Family medicine curriculum

Improving the quality of academic sessions

Douglas Klein MD MSc CCFP **Shirley Schipper** MD CCFP

ABSTRACT

PROBLEM ADDRESSED The Family Medicine Residency Program at the University of Alberta has used academic sessions and clinical-based teaching to prepare residents for private practice. Before the new curriculum, academic sessions were large group lectures given by specialists. These sessions lacked consistent quality, structured topics, and organization.

OBJECTIVE OF PROGRAM The program was designed to improve the quality and consistency of academic sessions by creating a new curriculum. The goals for the new curriculum included improved organizational structure, improved satisfaction from the participants, improved resident knowledge and confidence in key areas of family medicine, and improved performance on licensing examinations.

PROGRAM DESCRIPTION The new curriculum is faculty guided but resident organized. Twenty-three core topics in family medicine are covered during a 2-year rotating curriculum. Several small group activities, including problem-based learning modules, journal club, and examination preparation sessions, complement larger didactic sessions. A multiple-source evaluation process is an essential component of this new program.

CONCLUSION The new academic curriculum for family medicine residents is based on a variety of learning styles and is consistent with the principles of adult learning theory. This structured curriculum provides a good basis for further development. Other programs across the country might want to incorporate these ideas into their current programming.

RÉSUMÉ

PROBLEME À L'ÉTUDE Le programme de résidence en médecine familiale à l'université d'Alberta s'est servi de cours académiques et d'enseignement clinique pour préparer les étudiants à la pratique privée. Avant ce nouveau curriculum, les cours académiques étaient des cours donnés par des spécialistes à des grands groupes. Ces cours n'avaient pas toujours la qualité, les sujets structurés et l'organisation idéaux.

OBJECTIF DU PROGRAMME Le programme a été conçu pour améliorer la qualité et la cohérence des cours académiques grâce à un nouveau curriculum. Parmi les buts du curriculum, mentionnons l'amélioration de la structure organisationnelle, de la satisfaction des participants, des connaissances et de la confiance des résidents dans des domaines clés de la médecine familiale, et de leur performance aux examens d'aptitude à la pratique.

DESCRIPTION DU PROGRAMME Le nouveau curriculum est dirigé par la faculté, mais organisé par les résidents. Vingt-trois sujets de base sont couverts durant les 2 ans du curriculum rotatoire. Plusieurs activités en petits groupes incluant des modules d'apprentissage par problèmes, des clubs de lecture et des sessions de préparation aux examens complètent les grands cours didactiques. Un processus d'évaluation à plusieurs volets représente un élément essentiel de ce nouveau programme.

CONCLUSION Le nouveau curriculum académique pour les résidents en médecine familiale comporte une variété de styles d'apprentissage, en accord avec les principes de la théorie de l'apprentissage des adultes. Ce curriculum structuré constitue une bonne base pour l'apprentissage ultérieur. D'autres programmes au pays pourraient être intéressés à intégrer ces idées dans leur curriculum actuel.

This article has been peer reviewed.
Cet article a fait l'object d'une révision par des pairs.
Can Fam Physician 2008;54:214-8

The residency program in family medicine at the University of Alberta has used academic sessions in addition to clinical-based teaching to prepare residents to enter private practice. In the past, these monthly academic half-days (AHDs) were organized and driven by residents. Most of these sessions involved didactic large group lectures conducted by specialists or, rarely, family physicians. The quality of these sessions was inconsistent and they lacked proper organization. Many important topics were missed while others were repeated within the same year. A survey of the residents showed poor satisfaction with the organization of AHDs. There was concern about how to study for examinations and prepare for practice. Residents desired structure and faculty involvement, and there was general frustration with organizing duties of the AHD committee.

Principles

The College of Family Physicians of Canada states that the training of family physicians should incorporate adult learning principles.[1] The adult learning principles originally developed by Knowles et al[2] have been clearly summarized by Kaufman as the following principles[3]:

1. Establish an effective learning climate, where learners feel safe and comfortable expressing themselves.
2. Involve learners in mutual planning of relevant methods and curricular content.
3. Involve learners in diagnosing their own needs.
4. Encourage learners to formulate their own learning objectives.
5. Encourage learners to identify resources and devise strategies to achieve their objectives.
6. Support learners in carrying out their learning plans.
7. Involve learners in evaluating their own learning.

