

# PREVALENCE OF SMOKING AMONG PREGNANT WOMEN IN NOVA SCOTIA FROM 1988 TO 1992

Linda Dodds, PhD

**Objective:** To determine the prevalence of smoking during pregnancy in Nova Scotia and to identify women at high risk of smoking during pregnancy.

**Design:** Population-based descriptive study.

**Setting:** All hospitals providing obstetric services in Nova Scotia.

**Patients:** All 60 754 women residing in Nova Scotia who had a baby in hospital between 1988 and 1992; smoking data were available for 57 750 (95.1%) of them.

**Outcome measures:** Proportion of women who smoked during pregnancy and the maternal smoking rates by age, marital status, parity, attendance at prenatal classes and residence.

**Results:** Overall, 32.4% of the women smoked at some point during their pregnancy. The rate was highest among the women less than 20 years of age (47.0%) and decreased with each increasing 5-year age interval. Overall, the unmarried women were 2.1 times as likely to smoke as the married women. The smoking rates were highest among the women who were para 3 or greater regardless of age (women less than 20 were excluded here, since very few had such a parity). Of the nulliparous women, those who attended prenatal classes were less likely to smoke during pregnancy than those who did not attend. There was no relation between urban or rural residence and smoking rates. The smoking rates decreased little between 1988 and 1992 and in fact increased among the women 35 and over and among those who were para 3 or greater.

**Conclusions:** The smoking rates among pregnant women in Nova Scotia changed little between 1988 and 1992. Therefore, it seems that current strategies for smoking cessation have not been successful. Since prenatal classes are more likely to attract nonsmokers than smokers, other avenues for education and cessation are necessary.

---

**Objectif :** Établir la prévalence du tabagisme chez les femmes enceintes en Nouvelle-Écosse et identifier les femmes qui risquent fort de fumer durant la grossesse.

**Conception :** Étude descriptive démographique.

**Contexte :** Tous les hôpitaux qui fournissent des services d'obstétrique en Nouvelle-Écosse.

**Patientes :** Les 60 754 femmes habitant en Nouvelle-Écosse qui ont accouché à l'hôpital entre 1988 et 1992; on disposait de données sur le tabagisme au sujet de 57 750 (95,1 %) d'entre elles.

**Mesures des résultats :** Proportion de femmes qui ont fumé au cours de la grossesse et taux de tabagisme chez les mères selon l'âge, l'état civil, la parité, la participation aux cours prénataux et la résidence.

**Résultats :** Dans l'ensemble, 32,4 % des femmes ont fumé à un moment donné au cours de la grossesse. Le taux a été le plus élevé chez les femmes de moins de 20 ans (47,0 %) et a fléchi à chaque tranche de 5 ans suivante. Au total, les femmes célibataires étaient 2,1 fois plus susceptibles de fumer que les femmes mariées. Les taux de tabagisme étaient les plus élevés chez les femmes à leur troisième grossesse ou plus, peu importe l'âge (les femmes de moins de 20 ans ont été exclues dans ce cas puisque très peu en étaient à leur troisième grossesse). Chez les femmes nullipares, celles qui ont suivi des cours prénataux étaient moins susceptibles que les autres de fumer au cours de la grossesse. Il n'y avait aucun lien entre le fait de demeurer à la ville ou à la campagne et les taux de tabagisme. Les taux de tabagisme ont peu diminué entre 1988 et 1992 et ils ont en fait augmenté chez les femmes de 35 ans ou plus et chez celles qui en étaient à leur troisième grossesse ou plus.

**Conclusions :** Les taux de tabagisme chez les femmes enceintes de la Nouvelle-Écosse ont peu varié entre 1988 et 1992. Il semble donc que les stratégies antitabac actuelles n'ont pas connu de succès. Comme les cours prénataux sont plus susceptibles d'attirer les non-fumeuses que les fumeuses, d'autres moyens d'éducation et d'abandon du tabagisme s'imposent.

