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The status of adolescent medicine: Building a global adolescent workforce

Lana Lee, MD, Krishna K Upadhya, MD, MPH, Pamela Matson, PhD, MPH, Hoover Adger, MD, MPH, MBA, and Maria E Trent, MD, MPH

Section on Adolescent and Young Adult Medicine, Johns Hopkins School of Medicine, Baltimore, Maryland, United States of America

Abstract

Remarkable public health achievements to reduce infant and child mortality and improve the health and well-being of children worldwide have successfully resulted in increased survival and a growing population of young people aged 10–24 years. Population trends indicate that the current generation of 1.8 billion young people is the largest in history, but there is a scarcity of dedicated resources available to effectively meet the health needs of adolescents and young adults worldwide. Growing recognition of the pivotal roles young people play in the cultures, societies, and countries in which they live has spurred an expanding global movement to address the needs of this special population. Building an effective global workforce of highly-skilled adolescent health professionals who understand the unique biological, psychological, behavioral, social, and environmental factors that impact the health of adolescents is a critical step in addressing the health needs of the growing cohort of young people. In this review, we aim to: 1) Define a global assessment of the health needs for adolescents around the world; 2) Describe examples of current training programs and requirements in Adolescent Medicine; 3) Identify existing gaps and barriers to develop an effective adolescent health workforce; and 4) Develop a call for targeted actions to build capacity of the adolescent health workforce, broaden culturally relevant research and evidence-based intervention strategies, and reinforce existing interdisciplinary global networks of youth advocates and adolescent health professionals to maximize the opportunities for training, research, and care delivery.

Keywords

Adolescent medicine; child health; education

Introduction

Over the past 20 years, there has been an active and growing movement among practitioners, scientists, advocates, and policy makers to galvanize the global response to better meet the current health needs of adolescents around the world (1–10). Following the remarkable achievements in children's health during early and middle childhood (11,12), there have

been substantial demographic and population shifts resulting from a growing number of young people (defined in this paper as individuals ages 10–24 years) in the world. This growth has highlighted the relative lack of resources dedicated to adolescents for improved access to services such as education and health (13,14), while at the same time recognizing the pivotal roles young people can play in driving economic, social, and political changes in their societies and countries (15–17).

With nearly 1.8 billion young people in the world today, 90% of whom are living in low- and middle income countries, development of a broader global adolescent health agenda is essential in order to meet the needs of this generation of young people (6,18). A new report by the United Nations Population Fund demonstrates that investments in the health, education, human rights, and welfare of young people have the potential not only to improve their health and well-being, but such investments can also have significant impact in regions like sub-Saharan Africa, which could realize an economic boom estimated to be as much as \$500 billion a year for 30 years (18). To achieve these goals, a significant amount of work will be required in order to develop policies and systems of health, education, justice, and economics that support young people's health and enable them to achieve their highest potential.

Expanding the workforce of health professionals highly trained to understand the confluence of biological, psychological, behavioral, social, and environmental factors that influence the remarkable transformation from childhood into adulthood (adolescence) is critical to generating an effective, strategic, and interdisciplinary global response to adolescent health issues. In this review, we aim to:

- Define a global assessment of the health needs for adolescents around the world
- Describe examples of current Adolescent Medicine programs and training requirements
- Identify existing gaps/barriers to develop an effective adolescent health workforce
- Develop a call for targeted action for capacity building by advancing the adolescent health and medicine workforce; broadening culturally relevant research and evidence-based intervention strategies; and reinforcement of the existing interdisciplinary global network of youth advocates and adolescent health professionals to maximize the opportunities for training, research, and care delivery.

Status of adolescent medicine

Numerous studies have documented the current state of health for adolescents around the globe (10,19–21). Although international mortality data provide an incomplete picture of the state of adolescent health globally (22), synthesis of the data reveals important information on variations and similarities in the patterns of mortality between different regions of the world. For example, all-cause mortality was estimated at about 2.6 million deaths in 2004

for people aged 10–24 years, however the relative risk for death in Africa was nearly 7 times higher than in high-income countries (23). Despite such disparities in the degree of mortality among young people between different countries, there are surprising similarities in the major causes of death; injuries, maternal causes, infection/communicable diseases, and non-communicable diseases consistently rank in the top causes of death for young people regardless of region or country. Notably, many of the top causes of death are influenced by the social networks, systems and environments where young people live (see table 1) and therefore could be prevented with effective interventions and services.

Unintentional injury is the leading cause of death among young people, the greatest proportion of which are from road traffic injuries (12). Traffic-related crashes fall among the top five causes of death in all regions, age groups, and sexes when looking at global data (10,23). Suicide is the 2nd highest cause of death among all young people aged 10–24 years, whereas interpersonal violence ranks 2nd among causes of death for males 15–19 and 20–24 years (12,24,25). Death from maternal causes continues to be a major cause of mortality for females globally, with rates in the African Region nearly three times higher than some parts of the world (12,23). Infectious diseases, such as tuberculosis (TB), lower respiratory tract infections, and diarrheal diseases are more common among younger adolescents, whereas human immunodeficiency virus (HIV) continues to be a leading cause of death among all groups, particularly in the African region (12,23).

Although mortality rates among young people are considered to be relatively low and have declined slightly from 2000 to 2012, the rate at which mortality is falling among adolescents and young adults does not mirror the significant declines seen in other age groups (10,12). In the case of HIV-related deaths, mortality rates have increased among adolescents, and although this may reflect the improved survival of infants and children living with HIV, the reasons for poorer survival through adolescence is not clear (26).

Important contributors to morbidity among adolescents include tobacco use, alcohol and substance abuse, sexually transmitted infections (STIs) and reproductive health, mental health, non-communicable diseases (e.g. obesity, asthma, anemia), and other chronic issues (e.g. pain, headaches), which impact the quality of life for young people (24). In one of the few studies published on disability-adjusted life-years (DALYs) for young people using international data, Gore et al. identified the six main causes of worldwide disability in both males and females, of which the top cause was neuropsychiatric disorders (e.g. depression, schizophrenia, and substance abuse) (24). Many neuropsychiatric disorders present during adolescence and may negatively impact life trajectories without effective treatment (27–29).

