Training family medicine residents to care for children

What is the best approach?

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Abstract

**Problem addressed** There is a lack of consensus around the optimal way to train family medicine residents to care for children.

**Objective of program** Evaluation of an ambulatory versus an inpatient pediatrics rotation for family medicine residents.

**Program description** A 4-week pediatrics rotation for second-year family medicine residents was introduced involving half-day ambulatory pediatric clinics. A nonequivalent control group evaluation study design was followed. Patient logbook entries, as well as residents’ satisfaction, knowledge, and self-reported confidence outcomes were compared between family medicine residents completing the new ambulatory rotation and those completing a traditional inpatient-ambulatory pediatrics rotation.

**Conclusion** An ambulatory rotation in pediatrics is a feasible option for facilitating family medicine resident learning in child health care. Residents report exposure to more patient cases that reflect a family practice office setting and the same level of knowledge and confidence as residents completing an inpatient-ambulatory rotation. Intraprofessional collaboration, flexibility in scheduling, and the support of pediatric preceptors are key factors in the organization and implementation of an ambulatory rotation.

Résumé

**Problème à l’étude** Il n’y a pas de véritable consensus sur la meilleure façon de former les résidents en médecine familiale relativement aux soins aux enfants.

**Objectif du programme** Évaluation d’un stage en pédiatrie en clinique externe versus à l’hôpital pour les résidents en médecine familiale.

**Description du programme** Un stage de 4 semaines en pédiatrie comprenant des demi-journées en clinique externe de pédiatrie a été instauré pour les résidents de deuxième année de médecine familiale. On a utilisé un devis expérimental de type évaluation avec groupe témoin non équivalent. On a comparé les inscriptions de patients dans les registres ainsi que les issues en terme de satisfaction, de connaissances et de confiance exprimées par les résidents qui terminaient le nouveau stage en milieu externe par rapport à ceux qui terminaient le stage traditionnel en pédiatrie combinant milieux hospitalier et externe.

**Conclusion** Il est possible d’offrir aux résidents en médecine familiale un stage extra-hospitalier en pédiatrie pour faciliter leur apprentissage des soins aux enfants. Les résidents ont déclaré avoir été exposés à plus de cas correspondant à un contexte de pratique familiale et ont rapporté un même niveau de connaissances et de confiance que ceux qui avaient fait

EDITOR’S KEY POINTS

• An ambulatory clinic-based rotation in pediatrics is a feasible option to facilitate family medicine residents’ learning in child health care.

• Family medicine residents who participated in a child health ambulatory rotation reported exposure to more patient cases that reflected family practice office settings, and they recorded knowledge and confidence outcomes comparable to residents who completed inpatient-ambulatory rotations.

• Support of pediatric preceptors is essential in the development and implementation of an ambulatory clinic-based rotation in pediatrics for family medicine residents.

POINTS DE REPÈRE DU RÉDACTEUR

• Il est possible d’offrir aux résidents en médecine familiale un stage en pédiatrie dans une clinique externe pour faciliter leur formation dans le domaine des soins aux enfants.

• Les résidents qui ont participé à un stage en pédiatrie en clinique externe ont déclaré avoir été exposés à plus de cas correspondant à la pratique familiale et ont rapporté des résultats comparables à ceux des résidents qui avaient fait des stages hospitaliers, en termes de connaissance et de confiance.

• Il faut l’appui de précepteurs en pédiatrie pour développer et instaurer un stage de pédiatrie en milieux hospitalier et clinique pour les résidents en médecine familiale.
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Program Description  

Children constitute a large proportion of a family physician’s patient population. As a key member of the primary health care team, the family physician is able to assess and intervene early in developmental problems that could have serious lifelong health implications. The College of Family Physicians of Canada’s (CFPC’s) Task Force on Child Health reported that family physicians were uniquely positioned to participate in and coordinate complete health care for children. Pediatric training experiences are extremely important in preparing family physicians for future practice. According to the CFPC accreditation criteria, residents must be exposed to clinical settings with an adequate volume of office visits by children and adolescents to learn the diagnosis and management of common pediatric and adolescent problems that present in the family practice setting. International curriculum guidelines for the care of children have also been published in the United States and the United Kingdom with similar recommendations.