---

*From the Reproductive Care Program, Grace Maternity Hospital, Halifax, NS, and the Department of Community Health and Epidemiology, Dalhousie University, Halifax, NS.*

**Reprint requests to:** Dr. Linda Dodds, Reproductive Care Program of Nova Scotia, Grace Maternity Hospital, 5980 University Ave., Halifax NS B3H 4N1; fax 902 422-4463

Smoking during pregnancy has been associated with a range of adverse reproductive outcomes and health problems in children.<sup>1-3</sup> Women who smoke during pregnancy are about twice as likely as nonsmoking women of having a low-birth-weight baby.<sup>4,5</sup> It is thought that much of the reduction in birth weight among the offspring of women who smoke is due to intrauterine growth retardation.<sup>6</sup> The relative risk of preterm birth associated with smoking is increased, although to a lesser degree than the risk of intrauterine growth retardation.<sup>6,7</sup> For many adverse birth outcomes, not only is smoking one of the most important known contributors but it is also preventable.

Estimates of the prevalence of smoking during pregnancy have been reported for the United States and Europe, but little data are available for Canada. A study conducted in the Ottawa-Carleton region in 1983 revealed that close to 30% of the women surveyed smoked during their pregnancy.<sup>8</sup> Some of these women quit smoking later in their pregnancy, and many decreased the amount smoked during pregnancy. Birth certificates in the United States now include data on smoking during pregnancy. Recent reports based on birth-certificate data showed that the prevalence of maternal smoking ranged from 23.0%, in Ohio, to 27.5%, in Missouri.<sup>9,10</sup> Only a few studies have reported maternal smoking rates above 30%. A small study from Liverpool, England, reported a rate of 34.4%.<sup>11</sup> One from New Zealand revealed a rate of 33%, although the rate among the non-Maori population was substantially lower.<sup>12</sup>

Studies have shown that both stopping smoking at some point during pregnancy and reducing smoking during pregnancy can be beneficial to the baby.<sup>13</sup> Combined data from clinical trials of smoking cessation programs suggest a moderate reduction in the risk of a low-birth-weight baby among women in the intervention group.<sup>14</sup>

Before smoking prevention and cessation programs are implemented in a population of pregnant women, it is important to know the population prevalence rates and characteristics of women who smoke during pregnancy. This report describes the prevalence in Nova Scotia between 1988 and 1992 and identifies women at high risk of smoking during pregnancy.

## METHODS

Since 1988 data on all hospital births in Nova Scotia have been stored in the Nova Scotia Atlee Perinatal Database. A prenatal form (filled out during prenatal visits) and the hospital medical records are used to collect extensive information on medical conditions and events related to labour, delivery and infant outcomes. As well, data are collected on some lifestyle and demographic characteristics, such as smoking, marital status and residence. Information on socioeconomic indicators (e.g., income group and level of education) are not collected. Data are abstracted by trained health records personnel. There are approximately

12 000 births in Nova Scotia each year, about half of which occur at one tertiary care hospital in Halifax.

Information pertaining to smoking is collected prenatally and at the time of admission to hospital for delivery. The prenatal data are usually collected at the time of the first prenatal visit and include information on the average number of cigarettes per day. The smoking data collected at the time of delivery include the average number of cigarettes per day and pertain to the smoking habits before delivery. The Atlee Perinatal Database contains only one smoking variable, so changes in smoking habits during pregnancy are not recorded. If the average number of cigarettes per day on the prenatal record differs from the number at the time of admission to hospital, the highest number is recorded in the database.

This study included women living in Nova Scotia who delivered a live or stillborn baby in hospital between 1988 and 1992. Smoking was analysed as a dichotomous variable (did or did not smoke during pregnancy) and by amount smoked during pregnancy. To develop a profile of women who smoked during pregnancy, the data were analysed according to maternal age, marital status, parity, attendance at prenatal classes and region of residence. Age was divided into five categories: less than 20, 20 to 24, 25 to 29, 30 to 34, and 35 and over. Marital status was grouped into married and unmarried; the latter category included women who were single, in a common-law relationship, divorced, separated or widowed. The women were classified as urban or rural residents according to their postal code (a zero as the second digit indicated a rural residence, and any other number as the second digit indicated urban residence).

