



# NAVIGATING SURGICAL CRITICAL CARE FELLOWSHIP SUCCESSFULLY AND BEYOND

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RELEASED FALL 2022



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# P R E F A C E

Dear Surgical Critical Care Fellows,

Congratulations on matching to a surgical critical care fellowship! You are about to embark on a journey that will undoubtedly be important as you launch your careers. The Surgical Critical Care year will go by quickly and we hope you use this resource as you navigate your fellowship.

This handbook is modeled after "A Guide to Fellowship Training Programs in Surgical Critical Care and Acute Care Surgery", an earlier handbook created by the Surgical Critical Care Program Directors Society (SCCPDS). The aim of that handbook is to familiarize senior residents with the various surgical critical care and acute care surgery programs that exist and to provide practical tips on how to approach the application process.

To the best of our knowledge, no resource exists that guides individuals through the next phase after they have matched at a fellowship program. As mentioned before, fellowship is a short period of time and to launch a successful career, you must acknowledge that there are many moving parts. We hope that you can use this handbook to maximize success.

Another unique feature about this handbook is that it represents a strong collaboration between three organizations: the American Association for the Surgery of Trauma Associate Members (AAST AM), SCCPDS, and the Eastern Association for the Surgery of Trauma (EAST). These organizations have previously collaborated on other ventures including the annual professional development series and the Virtual Job Fair.

Additionally, we took advantage of the membership of each organization. The authors who contributed to this handbook represent a range of individuals with different perspectives: young surgeons who are beginning their careers, mid-career surgeons, and well-established surgeons. Each author was carefully sought after and asked to contribute their thoughts and wisdom.

This handbook is not meant to be read cover-to-cover in one sitting, but as a resource that you can reference throughout your fellowship. We wish you the best of luck in your future endeavors!

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# **SECTION I:** Starting Off Your Fellowship

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# CHAPTER 1:

## Setting Your Goals for Fellowship

Kaitlin A. Ritter, MD

When starting fellowship, it is important to help set yourself up for success. Early identification and planning of goals during your fellowship can help set you down the best path to optimize your training time.

Setting goals for your fellowship should actually begin before you start training and occur during the interview season. Fellowship training and priorities are different than those considered during residency selection. During general surgery residency, you obtain the basic training and skill set that you will apply to your specialty. In trauma, acute care, and critical care fellowship you want to identify a program that will help fill the gaps from your general surgery training and set you up for the type of eventual career/practice you would like to have. The type of training offered and credentialing/certificates you will graduate with are important considerations that may vary depending upon your ambitions. It is important to identify these gaps and long term goals so that you effectively interview and rank programs based upon your overall aspirations.

Once you have reached fellowship you can take these preliminary goals and further develop your objectives with a focus on several specific areas as outlined below.

- 1. Clinical Excellence** - First and foremost your primary goal for fellowship should be to become an excellent physician. This requires a critical evaluation of your knowledge, technical, and interpersonal skills. What were the gaps in your residency training? How well do you know the scientific literature for your major disease processes? What techniques or procedures do you still need to practice? What new technical skills do you want to learn? Take a deep look at what you were exposed to during your residency training and identify areas for growth and improvement. Actively seek out those cases. Find mentors to help teach you those skills. Be actively engaged in fine tuning your education. The AAST case minimums can be a good place to start to help define the types of cases and clinical scenarios expected for our specialty.
- 2. Become a Life Long Learner** - By this point in your academic career you have most likely learned how to study for tests and what techniques work best for you. With fellowship, the high stakes tests will soon be in your rear-view mirror and your future education requires a thoughtful plan of how to be a lifelong learner. Use your time during fellowship to develop study habits or plans that allow you to stay updated on the current literature and continues to reinforce your knowledge base. Using resources like the AAST trauma modules, various trauma journals, and educational conferences can help you create a comprehensive plan that will serve you well in your future learning. Adult learning requires active engagement in the education process and self-motivation to seek out the most up to date information, practices, and technical skills. Developing a plan during fellowship will not only make you successful in training, but in your future career as well.

- 3. Academic Endeavors and Professional Societies** - Depending upon your eventual career aspirations, fellowship can be a time to improve your academic and research skills. Do you want to learn how to write a grant, set up a research study, or do quality improvement research? There are a variety of way to approach the “academia” of surgery and you can use your fellowship time to explore these different areas. Identify mentors who are performing different types of research you are interested in and ask to be involved. You can dabble in a variety of academic endeavors or focus your work on a single area, but use your fellowship time to help direct yourself down the different paths you want to explore.

Along those lines, fellowship can be a time to become involved with the various trauma/critical care professional societies. Each society has a different flavor and focus with multiple ways for fellows to become involved. Do you want to help write practice guidelines, work on multi-institutional studies, or work in advocacy? Using fellowship as a time to explore these different options can help you make connections and guide your future career path.

