

# 101 PEDIATRICS



## A Resource Guide from the American Academy of Pediatrics

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



# Foreword

The mission of the American Academy of Pediatrics is to attain optimal physical, mental, and social health and well-being for all infants, children, adolescents, and young adults. To this purpose, the American Academy of Pediatrics and its members dedicate their efforts and resources.

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This publication appears both in print and on the American Academy of Pediatrics Web site ([www.aap.org/ypn/ms/ped\\_career/](http://www.aap.org/ypn/ms/ped_career/)). If you have the print version, please consult the Web version for quick links to many useful resources. All Internet links that appear in this document were current as of May 2, 2011.





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# PART 1

## Thinking About Medicine and Pediatrics

*Pediatrics 101* is a guide to one of the most rewarding medical specialties that paints the landscape of pediatric practice in broad strokes, and then identifies considerations that come to bear in preparing for a career in medicine. Premedical and medical education, the training experience, and career opportunities are discussed in turn. Internet links throughout the text encourage the reader to pursue content in more depth; *Quick Facts* pages located inside the back cover offer random statistical snapshots.

Medical training is a huge commitment and a major investment. Those considering a career in pediatrics should do their homework and seek the advice of physicians they know. If the research supports your interest in pediatrics, count yourself lucky and follow your heart. Consider the words of a general pediatrician interviewed a few years ago, when he was 82 and still teaching medical students: "When you're a general pediatrician you're a member of every family that you take care of. Would I recommend pediatrics? You bet your life!"

### Section 1: Pediatrics as an Attractive Career

Studies consistently rank pediatrics among the top specialties for career satisfaction.

- Results of a 2004-2005 survey published in an online peer-reviewed journal ranked the job satisfaction of 6,600 physicians in 42 specialties. Four of the "top 10" were pediatric specialties: pediatric emergency medicine (#1), general pediatrics (#4), med-peds (#5), "other" pediatric subspecialties (#6), and neonatal-perinatal medicine (#7).<sup>1</sup> (Reference 1)
- Data from a 1998 survey of physicians in large group practices that was used to measure career satisfaction of general and subspecialty pediatricians as well as general and subspecialty internal medicine physicians found that general pediatricians reported the highest overall satisfaction and lowest job stress or burnout overall. Pediatric subspecialists' rankings of both satisfaction and stress were closer to those of their colleagues in general and subspecialty internal medicine.<sup>2</sup> (Reference 2)



- An analysis of data to measure career satisfaction using a 1996-1998 survey of more than 12,000 physicians in direct patient care in 33 specialties identified 2 pediatric specialties among the "top 5." (Geriatric internal medicine came in first, followed by neonatal-perinatal medicine, infectious disease, dermatology, and general pediatrics.)<sup>3</sup> (Reference 3)
- In 2008, 94% of graduating pediatric residents reported that if they had it to do over, they would choose categorical pediatrics again.<sup>4</sup> (Reference 4)

## So Many Options

Pediatricians are free to choose one or more practice settings and to pursue a wide variety of interests. Generalist pediatricians are needed to serve as educators, mentors, hospitalists, and researchers. Rewarding careers are also available in public health, international health, health policy, and administrative leadership. Pediatric medical subspecialists practice primarily in academic medical centers and specialty hospitals.

In 2008, 96% of pediatric residents seeking a position in general pediatrics had secured a position before the conclusion of training.<sup>4</sup> (Reference 4) Preliminary data indicate that 84% of pediatric residents who completed training in the years 2006-2010 received an offer for their most desired general practice position. (American Academy of Pediatrics (AAP) Department of Research; unpublished data.)

Training in general pediatrics is the portal for careers in the pediatric medical subspecialties. Interest in subspecialization has fluctuated over time. American Board of Pediatrics data show that 33% of first-time applicants taking the general pediatrics examination in 2010 planned to subspecialize. An identical proportion had planned to subspecialize in 1990. In the interim, however, that number varied by as much as 13%.<sup>5</sup> (Reference 5)

### TIP

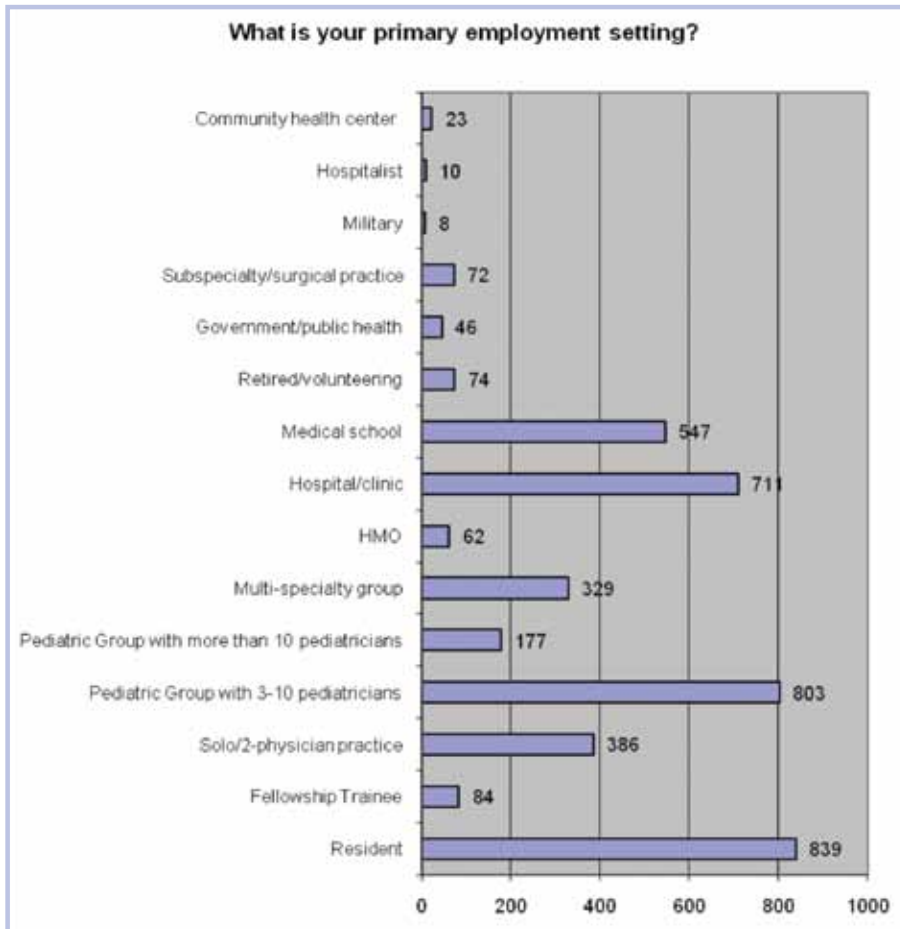
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According to the American Board of Pediatrics (ABP), among those taking the general pediatrics examination for the first time in 2009, the 5 subspecialties most frequently selected by those planning to pursue fellowship training in an ABP-boarded pediatric subspecialty were neonatal-perinatal medicine, pediatric hematology-oncology, pediatric emergency medicine, pediatric cardiology, and pediatric critical care.<sup>6</sup> (Reference 6)



## Practice Patterns: Settings and Shortage Areas

The chart below shows how pediatric practice settings for both generalists and subspecialists were distributed in January 2008.



*In January, 2008, the American Academy of Pediatrics (AAP) Task Force on Vision of Pediatrics surveyed the AAP membership on selected topics. This graph shows the responses of 4171 pediatricians who replied to a question about practice setting.*

Recent research has focused on the effectiveness of public policy designed to address pediatrician shortage areas. Some workforce experts have pointed out that an increase in the number of pediatricians overall has not translated to equitable access for all children. One study examined the ratio of child physicians (pediatricians and family physicians) to pediatric patients, discounting the impact of family physicians by the estimated proportion of time devoted to adult patients. By this measure, more than 950,000 children in 47 states lived in Primary Care Service Areas (PCSAs) without a primary care child physician in 2006.<sup>7</sup> (Reference 7)

A paper presented at the 2006 annual meeting of the Pediatric Academic Societies addressed child access to specific health care providers, reported that 52% of PCSAs in the United States were without a pediatrician and 20% also lacked a family physician. This meant that 8.1 million children were without a pediatrician and 650,000 lived in PCSAs without a primary care physician of any kind. A total of 53,000 lived in PCSAs that were also without nurse practitioners or physician assistants. Underserved PCSAs were more likely to be in areas that are less populous and more rural, with a higher proportion of persons living below the poverty line and a higher proportion of nonwhite residents.<sup>8</sup> (Reference 8)

