

Identifying the need for curriculum change

When a rural training program needs reform

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ABSTRACT

OBJECTIVE To identify what changes should be made in the University of British Columbia's rural family practice training program curriculum to help graduates be better prepared to practise.

DESIGN Two cross-sectional surveys via mailed questionnaires: one designed to measure physicians' self-reported preparedness for practice and the other to measure the importance of various rural family medicine components.

SETTING Rural training program graduates and preceptors representing rural communities in British Columbia.

PARTICIPANTS Thirty-nine graduates of the rural training program between 1982 and 1991 and 14 community-based rural training program preceptors representing eight communities throughout the province participated in this study.

MAIN OUTCOME MEASURES Percentage of graduates of the rural program who reported themselves to be underprepared on each family practice item and preceptors' mean scores for the attributed importance to rural practice of each item on this questionnaire.

RESULTS A list of curriculum areas most in need of reform was created. This list included trauma, counseling skills, radiology, vacuum extraction, fracture care, exercising community leadership, cost-effective use of diagnostic tests, using community health resources, obtaining hospital privileges, ophthalmology, dermatology, otolaryngology, personal and professional growth, relationships with other physicians, and personnel issues.

CONCLUSIONS Using both the level of graduates' self-reported underpreparedness and the attributed importance of elements of rural practice, as indicated by the preceptor survey, we developed a list of the areas of the rural training program curriculum most in need of reform.

RÉSUMÉ

OBJECTIF Identifier les changements à apporter au cursus du programme rural de résidence en médecine familiale à l'Université de la Colombie-Britannique afin de mieux préparer les résidents à ce type de pratique.

CONCEPTION Deux enquêtes transversales utilisant des questionnaires postaux : l'une conçue pour mesurer le niveau de préparation à la pratique tel que rapporté par les médecins, et l'autre pour mesurer l'importance des diverses composantes de la médecine en milieu rural.

CONTEXTE Programme de formation en médecine rurale pour les diplômés et les précepteurs représentant les communautés rurales de la Colombie-Britannique.

PARTICIPANTS Ont participé à cette étude trente-neuf diplômés du programme de formation en médecine rurale entre 1982 et 1991 et 14 précepteurs communautaires impliqués dans le programme de médecine rurale représentant huit communautés réparties dans la province.

PRINCIPALES MESURES DES RÉSULTATS Pourcentage des diplômés du programme de médecine rurale qui ont exprimé l'insuffisance de leur préparation dans chacune des questions touchant la pratique familiale, et les cotes moyennes attribuées par les précepteurs sur l'importance pour la pratique rurale de chacun des points apparaissant au questionnaire.

RÉSULTATS On a créé une liste des aspects du cursus nécessitant une réforme. On y retrouve notamment les traumatismes, les habiletés de counselling, la radiologie, l'utilisation de la ventouse obstétricale, le soin des fractures, le leadership communautaire, l'utilisation coût-efficace des tests diagnostiques, l'utilisation des ressources communautaires, l'obtention des privilèges hospitaliers, l'ophtalmologie, la dermatologie, l'oto-rhino-laryngologie, la croissance personnelle et professionnelle, les relations avec les autres médecins et des questions personnelles.

CONCLUSIONS L'utilisation du niveau insuffisant de préparation exprimé par les diplômés et l'importance accordée par les précepteurs aux éléments de la pratique rurale nous a permis d'élaborer une liste des éléments du programme de formation en médecine rurale qui devraient faire l'objet d'une réforme.

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In 1982, as a response to the need for family physicians to serve rural areas, the Department of Family Practice at the University of British Columbia (UBC) initiated a community-based rural training program for family practice residents.¹ These residents spent 2 years in the Department of Family Practice, the first year in urban settings, the second in rural and regional locations.

Forty weeks of the second year were spent in rural settings with community-based faculty members facilitating experiential learning in an academically monitored environment. In addition, 10 weeks of elective time were spent in regional hospitals and offices of specialists and family physicians with special skills. The final 2 weeks of training were spent at the UBC Department of Family Practice in Vancouver participating in workshops related to areas of perceived need identified by the residents.

