



Society for
Vascular Surgery

10 Steps to Preparing a Successful Vascular Surgery Integrated (0+5) Residency Application

*Prepared by the
SVS Resident and Student Outreach Committee*

Disclaimer

This Toolkit is a collaborative work from Society for Vascular Surgery's Student and Resident Outreach Committee. It is intended to help medical students interested in applying to a vascular surgery integrated residency program. The Toolkit is a reference source only and is not intended to be a substitute for information and/or assistance from the National Resident Matching Program or the Electronic Residency Application Service.

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1) CONFIRM YOUR INTEREST IN VASCULAR SURGERY

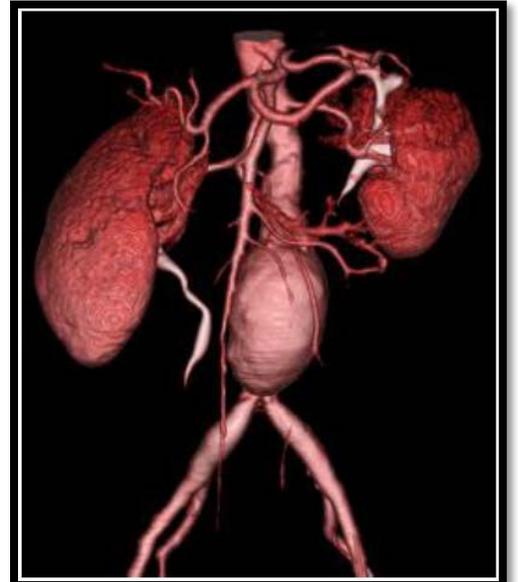
The fact that you're reading this manual means that you're considering a career in what we believe is one of the most exciting, challenging and rewarding surgical specialties, Vascular Surgery. As with any major life choice, the decision of what medical or surgical specialty to pursue after medical school should not be taken lightly. It is important that you thoroughly investigate your interests and career options to discover the best fit for both your professional and personal goals. This manual will give you a preliminary understanding of what it means to be a vascular surgeon, ways to confirm your interest in this field and get hands-on experience with vascular surgery, and how to navigate the integrated residency application process.

What Is Vascular Surgery?

Vascular surgeons treat patients with all types of vascular disease, which includes arterial, venous and lymphatic pathology. Vascular surgeons operate throughout the *entire* body, with the exception of the heart, and some surgeons even do procedures that include interventions in the intra-cranial vessels.

Vascular Diseases include:

Peripheral arterial disease (PAD)	Aneurysms (thoracic and abdominal aorta, vessels in the extremities)	Venous disease
Cerebrovascular disease	Vascular trauma	Dialysis access
Thoracic outlet syndrome	Complex tumor surgery	Assistance with exposure for operations in other specialties



Abdominal Aortic Aneurysm

Photo used with permission from Matthew Eagleton, MD.

Vascular surgeons are the only medical specialists trained to provide comprehensive care for patients with vascular disease. This care includes prevention, diagnosis, medical management, and endovascular and open surgical interventions. As a vascular surgeon, you will be able to offer your patients the entire range of potential treatment options, from medical management, to minimally invasive endovascular interventions, to open surgical operations, tailoring your treatment plan to each individual patient.

Vascular surgeons have the opportunity to perform a wide variety of different procedures. From elective to emergent cases, simple to long and complex cases, vascular surgeons perform procedures all over the body. We also work in many different locations like traditional operating rooms, hybrid operating rooms, angiography suites, cath lab, outpatient venous centers, clinics...as a specialty, we call a lot of places our office!

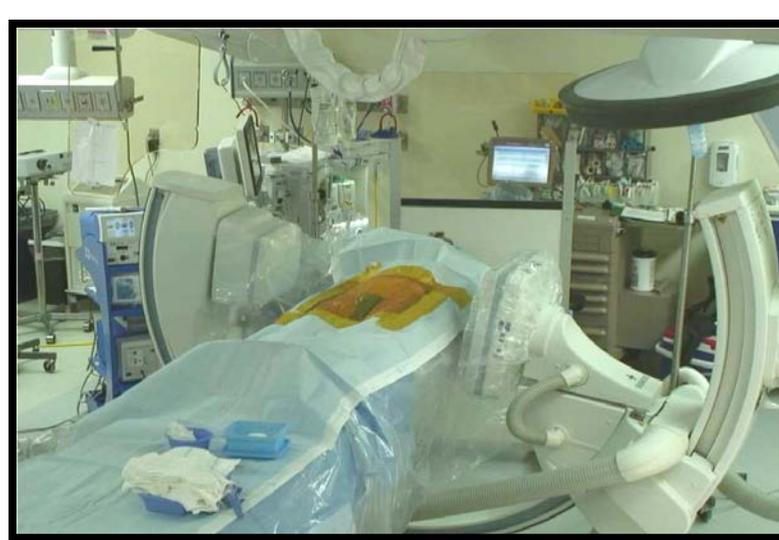
Vascular patients can be complex, are often elderly and have multiple medical problems, including hypertension, dyslipidemia, diabetes mellitus, coronary artery disease and tobacco abuse. These comorbidities impact management decisions, such as whether to offer endovascular or open operative interventions, and post-operative care.

Moreover, vascular surgeons are able to develop long-term relationships with their patients because many vascular diseases require life-long surveillance and management. This is unique among surgical specialties and is often cited by vascular surgeons as one of the most rewarding aspects of their job.



Physician using a duplex ultrasound at a public AAA screening event.

Photo used with permission from the University of Arkansas Vascular Surgery Interest Group.



Angiography suites (also known as the “cath lab”) similar to this one are among the many locations where vascular surgeons can be found.

Photo used with permission from Andres Schanzer, MD.

In addition to patient care, vascular surgeons also manage non-invasive vascular laboratories and conduct clinical and basic science research.

Vascular Surgery is an evolving field with exciting, new technology constantly being developed. Vascular surgeons enjoy staying abreast of these innovative technologies that offer great potential to improve intervention options and patient outcomes.

Why Choose Vascular Surgery?

Now more than ever, the choice to become a vascular surgeon fulfills an acutely growing need created by the aging population. According to the U.S. Census Bureau, from 2000 to 2030 there will be a near doubling of individuals aged 65 years and older, from approximately 35 million to an estimated 71 million. The number of people age 80 years and above will more than double in the same time period – from 9.3 to 19.5 million.¹

In 2012, there were only 3,130 active vascular surgeons in the United States participating in patient care. This is calculated to be 101,000 people per active vascular surgeon, the largest ratio of all medical subspecialties in the country. The shortage of vascular surgeons is exacerbated by the realization that 40.2% of practicing vascular surgeons are over the age of 55.²

As our patient population continues to increase in size and age, there will be an increasing demand for dedicated, well-trained vascular surgeons to meet this need in order to provide high quality care to vascular patients. What does that mean for you? There will be many available job options and job security as a vascular surgeon providing exciting growth and career opportunities.



Video Resource: *Choosing Vascular Surgery as a Career in Medical School*
(vsweb.org/VideoChoosingVS)

How to Investigate Your Interest

This brief primer is designed to provide some basic background information about vascular surgery; there is so much more to explore! If what you have read so far continues to inspire you, it's time to explore your interest further. Below are a few ways to find out if a career in vascular surgery is the right fit for you.

1. Get Connected with A Mentor

A vascular surgeon mentor can provide invaluable insight into the specialty, answer questions, and offer advice and guidance. Identifying a mentor may seem intimidating but remember that most people who love what they do are eager to share their passion.