Access to certain pediatric subspecialists is also a concern, especially in rural communities. A 2007 survey of active-practice, United States-based AAP Fellows in general pediatrics identified dissatisfaction with wait time for appointments and availability of many pediatric medical subspecialties and several pediatric surgical specialties.<sup>9</sup> (Reference 9) Ninety-six percent of



surveyed primary care pediatricians said there were too few local child/adolescent psychiatrists to meet referral needs; 87% cited a shortage of developmental-behavioral pediatricians; and 82% reported insufficient pediatric dermatologists. More than half of those surveyed reported shortages of pediatric medical subspecialists in rheumatology, neurology, adolescent health, endocrinology, and gastroenterology. When these same physicians were surveyed about local access to pediatric surgical specialists, the most acute shortages were in orthopedics, neurosurgery and urology. Workforce experts have suggested that public policy related to funding for subspecialty training should be carefully researched and subspecialty specific.<sup>10</sup> (Reference 10)

A variety of factors are associated with potential for increased demand for pediatrician services.<sup>11 12</sup> (References 11, 12)

- Increased insurance coverage and improved access for children when health care reform provisions are implemented.
- A growing shift in the number of pediatrician office visits for children previously cared for by family physicians (who may have increasing numbers of adult patients in their practices for the same reason).
- Changes in the type of and demand for pediatric services deriving from advances in genetics and other technologies.
- Increasing numbers of medically complex and/or fragile pediatric patients.
- Increasing need for pediatricians to address developmental, educational, and mental health issues with their patients.
- Increasing prevalence of chronic diseases in children.

The proportion of nonsurgical visits to pediatricians, as compared to family physicians, began to increase in the 1990s. Data from 1980-2006 National Ambulatory Medical Care Surveys related to office visits by patients 0 to 17 years showed that visits to general pediatricians increased by 10% (to 72% of total visits) during those years. For the first time, pediatricians were found to provide most adolescent visits.<sup>13</sup> (Reference 13)

When fully implemented, the Affordable Care Act signed into law by President Obama in March 2010 will give millions of previously uninsured children access to the AAP Bright Futures standards for pediatric preventive care. The AAP is also working with government, private, and community leaders to reach the 5 million children who are eligible for, but not enrolled for benefits via Medicaid and the Children's Health Insurance Program (CHIP).<sup>14</sup> (Reference 14)

## Part-Time Practice

Pediatrics is at the forefront of the trend toward more flexible work arrangements for physicians. A 2002 article in *AAP News* reporting the results of AAP and American Medical Association surveys reported that 26.1% of pediatricians – a larger proportion than in any other specialty surveyed – had practiced part time at some point in their careers. Among pediatric residents, 58% of females and 15% of males expressed an interest in arranging a part-time position within 5 years of completing residency.<sup>15</sup> (Reference 15)

- An AAP survey to assess interest in part-time employment among categorical pediatrics residents graduating 2003-2005 and not applying for fellowships found that 38% had sought a part-time position and 21% had accepted one.<sup>16</sup> (Reference 16)



- On average, these residents expected to work 15 hours less per week (23 vs. 38 hours) and to earn almost \$34,000 less (\$71,600 vs. \$105,600) than their full-time colleagues.<sup>16</sup> (Reference 16)
- In 2000, 2003, and 2006, an AAP Periodic Survey of Fellows asked categorical pediatrics residents completing training about their interest in part-time work. Results showed that the number of graduating fellows planning to work part time increased from 15% to 23% during those years.<sup>17</sup> (Reference 17)
- An all-member survey conducted in 2008 by the AAP Task Force on Vision of Pediatrics determined that 55% of pediatricians are women. Gender is a strong predictor of part-time status: between 2000 and 2006, the proportion of women in pediatrics working part time grew from 28% to 36%.<sup>17</sup> (Reference 17)
- Part-time work is also increasing in other groups, including men, those under 40 and over 50 years of age, and those in urban and suburban settings, generalists and subspecialists.<sup>17</sup> (Reference 17)

### Section 2: General Pediatrics

Pediatricians focus on the physical, emotional, and social health of infants, children, adolescents, and young adults from birth to 21 years. Developmentally oriented and trained in skilled assessment, their patient-care lens is focused on prevention, detection, and management of physical, behavioral, developmental, and social problems that affect children. Pediatricians diagnose and treat infections, injuries, and many types of organic disease and dysfunction. They work to reduce infant and child mortality, foster healthy lifestyles, and ease the day-to-day difficulties of those with chronic conditions. With structured evaluation and early intervention, pediatricians identify and address developmental and behavioral problems that result from exposure to psychosocial stressors. They appreciate the vulnerability of children and adolescents, and actively advocate for measures to protect their health and safety. The ability to communicate effectively with patients, families, teachers, and social service professionals is a key to effective pediatric care.

General pediatricians collaborate with pediatric subspecialists and other medical and surgical specialists in the treatment of complex diseases and disorders. They work closely with other health professionals concerned with the emotional needs of children. Pediatricians advise educators and child-care professionals, and advocate for access to care and a medical home for all children.

General pediatrics is a multifaceted primary care specialty. The general pediatrician's responsibilities include:

- Management of serious and life-threatening illnesses
- Diagnosis and treatment of acute and chronic disorders
- Monitoring physical and psychosocial growth and development
- Age-appropriate screening
- Health supervision (health promotion and disease prevention activities to enable each child to reach full potential)
- Anticipatory guidance (advice and education for patients and parents regarding appropriate preparation for predictable developmental challenges)
- Referral of more complex conditions as needed
- Consultative partnerships with other care providers, such as family practitioners, nurse practitioners, and surgeons
- Community-based activities in sports medicine, school health, and public health.

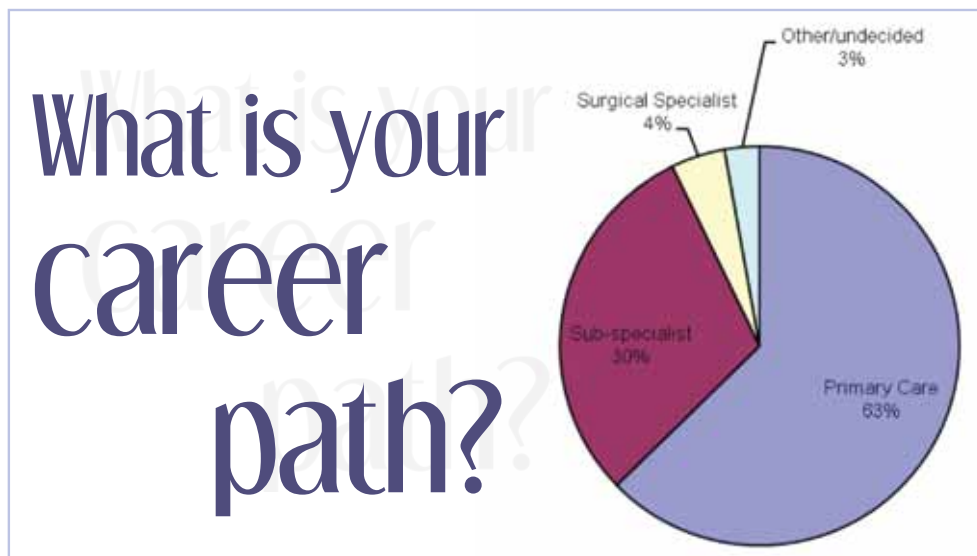


### Section 3: Pediatric Medical Subspecialties

Pediatric residents who choose to focus on a particular aspect of child health, either exclusively or as a part of their general pediatric practice, complete a subspecialty fellowship after residency.

Pediatric subspecialists are more likely to work in academic settings, where their responsibilities include teaching and research along with direct patient care. Full-time pediatric subspecialists spend, on average, 34 hours per week in direct patient care compared to 42 hours for full-time generalists.<sup>17</sup> (Reference 17)

The chart below shows how pediatricians responding to an all-member survey characterized their career choices.



*This chart shows the results of a question about career path in a January 2008 survey of American Academy of Pediatrics (AAP) members that was conducted by the AAP Task Force on Vision of Pediatrics. A total of 4177 pediatricians replied to this question.*

Most of the pediatric subspecialties have a "section" of their own within the American Academy of Pediatrics (AAP) that provides a forum for education and dialogue. For a quick overview of pediatric subspecialty options, scan the list of section home pages on the AAP Web site (<http://www.aap.org/sections/shome.htm>). Several offer detailed descriptions of the scope and nature of their training and practice.

#### Other Subspecialty Options

While the majority of physicians who care for children practice general pediatrics or a pediatric medical subspecialty, many complete a pediatric fellowship after achieving board certification in another specialty. A board-certified surgeon, for example, might complete a fellowship in pediatric orthopedic surgery.

