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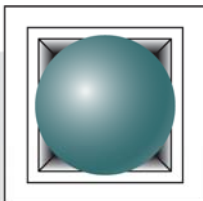
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EXECUTIVE SUMMARY

This report examines the current state of adolescent medicine fellowship programs -- including the supply and recruitment of fellows; the nature and content of clinical, research, and leadership training; and the institutional and financial challenges facing training programs today -- and offers recommendations for building the field. The report is based on findings from the first comprehensive national survey of adolescent medicine fellowship program directors, conducted in the spring of 2007 by The National Alliance to Advance Adolescent Health. The document also presents selected findings from two other National Alliance surveys conducted in 2007: one of pediatric residency program directors and the other of adolescent medicine faculty responsible for the one-month pediatric residency rotation. In addition, the report presents findings from key informant interviews and an extensive literature review.

Supply and Recruitment

Since adolescent medicine has become a board-certified subspecialty, requiring three years of training, the number of fellows entering training has not increased, and most of those who have received certification qualified on the basis of shorter alternative pathways. Correspondingly, fewer fellowship programs exist now than did prior to board certification, with only 24 ACGME-accredited programs actively operating at the time of our survey. Moreover, a third of approved ACGME positions remain unfilled. There are many factors deterring residents from seeking training in adolescent medicine. A key deterrent, however, is the perceived low salary potential of physicians in this subspecialty combined with the burden of deferred student loans.

The Training Experience

Clinical Training: In the primary care and general adolescent clinics where clinical training takes place, fellows' experience varies significantly depending on the characteristics of the patient population and clinic operation. In addition, the mix of health professionals represented on clinic staff affects the range of services provided and related training opportunities.

Fellows are expected to spend substantial time in diverse types of clinical settings in order to gain a breadth of experience. Yet the variability across programs is dramatic, with the required number of training sites ranging from three to 14.

With respect to fellows' exposure to clinical faculty, most fellows receive instruction from a range of appropriate professionals. Nevertheless, a substantial number report that they need more obstetricians/gynecologists, psychiatrists and other mental health professionals, and even adolescent medicine specialists involved in training.

Interdisciplinary Care Training: Consistent with the interdisciplinary origins of the adolescent medicine specialty, about three quarters of fellowship programs place a high priority on interdisciplinary training, and most training programs make a strong effort to teach fellows about interdisciplinary care. Not all programs, however, provide the same breadth of training opportunities.

Research Training: All fellowship program directors rank research training as a high priority. Although a broad array of research areas were identified in which adolescent medicine fellows are involved, most often STDs and HIV/AIDS are the studied subjects. Research opportunities in other areas, including depression, adolescent pregnancy, contraception, and substance abuse, are more limited.

Leadership Training: The majority of adolescent medicine fellowship directors (80%) place a high emphasis on leadership training and offer fellows various opportunities in clinical supervision, community and health professional education, advocacy, planning, and technical assistance. Fellows less often receive training in budgeting, business principles, and preparing or delivering testimony.

Factors Affecting Fellowship Training

Institutional: Various institutional factors negatively affect adolescent medicine fellowship training. Fully three-quarters of program directors think that the teaching burden for training pediatric residents is insufficiently compensated by their institutions. Many program directors also think that the low priority that hospital administration places on adolescent medicine compared to other subspecialties adversely affects them. Fellowship directors also note that research opportunities are impeded by inadequate staff support for grant writing, and many view the hospital structure and departmental organization as an obstacle to the provision of interdisciplinary care and training.

Financial: While some adolescent medicine fellowship programs are able to meet necessary expenses, more than half of program directors report that they are experiencing a deficit. Seventy percent of program directors expected the financial situation to remain unchanged in the coming year, with a quarter anticipating a worsening situation.

Adolescent medicine fellowship programs rely on multiple sources of funding, with no consistent pattern across all programs. Hospital, departmental, and institutional funding, which includes GME, is the mostly commonly cited source of financial support. Clinical revenue is the next most commonly reported source, but low reimbursement and high rates of uninsurance negatively affect the programs' ability to train fellows and deliver comprehensive care.

Research and training grants, an important source of funding for a small proportion of fellowship programs, have become highly competitive. Almost three-quarters of fellowship program directors view the lack of public funding for adolescent medicine research as an obstacle to training.

Conclusions

The field of adolescent medicine faces a number of pressing challenges related to fellowship training, particularly in the areas of supply and recruitment, program structure and content, and financial support. Effectively addressing these challenges requires a reconsideration of the fundamental goals and needs of adolescent medicine training as well as targeted action to reinvigorate the field. The following are some initial steps to consider.

Rethinking Fellowship Training

- The Society for Adolescent Medicine needs to clearly articulate the purpose of the adolescent medicine subspecialty, defining its scope of practice and unique areas of expertise. A better understanding of the subspecialty's role in clinical care, residency training, and scholarly activities will help to determine the number of programs and fellows needed and also the nature and content of the required fellowship experience.
- New post-residency training options are needed to achieve improvements in the care of adolescents. A commission, involving the key medical organizations in adolescent health, should be established to examine shorter training pathways that would focus primarily on enhancing clinical skills.

Building the Field

- A new, multi-strategy national recruitment campaign should be initiated to attract primary care residents into adolescent medicine.
- Public and private loan and scholarship opportunities should be increased for adolescent medicine fellows and those seeking shorter training options. In addition, leaders in the field should advocate for priority funding for adolescent medicine research under several NIH programs.
- An adolescent medicine research network, like the research networks developed in other pediatric subspecialties, should be created to guide the development of a cohesive plan for adolescent health research in the future.
- Adolescent medicine faculty in fellowship and residency programs should take a leadership role within their academic medical centers by establishing an organization or committee of faculty from various disciplines involved in the care of adolescents to build institutional support and improve clinical care and related research.
- Additional funding should be made available for leadership training through LEAH to expand the number of eligible training programs and the size of the grants.

Adolescent medicine, a field dedicated to helping young people grow and thrive, is at a crucial turning point in its own development. Through the kinds of decisions made and actions taken in the near term, the field will determine its own future.

I. BACKGROUND

When adolescent medicine was approved as a board-certified subspecialty in 1991, the purpose was to produce specialists equipped to provide complex clinical care, conduct research, and serve as teachers, consultants, and leaders in the field. Given the vast amount of new research on adolescent health that had emerged over the preceding 30 years, existing training programs for physicians wanting to concentrate exclusively on adolescent health care appeared inadequate.¹ The research emphasized that adolescence is a unique developmental period, with numerous biologic, psychological, and social factors interacting with and influencing health. It also underscored the need for more comprehensive and scientifically based approaches to adolescent care, as well as a better understanding of disease processes and effective prevention and intervention. Approval of adolescent medicine as a pediatric subspecialty by the American Board of Medical Specialties (ABMS) was a formal recognition of the science and specialization of adolescent medicine and of the advances in knowledge achieved through several decades of adolescent health research.²

The Case for Certification

Adolescent medicine was meant to incorporate knowledge from a variety of other medical specialties as well as other health professions, and the American Board of Pediatrics' (ABP) proposal made the case that the ability to integrate these diverse biopsychosocial elements made adolescent medicine distinct as a subspecialty.³ The approved proposal stipulated that subspecialty certification would improve the quality of adolescent health care by producing subspecialists who would provide care to adolescents with “complex biopsychosocial problems” and also by training primary care physicians to provide general adolescent care. In addition, the petition argued that a three-year fellowship training program would equip fellows to provide care in such subspecialty areas as endocrinology, sexually transmitted diseases, adolescent psychiatry, adolescent obstetrical and gynecologic disorders, and behavioral disturbances of adolescence, while also gaining skills to conduct further research in the field.

