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A Systems Approach to Training Pediatricians in the Field of Developmental Disabilities

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Primary care pediatricians have expressed concern with regard to the adequacy of their training in such areas as child development, community pediatrics, genetic counseling, and chronic handicapping conditions (Dworkin, Shonkoff, Leviton, & Levine, 1979; The Task Force on Pediatric Education, 1978). Although the difficulties in appropriately providing pediatric services in these areas may be due in part to rapidly changing pediatric practice patterns (Richmond, 1975; Richmond & Janis, 1983), they also reflect a serious and long-standing training problem in the field. This problem has been particularly serious in developmental pediatrics, that is, that area of pediatrics devoted primarily to children with developmental disabilities (see Thompson & O'Quinn, 1979). In fact, both parents and professionals have repeatedly called for improvements in the clinical skills, attitudes, and knowledge of pediatricians involved with developmentally disabled children and their families. Complaints have been wide ranging, including a lack of knowledge of existing community resources, failures to detect developmental delays and make appropriate referrals, a perceived insensitivity to the needs of the families of handicapped children, and difficulties in communicating effectively with all concerned (Gorham, Des Jardins, Page, Pettis, & Scheiber, 1975;

Guralnick, Richardson, & Kutner, 1980; Kelly & Menolascino, 1975; Lipton & Svarstad, 1977; Pueschel & Murphy, 1976; Richardson & Guralnick, 1983; Springer & Steele, 1980; Wolraich, 1980).

Although some of these concerns may be overstated, an examination in 1980 of the nature of existing training programs during the 3-year pediatric residency period confirmed that limited training experiences were available in the field of developmental pediatrics. Overall, pediatric training programs were highly fragmented, provided for only minimal clinical involvement with handicapped children and their families, and rarely attempted to identify the content and clinical skills that would be part of a rotation devoted to developmental pediatrics (Guralnick & Richardson, 1980). The state of the art was perhaps best captured in an editorial in a major journal in this area at that time. Commenting on training in developmental pediatrics, Bax (1979, p. 561) stated: "It is sad to realize that more than 20 years after this journal's inception, and despite its international approach, training [in developmental pediatrics] is still inadequate. . . It is curious, given the widespread recognition of the need for such training, that programs have been so slow to develop, and it is certain that the patients have been the losers."

The pervasiveness and seeming intractability of this problem can be understood more readily when viewed in terms of the deeply rooted organizational, political, and economic issues that have characterized the area of developmental pediatrics. Indeed, when the authors of this chapter conducted a survey of all pediatric residency training programs across the country, polled key pediatric educators, and interviewed pediatric residents (see Guralnick, Richardson, & Heiser, 1982), a number of formidable barriers to change emerged. Of central concern was that limited resources were allocated to clinics serving children with developmental disabilities and there existed a corresponding lack of faculty interest in this area. In fact, only relatively few programs had faculty trained specifically in the field of developmental pediatrics. Accordingly, only a small number of programs supported faculty with the status to galvanize training and related programs and to compete for residents' time.

The perception of the "soft," nonscientific, nature of developmental pediatrics was also seen as a major barrier. Moreover, the lack of a clear identity of the field in general, often overlapping with ambulatory pediatrics, pediatric neurology, and physical medicine, added a significant burden to those interested in promoting training in developmental pediatrics. Compounding matters even further were the internecine squabbles regarding the boundaries of a closely related field referred to as behavioral pediatrics (Felice & Friedman, 1982; Friedman, Phillips, & Parrish, 1983). Although efforts toward resolving the conceptual issues and semantic distinctions between behavioral and developmental pediatrics are progressing (Levine, Carey, Crocker, & Gross, 1983), these problems have only served to complicate

matters and to create additional barriers for effective training in any of the biosocial domains of pediatrics.

Given this state of affairs, it is not surprising to find that residents themselves lack interest in the field of developmental pediatrics. They are not only sensitive to the organizational, political, and training history problems noted above, but most of their attention is understandably centered on the more technologically oriented and acute illness aspects of pediatrics. It must also be said that the field of developmental pediatrics is not a financially lucrative one, and there are no subspecialty boards. Accordingly, without a direct effort to promote an awareness of the relevance and significance of this field, it is not likely that residents will perceive the inadequacies of their training until well into the realities of pediatric practice.

