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Family-Practice Anesthesia in British Columbia

SUMMARY

This study of family practitioners as anesthetists is based on data extracted from records of the Medical Services Plan of British Columbia. During the period from 1976 to 1986, the proportion of anesthetics that were administered by non-certified anesthetists declined from 28.3% to 22.1% of the total number. Small and medium-sized hospitals continue to depend on family-physician anesthetists. Family practitioners make up 96.9% of all anesthetists practising in hospitals with fewer than 50 beds and 88.2% of anesthetists in hospitals with 50–99 beds. Rural areas are served almost exclusively by family-practice anesthetists, since 16 of 29 B.C. regional districts have one or no certified anesthetists. The author discusses the implications of this situation for the future of family-practice anesthesia. (*Can Fam Physician* 1987; 33:1607–1612.)

RÉSUMÉ

Cette étude touchant les médecins de famille offrant des services d'anesthésie est basée sur des renseignements obtenus à partir des registres de l'Assurance-maladie de la Colombie-Britannique. Pendant la période allant de 1976 à 1986, la proportion d'anesthésistes est passée de 28.3% à 22.1% du nombre total. Les centres hospitaliers à faible et à moyen débit continuent de dépendre des services des médecins de famille-anesthésistes. Ceux-ci totalisent 96.9% de tous les actes d'anesthésie posés dans les hôpitaux de moins de 50 lits et 88.2% des actes posés dans les hôpitaux de 50 à 90 lits. Les régions rurales sont desservies presque exclusivement par les médecins de famille-anesthésistes, puisque 16 des 29 districts régionaux de la Colombie-Britannique ne comptent qu'un seul ou aucun anesthésiste certifié. L'auteur discute les implications de cette situation sur l'avenir de l'anesthésie en pratique familiale.

Key words: anesthesia, family practice, family physicians

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THE AUTHORS of a 1985 Canada-wide study reported that 7.4% of a total of 12,276 self-described family practitioners (FPs)/General Practitioners (GPs) performed anesthesia an average of 9.5 hours per week.[1] In Ontario, in 1977, GPs performed anesthetics for 25% or more of most operative procedures.[2] The proportion of anesthetic procedures performed by GPs was less in one urban centre than in the province as a whole. In Saskatchewan, in 1976, some 46%–49% of all anesthetics were performed by GP anesthetists.[3] In Australia, a country with comparable population and geographical difficulties, a study of Victoria GPs found that the proportion of GPs performing anesthesia declined from 65% in 1971 to 45% in 1978; a much greater proportion of GPs performed anesthesia in rural ares than in Melbourne.[4]

In the past, most FPs acquired their training in anesthesia through an apprenticeship in the hospital in which they worked.[5] Today there is ever-increasing pressure for a longer period of formal training in anesthesia for FP anesthetists.

Method

Information was extracted from records of the Medical Services Plan of British Columbia, based on data pertaining to individual physicians and billing codes. Numbers of anesthetics

