Applying for Residency: Anesthesiology

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Part I: Overview of Specialty

Description of Specialty, Common condition, types of patients:
The specialty of anesthesiology includes much more than just providing anesthesia in the operating room. Anesthesiologists also work in critical care units and on obstetric floors. They provide chronic pain and palliative care pain services and work in collaborative care pathways to optimize care for individual patient conditions both pre- and postoperatively. Anesthesiologists often have administrative roles in hospital settings. The operating room floor leader, head of the postoperative care unit, and head of hospital sedation and pain committees are frequently anesthesiologists. In addition, there is an opportunity to decide to serve broad types of patients (e.g. pediatric, adult, and obstetric) or to specialize in a certain patient type (pediatric surgery, cardiac surgery, thoracic surgery, etc.).

Career trajectories: academics, clinical, research, teaching
Because anesthesia services are required for surgery and procedures of all types, as well as all types of critical care and pain management, there is a broad selection of careers available. These can range from a pure private practice model to physician scientist and physician administrator roles.

Practice Models
Many anesthesiologists work in operating room settings in either private practice or academic models. Most operating room settings include anesthesia staff supervising advanced practice clinicians such as nurse anesthetists, or residents. The specific practice models may be regulated at the state level (i.e. number of residents or midlevel providers supervised by each anesthesia staff). This is similar to other specialties such as surgery and medicine who may work with other professionals such as certified registered nurse anesthetists (CRNA), physician assistants, or nurse practitioners as physician extenders.

Residency: Length, typical curriculum
An anesthesia residency program may be categorical or advanced. Categorical = integrated intern year at the same institution. Every categorical intern year is different, and designed at the discretion of the program leadership.
Advanced = no integrated intern year, just the PGY 2-4 years. Students need to find a preliminary internship year for PGY1.

Each institution may offer only a categorical track (e.g. Cornell), only an advanced track (e.g. Johns Hopkins), or both categorical and advanced tracks (e.g. MGH).

Preliminary year = This is the PGY1 (intern year) for students who match at an advanced program, which must be applied to and match at separately. You do not have a preliminary year if you match at a categorical program. The preliminary year internship can be at any institution you choose. It may be through a Medicine department (100% medicine), through a Surgery department (100% surgical), or as part of a Transitional Year program (some mix of medicine and surgery, depending on the program).

Most students apply to all tracks available at institutions they are interested in, and apply to preliminary programs near those institutions to provide flexibility once it comes time to make a rank list.

During the following three years of anesthesia residency, there is rotation time allotted to pediatric anesthesia, obstetric anesthesia, pain management, preoperative evaluation, and critical care. There is also elective time, which can be devoted to a resident’s clinical interests or to research. Your residency program may provide an option to spend up to six months of residency doing research, which may be desired in some cases.

Fellowships offered after residency
There are several fellowships an anesthesiology resident can pursue after residency. These include pain medicine, obstetric anesthesia, critical care medicine, cardiothoracic anesthesia, perioperative medicine, regional anesthesia/acute pain, and others. Many of these fellowships are only one year in duration, and some anesthesiologists choose to do more than one fellowship over the course of their career. This being said, there are many anesthesiologists, including at major academic institutions, who do not do any clinical fellowships and are well-trained to take care of medically complex patients at tertiary care centers.

Part II: Life as an Anesthesiologist

Demographics
Detailed demographics from 2017 can be obtained from the Bureau of Labor Statistics (https://www.bls.gov/oes/2017/may/oes291061.htm). In 2017, there were about 30,000 anesthesiologists in the United States with an average national income of about $275,000. Of anesthesiologists less than 36 years of age, 38 percent were female in 2015, which was significantly higher than previously. In 2009, 54 percent of anesthesiologists were white, followed by 22 percent unknown, 15 percent Asian, 4 percent Hispanic and 3 percent black.
Earnings
Potential income can vary widely with region of the country and type of practice. Anesthesiologists in private practice or who concentrate specialties may make significantly higher incomes.

Lifestyle
Lifestyle also varies considerably with the type of career chosen. Generally, private practice anesthesiologists spend most of their time directly providing anesthesia in operating room or procedural areas. Sharing overnight and weekend call is often involved regardless of type of practice. Anesthesiologists who are specialists in pain medicine often follow patients in a pain clinic, where procedures or medications can be used to plan longitudinal care for pain issues.