The rural training program has had an encouraging retention rate of graduates in rural and regional areas.² Rural communities were defined as those 40 km from a regional medical centre, having populations of 2500 residents or fewer, and having fewer than 20 participating physicians; or communities 80 km away from a regional medical centre having up to 6000 people. A regional medical centre has a regional hospital and specialists for referral.

Using these definitions, 51% of the graduates were practising in rural areas and 20.5% in regional areas at the time of evaluation. These are encouraging numbers given the fact that only 18.6% of Canada's general and family physicians are located in rural areas if rural communities are defined as having a population up to 10000 people.³

Results of an outcome study to compare the graduates of this program between 1982 and 1991 with a random sample of non-program-trained physicians working in rural communities in British Columbia² suggested the structured, community-oriented rural training program had a beneficial effect. More specifically, based on a self-reported sense of preparedness in eight different medical subject areas, looking at the aggregated items in each category, the graduates

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of the rural program indicated that they felt better prepared in four of them (family medicine, behavioural sciences, community medicine, and practice management), while rural physicians without the structured rural training indicated that they felt better prepared only in medical subspecialties. In the remaining three areas, pediatrics, obstetrics and gynecology, and surgical preparation, no significant differences overall appeared between the two groups.

Even though comparison of graduates of the program and non-program-trained rural physicians showed a beneficial effect of the rural training program over unstructured training, we cannot conclude that the graduates were necessarily *adequately* prepared for practice, nor does the comparison provide any indication of where the program could be improved. Further, little literature on rural family practice curriculum addresses which elements of family practice are most important for rural practice. Important principles of practice have been discussed,^{4,5} but without any reference to more specific training for physicians in rural areas.

The following analysis identifies what changes should be made in the rural training program curriculum at UBC to help make graduates better prepared to practise.

METHODS

Research design

We used two cross-sectional surveys to identify areas of the curriculum in need of reform. One survey measured attributed importance of each component of rural family practice, judged by preceptors of the program. The other survey measured the level of preparedness of program graduates.

Instruments

Graduates' preparedness questionnaire. The preparedness component of this research project was based on responses to the questionnaire used to evaluate all graduate residents from the family practice program. The questionnaire was divided into three parts. Part 1 asked respondents to provide a personal profile, a practice profile, and a training profile. Part 2 asked respondents about preparation for practice in various areas of family medicine, and part 3 evaluated respondents' level of satisfaction with various factors related to professional and personal life. This analysis focuses on part 2 only.

In part 2 of the questionnaire, respondents were asked to indicate whether they felt underprepared,

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Table 1. Items of rural family practice considered high priority for curriculum change

ELEMENTS IN RURAL FAMILY PRACTICE	PRECEPTOR SURVEY	GRADUATE SURVEY
	MEAN SCORE* OF IMPORTANCE FOR PRACTICE (N = 14)	GRADUATES WHO FEEL UNDERPREPARED (N = 39) %
FAMILY MEDICINE		
Personal and professional growth	4.2	28.9
Cost-effective use of diagnostic tests	3.8	24.3
MEDICAL SUBSPECIALTIES		
Dermatology	3.6	31.6
Radiology	4.0	26.3
OBSTETRICS AND GYNECOLOGY		
Vacuum extraction	4.0	32.4
SURGICAL PREPARATION		
Ophthalmology	3.6	42.1
Fracture care	4.0	42.1
Trauma	4.0	31.6
Otolaryngology	3.5	27.0
BEHAVIOURAL SCIENCES		
Counseling skills	4.0	23.7
COMMUNITY MEDICINE		
Exercising community leadership	3.8	33.3
Using community health resources	3.8	26.3
Obtaining hospital privileges	3.7	23.7
Relationships with other physicians	4.1	15.8
PRACTICE MANAGEMENT		
Personnel issues	3.5	34.2

*Score based on a scale increasing in importance from 1 to 5.

adequately prepared, or overprepared in the family practice content of the following subject areas: family medicine, medical subspecialties, pediatrics, obstetrics and gynecology, surgical preparation, behavioural sciences, community medicine, and practice management. The family practice content within subject areas was represented by a list of items describing specific tasks or subjects. This questionnaire was administered in 1992.