- How to identify and connect with a mentor:
 - ◇ If your school has a Surgery or Vascular Surgery Interest Group, this is a good place to start. Ask to be connected with a vascular surgeon who is interested in mentoring medical students.
 - ◇ Contact the coordinator for the third year core surgery clerkship. This person should be able to direct you to appropriate vascular surgery faculty.
 - ◇ In addition to local resources, the Society for Vascular Surgery offers a mentor matching program and a mentorship program at the Vascular Annual Meeting each year (vsweb.org/Mentoring).
- Your mentor can provide opportunities for you to shadow in clinic or in the operating room.
- Ask to assist with vascular research projects.

2. Participate in Vascular Surgery Rotations

- **Shadow A Vascular Surgeon**

As a first or second year medical student, take the opportunity to shadow a vascular surgeon for a day or two. Most surgeons are excited to share their day-to-day life as a vascular surgeon with medical students interested in the field. This provides an early opportunity for exposure to vascular surgery. Some institutions provide mini-electives, 1-2 week rotations specifically for first and second year medical students, in order to increase exposure to the field.
- **Core Surgical Clerkship**

A vascular surgery rotation may be incorporated into the Core Surgery Clerkship during your third year of medical school. Contact the Clerkship Director well in advance to inquire about opportunities to rotate with vascular surgery.
- **Vascular Surgery Elective Rotations**

Sub-internships provide an in-depth experience on a vascular surgery service. You should plan to complete a vascular surgery sub-internship late in your third year and/or early in your fourth year of medical school. This is a critical learning experience that can affirm your interest in pursuing a career in Vascular Surgery. This rotation also allows the vascular surgery faculty to get to know you and provide letters of recommendation when it comes time to apply for residency (*see Section 5*).

- **Vascular Surgery “Away Rotations”**

Many vascular surgery programs offer the opportunity for fourth year medical students to complete an “away rotation” at their institution. These rotations are best suited to individuals who are planning to apply to 0+5 programs and should be viewed as an “audition” at the hosting program (see *Section 4*).

3. Complete Research Projects

- Publications or presentations at vascular surgery meetings are important opportunities to build your CV and meet leaders in the field.

4. Seek Out Hands-on Experience Through Simulation

- Attend the SVS Vascular Annual Meeting’s Open and Endovascular Simulation Training Workshop as part of the SVS Scholarship Program for medical students.
- Seek out vascular simulators at your institution.
- Ask your senior residents how to borrow some suture to tie knots and suture at home.

5. Participate in Surgery/Vascular Surgery Interest Groups

- Invite vascular surgery faculty to give a demonstration on suturing skills or vascular anastomoses.
- If your medical school does not have a Vascular Surgery Interest Group, consider starting one. Not only will you learn a great deal by organizing interest group activities, you will be taking on a leadership role among your peers. This is a great opportunity for your professional development.

◇ See the SVS Website for the VSIG Toolkit (vsweb.org/VSIG)

2) DIFFERENT PATHWAYS TO VASCULAR SURGERY BOARD CERTIFICATION

As you explore your interest in Vascular Surgery, you should start to consider the training options to become a board certified vascular surgeon. The primary objective of any type of vascular surgery training program is to produce highly competent vascular surgeons.

The Integrated (0+5) vascular surgery residency programs are designed to provide a comprehensive, yet highly focused, training experience and continue to increase in popularity. There are, however, several other excellent training options that can launch your vascular surgery career, including the 5+2 (traditional General Surgery Residency with a Vascular Surgery Fellowship) and 4+2 (Early Specialization in Vascular Surgery) programs.

Vascular Surgery Training Paradigms

Pathway	Duration (years)	Certification	Institution	Number of Programs*
Integrated (0+5)	5	Vascular Surgery only	Single	48
Fellowship (5+2)	7	General Surgery + Vascular Surgery	Can be different	92
Early Specialization (4+2)	6	General Surgery + Vascular Surgery	Single	3

*NRMP Match Data 2015-2016

Online Resource: AMA FREIDA

AMA's FREIDA Online is a database with over 9,400 graduate medical education programs accredited by the Accreditation Council for Graduate Medical Education, as well as over 100 combined specialty programs. It provides an easy way to quickly compare programs.

<http://www.ama-assn.org/ama/pub/education-careers/graduate-medical-education/freida-online.page>

Integrated Vascular Surgery Residency (0+5 Pathway)



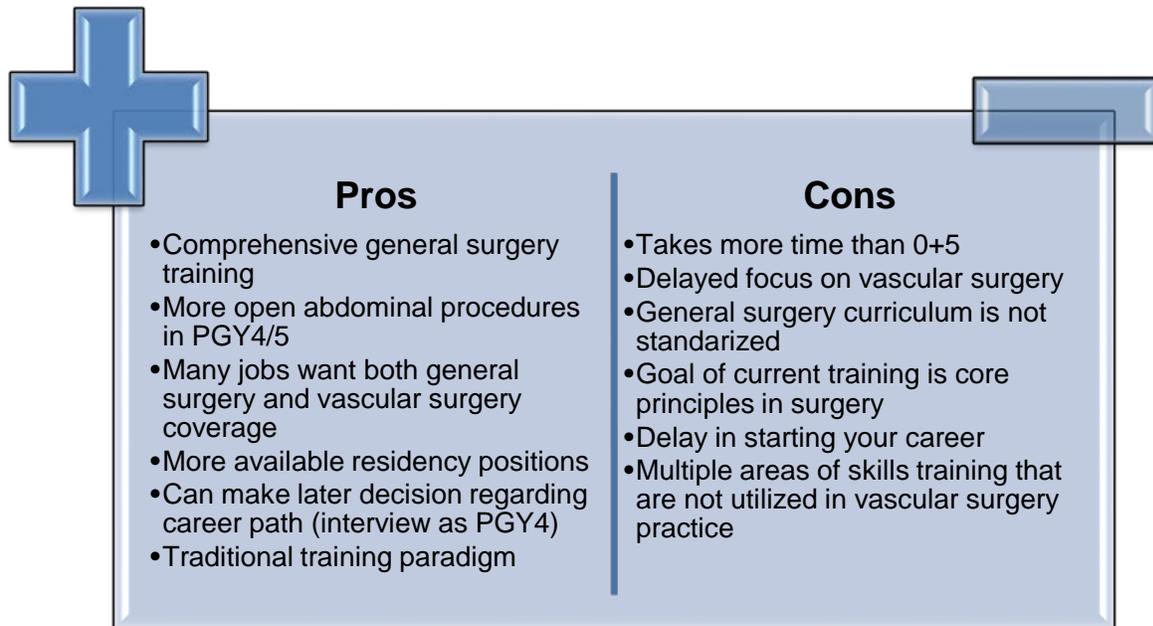
Pros	Cons
<ul style="list-style-type: none">• Streamlined education (five years vs. six-seven years)• More dedicated vascular time and mentorship• Allows early development of specialty identity• Integration with vascular fellows advantageous to both groups• Shared call necessary with 80 hr/week schedule• Two senior years equivalent to fellowship with respect to chief responsibilities	<ul style="list-style-type: none">• Board eligible in only vascular surgery• Requires early commitment to vascular surgery; less time to explore other career options• Many 0+5 programs are new and are still developing. Changes may be made to the structure while in residency.

In 2006, the Accreditation Council for Graduate Medical Education (ACGME) approved the Primary Certificate in Vascular Surgery which eliminates the requirement for certification in general surgery prior to certification in vascular surgery.