In a key report, Barer and Stoddart noted the importance of immersing residents in appropriate clinical settings, so they can gain optimal exposure to the type of patients they might encounter in future practice. Poole et al reported that family practice residencies needed a competency-based curriculum derived from actual pediatric experience in family practice. Pediatric training for family medicine residents should include attention to newborn care, neonatology, well-baby care, infectious disease, allergy, immunology, behavioural problems, learning disabilities, childhood illness, and adolescent care. More recently, it has been suggested that curriculums should focus on recognition of the sick child, acute and chronic organic illnesses, and structured adolescent health experiences. Respondents to a CFPC survey on child health care reported that family physicians should be knowledgeable about common and acute childhood problems, as well as learning disabilities, and be prepared to deal with the effects of family violence, addictions, family conflict, and separation or divorce on children.

Melville and colleagues state that there is controversy about the most effective way to train family physicians for the pediatric challenges they will face in practice, in particular what should be included in training, what should be left out, and how long it should last. In the United Kingdom, as well as in Canada and the United States, pediatric training has been largely inpatient hospital-based. For example, some studies have found that excessive exposure to neonatology, particularly neonatal intensive care, was perceived as generally irrelevant for family practice trainees. Declining hospitalization rates for children and an increased emphasis on ambulatory care are affecting the way family practice residency programs train their residents in the care of children. In a US study, Baldor and Luckmann found that residencies required a mean of 5.2 months of formal pediatric training and more than 89% required some structured pediatric outpatient training, while a small number of programs combined an outpatient experience with the inpatient pediatrics rotation.

The CFPC Task Force on Child Health identified inadequate exposure to a range of common and important child health problems in postgraduate medical education programs as a weakness at most Canadian universities. Suggestions to improve postgraduate education included ensuring adequate exposure to common childhood illnesses and well-child care.

The family medicine residency program at Memorial University of Newfoundland introduced a new ambulatory pediatrics rotation in 2004 at the Janeway Children’s Health and Rehabilitation Centre in St John’s, Nfld, to enhance family medicine residents’ learning experiences in pediatrics and adolescent health care. Traditionally, the family medicine pediatrics rotation at this hospital was based on inpatient learning experiences. The revised curriculum structure was developed to provide family medicine residents with a more effective experience learning about the diagnosis and management of common pediatric and adolescent problems that present in the family practice setting.

Description of program

The 4-week ambulatory pediatrics rotation for second-year family medicine residents was based on a series of clinical learning experiences in ambulatory clinical settings. The family medicine pediatric faculty coordinator, the chair of the discipline of pediatrics, pediatricians, pediatric subspecialists, and surgeons were instrumental in the planning and implementation of the new curriculum. There was no inpatient call during the rotation, and residents attended a total of 9 pediatric clinics per week. An individualized month-long schedule was arranged on a monthly basis; this ensured maximum learning with low learner-to-preceptor ratios. Only second-year residents were involved in this rotation and therefore had broader clinical experience to call on. Participation in the clinics was mandatory and family medicine residents were supervised by the attending pediatrician or pediatric surgeon. Residents were also able to attend a visiting consultant pediatric clinic for a full day in a nearby rural area. Attendance at pediatric teaching rounds was encouraged and attendance at family medicine academic half-days every week was expected.
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performance was assessed by each supervising physician at the end of each clinic by verbal and written feedback on “pediatric evaluation cards.” Residents were also required to maintain patient logbooks to demonstrate the range of patients and problems encountered during their rotations. Residents who did not complete the requirements satisfactorily had to complete remediation.

An evaluation research study was undertaken to compare the effectiveness of the new ambulatory pediatrics rotation with a traditional combined inpatient-ambulatory pediatrics rotation. A nonequivalent control group study design was followed. All second-year family medicine residents participating in the new ambulatory pediatrics rotation and the combined inpatient-ambulatory pediatrics rotations at 2 other hospitals were invited to participate. Immediately before and after completion of their respective pediatrics rotations, residents were asked to complete identical pretests and posttests, assessing knowledge and confidence in the management of common pediatric and adolescent problems. The knowledge assessment comprised 29 multiple-choice questions, while the confidence assessment included 22 positively worded confidence statements that residents were asked to rate using a 5-point Likert scale (1 = low confidence to 5 = high confidence). Both study groups, upon completion of their pediatrics rotations, were also required to complete resident evaluation surveys. Evaluation data were collected between the 2005 and 2009 academic years.