Statistical analyses were performed using SAS statistical software (SAS Institute Inc., Cary, NC).

## RESULTS

A total of 60 754 Nova Scotia women gave birth in hospital between 1988 and 1992. Smoking data were available for 57 750 (95.1%). The proportion of missing data on smoking did not change appreciably over the study period. The overall rate of smoking was 32.4%. In 1992, 31.3% of the women smoked during their pregnancy.

Smoking during pregnancy was strongly related to age (Table 1). The rate was highest among the women under 20 years of age (47.0%) and lowest among those 35 and over (21.2%).

The prevalence of smoking during pregnancy was related to marital status as well (Table 1). Overall, the unmarried women were more than twice as likely as the married ones to have smoked during pregnancy. This finding was evident in each age group except among the women less than 20, whose rates of smoking were high regardless of marital status. Each of the subgroups in the unmarried category (single, common law, separated, divorced and widowed) contributed to the high smoking rates. For each of these groups the rate was above 50% (data not shown).

The rate of heavy smoking (25 or more cigarettes per day) during pregnancy was 7.5%. Table 1 shows the relation between age, marital status and heavy smoking during pregnancy. Overall, 23.1% of the women who smoked during pregnancy smoked heavily. The women under 25 years of age tended to be lighter smokers than the older women. Except in the group of adolescent women, the unmarried women were more likely than the married ones to smoke heavily.

Fig. 1 shows the relation between parity and maternal smoking rates by age. Since very few of the women less than 20 were para 3 or greater, the smoking rate for this group was not calculated. The rate was highest among those who were para 3 or greater in the two groups of women over 20.

Among the nulliparous women 71.4% attended prenatal classes. The smoking rate was 25.4% in this group, as compared with 47.3% among the nulliparous women who did not attend classes. This difference was evident regardless of age and marital status. The smoking rate decreased over the study period among those who attended prenatal classes and among those who did not attend, although there was a somewhat greater decrease in the former group (Table 2).

The maternal smoking rates differed substantially by county, ranging from 28.0% to 40.0% (data not shown). The differences did not seem to be related to the urban or rural location of the residents. The maternal smoking rate

was 31.7% among the urban residents and 33.3% among the rural residents.

Table 2 shows the changes in smoking rates between 1988-89 and 1991-92 by selected maternal characteristics. Overall, the rate decreased, from 33.6% to 31.7%. There were modest decreases in each age group except that of women 35 years and over. The decrease in the rate among the married women was greater than that in the rate among the unmarried women, which thus increased the difference in the smoking rates overall between these two groups. The smoking rates increased by 8.4% among the women who were para 3 or greater.

## DISCUSSION

These data represent the first population-based provincial estimates of the prevalence of smoking during pregnancy. Close to one third of the women in our study smoked at some point during their pregnancy. Although modest reductions in the smoking rates occurred in most subgroups between 1988 and 1992, little progress has been made overall in reducing maternal smoking rates in Nova Scotia. The smoking rates were lowest among the women 35 years of age and older; however, this was the only age group in which the rates increased between 1988 and 1992.

It is difficult to compare the maternal smoking rates in Nova Scotia with those in other provinces, because

**Table 1: Prevalence of smoking during pregnancy among women in Nova Scotia between 1988 and 1992, by age and marital status\***

