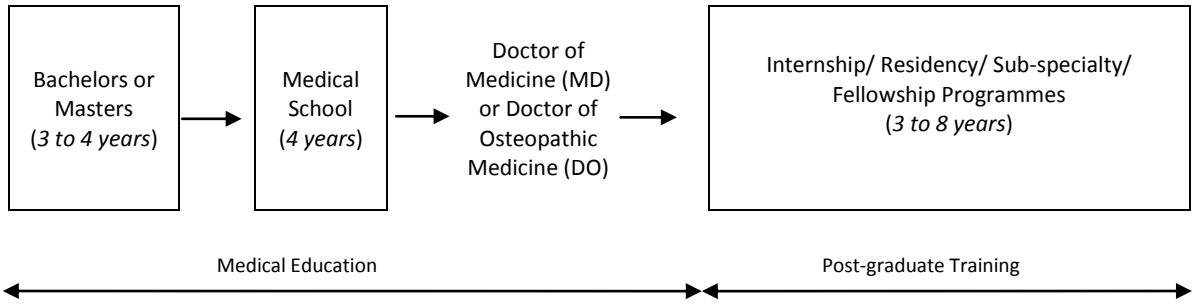
Trends in Medical Education and Training in United States

1. Brief Overview of Medical Education and Training Pathways

- Students accessing medical school in the United States (US) usually already have a bachelor's degree. The medical degree is normally obtained after four years of studies, with the student granted either a Doctor of Medicine (M.D.) degree or a Doctor of Osteopathic Medicine (D.O.) degree[1].
- New medical graduates then pursue their clinical specialty training (internship/residency), with the length of the training varying depending on the specialty. Overall, to become a doctor in the US, on average, a student can expect 10 to 16 years of higher education and post-graduate training.
- Figure 1 briefly summarises the medical education and training steps to become a doctor in the US.

Figure 1. Medical Education and Training Paths, United States



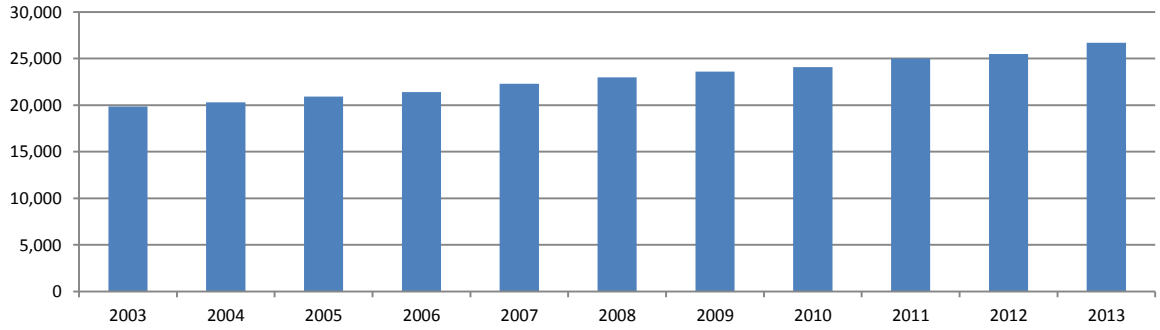
Source: American Medical Association, available at http://www.ama-assn.org/ama.

2. Trends in Admissions to Medical Schools

- Figure 2 shows trends in first-year admissions to medical schools in the US (including both allopathic and osteopathic programmes) from 2003 to 2013. The number of students admitted to medical schools in the US increased from 19,849 in 2003 to 26,696 in 2013, a rise of 34%, with most of the growth occurring after 2006. This rise followed a 2006 recommendation from the Association of American Medical Colleges (AAMC) to increase student enrolment by 30% to prevent a projected shortage of doctors (Association of American Medical Colleges, 2012a).

