



Where Have the Generalists Gone? They Became Specialists, Then Subspecialists

At the onset of the 20th century, most practicing physicians had received their training in proprietary medical schools, many of which were essentially diploma mills.¹ These schools offered a series of lectures over a 1-year period. A minority of physicians had attended university-based medical schools such as Johns Hopkins, which was established in 1893. There were only a few internships available in 1900.² These internships offered further medical education for new graduates and offered staff help to the hospitals.

After the Flexner report in 1910, 4-year medical schools based on the Hopkins Model gradually began to replace the proprietary schools.³ The number of US medical schools decreased from 161 in 1905 to 81 in 1922.¹

By 1914, 75% to 80% of medical school graduates took 1-year internships. In World War I, commissions in the medical corps required a 1-year internship.³

By 1920 the majority of US physicians were general practitioners who had completed 4 years at a university or a proprietary medical school and a 1-year hospital internship. These general practitioners provided the vast majority of medical care in the US until the middle of the 20th century.

There were virtually no specialists in the early 20th century. The first residencies were established in 1927.³ In the 1930s, 13 medical specialties were recognized and specialty boards were established to certify specialists. Just prior to World War II, in 1940, 24% of US physicians were specialists and 76% were general practitioners who performed surgery, delivered babies, and cared for all medical conditions.³

WORLD WAR II UNTIL 1970S

World War II led to profound changes in medical education and medical practice. An expanding system of hospitals and clinics was established to provide complete medical care to 12 million service men. The military recognized physicians who had some evidence of specialty expertise (with or without board certification); they were assigned to specialty care and were given higher military ranks than general practitioners.³

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After World War II there was a major shift from general practice to the specialties. In 1959, 75% of internships were rotating; by 1969 the percentage had decreased to 21%.³ Rotating internships and general practice residencies gradually disappeared, replaced by residencies in the specialties. The term “internship” disappeared, replaced by calling the first year of residency PGY 1 (for postgraduate year 1). Medical services for veterans were greatly expanded, and many specialists were recruited to staff veterans’ hospitals and clinics.

Physicians who had served in the military were eligible for the GI bill, which many utilized to undertake specialty residencies. The number of residency positions increased from 5000 in 1940 to 12,000 in 1949 and 25,000 in 1955.⁴

In 1940 there were 11,860 physicians in internship and residency programs; in 1949 there were more than 23,000; by 1960 there nearly 38,000 in residency programs.³

The largest increase of physicians in residency programs after World War II was in Internal Medicine. In the decade prior to 1941, 808 physicians were certified in Internal Medicine. From 1941 to 1950 more than 4000, and from 1951 to 1960 more than 6000 were certified in Internal Medicine.⁵ The vast majority of these physicians entered primary care practice as general internists.

There was a similar increase in Pediatrics. In 1940 there were only 373 residency positions in pediatrics. By 1960 there were 1862 positions and in 1970 there were 2920.³ The vast majority of residents entered primary care practice as general pediatricians.

By 1969 the number of physicians practicing primary care as general internists or general pediatrics (19%) equaled the number practicing as general practitioners.³

A new specialty, Family Medicine, was approved in 1969 and offered 3-year residencies in family medicine.

General practitioners gradually disappeared and were replaced by the 3 groups of specialists with 3 or more years of postgraduate training: general internists, general pediatricians, and family physicians, who became the US primary care work force.

CHANGES SINCE THE 1970S

The number of these well-trained primary care physicians began to decrease in the 1970s. Physicians who completed

internal medicine residencies, the largest source of primary care physicians, began to enter subspecialty fellowships in cardiology, pulmonary disease, and the other 19 subspecialties of internal medicine.

Fellowships were offered by the National Institutes of Health and other entities to prepare subspecialty physicians for research and academic medicine. The fellowships gradually became residencies in the medical subspecialties, and most were financed by Medicare. A minority of the physicians completing fellowships or residencies pursued careers in academic medicine. The majority elected to practice as medical subspecialists as shown in **Table 1**. The number of physicians entering practice as general internists diminished. By 2015, 88% of those completing a 3-year residency in internal medicine entered a medical subspecialty, leaving only 12% to practice general internal medicine.⁵

The number of physicians entering pediatric residencies increased from 2047 in 1998 to 2675 in 2016.^{6,7} However, the number of pediatric residents entering practice as pediatric subspecialists has increased, just as was the case with internal medicine.⁸ The increase in pediatric subspecialties has not been as substantial as in internal medicine. In 2002, 30% of pediatric residents became subspecialists. In 2015, 41% entered subspecialty practice.⁹

The number of Family Practice residents increased from 2584 in 2000 to 3083 in 2016.^{6,7} This increase was primarily due to an increase in international medical graduates entering family medicine residencies. The number of US seniors matching in Family Medicine decreased from 2179 in 1998 to 1467 in 2016.^{6,7} Nearly all who complete a Family Medicine residency enter practice as family physicians.