Proponents also anticipated that subspecialty certification would confer additional benefits to the specialty, as was occurring in other areas of pediatrics.⁴ Supporters of board certification hoped that formal recognition would grant the well-established and growing field of adolescent medicine the respect and credibility it deserved. They hoped also that certification would attract more clinicians, teachers, and researchers to the field.⁵ Proponents also anticipated that certification would enhance adolescent medicine's visibility within pediatric departments and facilitate the development of stronger medical school and residency training programs.^{6, 7} They further believed that certification would help to ensure that

adolescent medicine specialists received adequate reimbursement from insurers and other payment plans.⁸

From its inception, adolescent medicine has aimed to be an interdisciplinary field of study, reflecting the complex, interrelated health care needs of adolescents. Dr. J. Roswell Gallagher, founder of the first adolescent health clinic in the United States in 1951, emphasized the importance of providing holistic, interdisciplinary care and utilized a coordinated team of health professionals, including medical consultants, social workers, guidance counselors, and others to address adolescents' diverse health care needs.⁹ Although initially comprised only of physicians, the Society for Adolescent Medicine (SAM), formed in 1968 as a physicians' association, has grown increasingly interdisciplinary, and a large proportion of research generated by SAM members has been conducted by nurses, psychologists, and other health professionals.¹⁰ Most importantly, the adolescent medicine training program guidelines included with the initial application for board certification made explicit this long-held interdisciplinary goal, stating that programs should include participation from a variety of disciplines, including obstetrics-gynecology, psychiatry, nursing, social work, psychology, nutrition, education, and public health.¹¹

At the time that board certification was sought by the ABP, adolescent medicine training programs varied from one another in duration and content, but generally lacked the rigorous research focus of other pediatric fellowship programs. The majority of the approximately 45 programs offering post-residency training in adolescent medicine devoted equal time to clinical care and academic activities such as research, teaching, or program administration. None of the programs, however, required three years of training. About half required two years and 20% required just one year, with the remainder offering a one- or two-year option. Only three programs offered an elective third year of training.¹² Compared with today, there were significantly more openings for new fellows, with 120 positions available and approximately 40 fellows completing training each year.¹³

Competing Points of View

Many in the discipline were satisfied with this training situation and opposed the push for board certification. Opponents voiced concerns that board certification could negatively impact the interdisciplinary nature of the field, and that certification through the ABP would diminish the role of internal medicine and family medicine physicians who could not be board-certified.¹⁴ This might well have occurred had not the American Board of Internal Medicine in 1992 and the American Board of Family Medicine in 2000 obtained approval for board certification of adolescent medicine as a specialty.¹⁵ In addition, many felt that requiring three years of training would dissuade physicians from pursuing training,

especially since adolescent medicine did not offer the same level of compensation or status as other pediatric subspecialties.^{16, 17}

Some of the opposition to certification stemmed from an overall objection to specialization, grounded in the belief that it would dilute the primary certificate of pediatricians. Opponents also argued that specialization was one of the reasons that adolescent health care was fragmented and inaccessible in the first place.¹⁸

Adolescent Medicine Fellowship Training at a Crossroads

Now, 11 years after the first board examination for adolescent medicine fellows completing the required three-year training program,¹⁹ and 17 years after the approval of adolescent medicine as a certified subspecialty, the field enjoys a higher level of respect and has been able to maintain its interdisciplinary focus. However, the number of physicians entering adolescent medicine fellowships has not increased, and opinions about appropriate directions for training echo earlier debates.

Between 1995, when the ABP first began collecting workforce data on adolescent medicine fellows, and 2001, the total number of first-year fellows in accredited programs increased slightly, from 23 to 28 (Table1). Since 2001, however, the number of entering fellows has fluctuated, dropping to 19 in 2005, and only reaching 24 in 2007.^{20, 21,}

²² This general downturn occurred even though board certification is available not only to pediatricians but, after just two years of fellowship training, to internists and family physicians as well. Correspondingly, the number of adolescent medicine training programs has plummeted. As of spring of 2007, only 26 programs were accredited, of which two were not yet active.²³

Many in the field are beginning to voice concerns about the future of adolescent medicine and the subspecialty's ability to meet the needs in clinical care, teaching, and research. Questions are being raised about the primary purpose of the subspecialty, the appropriate length and content of training, the financial viability of adolescent medicine practice, and, of course, successful strategies for recruiting fellows. In order to sustain this important subspecialty, it seems that the time is right to re-examine adolescent medicine fellowship training.

Table 1. Total Number of First-Year Adolescent Medicine Fellows, 1995 – 2007

Years	First-Year Fellows
1995-1996	23
1996-1997	22
1997-1998	23
1998-1999	26
1999-2000	26
2000-2001	26
2001-2002	28
2002-2003	26
2003-2004	28
2004-2005	24
2005-2006	19
2006-2007	21
2007-2008	24

Source: American Board of Pediatrics

While some programs are able to achieve the high goals set for fellowship training, our recent survey of active adolescent medicine fellowship program directors found great variability among fellowship programs in their capacity to provide comprehensive training in interdisciplinary care, research and scholarly activities, and leadership skills. Some programs appear to be doing well on most training fronts, able to fill all available positions and to provide a balanced training experience. Others have difficulty maintaining optimal staffing, are unable to provide a broad range of research and leadership experiences, and often cannot fill all available slots. Of course, many programs fall somewhere in the middle, demonstrating both significant strengths and challenges.

Much of the variability among programs is likely due to the many financial and institutional barriers that affect programs' ability to provide services to adolescents and training opportunities to fellows. Funding for graduate medical education is limited, particularly for subspecialty training programs, and programs often rely on multiple or unstable funding sources. Clinical revenue is reportedly a prevalent source of funding, and low reimbursement for adolescent health services contributes to financial problems. In addition, many programs report a lack of institutional and departmental support for adolescent medicine, a shortcoming similar to that expressed prior to board certification. These barriers impact all aspects of training: clinical, interdisciplinary, research, and leadership.

The Purpose of This Report

This report examines the current state of adolescent medicine fellowship programs, including the supply and recruitment of fellows; the nature and content of clinical, research, and leadership training; and the institutional and financial challenges facing adolescent medicine training programs today. It also provides some recommendations for strengthening recruitment and building the field of adolescent medicine.

The report is based on findings from an extensive literature review, key informant interviews, and a new comprehensive survey of adolescent medicine fellowship program directors. The survey, which achieved an 88% response rate, providing information on 21 of the 24 active fellowship programs, was conducted by The National Alliance to Advance Adolescent Health in the spring of 2007. (See the Appendix for a detailed discussion of the methodology.) Also included are selected findings from two other recent National Alliance surveys conducted in the summer of 2007: one of pediatric residency program directors (78% response rate) and the other of adolescent medicine faculty responsible for the one-month pediatric residency rotation (76% response rate).

II. SUPPLY AND RECRUITMENT OF ADOLESCENT MEDICINE FELLOWS

In contrast to the recent growth in other pediatric subspecialties, the number of fellows entering adolescent medicine has not increased since the field became a board-certified subspecialty in 1991. As noted above, many fewer fellowship programs exist now than did prior to board certification, with only 24 ACGME-accredited programs actively operating compared to approximately 45 before accreditation. Moreover, a third of the 95 approved ACGME positions at these programs remain unfilled.²⁴ We found that even though most programs train two or three fellows each, about a quarter train only one fellow. Across the 21 programs, over half have unfilled positions. In addition, as many as 40% of adolescent medicine fellowship program directors indicated that the number of fellows in their program has decreased over the past few years, commonly citing as reasons fewer qualified applicants, fewer applicants overall, and insufficient program funding.

Currently, there are 701 board-certified adolescent medicine specialists in the United States, with 72% certified through the ABP, 19% through the ABFM, and 9% through the ABIM (Table 2). Importantly, the majority of those with certification qualified through alternative pathways, which in 1994 and 1997 allowed for two years of fellowship training, five years of broad-based practice

Table 2. Number of Adolescent Medicine Certificates Issued by Specialty, 1994 – 2005

Years	Total	Pediatrics	Family Medicine	Internal Medicine
1994	235	209	0	26
1997	155	132	0	23
1999	53	48	0	5
2001	100	47	49	4
2003	92	33	52	7
2005	66	36	30	0

Sources: American Board of Medical Specialties and American Board of Pediatrics

experience, or a combination of training and practice experience.²⁵ In fact, 56% of board-certified adolescent medicine specialists received certification in 1994 and 1997, before any significant number of fellows had completed training in accredited programs. Today, the option to become board certified continues to be available to those who have come through alternative pathways.²⁶ Only a handful of the 65 fellows in training in 2006-2007 were internists or family physicians, yet 89 fellows from these two primary care specialties -- nearly all of them family physicians -- received board certification in 2003 and 2005.²⁷

Challenges to Assessing Workforce Needs

For various reasons, assessing the adequacy of the supply of adolescent medicine subspecialists is more difficult than in other subspecialty areas. It is not clear, for example, precisely what role adolescent medicine subspecialists are meant to fill in patient care. Is adolescent medicine a true subspecialty, in that it is the only physician group uniquely trained to treat adolescents with certain specific diseases and

chronic conditions? Or is adolescent medicine more accurately defined as a specialized level of primary care delivery by physicians expertly trained to treat especially vulnerable adolescents who engage in complex, high-risk behaviors and require interdisciplinary care management and support? The boundaries between primary care and subspecialty adolescent medicine remain unclear. It is not possible, therefore, to estimate the current, or to project the future, number of adolescents who might require the care of an adolescent medicine specialist. Nor is it possible to assess the extent to which primary care physicians might benefit from consultation with adolescent medicine specialists.