[1] Osteopathic medicine is a distinctive form of medical practice in the United States. It is defined as using "all of the tools and technology available to modern medicine with the added benefits of a holistic philosophy and a system of hands-on diagnosis and treatment known as osteopathic manipulative medicine. Doctors of osteopathic medicine emphasize helping each person achieve a high level of wellness by focusing on health education, injury prevention and disease prevention." Today, the training of osteopathic physicians is virtually identical to that of their MD counterparts (American Association of Colleges of Osteopathic Medicine, http://www.aacom.org/, accessed 10 June 2014).

Figure 2. Students admitted to initial medical education, United States, 2003-2013



Source: Association of American Medical Colleges, Data, https://www.aamc.org/ (accessed 12 June 2014); American Association of Colleges of Osteopathic Medicine, Data and Trends, http://www.aacom.org/Pages/default.aspx (accessed 12 June 2014)

- This growing number of medical students was accommodated through the creation of new medical schools and the expansion of class sizes in existing schools.
  - *Creation of new medical schools:* Following a period of 20 years when no new medical schools were accredited in the US, the number of (*allopathic*) medical schools increased from 124 in 2005 to 141 in 2012. Four new medical schools also opened in 2013, contributing to about half of the overall enrolment increase in that year. In addition, three new osteopathic medical schools started enrolling their first classes in 2013 (American Association of Colleges of Osteopathic Medicine, 2012).
  - *Expansion of class sizes:* In 2013, 14 medical schools increased their class sizes by more than 10% (Association of American Medical Colleges, 2012b).

Box: What is the dropout rate from medical education in the US?

- A 2007 study by AAMC found that graduation rates for three medical classes (1987, 1992 and 1995) had been fairly stable over time, with around 81% of each of the three cohorts graduating four years after admission. By the fifth year, the graduation rate for the three cohorts increased to 91%, and by the 10th year, 96% of the cohorts had graduated (Association of American Medical Colleges, 2007). A more recent study found that graduation rates from medical schools in the US have remained in these ranges (Association of American Medical Colleges, 2014).

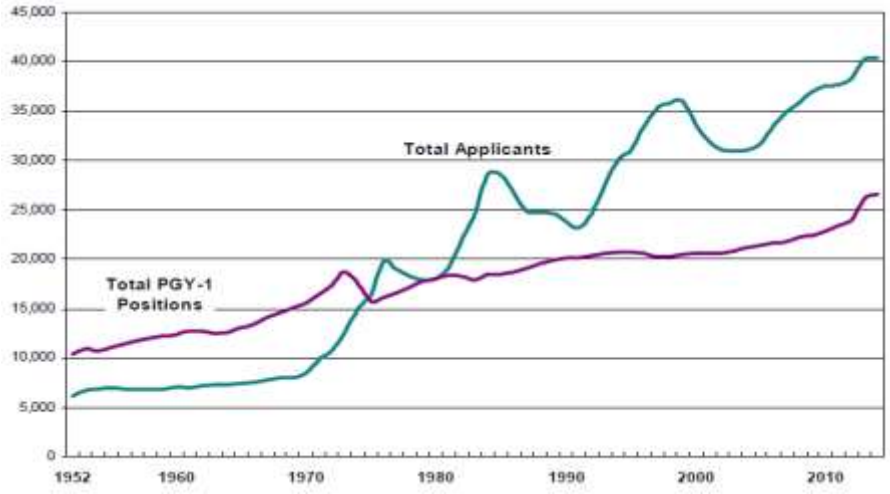
3. Trends in Admissions to Post-graduate Training

- Post-graduate clinical training in the US includes internship, residency, subspecialty and fellowship programs, and leads to state licensure and board certification. Each specialty defines its own curriculum, length and content of the post-graduate (residency) training. Generally, programs can last from 3 to 8 years.

- Access to post-graduate training programs such as residencies is a competitive process known as the *National Resident Matching Program*, or simply, *The Match*. Senior medical students usually begin the application process at the beginning of their fourth and final year in medical school. After that, applications are reviewed by residency programs and selected candidates are called in for interviews. When the interview period is over, students submit a "rank-order list" to a centralized matching service. Similarly, residency programs submit a list of their preferred applicants in rank order to this same service (American Medical Association, 2014).