The purpose of this chapter is to describe our efforts to improve training at the residency level in the field of developmental pediatrics on a national level. Our long-term goal is to assure an effective and comprehensive developmental pediatrics experience for all pediatric residents. To accomplish this, a systems approach was designed to address the organizational, informational, political, and other related issues just considered. Components of this systems approach included: 1) the creation of a National Task Force on Developmental Pediatrics to advise on all aspects of our work; 2) the definition and description of the content and related clinical experiences in the field of developmental pediatrics, and the concepts that distinguish it from behavioral pediatrics; 3) the development of a detailed outline of the knowledge and clinical competencies as well as attitudes that should be displayed by residents completing a 1-month rotation in developmental pediatrics; 4) a description of the clinical experiences, readings, and related educational activities associated with each of the competencies; 5) the design of an implementation approach that could be adapted to wide-ranging local resources; 6) the development of strategies to address political issues at individual pediatric training sites as well as the building of a national constituency promoting training in the area of developmental pediatrics; and 7) the establishment of an extensive evaluation component assessing the knowledge, skills, attitudes, and other factors associated with a rotation in developmental pediatrics. In fact, the design of a clinical rotation with a specification of goals and objectives constituted a unique approach to resident education, warranting unusual efforts in evaluation.

A NATIONAL TASK FORCE IN DEVELOPMENTAL PEDIATRICS

A National Task Force in Developmental Pediatrics was formed to serve as the major advisory and initial work group for this effort. Composed of a diverse group of experts in pediatric education and developmental pediatrics, as well as members of key committees and boards within pediatric and other

medical professional organizations, the task force assumed the responsibility for developing, testing, revising, and finalizing a structured curriculum in developmental pediatrics for a 1-month rotation. The 10 interrelated units agreed upon by the task force as constituting the core content of the field of developmental pediatrics included: 1) basic principles of child development and screening, an introductory unit; 2) attitudes toward handicapping conditions; 3) knowledge of handicapping conditions (developmental disabilities); 4) aspects of prevention; 5) developmental diagnosis and assessment; 6) interdisciplinary process and team functioning; 7) parents; 8) management of developmental disabilities; 9) community services and resources; and 10) controversial research issues. The knowledge units and clinical aspects of the curriculum were organized according to the major developmental disabilities (i.e., mental retardation; motor disorders, particularly cerebral palsy; autism; communication disorders; learning disorders; and major sensory impairments and multiple handicaps).

All of these units were tested individually in sites represented by task force members during the early phases of the program. The content was of primary interest during these preliminary tests of the units and task force members assisted in the identification of expert consultants to obtain independent opinions. In addition, the feasibility of teaching material contained within each unit was assessed as was the perception of the value and significance of an individual unit from the perspective of the residents. Accordingly, the task force provided oversight for an informal process analysis that comprised interviews of training program directors, faculty, and residents participating in the various curricular units. These interviews, as well as reports from the various sites as they incorporated the units into the longer rotation, resulted in a continuous process of revision and problem-solving during the 3-year developmental period of the program.

THE CURRICULUM

Organization and Structure

The curriculum that eventually evolved from this series of implementation-evaluation-revision cycles provided a blueprint for faculty to structure a 1-month rotation in developmental pediatrics. As such, it was neither a self-instructional textbook for residents nor a cookbook for faculty to utilize in a step-by-step training program. Rather, it was designed to identify the critical knowledge and clinical skills in the field of developmental pediatrics and to suggest alternative, effective strategies for conveying this information across programs.

A major concern of the task force was to devise a format for the curriculum that could be used to present this extensive body of information in a

flexible but consistent manner. The structure selected presented the underlying principles guiding the construction of each curriculum unit while also providing sufficient details to describe clearly how such principles could be translated into a coherent training program. Specifically, each of the 10 units of the curriculum included a rationale, a few broad goals, specific educational objectives, and suggested learning activities matched to these objectives. Several different learning experiences were suggested whenever possible: 1) didactic materials for lectures that could be incorporated within the rotation or during other structured training activities; 2) model clinical experiences with associated protocols; and 3) independent study through supplementary readings. In addition, new educational materials such as video-assisted case vignettes for low-incidence handicapping conditions and written case studies were developed to supplement clinical experiences when clients with particular types of disabilities were unavailable. A summary of the organization of the 10 units is shown in Table 13.1.