Academic Medicine
There are numerous opportunities for anesthesiologists in academic medicine, both in basic science and in clinical research. In addition, anesthesiologists are becoming interested in research in perioperative medicine and population health.

Part III: Applying in Anesthesiology

How Competitive is Anesthesiology
This is a good time to orient you to the National Residency Matching Program (NRMP) website, if you are not familiar already: http://www.nrmp.org. They specifically publish main residency match data and reports with annual updates. As of the time of this writing, the public reports are available here: http://www.nrmp.org/main-residency-match-data/. While we find our specialty to be highly competitive and desirable, nothing replaces looking at the actual data yourself and making your own conclusions. As with other disciplines, one can expect the top-tier programs to be amongst the most competitive to obtain a position.

Planning the post-clerkship and senior years

Clinical Rotations
Clinical rotations in acute care specialties (such as intensive care) can be helpful. Rotations in specialties relevant to perioperative care can also be beneficial, such as cardiology or pulmonary medicine. Other electives to consider: emergency medicine, pain medicine, hematology, “point-of-care” ultrasound or a surgery rotation.

Sub-Internships
See above regarding advice on sub-internships. Sub-internships in anesthesiology provide the opportunity to have more exposure to the specialty as a medical student, a better understanding of the culture of a program you may be considering, and options for requesting recommendations from additional anesthesia faculty. Typically, HMS students are advised to enroll in only ONE anesthesia sub-
internship at one of the three main Harvard teaching hospitals (MGH, BWH, BIDMC). Communication with your individual advisors regarding sub-internships can be helpful.

Away electives
Away electives are often sought by students as “audition rotations”. However, HMS advisors generally discourage away electives; while a stellar performance may impress some faculty at the away institution, anything less may actually diminish you as a candidate. The exception to this is if your clinical performance is likely to be markedly superior to your USMLE Step scores and academic record. If you have a particular reason for a specific program (partner or spouse in same institution, family or other ties to a region) or feel you will be able to impress a program with your clinical performance, choose a rotation which will allow you to come into contact with many faculty and residents to get an idea of the culture of the program. Remember, you cannot receive academic credit at HMS for more than 2 clinical electives in the same specialty, including away electives (HMS Student handbook Section 2.14).

Other Recommended Electives
Since anesthesia is a broad specialty, electives in areas such as population health, ethics, management skills, etc. may be helpful if you have an interest in these areas.

Research
Research is not required, but you should demonstrate a strong interest in some area outside academics complementary to anesthesiology training. This may be in clinical or basic science research, but may also include community service, global health, public health, or education, as examples. Your areas of interest can exist both within and outside of research.

National Meetings
Presentations at national meetings while a medical student are certainly great, but definitely not a requirement.

Other degrees
Degrees in business or public health, or PhD degrees, can be very helpful as an anesthesiologist, especially if a specific career path is desired. Be prepared to explain how you intend to use another degree in your career, why it is complementary, and (especially if done during medical school), why you decided to obtain it. Many applicants have worked in another field prior to medical school and these experiences often enhance your application as another unique facet of you as an individual.
Part IV: Assessing your Competitiveness

What Criteria do Programs Consider?

1. Grades and your DSA
Programs will likely look at not only your performance in anesthesiology rotations and sub-internships, but also core rotations such as medicine and surgery. Many anesthesia programs will take a holistic approach, including extracurricular strengths, in assessing your competitiveness. If possible, try to complete your medicine sub-internship and surgery electives by July of your senior year. This will give the department committee enough time to complete course grades and summative comments for your Departmental Summary Assessment (DSA).

2. USMLE Board Exam Scores
As noted above, many anesthesia programs will take a holistic approach to assessing your competitiveness. The more selective programs will have more applicants who are strong in many areas, including USMLE scores. Individual programs may specify if they have specific requirements and/or recommendations with regards to the timing of taking Step 2. Discuss the timing of taking Step 2 with your advisor, as some highly selective programs may expect the score to be available at the time of application.

3. Research Experience
Research experience is not required but can definitely enhance the application. Your areas of interest will be a key part of your application and personal statement, and these can exist both within and outside of research.