Age, yr; marital status	No. of women	No. (and %) who smoked†	No. (and %) who smoked heavily‡
<b>&lt; 20</b>	4 858	2 283 (47.0)	330 (14.5)
Married	634	278 (43.8)	52 (18.7)
Unmarried	4 223	2 004 (47.5)	278 (13.9)
<b>20-24</b>	13 848	5 882 (42.5)	1 262 (21.5)
Married	8 003	2 639 (33.0)	543 (20.6)
Unmarried	5 841	3 240 (55.5)	718 (22.2)
<b>25-29</b>	21 580	6 521 (30.2)	1 670 (25.6)
Married	18 320	4 677 (25.5)	1 092 (23.3)
Unmarried	3 257	1 843 (56.6)	578 (31.4)
<b>30-34</b>	13 254	3 138 (23.7)	852 (27.2)
Married	11 813	2 326 (19.7)	577 (24.8)
Unmarried	1 439	811 (56.4)	274 (33.8)
<b>≥ 35</b>	4 209	891 (21.2)	214 (24.0)
Married	3 649	628 (17.2)	120 (19.1)
Unmarried	558	262 (47.0)	94 (35.9)
<b>All</b>	57 749	18 715 (32.4)	4 328 (23.1)

\*Age was unknown for 1 woman, and marital status was unknown for 12 women.

†The percentages were derived from the number of women in the respective age or marital status group.

‡Heavy smoking referred to 25 or more cigarettes per day. The percentages were derived from the number of women who smoked.

comparable data are unavailable. The rates observed in this study were similar to those found in the Ottawa–Carleton region,<sup>8</sup> although the latter study was conducted over 10 years ago, and they were higher in gen-

eral than rates reported from the United States and Europe.<sup>7,9,10,15–18</sup>

The profile of women most likely to smoke during pregnancy includes unmarried women of any age and women

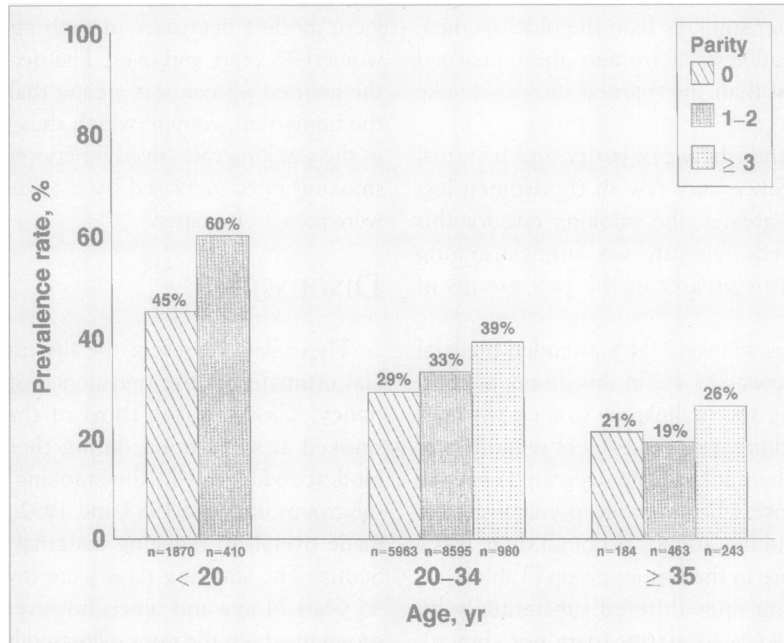


Fig. 1: Prevalence rates of smoking during pregnancy among women in Nova Scotia who gave birth in hospital between 1988 and 1992, by age and parity.

Table 2: Changes in the proportion of women who smoked during pregnancy from 1988–89 to 1991–92 by selected maternal characteristics

Characteristic	Year; % of women who smoked		% change
	1988–89 (n = 23 609)	1991–92 (n = 21 939)	
<b>Age, yr</b>			
< 20	47.9	46.4	-3.1
20–24	43.5	42.3	-2.8
25–29	31.4	29.1	-7.3
30–34	24.2	23.8	-1.7
≥ 35	20.6	21.6	+4.9
<b>Marital status</b>			
Married	26.7	23.0	-13.9
Unmarried	54.9	52.8	-3.8
<b>Parity</b>			
0	33.0	30.3	-8.2
1–2	34.0	32.2	-5.3
≥ 3	34.6	37.5	+8.4
<b>Attended prenatal classes (nulliparas only)</b>			
No	48.7	46.4	-4.7
Yes	26.5	24.3	-8.3
<b>Overall</b>	<b>33.6</b>	<b>31.7</b>	<b>-5.7</b>

less than 25 years regardless of their marital status. These characteristics were consistent with those found in other populations,<sup>8,10,19,20</sup> although the rates by age group and by marital status observed in this study were consistently higher. It is somewhat encouraging that although young women are the most likely to smoke during pregnancy, data from this study suggest that they smoke less heavily than older women.