Similarly, the consequences of the limited, and ultimately shrinking, supply of adolescent medicine specialists are difficult to evaluate. We do not have any information about waiting times to see specialists, misdiagnoses in the absence of their availability, or other indicators of access or quality problems resulting from shortages. What we do know, however, is that many pediatricians and family physicians -- the primary care providers who most often treat adolescents -- report that they are ill-prepared to address adolescents' complex psychosocial and reproductive health care needs.^{28, 29, 30, 31} Moreover, among physicians caring for adolescents, at least two-thirds think that there is a need for more adolescent medicine specialists in the United States, and the majority of those indicated that the most pressing reason for more specialists is to see patients in clinical settings.³²

Of course, the supply of adolescent medicine specialists must also meet the demands of academia, and research suggests that the current number of specialists is insufficient for teaching and scholarship. Our survey found that slightly more than half of adolescent medicine fellowship program directors believe there is a need for more adolescent medicine specialists to train fellows. We also found that more than a quarter of pediatric residency program directors think that more adolescent medicine specialists are needed to train residents.³³ A previous study in 1998 reported that about 60% of pediatric residency programs indicated that they had an inadequate number of adolescent medicine faculty.³⁴ These findings are particularly significant given that 85% of the adolescent medicine fellowship directors we surveyed indicated that the primary purpose of their training program is to prepare fellows for careers in research and academics.

Deterrents to Recruitment

According to adolescent medicine fellowship program directors, the major factors deterring residents from seeking training in adolescent medicine are financial in nature. Interestingly, our survey found that fellowship program directors reported many of the same income-related problems that were anticipated two decades ago by opponents of board certification. Almost all of the program directors we surveyed pointed to the low salaries of adolescent medicine specialists as a major deterrent to recruiting fellows.

Adolescent medicine faculty in pediatric residency programs concur. In a separate survey, we found that among faculty responsible for the one-month rotation in adolescent medicine, three-quarters cited low income potential as a factor deterring residents from fellowship training in adolescent medicine.³⁵

Table 3. Physician Salaries in Academic Medicine and Clinical Practice by Specialty, 2006

Specialties	Academic Medicine				Clinical Practice	
	Assistant Professor		Professor			
	Mean	Median	Mean	Median	Mean	Median
General Pediatrics	\$127,200	\$122,600	\$175,600	\$168,100	\$188,496	\$174,383
Adolescent Medicine	\$122,000	\$118,900	\$170,300	\$171,000	\$224,797	\$162,822
Pediatric Allergy/Immunology	\$135,300	\$120,400	\$194,000	\$184,000		
Pediatric Cardiology	\$162,700	\$160,000	\$239,500	\$237,500	\$312,243	\$269,529
Child Development	\$120,000	\$117,500	\$179,700	\$165,500	\$152,446	\$141,911
Pediatric Critical Care/Intensivist	\$172,800	\$165,700	\$255,200	\$234,000	\$318,977	\$315,075
Pediatric Emergency Medicine	\$158,800	\$156,400	\$223,200	\$213,700	\$214,596	\$210,209
Pediatric Endocrinology	\$122,000	\$118,800	\$183,400	\$175,000	\$201,862	\$179,083
Pediatric Gastroenterology	\$150,000	\$144,400	\$217,000	\$206,100	\$298,797	\$241,725
Pediatric Hematology/Oncology	\$129,000	\$126,400	\$196,100	\$191,700	\$213,596	\$200,471
Pediatric Hospitalist	\$129,600	\$125,300			\$166,568	\$164,913
Pediatric Infectious Disease	\$109,900	\$108,300	\$184,600	\$180,000	\$186,872	\$183,648
Pediatric Neonatal Medicine	\$170,600	\$162,800	\$252,200	\$233,700	\$287,458	\$248,429
Pediatric Nephrology	\$126,900	\$126,300	\$202,100	\$198,400	\$241,012	\$252,131
Pediatric Pulmonology	\$144,700	\$142,200	\$201,400	\$194,500	\$283,016	\$251,159

Sources: Association of Academic Administrators in Pediatrics. Compensation Comparison. Lexington, KY: AAP, January 16, 2007. Medical Group Management Association. Physician Compensation and Production Survey: 2007 Report Based on 2006 Data - #6752. Englewood, CO: MGMA, September 2007.

Low salary expectations appear well founded, at least in comparison to salaries for general pediatricians. Income for most adolescent medicine specialists is not commensurate with the investment in time spent training. According to the most recent data from the Medical Group Management Association, the mean income of adolescent medicine specialists in private practice in 2006 was higher than the mean income of general pediatricians, reflecting several exceptionally high outliers in that year, while the median income of adolescent medicine specialists was lower than that of general pediatricians and the vast majority of pediatric medical and surgical subspecialists, including endocrinologists and infectious disease specialists (Table 3).³⁶ Similarly, according to data from the Association of Academic Administrators in Pediatrics for assistant professors and professors, both the mean and median salaries for adolescent medicine specialists are similar to or lower than those of general pediatricians. They are also lower than the salaries of most other pediatric subspecialists, although salary differences are sometimes small at the assistant professor level.³⁷ Perhaps not surprisingly, 65% of fellowship program directors and almost 60% of faculty responsible for residents' adolescent medicine rotation identified

residents' deferred student debt burden, exacerbated by low salary expectations, as a related financial deterrent to adolescent medicine fellowship training (Table 4).

Table 4. Extent to Which Adolescent Medicine Fellowship Directors and Residency Faculty Agree or Disagree that Specific Factors Deter Recruitment						
Determing Factors	Agree/Strongly Agree		Neutral		Disagree/Strongly Disagree	
	Fellowship Directors	Residency Faculty	Fellowship Directors	Residency Faculty	Fellowship Directors	Residency Faculty
Income potential is low	95%	77%	0%	15%	5%	10%
Subspecialty lacks prestige	70	58	15	17	15	24
Subspecialty training is not considered necessary to treat adolescents.	70	58	25	23	5	20
Student loan repayment will be burdensome	65	57	25	30	10	13
Adolescents are considered difficult	30	53	20	19	50	28
Job market is weak	10	38	20	27	70	35
Sources: Incenter Strategies' survey of adolescent medicine fellowship directors conducted in spring of 2007 and survey of faculty responsible for the adolescent medicine rotations conducted in summer of 2007.						

Other factors affecting recruitment into adolescent medicine include the subspecialty's lack of prestige and the belief that subspecialty training is not necessary to treat adolescents. We found that 70% of adolescent medicine fellowship directors named each of these factors as deterrents to recruiting fellows. Among faculty responsible for residents' adolescent medicine rotation, the proportion citing the lack of prestige and the belief that training is unnecessary as reasons for residents not electing to pursue adolescent medicine training was only slightly lower, almost 60%. Interesting also, unlike the fellowship program directors, more than half of the faculty responsible for the rotation thought that residents were deterred from adolescent medicine fellowship training because they considered adolescents a difficult population to work with, and almost 40% thought they were deterred because of a weak job market.

Another frequently raised issue affecting recruitment is the length of fellowship training. In fact, our survey found that half of adolescent medicine fellowship program directors think that there should be an option for a shorter fellowship program for physicians who want to focus primarily on the clinical practice of adolescent medicine. Fellowship program directors who support a shorter fellowship were less likely to place a very high priority (five on a scale of one to five) on research training, leadership training, and interdisciplinary training, compared to those who were opposed. Also, those supporting a briefer fellowship were more likely to report a decrease in the number of fellows enrolled in their programs, although this finding was not statistically significant. Program directors who oppose a shorter fellowship

program presumably believe that three years of training are necessary to achieve competency and expertise in research, leadership, and interdisciplinary care.

Adolescent medicine program directors as a whole agree on the critical factors for recruiting fellows into training. All or almost all agree or strongly agree that faculty mentors and positive role models in adolescent medicine, involvement in the care of adolescents throughout the residency, and a long-standing interest in adolescent health are essential (Table 5). Almost as many agree or strongly agree that having a faculty mentor in adolescent medicine research and scheduling the adolescent medicine rotation during the first year and a half are crucial factors as well. (It is important to note, however, that by cross-tabbing responses,³⁸ we found that residents were no more likely to choose fellowship training when their rotation was scheduled during the first year of training than they were when their rotation was scheduled later.)

Table 5. Extent to Which Adolescent Medicine Fellowship Directors and Residency Faculty Agree or Disagree that Specific Factors are Crucial to Recruitment						
Crucial Factors	Agree/Strongly Agree		Neutral		Disagree/Strongly Disagree	
	Fellowship Directors	Residency Faculty	Fellowship Directors	Residency Faculty	Fellowship Directors	Residency Faculty
Faculty mentors and positive role models	100%	93%	0%	4%	0%	3%
Long-standing interest in adolescent health	95	86	5	9	0	4
Involvement in the care of adolescents throughout the residency	95	88	5	8	0	4
Adolescent medicine block rotation in the first 1 1/2 years of residency training	85	67	15	23	0	1
Sources: Incenter Strategies' survey of adolescent medicine fellowship directors conducted in spring of 2007 and survey of faculty responsible for the adolescent medicine rotations conducted in summer of 2007.						

III. THE ADOLESCENT MEDICINE TRAINING EXPERIENCE

Clinical Training

Some of the clinical training, particularly that related to longitudinal care and continuity, takes place in primary care or general adolescent clinics. Fellows' experiences may vary greatly depending on factors such as the characteristics of the patient population and clinic operation. According to the fellowship program directors we surveyed, in approximately 70% of clinics the majority of adolescent patients are low income; in the same proportion of clinics, the majority represent racial and ethnic minorities. In almost 50% of clinics, the majority of patients are characterized as behaviorally high risk, while in almost 40% of clinics, the majority of patients reportedly have chronic physical or mental health conditions.