Considerations

As opposed to entering residency as adult learners, family medicine residents enter their postgraduate training in a state of transition. They are actually moving between a pedagogy (the teaching of children) model and an andragogy (the teaching of adults) model.[4] There is some suggestion that progression through medical school can actually cause a decline in students' comfort with aspects of adult learning, such as self-directed learning.[5] With this in mind, the academic curriculum must recognize that the resident physicians might not be adult learners and strive to help move residents along the continuum of adult learning.

Dr Klein *is an Assistant Professor in the Department of Family Medicine and Assistant Director of the Division of Continuous Professional Learning at the University of Alberta in Edmonton.* **Dr Schipper** *is an Assistant Professor in the Department of Family Medicine at the University of Alberta.*

In addition to incorporating adult learning theory, one must also consider cognitive style when developing a curriculum. Riding and Cheema have completed an extensive review of previous work on learner styles.[6] One such model, the learning process model, was postulated by Honey and Mumford.[7] The 4 types of learners are as follows[8]:

- activists—individuals who welcome new ideas and experiences;
- reflectors—individuals who favour reflection, considering implications, and gathering data;
- theorists—individuals who assimilate, integrate new material, and incorporate experiences; and
- pragmatists—individuals who try out new knowledge.

The academic curriculum needs to recognize that there are various learning styles among residents.

Finally, the curriculum, based on education theory and a variety of learning styles, should have a multitude of teaching methods that can be used. According to McEvoy, an academic curriculum for general practice should include facts, concepts, and values.[4] Didactic sessions are still the best way to convey factual information to a large group in a limited time.[4] Small group sessions help develop problem-solving skills and critical reasoning, both concepts and values fundamental to family medicine.[4,9] The new curriculum integrates these different methods of teaching.

Objectives of the program

In May 2003, a group of residents and faculty members sat down to discuss ways to improve academic learning. It was agreed that the key elements missing from residents' educations were small group interaction and a structured curriculum of learning. Thus, in July of 2003, a new curriculum of academic activities began, initially as a pilot. After positive review from the residents and faculty, this was established as the new Family Medicine Residency Academic Curriculum. The program has successfully run for more than 4 years and has expanded. The Rural Alberta North Family Medicine Residency Program has also adopted the curriculum.

The goals for the new curriculum included improved organizational structure, improved satisfaction from the participants, improved resident knowledge and confidence in key areas of family medicine, and improved performance on licensing examinations.

Program description

The new academic curriculum is in addition to the clinical rotations throughout the 2-year residency program and to academic activities that can be linked to specific rotations (eg, internal medicine grand rounds, behaviour medicine sessions during family medicine rotation). The program is faculty guided and resident organized (Kaufman's principle 3). An overview of the program's

academic activities is shown in **Table 1.**[10] Twenty-three core topics in family medicine are covered during a 2-year rotating curriculum; thus, if residents start with Year B, they will end with Year A (**Table 2**).

Each topic is covered during 2 AHDs each month. Residents as a group identify what objectives they want covered during the AHD sessions and then plan the activities for each month (Kaufman's principles 3 and 4). All of the sessions, small group work, or lectures during that month are on the monthly topic. **Table 3**[10] shows an example of ADH activities associated with a month's topic. Resident time is protected to attend the half-days and attendance is mandatory.

Table 1. Overview of academic activities

2-year rotating curriculum (Years A and B)
- 1 topic per month
- 2 academic half-days per month

Second Wednesday evening of every month
- Large group learning (approximately 90 first- and second-year family medicine residents) held centrally at the University of Alberta
- 3 1-hour didactic sessions
- 1 specialist and at least 1 family physician (ideally)
- Quarterly evidence-based literature review by family physician

Fourth Thursday morning of every month
- Small group learning (approximately 15 to 20 first- and second-year family medicine residents) held at each of 5 teaching sites throughout Edmonton and supervised by an on-site faculty member
- 1-hour educational module[10] that is relevant to the monthly topic; a first-year resident leads the activity
- 1-hour critical appraisal of a journal article that is related to the topic of the month; a second-year resident leads the activity and selects and distributes the article
- 1-hour short-answer management problems from questions developed and maintained by faculty (some questions modeled after the self-learning modules of the College of Family Physicians of Canada)

Program components

The program has several components.