Part 4 of this guide describes the many ways that physicians earn credentials required to care for children. Specialty boards sometimes partner to oversee combined training programs (eg, internal medicine-pediatrics). Board-certified pediatricians earn "certificates of added qualifications" in related disciplines via arrangements between the American Board of Pediatrics and another specialty board.

Pediatric subspecialists of all kinds are physicians who like to "dig deep" in an area of focus while maintaining long-term relationships with patients and families. "My job allows me to work with people and to work with cutting-edge technology," one pediatric cardiologist says. "I am able to follow my patients from the newborn period until young adulthood, and not a day goes by that I do not learn something or see something that I have never seen before. If I live to be 100, I will never be bored."

SECTION 4:  
Weighing the Options

SECTION 5:  
Getting into Medical School

SECTION 6:  
Financing your Medical Education



# PART 2 The Premed Years

## Section 4: Weighing the Options

Choosing a career is a developmental process. The premed years are the time to think about goals, evaluate your strengths, and examine options. Research is important, as are one-on-one conversations with people in the field and first-hand experience in medical environments.

One former director of medical education (also known as the “DME” or “clerkship director”) urges that students considering medical school give serious thought to their motivation. “When I interviewed college students, the ones I worried about were those who had chosen medicine because they thought it was a good profession to ‘make money,’ she says. “I think if you choose a career in medicine, you have to have a passion for the care of people. There has to be a passion there to drive you, because medical school is not all that fun. It’s a lot of hours and you’re working hard. Sometimes people get all the way to medical school and then find out that they don’t really want to be there.”

### Health Professions Advisors

Most colleges and universities in the US designate someone on the science faculty or a specific person in their advising office to focus on health professions. If you are a high school student or someone who has been working for a few years and is no longer on campus, seek a local referral from the National Association for Advisors for the Health professions (<http://www.naahp.org/>). These people are the experts in your corner!



## Researching Medical Schools: Where to Start

The Association of American Medical Colleges (AAMC) (<http://www.aamc.org>) represents 150 allopathic medical schools in the United States and Canada.<sup>18</sup> (Reference 18) The American Association of Colleges of Osteopathic Medicine (AACOM) (<http://www.aacom.org>) represents 26 colleges of osteopathic medicine in the United States.<sup>19</sup> (Reference 19) Both the AAMC and the AACOM offer links and information of interest to those considering a career in medicine.

While *Pediatrics 101* focuses on allopathic medical training, most information is equally pertinent to osteopathic training. To learn about how allopathic and osteopathic educations may differ, and to locate schools of osteopathy in the United States, please visit the AACOM Web site.

The Foundation for Advancement of International Medical Education and Research Web site (<http://www.faimer.org>) and the Web site of the Educational Commission for Foreign Medical Graduates (<http://www.ecfm.org>) are excellent resources about more than 2000 medical schools across the globe that are outside the United States and Canada. These sites also feature information about requirements to transition from an international medical school to a US residency program. (Reference 20)

## Advice to Premeds: Focus Does Matter, But All Things in Moderation!

The best medical school applicants are excellent students who are also well rounded. It is important to think about more than the curricular requirements when building a solid transcript for medical school applications. “We look for good grades in organic chemistry and other science courses,” one educator says, “but varied experience in volunteerism and validating their interest in medicine by medical shadowing or participating in biomedical research can also be very helpful.”

Because pediatricians strive to provide culturally sensitive care for a diverse patient population, future medical school applicants are well advised to seek out experiences that expand their understanding of other cultures. Volunteer work in underserved communities can provide valuable insights, as can a semester’s study abroad. It is extremely useful to be fluent in a second language.

### TIP

Because pediatricians strive to provide culturally sensitive care for a diverse patient population, future medical school applicants are well advised to seek out experiences that expand their understanding of other cultures.

## Roads Less Traveled: BS/MD and MD/PhD Programs

A few universities offer combined BS/MD degree programs that enable students to bypass the Medical College Admission Test (MCAT) and proceed directly from college to medical school.<sup>21</sup> (Reference 21) According to the AAMC, 36 medical schools in the United States offer a BS/MD degree.<sup>22</sup> (Reference 22) Some Canadian medical schools also consider applicants without an undergraduate degree.

More than 100 medical schools offer formal MD/PhD combined degree programs. The AAMC reports that MD/PhDs represent about 3% of the typical graduating medical school class in the United States. Most MD/PhDs spend between 70% and 80% of their time in lab-based, clinical, or translational research and the balance in clinical service, teaching, and administrative activities, according to the AAMC, and most MD/PhD students complete their dual degree in 7 to 8 years.<sup>23</sup> (Reference 23)



## Online Resources

Excellent resources for premed students are available online. Although there may be some duplication, each has unique benefits.

From the Association of American Medical Colleges (AAMC)

- Advice for those beginning to think about a medical or health professions career: <https://www.aamc.org/students/considering/>
- Application and admission timeline for premed students: [https://www.aamc.org/students/considering/gettingin/62796/considering\\_timeline](https://www.aamc.org/students/considering/gettingin/62796/considering_timeline)
- Careers in Medicine: <https://www.aamc.org/students/considering>
- The Road to Becoming a Doctor: <https://www.aamc.org/download/68806/data/roadtobecomingadoctor.pdf>

From the American Medical Students Association (AMSA)

- AMSA members have access to a guide for pre-medical students. Information about membership in AMSA is available at: <http://www.amsa.org/AMSA/Homepage/JoinAMSA.aspx>

From the American Medical Association (AMA)

- *Becoming a Physician* offers an overview of premed and medical education: <http://www.ama-assn.org/ama/pub/education-careers/becoming-physician.shtml>
- A medical glossary with common terms related to medical education: <http://www.ama-assn.org/ama/no-index/education-careers/2376.shtml>
- Frequently asked questions about pursuit of a medical career: <http://www.ama-assn.org/ama/pub/category/3627.html>

### TIP

Some medical schools do not accept advanced placement (AP) course credit. (These are classes taken in high school by eligible students who then test out of the college class.) Students planning to apply to medical school may need to take these classes again during their undergraduate years.

### TIP

Spend some time on a variety of medical school sites. Check out the landscape!

## Section 5: Getting into Medical School

### Section 5: Getting into Medical School

Data on the Association of American Medical Schools (AAMC) Web site indicates that 46% of 2010 medical school applicants were accepted. This is an average; some programs are substantially more competitive than others. Specific data on acceptance rates over time are provided on the site, along with a matrix that presents acceptance rates in terms of grade point average and Medical School Admission Test (MCAT) scores.<sup>24</sup> (Reference 24)

Most applicants take the MCAT about 18 months before they plan to enter medical school. The MCAT is administered by the AAMC, which develops test content in cooperation with US medical schools.

Applications for most medical schools are coordinated by the American Medical College Application Service (AMCAS). Most schools accept applications in the summer or early fall, but admission deadlines vary by school. It is important to check the Web sites of each medical school that interests you long before application season begins.



Medical schools interview promising candidates between October and February of the students' senior year. For those interested in a specific school, the Early Decision Program (EDP) may be worth exploring. Many medical schools offer this program, which requires an earlier application deadline and limits application to that single school until a decision has been made. If not accepted in EDP, there is still time to apply to the same school as a regular candidate, as well as to any other school.

## Online Resources

From the Association of American Medical Colleges (AAMC)

- Procedures, resources and costs of applying for admission to US medical schools with links to information about how to order the *Medical School Admission Requirements* and background on the MCAT: [https://www.aamc.org/services/first/first\\_factsheets/94390/the\\_cost\\_of\\_applying\\_to\\_medical\\_school.html](https://www.aamc.org/services/first/first_factsheets/94390/the_cost_of_applying_to_medical_school.html)
- *Getting into Medical School*, (including frequently asked questions about the application process): <https://www.aamc.org/students/considering/gettingin.htm>.
- *Selecting a Medical School: 35 Questions I Wish I Had Asked*: [https://www.aamc.org/students/applying/requirements/109762/35\\_questions.html](https://www.aamc.org/students/applying/requirements/109762/35_questions.html)
- Links to all accredited US and Canadian medical schools: <https://www.aamc.org/medicalschoools.htm>
- The annual AAMC Tuition and Student Fees Reports compare tuition and fee ranges, medians, and averages for all US medical schools: <http://services.aamc.org/tsfreports>
- The Early Decision Program: [https://www.aamc.org/students/applying/amcas/faqs/147550/amcas\\_2010\\_faqs-7.1.html](https://www.aamc.org/students/applying/amcas/faqs/147550/amcas_2010_faqs-7.1.html)
- Getting Accepted. This site, sponsored by *Aspiring Docs*, the AAMC project to increase minority representation in medicine, considers factors that can improve a candidate's chance of acceptance: [http://www.aspiringdocs.org/faqs/getting\\_accepted/](http://www.aspiringdocs.org/faqs/getting_accepted/)

## Section 6: Financing Your Medical Education

### Section 6: Financing Your Medical Education

A tally of responses to the annual Association of American Medical Colleges (AAMC) graduation questionnaire showed that the average debt of medical students graduating in 2010 was \$157,944. More than 59% of students finished medical school owing \$150,000 or more.<sup>25</sup> (Reference 25)

According to the AAMC annual tuition and student fees survey,<sup>26</sup> (Reference 26) first-year tuition and fees for in-state residents attending public medical schools in 2007 averaged \$22,199. First-year tuition and fees for in-state students attending private schools that year averaged \$39,964. The AAMC estimates that costs in addition to tuition and fees associated with medical school attendance in 2007 averaged \$18,000.