- 4. Professional Development** - During fellowship training you will have the opportunity to work within a trauma system and with providers who have multiple roles in that system including trauma medical director, fellowship director, ICU director, and quality improvement officers. You can use your time during fellowship to explore these various positions and see if any of them appeal to you. You can also use this time to participate in advanced training programs such as ASSET, ATOM, or obtaining instructor status in ATLS. Planning in advance what professional spaces and credentialing you want to explore during training can help you optimize your time and experience during fellowship.
- 5. Find a Mentor** - While having the goal of obtaining a mentor is important, it is not something that can be scheduled or planned. Mentorship is something that develops naturally as you develop relationships with the people around you. Paying attention to the type of work that the faculty are involved in and finding physicians with common areas of interest can help guide you to people who may be good mentors. It is also important to recognize that one person may not be your mentor for all things. It is possible to have a mentor for research, another for clinical work, and another for work-life balance.

The most important thing when setting goals for your fellowship is to remember that fellowship is just the start of your career. It is important that you find balance and pace yourself. Set realistic expectations and ask your mentors about your goals and listen to their experience and advice. The goals for everyone will be different and it is important to only do the work that serves you. Use your goals as a guide to help focus your training and development during fellowship and you will set yourself up for success in your future endeavors.

# CHAPTER 2:

## How to Jumpstart Your Fellowship

Eileen M. Bulger, MD, FACS

Congratulations! You have just matched into your fellowship training program so what should you do next? Fellowship is a time to not only hone clinical skills in your field of interest, but also an opportunity to establish your career focus and set yourself up for a productive academic career. Whether it is a one- or two-year program, there is not a lot of time to complete additional projects, so it is best to hit the ground running. The first thing to do is make a list of your goals for the next one or two years. What do you hope to achieve? What additional skills do you need to set you up for a successful career? Are there new areas you want to explore?

Once you have your list, research the faculty you will be working with in fellowship. What is their academic focus? What have they published recently? Is there someone on the faculty whose interests align well with yours? Once you have done your homework reach out to the fellowship program director and ask if you can set up some virtual meetings with them both to discuss your goals with the program director and start to develop relationships with potential mentors. If you are planning to visit to look for housing, etc ask if you can set up some time to come and meet the faculty in person or shadow on ICU rounds. All of these strategies are designed to start to build relationships and help you identify a mentor within the program. Some programs will arrange this for you, but many will not, so it pays to be proactive.

When you meet with a potential mentor, share with them your interests and goals and let them know how you feel your interests align with theirs. If you are interested in doing a research project, ask them if they have any ongoing projects they might need help with. If so, you can start the background reading on that topic in advance. This phase in your career is a good time to offer to help with book chapters and review articles as well. These prompt you to do a deep dive into the literature on the topic and can help you develop research questions. Review articles are also highly cited. If you already have an idea for a research project you want to pursue, identify what you will need to accomplish to get started. If you need IRB approval, see if you can work with the clinical research staff to have that submitted and approved before you start fellowship. This will avoid significant delays waiting for this approval process.

Perhaps research is not your primary interest and you want to focus on surgical education. The same strategies apply, including finding a mentor and looking for opportunities to support curriculum development, skills training, etc. Are you already an ATLS or ASSET instructor? If not ask your program director if there are any instructor training courses that you can take. These courses often fill quickly so getting your name on the roster in advance may be key. Is there a simulation center on campus that you can work with? If so ask to speak to the director in advance to identify opportunities to participate.

Understanding the clinical care environment is also critical. Every institution and trauma system has subtle differences in clinical practice and culture that are important to understand. Ask for access to any existing clinical care protocols, guidelines, or pathways that you can review in advance. Make sure you review protocols related to the initial evaluation and management of patients as well as ICU clinical practice guidelines. Examples include the massive transfusion protocol, trauma imaging guidelines, VTE prophylaxis guidelines, antibiotic management, burn resuscitation algorithms, etc.

Many centers have these resources online and can grant you access. You can also speak with the current fellows. What elements of the clinical practice did they find different when they started? Is there something you will be doing in fellowship that you have not had exposure in residency? If so, more in depth reading on that topic in advance is advisable. For example, in my institution, our acute care surgeons manage the extracorporeal life support program and so we provide ECMO training modules in advance for our incoming fellows and simulation after they arrive.

Finally, your trauma center exists in the context of a trauma system. Take some time to review the trauma system structure for the state or region. How is the trauma system managed? What is the geographic catchment area of your center? As a fellow you may be involved in transfer discussions and decisions so understanding the regional referral base is important. What are the transportation resources in the region? How long are the transport times? Once you move to the area, take some time to explore the state/region. It really helps to understand the limitations of the rural critical access hospitals referring you patients if you visit a few. Are you interested in learning more about trauma system development? Ask your program director if there are state or regional committee meetings you can attend.

Fellowship is an exciting time. You are now focusing your clinical work in the area you are most passionate about. Enjoy the experience and seek out every opportunity for further professional development. Welcome to the field of Acute Care Surgery!