This structure was intended to provide sufficient flexibility to permit varying degrees of emphasis on informational and clinical aspects, depending upon the focus of a particular curricular unit. Thus, for example, the section on knowledge of handicapping conditions contains a substantial portion of the didactic content of the curriculum. Formal lectures and case conferences supplemented by the suggested readings are the primary suggested learning activities. The diagnosis and assessment unit, in contrast, emphasizes the pediatrician's role in a comprehensive developmental assessment of the child less than 6 years of age with suspected problems in development as well as a practical method of participating in the functional assessment of the older child with significant school problems. Suggested evaluation forms, sample checklists, and standardized tools appropriate for use by the pediatrician in the office are important aspects of the curriculum. A general profile of the types of cases that should be included and suggested clinical settings in which these clients typically are served constitute the major suggested learning activities.

Clinical exposure to children of different ages with a wide variety of handicapping conditions was viewed as essential to a comprehensive developmental pediatrics training program. Unfortunately, it was not possible to specify the exact nature of the clients whom each resident would evaluate during the rotation even in programs with large, diverse client populations. Therefore, seven model case histories for the major types of handicapping conditions were created to illustrate the recommended pediatric developmental assessment approach. In addition, more detailed video-assisted case examples also were developed to offer the widest variety of potential learning experiences.

The organization of the curriculum into comprehensive goals and objectives accompanied by various strategies to meet those goals and objectives offered several important advantages for wide-scale curriculum dissemina-

Table 13.1. Organization of developmental pediatrics curriculum

Units	Goals	Primary learning activities
1. Development and screening	Patterns of development; environmental influences; developmental screening	Well baby clinic; high-risk follow-up clinic; lectures on developmental processes, stages, and theories
2. Attitudes	Public acceptance of handicapped children; sensitive and appropriate interactions; ethical issues	Clinical observations of faculty interacting with handicapped children and their families; discussion of ethical issues
3. Knowledge of handicapping conditions	Common definitions and classifications; presentation, natural history, and associated developmental problems; etiological considerations, including: incidence, clinical manifestation, severity level, and prognosis of major developmental disorders	Lecture series on major developmental disorders; application in clinical setting
4. Prevention	Prenatal diagnosis and newborn screening; perinatal prevention, perinatal intensive care controversies; postnatal and other environmental influences, bacterial and viral infections, socioeconomic status factor	Genetics clinic; high-risk follow-up clinic; content discussions on prevention strategies at various developmental periods
5. Diagnosis and assessment	Etiological search; functional assessment; integration of findings	Comprehensive pediatric etiological and functional assessment of four to eight patients; preparation of clinical summary and written report
6. Interdisciplinary process	Roles and contributions of other disciplines; multidisciplinary assessment; interdisciplinary team; community/school conferences	Clinical observations of other disciplines; team conferences; community/school conferences
7. Parents	Parental reactions to diagnostic information; family dynamics	Discussion with faculty and/or parent of the stages of parental reactions
8. Management	General management principles; management as a part of a team; case manager role; specific man-	Counseling parents regarding the results of clinical evaluations; continuity clinic; planning medical

(continued)

Table 13.1. (continued)

Units	Goals	Primary learning activities
	agement techniques	therapy and other intervention strategies
9. Community services	Services for children under 6 years; school system's responsibilities; other community support services	Visit to preschool serving handicapped children; residential visit to institution, group home; IEP (individualized education plan) conference at school
10. Controversial issues	Contemporary research issues related to treatment and intervention; research methodology	Journal club discussion of topics such as early intervention, neurophysiological retraining therapies, dietary influences on learning and behavior, and mainstreaming

Source: Bennett, F. C., Guralnick, M. J., Richardson, H. B., Jr., & Heiser, K. E. (1984). Teaching developmental pediatrics to pediatric residents: Effectiveness of a structured curriculum. *Pediatrics*, 74, p. 516; reproduced by permission of *Pediatrics*.