Information on maternal smoking is collected twice during a woman's pregnancy (usually at the first prenatal visit and again at the time of hospital admission for delivery); however, the database includes only one smoking variable. The smoking rates reported here reflect maternal smoking at either point in pregnancy as well as the greatest number of cigarettes smoked. Thus, these are estimates of the prevalence and intensity of smoking during pregnancy from the time of the first prenatal visit. It has been suggested that about 18% of women who smoke quit by the time of their first prenatal visit.<sup>21</sup> The rates reported in this study pertain to women who did not quit by that time. If data were available on the prevalence of smoking at any time during pregnancy (e.g., before the pregnancy was recognized) the rates found in this population would likely be higher still.

In each age group in which age and parity were analysed, the smoking rates were highest among women who were para 3 or greater. There are several possible explanations for this finding. Since women of high parity are probably more likely than other women to have had their first child at a low age, it may be that age at first birth is more strongly associated with smoking during pregnancy than parity is. In this study the possible confounding effects of age at first pregnancy could not be distinguished, since this information was not available. A more disturbing explanation is the possibility that attitudes regarding smoking during pregnancy are more relaxed with subsequent births, especially if the previous births resulted in healthy babies. This explanation is supported by the finding of a smoking cessation trial in which the intervention was effective among primiparas but not among multiparas.<sup>22</sup> As more data are collected and information is available on all of the births of women in the database it will be possible to determine whether smoking patterns actually change according to parity after controlling for age at first birth.

The harmful effects of smoking on birth weight have been shown to be most critical after the fourth month of pregnancy.<sup>23</sup> Therefore, women who smoke should be encouraged to enter cessation programs even after their pregnancy is recognized or after the first prenatal visit. As well, organizers of prenatal classes are emphasizing the importance of classes being offered in the first trimester. Therefore, this could be an opportunity to provide information on the effects of smoking during pregnancy and on cessation programs. However, in this study the women who attended prenatal classes were less likely to be smokers than those who did not attend. Clearly other avenues for education and smoking cessation programs will have to be identi-

fied to target women who are likely to smoke during pregnancy. Since physicians and other health care professionals are seen by most pregnant women for regularly scheduled prenatal visits starting early in pregnancy, it may be opportune for them to initiate education and cessation programs.

Recording of information in the Nova Scotia Atlee Perinatal Database on maternal smoking at the onset and at the end of pregnancy would greatly enhance the database in terms of enabling research into the effectiveness of smoking intervention methods. With this additional information in the database Nova Scotia would be an ideal place to implement smoking cessation programs for pregnant women, since smoking cessation efforts could be evaluated in the population as a whole and in specific subgroups (e.g., young pregnant women).

---

I thank the staff of the health record departments of all the participating hospitals and the Reproductive Care Program for collecting the data for the Nova Scotia Atlee Perinatal Database. I also thank Sharon LeShano Alexander, MA, for her research assistance and Karen S. Mombourquette for her secretarial assistance.

