the unspoken result would seem to me to be the rejection of the new role of women, of feminism, and of concepts of equality and power sharing between the sexes. I would think these men need to learn to cope with the new world rather than return to some romanticized warrior society which gives maleness its full flower - that got us into a lot of our current world problems, didn't it? My initial reaction to much of this literature was to view it as an immature backlash to the feminist movement, and the "feminization of men", so these guys were going to take their balls and go home.

Quite a different view comes from Toronto writer Michael Kaufman in his book, *Cracking the Armour* (Toronto: Viking Press, 1993, 308 pages, $25.99). Kaufman was the university professor-writer who started the White Ribbon Campaign, men against violence towards women. He discards Bly's views and feels the problem for men is to recognize the artificial view of masculinity in our society. He uses feminist group techniques to bring out a understanding of what it means to be male and in a positive sharing relationship with women. His conclusions are hard to disagree with but the book shows the

signs of the years of note-taking and thinking and changing views over the years since he began the book. It is a confusing and jumbled book and could have been more clearly said in a short essay. It also doesn't ring true – not the concept, but the voices of men he quotes to emphasize his views. He says the examples come from discussions at his weekend seminars and discussions, but they all sound like him, and have the same speech pattern. I realize quotes need editing, but they all sound like Kaufman speaking his dogma. He seems a sincere and well meaning man who has a more balanced, healthy and positive view amidst a lot of trashy and perhaps dangerous thinking on maleness and masculinity, but it is unfortunate he didn't write a clearer and better organized work.

READING WEEKEND

In October we had the first of a series of Reading Weekends for those interested in discussing literature. The first had as a theme "The Patient's Story", looking at writings that try and see the experience of illness from the patient's point of view. We are familiar with the physician's story of the patient and the physician's story of the illness, but it is often quite different from the patient's story. In recent years there has been a lot of discussion of the importance of physicians ability to see the patient's story. A recent issue of *Literature and Medicine*, Volume 11, No. 1, 1992, was devoted to this topic.

The works we studied on the weekend at the Tattingstone Inn in the Annapolis Valley include:

Essays :	*Rebecca*, by Oliver Sacks
	The Use of Force, by William Carlos Williams
	The Long House Call, by John Stone
	Who Was Caring for Mary?, by Frederick Southwick
Short Story:	*Whither Thou Goest*, by Richard Selzer
Autobiography:	*Intoxicated by My Illness*, by Anatole Broyard
Novel:	*The Death of Ivan Ilych*, by Leo Tolstoy
Art:	*Illness and Healing: Images of Cancer*, by Robert Pope
Poems:	*Five Days in Hospital*, by Alden Nowlan
	X-Ray, by Alden Nowlan
	Five O'Clock Shadow, by John Betjeman
	The Obstetrical Patter (when magic fails), by Vincent Hanlon
	Foreign Body, by Vincent Hanlon
	My Son, by Ariel Boilen
	Back Into It, by Gerry Greenstone
	Countertransference Call, by Elmer Abear

If you are interested in one of the reading weekends in the future, call 902-494-2514 and we can provide dates and places. Some will be in charming inns around the province, others in Halifax. It is also possible for us to assist groups who wish to organize their own reading weekends or book clubs.

BOOKSHELF

The books I have put aside in the ever towering stack by my chair, include:

Girl, Interrupted, by Susanna Kaysen (New York: Turtle Bay Books, Random House, 1993). This is a very touching and thought provoking view of mental illness by a young woman who spent a portion of her adolescence in a private mental institution. Her wry insights, black humour and honesty make this an important example of a patient's story, seen in a way that physicians need to understand.

The Danger Tree, by David MacFarlane (Toronto: MacFarlane, Walter and Ross, 1991). This Newfoundland author has written a widely acclaimed work that explores the meaning of family through the exploration of the Goodyears of Newfoundland. As we follow the chronicle of this family we learn of the complex love and emotions involved in families and their events, of the effect of war and changing times.

The Last Dance is Mine, by Bill Horner (Montreal and Toronto: Optimum Publishing Inc, 1992). This book tells what a disease like multiple sclerosis can do to a hard rock miner from Sudbury, Ontario with a young family and with plans and aspirations. As he loses much of what was important to him he regroups his emotion and potential to make a new and different kind of life.

Canadian Medical Schools: Two Centuries of Medical History: 1822-1992 by N. Tait McPhedran. (Montreal: Harvest House Ltd, 1993). McPhedran reviews the history of the 16 medical schools of Canada in a lively and interesting way. As medical schools will be taking new directions in the next few years, it is important to review what has gone before, to identify what was done well, and what needs to be done better.

The English Patient, by Michael Ondaatje (Toronto: McClelland and Stewart Inc, 1992). When I was in England in the fall I went to one book store after another trying to get a copy, but this was immediately sold out as it won the 1992 Booker Prize. Ondaatje is one of Canada's leading novelists, and this interesting story talks of a burned and scarred airman who finds himself among an unusual small group near the end of the Second World War.

Scar Tissue by Michael Ignatieff (London: Chatto and Windus, 993). Another wonderful Canadian author, Ignatieff writes of a son's painful view of his mother's progressive loss of memory and control.

Medicine at the Crossroads by Melvin Konner (Mississauga: Random House, 1993). This is a critical but constructive view of physicians, medicine and society.

Doctors and Their Patients: A Social History by Edward Shorter (New Brunswick and London: Transaction Publishers, 1991). Shorter, an excellent Canadian medical historian, reviews the historical nature of the relationship between physicians and patients, and the character of the changes in that relationship. This is a well written and well researched book. □

Dalhousie University
Faculty of Medicine
Division of
Continuing Medical Education

1994 SHORT COURSE CALENDAR

Feb. 21-23	20th February Refresher (Emergency Medicine)
Mar. 7-10	4th Annual Northern Winter Symposium, Sunday River, ME
Mar. 10-12	15th Annual Winter Symposium, Deerfield, FLA
April 14-15	Short Course in Neurology
April 15	Obstetrics and Gynaecology, Update for Specialists
April 29	**Case Problems** in Gastroenterology
April 30	Update in Gastroenterology
May 13	**Case Problems** in Psychiatry
May 14	Update in Psychiatry
Oct. 1	Update in Rheumatology
Nov. 16-18	68th Annual Dalhousie Refresher Course
Dec. 1-2	Update in Obstetrics and Gynaecology for Family Physicians

In response to physician learning preferences, as indicated by our needs assessment, three of our short courses will have a Friday evening session focusing on small group case discussions.

Complete information on each of the courses listed here will be mailed to target audiences 4-6 weeks prior to the course date. Meanwhile, information may be obtained by calling Continuing Medical Education at (902) 494-2061. Please note that the course dates for Oct., Nov., and Dec. 1994 are tentative.

Workshop on Quality Management for Physicians

Presented by the Canadian Medical Association
and The Medical Society of Nova Scotia

June 10 and 11, 1994
Halifax, NS

For further details, please call Mary Kate Needler at The Medical Society Office.