Young people continue to be at higher risk of acquiring STIs and HIV than other groups for a combination of behavioral, biological, and cultural reasons (30,31). Despite the significant progress to reduce new HIV infections and worldwide efforts aimed at improving access to HIV treatment and care, young people continue to represent a consistently high proportion (42%) of new HIV infections worldwide, despite overall declines HIV infection (32,33). Further, the poor treatment outcomes among young people living with HIV highlight the need for youth-targeted prevention and care strategies to engage young people in care (34,35).

Adolescents are also uniquely vulnerable to relational, cultural, and other environmental factors that contribute to health (36–38). For example, adolescents who experience teen dating violence are at greater risk for adverse health outcomes, including sexually transmitted infections and unintended pregnancy (38,39). Emerging research in the neurocognitive development of the adolescent brain has shown a high degree of plasticity that may be particularly sensitive to experiences and environments (40,41). This susceptibility can expose a young person to negative health outcomes during a period in life when adolescents are often simultaneously exploring new experiences and potentially engaging in risk behaviors that can significantly interfere with their health trajectories (40).

Challenges to the health and well-being of adolescents are not only apparent in low resource countries, but also exist in higher income countries like the United States (US) (42). The top three causes of death among youth aged 10–24 years in the US are unintentional injuries (40.7%), suicide (15.0%), and homicide (14.9%) (43). Other health threats such as obesity and overweight are also of significant concern, with a quadrupling of obesity among adolescents over the past 30 years and increases in Type 1 and Type 2 diabetes also having been observed (44,45). Young people also continue to be at high risk of STIs and account for nearly half of all STIs and 26% of new HIV infections (46,47). Although encouraging, epidemiological trends in certain indicators such as decreased mortality from motor vehicle accidents, decreased homicide rates, decreased use of tobacco, and lower rates of pregnancy, abortion, and teen births, significant health disparities continue to persist by racial/ethnic group, gender, and among other vulnerable adolescent populations (e.g. those living in poverty, in the foster care or juvenile justice systems, who are homeless, or sexual minority youth) (20,48).

Adolescence represents a significant opportunity for many youth to feel empowered and learn important life skills such as negotiating personal relationships and developing independence. At the same time, this period of emerging autonomy exposing young people's vulnerabilities that can have significant impact on their future health (6,49). Responding to the needs of youth requires skilled professionals who are able to engage youth in care and address needs that may otherwise go unnoticed and ignored (50–52). Unfortunately, the distribution of resources to effectively deliver adolescent health services, including the numbers of trained adolescent health professionals, is markedly disproportionate relative to the geographic distribution of young people. Furthermore, even in countries where adolescent health services are established through formal clinical and research programs, young people continue to face health disparities (34,44,53) and robust advocacy is required in order to protect and advance the health of this vulnerable population (54–57).

Adolescent medicine: Country case studies

Meeting the needs of all adolescents will require a scaled-up, diversified, and expanded workforce capable of providing comprehensive adolescent-responsive healthcare. Although physicians have traditionally led the way towards developing clinical programs in Adolescent Medicine and have focused primarily on inpatient or hospital-based clinical settings, it is important to recognize the diversity of health disciplines that provide care to adolescents including nursing, nutrition, psychology, and social work. The interdisciplinary

approach to health is an essential component of Adolescent Medicine and provides opportunities to build adolescent health capacity, particularly in areas where workforce shortages exist (20). To our knowledge, there are limited opportunities for advanced adolescent health-specific training or certification in non-medical disciplines, although both the US and Australia have examples of interdisciplinary training opportunities (described later). In this paper, we will define Adolescent Medicine providers as the subset of adolescent health professionals providing primary and subspecialty medical care for adolescents and young adults.

Three countries currently offer established adolescent medicine training fellowships: the US, Canada, and Australia. In this section, we review the development of Adolescent Medicine programs in these countries and discuss adolescent health training opportunities in other parts of the globe.

United States

The field of adolescent medicine in the US emerged at the turn of the 20th century and grew from a foundation of scientific discoveries related to adolescent development (58). During the century, adolescent medicine continued to develop as the physiologic processes of puberty such as skeletal maturation and sexual maturation, and the psychological, neurocognitive and behavioral development of adolescents continued to be elucidated (59–66). A new health care delivery model was implemented in the form of college health services in the 1940s following World War I, as young people began leaving home to go to university for the first time. By 1951, Boston Children’s Hospital housed the first academic adolescent medicine training program, which was soon followed by programs at other academic institutions and the US military (67). Adolescent medicine units and academic programs continued to develop over the next two decades, and the field grew further with the addition of federal funding for adolescent medicine training programs during the 1960s. In 1977, the US Department of Health and Human Services Maternal and Child Health Bureau began funding the interdisciplinary Leadership Education in Adolescent Health (LEAH) program, which provides funding for the interdisciplinary leadership training and mentorship of trainees in adolescent health across five disciplines including medicine, nursing, psychology, social work, and nutrition. (68) Seven LEAH programs spread geographically across the United States currently offer post-doctoral positions for training and leadership development using a comprehensive interdisciplinary approach to care for adolescents (68,69).

Adolescent medicine in the US has been a board-certified subspecialty recognized by the American Board of Pediatrics (ABP) since 1991, the American Board of Internal Medicine (ABIM) since 1992, and a Certificate of Added Qualification by the American Board of Family Medicine (ABFM) since 2000. There are 27 accredited adolescent medicine fellowship programs across the country (70). Applicants are eligible to apply for an adolescent medicine fellowship if they have completed a medical residency in pediatrics, medicine-pediatrics, internal medicine, or family medicine. Most post-graduate subspecialty fellowship training in adolescent medicine require three years and incorporate academic research training in adolescent health as part of its requirements for completion. Although

there are no requirements for residency training in adolescent health by internists and family practitioners, the minimum duration of adolescent medicine fellowship training for these professionals is two years. Table 2 details the training and certification requirements across the three primary specialties.

The Accreditation Council for Graduate Medical Education (ACGME) outlines the clinical and scholarly requirements for both adolescent medicine fellows and faculty and details the program administration and infrastructure that are necessary for adolescent medicine training programs to successfully obtain and maintain accreditation for training in adolescent medicine (70). This includes having a program director and sufficient faculty with current certification in adolescent medicine by the ABP or another board of the American Board of Medical Specialties (i.e., ABIM and ABFM) to supervise and instruct fellows, evidence of faculty scholarship and the ability to support fellows in scholarly activities. The scope of educational experiences for fellows must include a balance of clinical, didactic, teaching, and research activities. Additionally, multidisciplinary interactions with pediatrics and other subspecialties are required as part of training including the following: “family medicine, internal medicine, psychiatry, obstetrics/gynecology, sports medicine, dermatology, surgery and related fields such as pharmacology/toxicology, law, psychology, mental health services, counseling, social work, education, nutrition, juvenile justice, sociology, and public health.” Fellows are also required to demonstrate knowledge of the care of adolescents across a spectrum of hospital and community settings, and must master an extensive list of skills and competencies related to adolescent health (70). Upon completion of fellowship training, fellows are eligible to apply for the opportunity to sit for a certification examination administered through the American Board of Pediatrics for physicians across disciplines.

