

Research Corner

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Physician shortage predictions and their implications

Health care policy experts generally agree that the United States faces a medical provider shortage in the near future. Recently there have been several articles addressing provider shortage predictions in single medical specialties. Since the PA profession has historically contributed a high proportion of its graduates to medical shortage areas, future shortage predictions have significant implications for the profession if these historical trends continue. Three recent articles addressing workforce shortages are reviewed in this installment of Research Corner.

Lynge DC, Larson EH, Thompson MJ, et al. A longitudinal analysis of the general surgery workforce in the United States, 1981-2005. *Arch Surg.* 2008;143(4):345-350. <http://archsurg.ama-assn.org/cgi/content/full/143/4/345>. Subscription required, accessed May 15, 2008.

ABSTRACT: Hypothesis: The overall supply of general surgeons per 100,000 population has declined in the past 2 decades, and small and isolated rural areas of the United States continue to have relatively fewer general surgeons per 100,000 population than do urban areas.

Design: Retrospective longitudinal analysis.

Setting: Clinically active general surgeons in the United States.

Participants: The American Medical Association (AMA) Physician Masterfiles from 1981, 1991, 2001, and 2005 were used to identify all clinically active general surgeons in the United States.

Main Outcome Measures: Number of general surgeons per 100,000 population and the age, sex, and locale of these surgeons.

Results: General surgeon to population ratios declined steadily across the study period, from 7.68 per 100,000 in 1981 to

5.69 per 100,000 in 2005. The overall urban ratio dropped from 8.04 to 5.85 (-27.24%) across the study period, and the overall rural ratio dropped from 6.36 to 5.02 (-21.07%). The average age of rural surgeons increased compared with their urban counterparts, and women were disproportionately concentrated in urban areas.

Conclusions: The overall number of general surgeons per 100,000 population has declined by 25.91% during the past 25 years. The decline has been most marked in urban areas. However, more remote rural areas continue to have significantly fewer general surgeons per 100,000 population. These findings have implications for training, recruiting, and retaining general surgeons.

Colwill JM, Cultice JM, Kruse RL. Will generalist physician supply meet demands of an increasing and aging population? *Health Affairs.* 2008;27(3):w232-w241. <http://content.healthaffairs.org/cgi/content/full/27/3/w232?hits=10&FIRSTINDEX=0&AUTHOR1=colwill&ck=nck&SEARCHID=1&qca=healthaff%3B27%2F3%2Fw232&>. Subscription required, accessed May 15, 2008.

ABSTRACT: We predict that population growth and aging will increase family physicians' and general internists' workloads by 29% between 2005 and 2025. We expect a 13% increased workload for care of children by pediatricians and family physicians. However, the supply of generalists for adult care, adjusted for age and sex, will increase 7%, or only 2% if the number of graduates continues to decline through 2008. We expect deficits of 35,000 to 44,000 adult care generalists, although the supply for care of children should be adequate. These forces threaten the nation's foundation of primary care for adults.

Hooker RS, Cipher DJ, Cawley JF, et al. Emergency medicine services: interprofessional care trends. *Journal of Interprofessional Care.* 2008;22(2):167-178. <http://www.informaworld.com/smpp/section?content=a791211621&fulltext=713240928>. Subscription required, accessed May 15, 2008.

ABSTRACT: To understand trends in emergency medicine and interprofessional roles in delivering this care, we analyzed a 10-year period (1995-2004) by provider, patient characteristics, and diagnoses. The focus was on how doctors, physician assistants (PAs), and nurse practitioners (NPs) share emergency medicine visits. The National Hospital Ambulatory Medical Care Survey of more than 1 billion "weighted" emergency department visits for 1995 to 2004 was analyzed. The majority of patients were female (52.3%); the mean age of all