As a result, the vascular surgery integrated (0+5) residency program was established. This track is designed for trainees who have chosen to pursue a vascular surgery career during medical school. Three years are devoted to vascular surgery and two years to core surgical training. Core surgery rotations may occur throughout the first four years of training. Trainees in this track are eligible for board certification in vascular surgery only.

If you have been able to confirm your interest in vascular surgery as a medical student, the 0+5 residency training option is a great choice! Your vascular surgery training will be streamlined over five years rather than the six to seven years needed to complete other training paradigms. In addition, you will have more overall dedicated time for your vascular surgery education, both in practicing technical skills and continuing to expand your knowledge base.

Vascular Surgery Fellowship (5+2 Pathway)



The traditional route to board certification in vascular surgery has been the vascular surgery fellowship, or 5+2, training program, which consists of five years of general surgery residency plus two years of vascular surgery fellowship. Trainees in this track are eligible for board certification in both general surgery and vascular surgery.

What to Look for in a General Surgery Residency Program if You Are Interested in Vascular Surgery

- Well-respected surgical program (typically academic-based)
- Balanced program (not overwhelming in one specific area)
- Vascular experience
 - Good combination of open and endovascular cases
 - Number of months spent on vascular and at what point in residency
 - Number of vascular cases done by residents (minimum is 44, much more is preferred)
 - Arrangement with vascular surgery fellows
 - Ample vascular surgery research opportunities
 - Well-respected vascular program
 - Track record of placing general surgery residents into vascular fellowships
 - Fellowship programs will expect applicants to have done 12 months of vascular surgery during surgical residency

Early Specialization in Vascular Surgery (4+2 Pathway)

The Early Specialization (4+2) Vascular Surgery Program is a less common training option, but should be mentioned for completeness. This training pathway provides an option for early tracking into vascular surgery for general surgery residents. Individuals who identify an interest in vascular surgery during their general surgery residency can choose to enter a 4+2 program if one exists at their institution. If you are not competitive for the 0+5 program or continue to debate about whether vascular surgery is the right career for you, you may want to consider applying to general surgery programs at institutions that offer a 4+2 pathway. Currently, those institutions include Oregon Health Sciences University, University of Texas-Southwestern, and the University of Virginia.

3) BE AWARE OF THE APPLICATION PROCESS AND TIMELINE

As you explore your interests and training options, make sure you are aware of the residency application and interview process, as well as the timeline for completing important steps in this process. Stay organized and keep up with deadlines along the way.

MS1/MS2

- Get exposure and confirm interest
- Complete USMLE Step 1
- Initiate research projects
- Arrange vascular rotation(s) for MS3 year

MS3/MS4

- Complete Core Surgical Clerkship
- Participate in vascular surgery electives early in MS3 & 4 years
- Participate in Away Rotations
- Meet with mentor to strategize rotations
- Take USMLE Step 2

July MS4

- Start ERAS application
- Update CV
- Prepare for vascular surgery Sub-Internships

August MS4

- Investigate residency programs
- Discuss with vascular surgery mentor
- Complete Sub-Internships and Away Rotations
- Obtain letters of recommendation

September - October MS4

- Register for NRMP
- Select your programs
- Finalize letters of recommendation
- Complete ERAS application.

November - January MS4

- Ensure ERAS application is complete (close in early-November)
- Follow-up on letters of recommendation
- Schedule and complete interviews
- Send thank-you emails or letters to program directors and physicians who interviewed you

February MS4

- Compare programs, consult with advisors and family
- Finalize your rank list
- Ask for phone calls to be made on your behalf to your top programs
- Contact top programs to reaffirm interest once your rank list has been finalized

March MS4

- Match Day!

4) BECOME A COMPETITIVE APPLICANT

Early involvement with professional activities during medical school is important because Integrated Vascular Surgery Residency programs continue to be competitive. The first 0+5 programs were established in 2007 and have proved to be very popular from the outset. The 0+5 matches have been rather competitive over the past few years.

In the 2016 Match, there were 48 0+5 programs, offering 56 positions. We expect additional 0+5 programs to be created over the next five years which will create additional positions. Today there are approximately two applicants per available 0+5 position.



It is important for you to make the most of your time in medical school to become a competitive applicant by building your curriculum vitae, more commonly referred to as a “CV.” This document will serve as a compilation of your professional activities and accomplishments throughout your career. Identifying opportunities to build a strong CV during medical school will set you up for success when you apply for residency, your first job, and beyond.

Video Resource: *Creating and Building a Great CV*
(vsweb.org/VideoBuildingCV)

Ways to make the most of your medical school experience include:

1. Confirm Your Interest in Vascular Surgery (See Section 1)

- It is important that your decision to pursue a career in Vascular Surgery is well-informed.
- Make sure you have a realistic understanding of both the positive and negative aspects of the profession.
- Your application and interviews for residency will be strengthened by activities and accomplishments that demonstrate both your understanding of and commitment to the specialty.

2. Maintain Strong Academic Performance

- Grades/Class Rank
- USMLE
 - It is common for residency programs, particularly in highly competitive fields, to utilize an arbitrary cut-off score below which they will not review your application. There are no specific cut-off scores for application review for integrated vascular surgery residency programs, but as a competitive surgical residency, you should strive to maximize your USMLE Step 1 score.
 - If your USMLE Step 1 score is not as competitive as you would like, you should consider taking Step 2 early so that your scores are available for ERAS. Discuss this decision with your advisor.
- Alpha Omega Alpha Medical Honor Society

3. Complete Clinical Clerkships

Programs will look at how you perform on all major core clerkships, not just your surgical rotations. Excellent performance in both medical and surgical clerkships demonstrates that you are hard-working, conscientious and able to be a team player.

- **Core Surgery Clerkship (MS3 year)**

Typically about 8 weeks in duration, the focus is on General Surgery with some time given to sub-specialties.

Contact the Clerkship Coordinator EARLY to determine if Vascular Surgery is a required component. If it is not, find out if you may be able to rotate on Vascular Surgery as a sub-specialty component of the Core Clerkship or as a separate elective.

- **Vascular Surgery Sub-Internship(s)**

This is your chance to immerse yourself in the world of Vascular Surgery and experience as much as you possibly can! Your sub-internship should be challenging, exciting, exhausting and fun, all at the same time.

- Know the answers, but don't be arrogant
- Be prepared to work hard
- Do a case report with your staff
- Ask to present a case or research
- Try to take a patient load. Present patients and understand their disease process
- Take responsibility for your patients and follow them full circle
- Make contacts with all the vascular staff, residents, etc.
- Be the first there and the last to go
- Pre-round
- Get to the OR whenever possible
- Know everything about your patients you operate on, before and after the surgery
- Be a team player
- Anticipate needs, become a valuable asset to your team
- Follow-up and follow through without being asked to do so
- Volunteer for call
- Read as much as you can
- Be helpful to the residents, but don't upstage them
- Ask for feedback
- Do not embellish or lie, if you do not know the answer simply state that you do not know but will find out, trust is critical in surgery
- Give it your all

- **Away Sub-Internship(s)**

- Talk to your program director for options.
- Keep in mind:
 - Always treat a sub-internship as if it was an “audition” for a residency program
 - Performing well on a sub-internship can help you become more competitive at that program

PROS	CONS
<ul style="list-style-type: none"> • An additional month of experience / exposure • Learn different perspectives and surgical approaches • Gain insight into what you want in a program • Find out the atmosphere of a prospective program • Can possibly use faculty for letters of recommendation • Can be especially helpful if your medical school doesn't have a 0+5 program • Another place to shine 	<ul style="list-style-type: none"> • You are at a disadvantage compared to other students at the institution you are visiting because you don't know “the lay of the land.” • A poor performance can cause the program to not consider interviewing you.