Large group learning. The first AHD per month consists of 3 1-hour large group sessions. The specific goal of these sessions is to provide consistent and factual information to all residents in the program in a safe learning environment (Kaufman's principle 1). Previously, residents were taught key concept information while on clinical rotation by specialists without emphasis on family medicine relevance. Residents requested didactic teaching relevant to family medicine. Key concepts are best learned in didactic sessions followed by the application of knowledge into the experiential learning during clinical rotations (eg, oral contraceptive advice or insulin management). Interactivity was obtained at the large didactic sessions by using faculty with skills to engage a large audience. Because one topic is done regularly every second year, speakers are easier to book and arrange.

Table 2. Academic half-day rotating 2-year schedule

MONTH	TOPIC FOR YEAR A	TOPIC FOR YEAR B
July*	Genitourinary system	Skin
August	Mental health	Neurology
September	Low-risk birthing	Endocrine system
October*	Child health	Hematology and oncology
November	Care of the elderly	Musculoskeletal system
December	Addictions and toxicology	Cross-cultural issues
January*	Digestive system	Women's health
February	Heart	Kidney
March	Lungs	Head and neck
April*	Preventive health	Palliative care
May	Urgent and emergency care 1	Emergency care 2 and infections
June	Research 1	Research 2

*Additional 30-minute session on evidence-based review of current literature.

Table 3. Example of academic half-day activities associated with a month's topic

JULY, YEAR A: GENITOURINARY SYSTEM		
	TOPIC	SPECIALIST
Wednesday AHD lectures		
• 1:00-2:00	New issues in sexually transmitted disease management	Dr Specialist
• 2:00-3:00	Benign prostatic hypertrophy	Dr Family Physician
• 3:00-4:00	Incontinence overview and pessary workshop	Incontinence clinic Registered Nurse
Thursday AHD small group learning		
• 9:00-10:00	Educational modules[10]—renal stones	N/A
• 10:00-11:00	Journal club—pitfalls of the prostate-specific antigen test	
• 11:00-12:00	Practising Short Answer Management Problems—testicular torsion, benign prostatic hypertrophy, sexual dysfunction, sexually transmitted diseases, and urinary tract infection in a child	

AHD—academic half-day.

Small group learning. The second monthly AHD is a 3-hour small group session held at each core family medicine teaching site. Between 15 and 20 first- and second-year residents attend the sessions at each site. Each session is facilitated and supported by a faculty member from that teaching site (Kaufman's principle 6). The goal of these sessions is to develop problem-solving skills, presentation skills, and skills in facilitating the group sharing of clinical experiences. During the first hour, residents break into smaller groups (usually 5 to 7 per group) and they work through an educational module. One first-year resident facilitates each small group to proceed through the cases and the faculty is present for support (Kaufman's principle 6).

The second hour is journal club. A second-year resident preselects a clinical question that is relevant to the resident's learning needs (Kaufman's principle 4). The resident performs a literature review and selects an article that addresses the question (Kaufman's principle 5). Each small group critically appraises the article while the facilitating resident encourages the sharing of experiences and learning from one another. Resources for evaluating the medical literature are available for use during these sessions.

The third hour is spent practising Short Answer Management Problems related to the monthly topic. The questions are presented as a slide show and the residents self-assess their knowledge of patients' problems (Kaufman's principle 3 and 4). Residents work in groups to come up with answers and discussion is facilitated by the faculty member. The residents often generate further objectives that reflect a knowledge gap, which they will address on their own (Kaufman's principle 4 and 7). The AHDs are continuously modified in response to feedback.

Evaluation component. Several steps have been initiated to evaluate changes occurring as a result of this new academic curriculum. Every speaker at the first AHD is evaluated by all residents. The standard evaluation form consists of both a 10-point Likert scale and an opportunity for comments about each speaker. Speakers who are positively evaluated are kept on the speaker roster for future AHDs. During the second AHD evaluation, forms use a 10-point scale and a commentary section to rate the AHD as well as the faculty facilitator. Group discussions among residents provide further feedback on AHD sessions. Once a year, the family medicine residents complete a survey to rate their confidence in specific therapeutic areas, examination preparation, and the overall effectiveness and their satisfaction with the academic curriculum (Kaufman's principle 7). Assessment of performance in licensing and certification examinations will also be used to evaluate the new curriculum.