Preceptor questionnaire. The questionnaire used for prioritizing items of rural family practice in the

preceptor survey comprised all items listed in part 2, but instead of looking at preparedness, respondents were asked to rate the importance of each item using a five-point scale. Rural practice items were prioritized by asking rural physicians to indicate how important they considered each item for rural practice. They responded using the following five-point scale: 1—not at all important, 2—somewhat important, 3—important, 4—very important, and 5—extremely important for rural practice. This questionnaire was administered in 1995.

Subjects

Preparedness survey. The group of residents asked to participate in the evaluation comprised all those who had graduated from UBC's rural-based residency training program before 1991. Of the 46 rural residency-trained physicians identified to take part in the study, 84.8% (39 physicians) responded. Most responders were male (71.8%), and the average age was 34.9 years. All of these graduates had completed the 24 months of rural family practice training, and 13 had also completed additional skills training beyond this program, for the most part in the areas of anesthesia and emergency medicine.

Preceptor survey. A sample of 14 of the program's rural community-based preceptors prioritized the rural medicine components. Responding preceptors represented eight of the nine rural sites that were sent the questionnaire. In order to be included in this survey, preceptors had to have worked in a community fitting the rural definition for longer than 5 years and had to be familiar with all aspects of rural family practice included in the questionnaire. The sample size was kept small because these preceptors represent what could be considered an expert survey.

Method of analysis

The percentage of respondents who indicated that they were underprepared was calculated for each item in part 2. A mean score of importance for rural practice was also calculated for all 65 items based on the preceptor rating. Using the results of these two calculations, a list of high-priority family practice items was formulated. For all items receiving a mean score of 4.0 to 5.0, we decided that an underprepared percentage of 10 or more was unacceptable. In other words, for the items ranked with the greatest importance as judged by the preceptor survey, if 10% or more graduates reported themselves underprepared, those items were viewed as areas of the curriculum

in need of reform. For items with a mean score between 3.5 and 3.9, 20% or greater responses indicating underpreparedness ranked them high priority for curriculum reform.

RESULTS

Table 1 displays the items considered high priority for curriculum change, and **Table 2** displays the items considered low priority using our sliding scale criteria. Curriculum changes to be given the highest priority are as follows. Under the category of family medicine, personal and professional growth and cost-effective use of diagnostic tests were identified. Under the category of medical subspecialties, radiology and dermatology were identified; under the heading of surgical preparation, trauma, fracture care, ophthalmology, and otolaryngology were identified. Under obstetrics and gynecology, vacuum extraction was identified; under behavioural sciences counseling skills were identified. In the area of community medicine, using community health resources, exercising community leadership, obtaining hospital privileges, and relationships with other physicians were all identified. Finally, in the practice management category, personnel issues were high priorities.

DISCUSSION

Method of analysis

Defining underpreparedness of graduates in an objective, reliable way to satisfy all concerns of residents, practising physicians, and medical educators is extremely difficult. While we could have chosen an arbitrary percentage of perceived underprepared responses as a cutoff point to indicate the need for curriculum change, this was not a reasonable solution to this problem for two main reasons. First, what should the actual cutoff point be? This would end up being a rather subjective and perhaps controversial decision. Second, it could be inappropriate to judge distinct elements of practice having different consequences and urgency with the same criteria. For these reasons, we decided that two main criteria, percentage of underprepared responses and importance to rural practice, must be considered together.