4. Participate in Vascular-Specific Electives

- Continue to prepare for your intern year in vascular surgery by scheduling pertinent electives during your fourth year of medical school.
- A few suggestions include:
 - Cardiology
 - Radiology
 - Neurology/Stroke
 - Surgical Critical Care
 - Nephrology

5. Involvement in Local, Regional & National Vascular Surgery Organizations

- Most vascular surgery organizations offer medical student membership. Membership perks may include emails or newsletters with current topics in vascular surgery.
- Conferences for vascular surgery organizations often include medical student programming. Attending these programs helps you to learn about the specialty and network with students, residents and vascular surgeons.

- Societies like the SVS will provide awards or travel scholarships for applicants to their medical student forums at their national meetings. This not only provides networking and exposure opportunities, but it is a nice addition to your CV.



- A few notable organizations that you should be aware of include:
 - Society for Vascular Surgery (www.vascular.org)
 - Vascular & Endovascular Surgery Society (www.vesurgery.org)
 - Society for Clinical Vascular Surgery (www.scvs.org)
 - American Venous Forum (www.veinform.org)
 - American College of Surgeons (www.facs.org)
 - American Heart Association (www.heart.org)
 - Regional vascular societies:
 - New England Vascular Surgery Society (www.nesvs.org)
 - Eastern Vascular Society (www.easternvascular.org)
 - Midwestern Vascular Surgery Society (www.vascular.org/mvss)
 - Western Vascular Surgery Society (www.westernvascularsociety.org)
 - Southern Association for Vascular Surgery (www.savs.org)

6. Research/Professional Development

Do not attempt to participate in research if this detracts from your ability to achieve excellence in your course work, grades and USMLE board scores. You must focus on your education first. That said, medical school is a great time to initiate research.

- Take advantage of formal research opportunities offered by your medical school. Many medical schools offer research programs, and even scholarships to support your work, between the first and second year. Check with your academic advisor early to learn about your options.
- Vascular research is ideal because early involvement in vascular-specific research demonstrates your interest in and commitment to the field. However, it is more important that your research is productive than that it is vascular-specific. Find a research lab or mentor who has a track record of publishing their work. Once you confirm your interest in vascular surgery, try to supplement your research with projects in the field.
- Programs are looking for your critical thinking skills, research skills and ability to follow through on a project.
- Be a finisher! While learning how to do research is a valuable experience, you can't put "participation" on your CV. Publications and presentations are the currency of academic medicine. You must be able to see your project through and disseminate your findings in some concrete form.
- Consider obtaining an advanced degree. You may be able to interrupt your medical school course work to obtain an MPH or PhD, etc.
- Presentation Opportunities
 - Abstracts and posters should be included in your CV even if they are local presentations
 - Consider your State ACS Chapter or local surgical societies for presentations
 - Submit an abstract for the poster session at the Vascular Annual Meeting
 - Present a case report at a regional and/or national society to get high visibility even if you don't have a formal research project that is ready to report
 - If it isn't published, it doesn't exist...
 - Every presentation is a job interview (always be prepared)

7. Network and Develop Mentorship Relationships

Meeting and getting to know Vascular Surgeons and current Vascular Surgery Trainees, both residents and fellows, is an excellent way to learn about the specialty and determine if it is the right career for you. Furthermore, the vascular surgery community is small and networking at any stage in your career allows you to confirm your interests in the field, continues to expose you to different types of vascular practices and will help you develop mentors who can serve as advocates as you proceed through both the match process and through training.

- Seek out mentorship, don't wait for a mentor to find you.
- Talk to everyone and ask to shadow:
 - Mentors
 - Division Chief
 - Vascular Program Directors
 - Research Advisors
 - Current vascular surgery fellows and residents
- Research the field to learn more about the people in it (i.e. Vascular.org, institutional web sites, student surgery interest groups, mentorship/shadowing programs, etc.).
- Contact SVS to find a mentor or get help to connect with a vascular surgeon at specific institution.
- Seek out the faculty involved in your clerkships, vascular cases, etc.
- Ask to shadow someone in the vascular surgery department.
- Create a list of people who seem to be a good fit for your needs.
 - Begin contacting them to introduce yourself – relay your interest in vascular surgery
 - Contact SVS to help make an introduction
 - Have specific goals established for the mentorship (see the SVS Mentee Toolkit for more details)
 - Try to form a professional relationship
- Attend local, regional and national vascular surgery meetings. Participate in medical student – specific programs at these meetings.
 - Apply for a Travel Scholarship for the Vascular Annual Meeting
 - Attend the Residency Fair at the Vascular Annual Meeting
 - Actively participate in the Welcome Mentor Program at the Vascular Annual Meeting (vsweb.org/FRSprogram) – all scholarship recipients and registered medical students attending the meeting are automatically matched with a mentor

5) CREATE YOUR APPLICATION

Your Integrated Vascular Surgery Residency application will be a compilation and representation of your years of hard-work. If you have truly made the most of your medical school experience (see *Section 3*), you are well on your way to creating a strong, competitive application. The major components to the ERAS application include the Medical Student Performance Evaluation (MSPE), Letters of Recommendation, Personal Statement, and USMLE scores.

Medical Student Performance Evaluation (MSPE- formerly called the Dean's letter)

- This document is a written transcript of your performance in medical school and a required component of your residency application. The School of Medicine prepares MSPEs for all students in their final year of medical school regardless of your residency application plans. They are prepared in accordance with the AAMC's guidelines. ERAS annually releases MSPEs to residency programs on October 1. MSPEs for all applicants nationwide are released on this date.
- The MSPE includes the following:
 - Selected Qualifications & Accomplishments
 - Academic Progress
 - Grades
 - Class Rank
 - Summary
 - Medical School Information Page
- For more information on the MSPE, contact your academic advisor or visit the AAMC website (https://www.aamc.org/members/gsa/54686/gsa_mspeguide.html)

Letters of Recommendation

Collect A Minimum of Three Letters

Carefully Choose Whom to Ask

- Most of your letters should come from vascular surgeons.
- Surgeons from other specialties who know you particularly well may be appropriate, but be sure they are aware and supportive of your choice to pursue vascular surgery. This should be clear in their letter.
- Identify individuals with whom you have worked extensively during your rotation(s). The more they have seen you in the OR and on the wards the better!
- If you have done a significant amount of research, you should ask your research mentor for a letter even if he/she is not a vascular surgeon.
- If you have done an away rotation, you should obtain a letter from the Department Chair or Program Director from that institution
- Consider asking: Vascular Surgery Program Director, Division / Department Chair, Research Mentor, "High Profile" faculty members (see below)

Ask EARLY

- Ask potential letter writers for performance feedback midway through your sub-internship. Let them know that you hope they will be able to write a strong letter for you once the rotation is complete. This alerts the individual to pay attention to your performance, enabling them to write a more personal letter.
- Follow up once you have completed the rotation and provide clear instructions regarding when you need the letter and how they should submit it.

