

Training Pediatric Residents and Pediatricians About Adolescent Mental Health Problems: A Proof-of-Concept Pilot for a Proposed National Curriculum

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Objective: This article presents a DVD-based educational program intended to help pediatric residents and practicing pediatricians recognize and respond to adolescent depression in busy primary care settings.

Methods: Representatives from pediatrics and adolescent medicine, child and adolescent psychiatry and psychology, and experts in the creation of educational mental health programs met to design a multimedia approach to improving the mental health diagnostic skills among pediatric residents. The authors chose depression as the initial topic because of its relatively high prevalence among children and adolescents, and evidence suggesting that pediatricians may have difficulty diagnosing this disorder in the primary care setting. The authors created a 30-minute DVD program featuring depressed adolescents and experts in child psychiatry and adolescent medicine. After viewing the DVD, residents in the training program, as well as practicing pediatricians, completed a standardized survey to assess the usefulness and attractiveness of this approach to pediatric education.

Results: The survey results support the potential value of this type of material and the feasibility of similar programs in addressing an array of mental health concerns in pediatric residencies. Participants found the program useful and indicated interest in receiving more educational programs in this format.

Conclusion: The authors suggest that the relative ease with which initiatives such as this media-based approach can be im-

plemented make this educational technique appropriate and feasible on a large scale for programs throughout the nation and for a variety of mental health concerns.

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Scope of the Problem: Child and Adolescent Mental Health

Mental health problems are a routine feature of pediatrics practice. The best available data, from the Methods for the Epidemiology of Child and Adolescent Mental Disorders (MECA) Study, suggest that the 6-month prevalence rate for any mental or addictive disorder among youth ages 9 to 17 is 20.9%; if we limit this to youth with significant functional impairment, the figure drops to 11% (1). Half of all lifetime cases of DSM-IV disorders begin at age 14, and unlike chronic physical disorders, mental disorders have their strongest foothold in youth (2). These problems have serious implications for children's current and future health and wellbeing. For example, depressed children often grow into adults with recurring mood disorders and other psychiatric conditions (3). Childhood depression is implicated in problems with relationships, school performance, substance abuse, and—of greatest concern—suicide. According to the most recent Youth Risk Behavior Surveillance data, 16.9% of U.S. high school students had (at some point during the previous 12 months) made a plan to attempt suicide, and 8.4% reported at least one actual attempt (4).

Although it is harder to diagnose disorders such as depression in children than in adults, improved procedures and instruments have made this easier and more reliable than in the past (5, 6). There are also effective evidence-

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based treatments for medication management and psychosocial therapies (7). However, for most young people, mental health and substance abuse problems are either unrecognized or inadequately treated (8, 9). This is of particular concern given that mental health disorders such as depression and anxiety in adolescence have been linked to reduced adult quality of life, and have a greater effect on quality of life than do physical illnesses (10).

Barriers to Diagnosis and Care

One barrier to meeting children's needs is an undersupply of trained child and adolescent psychiatrists. As of 2001, there were only about 6,300 child psychiatrists in the United States, or about 8.7 per 100,000 young people (11). This shortage is expected to continue. The number of U.S. child and adolescent psychiatry residency programs has decreased from 130 in 1980 to 114 in 2005 (12). Moreover, these psychiatrists are often clustered in major cities that have academic medical centers—and even those centers turn away many or most of their child psychiatry referrals due to lack of staff and space. Similarly, compared to the abundance of pediatric primary care physicians, there is a relative dearth of developmental and behavioral pediatricians. Currently, there are 37 approved fellowship programs in developmental-behavioral pediatrics, and 27 approved programs in adolescent medicine (13). As of December 31, 2005, there were 437 board-certified adolescent medicine specialists in the United States (14). In a survey of practicing pediatricians, they identified developmental-behavioral pediatrics (87%) and adolescent health (64%) among subspecialty fields with the greatest shortage of providers (15).

Another barrier is inadequate insurance coverage for mental health care as compared to "medical" care (16). Even if a child psychiatrist is available, many families are unable to afford services despite ongoing legislative attempts to establish greater mental health parity. Studies suggest that children often fail to get care when referred by their pediatricians for outside mental health treatment (17), supporting the need for informed collaborations between pediatricians and mental health professionals.