Adolescent clinics vary in terms of their accessibility, usage, and staffing patterns. The vast majority of clinics, about 85%, are separate from the general pediatric clinic, and half of these are free-standing facilities located apart from the main hospital. Approximately three-quarters of the clinics are open five to six days per week, although 10% are open only one to two days per week. Just under 30% have evening hours.

Correspondingly, the number of patients seen in the clinics varies widely, with fewer than 50 patients seen per week on the lower end of the spectrum and more than 350 patients seen on the higher end. And while a third of fellowship program directors report that nearly all of their adolescent patients perceive the clinic to be their ongoing primary care provider, 10% of program directors report that almost none do.

Table 6. Percent of Adolescent Medicine Fellowship Programs Whose Primary Clinic Site is Regularly Staffed by Health Professionals from Specific Disciplines

Health Professionals	Programs
Adolescent medicine specialist	100%
Nurse practitioner	71
Dietitian	52
Psychiatric or clinical social worker	52
Clinical psychologist	38
Obstetrician/Gynecologist	33
Health educator	24
Psychiatrist	14
General pediatrician	10
Addictions counselor	0

Source: Incanter Strategies' survey of adolescent medicine fellowship directors conducted in spring of 2007.

The mix of health professionals represented on the adolescent clinical staff affects the range of services and related training opportunities. In addition to adolescent medicine specialists, nurse practitioners most often staff adolescent clinics, followed by dietitians and social workers (Table 6). Clinical psychologists, obstetricians/gynecologists, and health educators are less likely to be on staff, while psychiatrists and psychiatric nurses are least likely to staff adolescent clinics. No program reported that an addictions counselor regularly staffs its clinic. As a result of these staffing patterns, well over half of

adolescent medicine fellowship programs are unable to provide substance abuse counseling in the clinic, and almost 20% are unable to provide mental health counseling in conjunction with physical health care.

Wide Variation in Other Clinic Sites Used for Training

Use of other clinical sites affects the training experience as well. Currently, there is only a general accreditation requirement that training occur in diverse clinical settings.³⁹ Prior to July 2007 and at the time of our survey, however, programs were expected to furnish training at several specific types of sites, including psychiatric and substance abuse treatment facilities, juvenile justice facilities, school-based clinics, community health centers, and family planning programs.⁴⁰ Yet, from program to program, we found wide variation in the number and types of sites used, which has numerous implications for the breadth of experience to which fellows are exposed (Table 7).

Table 7. Percent of Adolescent Medicine Fellowship Programs Using Specific Clinical Sites for Mandatory and Elective Training

Clinical Sites	For Mandatory Training	For Elective Training	Supervising Physician with Board Certification or Expertise in Adolescent Medicine
Hospital-based ambulatory adolescent clinic	95%	5%	90% (19/21)
Inpatient adolescent unit	76	0	88 (14/16)
Juvenile detention center	62	19	67 (10/15)
School-based clinic	57	29	71 (12/17)
University health services	52	24	73 (11/15)
Family planning clinic	52	5	82 (9/11)
Community-based ambulatory adolescent clinic	48	14	92 (11/12)
Sports medicine clinic	43	40	44 (7/16)
Community health center	33	10	75 (6/8)
STD clinic	29	24	64 (7/11)
Clinic for homeless adolescents	29	24	82 (9/11)
Inpatient psychiatric unit	29	29	50 (5/10)
Specialty clinics (eg, endocrinology, orthopedics)	29	43	29 (4/14)
Child and adolescent psychiatry clinic	24	29	64 (7/11)
Managed care clinic	19	0	75 (3/4)
Substance abuse treatment center	19	24	44 (4/9)
Public health clinic	14	19	57 (4/7)
Ob/Gyn clinic	14	24	71 (5/7)
Clinic for adolescents in foster care	14	5	100 (4/4)
Job Corps health sites	10	0	100 (2/2)
Pediatric office practice	5	0	100 (1/1)
Hospital-based ambulatory pediatric clinic	0	5	100 (1/1)
Community mental health clinic	0	5	0 (0/1)

Source: Incentiv Strategies' survey of adolescent medicine fellowship directors conducted in spring of 2007.

Some programs require clinical training time of one month or longer in as few as three sites, while others require this length of training in as many as 14 sites. Despite the prevalence of mental and behavioral health problems among adolescents, fewer than 30% of programs require fellows to spend a month or longer training in an inpatient psychiatric unit or in a child and adolescent psychiatry clinic. Even fewer programs require training for this length of time in a substance abuse treatment facility. None of the programs responding to the survey require fellows to care for patients at a community mental health clinic. The training situation is a little better at reproductive health sites. Slightly more than half of programs require a month or more of training in a family planning clinic, though just under 30% require it in an STD clinic, and only a few require it in an ob/gyn clinic.

With respect to other clinical sites that programs are expected to place fellows for training, juvenile justice facilities are by the far the most common, used by 62% of programs, usually under contract. School-based health centers are also common training sites, used by 57% of programs. Community health centers are used less often, but still are training sites in a third of programs.

Shortages of Clinical Faculty from Various Disciplines

Accreditation requirements are more specific with respect to faculty. Programs are required to have faculty from as many as seven medical and surgical subspecialties, including child and adolescent psychiatry and obstetrics-gynecology, and are expected to have personnel from disciplines such as psychology, social work, chemical dependency, nutrition, and education.⁴¹ While most fellows receive instruction from the appropriate professionals, there are some notable deficiencies. Overall, mental health

professionals are well-represented on fellowship program faculty, with psychiatrists, clinical psychologists, and psychiatric or clinical social workers each involved in training in about 80% of programs (Table 8). However, only about a fifth of programs have an addictions counselor. Moreover, two programs do not have a psychiatrist, a psychologist, a social worker, or an addictions

Table 8. Percent of Adolescent Medicine Fellowship Programs Involving and Needing More Health Professionals from Specific Disciplines

Health Professionals	Currently Involved In Training	More Needed
Adolescent medicine specialist	100%	52%
General pediatrician	29	0
Nurse practitioner	91	19
Psychiatrist	81	43
Clinical psychologist	81	33
Psychiatric or clinical social worker	81	42
Addictions counselor	19	57
Dietitian	81	29
Health educator	43	33
Ob/Gyn	48	43

Source: Incenter Strategies' survey of adolescent medicine fellowship directors conducted in spring of 2007.

counselor training their fellows. In reproductive health, faculty limitations appear to be even more significant. Just over half of programs do not have an obstetrician/ gynecologist involved in training fellows.

Perhaps more important is the large number of fellowship directors who express the need for more program faculty in a variety of disciplines. Over half reported the need for additional adolescent medicine specialists. More than 40% reported the need for psychiatrists, psychiatric or clinical social workers, and obstetricians/gynecologists, while more than 50% expressed a need for addictions counselors. Other faculty needs were identified in the areas of health education, clinical psychology, and nutrition, with a third or fewer programs indicating a need for more health professionals in these areas.

Interdisciplinary Care Training

Given the interdisciplinary origins of the adolescent medicine specialty, it is important to examine not only where and with whom fellows are training, but also how well the content and methods of the training experience are equipping fellows to practice and promote interdisciplinary care. To be accredited, training programs in adolescent medicine must integrate relevant areas of pediatrics and pediatric subspecialties with related fields such as social work, psychology, and nutrition. In addition, programs must teach fellows to work effectively as members of an interdisciplinary health care team. Our survey found that about three-quarters of fellowship program directors place a high or very high emphasis on interdisciplinary training (four or five on a scale of one to five), while only 10% place little or very little emphasis on interdisciplinary training (one or two on a scale of one to five).

It follows that adolescent medicine programs make a strong effort to assure that fellows learn about interdisciplinary care, although not all fellowship programs provide the same breadth of training methods and opportunities. Fellows in about 80% of programs attend lectures and seminars to learn the concepts of interdisciplinary care; more importantly, the same proportion participate in interdisciplinary team meetings that allow them to apply the concepts and actually practice interdisciplinary care. In addition, fellows in about two-thirds of programs have the opportunity to participate in case studies or role-play activities related to interdisciplinary care.

Research Training

In keeping with the general purpose of the subspecialty, didactic and experiential training in research is also critical to the preparation of adolescent medicine subspecialists. Accredited programs must assure that fellows are trained in all aspects of scientific methods and ethical principles and that they present research results to a scholarship oversight committee. Correspondingly, training facilities are

expected to allocate adequate educational resources to facilitate the involvement of fellows in scholarly activities.⁴² Prior to July 2007, accreditation requirements were somewhat different, with fellows expected to actively participate in the preparation of a manuscript or publication, and training facilities were required to provide this support.⁴³ Not surprisingly, all fellowship program directors report that they place a high or, most often, a very high priority on research training.