Schedule a Meeting with Letter Writers to Ensure A Personalized Letter

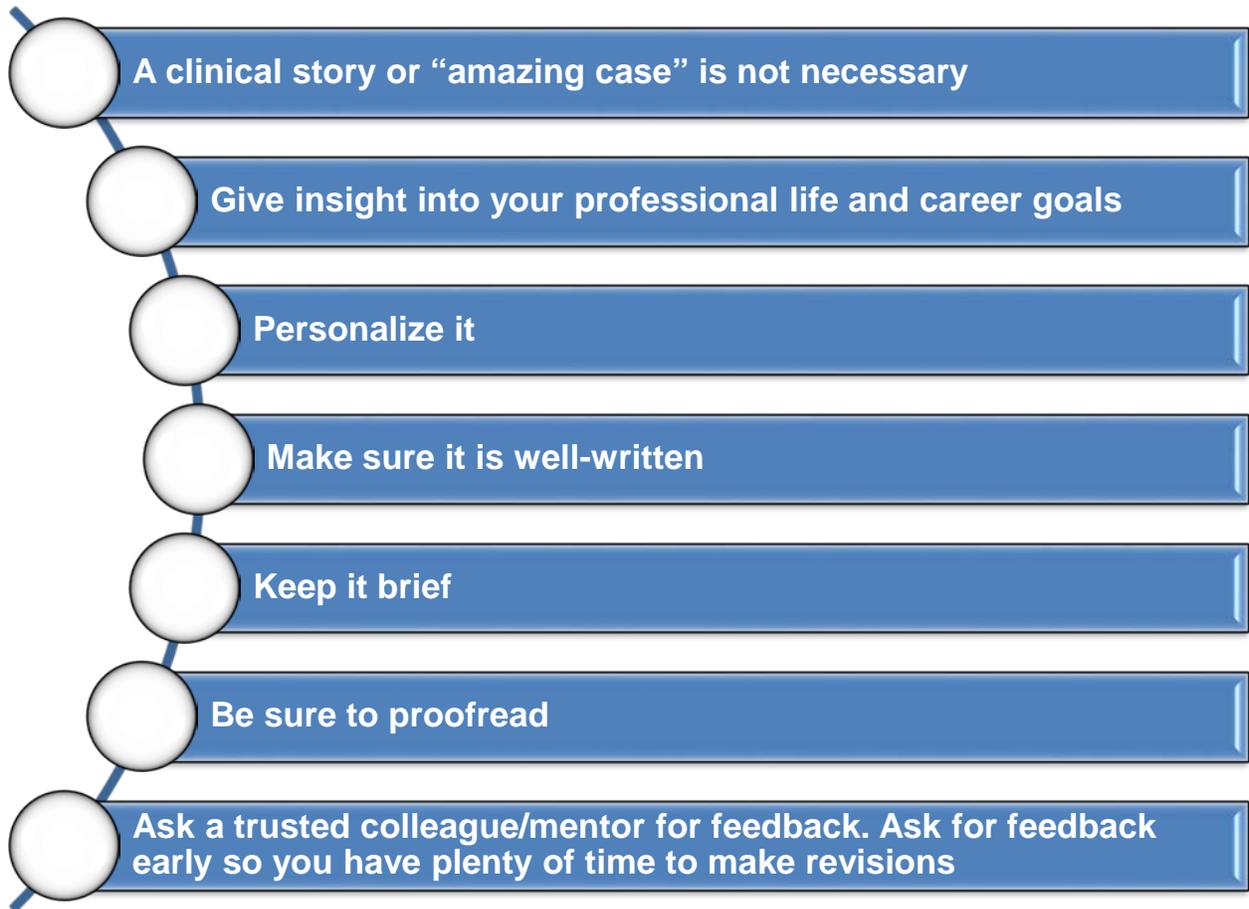
- Discuss career goals
- Give them your CV (this should not be a draft version)
- Share your personal statement
- Describe your research in a brief paragraph
- Share with them any other information you would like to be in the letter

High Profile Faculty Letters of Recommendation (i.e., president of a vascular society, well-known expert, etc.)

- If you have someone at your institution that is considered a high profile faculty member, you are encouraged to get a letter from them, but be sure to ask early for the letter and make sure they know you well enough to write a personalized letter. Their high profile is not helpful to you if their letter is generic because they do not know you well.

Personal Statement

- *This should be different than the personal statement used for your general surgery residency application (if you are applying to both, see Section 7, Application Strategies).*
- To prepare an effective personal statement:



USMLE Scores

- Discuss your USMLE Step 1 score with your mentor. If your USMLE Step 1 score is not competitive, you may choose to take USMLE Step 2 early in your MS4 year. A strong Step 2 score that is available in time for your application demonstrates your medical knowledge and test-taking ability.

Helpful Tips

- Review your CV one year prior to application.
- Schedule sub-internships or away rotations during late MS3 or early MS4 year. You want enough time to obtain letters of recommendation from your sub-internship experiences.
- Identify a mentor/faculty member that you can rely on for honest feedback of your CV and personal statement.
- Check your institution's policy for time off from rotations, especially those related to interviewing.
- Try to not take too much time away from important rotations.
- Keep separate applications if applying to both general surgery residency and 0+5 programs.
 - Personal statements should have a different focus for each type of residency program
 - Letters of recommendations should directly reflect the focus of the residency program you are applying to (i.e., don't use several letters from vascular surgery program directors for your general surgery residency application or vice versa)

What to Avoid

- Casual photo for application
- Spelling errors
- Bland and generic letters of recommendation
 - Wrong name/inconsistent name in letter
 - Letter is not personalized

6) INVESTIGATE PROGRAMS & FIND THE RIGHT FIT

Integrated vascular surgery residency programs consist of 24 months of core surgery experiences and 36 months of vascular surgery (see *Section 4*). Beyond this basic ACGME requirement, programs vary widely in structure and content. There are many factors to consider when looking for a program that is the right fit for you.

Research Years

Interruption of clinical training for research, sometimes referred to as “going into the lab,” is a common practice in graduate surgical education. Some 0+5 programs require dedicated research time and others do not. Many programs will post information regarding if they offer research years on their web site. Applicants also are encouraged to inquire about research years during the interview process.

If you are interested in pursuing a career in basic science, an academic residency with more access to NIH funding, grants and scientists is more appropriate.

Although clinical research can be done without taking time away from clinical duties, dedicated time for clinical research can also be an invaluable experience if you are considering an academic career. Programs with research requirements may offer graduate degrees to develop your clinical research skills such as a Masters in Clinical Research (MS) or a Masters in Public Health (MPH).

Rotation Schedules

The rotation schedule is not standardized across 0+5 programs. All programs must have 24 months of general surgery (core) and 36 months of vascular and endovascular surgery, but the rotations are typically scheduled in accordance to what works best for the program.

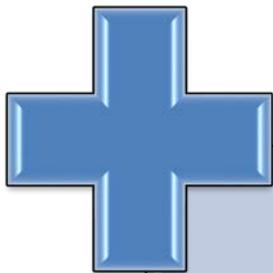
During the chief year (PGY5) all curriculum is devoted to the vascular service. All 0+5 programs must provide a core of surgical principles, as well as detailed knowledge of vascular imaging (Angiogram, CT and MR), vascular lab interpretation, vascular medicine, endovascular skills and traditional open vascular surgery. Core training typically includes pre- and post-operative care, airway management and critical care, trauma, nutrition, management of infections and complications, basic technical experience in skin and soft tissue, abdomen and alimentary track and any other basic knowledge deemed appropriate for a vascular surgeon.

It is important for applicants to investigate how the rotations are structured at each interested program to find out if the schedule is appealing to them. Most programs post the rotation schedule on their web site.