4. Publications
Publications are not required although they can definitely make the applicant more attractive.

5. Extracurricular Activities
Extracurricular activities are not required but can enhance the application. Evidence of community service or leadership roles in organizations, for example, can show the student’s interest and ability to make a positive impact beyond themselves.

Getting an Interview: Attributes Residency PD’s Consider in Granting Interviews: As of the time of the creation of the document, the newly published latest results of the NRMP Program Director Survey are available here (we post the direct link for convenience, but note the URL location within the NRMP website may change over time): [http://www.nrmp.org/main-residency-match-data/](http://www.nrmp.org/main-residency-match-data/). This report specifically “examines the factors program directors use to select applicants to interview and rank. Data are reported for...specialties and the transitional year in the Main Residency Match.” The report includes figures specific to anesthesiology. One can consider looking at the report now and over time if you are still early in your medical school training.
Letters of recommendation

Students are encouraged to review the materials from individual programs with regards to specifics for number of letters required and other logistical information. Most programs will expect to see three letters of recommendation. For students applying to Preliminary Medicine programs, a Department of Medicine letter is also required; since most student will apply for these preliminary programs, virtually all students will have 4 letters total. As noted above, many programs will take a holistic approach, including assessing the quality of the letters. It may be easier for a letter writer to write a strong letter of recommendation if you have a personal connection, such as a project together, or other activities beyond shadowing for one day in the operating room. Programs may look at both who wrote the letter (e.g. senior faculty, division chief, primary mentor, etc) as well as how excited this letter-writer is about your potential to be a strong anesthesiology resident in the target program.

How many programs should you apply to?

This is very specific to the individual student and should be discussed with the specialty advisor. In general, applicants may find themselves applying to between ten and twenty programs, and they may also end up deciding to decline interviews as the process moves forward. HMS students should take advantage of the advising opportunities available when making these decisions. Students also need to seek advice about how many preliminary programs to apply to, and this should be in consultation with your faculty specialty advisor.

The AAMC Careers in Medicine website (https://www.aamc.org/cim/481318/applysmartan.html) calculates a “point of diminishing returns” for the number of programs to which applicants should apply, based on Step 1 scores. Applicants with USMLE Step 1 scores ≥235 needed to apply to 17 programs (confidence band ranging from 16 to 18) to maximize their chances of matching successfully. The likelihood of entering a residency program at this point is 67%. Applicants with USMLE Step 1 scores ranging from 219 to 234 needed to apply to 20 programs (confidence band 18 to 22) with a likelihood of entering any residency program of 70%. Applicants with USMLE Step 1 scores ≤218 needed 29 applications (confidence band 27 to 31), with a likelihood of entering any residency program at this point is 70%. For all these categories, “the addition of one application beyond these points results in a lower rate of return on an applicant’s likelihood of entering a residency program.” (data accessed 30 March 2019).

Common questions you may be asked – specialty specific: In addition to the usual “why did you choose this specialty” questions, many interviewers will try to get an idea of your ability to function in difficult situations. For example, describing a difficult situation you faced and how you managed it could be asked. Anesthesia is a team sport, an assessment of what you will be like as a member of the team and how you will enhance the residency class will also be considered. Top tier programs will likely look for potential leadership qualities, both academic and non-academic.

Communication with Programs: NRMP Code of Conduct for Applicants and Programs: We take this opportunity to revisit the NRMP website for the latest on this important question. As of the time of this writing, the NRMP Communication Code of Conduct can be found here:
Further, other policy resources can be found here: [http://www.nrmp.org/residency-applicant-match-participation-agreement/](http://www.nrmp.org/residency-applicant-match-participation-agreement/). Rather than make statements subject to misinterpretation for such an important topic, we instead take this opportunity to note the value of knowing what the code of conduct is, and where to find additional resources. We also take this opportunity to point out dishonesty (for example, telling multiple programs you will be rating them first) is just as ill-advised as it would be in many other settings.

**Advocating for Interviews**

If you are not yet invited to interview for a top-choice program, despite what you perceive to be the timing for the invitation to arrive, we recommend reviewing possible strategies with your advisor(s). Similarly, your advisor(s) can be helpful in determining an overall timeline and contingency planning up-front (i.e. before the interview season even starts). As with all aspects of this resource guide, it is easier to get through this process with faculty support than attempting to do it all alone.