tion. First, pediatric faculty could readily adapt the learning activities to their interests and unique circumstances while being assured that the overall integrity of the curriculum was maintained. This enabled faculty in each program to emphasize those aspects of developmental pediatrics that they believed were particularly important and for which appropriate clinical experiences were available. In addition, this organizational format enabled the essential components of the curriculum to be described easily through the introductory rationales and major goals of each unit. Finally, sufficient detail was included in the curriculum to enable development of an evaluation process that was directly tied to major goals and objectives.

Curriculum Implementation

Implementation of the completed curriculum was conducted by seven of the residency programs represented on the task force. Criteria for inclusion as an implementation test site were: 1) the identification of a pediatric faculty member with designated responsibility for the rotation (as noted by Zebal and Friedman [1984], residents need pediatric role models who demonstrate interest and competence in an area in order to establish the credibility of the rotation within the many other competing areas of training), 2) the existence of a minimal level of appropriate clinical experiences that enable residents to have direct involvement with children at various ages with a broad range of developmental problems, 3) the availability of clinical staff from other medical and nonmedical specialties who demonstrate an interdisciplinary approach to serving handicapped children, and 4) sufficient resident and faculty time to accomplish the major goals of the curriculum. A 1-month, 160-hour

rotation was recommended, but many variations on this model have been developed. Within these major guidelines, the pediatric faculty determined other important organizational factors such as timing of the training during the 3 years of residency, mandatory or elective status of the rotation, and availability of additional learning experiences (e.g., more comprehensive electives for residents with special interests).

Although faculty from these initial implementation test sites had participated in the development and field testing of individual curricular units, additional planning was required to ensure that a feasible training program based on the total curriculum could be tailored to their local situations. The importance of working through critical issues in a collective and collegial fashion cannot be overemphasized. The task of undertaking the development and/or major revision of a rotation in addition to already existing service and teaching responsibilities can be overwhelming and isolating. Moreover, despite general commitments from the appropriate administrative entities within each site, implementation of the curriculum created new political, organizational, and educational issues. Specifically, the development of new activities, the encouragement of additional involvement from appropriate faculty members, the extensive resident scheduling and community contacts, and obtaining formal approval from training directors, department heads, and/or curriculum committees brought these issues into focus. Systematic discussions among participating faculty at planned conferences enabled constructive solutions to common problems and successful strategies to be shared. Specific implementation issues that were considered included: 1) various approaches to core lecture series (annual versus every 3 years) to reduce demands on faculty, 2) teaching techniques to utilize written case studies in lieu of appropriate clinical cases, 3) advantages and disadvantages of videotaping residents, and 4) need for high visibility on the wards as a means of heightening resident interest. Another common concern was the lack of resources devoted to this area of pediatrics. While acknowledging difficulties in this regard, faculty were able to share successes in terms of utilizing the format and content of the curriculum, for example, to strengthen primary care grants and to develop cooperative training and service agreements with community agencies.

Political considerations were also the focus of discussions at each conference. One important recommendation was the dissemination of condensed versions of the curriculum for presentation to curriculum committees, department chairpersons, and even the residents themselves as a means of promoting greater understanding of the content and purpose of the rotation. At least three sites were able to share models that they had utilized successfully in their program. In addition, considerable time was spent discussing current political concerns at the national level (e.g., distinctions between developmental and behavioral pediatrics, need for subspecialty boards in develop-

mental pediatrics, role of ambulatory pediatrics faculty in training in this area, and appropriateness of the curriculum for family practice residents). Finally, these discussions also resulted in a commitment from participants to disseminate the curriculum through their professional contacts as well as through integration of the curriculum into their own programs. In these and other ways, the conferences were important not only in familiarizing participants with the materials but also in bringing together some of the foremost educators in developmental pediatrics to address educational, organizational, and political areas of common concern and to promote a greater understanding of the impact of barriers to effective training in developmental pediatrics.