## Dealing with Debt

The American Academy of Pediatrics (AAP) annual graduating residents' survey assesses trends in education debt among pediatric residents. In 2010, the survey found 77% of graduating residents had student loan debt at the end of training. The average debt among residents who reported any debt that year (debt from medical school and college, and if married, the spouse's educational debt), was \$181,288.4<sup>4</sup> (Reference 4)

To put this in context, researchers also included a question about starting post-residency salaries in 2010, and used the data to tabulate average anticipated salaries the first year out of residency:<sup>4</sup> (Reference 4)

- For those entering general pediatric practice: \$124,360
- Pediatric hospitalists: \$119,256
- Chief residents: \$64,932
- Pediatric subspecialty fellows: \$54,292
- Non-pediatric subspecialty fellows: \$51,750

## Government Programs that Support Medical Education

Financial support for medical education is one benefit of enlistment in the United States armed forces or the National Health Service Corps (NHSC). The National Institutes of Health offer research scholarships as well.

According to Aspiring Docs (which is sponsored by the Association of American Medical Colleges -- <http://www.aamc.org>):

- Medical students who are accepted to the Uniformed Services University of the Health Sciences (USUHS) attend as commissioned officers in one of the uniformed services (Army, Navy, Air Force, or US Public Health Service). They pay no tuition or fees in exchange for 7 years' active duty after training.
- The Armed Forces Health Professions Scholarship Program offers full support to students enrolled in civilian medical schools in exchange for service in the Air Force, Army, or Navy after training.
- The National Health Service Corps (NHSC) scholarship program covers tuition and fees, along with a living stipend, for eligible candidates who agree to serve as a primary care provider in a high-need Health Professional Shortage Area for 2 to 4 years after graduation.
- The NHSC loan repayment program is an option for fully trained primary care physicians. Loan repayment offers \$60,000 for 2 years service in a high-need HPSA.

## Seek Guidance Early

When scheduling an interview at a medical school, request a session with a financial aid officer. Find out how the process works at that school and learn what you can about options and procedures for paying for school.

**It is critically important to obtain qualified advice before entering into any loan repayment employment agreement.** Government programs are many and varied. A firm understanding of what commitments are made and what promises have been secured is essential. Look closely at the source of funding and the fine print. Consult mentors on your faculty and in your student affairs office before entering into any commitments.



## Online Resources

Please note: The links below provide general information as a starting point for research. Consult with your college financial aid officer and other qualified advisors before committing to any financial arrangement.

From the American Academy of Pediatrics (AAP)

- Grants and scholarships available to pediatric residents: [http://www.aap.org/ypn/r/funding\\_awards](http://www.aap.org/ypn/r/funding_awards)

From the Association of American Medical Colleges (AAMC)

- FIRST for Medical Education. Resources and links for those investigating financial aid for medical education and their advisors: <https://www.aamc.org/services/first/>
- Aspiring Docs. Resources and links offering guidance on everything from how to investigate medical careers to government and military service programs that help eligible students finance a medical education: <http://www.aspiringdocs.org/faqs/>
- Financial aid links and calculators: <https://www.aamc.org/download/78800/data/sitelist.pdf>

From the National Health Service Corps (NHSC)

- Information about competitive scholarship and loan repayment programs for health professionals who serve in high-need health-professional shortage areas after completion of training: <http://nhsc.hrsa.gov/about>

From the National Institutes of Health (NIH)

- Pediatric Research Loan Repayment Program. In return for a 2-year commitment to your research career, NIH will repay up to \$35,000 per year of your qualified repayable education debt plus an additional 39% of the repayments to cover your federal taxes, and may reimburse state taxes that may result from these payments: <http://www.lrp.nih.gov/about/lrp-pediatric.htm>

From the US Department of Health and Human Services, loan repayment programs for service in underserved communities

- National Health Service Corps loan repayment programs for service in underserved communities: <http://nhsc.bhpr.hrsa.gov>



SECTION 7:  
Medical School

SECTION 8:  
Choosing a Medical Specialty



# PART 3

## Launching Your Medical Education

### Section 7: Medical School

The academic pressure in medical school is consistently intense. It is important to find a balance between study and personal life; your lifestyle will be different from that in college, but the workload is manageable.

Although there are exceptions, most medical schools devote the first 2 years to classroom and laboratory instruction in the basic sciences. Many provide clinical rotations and/or teach the basic sciences (anatomy, physiology, biochemistry, histology, pathology, and pharmacology) with a strong clinical correlation. Students also learn how to take a patient history, conduct a physical examination, and make a diagnosis. They become familiar with the art of the patient interview and study psychosocial aspects of medicine.

There is certainly variation, but most schools structure third-year core rotations in medicine, primary care, neurology, obstetrics and gynecology, pediatrics, psychiatry, and surgery. Short courses in ethics, health care systems, and similar topics are often provided as well; each medical school Web site will identify program specifics.

During the fourth year of medical school, students complete senior clerkships and subinternships while taking electives in areas of interest. Some pursue experiences in research, work with underserved cultural groups, and international child health. Most US schools require that students successfully complete parts 1 and 2 of the United States Medical Licensing Exam (USMLE) to graduate.

After successful completion of a 4-year medical school program, students choose a specialty area and enter residency training. The length of residency varies by specialty; primary care residency in pediatrics is 3 years.



## Section 8: Choosing a Medical Specialty

Choosing a specialty is a big decision, but fortunately, resources abound!

Abundant facts and figures for the major specialties are available online: training duration, starting salaries, practice settings, income ranges and such. Not all considerations, however, have equal weight. As 1 pediatric infectious disease specialist pointed out, specialty choice is a big-picture judgment.

“My belief is that you have to do what will make you happy,” he said. “It’s hard to know what the job market is going to be 10 years out, and even if it’s going to be tight, you’ve got to do what you’re most interested in.” Students are sometimes overwhelmed by medical school debt, and make a specialty choice based primarily on income, he added. “Debt drives a lot of decisions, but I think a choice that is based on economics alone has the wrong motivation,” he said. “Some specialties pay more than others, but all provide a good living. Students need to ask themselves, ‘Am I going to be intellectually stimulated enough with whatever choice I’m contemplating? Am I going to be happy 2 or 3 years down the road? Or am I doing this for the wrong reasons?’”

Faculty and attending physicians can offer guidance, and many medical schools sponsor interest groups for the various medical specialties. Interest groups are ordinarily open to all students; participating is a fine way to narrow choices and does not represent a commitment. If there is no interest group at your school for a specialty that you would like to explore, speak to the clerkship director, department chair, or residency director about starting one. There are no limits to attending these interest groups, so join more than one as your interests dictate.

### Online Resources

From the American Board of Medical Specialties (ABMS)

- Links and contact information for approved member boards, which can provide more detailed information about training in their specialties: [www.abms.org/who\\_we\\_help\\_consumers/specialties.aspx](http://www.abms.org/who_we_help_consumers/specialties.aspx)

From the American Medical Association (AMA)

- *Choosing Your Medical Specialty* offers brief descriptions of the 8 specialties most frequently selected by participants in the National Medical Residency Match: <http://www.naahp.org/>

From the Association of American Medical Colleges (AAMC)

- *The Careers in Medicine* Web site, which features online decision-making tools to choose a specialty, review career information about specialties, and finally, select and apply for a residency: [www.aamc.org/students/cim/start.htm](http://www.aamc.org/students/cim/start.htm)
- *Career Planning Resources*, a collection of links to career advice, specialty boards, and practical tools for students and residents: [www.aamc.org/students/cim/careerplanning.htm](http://www.aamc.org/students/cim/careerplanning.htm)

*Career paths diverge when specialty choices are made; each specialty is in some ways unique. The balance of content in this guide will focus on pediatrics and its subspecialties.*

### TIP

Abundant facts and figures for the major specialties are available online: training duration, starting salaries, practice settings, income ranges and such. Not all considerations, however, have equal weight.