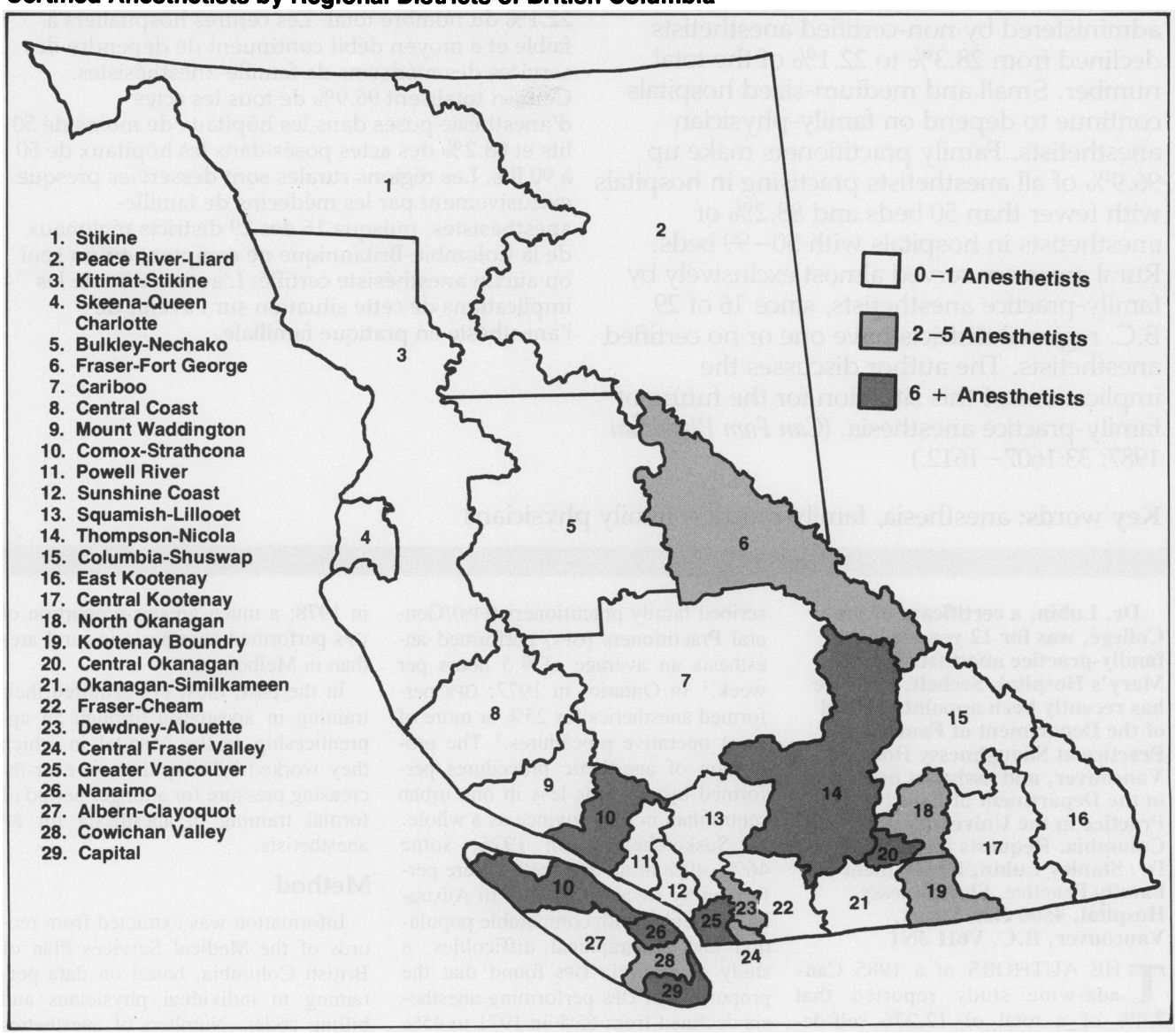
performed were estimated by the number of pre-anesthetic assessments billed. There are separate billing codes for anesthetic assessments of certified and non-certified anesthetists. At times more than one anesthetic assessment of a patient may be performed, but the number of multiple assessments could not be estimated from the data. Anesthetics billed to the Workers' Compensation Board or privately were not included in total numbers of anesthetics.

Numbers of anesthetists were determined from Medical Services Plan data for the 1985/86 billing period. Those anesthetists, whether certified or FPs, who administer fewer than 12 anesthetics per year were excluded from the study. By this definition there were 239 certified anesthetists and 232 FP/GP anesthetists in British Columbia during the study period.

Age and sex distributions of anesthetists, certified and uncertified, were determined from physician data obtained from Medical Service Plan. The location and numbers of hospital beds were determined by data provided by the British Columbia Hospital Association (BCHA). Only numbers of acute beds were taken into account in determining hospital size. Addresses of physicians were obtained from Medical Services Plan data and from the Medical Directory of the College of Physicians and Surgeons of British Columbia, 1985/86.

Denominator data on total numbers of FPs/GPs and certified anesthetists were obtained from the British Columbia Medical Association (BCMA) records for 1985/86. There were 2225.19 full-time equivalent (FTE) FPs/GPs and 232.81 FTE certified anesthetics. A FTE was defined as any doctor earning 50% or more of the average income for his/her group (e.g., certified anaesthetists) from the practice of anesesthia. A physician earning less than half of this average income was considered a fraction of a FTE. This fraction was calculated by taking the ratio of the doctor's income to the average income of those doctors earning more than half the average income of all doctors for the group.