To train fellows effectively in research and scholarly activities, programs are required to have a sufficient number of faculty members engaged in research in order to provide supervision and mentorship to fellows. Just under 40% of fellowship program directors report that 100% of the adolescent medicine specialists on their faculty are engaged in research; just over half report that 60% or fewer are. Nevertheless, most program directors think that limited faculty involvement in research does not decrease the availability of research mentors for fellows.

In all programs, fellows reportedly have the opportunity to participate in research on a wide range of topics, although certain areas of research are far more prevalent than others. Our survey found STDs and HIV/AIDS to be the most commonly studied topics, with fellows in about 70% of programs involved in research on these subjects (Table 9). Participation in selected other research areas is relatively common as well: in approximately half of the programs, fellows are engaged in research on health promotion and disease prevention, health services, obesity/weight reduction, and psychosocial issues.

However, research opportunities in other areas are limited, with only a third of program directors reporting that their fellows are involved in research on depression and other affective disorders, or on public policy and financing, and fewer than a quarter reporting that they are involved in research addressing adolescent pregnancy, confidentiality, or disease management. Topics such as substance abuse or

Table 9. Percent of Adolescent Medicine Fellowship Programs Involving Fellows in Specific Areas of Research

Research Areas	Programs
STD and HIV/AIDS	71%
Health promotion and disease prevention	52
Health services	52
Obesity/weight reduction	52
Psychosocial issues	48
Eating disorders	38
Depression and other affective disorders	33
Public policy and financing	33
Adolescent pregnancy	24
Confidentiality	24
Disease management	19
Contraception	15
Sports medicine	10
Diabetes	5
Foster care youth	5
Substance abuse	5
Transgender care	5
Transition to adult care	5
ADHD	0

Source: Incenter Strategies' survey of adolescent medicine fellowship directors conducted in spring of 2007.

contraception, both significant health issues for teens, are even less likely to be investigated. Still, in almost 60% of institutions, fellows are able to participate in five or more of the research areas we examined.

Leadership Training

In addition to increasing fellows' clinical and research knowledge and skills, fellowship training also serves to develop and hone a variety of leadership skills. All accredited subspecialty programs currently are expected to assure that adolescent medicine fellows achieve skills in teaching, practice-based quality improvement, departmental administration, patient and systems advocacy, and the preparation of grant applications.⁴⁴ Prior to July 2007, however, the accreditation requirements in effect, many of which were specific to adolescent medicine, stipulated that fellows must have instruction and experiences in these particular areas, as well as in program planning in a variety of settings, advocacy, and health care financing.^{45, 46} These are skills that enable adolescent medicine specialists to serve as advocates for adolescents in a variety of arenas. We found that a great majority of adolescent medicine program directors (80%) place a high or very high priority on leadership training. None place a low or very low priority on it.

Table 10. Extent to Which Adolescent Medicine Fellowship Programs are Involving Fellows in Specific Leadership Activities		
Leadership Activities	Occasionally/ Often	Never/ Rarely
Supervise and teach residents, students, or other fellows	100%	0%
Present on health topics to health professionals or community groups	100	0
Present research findings at professional conferences	95	5
Participate in advocacy efforts	80	20
Prepare grant applications	70	30
Serve on committees in local, state, or national organizations	70	30
Provide technical assistance	65	35
Plan or evaluate adolescent health programs	65	35
Manage project budgets	40	60
Prepare or deliver testimony	37	63
Apply business principles to improve division finances	35	65
Source: Incenter Strategies' survey of adolescent medicine fellowship directors conducted in spring of 2007.		

However, there is significant variation in the extent to which fellows are being prepared to assume a leadership role in adolescent medicine, with some aspects of leadership training getting ample attention by the vast majority of programs and others frequently addressed only superficially or not at all. Almost all adolescent medicine program directors report that fellows are often involved in teaching students, residents, and other fellows (Table 10). Further, almost all directors say that fellows often or occasionally have opportunities to make presentations to other health

professionals or community groups, present research findings at professional conferences, and participate in advocacy efforts. In almost two-thirds of programs, fellows reportedly are able often or occasionally to help prepare grant applications, plan or evaluate adolescent health programs, provide technical assistance, and serve on committees of related state, local, or national organizations.

In a substantial proportion of programs -- also about two-thirds -- fellowship directors report that fellows rarely or never have the opportunity to manage project budgets, engage in efforts to improve division finances, or participate in preparing or delivering legislative testimony affecting adolescent health care. Across programs, the range of participation in leadership roles is significant. Fellows in 30% of the fellowship programs occasionally or often participate in virtually all of the listed leadership activities, while fellows in 25% of programs rarely or never participate in more than half of these activities.

IV. FACTORS AFFECTING ADOLESCENT MEDICINE FELLOWSHIP TRAINING

Institutional Factors

Various institutional factors negatively affect adolescent medicine fellowship training. While institutional concerns for some fellowship program directors reflect issues at the pediatric department level, more often they rest with the hospital administration. We found that about a third of program directors think that the lack of pediatric departmental support for adolescent health care affects fellowship training at their institution (Table 11). By contrast, almost 60% think that fellowship training is harmed by the low priority placed by hospital administration on adolescent medicine compared to other specialties at their institution.

Table 11. Extent to Which Adolescent Medicine Fellowship Directors Agree or Disagree that Specific Institutional Factors Negatively Affect Training			
Institutional Factors	Agree/ Strongly Agree	Neutral	Disagree/ Strongly Disagree
Insufficient compensation of the teaching burden for training residents	74%	5%	26%
Low priority hospital administration places on adolescent medicine compared to other subspecialties	58	16	26
Insufficient staff support for grant writing	52	14	33
Inability of hospital structure and departmental organization to support interdisciplinary care and training	48	10	43
Insufficient financial support for research	38	24	38
Lack of pediatric departmental support for adolescent medicine	32	5	63
Limited faculty time for research activities and mentoring	29	10	62
Source: Incentiv Strategies' survey of adolescent medicine fellowship directors conducted in spring of 2007.			

Often, it appears to fellowship program directors that their institutions expect them to secure revenue for their programs from clinical care, but at the same time to assume a heavy teaching burden and growing research responsibilities that detract from the time available to treat patients. Fully three-quarters of program directors think that the teaching burden for training pediatric residents is insufficiently compensated by their institutions. In addition, while just under 40% of program directors think that the research opportunities available at their institutions are limited by insufficient financial support for research, just over half think that opportunities are impeded by insufficient staff support for grant writing, and many note the lack of protected faculty time to engage in or mentor fellows in research. Importantly also, the structure of the hospital itself and the fact that different disciplines work in separate departments

are seen as obstacles to the provision of interdisciplinary care for adolescent clinics by almost half of program directors.

Financial Factors

While many adolescent medicine fellowship programs are currently able to meet their necessary expenses, the financial picture for others is discouraging, with little likelihood of change in the foreseeable future. More than half of program directors report that they are experiencing a deficit, which a few have addressed by curtailing expenses commensurately (Table 12). Each of these programs has had a deficit over the previous four years as well. When asked to project the financial outlook for the coming year, 70% of program directors -- almost two thirds of those currently experiencing a deficit -- expected that the outlook would remain unchanged, with a quarter anticipating a worsening situation.

Years	Significant Deficit	Moderate Deficit	Slight Deficit	Budget Meets Expected Deficit	Budget Meets Necessary Expenses	Slight Surplus Expenses	Moderate Surplus	Significant Surplus
2006-2007	5%	15%	25%	10%	40%	0%	5%	0%
2005-2006	5	20	20	10	30	5	5	0
2004-2005	5	5	30	10	30	10	0	0
2003-2004	5	20	30	5	30	5	5	0
2002-2003	11	16	21	11	37	0	0	5

Source: Incenter Strategies' survey of adolescent medicine fellowship directors conducted in spring of 2007.

Adolescent medicine fellowship programs rely on multiple sources of funding, with no consistent pattern across programs (Table 13). Yet, despite the often perceived lack of sufficient institutional support for adolescent medicine fellowship programs, hospital, departmental, and institutional funding is the most commonly cited source of financial support. Most program directors are generally not aware of how much of this institutional allocation reflects federal graduate medical education (GME) funding through Medicare, or at free-standing children's hospitals where approximately half of all adolescent fellowship programs are located how much of the allocation comes through the Children's Hospital Graduate Medical Education program (CHGME). However, under federal rules, training costs for adolescent medicine, like other subspecialties, are counted only as 0.5 FTE when determining the amount of direct GME payments for the institution. By contrast, training costs for primary care physicians are counted as one FTE.⁴⁷

Presumably, institutional allocations for adolescent medicine fellowship programs also reflect the GME payments under Medicaid made by almost every state. While amounts vary from state to state, they are not likely to continue at current levels unless Congress acts to overturn proposed regulations that would deny federal Medicaid matching funds to states for expenditures related to GME beginning in May 2008.⁴⁸ The proposed regulations could significantly erode federal support for fellowship training and the ability of training facilities to serve adolescent patients with Medicaid coverage.