As of 2014, a total of 883 physicians have been granted board certification or certificates of added qualification for adolescent medicine by the ABP (n=614), ABIM (n=179), and the ABFM (n=90) for the approximately 41.8 million adolescents across the country (71,72). However, these numbers may not reflect the actual number of individuals practicing adolescent medicine, and may not include individuals who have been ‘grandfathered’ into the field prior to board recognition, those who have completed one year clinical fellowships and are ineligible to take the certification exam, or those who have completed a board-recognized 2 or 3 year adolescent medicine fellowship, but have chosen not to take the exam. These numbers also do not include those physicians who, while not having pursued formal adolescent medicine fellowship training, have developed experience-based clinical and content expertise in adolescent medicine in order to fill a clinical need in regions where adolescent medicine providers are unavailable (73). Concerns about a slowly dwindling adolescent medicine workforce, evidenced by lower numbers of trainees entering Adolescent Medicine fellowship programs over the last 5–7 years, have led to discussions among many in the field about the future of Adolescent Medicine and has prompted examination of the quality and length of training, the responsibilities of Adolescent Medicine physicians versus primary care, as well as the financial and professional incentives that could facilitate increased recruitment of fellows into the field (73–78).

While there is concern about the numbers of trainees pursuing subspecialty Adolescent Medicine fellowships, there have also been additional discussions to specify the

competencies necessary to provide adolescent health care by general pediatricians, pediatric residents, and other providers such as internists or family practitioners. Despite an ACGME 1-educational unit (i.e. 4-week block or 1 month) training requirement for all pediatric residents (79), several studies have demonstrated that many general pediatricians feel unprepared to discuss sensitive adolescent health issues including mental health illness, violence prevention, and pregnancy prevention. This observation has also been made for internists and family practitioners for whom the residency training requirements in adolescent medicine are less rigorous (75, 80–83). The quality of adolescent medicine training is also highly variable and resulting in significant gaps in adolescent medicine training for pediatric residency programs in the US (75,76,84). As adolescents mature into adulthood, they may see a greater diversity of providers ranging from general pediatricians, family physicians, internists, and gynecologists, with variable training, experience, and comfort in the care of adolescents (75,85,86), thus more comprehensive training in adolescent and young adult care may be important avenues for improving care to adolescents. Although it is important to increase the adolescent health workforce capacity by strengthening general pediatricians' and adult providers' comfort working with adolescents and young adults, it is not likely to be sufficient to adequately address the many disparities and complex health needs facing adolescents today. Additional strategies such as redesign of resident training, creation of alternative paths to adolescent medicine certification, expanded recruitment strategies (e.g. private and public loan repayment programs), and increased advocacy for expansion of LEAH funding have been proposed to raise the quality of adolescent health care in the U.S. and increase individuals who are specialized in adolescent medicine (73,76,78).

Canada

Although only recently recognized by the Royal College of Physicians and Surgeons of Canada (RCPSC) as a subspecialty within pediatrics (2007), pediatricians with subspecialty training in Adolescent Medicine have been practicing in Canada for the last 30 years (87). Following the RCPSC's decision to provide accreditation and certification in adolescent medicine in Canada, the growth in the field continues to be substantial.

Australia

Australia has also been experiencing significant growth and development in the field of adolescent medicine over the past 20 years. Under the leadership of academic and clinical leaders in adolescent medicine, momentum to establishing adolescent medicine as an independent discipline has been building. (88–90). Building upon the research evidence demonstrating the need for adolescent health training among general practitioners who see the vast majority of Australia's adolescents, subspecialists in adolescent medicine have been at the forefront of developing several initiatives to incorporate adolescent health training in undergraduate and post-graduate medical education (90–92).

Europe

Europe's efforts to develop their adolescent medicine workforce has largely been through the collaborative work between a coalition of adolescent health specialists from several European nations and have received recognition for innovation as an educational model for adolescent health training by the Society of Adolescent Health and Medicine (93). Coordinated through the Multidisciplinary Unit for Adolescent Health at the University of Lausanne in Switzerland, the European Training in Effective Adolescent Care and Health (EuTEACH) working group first convened in 1999 to establish an adolescent health training curriculum for European health professionals, and has continued to operate and develop tools and methodologies for adolescent health training (94–96). EuTEACH also partners with many non-governmental and governmental and United Nations agencies to provide technical assistance and advocacy for the care of adolescents worldwide. EuTEACH is also a Collaborating Center in Adolescent and School Health for the World Health Organization.

The EuTEACH website (<http://www.unil.ch/euteach>) offers free online resources for trainees and practitioners including resources and support for trainers and a 21 modules that focus on three major areas: foundations for the care and management of adolescents, specific health topics common during adolescence (e.g. puberty, sexual reproductive health, injury and violence, substance use), and public health issues related to adolescent health promotion, prevention, and policies (94). The website also provides access to a network of adolescent medicine experts who can provide additional technical support. Additionally, since 2002, EuTEACH has offered a 1-week interactive summer course to train practitioners in adolescent health and targets individuals who may have teaching responsibilities, public health professionals, policy makers and youth advocates (97, 98). Participants across disciplines come from across Europe and other world regions to train in the EuTEACH program and consistently rate the program highly in terms of its usefulness and overall quality of the course.

Other areas of the world

Although the current momentum to prioritize adolescent medicine training around the globe has been accelerating, the international field of adolescent medicine has been underway since at least the 1960s, with the development of adolescent health centers and hospital-based clinics in Latin America (99). The development of training programs in adolescent health in other countries such as Israel and China also show promising signs of growth in the discipline (100–102). However, marked shortages of adolescent health professionals globally remain. In some settings, a single adolescent medicine specialist is available for the entire country and in other settings, there are no available Adolescent Medicine specialists at all (10,103).

