Surveying Graduates of Combined Internal Medicine–Pediatrics Residency Programs

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Abstract—Graduates of all U.S. combined internal medicine–pediatrics residency programs were surveyed in 1987 regarding a variety of demographic information about their residencies and current practices, the residency curricula they had followed for both specialties, and recommendations for modifications in training. The 71 responding graduates (from a total of 112) reported patient care as their major involvement (mean of 42.9 hours per week), with a majority (83%) seeing patients in both pediatric and adult age groups. Most were involved in primary care only (64%). The graduates reported that during both pediatrics and internal medicine training, they had had too many inpatient and intensive care rotations and too few elective and ambulatory rotations. The most important subspecialty rotations in internal medicine were considered to be cardiology, dermatology, and pulmonary medicine; and in pediatrics, infectious disease, cardiology, and adolescent medicine. The graduates recommended more outpatient subspecialty rotations, ambulatory rotations in medicine and pediatrics, and a combined medicine–pediatrics continuity clinic. Acad. Med. 65(1990):266–271.

In the past decade, combined internal medicine and pediatrics residency training programs (med-ped) have become increasingly common. Originally evolved in the 1960s as a two-year rotating internship,1 med-ped programs now are often viewed as an alternative to family-practice training. The programs are generally four years in length and divided equally between the two specialties. By virtue of a 20-year-old agreement between the American Board of Pediatrics and the American Board of Internal Medicine, graduates of such residencies are eligible for both board examinations.

In 1980 there were four med-ped programs identified in the National Resident Matching Program (NRMP) Directory, with nine available postgraduate year-one positions. Only 20 physicians had completed the combined residency by that time. By 1987, there were 1,110 applications from American senior medical students, which is comparable to the 1,755 applications in primary care internal medicine in the same year. This is in contrast to 28,941 applications from American students for all categories of internal medicine programs in 1990, which dropped to 27,239 by 1987. Little is known about the careers med-ped graduates actually choose; whether the graduates are academic or community-based, whether they are primary or subspecialty providers, and how they are involved with various age groups. Questions also remain regarding optimal curricula for trainees, how graduates are accepted by their peers in categorical residencies, and how they perceive their competencies in representative clinical situations. In order to address these questions concerning internal medicine–pediatrics training pro-
grams, the investigators performed the first nationwide survey of graduates of such combined residencies; this article is a report of their investigation and what they found.

Method

Through telephones and written inquiries to the directors of all the medical programs listed by the NRMP in 1987, the investigators attempted to obtain the addresses of all the graduates of these programs who had completed combined residencies before July 1986. Questionnaires were mailed directly to the 88 graduates of ten of the 16 programs. The directors of the remaining six programs chose to have their offices mail the surveys to their graduates (an additional 24), citing their policies regarding privacy of information to explain why they did not disclose the names and addresses of these graduates. The questionnaire covered several areas: demographics, residency format, suggested modifications of training, and how the residents perceived their competencies in representative clinical situations. A series of clinical vignettes was used to elicit the residents' responses in this last category of the questionnaire.

The demographic data requested were the location of the residency, the year the residency was completed, the graduate's board certification status in internal medicine and pediatrics, whether the graduate's current clinical practice was in primary care, a subspecialty, or both, and whether it was solo or group- or hospital-based, the hours spent in the graduate's current clinical practice, and the number of patients seen per month. The investigator also asked for the graduate's current professional activities or fellowship training. Residency format data requested (for both internal medicine and pediatrics components) were the total number of months the resident spent in each department as well as the number of rotations spent in each department (inpatient wards; adult, pediatric, and neonatal intensive care; emergency room; subspecialty electives; primary care and ambulatory care) and whether the graduate felt the time he or she had been involved in each rotation had been too much, too little, or appropriate. A chi-square analysis compared the graduates who reported either too great or too little time spent in a rotation, in order to evaluate trends for each rotation. A Spearman rank correlation coefficient analysis was made to determine the correlation between the total time spent in a rotation and the perceived appropriateness of the duration of involvement in that rotation.