Table 13. Percent of Adolescent Medicine Fellowship Programs' Use and Major Sources of Funding

Funding Sources	Use by Programs	Major Source for Programs
Hospital, departmental, or institutional support and/or federal GME funding	90%	53%
Clinical revenues from professional charges	52	10
LEAH grant	29	19
Contracts with clinical sites outside of the division	24	5
Research training grants (T32)	19	5
Private donations	19	5
Department of Health contracts	14	0
Research grants	14	0
Foundation grants	10	0
Other training grants	10	0
Source: Incenter Strategies' survey of adolescent medicine fellowship directors conducted in spring of 2007.		

Programs Disadvantaged with Respect to Clinical Revenue

Clinical revenue is the next most commonly reported source of funding provided to programs directly, rather than as part of an institutional allocation. Compared to other subspecialties, adolescent medicine appears to be at a disadvantage in terms of the amount of revenue its clinics can bring in. The reality -- that providing adolescent health care is not a profitable endeavor for an institution -- creates a disincentive to providing comprehensive services for adolescents, supporting interdisciplinary staff, and sponsoring an adolescent medicine fellowship program. Many of the health care services that adolescents need, such as preventive care, health education, mental health and substance abuse counseling, sexual health services, and care coordination, are poorly reimbursed. Payment may be low or it may not be provided at all.^{49, 50} Moreover, many adolescents, especially the low-income and minority adolescents seen at teaching hospital clinics, are likely to be uninsured. The rate of uninsurance among adolescents ages 12 through 21 is 17%, compared to 8% among younger children.⁵¹

Clearly, health care financing has a tremendous impact on adolescent medicine fellowship programs' ability to provide clinical services and related training opportunities. The vast majority of directors -- about 85% -- indicate that insufficient public funding for uninsured adolescents undercuts their ability to adequately serve high-risk, vulnerable adolescents (Table 14). Almost two-thirds of program directors report that low reimbursement for adolescent services negatively affects the number and type of services

offered to this population. The same proportion of directors say that limited clinical revenue, in turn, has a negative impact on training opportunities in adolescent medicine at their institution.

Table 14. Extent to Which Adolescent Medicine Fellowship Directors Agree or Disagree that Specific Financial Factors Negatively Affect Training			
Financial Factors	Agree/ Strongly Agree	Neutral	Disagree/ Strongly Disagree
Insufficient public funds to care for the uninsured reduces capacity to serve high-risk vulnerable adolescents	84%	5%	11%
Inability of some disciplines to receive reimbursement for services limits the extent of interdisciplinary care	71	0	29
Low reimbursement for adolescent health services affects the number and type of adolescent health services offered	63	11	26
Limited clinical revenue for adolescent health services affects training opportunities in adolescent medicine	63	11	26
Lack of reimbursement or financial incentives for interdisciplinary care decreases team meetings and other collaborative practices	57	14	29
Source: Incentiv Strategies' survey of adolescent medicine fellowship directors conducted in spring of 2007.			

Limited potential for reimbursement is a particular barrier to providing interdisciplinary care and training. Just over 70% of program directors report that they offer fewer interdisciplinary services than they would like, due to the fact that some disciplines are unable to receive reimbursement. Similarly, well over half say that the lack of reimbursement or financial incentives for interdisciplinary care decreases their use of team meetings and other collaborative practices.

Research and Training Grants Rarely a Significant Source of Support

Research and training grants are a funding source for a much smaller proportion of fellowship programs. One potential source of federal funding support for adolescent medicine and other pediatrics subspecialties is the T32 institutional research training grant program of the National Institutes of Health (NIH). These grants, however, are increasingly competitive as a growing number of training programs seek federal support.⁵² In general, pediatrics fares less well than adult medicine in the receipt of T32 grants.⁵³ Still, only 20% of adolescent medicine fellowship programs currently have an NIH research training grant.

The LEAH (Leadership Education in Adolescent Health) Program is another potential source of federal funding for adolescent fellowship programs. LEAH programs provide interdisciplinary training to health professionals in medicine, nursing, psychology, nutrition, and social work, preparing them to be leaders in clinical care, research, public health policy, and advocacy.⁵⁴ Yet, only seven adolescent fellowship programs are awarded LEAH grants. Not surprisingly, almost 80% of adolescent medicine fellowship program directors think that LEAH funding is insufficient to support the number of programs capable of providing interdisciplinary training and research. Moreover, about 60% of directors report that even when available, the LEAH grant is inadequate to cover the cost of faculty salaries.

Given that most of the research carved out by adolescent medicine faculty is not biomedical in nature, private industry is not likely to support a substantial portion of adolescent medicine research, and the lack of private sector support makes the public funding gap that much more serious, particularly in the realm of training. In fact, approximately, three-quarters of the fellowship program directors see the lack of public funding for adolescent medicine research as an obstacle to training.

Significantly, programs that have not been awarded research training grants are less likely to report placing a very high emphasis on research than those who have received grants. Importantly, also, programs whose faculty are less involved in research are less likely to place a very high priority on leadership training. They are less apt to involve fellows frequently in certain leadership activities such as planning and evaluating adolescent health programs, providing technical assistance, and preparing or delivering testimony on legislation pertaining to adolescent health.

V. CONCLUSIONS AND RECOMMENDATIONS

Adolescent medicine is at a critical juncture. Since receiving board approval as a subspecialty in 1991, adolescent medicine has made strides in many areas. At the same time, it faces a number of urgent challenges related to fellowship training. New survey results and other data show that the number of fellows completing training has declined and that the number of training programs has dropped by almost half. Moreover, the capacity of existing programs to provide comprehensive training in clinical care, research, and leadership varies substantially from program to program. Much of this variability is likely due to institutional and financial barriers faced by many training programs, including inadequate support from academic medical centers and insufficient public funding for adolescent medicine training and research. Inadequate reimbursement for interdisciplinary care is a factor as well. Effectively addressing these multiple and interlocking challenges requires a fresh look at the fundamental goals, requirements, and needs of adolescent medicine fellowship training, and consideration of new directions for supporting and reinvigorating this vital field.

Rethinking Fellowship Training

At this time, SAM needs to clearly articulate the purpose of the adolescent medicine subspecialty, defining its scope of practice and unique areas of expertise. What is the subpopulation that adolescent medicine specialists are best qualified to serve? What conditions are they most effective in treating? And what are the interventions they are uniquely qualified to provide? Ideally, this task would be guided by an evidence-based literature assessing the impact of the subspecialty and its treatment methods on adolescent morbidity and mortality.

A better understanding of the role of the subspecialty will help to determine not only the number of programs and fellows needed for clinical care, residency training, and scholarly activities, but also the nature and content of the required fellowship experience. SAM should examine all available data on fellowship training and identify ways to enhance the curriculum and increase fellows' exposure to interdisciplinary medical and other faculty.

In addition, to achieve improvements in the care of adolescents, particularly those who are low income and high risk, new post-residency training options are needed. We strongly urge that a commission be established to examine alternative, shorter fellowship training pathways that would allow broader recognition of adolescent health clinical expertise. Members of this commission should include the relevant accrediting bodies – including the American Board of Pediatrics, the American Board of

Family Medicine, and the American Board of Internal Medicine as well as the various medical organizations invested in adolescent health.

Given that a core purpose of the three-year fellowship is to produce medical educators and researchers, shorter fellowship pathways can be developed to focus primarily on enhancing clinical skills. The availability of shorter pathways might lead to a decrease in the number of applicants for three-year training, but more likely it will fill the training needs of residents and practicing physicians who want to specialize in clinical care, either outside or within academia, treating adolescents with complex health needs and providing consultative services to general pediatricians. (Recommendations to improve the training of pediatricians will be made in a separate report).

Building the Field

Expanded recruitment strategies are necessary to build the adolescent medicine field. Despite the tremendous competition to attract primary care residents into other pediatric subspecialties, SAM -- along with individual adolescent medicine fellowship training programs -- needs to generate more interest and excitement about the clinical, research, and teaching opportunities in the field. A new national adolescent medicine recruitment campaign with multi-level strategies could positively affect the number of applicants pursuing adolescent medicine. It should include, for example, expanded SAM website information for residents and fellows, an organized mentoring network in medical schools and residency training programs, additional membership and annual meeting sponsorship and outreach, targeted education and marketing strategies, and more financial awards to recognize the accomplishments of outstanding fellows and junior faculty.

Efforts also need to be made to increase public and private loan and scholarship opportunities for those seeking training in either three-year or shorter adolescent medicine fellowship training in adolescent medicine. SAM should help to develop new private and corporate funding support, as other pediatric subspecialties have done, and should maintain a comprehensive database of new and existing funding options that could be updated regularly. In addition, fellowship program directors and leaders in the field should advocate for priority funding for adolescent medicine research training under the National Institutes of Health's (NIH's) career development, research service, and loan repayment programs. They also should join with the primary care medical associations to advocate for the inclusion of shorter adolescent medicine fellowship training programs under the Health Resources and Services Administration's (HRSA's) primary care low-cost loan program.