The implementation process was designed to provide information on several issues critical to more wide-scale dissemination as well. First, it was intended to assess whether the content described in the curriculum could be taught within a defined period of time by faculty who had access to widely different resources. Second, it was designed to evaluate the utility of the curriculum in overcoming perceived political constraints (e.g., departmental and resident resistance). Finally, it was intended to provide a mechanism for evaluating the effectiveness of the curriculum in different programs at both objective and subjective levels. These factors were essential in establishing the credibility of the curriculum, which would be necessary to garner the interest of new sites.

Evaluation

To address these important questions regarding the value and potential usefulness of the curriculum on a national scale, data were obtained from 11 pediatric residency training programs contributing a total of 64 residents for the first major evaluation cycle (see Bennett, Guralnick, Richardson, & Heiser, 1984, for details). Two general evaluation strategies were utilized. The first approach relied upon subjective feedback from both residents and their supervising faculty to document the effectiveness of the curriculum in changing residents' attitudes, knowledge, and clinical skills and to evaluate related aspects of the developmental pediatrics rotation. Information was gathered from residents by means of a resident feedback questionnaire (RFQ)—a brief questionnaire completed by all residents at the end of their rotation. The primary section of the RFQ comprised self-reports of perceived clinical competence in 11 areas emphasized within the curriculum. Residents used a 7-point rating scale ranging from 1 (extremely poor skills) to 7 (extremely good skills) to respond to the following question: "Assume you are in general practice and are asked to perform a comprehensive pediatric developmental assessment of a child with handicaps or suspected of having a handicapping condition. Please use the scale below to rate how competent you would feel in carrying out the following clinical activities in your office." Residents were also asked to estimate the percentage of their rated skill levels

that could be directly attributed to their participation in the developmental pediatrics rotation.

The results of this evaluation for the 11 clinical skill areas for the 64 residents are summarized in Figure 13.1. As can be seen, residents felt confident for most of the skill areas (overall mean = 5.24), with skills associated with screening, history and etiology, working with other professionals (interdisciplinary), communicating with parents, and attitudes/clinical approach being rated most highly. In contrast, residents felt considerably less competent in being able to utilize community services and in the management of handicapping conditions. As might be expected, the residents attributed a substantial proportion of their skills directly to the rotation in the areas of integration of findings and working with other professionals. Moreover, although perceived competence was low for community resources, 60% of their skills in this area were attributed to the rotation. Independent ratings of residents' clinical skills carried out by faculty members for the same 11 areas closely corresponded to residents' self-perceptions.

The self-report questionnaire also asked residents to rate on a similar set of scales their knowledge of the major handicapping conditions, the extent to which the rotation was well organized, and the importance of the knowledge and skills contained within the rotation in relation to their anticipated pediatric career. Knowledge received a rating of 4.66, with 62.1% being attributed to the rotation. The curriculum was also judged to be well organized, receiving a

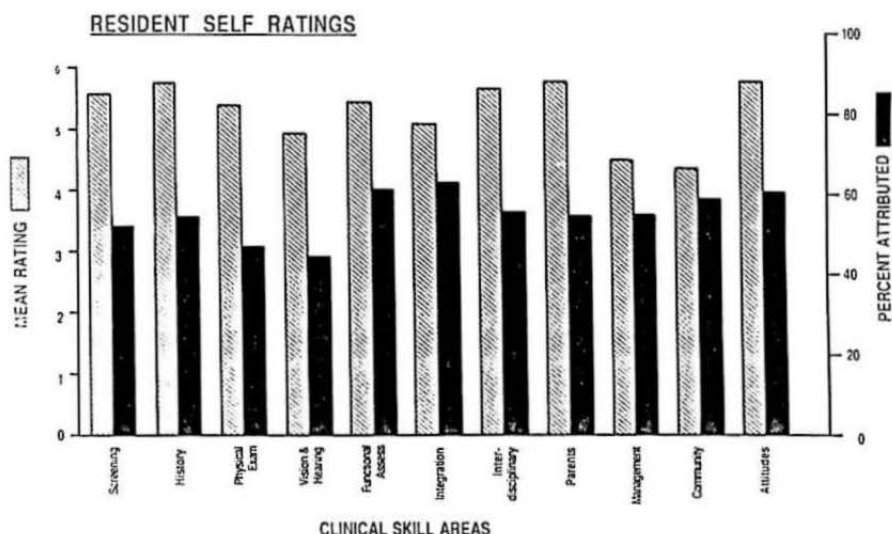


Figure 13.1. Mean resident self-ratings of competence and mean percent attributed to the rotation for each of the eleven clinical skills. (Based on Bennett et al., 1984.)

rating of 5.29. Finally, the importance of the rotation to the anticipated career of residents received the highest mean rating, 5.95.