The questionnaire listed various subspecialties within each specialty; the graduates were asked to note which of these subspecialties were offered as electives by their residency program, and whether they had completed a particular elective during training. They were asked to rank (from their current perspective) the importance of taking each of the electives, using a Likert-type scale (1 = very important, 2 = somewhat important, and 0 = of very little importance). A contingency table was constructed for comparing the perceived importance scores with whether the rotation was taken. A chi-square analysis was performed, and a contingency coefficient was calculated.

The graduates were asked to note whether they had anticipated, at the beginning of their residency, their current professional activities or practice, or how these activities were different from their expectations. They also were asked to list whether they would again choose a combined residency program. Finally, they were asked to list, in order of priority, recommended changes for med-ped residencies.

Results

Of the 88 graduates from 16 programs mailed surveys directly, 65 (74%) responded. Of the 24 graduates who were to have questionnaires mailed through six other residency programs, six (25%) returned them. The majority of the graduates (and the responding graduates) came from four programs, with by far the largest number of the latter (27) coming from the last year surveyed, 1986. Not all the graduates who filled out the questionnaire responded to every question, so that the number of graduates' responses for a particular question may not equal 71.

Internal Medicine Component

During residency training, the responding graduates spent a mean of 24.0 months in internal medicine rotations, with a range of 12 to 30 months. As noted in Figure 1, they had a mean of 10.0 months in inpatient ward rotations, 6.7 months on patient ward rotations, 6.7 months on emergency rotations, 3.0 months on electives, and 0.5 months on ambulatory rotations.
elective, 3.7 months in intensive care (ICU), 2.6 months in ambulatory rotations, and 1.8 months in emergency room (ER) rotations. The graduates were more likely to feel there was too much, rather than too little, time on ward and ICU rotations (p < .001 and p < .05, respectively) and too little time in ER rotations, electives and ambulatory rotations (chi square, p < .001, p < .01 and p < .001, respectively). The graduates noted the amounts of time they spent on various rotations, and their perceptions of the appropriateness of the length of involvement. Except for ward and ambulatory rotations, the graduates who had longer involvements with a given rotation felt a shorter duration would have been more appropriate.

The responding graduates ranked 15 adult subspecialty rotations by perceived importance and by whether they had taken those rotations. The cardiology, dermatology, and pulmonary rotations (in that order) were felt to be the three most important. Of the rotations perceived to be among the more important, dermatology and gynecology are nontraditional internal medicine subspecialties. There was often a significant correlation between the graduates' perceiving a rotation as important and having taken that rotation. However, for dermatology, neurology, rheumatology, ophthalmology, and orthopedics, whether it was taken (or not) did not predict whether it was felt to be important. The graduates also noted rotations considered somewhat or very important that their training program had not offered during residency. These included gynecology (12 respondents) orthopedics (10), psychiatry (7), ophthalmology (6), and allergy-immunology (5).

**Pediatrics Component**

During training, the responding graduates spent a mean of 23.9 months in pediatrics, with a range of 18 to 30 months. Specifically, they spent a mean of 7.9 months in ward rotations, 5.4 months in the ICU (1.7 pediatrics and 3.7 in neonatal), 1.2 months in the normal newborn nursery, 4.7 months in electives, and 3.5 months in ambulatory care. The graduates tended to feel they had spent too much, rather than too little, time on wards and in the neonatal ICU (p < .05, p < .001), and too little time in the newborn nursery (p < .05), in the ER (p < .05), on electives (p < .001), and in ambulatory care (p < .01) (Figure 2). Significant correlations (p < .05) between the length of time spent and the perceived appropriateness of a rotation were present for all rotations except the ward and emergency rotations. Each graduate ranked 12 pediatrics subspecialty rotations by perceived importance, and noted whether he or she had taken a given rotation. Infectious disease, cardiology, and adolescent medicine were felt to be the most important subspecialties. For several rotations, there was a poor correlation between rotations thought to be important and the graduate's having taken them, including pediatric cardiology, endocrinology, hematology-oncology, surgery, and orthopedics. Several of the graduates did not have an opportunity to take selected pediatrics rotations that they had felt to be somewhat or very important during their residencies, including orthopedics (11 graduates), surgery (7), adolescent medicine (5), and gastroenterology (4).