Evaluation of program

A total of 79 residents participated in the pediatric rotations. Table 1 summarizes the response rates for the various evaluation instruments, which ranged from 43.0% for the confidence posttest to 100.0% for the logbooks. Figure 1 summarizes the various clinics attended by residents for the ambulatory and the combined inpatient-ambulatory rotations. A larger percentage of residents in the ambulatory rotation reported attending a greater variety of subspecialty clinics in urology; surgery; respirology; plastics; orthopedics; ears, nose, throat; dermatology; and allergy. Residents in the ambulatory rotation also reported attending a higher number of outpatient clinics (Table 2) and seeing a higher mean number of patients than residents participating in the inpatient-ambulatory rotation (108.3 vs 71.0 patients per resident).

Table 1. Response rates for various evaluation instruments: N = 79.

<table>
<thead>
<tr>
<th>INSTRUMENT</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction survey</td>
<td>47 (59.5)</td>
</tr>
<tr>
<td>Confidence pretest</td>
<td>61 (77.2)</td>
</tr>
<tr>
<td>Confidence posttest</td>
<td>34 (43.0)</td>
</tr>
<tr>
<td>Knowledge pretest</td>
<td>61 (77.2)</td>
</tr>
<tr>
<td>Knowledge posttest</td>
<td>36 (45.6)</td>
</tr>
<tr>
<td>Logbooks</td>
<td>79 (100.0)</td>
</tr>
</tbody>
</table>

Figure 1. Percentage of residents who attended subspecialty clinics, by subspecialty

ADHD—attention deficit hyperactivity disorder, CP—cerebral palsy, ENT—ears, nose, throat.
Table 3 summarizes a comparison of residents’ satisfaction with the ambulatory and inpatient-ambulatory pediatric rotations. A t test analysis revealed no significant differences across most of the satisfaction items. Residents in the ambulatory rotation did report a significantly higher mean level of satisfaction with the length of the rotation than residents in the inpatient-ambulatory rotation did ($P<.031$). Tables 4 and 5 summarize results of $t$ test analysis of knowledge and confidence scores before and after ambulatory or inpatient-ambulatory rotations. Residents in the ambulatory rotation reported a significant increase in knowledge scores after the rotation ($P<.001$), while those in the inpatient-ambulatory rotation reported no significant increase. There was no significant difference between ambulatory and inpatient-ambulatory groups in knowledge scores before ($P=.404$, $t=0.845$, degrees of freedom [$df]=33$) or after ($P=.185$, $t=-1.354$, $df=33$) the rotations. There were significant increases in the confidence scores of residents in both the ambulatory and inpatient-ambulatory groups ($P<.001$) after the rotations. There was no significant difference between ambulatory and inpatient-ambulatory groups in confidence scores before ($P=.413$, $t=-0.830$, $df=30$) or after ($P=.106$, $t=-1.665$, $df=30$) the rotations.

Discussion

The ambulatory rotation in pediatrics was developed to provide family medicine residents with a more effective experience learning about the diagnosis and management of common pediatric and adolescent problems that present in the family practice setting. The traditional inpatient pediatrics rotation offers family medicine residents exposure to a subset of patients who often require subspecialty care. There seemed to be a disconnect between what family medicine residents experienced and encountered with patients in an inpatient setting and what they would encounter in the family practice setting. The new ambulatory clinic-based rotation offered the organizing family medicine faculty

<table>
<thead>
<tr>
<th>NO. OF CLINICS ATTENDED</th>
<th>INPATIENT-AMBULATORY GROUP</th>
<th>AMBULATORY GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\leq 20$</td>
<td>14 (63.6)</td>
<td>0</td>
</tr>
<tr>
<td>$&gt; 20$</td>
<td>8 (36.4)</td>
<td>15 (100.0)</td>
</tr>
</tbody>
</table>