Academic half-day committee

An AHD committee oversees and organizes the AHDs. It consists of 2 faculty members, 2 co-chief residents, a department secretary, and 2 representatives from each teaching site (one from each year). The faculty and co-chiefs meet twice a year (Kaufman's principle 6). The full resident group meets every 3 months. The committee's responsibilities include organizing speakers, selecting modules, reviewing evaluations, and generating feedback.

Discussion

The new curriculum appears to be an improvement over the previous approach. The ongoing evaluation process will provide evidence on the effects of this new curriculum. At this point, we can only justify the design through previous evidence-supported theory. This new program reflects the current learning needs of resident physicians while introducing and encouraging the concepts of adult learning theory. The program provides, as requested by residents, structured, consistent, and high-quality presentations of key concepts through didactic teaching methods that can be applied during clinical rotations and in small group learning settings. In addition, the program recognizes that resident physicians come into their teaching sessions with unique individual experiences and encourages them to share experiences and learn from one another.

One critical component of the program is its flexibility to change and respond to the needs of the resident population. At the end of the first 2 years the full program was reviewed by the Residency Program Committee and future changes were discussed. The monthly topics were changed from being specialty based (eg, gynecology) to more family medicine oriented (eg, women's health). The journal article review was modified to a critical appraisal of an article related to a practice question. The practice management questions were improved.

Future ideas for improvement include the implementation of third and fourth AHDs for second-year residents to incorporate areas that are still missing from the curriculum. There are many more areas that need better coverage in the curriculum, including ethics, counseling, applications of behavioural medicine, skills training, and advanced management for chronic disease. A list of recommended reading material would direct residents to resources about specific topics that might not be covered during the month.

Ideally, this program could be compared with other descriptions of programs implemented across the country and around the world. Unfortunately, this process is limited to what has actually been published. There are no papers describing family medicine residency AHD programs from Canadian universities. There were very few articles describing the format of academic days from any source. There is one American paper that describes development and implementation of a similar rotating curriculum in 3 residency programs.[11] The authors suggested that having a well-organized and comprehensive program made more efficient use of faculty time, prevented repetition of topics, and resulted in better coordination of educational activities.

Two handbooks from the United Kingdom do provide some guidance on the development of an academic

curriculum for general practitioners.[4,12] McEvoy provides important background information useful in changing or improving an academic curriculum for general practitioners.[4] Hand and McKee describe several problems encountered through the training of general practitioners in the hospital setting.[12] The problems that they suggest include the lack of educational objectives, little relevance to general practice, and the lack of both personal feedback and protected teaching time. Our new curriculum incorporates suggestions and addresses several of the concerns raised by these authors.

While no Canadian descriptive papers have been published, there is information available about programs via the Internet. Most Canadian programs are similar when it comes to the structure of their AHD programs. A review of family medicine residency program websites revealed that most programs have an academic or education half-day or full day.[13] Academic days ranged from once a week to once a month. Duration was anywhere from 1 to 3 hours, with the occasional full-day session. Most programs were lecture based with some universities, such as Dalhousie in Halifax, NS, and McMaster University in Hamilton, Ont, having small group components. A few schedules were available on-line for review, which showed a variety of topics with no particular order or format.

There are also very few articles describing specialty AHD programs. One Canadian paper described neurology academic half-day programs across the country.[14] Many had courselike features, such as examinations and required textbooks. The websites for specialty residency programs, such as the internal medicine program at the University of British Columbia in Vancouver and the pediatric program at Queen's University in Kingston, Ont, often display the content of their AHD programs.[15]

In the United States, there have been some studies that describe the evaluation of components of an academic curriculum. In 1999, Slawson and Shaughnessy published a study that examined the academic curriculum focusing on information mastery within a family practice residency in the United States.[15] Three additional articles were published evaluating sessions on medical informatics, evidence-based medicine, and journal clubs.[16-18]

Conclusion

A new academic curriculum for family medicine residents is presented. This curriculum is clearly more organized and comprehensive than the approach that preceded it, and it is consistent with the theory of learning styles and the principles of adult learning theory presented by Knowles and colleagues.[2] Other schools across the country might want to incorporate these ideas into their current programs.