SECTION 9:  
Finding the Right Pediatric Residency

SECTION 10:  
Residency Training in General Pediatrics

SECTION 11:  
Licensure and Board Certification

SECTION 12:  
Post-Residency Training



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# 4

## Pediatric Residency and Post-Residency Training

### Section 9: Finding the Right Pediatric Residency

So you've signed on for a future in pediatrics. Good plan! Your next step is to secure training that fits your needs and temperament.

As medical students take core rotations in the third year of medical school, they begin to work with their advisors and pediatric clerkship directors to further refine career goals and investigate residency opportunities. Some will be drawn to academic medicine at a medical school or teaching hospital that will accommodate a subspecialty concentration, teaching, and research. Others will prefer an office- or hospital-based clinical practice. Summer externships, volunteering at a children's hospital, physician shadowing, and helping with projects within pediatric departments are ways to further explore initial inclinations.

The American Academy of Pediatrics Section on Medical Students, Residents and Fellowship Trainees (SOMSRFT), working in conjunction with the SOMSRFT Medical Student Subcommittee and AAP Council on Medical Student Education in Pediatrics, has published *Becoming a Pediatrician: Your Guide to Exploring Pediatrics, Matching for Residency and Starting Intern Year*, a guide that offers medical students an overview of the opportunities and challenges that await them. *Becoming a Pediatrician* is posted on the SOMSRFT Web site or can be accessed directly at <http://www.aapbecomingaped.com>.

In evaluating a residency program, consider diversity and complexity of patients, number of locations in which required rotations are conducted, availability of faculty, and resident cadre. Some programs offer a primary care residency option or track, sometimes with concentration in community pediatrics or advocacy. Those who see a possible career path in child advocacy, for example, might want to investigate programs that offer a rotation in child abuse pediatrics or pursue legislative advocacy opportunities available through the AAP.

### TIP

In evaluating a residency program, consider diversity and complexity of patients, number of locations in which required rotations are conducted, availability of faculty, and resident cadre.

Consider carefully the intangible qualities of each residency program. Is it in a big city or rural setting? Are cultural activities available? Does it offer opportunities for outdoor experiences, such as hiking and biking? Is it near enough to home and friends or too close for comfort? For many residency candidates, considerations relevant to lifestyle are as important as those related to their career plan. “Many students will award points and keep a detailed objective score on various aspects of the different programs in which they interview,” one program director says. “Most approved programs provide excellent training; so many program directors suggest using a more subjective approach to choosing a program.”

One of the most important factors is the size and personality of the resident cadre. Because you will be spending most of your time with your fellow residents, be sure that you feel comfortable with those you meet.

### Combined Training Programs

The American Board of Pediatrics (ABP) has cooperative arrangements with several other specialty boards for combined training.<sup>27</sup> (Reference 27) Students who successfully complete these programs and pass certification examinations administered by all boards involved are said to be “double boarded” (or in some cases “triple boarded”). Specifics vary and can be pursued with the ABP and the other individual specialty boards, whose contact information is linked to the ABP Web site (<https://www.abp.org>). The ABP approved combined training programs include:

- Internal medicine-pediatrics (med-peds) (4 years)
- Pediatrics/anesthesiology (5 years)
- Pediatrics/dermatology (5 years)
- Pediatrics/emergency medicine (5 years)
- Pediatrics/medical genetics (5 years)
- Pediatrics/physical medicine and rehabilitation (5 years)
- Pediatrics-psychiatry/child and adolescent psychiatry (5 years)

The largest combined training program is Med-Peds (an abbreviation for “combined internal medicine and pediatrics”). Over the course of 4 years, med-peds trainees complete 2 years’ training in pediatrics and 2 years in internal medicine. Those who complete a med-peds residency are eligible to sit for board certification in internal medicine and pediatrics, and to pursue a fellowship in either specialty or both specialties<sup>28</sup> (Reference 28)

A career in med-peds offers considerable flexibility. These physicians may see both adult and pediatric patients, which enables them to provide transition care for patients with chronic diseases with onset in childhood.

“Med-peds enables me to appreciate continuity and longitudinal care of patients and families of all ages,” says one resident. “Conditions that used to start and end in childhood now last through adulthood, and conditions that used to begin in adulthood now begin in childhood. I wanted to be a pediatrician. From here I can go into hospital practice, subspecialty fellowship, private practice with primary care physicians, or a multispecialty practice.”



#### TIP

A career in med-peds offers considerable flexibility. These physicians may see both adult and pediatric patients, which enables them to provide transition care for patients with chronic diseases with onset in childhood.

## Child Neurology and Neurodevelopmental Disabilities

According to information on the American Academy of Pediatrics patient Web site, most child neurologists have certification from the American Board of Pediatrics and the American Board of Psychiatry and Neurology (with special competency in child neurology). These are not combined specialties but training and certification are collaborative. Candidates for residency training in 2 fields, child neurology and neurodevelopmental disabilities, apply through the San Francisco Match, which takes place in January. (The National Resident Matching Program manages all other pediatric residency matches.) For more information about prerequisites for and applying to training programs in child neurology and neurodevelopmental disabilities, please go to the American Board of Pediatrics (<http://www.abp.org>), American Board of Psychiatry and Neurology (<http://www.abpn.com>), and San Francisco (<http://www.sfmach.org>) match sites.

## The Application Process

Residency applications are submitted electronically. Students develop a curriculum vitae (resume) and personal statement. Letters of recommendation from the dean and others are included with the application, along with medical school transcripts, US Medical Licensing Examination scores, and other credentials. Students work closely with their advisors' and deans' offices to ensure that all necessary materials are secured and prepared well in advance of the deadline.

Most allopathic medical residency programs use the Electronic Residency Application Service (ERAS®) to process residency applications. ERAS is a service that transmits applications to residency programs over the Internet. (The service is not available for non-ACGME accredited programs, or some fellowship or osteopathic programs.) Candidates participate in ERAS through their deans' offices.

Medical students are generally advised to apply to all programs in which they are interested and to make an application list that has breadth and depth of programs in terms of experiences and competitiveness.

### TIP

Medical students are generally advised to apply to all programs in which they are interested and to make an application list that has breadth and depth of programs in terms of experiences and competitiveness.

## The Interview

Program directors typically review application materials, and then offer an interview opportunity to those who seem to be good candidates for their programs.

Students should work closely with their clerkship directors and other mentors to prepare for the residency interviews. For example, it is useful to read the requirements for accredited residency programs (available at <http://www.acgme.org>) and ask about possible discrepancies. Plan a few essential questions.

- You will be meeting with faculty and current residents. Ask about program strengths and areas where they recognize a need for improvement. If there are areas of interest for which the program offers limited experience, ask how they address that gap.
- Ask about recent changes in the program, what prompted them, how the effects of the change are being monitored, and opportunities for residents to be involved in the improvement process.



- Ask about the feedback and evaluation process.
- Ask about what is special or unique about the program. What are the program's best qualities?
- Ask about program flexibility, call schedules, and willingness to accommodate residents who encounter family and personal matters that may require changes in their schedules.

Interview preparation with mentors and advisors should include how questions such as these are best addressed. Remember to have questions for each person you will meet, although in some cases you may ask the same question more than once. Each faculty member will have his or her own perspective.

Remember your interview starts with your first contact with the program. Every contact with anyone at the program (coordinators, office staff, housestaff) should be professional and respectful.

### After Interviews, the Match

Early in the summer of senior year, medical students enroll in the National Resident Matching Program (NRMP) Match. The NRMP is sponsored by national medical organizations and managed by the Association of American Medical Colleges (AAMC).