Increasing research opportunities will help to attract a larger cadre of fellows and also accelerate the development and dissemination of new and improved therapeutic approaches for serving adolescents.

The establishment of an adolescent medicine research network could move the field forward rapidly, provided that infrastructure support was adequate. A research network would facilitate the articulation of national adolescent health research priorities and the formulation of a cohesive plan for guiding adolescent health research in the future. Other pediatric subspecialties -- oncology, rheumatology, and child and adolescent psychiatry -- have developed successful research networks, increasing the opportunities for collaborative and multi-site studies and significantly expanding the funding base for their work. These are excellent models for adolescent medicine specialists to emulate.

To further build support for the field, adolescent medicine faculty in fellowship and residency programs should take a leadership role within their academic medical centers by establishing an organization or committee comprised of faculty from the various disciplines -- physicians, nurses, social workers and other mental health and substance abuse professionals -- involved in the care of adolescents. Undertaking this systems-level initiative would increase the visibility of adolescent health, promote institutional changes to improve clinical care and related research, and demonstrate the value of adolescent medicine training.

Consistent with the goal of creating leaders to move the field forward, there needs to be more funding available for leadership training. Most importantly, funds for the Leadership in Adolescent Health (LEAH) Program, operated by the federal Maternal and Child Health Bureau, need to be increased. Currently, only seven adolescent medicine fellowship programs receive LEAH grants each year. SAM should advocate for additional funds to expand the size of the grants and the number of training programs able to participate. This will help to generate leaders with improved capabilities in budget management, health care financing, and legislative advocacy as well as interdisciplinary care.

Adolescent medicine, a field dedicated to helping young people grow and thrive, is at a turning point in its own development. The field itself is vulnerable, facing serious challenges in attracting new physicians, shaping programs that help physicians to adequately understand and care for today's adolescents, and garnering the financial support to make high-quality training possible. Depending on decisions made and actions taken -- sooner rather than later -- the field of adolescent medicine will determine its own future.

APPENDIX: RESEARCH METHODOLOGY

Information presented in this report is primarily based on an original survey of adolescent medicine fellowship directors conducted by The National Alliance to Advance Adolescent Health in the spring of 2007. It is supplemented by findings from two other National surveys: one of pediatric residency directors and one of adolescent medicine faculty responsible for the one-month pediatric residency block rotation in adolescent medicine. In addition, a comprehensive literature review was conducted as well as key informant interviews with experts in graduate medical education financing, federal training programs, and adolescent medicine faculty. Working with The National Alliance to Advance Adolescent Health was an expert advisory committee consisting of leaders from the American Academy of Pediatrics, the American Board of Pediatrics, the American Medical Association, the Association of Medical School Pediatric Department Chairs, and the Society for Adolescent Medicine.

This survey of adolescent medicine fellowship programs is the first comprehensive national survey of the field designed to collect information about the supply and recruitment of adolescent medicine fellows; the status and needs in key training areas, including clinical, research, and leadership; institutional and financial challenges facing adolescent medicine training programs; and also recommendations for the future.

Program directors of all 25 adolescent medicine fellowship programs that were ACGME-accredited during the 2006-2007 training year were sent the survey via mail and email in April 2007. (One program was later excluded from the sample because it was currently inactive at the time of the survey.) The electronic version of the survey was administered through SurveyMonkey, an online survey tool. Email reminders were sent to non-respondents approximately two weeks after the initial survey was sent. This was followed by phone call reminders one week later. A total of 21 out of 24 adolescent medicine fellowship directors completed the survey by May 2007, for a response rate of 88%. Descriptive statistics and basic tabulations were compiled using SurveyMonkey. Data was analyzed with SPSS for Windows 10.0. Statistical analysis included frequencies and cross-tabs with the Pearson Chi-square test to identify statistically significant differences between subgroups of the population surveyed.

The survey contained 54 primarily closed-ended questions covering a broad range of topics. Supply and recruitment questions addressed the number of accredited positions and current fellows, recruitment activities, and factors affecting the recruitment of adolescent medicine fellows. The questions related to clinical training covered the types of clinical sites where fellows spend ≥one month of training; the main adolescent primary care or general adolescent clinic in which fellows train, including patient and clinic characteristics, services provided, patient volume, and the health professionals that regularly staff the clinic; and interdisciplinary care and training, including teaching methods, the health professionals that are involved in teaching the fellows, and barriers to providing interdisciplinary care and training. Other questions on fellowship training addressed research and leadership training, including faculty involvement in research, areas of research in which fellows are involved, barriers to research training, and leadership training activities. Several questions addressed program financing, including program funding sources and financial stability of the programs. In addition, program directors were asked about the influence of several potential financial and institutional barriers on adolescent medicine fellowship training at their institution. Finally, program directors were asked about future training options for adolescent medicine fellowship programs and options for improving adolescent medicine training in pediatric residency programs.

The survey was pilot tested with two adolescent medicine fellowship directors prior to distribution to ensure that the questions were clearly worded and that the content accurately reflected the nature of the issues faced by adolescent medicine fellowship programs.

ENDNOTES

- ¹ American Board of Pediatrics. *The Petition to the American Board of Medical Specialties (ABMS) for Subcertification in Adolescent Medicine by the American Board of Pediatrics (ABP)*. Chapel Hill, NC: ABP, Submitted to the ABMS on January 23, 1990 and approved by the ABMS in March 1991.
- ² Ibid.
- ³ Ibid.
- ⁴ As many as nine pediatric subspecialties had their first board certification examination between 1990 and 1999. Expert Work Group on Pediatric Subspecialty Capacity, MCH Policy Research Center. Available at <http://www.mchpolicy.org/practice.PediatricSubspecialtyBackgroundInformation.html>, Accessed February 2008.
- ⁵ Munro H. *A Doctor of Their Own: The History of Adolescent Medicine*. Cambridge, MA: Harvard University Press, 1998.
- ⁶ Ibid.
- ⁷ American Board of Pediatrics, 1990 and 1991.
- ⁸ Munro, 1998.
- ⁹ Ibid.
- ¹⁰ Phillips SA, Moscicki AB, Kaufman M, Moore E. The composition of SAM: Development of diversity. *Journal of Adolescent Health*. 1998; 23S:162-165.
- ¹¹ American Board of Pediatrics, 1990 and 1991.
- ¹² Ibid.
- ¹³ Ibid.
- ¹⁴ Munro, 1998.
- ¹⁵ The adolescent medicine certification program is jointly developed by the ABP, the American Board of Internal Medicine (ABIM), and the American Board of Family Medicine (ABFM); the examination is administered by the ABP. Applicants through the ABIM or the ABFM are eligible for certification after two years of fellowship training.
- ¹⁶ Maisels MJ. Personal correspondence to Thomas Oliver, MD. *Establishment of Certification in Adolescent Medicine: 1975-1998*. Chapel Hill, NC: ABP, October 2, 1989.
- ¹⁷ Munro, 1998.
- ¹⁸ Ibid.
- ¹⁹ To be eligible for the certifying examination in 1999, physicians who entered fellowship training on or after January 1, 1995 had to have completed three years of fellowship training if they were applying through the ABP. Applicants applying through the ABIM had to have completed two years of fellowship training.
- ²⁰ Althouse LA, Stockman JA. Pediatric workforce: A look at adolescent medicine data from the American Board of Pediatrics. *Pediatrics*. 2007; 150:100-102.
- ²¹ American Board of Pediatrics. *Workforce Data: 2006-2007*. Chapel Hill, NC: ABP, 2007.
- ²² The number of first-year fellows in adolescent medicine fellowship programs for academic year 2007-2008 was obtained by personal communication with ABP staff, February 2008.
- ²³ One program is newly accredited and will be accepting its first fellows for the academic year 2008-2009, and the other is currently inactive due to an inadequate number of faculty. One additional program has been approved for accreditation starting on July 1, 2008.
- ²⁴ Accreditation Council for Graduate Medical Education. *List of ACGME – Accredited Programs and Sponsoring Institutions*. Available at <http://www.acgme.org/adspublic/>. Accessed February 2007.
- ²⁵ Butzin DW, Guerin RO, Langdon LO, and Irwin CE. The certification process in adolescent medicine. *Journal of Adolescent Health*. 1998; 23:328-331.
- ²⁶ American Board of Pediatrics. *Eligibility Criteria for Certification in Adolescent Medicine*. Available at <http://www.abp.org/ABPWebSite/>. Accessed September 2007. A physician applying through the ABP who entered adolescent medicine fellowship training before January 1, 1995 may apply for admission on the basis of completion of two years of fellowship training, as long as his/her program was operated in association with a general pediatrics or internal medicine residency program accredited by the Accreditation Council for Graduate medical Education (ACGME) or by the Royal College of Physicians and Surgeons of Canada (RCPSC). In addition, the practice

experience pathway is still an option through 2010 if the experience was received by 1995, after which it will no longer be available.