Table 2. Number of outpatient clinics attended by study groups: $P<.001$ by $\chi^2$ analysis.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>INPATIENT-AMBULATORY GROUP</th>
<th>AMBULATORY GROUP</th>
<th>T TEST</th>
<th>DEGREES OF FREEDOM</th>
<th>P VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I was given an appropriate orientation to this rotation</td>
<td>25  4.60 (0.645)</td>
<td>16  4.44 (0.629)</td>
<td>.794</td>
<td>39</td>
<td>.432</td>
</tr>
<tr>
<td>Main learning objectives were clearly described and followed</td>
<td>25  4.32 (0.690)</td>
<td>16  4.31 (0.602)</td>
<td>.036</td>
<td>39</td>
<td>.972</td>
</tr>
<tr>
<td>The clinical experience allowed for the learning objectives to be met</td>
<td>25  4.36 (0.907)</td>
<td>16  4.44 (0.629)</td>
<td>-.298</td>
<td>39</td>
<td>.767</td>
</tr>
<tr>
<td>A variety of patient problems representative of the discipline were seen</td>
<td>25  4.36 (0.995)</td>
<td>16  4.56 (0.629)</td>
<td>-.725</td>
<td>39</td>
<td>.473</td>
</tr>
<tr>
<td>The rotation was well organized with efficient use of time</td>
<td>25  4.04 (0.978)</td>
<td>16  4.25 (0.931)</td>
<td>-.683</td>
<td>39</td>
<td>.499</td>
</tr>
<tr>
<td>There were sufficient opportunities to participate in patient care and management</td>
<td>25  4.32 (0.900)</td>
<td>15  4.53 (0.640)</td>
<td>-.803</td>
<td>38</td>
<td>.427</td>
</tr>
<tr>
<td>The length of the rotation was appropriate</td>
<td>25  4.00 (0.957)</td>
<td>16  4.62 (0.719)</td>
<td>-2.235</td>
<td>39</td>
<td>.031</td>
</tr>
<tr>
<td>I was given support and positive reinforcement</td>
<td>25  4.68 (0.557)</td>
<td>16  4.69 (0.704)</td>
<td>-.038</td>
<td>39</td>
<td>.970</td>
</tr>
<tr>
<td>I was given support by nursing and ancillary staff</td>
<td>25  4.60 (0.645)</td>
<td>16  4.56 (0.727)</td>
<td>.173</td>
<td>39</td>
<td>.864</td>
</tr>
<tr>
<td>Textbooks, literature resources, and reading assignments were recommended to me</td>
<td>26  4.28 (0.737)</td>
<td>15  4.33 (0.976)</td>
<td>-.196</td>
<td>38</td>
<td>.846</td>
</tr>
<tr>
<td>This rotation was educationally beneficial</td>
<td>25  4.48 (0.770)</td>
<td>16  4.69 (0.793)</td>
<td>-.832</td>
<td>39</td>
<td>.411</td>
</tr>
<tr>
<td>Considering all aspects of this rotation, how would you rate its overall effectiveness?</td>
<td>25  4.28 (0.843)</td>
<td>16  4.44 (0.629)</td>
<td>-.641</td>
<td>39</td>
<td>.525</td>
</tr>
</tbody>
</table>
An ambulatory rotation in pediatrics is a feasible option whereas in the traditional inpatient-ambulatory rotation.

**Program Description | Training family medicine residents to care for children**

**Conclusion**

An ambulatory rotation in pediatrics is a feasible option for facilitating family medicine resident learning in child health care. Residents participating in an ambulatory rotation reported greater satisfaction with the length of the rotation and exposure to more patient cases that reflect a family practice office setting, and they recorded the same level of knowledge and confidence outcomes compared with residents completing an inpatient-ambulatory rotation. Intraprofessional collaboration between the disciplines of family medicine and pediatrics, flexibility in scheduling, and the support of pediatric preceptors are key factors in the organization and implementation of an ambulatory rotation.

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**Contributors**

Drs Duke and Curran were co-principal investigators of the research study. Dr Duke, Dr Curran, and Ms Hollett made substantial contributions to conception and design, acquisition of data, and analysis and interpretation of data, drafting the article and revising it critically for important intellectual content, and final approval of the version to be published.

**Competing interests**

None declared

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**References**