**Other Curriculum Issues**

The respondents felt very accepted by the traditional house officers during training. Sixty-three reported feeling very accepted by the internal medicine residents (eight reported moderate acceptance, none felt not accepted). Similarly, 60 felt very accepted during training by the pediatrics residents (11 reported moderate acceptance, none felt not accepted).

The majority of the graduates (71%) had separate half-day internal medicine and pediatrics continuity clinic experiences weekly. Some (28%) had attended a weekly combined med-ped clinic, and a smaller number had a continuity clinic once a week that alternated between internal medicine and pediatrics. The graduates reported a mean of 1.8 continuity clinic sessions per week.

Sixty-four of the participants (93% of those who responded to this question) reported they would again choose a combined med-ped residency, and all but one felt the residency met their expectations. When requested to list and rank recommended changes, the graduates most commonly recommended an increase in the amount of time involving outpatient subspecialty rotations, specifically in gynecology, orthopedics, and adolescent medicine (Table 1).
ever, the greatest number of graduates ranked as most important that there be an increased amount of time for ambulatory care experiences within internal medicine and pediatrics. Graduates frequently recommended a combined med-ped continuity clinic (31% of those without a combined clinic recommended one). Decreasing the time spent in intensive care (especially the intensive care nursery), addressing administrative concerns, and increasing the preparation for nonmedical aspects of care (including family therapy or financial aspects of health care) were other significant responses of the graduates.

Current Activities

Fifty-five of the graduates had already received certification in internal medicine, 60 had passed the written portion of the pediatrics examination, and 34 had passed the oral portion (37 of the respondents had graduated too recently to be eligible for the oral portion). Twenty-three of the graduates had pursued fellowship training and one had completed a second residency in preventive medicine. The fellowships included three in infectious diseases and two in adolescent medicine, gastroenterology, cardiology, general pediatrics, pediatric pulmonology, neonatology, and the Robert Wood Johnson Clinical Scholars program. There was one fellow each in rheumatology, oncology, hematology, pediatric hematology-oncology, general medicine, and behavioral pediatrics. Twelve of the fellowships combined training in treating both child and adult populations.

The respondents reported a mean of 42.9 hours per week of clinical work, and 83% were seeing patients in both child and adult age groups. The mean distribution of hours spent in the different age groups was 4.9 for newborns, 5.1 for toddlers, 4.9 for school-aged children, 4.9 for teenagers, 7.0 for young adults, 9.3 for the middle-aged, and 6.8 for the elderly. Although the graduates spent most of their time in patient care (42.9 hours), they also noted significant time in research (7.0 hours), teaching (5.8 hours), and administration (3.0 hours). Many practiced in a group setting. The majority were involved in primary care only (64%), with an additional 16% in subspecialty care only.

When asked if their current activity were the same as that anticipated from the start of their residency, 39 of the 71 (55%) replied no. Approximately half of those who said no reported that they either had anticipated a career in primary care (16) or had not planned their current career in academic medicine (3). Although a majority of the graduates were able to practice in a combined med-ped setting, 11 reported that they had not been able to; five of these were not practicing pediatrics, three were not practicing internal medicine, and three were practicing both internal medicine and pediatrics but were unable to integrate the two specialties at a single practice setting.