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patients was 35.3 years. By 2004, physicians were the provider of record for emergency visits at 92.6%, with PAs at 5.7% and NPs at 1.7%. Emergency visits increased for all three providers over the 10 years, with PA growth doubling during this same period. Medications were prescribed for three-fourths of the visits and were consistent in the *mean* number of prescriptions written across the three prescribers. No significant differences emerged when urban and rural settings were compared. Expansion of the roles and interprofessional care provided by NPs and PAs include increasing acceptance, clarification of legal and regulatory aspects of practice, shared roles, team approaches to shortages of fully-trained doctors, and the limitation of working hours of physician postgraduate trainees. The US forecast for emergency department visits is expected to outpace the growth of the population and the supply of emergency medicine providers. In view of an increasing emergency medical demand and a continuing shortage of physician personnel, policies are needed for workforce planning to meet the demand.

DISCUSSION

Since the publication of Cooper's prediction in 2002 that the United States would soon experience an increasing shortage of medical providers across all specialties,¹ more articles have been published documenting that indeed shortages now exist or are imminent and worsening. In 2005, the Council on Graduate Medical Education, which had been predicting future physician surpluses as recently as 1996,² reversed its position and called for substantial increases in medical school enrollment and residency training to address predicted provider shortages.³ Historically, in the most recent era of perceived physician shortages (1965-1980), the impact of the nascent PA profession was relatively small and the response to the shortage was primarily a substantial increase in physician and nursing enrollment. Today, with the PA profession recognized as a contributor to the health care workforce, current provider shortages present PAs with an opportunity to impact health care policy in new ways. These three recent publications address implications of worsening provider supplies and apply different philosophies for solutions.

The article by Colwill and colleagues utilizes an analysis of the National Ambulatory Medical Care Survey (NAMCS) to determine that the generalist physician supply (general internists and family practitioners) will be insufficient to meet projected need in 2025 by 35,000 to 44,000 adult generalists. The authors consider the current and likely future contribution of PAs and NPs to be small, and thus their final recommendation is to increase the number of physicians trained in general internal medicine and family medicine. Morgan and colleagues have noted how NAMCS and other national surveys underrepresent the contributions of nonphysician providers who work in collaborative arrangements.⁴ Particularly with PAs, their contribution to care in these surveys is credit-

ed to physicians, resulting in an underestimation of PA contribution and an overestimation of physician contribution. In Colwill's analysis, this data bias may have contributed to the conclusion that nonphysician providers are not currently relevant in providing services to this population of patients and not likely to be a significant factor in providing solutions for the future.

The article by Lynge and colleagues calculates the general surgeon to population ratio in the United States in 1981, 1991, 2002, and 2005 from physician data obtained from the AMA Masterfiles. Work addresses were coded by county-level urban-rural taxonomy using 1990 US Census data and Urban Influence Codes. Analysis of the data showed that the relative number of general surgeons fell 25.91% from 1981 to 2005, and the decline was greater in urban areas than in rural areas. The article discusses the role of PAs and NPs in addressing health care shortages in other specialties and mentions the limitation nonphysician providers may face in providing solutions to shortages of general surgeons.

The use of PAs and NPs in the provision of emergency medical services has substantially increased over the past decade. In documenting this phenomenon, Hooker and colleagues analyze 1995-2004 data from the National Hospital Ambulatory Medical Care Survey, administered by the National Centers for Health Statistics at the CDC. These data show that the proportion of patients seen in emergency department settings by PAs is increasing at a faster rate than the proportion of patients seen by physicians or NPs, implying that more of the growth in emergency department providers has consisted of PAs than physicians or NPs.

These three articles all address medical workforce issues; two articles document projected shortages in physician workforce supply, and one describes the mix of physician and nonphysician providers over 10 years in emergency medical settings. Although all three publications deal with increasing future demand for health care providers, they each approach the use of PAs as part of the solution with varying degrees of enthusiasm. Although the PA profession has made progress in recognition as an established profession, efforts will still be necessary to ensure that enough PAs are available and willing to work in shortage areas and that workforce decision makers consider PAs as part of the solution to workforce shortages. **JAAPA**

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