Figure 1
Certified Anesthetists by Regional Districts of British Columbia



General population statistics, regional district distribution of physicians, and maps were obtained from BCHA and BCMA data for 1985/86. BCMA and B.C. Regional District boundaries, though different for most areas, are virtually identical for metropolitan Vancouver and Victoria.

Results

During 1985/86, 232 FP/GP anesthetists administered 62,966 anesthetics for an average of 271.4; 239 certified anesthetists administered an average of 929.1 anesthetics (Table 1). During the eleven-year period from 1975/76 to 1985/86, there has been a gradual decline in the proportion of all anesthetics given by uncertified anesthetists from 28.3% to 22.1% (Table 2, Figure 1). During this period the total number of anesthetics administered per year increased by 9.2% (from 261,101 to 285,238); the number administered by certified anesthetics increased by 18.7% (187,125 to 222,253); the number administered by uncertified anesthetists decreased by 14.9% (73,976 to 62,985).

Some 94.0% of non-certified anesthetists, as compared to 85.4% of certified anesthetists, were male (Table 3). Certified anesthetists tended to be older: 45.2% (105 of 232) non-certified anesthetists were under 40 years of age, whereas 30.5% (73 of 239) of certified anesthetists were under 40. Among non-certified anesthetists 5.6% (13) were aged 60 years or over, whereas 12.1% (29) of certified anesthetists were in this age group.

The pattern of earnings from anesthesia among non-certified anesthetists was U-shaped (Table 4). A large majority did anesthesia part time: 88.1% earned less than 50% of their medical income from anesthesia. Another 8.0%, however, were virtually full-time anesthetists, earning over 90% of their medical income from anesthesia. Among non-certified anesthetists, only 4.0% earned 50%–89% of their income from anesthesia.

There was a sharp distinction in distribution of anesthetists. In 24 smaller hospitals (with fewer than 50 beds) that provided anesthetic services, 96.9% of anesthetists (62 of 64) were non-certified (Table 5). Even in some 18 larger hospitals (with 50–99 acute-care beds) that provided anesthetic services, 88.4% of anesthetists (76 of 86) were non-certified. By contrast, 94.9% of certified anesthetists (222 of 234) worked in 34 hospitals of 100 or more acute-care beds. Using BCMA district boundaries for Greater Vancouver and Victoria, we found that 80.4% of certified anesthetists (189 of 235) worked within these urban areas; by contrast, some 85.4% of non-certified anesthetists (193 of 226) worked outside Greater Vancouver and Victoria (Table 6).

Using provincial regional district boundaries, we found that 76.6% of certified anesthetist profile FTEs (178.43 of 232.81) worked in Greater Vancouver and Victoria (Table 7). This profile is in sharp contrast to that of general surgeons, of whom 54.0% (98.36 of 182.17 FTE) worked in Vancouver and Victoria. Of the total population, 50.9% (1,483.32 of 2,910.104) live in these two metropolitan areas. Of 29 provincial regional districts of British Columbia, four have no certified surgeons, and 11 have no certified anesthetists. A further five regional

Table 1
Numbers of Anesthetics by Type of Anesthetist in British Columbia, 1985/86

	Anesthetists	
	FP/GP	Certified
Number of anesthetics	62,966	222,046
Number of anesthetists	232	239
Average number of anesthetics	271	929
Median number of anesthetics	157	835

Table 2
Numbers & Proportion of Anesthetics by Type of Anesthetists, 1975/76–1985/86

	Number of Anesthetics			% of Anesthetics
Period	FP	Certified	Total	Given by FPs
1975–76	73,976	187,125	261,101	28.3
1976–77	66,198	188,491	254,689	26.0
1977–78	64,122	179,434	243,556	26.3
1978–79	65,368	188,369	253,737	25.8
1979–80	64,703	192,549	257,252	25.2
1980–81	64,092	197,417	261,509	24.5
1981–82	68,668	199,912	268,580	25.6
1982–83	68,421	204,392	272,813	25.1
1983–84	61,815	211,091	272,906	22.7
1984–85	63,420	220,928	284,348	22.3
1985–86	62,985	222,253	285,238	22.1