Discussion

This first nationwide survey of graduates of combined medicine and pediatrics residency programs has shown that although these graduates were generally satisfied with their training, they had several specific criticisms of their curricula. During both their internal medicine and their pediatrics training time, the responding graduates would have preferred more ambulatory care and less inpatient experience. There was an especially negative response toward the neonatal intensive care unit. This is not surprising, given the disproportionate amount of time devoted to this area in most pediatrics programs. Indeed, in

### Table 1

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Number of Graduates Who Listed the Recommendation</th>
<th>Number of Graduates Who Ranked the Recommendation as Most Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase time in outpatient subspecialty rotation†</td>
<td>23</td>
<td>10</td>
</tr>
<tr>
<td>Decrease time in intensive care</td>
<td>18</td>
<td>10</td>
</tr>
<tr>
<td>Increase/intensify ambulatory care experience</td>
<td>17</td>
<td>13</td>
</tr>
<tr>
<td>Offer combined internal medicine–pediatrics continuity clinic</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>Establish more defined curriculum, have a designated program director, greater identification as a program, regular seminars, and more recreational activities</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Address administrative issues, have greater flexibility or cooperation between internal medicine and pediatrics programs</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Make available career counseling and information about financial aspects of practice, psychosocial aspects of care, and methods of family therapy</td>
<td>5</td>
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the mid-1970s, the American Academy of Pediatrics reported that almost half of their surveyed membership thought they had had too much newborn care training during their residencies. Despite recommendations at that point to limit such exposure, a 1984 survey showed little change in the number of months that pediatrics residents devoted to the area of newborn care.

The graduates generally wanted to have had more ambulatory care time, including primary care, emergency care, and subspecialty electives. Those outpatient specialty experiences that were especially desired were gynecology, orthopedics, and adolescent medicine. These findings are in accord with other published studies of graduates in internal medicine residencies, which show that the graduates consistently want more training in common ambulatory care problems and in subspecialty ambulatory care. Practitioners of general medicine who have trained in either traditional or primary care medicine programs feel underprepared in such "nonmedical" disciplines as orthopedics, dermatology, psychosocial problems, and gynecology. Adolescent medicine, however, stands out as a part of training that many med-ped graduates desired. Because of their exposure to both children and adults, some med-ped physicians may see practicing adolescent medicine as particularly appropriate, and it is possible that other physicians would see them as the best consultants concerning this crossover age group. Without directed training in the unique morbidities and developmental issues of adolescence, however, a med-ped physician may be more qualified to treat these patients than any other primary care physician.

The desire of the med-ped graduates surveyed in this study to have more ambulatory education is in agreement with the general trend in medical education away from the hospital ward and toward the outpatient setting, an ever-expanding site of patient management. Even graduates of traditional, subspecialty-oriented internal medicine programs desired increased training emphasis in areas most applicable to outpatient care.

One part of a trainee’s primary care experience in an ambulatory care setting is the continuity clinic, an experience that residents, at least in internal medicine, have not always found to be of high quality. In med-ped programs, many different combinations of weekly or semiweekly internal medicine, pediatrics, or combined practices exist. Those who did not experience a combined med-ped continuity clinic often recommended a change to this arrangement that would allow residents to train to see patients of all ages in a single session. Doing this is important because establishing a practice that combines all age groups in a goal anticipated by almost all med-ped residents.

While there was usually a correlation between graduates' having taken a particular subspecialty and their perceiving that the rotation in that subspecialty was important, five medicine and five pediatrics subspecialties were an exception to this trend. In eight of these ten cases, the lack of correlation was a result of the fact that even those who did not take the particular rotation deemed it important. The implication is that med-ped graduates, like internal medicine graduates, wish for exposure to more subspecialty areas without sacrificing the ones they have. As Linn and colleagues note, "This phenomenon of wanting more without an expressed willingness to make cuts elsewhere proves a continuing dilemma to medical educators who try to be responsive to the increasing and often changing needs of residents." In the case of med-ped programs, one way of offering more subspecialty experiences without consuming more valuable time is to offer combined subspecialty rotations for fields such as endocrinology, rheumatology, infectious disease, gastroenterology, and nephrology.