A second strategy to evaluate program impact on a national level was to develop a more objective approach. This was accomplished by creating a set of four clinically oriented evaluation case study questions. Each question and subquestion was keyed to the content of the curriculum and was designed not only to reflect aspects of knowledge but to tap clinical decision-making processes. A sequential format of presenting case material was especially useful in this regard. At various steps within each question, residents were given additional clinical information and requested to make specific judgments.

The experimental design that was employed was especially suited to residency program schedules (Richardson & Guralnick, 1978). Specifically, since residents in each program participated in the rotation on a monthly basis for the most part, residents at each of the 11 sites were assigned to either a postrotation (experimental) or to a prerotation (control) group. Following the completion of the rotation at the end of a month, the evaluation case study questions were administered to the residents assigned to the experimental group. At the same time, however, the evaluation case study questions were administered to those residents assigned to the control group who were scheduled to begin the rotation for the *following* month. This formed the basis for the primary comparisons. That is, through random assignment of residents and by alternating participation in experimental and control groups within and across sites, this procedure had the effect of randomizing all possible confounding variables including resident experiences and self-selection factors, yet not preventing any residents from participating in the rotation or interfering with rotation schedules. Accordingly, any differences found between the experimental and control groups could be attributed directly to participation in the developmental pediatrics rotation.

As can be seen in Figure 13.2, experimental group residents received higher scores on each of the evaluation case study questions than control residents, with each comparison being statistically significant ($p < .05$). From a maximum of 270 points, the mean total score for control residents was 113.9, whereas experimental residents' mean total score was 164.3, also a highly significant difference.

Taken together, this systematic evaluation of a rotation in developmental pediatrics based on a carefully structured curriculum has revealed that the essential goals of a program that is national in scope can be accomplished. Upon completion of such a rotation, residents clearly demonstrated a greater appreciation of the professional challenges involved in serving children with disabilities. Not only did they indicate that the knowledge and clinical skills needed to care properly for handicapped children and their families were important to their future pediatric careers, but also that this particular rotation was critical to acquiring such skills. In addition, residents reported that their

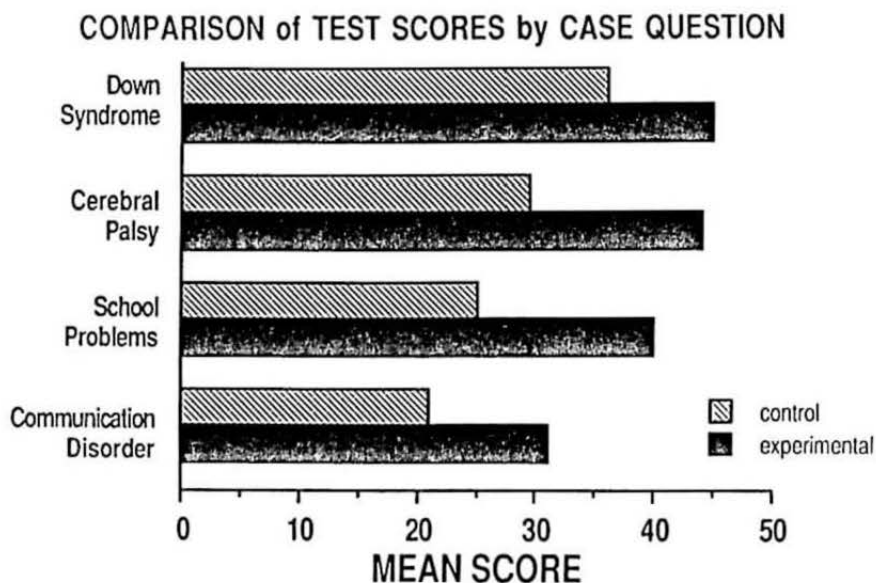


Figure 13.2. Mean scores for each of the four evaluation case study questions for residents in the control and experimental groups. (Based on Bennett et al., 1984.)