Table 3
Age and Sex Distribution of Anesthetists in British Columbia by Type, 1985–86

	Anesthetist					
Age	FP/GP			Certified		
	M	F	Total	M	F	Total
<30	7	2	9	1	2	6
30–39	91	5	96	55	12	67
40–49	76	6	82	66	11	77
50–59	31	1	32	52	8	60
60 +	13	0	13	27	2	29
Total	**218**	**14**	**232**	**204**	**35**	**239**
% of Total	**94.0**	**6.0**	**100**	**85.4**	**14.6**	**100**

districts have only one certified anesthetist each (Figure 2).

Discussion

Sources of error

The number of anesthetics administered was estimated from the number of anesthetic assessments recorded. In general, only one assessment is done per anesthetic. More than one assessment may be done for an anesthetic given by a physician other than the anesthetist or by the anesthetist her/himself. Again, a second assessment is sometimes done if the time interval between initial assessment and the anesthetic has been long, as in a situation where surgery is postponed at the last moment. This source of error could not be estimated. Moreover, the number of anesthetics billed privately or billed to the Workers' Compensation Board was not included in the numbers estimated. There is no reason to expect that the per cent error would be significantly different for certified or FP/GP anesthetists than for specialists.

The number of FP anesthetists is almost certainly less than the figure of 232 estimated from billings of non-certified anesthetists. The category of non-certified anesthetists includes FPs/GPs as well as full-time non-certified anesthetists. Some 18 persons in this category of whom 11 were located in Greater Vancouver, earned more than 90% of their medical income from anesthesia. In effect, physicians in this group are full-time anesthetists in all but certification, and not family practitioners. Included in this group are final-year anesthesia residents doing locums for certified anesthetists before writing their certification examinations. Some family-practice locums who reside in Vancouver do anesthesia in rural areas. As a result, the number of non-certified anesthetists is an overestimate of the number of FP/GP anesthetists, particularly in the cities. In reality, it is likely that the proportion of genuine family practitioners performing anesthesia in rural areas is far greater than the 85.4% reported in Table 6. In an unpublished survey of all B.C. hospitals in 1986, Dr. P.W. Boronowski estimated that there were approximately 150 GP anesthetists in British Columbia.

There is an inconsistency in the estimate of the proportion of certified anesthetists in Greater Vancouver and Victoria: 80.4% is the figure given in Table 6, while 76.6% is the figure given in Table 7. This inconsistency is principally the result of similar, but not identical, numerators (235 anesthetists in Table 6, and 232.81 FTE in Table 7) and similar, but not identical, definitions of Greater Victoria (BCMA districts cf. regional districts). Different numerator data were used because FTE data were not available for FP/GP anesthetists.

Table 4
Earnings from Anesthesia[a] as a proportion of Total Earnings[b] of FP/GP Anesthetists

	% Earnings from Anesthesia				
	<50%	50–79%	80–89%	90+%	Total
Number of FP/GPs	199	4	5	18	226)
% of FP/GPs	88.1%	1.8%	2.2%	8.0%	100%

a. Medical Service Plan of B.C. billings only
b. No information on 6 FP/GPs

Table 5
Type of Anesthetist by Hospital Size—BL 1985–86

	Number of Acute Beds					
	<50		50–99		100	
	N	%	N	%	N	%
Anesthetists	64	100.0	86	100.0	310	100.0
FP/GP[a]	62	96.9	76	88.4	88	28.1
Certified[a]	2	3.1	10	11.6	222	71.6
Hospitals	24	100.0	18	100.0	32	100.0
with FP/GP anesthetists	24	100.0	17	94.4	b	b
with certified anesthetists	2	8.3	5	27.7	28	87.5

a. Location of 6 FP/GP anesthetists and 5 certified anesthetists could not be determined.
b. Data unreliable.

