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Child Neurology: Workforce and Practice Characteristics

Editor's note: For more than a decade, reports have indicated that the supply of child neurologists is inadequate to provide care for the growing number of children with acquired and genetic neurological conditions. It is critical to understand how the shortages affect the practice of child neurology, the attitudes of child neurologists, and ability of the field to attract new members. This Issue Brief examines these workforce issues, and profiles the attitudes and practice characteristics of child neurologists and trainees.

Child neurology faces present and predicted workforce shortages as demand for services increases

The field of child neurology has rapidly expanded since board certification was established in 1969. The Child Neurology Society (CNS) has grown from about 200 members in 1972 to more than 1400 today. But this growth in the profession has been overshadowed by the even more rapid expansion of basic and clinical knowledge in the neurosciences and in treatment strategies for children with neurological disorders.

- In 1998, a Workforce Task Force of the American Academy of Neurology reported that there were 819 full-time equivalent child neurologists in patient care. The Task Force estimated that staffing was 20% below the need for child neurology services, a shortage projected to remain unchanged through 2020.
- The Task Force surmised that pediatricians and adult neurologists are meeting the demand for services, but the extent to which these specialties can and do substitute for child neurologists is unknown. The effects of the workforce shortage on the practice of child neurologists, particularly on referral patterns and waiting times for an appointment, are also unknown.
- A declining number of physicians are entering the field of child neurology. According to data from the American Medical Association (AMA), the percentage of filled residency positions in child neurology decreased from 70% a decade ago to 55% in 2001.

Surveys describe demographic and practice characteristics of child neurologists

Polsky and colleagues conducted a series of surveys in 2002 to obtain information on practicing child neurologists and child neurology trainees.

- The investigators surveyed all 1,051 active members of the Child Neurology Society and the 433 non-member physicians listing child neurology as a primary or secondary specialty on the AMA Masterfile. The response rate was 65%, and the final sample included 815 eligible respondents.

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- To put their results in context, the investigators compared the responses of child neurologists with those of other specialists in the Community Tracking Study (CTS), a survey of a representative sample of physicians in the United States. More than 12,000 physicians completed each wave of the CTS, which was conducted in 1996 and 1999. The survey provides an in-depth look at issues and challenges that physicians face, and it included questions nearly identical to those contained in the child neurology survey.
 - To learn more about the pipeline that provides future child neurologists, the investigators surveyed trainees in the 65 child neurology programs. Twelve programs had no current residents. Polsky and colleagues surveyed 152 trainees in the remaining 53 programs, and received responses from 80 residents in 38 programs.
 - To discern institutional factors that might affect the decision to choose child neurology as a career, the investigators identified and compared top-ranked U.S. medical schools with the most, and fewest, graduates choosing child neurology over the last 18 years. Nine schools with at least 6 child neurology graduates were contacted by phone, and eight responded; 13 schools with zero or one graduate in child neurology were contacted, and eight responded.

Child neurologists work similar hours, earn less than other pediatric subspecialists

The survey of practitioners reached physicians in a variety of work settings. About 33% of respondents were faculty based in a university setting, 26% were faculty in a non-university setting (usually solo or neurology group practice) and 39% were not faculty, primarily in private practice.

- The majority of child neurologists in the survey were male (70%) and white (81%). Their mean age was 51. Most (86%) were board certified in child neurology and 69% were certified in both child neurology and pediatrics.
- Respondents worked an average of nearly 54 hours per week, including 37 hours in patient care, 6 hours in research, and 11 hours in other activities. Not surprisingly, university-based faculty report spending a lower percentage of their time on patient care (56%) than non-university based faculty (73%) or non-faculty (84%). Child neurologists spent similar hours per week on patient care as pediatricians and other subspecialists, but less than adult neurologists.
- Most respondents reported earning between \$100,000 and \$175,000 per year, with an average annual income of \$151,000. Compared to reports from the Community Tracking Study, child neurologists earn about \$18,000 less than other pediatric subspecialists, and about \$22,000 less than adult neurologists.

Waiting times for patient appointments are considered excessive

The survey explored several indices of workforce adequacy, such as waiting times and perceived need for more child neurologists.