The Benefits of Training Pediatricians

Primary care pediatricians have the potential to diagnose and treat (or make appropriate referrals) for many of these neglected youngsters. Roughly one-fourth of pediatric visits involve some discussion of behavioral, developmental, or emotional concerns (18). Pediatric specialists are more numerous than child psychiatrists, with approx-

imately one pediatrician for every 2,000 young patients (19). Third-party payers generally cover pediatric medical services. Adolescents are expected to see their pediatrician on an annual basis, which provides a natural opportunity to screen for mental health problems. Adolescents are often more comfortable talking with their pediatrician than with an unfamiliar mental health professional (20). Due to the stigma of mental illness, families may be more supportive of mental health treatment provided through a pediatrician (21)—especially with less-complicated mental health issues.

The transition to adult medicine from pediatric medicine can be difficult; many older adolescents or young adults with physical and mental illness fall through the cracks (22). Pediatric training in the diagnosis and treatment of depression and other mental disorders would serve as a safety net for those older adolescents.

Expert consensus is that pediatricians could appropriately diagnose and treat mood disorders in patients with mild to moderate illness (23). Standardized tools such as behavior checklists are available to help pediatricians assess psychosocial problems, but they are underutilized; in one study, half of pediatricians never used such tools (24). Multiple studies have found that pediatricians with training in psychosocial issues are more likely to identify and/or appropriately manage care for children with emotional and behavioral problems (25).

Many adolescents with moderate or severe illness require treatment by qualified child psychiatrists or allied mental health professionals. Pediatricians can play a vital role in identifying troubled adolescents, making appropriate referrals, and participating in the treatment team as medication managers as appropriate, or when child psychiatrists are unavailable (26).

The Need for Improved Training

Previous surveys of pediatricians suggest that the majority are interested in receiving further education in identifying, managing, and treating depression and other mental health problems in children. Many cite lack of training, competence, or confidence as barriers to treating or referring children and adolescents. The largest perceived obstacle is often the lack of time to treat or refer. This suggests that training must emphasize practical, feasible strategies that could fit into routine pediatric practice (27).

Pediatric residents need to know how to interview, diagnose (28), treat, and triage mentally ill patients in harried ambulatory practices. These skills are also necessary for pediatric specialists who see troubled adolescents in

their clinical practices. For example, depression, anxiety, and posttraumatic stress disorder, as well as family problems, are common among children with acute and chronic illnesses (29). Attention to these issues may improve medical outcomes.

Pediatricians also must feel comfortable addressing the needs of mentally ill youth. Given recent black box warnings issued by the Food and Drug Administration (FDA) on selective serotonin reuptake inhibitor (SSRI) medications, and results of studies indicating that some adolescents had suicidal ideation while taking such medications, pediatricians need increased confidence in their abilities to diagnose, treat, and follow patients struggling with mental illness (30).

While pediatricians are typically at the “front lines” of medical professionals who come into contact with adolescents and their families, many have relatively little training in making these assessments. The current Accreditation Council for Graduate Medical Education (ACGME) requirements include just 1 month of full-time equivalent training and education in behavioral/developmental pediatrics and 1 month of adolescent medicine over the 3 years of pediatric graduate education. This is a brief period of time given the enormity of knowledge, skills, and attitudes required, as well as the prevalence of these problems. Few pediatric programs have the internal faculty to teach this material, or have close ties to a child and adolescent residency program with sufficient expert faculty to teach in this area (31).

Finally, there is a need for high-quality, objective, free or low-cost continuing medical education on adolescent mental and behavioral health for pediatricians. A 2006 article in the *Journal of the American Medical Association* called on academic medical centers to take the lead in disseminating continuing medical education (CME) that is not dependent on pharmaceutical industry funding and that adequately addresses the multimodal treatments that mental health interventions require (32).

In sum, addressing the enormous unmet needs requires improved training of pediatric residents in mental health and substance abuse disorders, including diagnosis, treatment, and when to refer to or collaborate with a specialist. It also requires access to experienced faculty with an understanding of current research and techniques. We found no mention (in the published literature or anecdotally) of any U.S. residency program with a formal substantive curriculum to teach these important skills to pediatric residents, nor any set of media materials that could support such training. For these reasons, researchers and child

mental health advocates have continually called for stronger links between pediatricians and psychiatrists/psychologists to help pediatricians recognize signs of problems and to consult on referrals of children who need additional help (33).