particular rotation was well organized even though the curriculum was implemented in very different ways across a number of diverse training sites. Although residents perceived their knowledge of handicapping conditions as having improved, many commented that the relatively lower rating assigned this area reflected a recognition of the complexity of information in the field of developmental pediatrics—an appreciation that was not fully gained prior to the experience of the rotation. Finally, an objective evaluation of the curriculum revealed that the clinical decision-making skills of residents working with handicapped children or those suspected of having handicapping conditions can be significantly enhanced through participation in the developmental pediatrics rotation.

Following this initial implementation and evaluation phase, the task force once again examined the overall direction of the project in meeting its long-term goal of establishing mandatory training in developmental pediatrics in all accredited residency programs. Based upon the evaluation results, more wide-scale dissemination appeared warranted.

EXPANDING THE NETWORK

Having demonstrated the effectiveness of the curriculum, the next step in the approach was to recruit new programs. Because of their leadership position in the field, task force members were able to identify several potential sites that

might be interested in establishing or expanding their developmental pediatrics rotation. Indeed, many pediatric fellows who had been trained by members of the task force were associated with sites that were eventually selected. In addition, project staff and other task force members had made several presentations regarding the curriculum and corresponding training issues at various professional meetings, which generated considerable interest. Also, the curriculum development, implementation, and evaluation process was subsequently described in professional publications, which also led to requests for further information and, often, eventual participation.

Once potential sites were identified, a formal process was followed in order to prepare the training program for implementation of the curriculum. This included a thorough review of the curriculum, matching clinical and related resources to specific objectives, assuring that appropriate administrative procedures had been followed, and resolving any major political issues. Sites that had been through this process were able to provide important advice during conferences attended by existing and new training programs. As of 1986, nearly 50 of the more than 200 accredited pediatric residency training programs have participated in these conferences.

While several members of the task force assumed primary responsibility for implementing and evaluating the curriculum, others attempted to influence key national groups in pediatric education to review the curriculum as a means of defining a body of knowledge in developmental pediatrics. It was hoped that through support from such organizations as The American Academy of Pediatrics, Study Group on Pediatric Education, The American Academy of Cerebral Palsy and Developmental Medicine, American Board of Pediatrics, and The Ambulatory Pediatric Association, that some of the institutional barriers could be overcome and a more generalized acceptance of the need for training in this area could be achieved. As previous sections of this chapter have indicated, considerable progress has been made in recent years within the pediatric community. However, continued effort needs to be maintained with these key decision-making groups if systems level changes are to occur. Accordingly, efforts currently are being directed toward official endorsements of the content areas covered by the curriculum. Formal action by any of the major professional organizations could influence dramatically the commitment to training in developmental pediatrics.

To support further the credibility of our efforts it was necessary to demonstrate that these new sites—training programs that were neither part of the initial development of the curriculum nor were participants in task force activities—could establish effective training programs. Accordingly, the evaluation procedures described earlier in this chapter were applied to the most recent cycle of residents, consisting primarily of new site participants (Guralnick, Bennett, Heiser, Richardson, & Shibley, in press). Outcomes on both subjective and objective measures were similar to those of the initial

sites, confirming that new network training programs could implement the curriculum effectively and suggesting once again its potential value on a national level.

ISSUES FOR THE FUTURE

What conclusions can be drawn regarding the impact of this systems level approach to fostering training in developmental pediatrics? Our efforts were undertaken to address an identified need for improving training of pediatricians in the area of developmental disabilities. As such, special consideration was given to the processes of development and dissemination, the contributions of a written curriculum, and documentation of its impact.