From these data one can first conclude that med-ped training is flexible, allowing either academic or community practice and either general or subspecialty care. Of the 71 graduates who responded, 23 had already pursued fellowship training, and more than half of those fellowships were for a combined med-ped population of patients. The ability to practice a subspecialty in both internal medicine and pediatrics areas is well established for those trained in med-ped. Further, the graduates studied have generally been successful in maintaining practices that involve both adult and pre-adult patients. 83% of the graduates saw patients of all ages. The versatility of training is further supported by board certification performance. Passing rates for med-ped graduates taking the pediatric and internal medicine board exams are at least as high as those of their counterparts in each of these specialties. Although this may not be an accurate indicator of one's ability to practice both internal medicine and pediatrics, it does establish comparable performance between combined-specialty and non-combined-specialty residents in this one measurement of cognitive skill.

What is implied in the diversity of graduates' careers is that the different med-ped residency programs have different strengths. Some programs are more oriented toward primary care and some more oriented toward their graduates' pursuing subspecialties or other academic pathways. This has been reflected in the opinion of directors of such programs. It may be important, therefore, for each med-ped program to develop and explicitly state its focus. This would not only assist each program to define and nurture its own strengths, but would also help prospective residents to choose the programs that most nearly fit their needs.

There are several possible shortcomings to the present study. By attempting to poll all med-ped graduates as of July 1986 through contact with programs listed in the 1986-1987 Directory of Residency Training Programs, the investigators probably omitted some because there have been graduates either of programs that no longer exist or of ad hoc programs not recognized by the NMP. These potential omissions probably represent a small portion of the total
population of graduates. Moreover, from the standpoint of introducing curricular innovation into med-ped training, it is more valuable to solicit feedback from graduates of currently functioning programs, as has been done. The difference in response rates between those graduates mailed questionnaires directly and those mailed questionnaires indirectly through program directors is probably because some directors of their staffs did not forward the questionnaire. However, there does not appear to be any systematic bias introduced into the results because of this problem.

The interpretation of results form this survey must also be tempered by the knowledge that med-ped programs are rapidly expanding and thus information will be changing rapidly. Although the oldest programs graduated residents more than 15 years ago, the majority of graduates who responded (38 of 71) had finished training in 1985 and 1986; 27 finished in 1986 alone. Therefore, such data as board certification rates, the proportion of graduates ultimately pursuing fellowships, and practice patterns, all of which may take several years to stabilize, are by necessity preliminary. The proportion of residents pursuing primary care careers, for instance, may change over time. The program with the greatest number of graduates to date (the University of North Carolina at Chapel Hill) has produced proportionally more academicians and subspecialists, whereas the second largest (the University of Rochester School of Medicine and Dentistry) has a larger proportion entering primary care. Most of the new programs tend to emphasize primary care training, and over time will probably account for a growing share of graduates. A disturbing trend emerging at some centers, as found by Siegel and colleagues, is the establishment of a med-ped program in order to strengthen a relatively weak internal medicine or pediatrics program. If this trend continues, it may lead to less success for med-ped graduates in board certification scores and in the ability to sustain combined practices and obtain quality fellowships.

Further research is needed to address these questions now that the rapid growth of numbers of graduates has begun to level off. Although graduates are a valuable source of data, faculty and current trainees may offer complementary information regarding curricular issues. In addition, a major question only hinted at by the present survey is the recent rapid growth of med-ped programs. Med-ped program directors (a small minority of whom were trained in med-ped) most commonly view this combined training as an alternative primary care pathway to family medicine. It is unclear how graduates, current residents, or fourth-year medical students view this issue.

In conclusion, med-ped training has undergone tremendous expansion, approaching, in the mid 1980s, the number of applications to residency programs in primary care internal medicine. Although graduates of med-ped programs have generally been satisfied with their training and successful in their careers, they have certain criticisms of their residency curricula. Their most important recommendations are (1) to limit the required amount of newborn care (especially neonatal ICU), perhaps to one-sixth of all pediatrics time; (2) to emphasize opportunities for ambulatory care training and offer nontraditional outpatient subspecialty rotations such as orthopedics and gynecology, combined med-ped continuity clinics, and adolescent medicine training; and (3) to offer combined rotations in those subspecialties that are more outpatient-oriented and less procedure-oriented.

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