Advantages of Using Electronic Media for Training

Computer-based multimedia education demonstrates how information presented via lectures or textbooks can be effectively translated into clinical practice. Studies have found online CME courses to be effective in improving physicians' knowledge and practice, with quality of content rated as most important (34). Well-designed online CME can be as effective as small-group, in-person CME in changing physician knowledge and behavior (35). However, computer-based CME programs vary widely in quality of content, instructional design, instructional methods, and in presentation of content (36). Careful attention to planning, production quality, and evaluation of program elements are critical to success—and to replicating that success with other topics and audiences.

Well-designed electronic media programs can:

- Provide behavioral models for key skills (e.g., interview techniques pediatricians can use to assess potentially depressed or suicidal teens within the constraints of daily practice)
- Introduce a range of expert instructors that viewers would not otherwise have access to (e.g., psychiatrists and pediatricians from different backgrounds who can demonstrate a range of approaches to different types of patients)
- Expose viewers to information that would be difficult to provide in live teaching (e.g., video or audio demonstrating how patients with a particular condition may look or sound) (37)
- Provide up-to-date support materials that educators can integrate into their seminars and case discussions
- Address attitudes and emotions as well as facts (e.g., via interviews with practicing pediatricians who describe their experiences with diagnosing adolescents)
- Make information available at times and places convenient for residents and pediatricians, increasing the odds that they will be used and revisited
- Potentially adapt information to users of different learning styles, to maximize effectiveness (38)
- Expand learning via links to related credible information and organizations on the web.

One of the challenges of comparing the effectiveness of various media-based approaches to CME is the tendency of many authors to describe the materials they create in generic terms, such as “a DVD” or “a website.” Since the medium can be less important than the structure and the content, this article will detail specifics of both.

Project Description and Goals

The Massachusetts General Hospital Department of Psychiatry (including the its Center for Mental Health and Media) and the hospital’s Adolescent Division collaborated to test the feasibility of a flexible, multimedia national curriculum on child and adolescent mental and behavioral health problems (the Pediatric Mental Health Training Initiative). We produced and pilot-tested a segment of the planned curriculum: a DVD featuring video, audio, graphics, and print material on diagnosing adolescent depression in the primary care setting.

The goals of the DVD were:

- To influence attitudes and beliefs related to adolescent depression—to motivate pediatric residents and pediatricians to pay more attention to depression, to feel that it is part of their job to address depression (not simply to refer to a mental health professional), and to believe that it may be possible to assess depression during routine pediatric visits (despite time constraints)
- To teach basic facts about adolescent depression (prevalence, symptoms, comorbidities, consequences)
- To model one simple method of screening for depression symptoms (using the mnemonic “SIGECAPS”)
- To increase confidence about using this tool to diagnose depression
- To remove perceived barriers to taking action to diagnose and help depressed adolescents (lack of time, lack of interest, lack of skills, lack of self-efficacy).

The training goals and content were developed by the authors based on their combined experience in diagnosing adolescent depression, educating pediatric residents and pediatricians, and developing health behavior change and educational media programs. For the pilot study, we modeled the use of a mnemonic (SIGECAPS) that summarizes DSM-IV criteria for depression. SIGECAPS was originally developed at Massachusetts General Hospital by Carey Gross, M.D. (39). SIGECAPS stands for Sleep increase/decrease; Interest in formerly compelling or pleasurable activities diminished; Guilt, low self-esteem; Energy poor; Concentration poor; Appetite increase/decrease; Psycho-

motor agitation or retardation; and Suicidal ideation (all occurring in the context of depressed or irritable mood lasting longer than 2 weeks). While this mnemonic is widely known among many mental health clinicians, we found that it was relatively unfamiliar to pediatricians.

The DVD-based education pilot program was intended to assess the reaction of a sample of approximately 50 pediatric residents and practicing pediatricians to the DVD content, format, and style, and to assess the perceived need for and interest in DVD- or web-based education on specific adolescent mental and behavioral health issues. Since this was formative and exploratory research, we chose to solicit anonymous, honest feedback via an internet-based survey. We expect future steps in this research to involve more detailed measures and larger samples of pediatricians and pediatric residents.