The US is rapidly losing its main source of primary care physicians: general internal medicine practitioners, and to a lesser extent, general pediatricians.

As a result, the percentage of US primary care physicians decreased from 50% in 1961¹⁰ to 33% in 2015¹¹ (**Table 2**).

The 33% of physicians that are generalists in the US is much lower than in other Western countries. Most countries consider internal medicine to be a specialty and do not include them as generalists. The percentage that are

Table 1 Physicians Entering Internal Medicine Residencies 1951 to 2015⁵

Year	Entering Internal Medicine	Entering Subspecialty	% Subspecialist
1951-1960	6489	448	7
1961-1970	8782	896	10
1971-1980	36,837	17,110	46
1981-1990	47,754	30,387	64
1991-2000	65,207	42,099	65
2001-2010	69,850	51,352	74
2011-2015	36,303	31,944	88

Table 2 US Primary Care Specialists, 2015¹¹

	Number*	%†
General internal medicine	114,089	13
Family Medicine	111,295	13
Pediatrics	62,383	7
Totals	276,226	33

*Number of specialists.

†% of US practicing physicians.

generalists (without general internal medicine) in the 34 Organization for Economic Co-operation and Development nations in 2013 was 29%. It was 47% in Canada and 29% in the UK, compared with 12% in the US.¹²

A major reason for the mandate to increase the number of MD/DO medical students was to increase the supply of primary care physicians.¹⁰ As we have shown in a prior publication, the 28% increase in US medical students from 2002 to 2016 has not increased the output of primary care physicians.⁸ The main reason is that the vast majority of internal medicine residents enter practice as medical subspecialists rather than general internists. It is very unlikely that this 60+-year trend as shown in **Table 1** will be reversed. The percentage of pediatricians entering general pediatrics has had a similar, but less severe, decrease. Family Medicine, the remaining primary care specialty, has shown a modest increase. However, the number of US seniors, the major source of Family Medicine residents, has decreased from 77% of those matched to Family Medicine in 1998 to 45% in 2016.^{6,7}

The evidence is clear that US physicians prefer specialty medicine to primary care medicine. It is highly likely that this preference will persist.

Why do US medical students choose specialty and subspecialty practice rather than primary care?

The most frequent explanation is that as the debt of graduating seniors increases, the number choosing the higher-paying specialties increases.¹³ Other suggested reasons are that the specialties have more prestige and many present a better lifestyle than primary care.¹³

The Health Resources and Services Administration projects a shortage of 20,400 primary care physicians in 2020.¹⁴

Peterson et al¹⁵ predicted an even larger shortage of 52,000 primary care physicians by 2025.

There will not be enough family practitioners to provide primary care to the entire US population; they will need help from other health care providers. Fortunately, there are 2 excellent sources of primary care providers: Nurse Practitioners (NPs) and Physician Assistants (PAs).

Of the 222,000 licensed NPs in the US in 2016, 83% were prepared in primary care.¹⁶ The Health Resources and Services Administration predicts a 30% increase in primary care NPs over the period from 2010 to 2020.¹⁴ NPs may or may not have to work with a physician, depending upon individual state regulations. The number of NPs entering primary care training programs is increasing.¹⁷

PAs are a second source of primary care providers. They are licensed to practice medicine with physician supervision. Of the 91,836 PAs in the US in 2016,¹⁸ 28% are certified in primary care. Many PAs practice with medical specialists.

Multiple studies have shown that NPs and PAs provide the same quality of primary care as primary care physicians.^{14,18-20} Unlike primary care physicians, the number of NPs and PAs is increasing.¹⁴

We agree with the many who have suggested that NPs and PAs represent the obvious solution to the shortage of US primary care physicians.^{14,17,19-23} Working together as a team, primary care physicians (mostly family physicians) and NPs and PAs with training in primary care can revitalize our primary care workforce.

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