- Respondents reported that new patients wait an average of 53 days for an appointment, with an average wait of 44 days for a return visit. Most respondents (66%) believe that these waiting times for an appointment are excessive. The waits are significantly longer in the university setting than in other settings.
 - About 83% of respondents agreed that more child neurologists will be needed in the next 3 to 5 years. Less than 20% report facing competition from other child neurologists.
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Child neurologists remain satisfied with their careers, and report increasing referrals from primary care physicians

The respondents were asked about personal career satisfaction, the appropriateness of referrals, and changes in the number and complexity of patients in the last two years.

- The vast majority (90%) of respondents felt that child neurology is a satisfying field, despite an almost equal amount believing that earnings are low compared to similarly trained peers. Child neurologists report slightly higher levels of satisfaction than pediatricians, other pediatric subspecialists, and adult neurologists in the Community Tracking Study.
- Nearly 60% believe that the complexity or severity of patients at the time of referral is appropriate, although 25% believe it is less than it should be, suggesting that referring physicians have too low a threshold for referral. This perceived problem in referral patterns is three times higher than that reported by other pediatric subspecialists or adult neurologists.
- About 65% of respondents perceive that the number of patients referred by primary care physicians increased in the previous two years. The percentage reporting a recent increase in referrals is greater than that reported by other pediatric subspecialists (46%) or neurologists (39%).

Trainees emphasize importance of early exposure, mentors in choosing specialty

The surveys of child neurology residents and medical schools provided insights into attributes that attracted current residents to the field.

- About 55% of child neurology residents were graduates of U.S. medical schools, and 23% had a PhD in addition to their medical degree. U.S. graduates identified having a mentor as one of the most influential exposures in their career choice.
- When asked about actions that could improve the attractiveness of the field, residents responded that medical students should get more exposure to child neurology, both in preclinical work and in electives, and that some exposure should be required.
- Medical schools producing the highest number of child neurologists had stronger neuroscience curricula in the first and second year, stronger academic reputations, and larger Divisions of Child Neurology than schools producing the fewest.
- The career expectations of residents differed somewhat from the reported activities of current practitioners. Residents predicted that they would spend less time on patient care and more time on research than practicing child neurologists report. However, residents' prediction about their income in five years was similar to practitioners' actual income.

Supply of child neurologists will not increase if current training levels continue

Polsky and colleagues used these practitioner and trainee data to calculate the geographic distribution of child neurologists, and to project the supply of child neurologists in the next 20 years taking population and aging trends into account.

- Consistent with earlier reports, the investigators estimated that 904 child neurologists currently provide patient care in the United States, which translates into 1.3 child neurologists per 100,000 children.
- The supply of child neurologists, as the supply of pediatricians and all physicians, varies geographically. The supply is highest in the Northeast (1.6 per 100,000 children), and lowest in the West (.8 per 100,000 children).
- If the number of child neurologists entering the field stays at the current rate (36 per year), by 2022 the supply of child neurologists per 100,000 children will remain virtually unchanged. However, if all residency slots were filled, the ratio would rise to nearly 1.8 by 2022.

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POLICY IMPLICATIONS

These findings are consistent with previous reports of a workforce shortage in child neurology, and provide a glimpse of how this shortage affects the practice and attitudes of child neurologists. Attracting medical students to train in child neurology, and filling all available residency slots, should be a top priority.

- Child neurology trainees point out the importance of mentorship and child neurology electives in the third and fourth year of medical school. Providing medical students with a clerkship or elective in child neurology should be stressed. Medical schools with a proven track record of producing child neurologists tend to have a strong neuroscience curriculum that exposes students early to the field of child neurology, and maintains their interest through their course of study.
- In the short term, the use of the existing child neurology workforce should be optimized. Some child neurologists believe that they are seeing many patients who could be cared for by pediatricians. Such inefficiencies will exacerbate workforce shortages, diluting the capacity of child neurologists to meet the demand for their specialized services. Research should be conducted on the factors that influence pediatricians' referral patterns, and on strategies to improve the appropriateness of referrals to child neurologists.
- To the extent that economic factors influence career choices, the relatively long training period for child neurology (usually five years) and relatively low future earnings may create disincentives to enter the field, especially for students with educational debt. Highlighting the relatively high career satisfaction of practicing neurologists, and providing assistance with debt for child neurology trainees, may make the field of child neurology more attractive to medical students.

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