Methods

Materials

A 22-minute original DVD was produced for the pilot test, using high-definition video. The DVD could be played on any computer with appropriate hardware and software, as well as on a standard DVD player and TV. Interviews were recorded in February and March of 2006.

Patients for the model interviews were recruited via the Massachusetts General Hospital psychiatry department. Two patients with recently diagnosed depression agreed to participate, with written parental consent. To highlight the difference in presentation between depressed and healthy adolescents, a third child with no history of depression was recruited. Participants were paid \$50 for their assistance.

Dr. Mark Goldstein conducted interviews as he would with a new patient in the Massachusetts General Hospital Adolescent Medicine clinic. The children’s actual physical symptoms (e.g., stomach pain) were used as presenting complaints; the third child was interviewed as if for a routine well-child checkup. The subjects were interviewed in a “limbo” setting (against a black background) to focus viewers’ attention on signs of depression in the adolescents’ facial expressions, posture, and dress.

In addition, four hospital pediatricians and residents (women and men of different ages) were videotaped giving their opinions about how prepared they felt to diagnose adolescent depression and whether it was feasible to do so in routine pediatric practice.

The DVD was divided into six separate sections. In the first, a series of brief comments from interviews with four pediatricians and residents (women and men of different

ages) was shot in clinic corridors and exam rooms. These address common perceived barriers to getting involved in making a diagnosis of adolescent depression, providing context for the content to follow. The second section transitions to Dr. Eugene Beresin, who introduces the DVD and explains its format and goals. Thirdly, with the aid of computer graphics, Dr. Beresin explains the prevalence of adolescent depression, symptoms, common comorbidities, and consequences of untreated depression (including suicide). He introduces the mnemonic SIGECAPS (pronounced *sig-e caps*, or “prescribe energy capsules”) as a way to remember the criteria for major depression, and explains that Dr. Mark Goldstein will model a set of interviews. The fourth section transitions to Dr. Goldstein, who describes how he typically initiates such interviews. The fifth section transitions to model interviews with three young adolescent boys (two of whom are depressed). We begin with child #1 (Jake), but soon begin to alternate between his responses and those of child #2 (Matt) and child #3 (David) as Dr. Goldstein proceeds through the SIGECAPS questions. Throughout the interviews, we see only close-ups of each child as he responds to Dr. Goldstein’s questions (we hear Dr. Goldstein, but no longer see him, since observing the child as he listens and responds to questions is important to diagnosis).

From time to time, the image of the child is frozen as we hear commentary by Dr. Goldstein (recorded after each child’s interview) about what he was observing in the child’s responses and demeanor, whether these observations supported a diagnosis of depression, and how they influenced his subsequent questions. The progress through SIGECAPS and key observations about the child are highlighted with computer graphics. Other issues, such as use of substances to self-medicate, are discussed as they arise. Voice-over comments from Dr. Beresin are added to clarify some points. Only a few questions are needed to show that child #3 is not depressed. The final section contains closing comments from Dr. Beresin.

Study Participants and Recruitment

The pilot test of the “proof of concept” DVD was conducted with a sample of pediatric residents and practicing pediatricians. Our goal was to include a minimum of 35 pediatric residents and practicing pediatricians, to assess the educational needs of pediatricians at various stages of their careers.

Participants were recruited from several sources:

- Third-year residents in pediatrics and medicine-pediatrics at Massachusetts General Hospital. Each year, 20 to

25 residents have a 1-month rotation in ambulatory adolescent medicine. The pilot training module was integrated into this rotation, to supplement and expand on material presented via live lecture and print.

- Pediatricians within Partners Community Healthcare, Inc. (PCHI). Information about the study was distributed twice via the monthly newsletter sent to all PCHI-affiliated pediatricians (approximately 350). They were invited to e-mail or telephone to request a free DVD and complete a web-based survey; 13 pediatricians responded.
- Members of the Society for Adolescent Medicine (SAM). A notice about the DVD and pilot test was distributed to a national audience via the SAM e-mail listing; SAM members were invited to request a DVD. Fifty DVDs were mailed to 43 addresses, including some to sites with multiple pediatricians and to residency programs.