- The first residency match was conducted in 1952 when 10,400 internship positions were available for 6,000 US medical graduates. This trend reversed since the mid-1970s, with the number of applicants exceeding by a growing margin the total number of available post-graduate year 1 (PGY-1) places (National Residency Matching Program, 2014).

Figure 3. Applicants and 1st Year Places in The Match, United States, 1952-2014



Note: This graph relates solely to allopathic medicine

Source: National Residency Matching Program (NRMP), Results and Data – 2014 Main Residency Match, available at http://www.nrmp.org/wp-content/uploads/2014/04/Main-Match-Results-and-Data-2014.pdf.

- As shown in Figure 3, the number of places reached an all-time high in 2014, at 26,678, although this was still far below the number of applicants (exceeding 40,000). These applicants include not only new graduates from US medical schools, but also graduates from schools in other countries (including Americans who went to study in another country).

- Table 1 below shows the trend in places offered by specialty area from 2010 to 2014 for allopathic medicine only. The number of available positions in both Family Medicine and Internal Medicine has increased quickly in recent years, rising from 2,600 in 2010 to 3,100 in 2014 in Family Medicine and from 5,000 places to 6,525 in internal medicine. As a share of all post-graduate training places, the proportion of places in Family and Internal Medicine increased from 33% to 36% over this four year period.

- Following the increase in medical school enrolments by over 30% over the past decade, the number of applicants to post-graduate training programs will continue to increase in the years ahead. However, the number of residency posts has not increased at the same pace. In this context, it can be expected that graduates from US medical schools might have increasing difficulties finding residency posts to complete their clinical training, and these difficulties are likely to be even greater for American and non-American students who have obtained their diploma from a university outside the US wishing to pursue their post-graduate training in the US. The surge in medical school enrolment in the US and in the number of American students going to study medicine abroad can be expected to create growing pressures to further increase federal support for residency training.

Table 1. Places Offered in the Matching Program, by specialty, United States, 2010 - 2014