The NRMP algorithm is a mechanism to fairly and consistently pair up applicants and training programs. Medical students develop and submit a rank-ordered list of desired programs; training program directors develop and submit a rank-ordered list of candidates. On "match day" each March, the computer generates the results. (To learn more, go to <http://www.nrmp.org>.) The NRMP also offers a couples algorithm, which allows 2 people to enroll in the Match as a unit.<sup>29</sup> (Reference 29)

### Online Resources

From the American Academy of Pediatrics (AAP)

- The *Section on Medicine-Pediatrics* Web page features more than 50 frequently asked questions on everything from starting a job search to contract negotiation: <http://www.aap.org/sections/med-peds/>

From the American Medical Association (AMA)

- *Transitioning to Residency: What Medical Students Need to Know*, a series of articles by the AMA Minority Affairs Consortium. Although targeted to minority students, content is of interest to all applicants: : <http://www.ama-assn.org/ama/pub/about-ama/our-people/member-groups-sections/minority-affairs-consortium/transitioning-residency.shtml>
- FREIDA Online (Fellowship and Residency Electronic Interactive Database) provides detailed information about accredited specialty, subspecialty, and combined training programs (<http://www.ama-assn.org/ama/pub/category/2997.html>)

From the Association of American Medical Colleges (AAMC)

- *Careers in Medicine* features online decision-making tools to choose a specialty, specialty-specific career information, and advice on residency application and selection: <https://www.aamc.org/students/medstudents/cim/>
- *Online Career Resources* offers links to career advice, specialty boards, and practical tools for students and residents: <https://www.aamc.org/students/cim/careerplanning.htm>
- *Facts about ERAS*: <https://www.aamc.org/students/eras/start.htm>

From the Accreditation Council for Graduate Medical Education (ACGME)

- A database with detailed information on accredited pediatric residency programs: <http://www.acgme.org/adspublic/> (Click on "Search Programs/Sponsors.")

From the National Residency Matching Program (NRMP)

- General information and links: <http://www.nrmp.org>
- How the Matching Algorithm Works: <http://www.nrmp.org/fellow/algorithm.html>
- Charting Outcomes in the Match: Characteristics of Applicants Who Matched to Their Preferred Specialty in the 2009 Main Residency Match. 3rd ed. 2009: <http://www.nrmp.org/data/chartingoutcomes2009v3.pdf>

From the American Medical Student Association (AMSA)

- Algorithms with which to evaluate medical schools and residency programs, identify opportunities in international medicine and find advice on developing leadership potential, as well as a timeline for the medical education experience: <http://www.amsa.org/AMSA/Homepage/EducationCareerDevelopment.aspx>.

From the Med-Peds Program Directors Association (MPPDA) & National Med-Peds Residents' Association (NMPRA)

- *Medical Student Guide to Combined Internal Medicine and Pediatrics Residency Training*: <http://www.medpeds.org/archive/PDF/StudentGuide.pdf>

### Section 10: Residency Training in General Pediatrics

#### Section 10: Residency Training in General Pediatrics

Following successful completion of medical school, future pediatricians begin residency training in general (or categorical) pediatrics, which consists of 3 years in core pediatrics experiences and elective rotations. Individuals are eligible to sit for the certification examination administered by the American Board of Pediatrics only after completion of a residency program accredited by the Residency Review Committee (RRC) for Pediatrics of the Accreditation Council for Graduate Medical Education (ACGME). It is the Pediatric RRC that sets the requirements for accredited programs.

Residency education is primarily centered in university, children's, community, and military hospitals. These include experiences in the ambulatory and community environments.

Although individual residency programs may vary in setting, size, patient population, and resident number, their common goal is to provide educational experiences that prepare graduates to be competent general pediatricians. It is expected that graduates of these programs will be able to provide comprehensive, coordinated care to a broad range of children from birth through adolescence and young adulthood. To accomplish this goal, all programs must provide experience in the following areas<sup>30</sup> (Reference 30):

- Inpatient pediatric care including children with general and subspecialty problems acute and chronic in nature
- Emergency and acute illness care in emergency department and ambulatory clinic settings
- Continuity care, during which residents take care of a group of pediatric patients longitudinally over the course of their residency, usually in a weekly clinic
- Normal/term newborn care, including longitudinal follow-up of infants discharged from the nursery

- Subspecialty care, including required rotations in neonatal and pediatric intensive care. Required months devoted to adolescent medicine and developmental/ behavioral pediatrics complement a minimum of 6 months of elective rotations chosen from a list provided by the pediatric RRC.

Throughout their 3 years of training, pediatric residents participate in regularly scheduled teaching. Pediatric residency programs provide training in the procedural skills necessary for routine and critical/resuscitative care. Residents attend rounds and conferences that cover clinical aspects of care and participate in discussions about medical ethics, quality assessment and improvement, medical informatics, and health care financing. To further enhance their academic skills, they participate in scholarly experiences such as journal club/evidence based medicine, academic conferences, and clinical and/or basic research activities.

There are 198 accredited categorical pediatrics residency programs in the US.<sup>31</sup> (Reference 31) Some larger programs offer several tracks. For example, one track may place greater emphasis on primary care training while another may focus on preparation for a career in academic medicine or research. Information on individual programs and their educational resources is available online from the Fellowship and Residency Interactive Database (FREIDA) sponsored by the American Medical Association<sup>32</sup> (Reference 32) as well as the ACGME Web site. Combined programs accredited by the ACGME are discussed above (please see Section 9).

#### TIP

There are 198 accredited categorical pediatrics residency programs in the US.<sup>31</sup>

### Research Pathways

In addition, the American Board of Pediatrics (ABP) offers 2 special routes for pediatrician scientists who may be qualified to devote time to research during training. The Integrated Research Pathway permits 11 months of research during 3 years of pediatric residency training prior to entering a 3-year pediatric subspecialty fellowship. The Accelerated Research Pathway enables selected candidates to enter fellowship after 2 years of general pediatric residency, completing that additional year in research time during fellowship. More information on these opportunities is available from the ABP.<sup>33</sup> (Reference 33)

### The Big Picture

Regardless of the particular program, pediatric residency training is designed to confer the knowledge, skills, and attitudes required for comprehensive, longitudinal, and family-centered health care. Pediatric residents learn to consider behavioral, psychosocial, environmental, and family-unit correlates of disease. They learn to care for children who are chronically ill and manage acute events as well as promote wellness and prevention. Because pediatric residents work with so many other members of the health care team in the management of children, they learn to be collaborative in their approach to care. It is this common devotion to the care and well-being of children that makes pediatricians among the most professionally satisfied of all physicians.



## Section 11: Licensure and Board Certification

The National Board of Medical Examiners® (NBME®) and the Federation of State Medical Boards (FSMB) sponsor the US Medical Licensing Examination™ (USMLE™).

Students and graduates of medical schools in the United States and Canada that are accredited by the Liaison Committee on Medical Education or the American Osteopathic Association Bureau of Professional Education register for the USMLE with the NBME.

Students and graduates of medical schools outside the United States and Canada register for the USMLE with the Educational Commission for Foreign Medical Graduates (ECFMG).

Medical students take the 3-part examination during medical school and residency. Most medical students take Step 1 of the in-training examination after the second year of medical school, Step 2 during the fourth year of medical school, and Step 3 during the first or second year of residency. After passing all 3 parts, they are eligible to apply for their medical license.

Medical licenses are granted by state boards of medical examiners. Medical students who plan to practice in another state are advised to apply for a medical license with that state's licensing board as early as possible (generally early in the third year of residency). The FSMB posts links to individual state medical boards at ([http://www.fsmb.org/directory\\_smb.html](http://www.fsmb.org/directory_smb.html)).

This is also the time to apply for a federal Drug Enforcement Administration number, which permits physicians to prescribe controlled substances.

### Certification by the American Board of Pediatrics (ABP)

In 2008, 74% of primary care pediatricians in active practice were board certified. This was the highest certification rate among the top 5 primary care specialties (family medicine general practice, internal medicine, OBGYN, and pediatrics). The next-highest rates of certification in the group were those for family physicians (72%), OBGYNs (70%) and internal medicine physicians (64%).<sup>34</sup> (Reference 34)

According to the ABP, physicians must complete the following steps to sit for the board certification examination<sup>35</sup> (Reference 35):

1. Graduate from a medical school in the United States or Canada accredited by the Liaison Committee on Medical Education (LCME), the Royal College of Physicians and Surgeons of Canada (RCPSC), or the American Osteopathic Association (AOA).
  - a. The alternative for graduates of medical schools outside the US or Canada that are not accredited by the LCME, RCPSC, or AOA but are listed by the World Health Organization, is to hold a standard certificate from either the Educational Commission for Foreign Medical Graduates or the Medical Council of Canada.
2. Complete 3 years of training in pediatrics in an accredited residency program.
3. Possess verification of satisfactory completion of residency training.
4. Hold a valid, unrestricted state license to practice medicine.
5. Pass the 1-day written examination for certification.

Board certification in pediatrics must be renewed every 10 years by successfully completing the program for continuing certification in pediatrics, which includes passing a recertification examination.