Sampling scheme

Because the rural physicians who rated priority for our survey were preceptors in the rural training program, it is possible that the underprepared responses correspond to the priority levels attributed to the

Table 2. Items of rural family practice considered lower priority for curriculum change

ELEMENTS IN RURAL FAMILY PRACTICE	PRECEPTOR SURVEY	GRADUATE SURVEY
	MEAN SCORE* OF IMPORTANCE FOR PRACTICE (N = 14)	GRADUATES WHO FEEL UNDERPREPARED (N = 39) %
FAMILY MEDICINE		
Cross-cultural issues	3.4	34.2
Family structure and function	3.4	21.6
Psychosomatic problems	3.7	18.9
Health promotion	3.6	18.4
Emergency evacuation skills	3.9	16.7
Psychosocial components of major medical illness	3.7	16.2
Arranging for continuing medical education	3.7	16.2
Pharmacology of family practice	3.9	13.2
Referral and consultation	3.6	10.8
Doctor-patient relationship	4.2	8.1
Providing health maintenance (periodic health examinations)	3.2	7.9
Care of common clinical problems	4.2	5.3
In-hospital management of patients	4.1	2.7
MEDICAL SUBSPECIALTIES		
Rehabilitation	3.1	50.0
Allergy	2.9	39.5
Rheumatology	3.1	31.6
Neurology	3.4	28.9
Hematology	2.9	26.3
Nephrology	2.9	26.3
Cardiology	3.6	13.2
Infectious disease	3.6	13.2
Respirology	3.8	10.5
Gastroenterology	3.5	7.9

continued...

*Score based on a scale increasing in importance from 1 to 5

various items, as the preceptors are likely to emphasize areas of practice that they consider most important. Even so, the items listed in **Table 1** indicate that areas of practice assigned a high level of importance still showed a substantial level of self-reported underpreparedness. In this light, this analysis will be valuable for the preceptors of the program to monitor

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Table 2 (continued)

ELEMENTS IN RURAL FAMILY PRACTICE	PRECEPTOR SURVEY	GRADUATE SURVEY
	MEAN SCORE* OF IMPORTANCE FOR PRACTICE (N = 14)	GRADUATES WHO FEEL UNDERPREPARED (N = 39) %
PEDIATRICS		
Learning problems of childhood	3.2	52.6
Development disorders	3.3	31.6
Chronic childhood illnesses	3.4	18.4
Well baby and child development	3.7	5.3
Newborn care	4.2	2.6
Acute childhood illnesses	3.9	0.0
OBSTETRICS AND GYNECOLOGY		
Forceps delivery	3.3	78.9
Cesarean section	2.9	57.9
Gynecologic surgical management	2.4	31.6
Gynecologic medical management	3.8	10.5
Prenatal and postnatal care	4.3	2.6
Uncomplicated delivery	4.5	2.6
SURGICAL PREPARATION		
Urology	2.9	26.3
Emergency surgery	3.0	21.6
General surgery	2.8	13.2
Office surgery and procedures	3.7	13.2
BEHAVIOURAL SCIENCES		
Psychiatry disorders	3.9	13.2
Stages of human development	3.0	13.2
Behaviour disorders	3.7	10.5
COMMUNITY MEDICINE		
Assessing community health needs	3.1	42.1
Understanding hospital organization and management	3.4	39.5
Medical and local priorities	3.4	18.4

*Score based on a scale increasing in importance from 1 to 5

whether the elements they believe are most important are reflected in graduates' level of preparation.

Limitations

An important limitation of this study is the unknown correlation between confidence and competence. Because the preparedness questionnaire looked at personal perceptions of preparedness, it is evident that different personality characteristics will contribute to

the responses of residents. Residents who are generally more insecure are more likely to rate themselves as underprepared than more confident residents. It is impossible to predict how many of the underprepared responses are due to personality characteristics rather than true deficit in training. For this reason alone, a small percentage of underprepared responses in each category would be considered reasonable.

Conversely, some self-reported preparedness could reflect a false sense of competence. One of the goals of training is to develop appropriate self-assessment of skills and abilities. The best-case scenario would be to have all graduates display adequate preparation in practice and appropriate confidence in their abilities.

Conclusion

The need for outcome-measured, high-quality rural family practice training programs has been documented.⁶ Given the lack of literature outlining the most important elements of rural family practice, we believe that the preceptor survey was a valuable contribution in this area. By combining the attributed importance of each item for rural practice with the graduates' perceived preparedness, a useful guideline for curriculum change has been created. ♣

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