American Board of Family Medicine. *Adolescent Medicine Certification Requirements*. Available at <http://www.theabfm.org/cert/caq.aspx#caq1>. Accessed September 2007. A physician applying through the ABFM who entered Adolescent Medicine training before July 1, 2000 may apply for admission on the basis of completion of two years of fellowship training provided those training programs were operated in association with an ACGME-accredited Pediatrics or Internal Medicine Residency Program. A physician applying through the ABIM for certification in adolescent medicine must have satisfactorily completed the two-year requisite graduate medical education fellowship training. Available at <http://www.abim.org/certification/policies/imss/adol.aspx>. Accessed September 2007.

²⁷ Personal communication with Ying Du from the ABP regarding adolescent medicine certificates issued in pediatrics, family medicine, and internal medicine by year, November 22, 2006.

²⁸ Frankenfield DL, Keyl PM, Gielen A, Wissow LS, Werthamer L, Baker SP. Adolescent patients – healthy or hurting? Missed opportunities to screen for suicide risk in the primary care setting. *Archives of Pediatric and Adolescent Medicine*. 2000; 154:162-168.

²⁹ Borowsky IW and Ireland M. National survey of pediatricians' violence prevention counseling. *Archives of Pediatric and Adolescent Medicine*. 1999; 153:1170-1176.

³⁰ Hellerstadt WL, Smith AE, Shew ML, Resnick MD. Perceived knowledge and training needs in adolescent pregnancy prevention. *Archives of Pediatrics and Adolescent Medicine*. 2000; 154:679-684.

³¹ Millstein SG and Marcell AV. Screening and counseling for adolescent alcohol use among primary care physicians in the United States. *Pediatrics*. 2003; 111:114-122.

³² American Academy of Pediatrics. *The Future of Pediatric Education II: Summary of Survey Findings: Adolescent Health* Available at <http://www.aap.org/profed/adolescent.html>. Accessed November 2003.

³³ Survey of pediatric residency program directors conducted by The National Alliance to Advance Adolescent Health in summer 2007. Washington, DC: The National Alliance to Advance Adolescent Health, Report forthcoming.

³⁴ Emans SJ, Bravender T, Knight J, Frazer C, Luoni M, Berkowitz C, Armstrong E, Goodman E. Adolescent medicine training in pediatric residency programs: Are we doing a good job? *Pediatrics*. 1998; 102:588-595.

³⁵ Survey of faculty responsible for the adolescent medicine rotation in pediatric residency programs conducted by The National Alliance to Advance Adolescent Health in summer 2007. Washington, DC: The National Alliance to Advance Adolescent Health, Report forthcoming.

³⁶ Forty-two adolescent medicine specialists were included in this sample. Medical Group Management Association. *Physician Compensation and Production Survey: 2007 Report Based on 2006 Data*. (#6752) Englewood, CO: MGMA, September 2007.

³⁷ Association of Academic Administrators. *Compensation Comparison*. Lexington, KY: AAAP, January 16, 2007.

³⁸ For each pediatric residency program, we cross-tabbed a question about the timing of the adolescent medicine block rotation with a question about the number of residents electing to pursue adolescent medicine fellowship training over the past five years.

³⁹ The ACGME requirements state that facilities and settings must include access to outpatient adolescent services and clinical consultative services and that, while “it is not expected that every training program will use the same type or number of community-based sites, exposure to one or more community-based clinical setting(s) is an important part of adolescent fellowship training.” In addition, the requirements state that fellows should train in inpatient settings in order to learn about the unique issues of hospitalized adolescents. Accreditation Council for Graduate Medical Education. *ACGME Program Requirements for Graduate Medical Education in the Subspecialties of Pediatrics*. Available at http://www.acgme.org/acWebsite/downloads/RRC_progReq/321adolescentmedicinepeds07012007.pdf. Accessed July 2007.

⁴⁰ ACGME requirements state that the facilities and settings used by the program must be adequate for the program to accomplish the educational goals, and must include access to the following: an inpatient medical service, an outpatient service, and clinical consultation. They also state that additional clinical settings should include a school-based clinic, a summer camp, a crisis center, juvenile justice facilities, a college health program, a community health center, psychiatric, drug and alcohol facilities, and a family planning program. Accreditation Council for Graduate

Medical Education. *Program Requirements for Residency Education in Adolescent Medicine*. 1997. Available at http://www.acgme.org/acWebsite/downloads/RRC_progReq/321pr997.pdf. Accessed October 2007.

⁴¹ The ACGME program requirements for Adolescent Medicine Fellowship Programs state that consultant faculty in child/adolescent psychiatry, child neurology, obstetrics/gynecology, general surgery, orthopedic surgery, sports medicine, and dermatology must be available to the program. ACGME defines “must” as: “a term used to identify a requirement which is mandatory or done without fail. This term indicates an absolute requirement.” Personnel in psychology, social work, public and private school systems, education, public health, chemical dependency, nutrition, and clinical pharmacology/toxicology should be available. ACGME defines “should” as: “a term used to designate requirements so important that their absence must be justified. A program or institution may be cited for failing to comply with a requirement that includes the term ‘should’.” Accreditation Council for Graduate Medical Education. ACGME Program Requirements for Graduate Medical Education in the Subspecialties of Pediatrics. Available at http://www.acgme.org/acWebsite/downloads/RRC_progReq/321adolescentmedicinepeds07012007.pdf. Accessed July 2007.

⁴² Accreditation Council for Graduate Medical Education. *ACGME Program Requirements for Graduate Medical Education in the Subspecialties of Pediatrics*, 2007. Available at http://www.acgme.org/acWebsite/downloads/RRC_progReq/320pediatricssubs01012007.pdf. Accessed October 2007.

⁴³ Accreditation Council for Graduate Medical Education, 2000.

⁴⁴ Accreditation Council for Graduate Medical Education, 2007.

⁴⁵ Accreditation Council for Graduate Medical Education, 2000.

⁴⁶ Accreditation Council for Graduate Medical Education, 1997.

⁴⁷ Social Security Act: Section 1886(h): Payments for Direct Graduate Medical Education Costs. Available at http://www.ssa.gov/OP_Home/ssact/title18/1886.htm. Accessed September 2006.

⁴⁸ Legislation enacted as part of the 2007 emergency supplemental imposes a one-year moratorium on CMS from taking any further action on the regulations until May 2008. CMS issued the proposed regulations in the May 23, 2007 *Federal Register*. Available at <http://a257.g.akamaitech.net/7/257/2422/01jan20071800/edocket.access.gpo.gov/2007/pdf/07-2576.pdf>. Accessed October 2007.

⁴⁹ Fox HB, Limb SJ, McManus MA. *Preliminary Thoughts on Restructuring Medicaid to Promote Adolescent Health*. Washington, DC: The National Alliance to Advance Adolescent Health, 2007.

⁵⁰ McManus MA, Shajavali KI, Fox HB. *Is the Health Care System Working for Adolescents? Perspectives From Providers in Boston, Denver, Houston, and San Francisco*. Washington, DC: Maternal and Child Health Policy Research Center, 2003.

⁵¹ Special tabulations from the 2006 National Health Interview Survey prepared for The National Alliance to Advance Adolescent Health by Amy Cassidy, Center for Epidemiology and Biostatistics, Cincinnati Children’s Hospital Medical Center, February 11, 2008.

⁵² National Institutes of Health Office of Extramural Research, *Trends in Training and Fellowships: Fiscal Years 1997-2006*. Available at <http://grants.nih.gov/training/outcomes.htm#reports>. Accessed November 2007.

⁵³ In FY 2005, only 5.5% of the total T32 award amounts went to pediatric medical school departments, while internal medicine medical school departments received 28.9% of the award amounts. The National Alliance to Advance Adolescent Health’s analysis of the distribution of NIH training grants in 2005.

⁵⁴ Athey J, Kavanagh L, Bagley K. *The MCH Training Program: An Evaluation*. Arlington, VA: National Center for Education in Maternal and Child Health, 2001.

The National Alliance to Advance Adolescent Health provides education, research, policy analysis, and technical assistance to achieve fundamental improvements in the way that adolescent health care is structured and delivered in the United States. Its mission is to enhance the physical and emotional well-being of adolescents, especially those who are low income and minority, by improving the health care delivery model for adolescents and achieving the infrastructure changes needed to support it. The National Alliance seeks to promote comprehensive, interdisciplinary models of physical, mental, behavioral, and reproductive health care that incorporate a youth development philosophy and operate in collaboration with schools and other community-based programs. It also seeks to ensure that all adolescents have health insurance coverage for the services they require.

For more information about our work and available publications, contact Aileen Collins at The National Alliance to Advance Adolescent Health: acollins@TheNationalAlliance.org. Also visit our website: www.TheNationalAlliance.org.

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