Adolescent health professional organizations

Professional organizations like the Society of Adolescent Health and Medicine (SAHM) and the International Association of Adolescent Health (IAAH) provide a forum for practitioners, researchers, and advocates for the health of adolescents to develop interest in

the field, exchange ideas and knowledge, develop strategies and provide leadership to further the field.

Established in 1968, SAHM is the oldest professional body of Adolescent Medicine experts whose vision is to be a “leader in promoting optimal health and well-being for adolescents and young adults”. Internal data from SAHM reveals that of the approximately 1,200 members, approximately three-quarters are physicians. The membership is predominantly based in North American (91%), which is not surprising given the global shortages of Adolescent Medicine providers and the fact that the US has had the longest established Adolescent Medicine training programs. However, all of the major regions are represented in the SAHM membership: Caribbean/Central & South America [15]; Europe [35]; Middle East/Africa [4]; Asia Pacific [50, 33 from Australia] (104). Although regional disparities are evident in SAHM’s membership, this also likely reflects the lack of access to formal training opportunities in Adolescent Medicine and funding for such training.

In 1987, the International Association of Adolescent Health (IAAH) was established, and was followed by the formation of several national adolescent health associations and societies in the 1990s (Italy, Spain, Switzerland, the UK, Israel, Brazil, Argentina, Canada, Australia, and New Zealand). By the beginning of the 21st century, there were ten regionally based adolescent health conferences on seven continents, which demonstrates the worldwide recognition and interest in developing Adolescent Medicine among practitioners and researchers (103).

A more striking finding is the paucity of adolescent medicine specialists in areas where the population of youth makes up the largest proportion of the general population such as Africa and Asia. At the same time, there is evidence that adolescent health and training are priorities in these areas. In Africa, the development of professional organizations such as the Society for Adolescent Health in Uganda (www.sahu.ug) and calls for adolescent health units South Africa (105,106) suggest that there is momentum among health providers and other professionals to develop and improve systems to effectively provide care to adolescents.

Gaps and barriers to provide comprehensive health care for all adolescents

Developing a more expansive and competent adolescent health workforce is an important step towards addressing the health needs of adolescents around the globe. Integrating adolescent health modules early in the training of health providers, such as Australia’s model to teach adolescent health modules during undergraduate medical training or Israel’s training module in adolescent health, which spreads adolescent health modules over the course of 3 years (6 semesters), may be valuable in increasing skills and competencies for any provider when working with adolescents. Early exposure to adolescent health may also raise awareness of the field, and encourage young trainees to pursue advanced training to become Adolescent Medicine specialists (75,77,84).

In an online survey of 221 physician members conducted by SAHM to examine the pipeline of trainees entering the field of adolescent medicine, 61% had completed an adolescent medicine fellowship (104). Among those who pursued fellowship training, the reasons for

pursuing adolescent medicine included being drawn to the population (42%), wanting to become an expert and/or becoming board certified in the field (38%), and a specific desire to pursue an academic adolescent medicine career (19%). Motivations for choosing adolescent medicine as an interest included having a particular interest in an adolescent health topic (18%), desiring research and/or public health training (10%), and having an influential opportunity, mentorship, and/or clinical training experience in adolescent health prior to fellowship (11%). Others described it as a new and exciting field when they decided to pursue fellowship or as an inherent drive to pursue training in adolescent medicine. While most respondents practiced in the United States (89%), participants included individuals from Canada, Australia, Spain, Brazil, New Zealand, Kyrgyzstan, and Mexico (104).

These results provide insight into some of the needs for potential trainees of adolescent medicine. Additional time spent in training is a personal and financial commitment for trainees. National data indicates that pursuing an additional 3 years of clinical and research adolescent medicine training does not convey additional economic benefits above those who pursue careers as generalists (72,104). Given the amount of educational debt for many young physicians in the US, this may represent a significant barrier for recruitment of those interested in pursuing fellowship training in adolescent medicine and the observed goals for future practice among pediatric residents in the US (104,107).

The need to establish adolescent training programs in other regions of the world is critical to develop the field both clinically and to advance the science of the discipline. Although many practitioners pursue advanced training opportunities in established programs such as those in North America, Australia, and Europe, the adolescent health needs in local settings may differ. Culturally-relevant adolescent health care and the dissemination of research in adolescent health populations across a diversity of global regions would develop the evidence base that could influence health care approaches and policies for specific populations of adolescents.

In addition to training health care providers on appropriate comprehensive adolescent health care and subsequent expansion of a competent adolescent health workforce, effective healthcare delivery systems that can reach all young people are necessary. In particular, creative models and services that reach subsets of young people who are the most vulnerable and may have the least access to health care – for example, youth who are homeless, out-of-school, sexual minority, migrant or immigrant, juvenile justice-involved, or those with mental illness – are needed.

Identifying resources and funding to develop adolescent health training opportunities as well as adolescent-friendly health services is often challenging, particularly in country settings that may struggle with limited resources and poor infrastructure. In one study by Deogan et al, estimated costs to scale-up adolescent friendly health services and to achieve universal coverage of these services across an average of 74 low- and middle-income countries would require an annual additional expenditure per capita from \$0.38 to \$0.82 over a 4 year period or an additional US \$15.41 billion for the period 2011–2015 (3), demonstrating a sizeable investment gap to achieve universal coverage of multiple adolescent health services. In order to continue to advance the progress that has been made in the field, a concerted effort to

advocate and collaborate across the global network of adolescent health proponents will be essential.

Next steps

Despite the challenges and barriers to build a global adolescent workforce that is appropriate and effective to meet the needs of adolescents and young adults, there are important opportunities that must be seized and innovations that must be explored. Increasing capacity for universal and comprehensive adolescent-responsive systems will require developing a healthcare workforce that understand the general foundations of adolescent health as well as training providers who are specialists in the field of adolescent medicine. To do this, a tiered approach that stresses early integration of a broad adolescent health agenda during training for health care workers across multiple disciplines (e.g. medicine, nursing, social work, psychology) as well as the development of specialists in adolescent medicine will maximize the capacity for adolescent healthcare delivery.

Inter-nation partnerships to develop opportunities for adolescent health training where formal training programs do not exist would distribute the availability of tight human resources. Currently, there are limited funding options for international medical graduates to pursue adolescent medicine subspecialty funding in the US. Exploring creative solutions such as the use of mobile technology and the internet has the potential to open doors to build capacity in areas that are difficult to reach and where providers do not have the resources to pursue training overseas for an extended period.