Academic vs. Clinical Residencies

While all programs have academic and clinical components, some residencies are better known for producing “academic” or “private practice” vascular surgeons and/or have a reputation as an academic or clinical residency. When researching programs, you should look at the job history of previous trainees (if applicable). This will give you better insight into the focus of the program. Additional knowledge can be gained by comparing the following:

- Basic research
- Case volumes
- Clinical research
- Faculty
- Hospital setting



Academic	Clinical
<ul style="list-style-type: none">•Interested in pursuing a career in academic surgery•Greater access to resources (i.e., simulation center, animal labs) and networking (i.e., funding for courses)•Less interested in “business” aspects of medicine•You enjoy academic endeavors such as research, writing articles/chapters, presenting at meetings•Interested in an opportunity to improve CV•Want to do a lot of complex cases on a regular basis in your training (i.e., fenestrated stent grafts, TAAA, pediatric vascular)•Interested in taking care of “challenging” cases of patients with severe vascular disease•Larger faculty means more points of learning•Enjoy teaching	<ul style="list-style-type: none">•Want to be prepared for the “business” of medicine•Less interested in academic pursuits such as teaching or research•Don’t want to compete with other learners (i.e., surgical residents, fellows, PAs, nurses, students, other specialists, etc.)•Interested in a front-line practice•Interested in “bread and butter” cases•Smaller faculty equals more personal learning similar to an apprenticeship•Value efficiency – practices and hospitals at clinically-based programs tend to be more streamlined and efficient (less scut, fewer distractions, etc.)•Interested in more medical “amenities” (surgeon’s lounge, doctor’s cafeteria)

Does My Choice of Academic vs. Clinical Residency Limit My Practice Choices?

No matter what type of residency-based training you choose you are never limited to a specific type of practice for the rest of your career. Trainees from academic-based residencies have gone into private practice and trainees from clinical-based residencies have worked at academic practices. It is typically much easier to transition from academic practice to private practice than the reverse as many clinical-based residencies might not emphasize some key academic requirements such as research.

If you do choose an academic residency but want to practice in private practice, some key ways to prepare yourself for private practice are by learning more about billing and coding, establishing a referral base, covering call, understanding contracts as well as doing off-site rotations.

If you are still unsure of what type of practice you want to pursue, an academic residency is probably a better choice for you in order to keep all of your options open.

Case Volume and Faculty

Generally, case volumes will be higher in clinical residencies allowing for broad training but complex cases are more commonly found in academic residencies. The faculty and hospital setting also will differ at these types of programs. At an academic program you will find a mix of faculty and various hospital settings such as the VA and university center. Clinical residencies typically are held at a single hospital and feature a faculty comprised only of clinicians.

You will find that some programs are more clinically busy than others, with operative case numbers in the 90th percentile nationally. On the other hand, some programs will have more of a “cerebral” feel, with well-developed didactics and teaching conferences to supplement lower case volume. It is important to note that all accredited programs will provide the required minimum case numbers mandated by the ACGME for graduation. You will receive good training with adequate operative experience at either type of program, but you should consider how you learn best. Some individuals will thrive on high volume while others will do well with more didactic and study time.

“Fit”

Ultimately, finding the right training program for you is very much about finding the “right fit.” This is a difficult concept to define and is even more difficult to figure out from a website. This aspect of exploring programs will become much more apparent during the interview process. The bottom line is that every

A 0+5 program that is accredited will provide you with the basic experiences and tools that you will need to become a board certified vascular surgeon. In order to be happy and enjoy your years of residency, you want to be at a program where you “fit in” with the people and culture. To this end, be yourself at your interviews. Be honest about your personal and professional goals. This will help you find a group of like-minded individuals with similar goals and personality. Residency should be fun!

Geography can have a significant impact on where you choose to train for many reasons. Consider where you enjoy living and what hobbies are important to you (e.g., big or small city, climate, etc.). It is also important to consider the needs and wants of your significant other and/or family. If your family is not happy in a particular place, it is unlikely that you will be happy there either!

7) APPLICATION STRATEGIES

Now that you have put together your application and reviewed the 0+5 programs, it's time to finalize your application strategy. At this point you should meet with your advisor and vascular surgery mentor to review your application, focusing on your strengths and weaknesses.

Depending upon your overall competitiveness to match into a 0+5 program, you need to determine:

- How many 0+5 programs to apply to
- Which 0+5 programs to apply to
- Whether or not to apply to General Surgery programs
- Accepting/declining interview offers
- Back-up plan

How Many 0+5 Programs Should I Apply to?

This depends on several factors including the competitiveness of your application, family/significant other considerations and geographic limitations. If your application is strong, you may be able to apply to as few as ten programs (remember, you may not receive an invitation to interview at every program you apply to). Weaker applicants should apply more broadly.

Which 0+5 Programs Should I Apply to?

Hopefully reviewing 0+5 program websites with the help of Section 6 has helped you to identify programs that you are interested in. Review this list with your advisor. Be sure to apply to a mix of more competitive and less competitive programs. It is okay to “shoot for the moon” and apply to the top programs but you will want to round out your list with less competitive programs to help ensure a successful match.

Should I Apply to General Surgery Programs as well?

Vascular Surgery Residency Programs remain highly competitive with about three applicants for every one position. Depending upon the strength of your application, it may be prudent to apply to general surgery and/or preliminary surgery positions (keeping in mind that general surgery, though not as competitive as integrated vascular surgery, is not a “shoe-in”).

You should discuss this decision carefully with your advisor. If you decide to apply to General Surgery programs, keep in mind:

- Letters of recommendation should be different for vascular surgery and general surgery applications. Be sure that your letter writers know which application you intend to use their letter for.
- Personal Statement may need to be different for each application. It is okay to describe your desire to pursue vascular surgery to a general surgery program, but review your statement carefully. Avoid statements that you are applying to integrated vascular programs.
- Unfortunately, some General Surgery programs may choose not to interview you if they are aware that you are applying in Vascular Surgery.

How Should I Handle Invitations to Interview?

Respond promptly. This is courteous. Also, interview slots fill quickly and you will want to be able to select the date that works best for you.

You may have the pleasant problem of having more interview offers than expected. Be realistic about how many interviews you will be able to complete (travel time away from school and cost). If you find you need to cancel an interview, do so promptly. The Vascular Surgery world is small and word of your unprofessional behavior if you simply do not show up for an interview or cancel at the last minute will travel quickly.

What Is My Back-Up Plan?

The National Residency Match Program generally works well, with a highly successful match rate. Unfortunately, although uncommon, even the strongest applicants to any given specialty are at risk of not matching. Therefore, it is wise for everyone to have a back-up plan. That said, if you and your mentor recognize that your application is not highly competitive, it is imperative that you consider what you will do if you do not match into a 0+5 position.

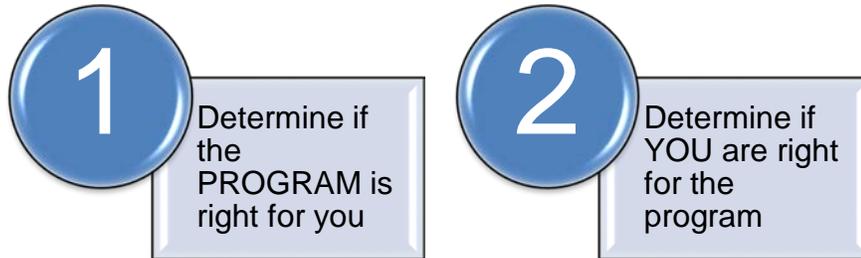


The Supplemental Offer and Acceptance Program, or “SOAP,” is one option to identify an unfilled residency position. Be prepared to participate in the SOAP. For more information, check out the NRMP website (<http://www.nrmp.org/residency/soap/>).