## Online Resources

From the American Academy of Pediatrics (AAP)

- PREP: Pediatrics Review and Education Program contact information: <http://www.aap.org/profed/prep.htm>
- Board preparation materials, including audio courses and books: <http://www.aap.org/ypn/r/education/resources.html>

From the American Board of Pediatrics (ABP)

- General examination admission requirements: <https://www.abp.org/ABPWebStatic/#murl%3D%2FABPWebStatic%2FgenPedCertification.html%26surl%3Dsubmenu%2FexamAdmissionReqs.html>
- Description of the ABP and the subspecialty certificates it awards: <https://www.abp.org/ABPWebStatic/#murl%3D%2FABPWebStatic%2FaboutABP>
- Description of subspecialty certificates awarded in conjunction with other certifying boards, with contact information: <https://www.abp.org/ABPWebStatic/#murl%3D%2FABPWebStatic%2FsubSpecCertification.html%26surl%3D%2Fabpwebsite%2Fcertinfo%2Fsubspec%2Fsubintro.htm>

From the American Medical Association (AMA)

- Getting a License—The Basics, an article by the FSMB that sketches out considerations for those applying for a medical license; related links provide information about guides to state licensure requirements and links to national organizations: <http://www.ama-assn.org/ama/pub/category/2644.html>

From the US Medical Licensing Examination (USMLE)

- To prepare for steps 1, 2, and 3 of the examination: <http://www.usmle.org/>

## Section 12: Post-Residency Training

### Section 12: Post-Residency Training

Following completion of general pediatrics residency, some physicians choose to continue their medical education with subspecialty training. A medical subspecialty is an identifiable component of a specialty to which a practicing physician may devote a significant proportion of time. Board-certified subspecialists complete additional training and qualifying examinations beyond those required for board certification in general pediatrics.

A pediatric subspecialist is an individual with the training and experience to provide patient care and education and to conduct



research in a defined or organ-specific area of medical care. This definition recognizes that pediatric subspecialists function in a wide variety of roles, including direct patient services, research, and education. Currently, many pediatric subspecialists practice within academic medical systems. The wide range of pediatric subspecialties includes age-specific generalists (neonatologists and adolescent medicine specialists), acute care specialists (critical care and emergency medicine), organ-specific specialists (cardiologists, nephrologists), and non-organ-specific specialists (endocrinologists, oncologists, infectious disease physicians). Some choose a subspecialty for the specific clinical discipline; others seek an academic career path marked by teaching, writing, and/or research.

Pediatric medical subspecialists and pediatric surgical specialists are either board-certified general pediatricians who are subspecialty boarded through the American Board of Pediatrics (ABP) or physicians who are initially board certified in another discipline who then seek pediatric training to apply their skills in the care of children and adolescents.<sup>36</sup> (Reference 36) A list of board-certified subspecialties, along with the passing rates for first-time examinees over the past 5 years, is posted on the ABP Web site.<sup>37</sup> (Reference 37) To find that list, go to the menu bar at <http://www.abp.org> and click on "initial certification" and then "subspecialty certification."

Pediatric subspecialties that are certified by the ABP, including 7 (indicated by an asterisk) that are certified by the ABP in conjunction with another board, are:

- Adolescent Medicine
- Pediatric Cardiology
- Child Abuse Pediatrics
- Pediatric Critical Care Medicine
- Developmental-Behavioral Pediatrics
- Pediatric Emergency Medicine\*
- Pediatric Endocrinology
- Pediatric Gastroenterology
- Pediatric Hematology/Oncology
- Hospice and Palliative Medicine\*
- Pediatric Infectious Diseases
- Medical Toxicology\*
- Neonatal-Perinatal Medicine
- Pediatric Nephrology
- Neurodevelopmental Disabilities\*
- Pediatric Pulmonology
- Pediatric Rheumatology
- Sleep Medicine\*
- Sports Medicine\*
- Pediatric Transplant Hepatology\*

## TIP

Academic general pediatrics fellowships are another option for those interested in an academic career. These fellowships most often provide additional training in education, advocacy, and/or research skills, providing research opportunities in such areas as environmental health, quality improvement, outcomes, or care determinants.

Academic general pediatrics fellowships are another option for those interested in an academic career. These fellowships most often provide additional training in education, advocacy, and/or research skills, providing research opportunities in such areas as environmental health, quality improvement, outcomes, or care determinants. These fellows select from a variety of clinical focus options (eg, ambulatory, community, and/or hospitalist medicine). Information regarding academic general pediatrics is available from the Academic Pediatric Association (<http://ambpeds.org>).





In addition, national specialty boards for dermatology, otolaryngology, pathology, physical medicine and rehabilitation, radiology, surgery, and urology offer certification for pediatric subspecialists in their respective disciplines.<sup>36</sup> (Reference 36)

Pediatric neurologists and psychiatrists may be certified in pediatrics/neurology or pediatrics/psychiatry after completing 2 years of training in general pediatrics and meeting the training requirements of the American Board of Psychiatry and Neurology for certification in neurology or psychiatry with special qualification in child neurology or child psychiatry.

Surgeons in other disciplines (such as neurological surgery, ophthalmology, orthopedics, and plastic surgery) often complete additional training to specialize in care of pediatric patients.

## Online Resources

From the Accreditation Council for Graduate Medical Education (ACGME)

- Program requirements for subspecialty training in pediatrics: [www.acgme.org/acWebsite/RRC\\_320/320\\_prIndex.asp](http://www.acgme.org/acWebsite/RRC_320/320_prIndex.asp)

From the *Journal of Pediatrics*

- Fellowship opportunities are published each year in the January issue, which provides application deadlines, duration of the fellowship, training requirements, and a contact person: <http://www.jpeds.com/> (Click on "List of Fellowships")

From the American Medical Association (AMA)

- FREIDA Online (Fellowship and Residency Electronic Interactive Database), covers accredited specialty, subspecialty, and combined training programs by institution or medical school: <http://www.ama-assn.org/ama/pub/education-careers/graduate-medical-education/freida-online/about-freida-online.shtml>

From the National Resident Matching Program (NRMP)

- NRMP matches for advanced residency or fellowship programs available to persons who have successfully completed a pediatric residency include developmental-behavioral pediatrics, neonatal-perinatal medicine, pediatric cardiology, pediatric critical care medicine, pediatric emergency medicine, pediatric gastroenterology, pediatric hematology/oncology, pediatric nephrology, pediatric pulmonology, pediatric rheumatology, and primary care sports medicine): [www.nrmp.org/fellow/index.html](http://www.nrmp.org/fellow/index.html)

SECTION 13:  
Issues in Contemporary Pediatrics

SECTION 14:  
Pediatrician as Advocate



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## Practicing Pediatrics

### Section 13: Issues in Contemporary Pediatrics

It could be that pediatricians consistently report high career satisfaction<sup>1,2,3</sup> (References 1-3) because they make a concrete and direct difference in the lives of children every day. Pediatricians typically bring a high level of commitment to their work, and their energies often spill over into child advocacy activities.

Many issues of concern to pediatricians relate to access for underserved children, both those who live in physician shortage areas as well as those with special health care needs and mental health concerns who lack access to subspecialty care. Provision of culturally effective care for children and adolescents who are members of racial, ethnic, and cultural minority groups is another area where pediatricians work for continuous improvement.

#### TIP

Many issues of concern to pediatricians relate to access for underserved children, both those who live in physician shortage areas as well as those with special health care needs and mental health concerns who lack access to subspecialty care.

### Rural Practice

Between 1981 and 1996, the total number of clinically active general pediatricians in the United States increased by 73%. The number practicing in rural counties increased by 21% during those years, while the number practicing in urban areas increased by 80%.<sup>38</sup> (Reference 38)

Although these numbers may seem to suggest that rural practices are less desirable to pediatricians, this is not the case for those who commit to rural practice. A report in the June 2000 *AAP News* summarizing a survey of AAP members who had identified themselves as rural pediatricians revealed that 73% were "very satisfied" with their decision to practice in a rural area and would do so again, while 93% planned to continue in rural pediatrics. These physicians cited lifestyle, variety, and the opportunity for community connection as positives about rural practice.<sup>39</sup> (Reference 39)

Still, rural practice does have its challenges. According to a 2002 article in *AAP News*, access to continuing medical education (CME) is a chronic problem for rural pediatricians that ties to another downside: coverage for vacation or academic travel.



Payment can be a barrier to business success because rural families are often without health insurance, and Medicaid rates in many states are low. Patients in need of subspecialty care often must travel some distance, and not all can do so. Rural pediatricians interviewed for the article acknowledged all of this, but also talked about the variety in their work and opportunities to become part of a critical local support network.<sup>40</sup> (Reference 40)

When you're the only pediatrician in the community, you get involved in a lot of things," one rural pediatrician said. "I work with local people on school issues, Head Start, and community programs to educate kids about dating violence and domestic violence. I find myself interacting with a lot of social service agencies because I'm the only pediatrician. In rural areas you work with a lot of the same people on a lot of different issues because there are only so many people in public health."