Formalizing competencies for adolescent medicine for trainees at all levels and recognition by governing medical boards of various nations will also be important to providing consistent and standardized care and help to eliminate variation in the quality of care being delivered. Recognition of adolescent medicine as a subspecialty in more countries may also increase visibility and recognition of the field and result in increased recruitment, which have been the case for both Canada and Australia (87,90). Additionally, developing educational programs for non-physician health providers (e.g. nursing, social workers, and counselors) who care for adolescents may also increase adolescent health competencies across disciplines and strengthen integrated and interdisciplinary approaches to adolescent health. In countries facing universal workforce shortages throughout entire health systems, “task-shifting” strategies like those used to rapidly expand access to HIV care and services may be one approach to increase access to adolescent health care in areas where the adolescent health workforce are scarce (108).

Finally, strengthening research capacity and improving the quality of evidence for greater representation of adolescents across diverse settings will be required to improve the granularity of data and identify culturally and socially relevant adolescent health issues seen across the different regions of the world. Mentorship across institutions and countries and identification of funding opportunities to support these endeavors are essential.

Conclusions

The field of adolescent medicine is entering into an exciting period of opportunities to improve the health of adolescents worldwide. With increasing resolve and momentum to work towards improving the current systems impacting adolescent health among worldwide governing bodies like the United Nations and country governments, the adolescent health community must continue to pursue efforts that focus on building the adolescent health workforce and influencing health systems to effectively address the needs of adolescents in their communities. Disseminating best practices and increasing training opportunities through collaborative networks that exist through professional organizations and across institutions, will be important next steps towards this goal.

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References

1. UNICEF and WHO. Second global consultation on service provision for adolescents living with HIV. New York: UNICEF, Consensus Statement; 2010.
2. Blum R, Dick B. Strengthening global programs and policies for youth based on the emerging science. *J Adolesc Health*. 2013; 52(Suppl 2):S1–S3. [PubMed: 23332565]
3. Deogan C, Ferguson J, Stenberg K. Resource needs for adolescent friendly health services: Estimates for 74 low- and middle-income countries. *PloS One*. 2012; 7(12):e51420. [PubMed: 23300548]
4. Bennett DL. Worldwide problems in the delivery of adolescent health care. *Public Health*. 1982; 96(6):334–40. [PubMed: 7163471]
5. Patton GC, Ross DA, Santelli JS, Sawyer SM, Viner RM, Kleinert S. Next steps for adolescent health: a Lancet Commission. *Lancet*. 2014; 383(9915):385–6. [PubMed: 24485572]
6. Sawyer S, Afifi R, Bearinger L, Blakemore S, Dick B, Ezech A, et al. Adolescence: A foundation for future health. *Lancet*. 2012; 379(9826):1630–40. [PubMed: 22538178]
7. UNICEF. Progress for children: A report card on adolescents. New York: UNICEF; 2012.
8. World Health Organization. Making health services adolescent friendly. Geneva: WHO; 2002.
9. World Health Organization. Young people: health risks and solutions. Geneva: WHO Fact sheet 345; 2011.
10. World Health Organization. Health for the world's adolescents: A second chance in the second decade. Geneva: WHO; 2014.
11. UNICEF. Progress for children: Achieving the MDGs with equity. New York: UNICEF; 2010.
12. Viner RM, Coffey C, Mathers C, Bloem P, Costello A, Santelli J, et al. 50-year mortality trends in children and young people: a study of 50 low-income, middle-income, and high-income countries. *Lancet*. 2011; 77(9772):1162–74. [PubMed: 21450338]
13. UNICEF. The state of the world's children 2011: Adolescence an age of opportunity. New York: UNICEF; 2011.
14. World Health Organization. Adolescent friendly health services: An agenda for change. Geneva: WHO; 2002.
15. Kamo N, Carlson M, Brennan RT, Earls F. Young citizens as health agents: Use of drama in promoting community efficacy for HIV/AIDS. *Am J Public Health*. 2008; 98(2):201–4. [PubMed: 18172136]