The alternative training pathways discussed in Section 2 are all excellent training options. A general surgery residency position will keep you on track for your future career in vascular surgery. Preliminary positions are also important options to consider.

8) PREPARE FOR YOUR INTERVIEWS

There Are Two Main Objectives for Interviews:



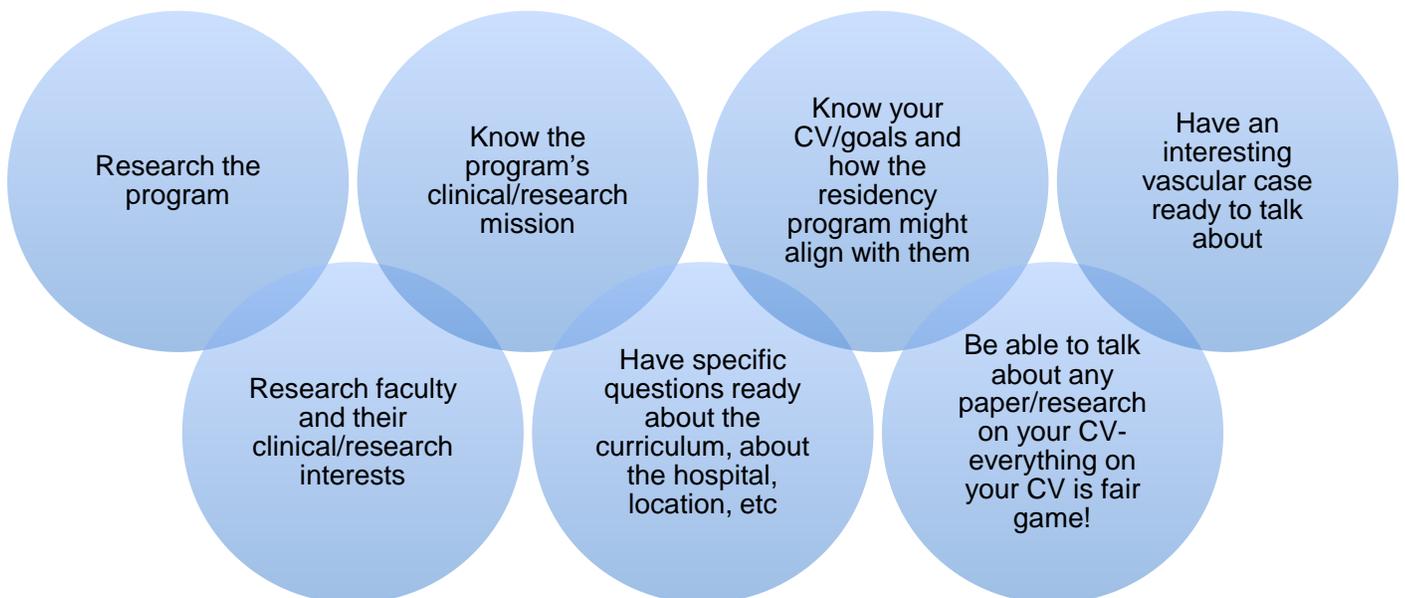
In most cases the focus of the interview is really on personality and “fitting in.” By the time you have been chosen for an interview, the program has already pre-selected you based on your application, letters of recommendation, etc. The interview provides an additional way for the program to determine if you are a good fit in their culture.

In addition to determining if you are a good personality match for the program, faculty also will be looking for the following key items:

- An accurate application
- Genuine enthusiasm about vascular surgery

Helpful Tips

- Be prepared:



Helpful Tips *(continued)*

- Be honest.
- Be professional.
- Treat the interview process like a job interview.
- Respond to invitations promptly.
- Make an effort to attend pre-interview events. These events are typically optional but a good way to meet everyone and get a sense of resident morale.
- Talk with everyone and be nice/polite to everyone- from support staff to faculty. Every interaction can have repercussions.
- Always remember that your fellow applicants may become friends but you are vying for the same positions.
- Current residents are your best source to find out what your potential life will be like.
- Work with your faculty and mentors throughout the process.
- Remember the interview goes both ways.
- It may be helpful to frontload vascular surgery interviews and backload general surgery interviews.
- Sometimes scheduling less desirable interviews early in the process allows you to practice- especially your very first interview.
- Be strategic about interview scheduling- try to schedule based on geography if possible to reduce expenses.
- Don't underestimate first impressions.
- Wear comfortable shoes- you will be doing a lot of walking on tours.



Create a Document to Compare Programs' Strengths/Weaknesses

A simple way to compare the strengths and weaknesses of the visited programs is to create a chart or spreadsheet you can easily just add notes to after each visit. It is best to add comments when they are fresh in your mind, such as on your return trip from the interview. This document will be a critical tool as you begin the process of ranking the programs, especially if your interviews are staggered over several months rather than a few weeks. Common items for comparison include:

- Case volume and mix
- Clinical experience
- Rotation schedule
- Faculty interaction with residents
- Interaction with fellows (if applicable)
- Interaction with general surgery residents
- Formal educational curriculum
- Level of responsibility
- Research opportunities
- Geography
- Surrounding community
- Having a support system/family nearby

Also, be sure to write down your general gut feeling about a program, this can be your most useful note when going back to make your rank list!

Prepare Questions

Clinical Experience/Case Volume

- What types of cases are typical?
- Are there any cases that the program does not have high volume or that the residents do not get good experience with?
- Is there a balanced experience in both open and endovascular cases? If one or the other is low, how do they handle that?
- If they have a 5+2 program, how do integrated residents and fellows interact on services as far as case coverage?

Changes

- Are there any anticipated changes in the program or faculty in the near future?
- Is any faculty planning to leave and/or have any faculty left recently?
- Are they planning to close the 5+2 program? (if applicable)
- Are there any planned changes for the 0+5 program, and how may that affect you? (if applicable)

Exams and Graduates (if applicable)

- What percent of your residents complete your program? Has there been significant attrition? If so, why?
- What percent of your graduates pass the specialty boards on their first attempt?
- What types of jobs have your graduates obtained (academic or private practice)?

Educational Opportunities

- What is the didactic teaching schedule?
- How is travel to meetings/conferences determined?

Research

- What are the program's research commitments and expectations? (i.e., clinical research projects, manuscripts, book chapters, any requirements?, etc.)
- Can you realistically get research done without time away from clinical training? (i.e., research commitment, expectations, protected research time, etc.)
- If research is required, are there moonlighting opportunities?

Anticipate Questions

- Why did you choose vascular surgery?
- Why do you like our program? Why do you want to come here to train?
- Be prepared to explain your research and anything else you've chosen to put in your CV
- What are your career goals? (i.e., what do you want to do after residency, in 5 years, 10 years, etc.?)
- Why did you become a doctor?
- What was the most interesting case you have been involved in? (What are the steps of that case? Complications? Literature surrounding the case?)
- What motivates you?
- How would you describe yourself?
- What was the most difficult situation you encountered in medical school?
- What is your most important accomplishment?
- What are your strengths? What are your weaknesses?