## References

1. Office on Smoking and Health: *The Health Consequences of Smoking for Women: a Report of the Surgeon General*, US Department of Health and Human Services, Washington, 1980
2. Kleinman JC, Pierre MB, Madans JH et al: The effects of maternal smoking on fetal and infant mortality. *Am J Epidemiol* 1988; 127: 274-282
3. Prager K, Malen H, Spiegler D et al: Smoking and drinking behavior before and during pregnancy of married mothers of live-born infants and stillborn infants. *Public Health Rep* 1984; 99: 117-127
4. Sexton M, Hebel JR: A clinical trial of change in maternal smoking and its effect on birth weight. *JAMA* 1984; 251: 911-915
5. *Prevention of Low Birth Weight in Canada: Literature Review and Strategies*, Canadian Institute of Child Health, Ottawa, 1992
6. Kramer MS: Determinants of low birth weight: methodological assessment and meta-analysis. [review] *Bull World Health Organ* 1987; 65: 663-737
7. Shiono PH, Klebanoff MA, Rhoads GG: Smoking and drinking during pregnancy — their effects on preterm birth. *JAMA* 1986; 255: 82-84
8. Stewart PJ, Dunkley GC: Smoking and health care patterns among pregnant women. *Can Med Assoc J* 1985; 133: 989-994
9. Effects of maternal cigarette smoking on birth weight and preterm birth — Ohio, 1989. *MMWR* 1990; 39: 662-665
10. Stockbauer JW, Land GH: Changes in characteristics of women who smoke during pregnancy: Missouri, 1978-88. *Public Health Rep* 1991; 106: 52-58
11. Mathai M, Skinner A, Lawton K et al: Maternal smoking, urinary cotinine levels and birth weight. *Aust NZ J Obstet Gynaecol* 1990; 30: 33-36
12. Alison LH, Counsell AM, Geddis DC et al: First report from the Plunket National Study: smoking during pregnancy in

New Zealand. *Paediatr Perinat Epidemiol* 1993; 7: 318-333

13. Hebel JR, Fox NL, Sexton M: Dose-response of birth weight to various measures of maternal smoking during pregnancy. *J Clin Epidemiol* 1988; 41: 483-489
14. Lumley J: Strategies for reducing smoking in pregnancy. In Enkin MW, Keirse MJNC, Renfrew MJ et al (eds): *Pregnancy and Childbirth Module. Cochrane Database of Systematic Reviews*, disk issue 2, Oct 2, 1993: rev 03312
15. Williamson DF, Serdula MK, Kendrick JS et al: Comparing the prevalence of smoking in pregnant and nonpregnant women, 1985 to 1986. *JAMA* 1989; 261: 70-74
16. Fingerhut LA, Kleinman JC, Kendrick JS: Smoking before, during, and after pregnancy. *Am J Public Health* 1990; 80: 541-544
17. Cigarette smoking among reproductive-aged women — Idaho and New York. *MMWR* 1990; 39: 659-662
18. Milham S Jr, Davis RL: Cigarette smoking during pregnancy and mother's occupation. *J Occup Med* 1991; 33: 468-473
19. Tollestrup K, Frost FJ, Starzyk P: Smoking prevalence of pregnant women compared to women in the general population of Washington State. *Am J Prev Med* 1992; 8: 215-220
20. Cnattingius S, Thorslund M: Smoking behaviour among pregnant women prior to antenatal care registration. *Soc Sci Med* 1990; 31: 1271-1275
21. Lumley J: Stopping smoking. *Br J Obstet Gynaecol* 1987; 94: 289-292
22. MacArthur C, Newton JR, Knox EG: Effect of anti-smoking health education on infant size at birth: a randomized controlled trial. *Br J Obstet Gynaecol* 1987; 94: 295-300
23. Butler NR, Goldstein H, Ross EM: Cigarette smoking in pregnancy: its influence on birth weight and perinatal mortality. *BMJ* 1972; 2: 127-130

**Mar. 29-31, 1995: Dissociation in the '90s: an Update for Health Care Professionals (sponsored by the General Psychiatry Program, Dissociative Disorders Team, Royal Ottawa Health Care Group, and the Canadian Society for the Study of Dissociation)**

Ottawa

Wilcom Services Inc., 59 Horner Dr., Nepean ON K2H 5G1; tel 613 596-6064, fax 613 596-0711

**Mar. 29-Apr. 1, 1995: 12th Annual Cardiology Symposium (sponsored by McMaster University Cardiology Programme, in association with the Heart and Stroke Foundation of Ontario and the Bermuda Medical Society)**