16. Makhoul J, Alameddine M, Afifi RA. 'I felt that I was benefiting someone': youth as agents of change in a refugee community project. *Health Educ Res.* 2012; 27(5):914–26. [PubMed: 21464150]
17. Howe N, Strauss W. The new generation gap. *Atl Mon.* 1992; 270(6):67–89.
18. UNFPA. *State of the world population 2014: The power of 1.8 billion adolescents, youth and the transformation of the future.* New York: UNFPA; 2014.
19. Emerging issues in adolescent health. *J Adolesc Health.* 2013; 52(2):S1–S46.
20. Lawrence, RS.; Gootman, JA.; Sim, LF. eds *Adolescent health services: Missing opportunities.* Washington, DC: National Academies Press; 2009.
21. *The Lancet Series on Adolescent Health.* London: Lancet; 2012.
22. Patton GC, Viner RM, Linh LC, Ameratunga S, Fatusi AO, Ferguson BJ, et al. Mapping a global agenda for adolescent health. *J Adolesc Health.* 2010; 47(5):427–32. [PubMed: 20970076]
23. Patton G, Coffey C, Sawyer S, Viner R, Haller D, Vos T, et al. Global patterns of mortality in young people: a systematic analysis of population health data. *Lancet.* 2009; 374(9693):881–92. [PubMed: 19748397]
24. Gore F, Bloem P, Patton G, Ferguson J, Joseph V, Coffey C, et al. Global burden of disease in young people aged 10 to 24 years: a systematic analysis. *Lancet.* 2011; 377(9783):2093–102. [PubMed: 21652063]
25. Patton G, Coffey C, Cappa C, Currie D, Riley L, Gore F, et al. Health of the world's adolescents: a synthesis of internationally comparable data. *Lancet.* 2012; 379(9826):1665–75. [PubMed: 22538181]
26. Idele PP, Gillespie AP, Porth TM, Suzuki CP, Mahy MS, Kasedde SD, et al. Epidemiology of HIV and AIDS among adolescents: Current status, inequities, and data gaps. *J Acquir Immune Defic Syndr.* 2014; 66(S2):S144–53. [PubMed: 24918590]
27. Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. *Arch Gen Psychiatr.* 2005; 62(6):593–602. [PubMed: 15939837]
28. Knapp M, McCrone P, Fombonne E, Beecham J, Wostear G. The Maudsley long-term follow-up of child and adolescent depression. *Br J Psychiatry.* 2002; 180(1):19–23. [PubMed: 11772846]
29. Costello EJ, Foley DL, Angold AM. 10-year research update review: The epidemiology of child and adolescent psychiatric disorders: II. Developmental Epidemiology. *J Am Acad Child Adolesc Psychiatry.* 2006; 45(1):8–25. [PubMed: 16327577]
30. Nicolai LM, King E, D'Entremont D, Pritchett EN. Disclosure of HIV serostatus to sex partners: a new approach to measurement. *Sex Transm Dis.* 2006; 33(2):102–5. [PubMed: 16432481]
31. Fortenberry DJ, Brizendine EJ, Katz BP, Wools KK, Blythe MJ, Orr DP. Subsequent sexually transmitted infections among adolescent women with genital infection due to Chlamydia trachomatis, Neisseria gonorrhoeae, or Trichomonas vaginalis. *Sex Transm Dis.* 1999; 26(1):26–32. [PubMed: 9918320]
32. UN Joint Programme on HIV/AIDS. *Global report: UNAIDS report on the global AIDS epidemic.* Geneva: UNAIDS; 2010. Accessed 2012 November 22. URL: http://issuu.com/unaid/docs/unaid_globalreport_2010/3
33. Lamb MR, Fayorsey R, Nuwagaba-Biribonwoha H, Viola V, Mutabazi V, Alwar T, et al. High attrition before and after ART initiation among youth (15–24 years of age) enrolled in HIV care. *AIDS.* 2014; 28(4):559–68. [PubMed: 24076661]
34. Zandoni BC, Mayer KH. The adolescent and young adult HIV cascade of care in the United States: Exaggerated health disparities. *AIDS Patient Care STDS.* 2014; 28(3):128–35. [PubMed: 24601734]
35. Agwu AL, Siberry GK, Ellen J, Fleishman JA, Rutstein R, Gaur AH, et al. Predictors of highly active antiretroviral therapy utilization for behaviorally HIV-1-infected youth: impact of adult versus pediatric clinical care site. *J Adolesc Health.* 2012; 50(5):471–7. [PubMed: 22525110]
36. Mmari K, Lantos H, Blum RW, Brahmabhatt H, Sangowawa A, Yu C, et al. A global study on the influence of neighborhood contextual factors on adolescent health. *J Adolesc Health.* 2014; 55(6):S13–S20. [PubMed: 25453998]

37. Matson PA, Chung SE, Sander P, Millstein SG, Ellen JM. The role of feelings of intimacy on perceptions of risk for a sexually transmitted disease and condom use in the sexual relationships of adolescent African-American females. *Sex Transm Infect.* 2012; 88(8):617–21. [PubMed: 22707479]
38. Reed E, Miller E, Raj A, Decker MR, Silverman JG. Teen dating violence perpetration and relation to STI and sexual risk behaviours among adolescent males. *Sex Transm Infect.* 2014; 90(4):322–4. [PubMed: 24578579]
39. Cutter-Wilson E, Richmond T. Understanding teen dating violence: Practical screening and intervention strategies for pediatric and adolescent healthcare providers. *Curr Opin Pediatr.* 2011; 23(4):379–83. [PubMed: 21670679]
40. Carpenter-Hyland EP, Chandler LJ. Adaptive plasticity of NMDA receptors and dendritic spines: Implications for enhanced vulnerability of the adolescent brain to alcohol addiction. *Pharmacol Biochem Behav.* 2007; 86(2):200–8. [PubMed: 17291572]
41. Padmanabhan A, Geier CF, Ordaz SJ, Teslovich T, Luna B. Developmental changes in brain function underlying the influence of reward processing on inhibitory control. *Dev Cogn Neurosci.* 2011; 1(4):517–29. [PubMed: 21966352]
42. Alderman EM, Rieder J, Cohen MI. The history of adolescent medicine. *Pediatr Res.* 2003; 54(1): 137–47. [PubMed: 12672903]
43. Heron, M. National Vital Statistics Reports, Deaths: Leading causes for 2010. Hyattsville, MD: National Center for Health Statistics; 2010.
44. Ogden CL, Carroll MD, Curtin LR, Lamb MM, Flegal KM. Prevalence of high body mass index in us children and adolescents, 2007–2008. *JAMA.* 2010; 303(3):242–9. [PubMed: 20071470]
45. Dabelea D, Mayer-Davis EJ, Saydah S, et al. Prevalence of type 1 and type 2 diabetes among children and adolescents from 2001 to 2009. *JAMA.* 2014; 311(17):1778–86. [PubMed: 24794371]
46. Centers for Disease Control and Prevention. CDC Fact Sheet: New HIV infections in the United States. Accessed 2013 July 2. URL: <http://www.cdc.gov/nchhstp/newsroom/docs/2012/HIV-Infections-2007-2010.pdf>
47. Satterwhite CL, Torrone E, Meites E, Dunne EF, Mahajan R, Ocfemia, et al. Sexually transmitted infections among US women and men: Prevalence and incidence estimates, 2008. *Sex Transm Dis.* 2013; 40(3):187–93. [PubMed: 23403598]
48. Mulye TP, Park MJ, Nelson CD, Adams SH, Irwin CE Jr, Brindis CD. Trends in adolescent and young adult health in the United States. *J Adolesc Health.* 2009; 45(1):8–24. [PubMed: 19541245]
49. Park MJ, Scott JT, Adams SH, Brindis CD, Irwin CE Jr. Adolescent and young adult health in the United States in the past decade: Little improvement and young adults remain worse off than adolescents. *J Adolesc Health.* 2014; 55(1):3–16. [PubMed: 24815958]
50. Wiemann CM, Berenson AB, Garcia-delPino L, McCombs SL. Factors associated with adolescents' risk for late entry into prenatal care. *Fam Plann Perspect.* 1997; 29(6):273–6. [PubMed: 9429873]
51. Lahuerta M, Lima J, Nuwagaba-Biribonwoha H, Okamura M, Alvim MF, Fernandes R, et al. Factors associated with late antiretroviral therapy initiation among adults in Mozambique. *PloS One.* 2012; 7(5):e37125. [PubMed: 22615917]
52. McCann TV, Lubman DI. Young people with depression and their satisfaction with the quality of care they receive from a primary care youth mental health service: a qualitative study. *J Clin Nurs.* 2012; 21(15–16):2179–87. [PubMed: 22642743]
53. Liao Y, McGee DL, Kaufman JS, Cao G, Cooper RS. Socioeconomic status and morbidity in the last years of life. *Am J Public Health.* 1999; 89(4):569–72. [PubMed: 10191805]
54. Gennetian LA, Duncan G, Knox V, Vargas W, Clark-Kauffman E, London AS. How welfare policies affect adolescents' school outcomes: A synthesis of evidence from experimental studies. *J Res Adolesc.* 2004; 14(4):399–423.
55. Ross CS, Ostroff J, Jernigan DH. Evidence of underage targeting of alcohol advertising on television in the United States: Lessons from the Lockyer v. Reynolds decisions. *J Public Health Pol.* 2014; 35(1):105–18.