Survey Development

A 30-question web-based survey was developed for the pilot test. It collected quantitative and qualitative information on the following topics:

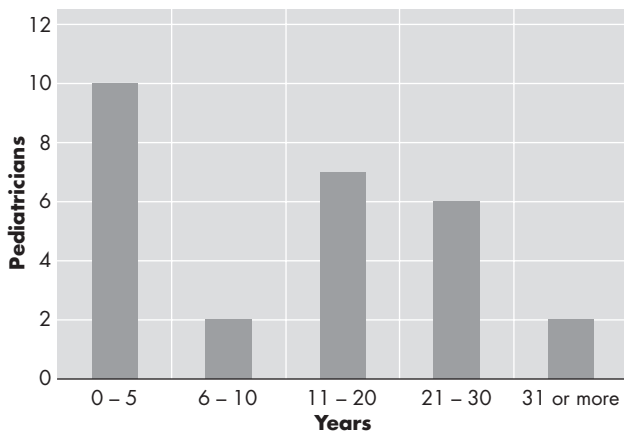
- Type of physician or resident, years in current position, primary workplace, and location (state) of practice or training
- Previous training in adolescent depression in the past few years
- Perceived change in key attitudes/beliefs after viewing DVD
- What was learned from the module, including what was most relevant to their current or future practice
- Credibility of content and experts
- Any content the participants found confusing or inappropriate
- How patient interaction might be affected by the DVD (behavioral intentions)
- What content participants would like to see in a full-length DVD on adolescent depression
- How frequently participants encounter various adolescent mental or behavioral health problems in their practice
- What additional topics on adolescent mental and behavioral health should be covered on full-length DVD or web-based programs
- Interest in receiving supplemental materials to educate parents, teens, or teachers
- Information on participants’ media use patterns and preferences related to continuing professional education (including program funders)

- Additional comments on the DVD or on experiences with adolescent mental health.

Results

The survey was returned by 36 pediatricians; 14 were in practice in Massachusetts and the rest were divided among 13 other states. As shown in Figure 1, one-third had been in practice for 5 years or less. Surveys were also returned by 24 pediatric residents (including two adolescent medicine fellows), 21 of whom were training in Massachusetts. Several incomplete surveys were discarded, as were surveys completed by other health professionals (e.g., medical students).

FIGURE 1. Number of Years in Practice for Pediatricians Participating in the Pilot Study



Years in practice does not include residents, fellows, or medical students.

Key Survey Findings

Nearly all pediatricians and residents agreed or strongly agreed that pediatricians encounter depressed teens in their practice every week; 31% of pediatricians (n = 11) and 17% of residents (n = 4) said that the DVD had increased the strength of that conviction. Ninety-two percent of pediatricians (n = 33) and residents (n = 22) agreed that the physicians in the video seemed credible and knowledgeable. When asked how their interactions with adolescents might be affected by the DVD, more than half of each group indicated that they might try using SIGECAPS; 31% of pediatricians (n = 11) and two-thirds of residents (n = 15) indicated that they would be more alert for depression in their practice.

Three-quarters of pediatricians (n = 27) were very interested in seeing a full-length DVD on adolescent depression, as were 29% of the residents (n = 7); 54% of residents (n = 13) were somewhat interested. As shown in Table 1, participants were interested in seeing a comprehensive and practical program.

At least one-half of the pediatricians were very interested in viewing a program on each of these topics: depression (92%, n = 33); anxiety disorders (75%, n = 27), attention deficit-hyperactivity disorder (64%, n = 23), drug/alcohol abuse (61%, n = 22), conduct disorder/behavior management (53%, n = 19), and learning disabilities (50%, n = 18). Most would also like materials to educate parents (69%, n = 25) and adolescents (89%, n = 32) about these issues. More than 50% of residents were very interested in viewing programs about anxiety disorders, drug/alcohol abuse, ADHD (58% for each, n = 14), and depression (54%, n = 13).