Bermuda

Dr. Paul H. Tanser, St. Joseph's Hospital, 50 Charlton Ave. E, Hamilton, ON L8N 4A6; tel 905 521-6081

**Mar. 31, 1995: Pathways for Healing: Mental Health and Disabilities Conference (hosted by the Resource, Educational and Advocacy Centre for the Handicapped)**

Ottawa

*Keynote speaker: Patrick Watson*

Marilyn Light, coordinator, Continuing Education, University of Ottawa, 139 Louis Pasteur St., Ottawa ON K1N 6N5; tel 613 564-3952, fax 613 564-3956

**Apr. 3-5, 1995: Current Treatments Conference: Diagnostic and Treatment Problems in Primary Care**

Victoria

Coastal Conferences Ltd., 1459 Jamaica Rd., Victoria BC V8N 2C9; tel 604 477-7559, fax 604 595-9594

**Apr. 6-7, 1995: Therapeutic Camps for Children and Adolescents (sponsored by the Recreation Discipline and the Children's Out-patient Department, Royal Ottawa Hospital)**

Ottawa

Robert Wilson, conference facilitator, Wilcom Services Inc., 59 Horner Dr., Nepean ON K2H 5G1; tel 613 596-6064, fax 613 596-0711

**Apr. 10-11, 1995: 5th Annual Palliative Care Conference — Palliative Care . . . Towards Consensus in Practice (in collaboration with the Canadian Association of Nurses in AIDS Care, the Canadian Association of Nurses in Oncology, the Community Hospice Association of Ontario, the Metropolitan Toronto Palliative Care Council, the Ontario Medical Association, Section of Palliative Care, and the Ontario Palliative Care Association)**

Toronto

Humber College, Business and Industry Services, 205 Humber College Blvd., Etobicoke ON M9W 5L7; tel 416 675-5077, fax 416 675-0135

**Apr. 20-22, 1995: 6th International Congress on Dermatology and Psychiatry: Getting in Touch**

Amsterdam, the Netherlands

Bureau PAQG Amsterdam, Tafelbergweg 25, 1105 BC Amsterdam, the Netherlands; tel 011 20 566-4801, fax 011 20 696-3228

**Apr. 23-27 1995: An Update on Geriatrics — Alzheimer's disease, depression, therapeutics and medical ethics**

Jerusalem, Israel

*Study credits available.*

Dr. A. Mark Clarfield, Sarah Herzog Hospital, c/o Ortra Ltd., 2 Kaufman St., PO Box 50432, Tel

Aviv 61500, Israel; tel 011 972 3 517-7888, fax 011 972 3 517-4433

**Apr. 23-27, 1995: Probing the Future: Canadian Society of Clinical Chemists and Canadian Association of Medical Biochemists 39th Annual Scientific Congress**

Whistler, BC

CSCC-CAMB 39th Annual Conference, PO Box 1570, 190 Railway St., Kingston ON K7L 5C8; tel 613 531-8899, fax 613 531-0626

**Du 23 au 27 avr. 1995 : «Probing the Future» : 39<sup>e</sup> congrès annuel de la Société canadienne des clinico-chimistes et de l'Association canadienne des médo-biochimistes**

Whistler, C-B

Congrès annuel de la SCCC-AMBC, CP 1570, 190, rue Railway, Kingston ON K7L 5C8; tel 613 531-8899, fax 613 531-0626

**Apr. 24-25, 1995: Approaching the Dream: Clinical and Cultural Perspectives**

Paris, France

Ontario Council for Leadership in Educational Administration, 252 Bloor St. W, Ste. 12-115, Toronto ON M5S 1V5; tel 416 944-2652, fax 416 944-3822

**Apr. 26-29, 1995: Canadian Association of Speech-Language Pathologists and Audiologists**

Ottawa

Linda J. Garcia, CASLPA Conference '95, Programme d'audiologie et d'orthophonie, University of Ottawa, 545 King Edward Ave., Ottawa ON K1N 6N5; tel 613 564-9918, fax 613 564-9919