56. Rowland B, Toumbourou JW, Livingston M. The association of alcohol outlet density with illegal underage adolescent purchasing of alcohol. *J Adolesc Health*. 2015; 56(2):146–52. [PubMed: 25287986]
57. Yang Z, Gaydos LM. Reasons for and challenges of recent increases in teen birth rates: A study of family planning service policies and demographic changes at the state level. *J Adolesc Health*. 2010; 46(6):517–24. [PubMed: 20472207]
58. Hall, GS. Adolescence: Its psychology and its relations to anthropology, sociology, sex, crime, religion, and education. New York: Appleton; 1904.
59. Greulich, WW.; Pyle, SI. Radiographic atlas of skeletal development of the hand and wrist. 2nd. Stanford, CA: Stanford University Press; 1950.
60. Stuart HC. Normal growth and development during adolescence. *N Engl J Med*. 1946; 234(20): 666–72. [PubMed: 20983883]
61. Marshall WA, Tanner JM. Growth and physiological development during adolescence. *Annu Rev Med*. 1968; 19(1):283–300. [PubMed: 4297619]
62. Marshall WA, Tanner JM. Variations in the Pattern of Pubertal Changes in Boys. *Arch Dis Child*. 1970; 45(239):13–23. [PubMed: 5440182]
63. Marshall WA, Tanner JM. Variations in pattern of pubertal changes in girls. *Arch Dis Child*. 1969; 44(235):291–303. [PubMed: 5785179]
64. Piaget, J.; Inhelder, B. The growth of logical thinking from childhood to adolescence. New York: Basic Books; 1958.
65. Erikson EH. Eight ages of man. *Int J Psychiatry*. 1966; 2:281–307. [PubMed: 5934808]
66. Garmezy NP. Resilience in children's adaptation to negative life events and stressed environments. *Pediatr Ann*. 1991; 20(9):459–60. 63–66. [PubMed: 1945543]
67. Gallagher JR. The origins, development, and goals of adolescent medicine. *J Adolesc Health Care*. 1982; 3(1):57–63. [PubMed: 6749779]
68. Maternal and Child Health Bureau, US Department of Health and Human Services. Leadership education in adolescent health. 2014. Accessed 2015 January 30. URL: <http://mchb.hrsa.gov/training/projects.asp?program=1>
69. SAHM. Training opportunities in adolescent health. 2015. Accessed 2015 February 2. URL: <http://www.adolescenthealth.org/Training-and-CME/Fellowships-Training.aspx>
70. ACGME. ACGME program requirements for graduate medical education in adolescent medicine. Accessed 2015 February 2. URL: https://www.acgme.org/acgmeweb/Portals/0/PFAssets/2013-PR-FAQ-PIF/321_adolescent_med_peds_07012013.pdf
71. American Board of Pediatrics communication. Accessed 26 February 2015. <https://www.abp.org/content/workforce-databook>. American Board of Internal Medicine and American Board of Family Medicine information available at <http://www.abim.org/pdf/data-candidates-certified/all-candidates.pdf> and <https://www.theabfm.org/about/stats.aspx>
72. US Census Bureau. Age and sex composition in the United States: 2012. Accessed 30 January 2015. URL: <http://www.census.gov/population/age/data/2012comp.html>
73. Fox, HB.; McManus, M.; Wilson, JE.; Diaz, A.; Elster, AB.; Felice, ME., et al. Adolescent medicine at the crossroads: A review of fellowship training and recommendations for reform. Washington, DC: National Alliance to Advance Adolescent Health; 2008.
74. Althouse LA, Stockman JA I. Pediatric workforce: A look at adolescent medicine data from the American Board of Pediatrics. *J Pediatrics*. 2007; 150(1):100–2.e2.
75. Fox HB, McManus MA, Klein JD, Diaz A, Elster AB, Felice ME, et al. Adolescent medicine training in pediatric residency programs. *Pediatrics*. 2010; 125(1):165–72. [PubMed: 19969616]
76. Trent M, Cheng TL. Meeting the needs of adolescents: Pediatric medical education and workforce development. *Pediatrics*. 2010; 125(1):191–2. [PubMed: 20048086]
77. Emans SJ, Austin SB, Goodman E, Orr DP, Freeman R, Stoff D, et al. Improving adolescent and young adult health — Training the next generation of physician scientists in transdisciplinary research. *J Adolesc Health*. 2010; 46(2):100–9. [PubMed: 20113915]
78. Hergenroeder AC, Benson PS, Britto MT, et al. Adolescent medicine: Workforce trends and recommendations. *Arch Pediatr Adolesc Med*. 2010; 164(12):1086–90. [PubMed: 21135335]