The American Academy of Pediatrics (AAP) Rural Health Initiative provides CME resources for rural pediatricians. Many pediatricians, particularly residents, are able to provide services to rural communities through projects funded by the AAP Community Access to Child Health (CATCH).

The Academy has long advocated for financial incentives at the state and national levels to attract and retain pediatricians in underserved areas.

### Children with Special Health Care Needs

The AAP policy statement on the use of integrated care systems to serve children with special health care needs speaks to the importance of the medical home as a source of coordinated care for children and adolescents who have or are at increased risk for chronic physical, developmental, behavioral, or emotional conditions.<sup>41</sup>

(Reference 41) Consultative assistance from subspecialists and other health care providers will enable pediatricians to meet the needs of these patients, including those who are technology-dependent (requiring special equipment, such as ventilators and feeding pumps). Assistive technologies, including telemedicine, will increasingly enable pediatricians in remote areas to consult with subspecialists and link the families in their practices to needed resources.



### Access to Mental Health Care

A 1999 US Surgeon General's report on mental health estimated that nearly 21% of U.S children aged 9 to 17 had a diagnosable mental or addictive disorder that was associated with at least minimum impairment. Further, the report observed, more than half of those children suffered from significant functional impairment.<sup>42</sup> (Reference 42) Ten years later, an AAP policy statement on mental health competencies for pediatric primary care called for a systems-based approach to the care of children, adolescents, and young adults with mental health diagnoses, underscoring

#### TIP

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the unique role of the primary care clinician but also recognizing that the complexity of mental health problems warranted close collaboration with mental health specialists. The authors estimated that only about 20% of children with mental health or substance abuse problems were receiving care. “System enhancements, such as collaborative relationships with mental health specialists and changes in the financing of mental health care must precede enhancements in clinical practice,” they wrote. “For this reason, the proposed competencies begin with knowledge and skills for systems-based practice.”<sup>43</sup> (Reference 43)

## Pediatric Workforce Concerns

A fact sheet developed by the American Academy of Pediatrics in 2010<sup>44</sup> (Reference 44) provides evidence of increasing shortages of pediatric medical subspecialists and surgical specialists as well as geographic maldistribution of pediatricians. In 2006, the AAP researchers found, 28,000 pediatric medical subspecialists and surgical specialists were available to care for more than 80 million children, an average of 100,000 to 200,000 children per provider in most subspecialties. Geographic maldistribution is a huge concern for subspecialty care; about 1 in 3 children in rural areas travel at least 40 miles to see a pediatric subspecialist. The average wait time to see a pediatric neurologist, according to a 2009 survey, was 9 weeks; families of children with autism-spectrum disorders typically wait 13 weeks to see a developmental-behavioral pediatrician.

## Culturally Effective Pediatric Care

Culturally effective health care improves patient outcomes. The AAP Committee on Pediatric Workforce defines “culture” in this context as the values, behaviors, customs, language, race, ethnicity, gender, sexual orientation, religious beliefs, socioeconomic status, and other distinct attributes of population groups.<sup>45</sup> (Reference 45) In one policy statement, the committee points out that a lack of health professionals from cultural minority groups affects the clarity of physician-patient communication. Researchers believe that increased patient satisfaction and trust (which is observed when racial and ethnic minority patients have access to a diverse pediatric workforce) should result when members of cultural minorities have access to a more diverse pediatric workforce. Increasing the number of pediatricians who are members of minority groups should help improve access to culturally effective care. The AAP has called for measures to increase the diversity of the pediatrician population by encouraging more minority medical students to choose pediatrics as a career.<sup>46</sup> (Reference 46)

## Online Resources

From the American Academy of Pediatrics (AAP)

- Division of Workforce and Medical Education Policy: <http://www.aap.org/gme>
- Committee on Pediatric Workforce: <http://www.aap.org/copw/>

From the AAP Special Interest Group (SIG) on Rural Health

- Information and activities to improve recruitment and retention of rural pediatricians: <http://www.aap.org/commpecs/cocp/sigRH.html>

From the National Rural Health Association

- What’s Different About Rural Health Care? [www.nrharural.org](http://www.nrharural.org)

## Section 14: Physician as Advocate

Pediatricians are among the most active and effective advocates for pediatric health and safety. Members of the American Academy of Pediatrics (AAP) have access to advocacy tools that include in-depth research, state and federal legislative training, community service projects, and public education campaigns.

- With support and resources from the AAP Department of Federal Affairs and Division of State Government Affairs, pediatricians and chapters communicate with state and federal legislators, testify, coordinate media events, and participate in election activities.
- Advocacy training is offered to AAP members through the Legislative Conference and Chapter Advocacy Summit. Strategic consultation, issue sheets/briefs, data, and background information are provided.
- International travel grants are available for pediatric residents interested in completing a rotation in a third-world country.
- Community Access to Child Health (CATCH) grants provide planning and implementation funds for innovative, community-based child health projects.

While child health and safety is no doubt its best-known advocacy topic, the AAP is very much engaged in a host of projects that benefit children less directly. Through leadership in medical education and outreach to other health professions' groups, the AAP speaks with authority on public policy that promotes the well being of pediatric patients and their families.

### Online Resources

From the American Academy of Pediatrics (AAP)

- Information about membership in the AAP (available to board-certified pediatricians): <http://www.aap.org/moc>. Candidate membership is available to pediatricians who are preparing for the pediatric board examination. Allied health professionals participate in Academy activities via other membership categories.
- American Academy of Pediatrics Departments of State and Federal Advocacy:
  - American Academy of Pediatrics Departments of State and Federal Advocacy: [www.aap.org/advocacy.html](http://www.aap.org/advocacy.html)
  - Ten tips for child advocates: <http://www.aap.org/advocacy/childadvocacytips.htm>.
  - Bright Futures, a developmentally based national health promotion and disease prevention initiative that addresses children's health issues in the context of family and community. Designed for health professionals who care for children. Available at: <http://brightfutures.aap.org/>
  - The AAP-PAX Asking Saves Kids (ASK) Campaign is a response to the reality that over 40% of American homes with children have guns, many kept unlocked and loaded. Available at: <http://www.aap.org/advocacy/PAXASK.htm>
  - Advice for parents on car safety seats and transportation safety is available at: <http://www.aap.org/healthtopics/carseatsafety.cfm>



## SECTION 15: Looking into the Future of Pediatrics



# PART 6 Closing Thoughts

### Section 15: Looking to the Future of Pediatrics

In November, 2010, members of the American Academy of Pediatrics (AAP) Vision of Pediatrics (VOP) 2020 task force published a report of their 18-month endeavor to tease out the trends most likely to influence the future of pediatrics, identify scenarios likely to emerge in that context, and propose strategies to prepare for them. The group identified 8 “megatrends” believed to be highly likely to have a profound impact on the future of pediatrics and child health.<sup>47</sup> (Reference 47)

The 8 megatrends identified are:

- changing demographic and clinical characteristics of children and families
- influence of health information technology
- continuing advances in medicine
- evolving health-care delivery systems
- growth of consumer-driven health care
- workforce dynamics in pediatrics
- environmental, infectious, and man-made disasters
- globalism

The VOP project identified a need for continuous awareness and creative thinking about how clinicians, practices, organizations, and interest groups can initiate what they called a “cycle of inquiry and action” to address the trends and “bend the curve” in a timely fashion. This was visualized through what is called the PEER cycle of change: **P**reparing, **E**nvisioning, **E**ngaging, and **R**eshaping change.<sup>48</sup> (Reference 48) Both the AAP and individual pediatricians play key roles in leading efforts to shape a future for the profession and for child health. The AAP has devoted significant resources to helping members anticipate and navigate changes related to the megatrends. These efforts will continue to evolve.

The evolution and outcomes of the Vision of Pediatrics Project are described on the VOP Web site (<http://www.aap.org/visionofpeds/>).

The VOP project has endorsed in principle the value of active, ongoing, anticipatory, collaborative, decentralized strategies to effect meaningful change in both medical education and clinical practice. Change is viewed as a continuing process rather than a structured event.

*Pediatrics 101* adopts this world view. This guide seeks to provide the tools with which every pediatric resident can readily secure and sustain a powerful level of engagement, enthusiasm, and commitment. When that occurs, the outcome is a common vision that fosters a cultural belief in the power of today’s pediatricians in framing the future of children in their care.



## SECTION 16: References and Resources

## SECTION 17: Quick Facts Tables



# PART

# 7 Resources and Tools

## Section 16: References and Resources

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