Competing interests

None declared

EDITOR'S KEY POINTS

- In addition to clinical-based teaching, family medicine residency programs often have formal teaching time set aside to provide a core curriculum. Historically, these programs have often consisted of large didactic sessions.
- This paper presents one residency program's attempt to provide a comprehensive and organized curriculum, which is also based on the principles of adult learning theory and learning styles. A key component is its flexibility to change and respond to the needs of the current residents.

POINTS DE REPÈRE DU RÉDACTEUR

- En plus de l'enseignement de nature clinique, les programmes de résidence en médecine familiale réservent souvent des périodes d'enseignement formel pour constituer un tronc commun. Historiquement, ces programmes ont souvent consisté en grands cours magistraux.
- Cet article décrit les efforts d'un programme de résidence pour offrir un curriculum complet et organisé, qui s'appuie aussi sur les principes de la théorie de l'apprentissage adulte et sur différents styles d'apprentissage. Une composante clé est sa flexibilité lui permettant de changer et de répondre aux besoins des résidents.

Correspondence to: **Dr Douglas Klein**, *Department of Family Medicine, Faculty of Medicine and Dentistry, University of Alberta, 205 College Plaza, Edmonton, AB T6G 2C8; e-mail* **doug.klein@ualberta.ca**

References

1. College of Family Physicians of Canada. *The postgraduate family medicine curriculum: an integrated approach*. Mississauga, ON: College of Family Physicians of Canada; 1995. Available from: **http://www.cfpc.ca/English/cfpc/education/home/default.asp?s=1**. Accessed 2007 October 31.
2. Knowles MS, editor. *Andragogy in action: applying modern principles of adult learning*. San Francisco, CA: Jossey-Bass Publishers; 1984.
3. Kaufman D. Applying educational theory in practice. *BMJ* 2003;326(7382):213-6.
4. McEvoy P. *Educating the future GP: the course organizer's handbook*. 2nd edition. Abingdon, Engl: Radcliffe Medical Press; 1998.
5. Harvey B, Rothman A, Frecker R. Effect of an undergraduate medical curriculum on students' self-directed learning. *Acad Med* 2003;78(12):1259-65.
6. Riding R, Cheema I. Cognitive styles: an overview and integration. *Educ Psychol* 1991;11:193-215.
7. Honey P, Mumford A. *The manual of learning styles*. Maidenhead, UK: Peter Honey Publications; 1986.
8. Neighbour R. Icarus and Daedelus: myths, methods, and motivation in vocational training. *Post Ed Gen Prac* 1990;1:165-73.
9. Engel C. Problem-based learning. *Br J Hosp Med* 1992;48(6):325-9.
10. Ross DJ, Allan GM, Hughes S. Hypertension: what's new and what's true. *Found Med Pract Educ* 2005;13(12):1-17.
11. Zweifler J, Ringel M, Maudlin R, Blossom J. Extended educational sessions at three family medicine residency programs. *Acad Med* 1996;71:1059-63.
12. Hand C, McKee A. Educating the GP in a primary care-led NHS: what are the problems with training in hospitals. In: Field S, Strachan B, Evans G, editors. *The general practice jigsaw: the future of education, training and professional development*. Abingdon, Engl: Radcliffe Medical Press; 2001.
13. Canadian Resident Matching Service. *Program descriptions*. Ottawa, ON: Canadian Resident Matching Service; 2007. Available from: **http://www.carms.ca/eng/r3_program_descriptions_e.shtml**. Accessed 2007 November 1.
14. Chalk C. The academic half-day in Canadian neurology residency programs. *Can J Neurol Sci* 2004;31(4):511-3.
15. Slawson DC, Shaughnessy A. Teaching information mastery: creating informed consumers of medical information. *J Am Board Fam Pract* 1999;12(6):444-9.
16. Grad R, Macauley A, Warner M. Teaching evidence-based medical care: description and evaluation. *Fam Med* 2001;33:602-6.
17. Schwiebert L, Aspy C. Didactic content and teaching methodologies on required allopathic US family medicine clerkships. *Fam Med* 1999;31:95-100.
18. Van Derwood J, Tietze P, Nagy M. Journal clubs in family practice residency programs in the southeast. *South Med J* 1991;84:483-7.