Table 2 lists 27 adolescent mental/behavioral health top-

TABLE 1. Content which Participants Would Like to See in a Full-Length Program on Adolescent Depression

	Pediatricians		Residents/Fellows	
	N	%	N	%
Comorbidities of depression	25	69.4	15	62.5
Medical conditions that can mimic depression	22	61.1	15	62.5
Depression in children who have medical illnesses	14	38.9	13	54.2
Examples of how to do brief interviews to assess depression	30	83.3	15	62.5
Treatment options: talk therapies	25	69.4	12	50.0
Treatment options: medications	30	83.3	18	75.0
How to match treatment to symptoms	24	66.7	13	54.2
Medication side effects	21	58.3	15	62.5
How to collaborate effectively with a psychiatrist/psychologist	19	52.8	10	41.7
How to talk with/educate parents	25	69.4	17	70.8
What treatments can be provided in a pediatric practice	22	61.1	12	50.0
Office-based screening instruments	28	77.8	14	58.3
Prevention techniques (in the office, schools, community)	12	33.3	7	29.2

TABLE 2. Adolescent Mental Health Topics of Interest to Study Participants

Topic	% "Very" or "Somewhat" Interested
Depression	96
Anxiety disorders	95
Drug or alcohol abuse	92
Conduct disorder/behavior management	89
Suicidality	88
Eating disorders	88
ADHD	85
Learning disabilities	85
Self-harm/cutting	85
Sexual abuse	84
Bullying, aggression, violence	82
Posttraumatic stress	82
Psychiatric aspects of pediatric illness	82
Obsessive-compulsive disorder	82
Bipolar disorder	81
Autism, pervasive developmental disorders, Asperger's syndrome	79
High-risk sexual behavior	78
Smoking prevention/cessation	78
Sleep disorders	76
Chronic pain	74
Family psychopathology/domestic abuse	73
Psychological/neuropsychological testing	73
Personality disorders	72
Schizophrenia/psychoses	66
Media violence/wise use of media	61
Attachment disorders	61
Sexual harassment	60

ics. At least 60% of the total sample was "very" or "somewhat" interested in viewing a DVD- or web-based program on each of these topics.

Practicing pediatricians reported that they were most likely to access CME materials on the web (75%, $n=27$), to download print materials from the web (72%, $n=26$), or to use print materials received by mail (75%, $n=27$). They would most prefer to receive such information via DVDs (83%, $n=30$) and the web (78%, $n=28$); web materials ranked first among residents (75%, $n=18$).

We found that 64% of pediatricians ($n=23$) strongly preferred and 25% ($n=9$) preferred to receive educational materials produced by nonprofit organizations. Residents seem less settled in their opinions (42% strongly preferred nonprofits, $n=10$; 25% preferred nonprofits, $n=6$; 29% had no preference, $n=7$). No respondents preferred to receive materials from for-profit entities.

At the end of the survey, participants were asked to provide some general feedback about issues related to the

DVD and adolescent mental health. Many gave positive comments ("Making use of realistic interviews and comments lets us see 'what the expert is thinking while doing.' It is this thought process that helps me learn more because I understand why something is being done . . . not just what is being done").

Conclusions

This pilot test supports the need and, perhaps more important for success, the demand for a well-designed media-based curriculum on adolescent mental and behavioral health. Based on the results of this first step, we are better able to design and produce effective, comprehensive media-based training materials for which results could be measured in terms of changes in the rates of accurate diagnoses and treatments of key mental health issues.

In addition, physicians in our pilot said that they are interested in a coordinated, complementary set of materials that could be used to educate parents on these issues. Other researchers have found evidence that parents will use and benefit from child health information on the internet that is "prescribed" by pediatricians (40).

The different levels of interest between practicing pediatricians and pediatric residents in viewing a full-length DVD on depression may reflect the heavy time demands of residency training. Also, residents must focus on high-acuity medical illnesses in inpatient wards and intensive care units; most ambulatory practice involves low-acuity illnesses and health maintenance, with daily exposure to psychiatric illnesses and psychosocial/behavioral issues.

The pilot study also demonstrates the value of collaborating across disciplines to create materials. For example, this joint effort by pediatrics and psychiatry ensured that the content fit the needs and practical constraints of pediatric practice and addressed relevant attitudes and beliefs of pediatricians—materials are more likely to be used and subsequent changes will improve the health of adolescents. Finally, this study shows the feasibility of developing high-quality educational materials on a reasonable budget (\$20,000 in direct production and research costs; time and some overhead expenses were contributed).

Our eventual goal is to develop a comprehensive Pediatric Mental Health Training Initiative that can serve as a model and resource for the 218 accredited pediatric residency programs and medicine/pediatric training programs in the United States. The program will also provide an unbiased, easy to access educational resource for practicing pediatricians.

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