Table 6
Urban/Rural Distribution of Anesthetists in British Columbia

	Greater Vancouver and Victoria[a]		Rest of British Columbia	
	N	%	N	%
Certified anesthetists	189	80.4	46	19.6
FP/GP anesthetists	33	14.6	193	85.4

a. BCMA districts 1, 3, 41, 5, 6, 8.

Urban/rural distribution of anesthetists

The overwhelming majority of British Columbia's certified anesthetists work in the major metropolitan areas of Vancouver and Victoria. By contrast, family-practice anesthesia is virtually completely a rural phenomenon. Those few non-certified FP anesthetists working in metropolitan areas will not be replaced by FP anesthetists when they retire. Progressively, urban anesthesia is likely to become the exclusive preserve of certified anesthetists. This loss of older GP anesthetists in cities probably accounts, in part, for the progressive decline in the number of anesthetics performed by FP/GPs.

What of the future of family-practice anesthesia? Certainly certified anesthetists are doing more anesthetics and FP anesthetists fewer. Will the trend continue so that ultimately all anesthesia will be performed by certified anesthetists in urban and regional hospitals?

It is likely that surgery, and therefore anesthesia, will continue to be

performed in small rural hospitals. The people in small rural communities tend to be intensely proud of "their" local hospital, and they generally oppose any proposed reduction in services offered at the hospital. They are reluctant to travel outside their own communities for elective surgery. Members of hospital boards, local aldermen, and the public usually present a united front with considerable political clout in support of local medical services. Secondly, surgeons, unlike certified anesthetists, are well distributed in rural areas. They clearly have an interest in supporting the position that surgery continue to be performed in the hospitals where they work. Thirdly, while it is certainly possible for elective surgery to be transferred to regional hospitals, transfer involves an increased cost for transportation and generally higher *per diem* hospital rates, which must be absorbed by the patient and the government. Some persons requiring emergency surgery such as neurosurgical patients, must be transferred to larger centres. However, transfer of other emergency patients, for whom time is of the essence, is frequently undesirable. In the case of a Caesarean section for acute fetal distress or of hemorrhagic shock resulting from a ruptured spleen or an ectopic pregnancy, for instance, a delay of one to two hours is unacceptable. In Canada, with its scattered population and inclement winter weather, transfers of emergency cases may take far longer than one or two hours. If one accepts the need for emergency surgical services, it is clearly not feasible to support a surgical anesthetic service requiring physicians, nurses, and operating rooms which exists only for emergencies. Thus it is likely that surgery will continue to be performed in smaller rural hospitals.

Can the need for anesthetic services in rural areas be met exclusively by certified anesthetists? It seems unlikely. The situation of one certified anesthetist working completely on his/her own does not appear to exist in British Columbia. In general the critical minimum number of anesthetists for a hospital appears to be about three. Small hospitals do not generate enough surgery to support three full-time anesthetists. It is feasible, however, for physicians to do part-time anesthesia, and this is why, in practice, family practitioners have come to dominate anesthesia in smaller rural hospitals.

The future of family-practice anesthesia

At first glance the role of the family-practice anesthetists in rural areas seems secure. However, family-practice anesthetists are coming under increasing pressure. Most family physicians, because they are not specialists in anesthesia feel even more vulnerable to the possibility of a malpractice suit than do certified anesthetists. In addition, they must consider the increased cost of malpractice insurance. In an economic sense, many family practitioners believe that anesthesia does not pay. In British Columbia, non-certified anesthetists are paid at approximately the same rate as certified anesthetists. This arrangement sounds, if anything, unfair to certified anesthetists until it is remembered that FP anesthetists must pay office-overhead costs, whereas specialist anesthetists do not. In general, most FPs believe that seeing patients in the office pays better. Frequently patients and surgeons put pressure on FPs to give an anesthetic in cases which, because of the nature of the surgery or the condition of the patient, are beyond the FP anesthetists's competence.