Specialty	2014		2013		2012		2011		2010	
	No.	%	No.	%	No.	%	No.	%	No.	%
PGY-1 Positions										
▲ Anesthesiology	1,049	3.9	1,000*	3.8*	919	3.8	841	3.6	797	3.5
Child Neurology	92	0.3	91*	0.3*	75*	0.3*	0	0.0	0	0.0
▼ Dermatology	20	0.1	23*	0.1*	23	0.1	28	0.1	31	0.1
▲ Emergency Medicine	1,786	6.7	1,743*	6.7*	1,668	6.9	1,607	6.9	1,556	6.8
Emergency Med-Family Med	4	0.0	4	0.0	4	0.0	4	0.0	4	0.0
▲ Family Medicine	3,109	11.7	3,037	11.6	2,740	11.4	2,708	11.6	2,608	11.4
Family Med-Preventive Med	5	0.0	6	0.0	6	0.0	4	0.0	0	0.0
▲ Internal Medicine (Categorical)	6,524	24.5	6,277	24.0	5,277	22.0	5,121	21.9	4,999	21.9
Medicine-Anesthesiology	7	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Medicine-Dermatology	6	0.0	8	0.0	9	0.0	9	0.0	7	0.0
Medicine-Emergency Med	28	0.1	27	0.1	26	0.1	26	0.1	23	0.1
Medicine-Family Medicine	4	0.0	4	0.0	4	0.0	5	0.0	5	0.0
Medicine-Medical Genetics	3	0.0	2	0.0	1	0.0	1	0.0	0	0.0
Medicine-Neurology	1	0.0	2	0.0	2	0.0	0	0.0	2	0.0
Medicine-Pediatrics	374	1.4	366	1.4	362	1.5	365	1.6	359	1.6
Medicine-Preliminary (PGY-1 Only)	1,905	7.1	1,883	7.2	1,861	7.8	1,900	8.1	1,863	8.2
Medicine-Preventive Med	7	0.0	7	0.0	5	0.0	6	0.0	7	0.0
▲ Medicine-Primary	335	1.3	335	1.3	311	1.3	286	1.2	259	1.1
Medicine-Psychiatry	18	0.1	17	0.1	20	0.1	19	0.1	26	0.1
Medical Genetics	0	0.0	1	0.0	0	0.0	0	0.0	2	0.0
Neurodevelopmental Disabilities	0	0.0	1*	0.0*	1*	0.0*	0	0.0	0	0.0
Neurological Surgery	206	0.8	204	0.8	196	0.8	195	0.8	191	0.8
▲ Neurology	380	1.4	339*	1.3*	291*	1.2*	266	1.1	228	1.0
Nuclear Medicine	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0
Obstetrics-Gynecology	1,242	4.7	1,237	4.7	1,222	5.1	1,200	5.1	1,182	5.2
OB/GYN-Preliminary (PGY-1 Only)	22	0.1	22	0.1	18	0.1	5	0.0	5	0.0
Orthopedic Surgery	695	2.6	692*	2.6*	682	2.8	670	2.9	656	2.9
Otolaryngology	295	1.1	292	1.1	285	1.2	283	1.2	280	1.2
▲ Pathology	597	2.2	583	2.2	521	2.2	518	2.2	503	2.2
▲ Pediatrics (Categorical)	2,640	9.9	2,616	10.0	2,475	10.3	2,482	10.6	2,387	10.5
Pediatrics-Anesthesiology	8	0.0	8	0.0	7	0.0	3	0.0	0	0.0
Pediatrics-Emergency Med	9	0.0	7	0.0	7	0.0	7	0.0	7	0.0
Pediatrics-Medical Genetics	10	0.0	9	0.0	7	0.0	8	0.0	4	0.0
Pediatrics-P M & R	3	0.0	3	0.0	2	0.0	3	0.0	5	0.0
Pediatrics-Preliminary	40	0.1	44	0.2	55	0.2	53	0.2	41	0.2
▲ Pediatrics-Primary	75	0.3	83	0.3	67	0.3	66	0.3	65	0.3
Peds/Psych/Child Psych	19	0.1	19	0.1	18	0.1	19	0.1	17	0.1
Physical Medicine & Rehab	96	0.4	87*	0.3*	86	0.4	86	0.4	87	0.4
▲ Plastic Surgery (Integrated)	130	0.5	116	0.4	101	0.4	70	0.3	69	0.3
Preventive Medicine	0	0.0	0*	0.0*	4	0.0	5	0.0	6	0.0
▲ Psychiatry (Categorical)	1,322	5.0	1,297*	5.0*	1,117*	4.7*	1,097	4.7	1,091	4.8
Psychiatry-Family Medicine	10	0.0	11	0.0	10	0.0	9	0.0	13	0.1
Psychiatry-Neurology	4	0.0	2	0.0	2	0.0	4	0.0	5	0.0
Radiation Oncology	18	0.1	18*	0.1*	15	0.1	16	0.1	15	0.1
Radiology-Diagnostic	137	0.5	147*	0.6*	135	0.6	143*	0.6	141	0.6
▲ Surgery (Categorical)	1,205	4.5	1,180*	4.5*	1,146	4.8	1,108	4.7	1,077	4.7
▲ Surgery-Preliminary (PGY-1 Only)	1,286	4.8	1,278	4.9	1,221	5.1	1,179	5.0	1,165	5.1
▲ Thoracic Surgery	33	0.1	26	0.1	20	0.1	13	0.1	10	0.0
▼ Transitional (PGY-1 Only)	868	3.3	937	3.6	941	3.9	952	4.1	980	4.3
Urology	0	0.0	0	0.0	0	0.0	0	0.0	9	0.0
▲ Vascular Surgery	51	0.2	46	0.2	41	0.2	30	0.1	22	0.1
TOTAL - PGY1	**26,678**	**100**	**26,138**	**100**	**24,006**	**100**	**23,420**	**100**	**22,809**	**100**

Source: National Residency Matching Program (NRMP), Results and Data – 2014 Main Residency Match, page 20, available at http://www.nrmp.org/wp-content/uploads/2014/04/Main-Match-Results-and-Data-2014.pdf.

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