The creation of a national task force of experts in developmental pediatrics, medical education, curriculum development, and evaluation was critical for a program of this nature. First, the task force established the initial credibility of the effort and provided valuable information regarding previous history, current trends, and political considerations for acceptance by the pediatric community. Moreover, this group openly discussed several key issues confronting the evolving field of developmental pediatrics, for example: the need for a block rotation versus an integrated experience, the incorporation of behavioral as well as developmental pediatric topics in a single rotation, and the need for developmental pediatrics as a recognized subspecialty. While all these issues were certainly not resolved, the discussion surrounding them enabled a curriculum to be developed that was sensitive to these concerns. Finally, the national task force was the foundation for the establishment of a network of pediatric educators with a common interest. This network, which has expanded as new sites have been added, continues to be an extremely important outgrowth of the entire development and dissemination process.

In a survey of all accredited pediatric residency programs, 65% of the respondents indicated that the lack of a defined curriculum was a barrier to comprehensive training in developmental pediatrics (Guralnick et al., 1982). In examining the effectiveness of our curriculum in overcoming this barrier, several factors can be noted. First, it provided faculty a means of examining their own training priorities in comparison with leading experts in the field. Moreover, as gaps were identified in their training programs, it provided a mechanism for seeking additional resources. Finally, and perhaps most important, it clearly documented the extensive body of knowledge and clinical skills that are a part of the area referred to as developmental pediatrics. This was extremely valuable in approaching department heads and curriculum committees regarding the need for systematic training in this area. In fact, we suggest that the value of well-documented reports of the effective

transmission of the appropriate knowledge, skills, and attitudes identified in developmental pediatrics training programs cannot be overestimated. We anticipate that efforts to evaluate training programs systematically and objectively, especially if carried out on a national level, will eventually have an impact if disseminated properly.

A national effort similar to that described in this chapter can serve also as a catalyst for building a constituency within the pediatric community to lobby for mandatory rotations for pediatric residents that focus on developmental issues. In fact, the rudiments of networks, often based in specific geographic regions, have already been established. As new training sites join, especially the larger "leadership" sites, we expect that such networks will be able to assume responsibilities that become self-sustaining in nature. For example, these networks could function to disseminate information about educational practices or new research findings in the field as well as provide technical assistance to those sites considering initiating or strengthening a rotation relative to developmental issues. Of equal importance would be the mutual support that would be generated within such a network to press for widespread changes within pediatric administrative hierarchies. This might be accomplished through the development of position papers or by participating in the work of committees that may have an impact on pediatric education policies. This constituency could extend even to other medical specialties, as seen in the recent interest of family practitioners in the area of treating persons with disabilities (Fischler, 1983).

Yet despite this progress and the pressures for change within pediatrics, we believe that much skepticism remains within the pediatric community. The often limited resources and status accorded to developmentally oriented faculty and training efforts within major pediatric training programs belie public and forceful statements of commitment to change. In part, this skepticism reflects concern about the "soft" nature of the field as well as its ability to develop and evaluate the effectiveness of its diagnostic and treatment approaches in a manner similar to those found in other fields of pediatrics. Issues of scientific credibility are perhaps most apparent in the area of early intervention (Denhoff, 1981; Ferry, 1981), where controversy is likely to continue for some time to come (Guralnick & Bennett, 1987).

Moreover, institutional change is slow at both national and local levels. The long-term impact of our contacts with key professional organizations has yet to be realized. Even within an individual residency program, considerable effort often must be exerted to reach even the interim goal of establishing an elective training program in the area. The fact remains that such changes may be more dependent upon local personalities than on the inherent value of the training program itself. As Weinberger and Oski (1984) have noted in their survey of pediatric residency programs, very few substantial content changes

in the areas of chronic handicapping conditions and behavioral problems have been made 5 years after the report of the Task Force on Pediatric Education, despite the prestige of this organization.

Finally, a number of questions remain unanswered; questions that may ultimately determine the effectiveness of our systems approach. First, we must determine if the gains in knowledge and clinical skills noted by residents on the evaluation instruments actually result in improved services for handicapped children and their families in future years. Extensive follow-up of residents participating in the training program is underway. Second, it is important to ensure that the training initiatives established with the support of external funds and a task force can be maintained over time. Ultimately, it is the network of developmental pediatricians committed to improving training in this area and applying pressure for comprehensive, mandatory training throughout all residency programs that must find a mechanism to continue this work.

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