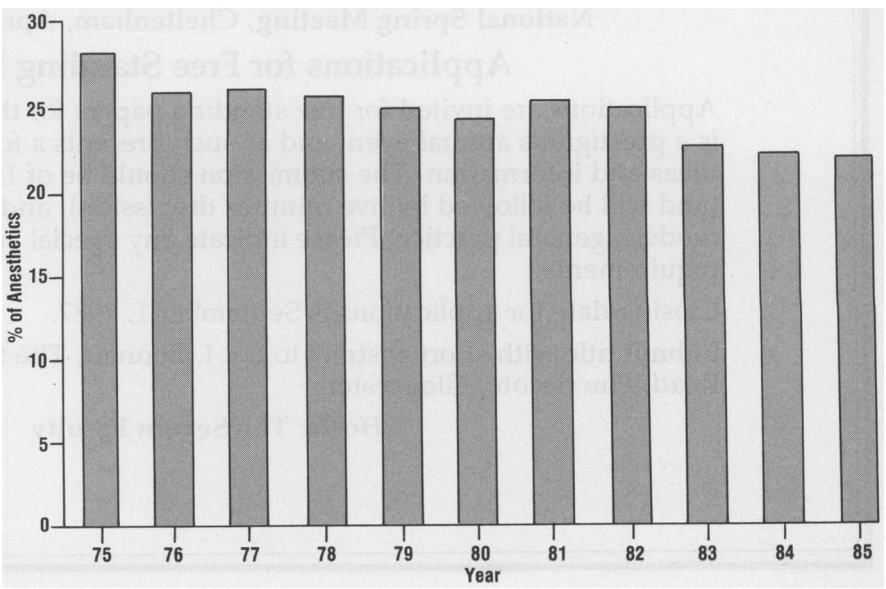
Finally, specialist anesthetists are creating pressure for family-practice anesthesia over the matter of training. Canada's provinces, except for Nova Scotia, which requires two years training in anesthesia, recommend or require that new family-practice applicants for anesthesia privileges have a minimum of six months anesthetic training in a program approved by the Royal College of Physicians and Surgeons of Canada.[6] The College of Family Physicians of Canada has recommended that six-month training programs in family-practice anesthesia continue to be made available. Certified anesthetists in British Columbia

Table 7
Urban/Rural Distribution of Certified Anesthetists and Surgeons in British Columbia

	Greater Vancouver and Victoria[a]		Rest of Province	
	N	%	N	%
FTE certified surgeons	98.36	54.0	83.81	46.0
FTE certified anesthetists	178.43	76.6	54.38	23.1
Total population	1,483,325	51.0	1,426,779	99.0

a. Regional districts 1, 16

Figure 2
Percentage of Anesthetics Administered by FPs/GPs



and other provinces are of the opinion, however, that the current level of training for non-certified anesthetists is inadequate. They have recommended that the minimum requirement for training in FP anesthesia be one year. Rural family physicians and surgeons fear that if this proposal became a requirement, it would increase the difficulty that many rural hospitals experience in obtaining FP anesthetists, and that consequently, the provision of surgery in rural areas would be threatened.

The current result of this difference of opinion is a serious impasse: Family physicians and general surgeons practising in British Columbia demand six-month training courses in anesthesia; the certified anesthetists remain adamant that only one-year minimum courses be provided for FP anesthetists. For the specialist anesthetists, at stake are professional competence, quality of care, and protection of the public interest; family practitioners, for their part, often perceive the attitude of the specialist as obstructionist and self-serving.

It is important to set aside emotions and to assess the problem objectively. There is no reason why family practitioners cannot work as co-operatively with specialist anesthetists as they do, with say, obstetricians, each respecting the other's role and expertise.

Conclusions

It is clear that there will be a continuing need for family-practice anesthetists in many rural areas, and that they must be competent.

General guidelines for the training of family-practice anesthetists should be formulated jointly by the Canadian Association of Anesthetists and the College of Family Practice. The competence of family-practice anesthetists might be assessed partly by examination, and a diploma in anesthesia might be awarded to successful candidates. Practising family-physician anesthetists should have the opportunity to take hands-on refresher courses in teaching at regional centres under the direction of certified anesthetists.

The real sticking point is the matter of professional competence and the safety of family-practice anesthesia. On this important question there are many opinions, but there is little objective information. A prospective study that compared anesthetic complication rates as between FP and certified anesthetists would be of value, in order to settle the sensitive issue of physician competence and patient safety. ◉

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