79. ACGME. ACGME program requirements for graduate medical education in pediatrics. Accessed 2 February 2015 URL: https://www.acgme.org/acgmeweb/Portals/0/PFAssets/ProgramRequirements/120_family_medicine_07012014.pdf
80. Borowsky I, Ireland M. National survey of pediatricians' violence prevention counseling. *Arch Pediatr Adolesc Med.* 1999; 153(11):1170–6. [PubMed: 10555720]
81. Hellerstedt WL, Smith AE, Shew ML, Resnick MD. Perceived knowledge and training needs in adolescent pregnancy prevention: Results from a multidisciplinary survey. *Arch Pediatr Adolesc Med.* 2000; 154(7):679–84. [PubMed: 10891019]
82. 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. *Arch Pediatr Adolesc Med.* 2000; 154(2):162–8. [PubMed: 10665603]
83. Freed LH, Ellen JM, Irwin CE Jr, Millstein SG. Determinants of adolescents' satisfaction with health care providers and intentions to keep follow-up appointments. *J Adolesc Health.* 1998; 22(6):475–9. [PubMed: 9627818]
84. Emans SJ, Bravender T, Knight J, Frazer C, Luoni M, Berkowitz C, et al. Adolescent medicine training in pediatric residency programs: Are we doing a good job? *Pediatrics.* 1998; 102(3):588–95. [PubMed: 9738181]
85. Rand CM, Shone LP, Albertin C, Auinger P, Klein JD, Szilagyi PG. National health care visit patterns of adolescents: Implications for delivery of new adolescent vaccines. *Arch Pediatr Adolesc Med.* 2007; 161(3):252–9. [PubMed: 17339506]
86. Klein JD, McNulty M, Flatau CN. Adolescents' access to care: Teenagers' self-reported use of services and perceived access to confidential care. *Arch Pediatr Adolesc Med.* 1998; 152(7):676–82. [PubMed: 9667540]
87. Katzman DK, Frappier J-Y, Goldberg E. Adolescent medicine: A new paediatric subspecialty in Canada. *Paediatr Child Health.* 2008; 13(1):12–4. [PubMed: 19119346]
88. Sawyer S, Sanci LA, Conn JJ, Patton GC. A training agenda in adolescent medicine and health. *Int J Adolesc Med Health.* 2007; 19(3):305–15. [PubMed: 17937147]
89. Patton GC, Sanci LA, Sawyer S. Adolescent medicine. *Med J Aust.* 2002; 176(1):3. [PubMed: 11840931]
90. Sanci LA, Coffey CM, Veit FCM, Carr-Gregg M, Patton GC, Day N, et al. Evaluation of the effectiveness of an educational intervention for general practitioners in adolescent health care: randomised controlled trial. *BMJ.* 2000; 320(7229):224–30. [PubMed: 10642233]
91. Veit FC, Sanci LA, Coffey C, Young DY, Bowes G. Barriers to effective primary health care for adolescents. *Med J Aust.* 1996; 165(3):131–3. [PubMed: 8709874]
92. Veit FC, Sanci LA, Young DY, Bowes G. Adolescent health care: perspectives of Victorian general practitioners. *Med J Aust.* 1995; 163(1):16–8. [PubMed: 7609681]
93. Society for Adolescent Health and Medicine. Millar award for innovative approaches to adolescent health care. Accessed 2015 February 11. URL: <http://www.adolescenthealth.org/Awards-and-Grants/Awards-and-Honors/Millar-Award-for-Innovative-Approaches.aspx>
94. European Training in Effective Adolescent Care and Health. EuTEACH. Accessed 2015 February 11. URL: <http://www.unil.ch/euteach/home.html>
95. Berg-Kelly K. EU-Teach: a network for developing the teaching of adolescent medicine in Europe. *Acta Paediatr.* 2000; 89(10):1270. [PubMed: 11083388]
96. Michaud, PA. Unité multidisciplinaire de santé des adolescents. Accessed 2015 February 11. URL: http://www.umsa.ch/files/state_of_umsa_mid_2014.pdf
97. Michaud PA, Stronski S, Fonseca H, MacFarlane A. The development and pilot-testing of a training curriculum in adolescent medicine and health. *J Adolesc Health.* 2004; 35(1):51–7. [PubMed: 15193574]
98. EuTEACH. EuTEACH Summer School. URL: <http://www.unil.ch/euteach/en/home/menuguid/euteach-summer-school.html>
99. Silber TJ. Adolescent medicine: the development of a new specialty. *Adolescence.* 1980; 15(59):495–500. [PubMed: 7435317]

100. Lee RL, Wong TK, Al-Gasseer N, Wu CS, Chan SS, Ko SK, et al. Evaluating the efficacy of an integrated curriculum on adolescent health and development for pre-service nursing education in Hong Kong. *Nurse Educ Today*. 2006; 26(4):286–97. [PubMed: 16343698]
101. Lee RL, Hayter M. The effect of a structured adolescent health summer programme: a quasi-experimental intervention. *Int Nurs Rev*. 2014; 61(1):64–72. [PubMed: 24382169]
102. Hardoff D, Danziger Y, Reisler G, Stoffman N, Ziv A. Minding the gap: training in adolescent medicine when formal training programmes are not available. *Arch Dis Child Educ Pract Ed*. 2009; 94(5):157–60. [PubMed: 19770496]
103. Bennett DL, Tonkin RS. International developments in adolescent health care: a story of advocacy and achievement. *J Adolesc Health*. 2003; 33(4):240–51. [PubMed: 14519565]
104. Personal communication. Trent ME, Society for Adolescent Medicine and Health, Pipeline Data. Used with permission. 2013
105. Westwood T, Swingler G, Ross M, Patel B, Mayosi BM. Time for adolescent medicine units in South Africa? *S Afr Med J*. 2008; 98:818–20. [PubMed: 19180738]
106. Stefan DC, Van Der Merwe PL. Treating adolescents in South Africa: Time for adolescent medicine units? *S Afr Med J*. 2008; 98:184–5. [PubMed: 18350217]
107. Frintner MP, Mulvey HJ, Pletcher BA, Olson LM. Pediatric resident debt and career intentions. *Pediatrics*. 2013; 131(2):312–8. [PubMed: 23296437]
108. World Health Organization. Health worker shortages and the response to AIDS. Geneva: WHO; 2006. WHO Health Systems and Services.

Table 1

Top 10 causes of death for 10–24 year olds, 2004(23)

Road traffic accidents
Self-inflicted injuries
Violence
Lower respiratory tract infection
Tuberculosis
HIV/AIDS
Drowning
Fire-related
Meningitis
War

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Table 2

Training Requirements by Specialty Board

American Board of Pediatrics		American Board of Internal Medicine*		American Board of Family Medicine	
•	<i>Minimum Training:</i> 3 years (Accredited program in US or Canada)	•	<i>Minimum Training:</i> 2 years	•	<i>Minimum Training:</i> 2 years
•	No continuous absence of > 1 year	•	<i>Clinical Months required:</i> 12	•	<i>Initial certification:</i> family medicine
•	Scholarly activity required	•	<i>Procedures:</i> None		
•	Verification of Competence form	•	Clinical competence demonstrated		
•	<i>Initial certification:</i> general pediatrics	•	<i>Initial certification:</i> internal medicine		
		*Options for candidates for special consideration			

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