Be Prepared for Tricky Situations

- *What happens if a program director asks you about the other programs you applied to or how you are planning to rank them? Are you obligated to provide that information?*
 - No. Section 6.0 of the Match Participation Agreement prohibits programs from requiring applicants to reveal the names or identities of programs to which they have or may apply and from requesting any information about how you plan to rank programs. Any program that requires an applicant to disclose such information is in violation of NRMP policy and will be investigated by the NRMP.
 - If this question does come up, politely state that you are weighing your options and then focus on discussing the things that you like about their program.
- *What happens if a general surgery program asks about your interest in 0+5 programs?*
 - Again, Section 6.0 of the Match Participation Agreement prohibits programs from requiring applicants to reveal the names or identities of programs to which they have or may apply and from requesting any information about how you plan to rank programs (see above for specific details). The best policy in these types of situations is to always be passionate about your career choice.
- *What happens if a program director contacts you to say they are ranking you in a matchable position?*
 - According to NRMP, you may volunteer information about where you have applied and how you plan to rank programs, but programs CANNOT require you to disclose the information.

Red Flags

During your visit, don't forget to be on the look-out for any troubling or problematic events, activities, or interactions. Some common red flags include:

- No time scheduled with current residents
- Evasive answers to rumors of anticipated changes
- Lack of enthusiasm of program from faculty and residents
- What you see should represent the best of the program – if it isn't, something may be amiss
- Trust your intuition – if something feels off, it probably is...



Don't Forget

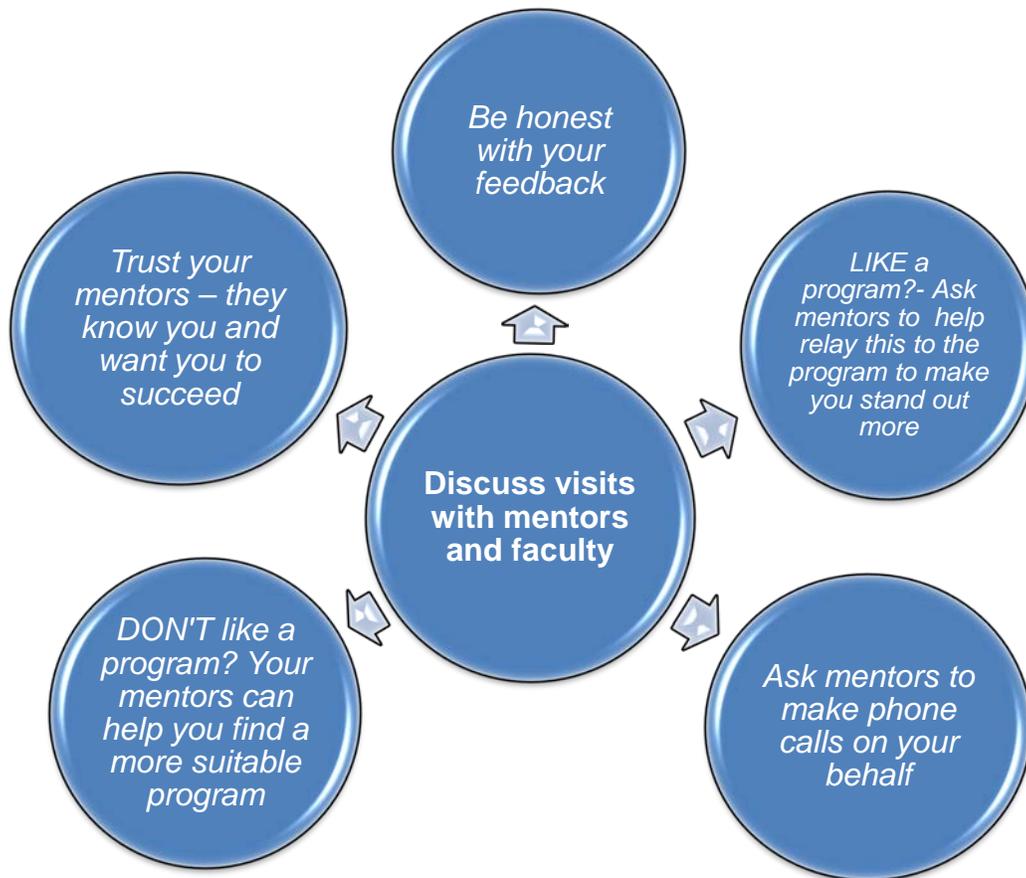
- The interview is all inclusive – it starts when you are contacted requesting the interview and continues through all the correspondence, meals, staff, residents, secretaries, and program coordinators.
- Work with your faculty and mentors.
- Know your goals.
- Be prepared.
- Be professional.
- Dress professionally. You don't want to be remembered for what you wore!
- Don't be arbitrarily "quirky" just to stand out in the crowd.
- Vascular surgery is a small world-
 - Be courteous to all programs even if you aren't a good fit.
 - Always remember faculty talk to each other and genuinely want to help residents find the best program for them.
 - You will interact with faculty/colleagues repeatedly in the future.
 - Not choosing a program doesn't elicit hard feelings.



Video Resource: *Interview Process for Vascular Fellowships and Residency*
(vsweb.org/VideoInterviewProcess)

9) FOLLOW-UP AFTER INTERVIEWS

- Send thank you letters and express your continued interest
 - You may express strong interest in your top programs but be realistic about how many programs you consider in this list.
 - According to NRMP, both applicants and programs may express their interest in each other; however, they shall not solicit verbal or written statements implying a commitment.
 - If there is a clear stand-out program that is your first choice, consider asking your local program director or mentor whether he or she would be willing to call that program on your behalf. This type of direct, personal endorsement can go a long way to support your application.
- Analyze data from visits to compare programs
- Submit your final rank list by the deadline
 - Be sure to submit your rank list based on YOUR preferences, regardless of any outside information you may receive.



10) PREPARE FOR RESIDENCY (STAY ENGAGED DURING YOUR MS4 YEAR)

Congratulations! You have matched into a Vascular Surgery Integrated Residency Training Program! Before residency begins, it is very important to stay involved and remain engaged with vascular surgery during your fourth year of medical school.

a. MS4 Rotations

- Consider taking electives during your MS4 year that will help prepare you for a surgical residency. Experiences to consider include:
 1. **Critical care** - Many programs include critical care as part of their core surgical rotations.
 2. **Radiology**- As a surgical resident you will never rely on a radiology reading of an imaging test, so start to learn how to read your own studies
 3. **Cardiology**- Vascular surgery patients almost always have comorbid cardiovascular disease. This provides an excellent exposure to risk factor modification, preoperative risk stratification and management of acute cardiac problems
 4. **Neurology**- Treatment of cerebrovascular disease is common in vascular surgery and a neurology rotation with a specific focus on stroke patients would be helpful prior to starting residency
 5. **Nephrology**- Dialysis access is another large portion of vascular surgeries; understanding the medical management of these patients, how patients lead up to dialysis and even spending some time in a dialysis clinic is extremely educational to a vascular surgery resident

b. Boot Camp Programs

- Some medical schools provide boot camp programs to those starting any type of surgical rotation. Often these involve suturing workshops, basic critical care management of acute post-operative issues and simulations sessions.

c. Research

- Continue your involvement with research projects and follow through on any projects that are not yet completed. You have more time for this now than you will again in your career!

d. Reading

- Handbook of Patient Care in Vascular Diseases, 5th edition

e. Take a Vacation!

- Take some time to visit family and friends prior to starting residency.
- It is important to keep the ability to rejuvenate and reconnect during your periods of vacation
- Make sure your housing is all set prior to starting residency so you are ready to start your integrated vascular surgical residency program!



¹ No authors listed. Public health and aging: trends in aging -- United States and worldwide. MMWR 2003;52:101-6.

² AAMC 2014 Physician Specialty Data Book.