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# CHAPTER 3:

## Assimilating to a New Environment

Alexander C. Schwed, MD

Congratulations on choosing to pursue fellowship training in Acute Care Surgery (ACS), Surgical Critical Care (SCC), or both! As compared with residency training, the expectations, time commitments, mentoring relationships, and overall feel of your working life are likely to be quite different. With such a change, the adjustment to this new way of working and learning is likely to be a potential source of anxiety. It is reassuring to know that, at least in the published literature on the subject, the majority of survey respondents who have completed an ACS or SCC fellowship are happy with their fellowship choice and would undertake the same training again given the chance.<sup>1,2</sup> With this life change that you are about to undertake, herewith is a highly subjective list of ideas and recommendations about how to successfully navigate the change from resident to fellow, and some tips for success both for fellowship and for your next steps as faculty.

- 1. Redefine Your Role:** Fellows are not residents. This may seem obvious, but as a starting point it is important to realize that a significant proportion of your experience, training, goals, expectations, and relationships with faculty will be filtered through this lens. With some exceptions, you have already completed at least 5 years of surgical training prior to arriving to fellowship. Stepping into this new role, it is important to embrace your more senior level of training from the get-go. Arrive to ICU rounds prepared, take true ownership over your ICU and surgical patients, be a team leader, model excellent behavior, and embrace the idea that more junior trainees will look to you as a role model. This one- or two-year experience is a bridge to being an attending; put yourself in that mindset from the beginning as a way of contextualizing these newfound responsibilities. Ask yourself what your practice as faculty will look like and then model that behavior and make those decisions.
- 2. Stay Humble:** There are, as they say, hundreds of ways to skin a cat. One of the wonderful things about pursuing fellowship training is exposure to new ways of doing, thinking, and seeing. Be open to the newness - not only of your training position, but also to ways of tackling familiar clinical problems. Avoid relying solely on your prior notions of how things should happen, and be wary of invoking your prior institution, especially early in your fellowship, as a reason to do something one way. Showing mental flexibility and being open to critique are the hallmarks of a mature intelligence; show all your new colleagues that you possess such openness and intellectual maturity.
- 3. Bring Your "A Game":** Being open to new experiences also comes with a challenge: you will need to show your faculty and new colleagues that you deserve their trust and autonomy. Do not expect to be completely unsupervised in any domain early in your training, as your faculty are working to assess your readiness and want to be around to help keep you and patients safe, to be a teacher and leader themselves, and to model expectations and behaviors to you, their trainee. It is unfortunately true that there is a perception that residency graduates are unprepared for fellowship<sup>3</sup>; take this knowledge as a personal charge to defy these expectations by committing to academic and clinical excellence while also being open to supervision and guidance, especially early on.
- 4. Keep Good Records:** This advice applies to multiple domains of fellowship: keep an accurate and up-to-date log of your cases and procedures; maintain personal records or reflections

about cases and lessons learned; be an excellent steward of ICU care by keeping good records of the day's plans and the week's goals for patients; help your faculty keep track of patient care and patient progress (or lack thereof); write down research ideas or quality improvement projects that you want to tackle. This list could go on and on, but truly one of the advantages of fellowship training is that, because you are no longer a resident, you do have a bit more bandwidth to tackle "big picture" projects. Remember that writing is a form of thinking; use some of this newfound bandwidth to write things down.

5. **Commit to a Reading Plan:** This bit of advice sounds, unfortunately, like much of the generic feedback given to medical students and residents ("read more"), but it is true that fellowship represents a time wherein you should commit to the idea of taking charge of your lifelong education. While you may rely on a textbook as a grounding source material, you should also make a concerted effort to seek out primary literature to support or refute your current management of critically ill patients. Most programs will have a curriculum that includes journal clubs or presentations; make an effort to go beyond this minimum and really work towards establishing a pattern of true lifelong learning.
6. **Grow and Maintain Your Professional Relationships:** Fellowship is a wonderful opportunity to grow and develop your network of professional mentors, colleagues, and friends. Make sure to also maintain your relationships with people from residency, including your former co-residents. They are often a wonderful source of support and guidance as you embark on this professional transition (and are likely to be going through similar growing pains as you!). Also keep yourself open to any and all mentoring opportunities at your new institution. These may be outside of your new division or, even, outside your department; embrace fellowship as a time to expand your professional network and strengthen the one you already have in place.
7. **Life Exists Outside the Hospital:** It is easy to say, and often much harder to do, but it is important as a fellow to realize that your life outside the hospital deserves attention as well. Taking time for self care and rejuvenation outside of work, however that exists for you, is important not only for mental well-being, but also to help you be the best fellow you can possibly be. Resting, recharging, and resetting will also help you as you make this personal and professional adjustment. Seek out new opportunities outside the hospital; just as you are trying on new ways of doing and being as a budding Surgical Intensivist and Acute Care Surgeon, so, too, can you tackle new extracurricular pursuits. Explore your new city, make friendships and relationships outside the hospital, and use the time you have to embrace your non-working self and your non-working life. Again, it's often easy to say and harder to do, but is absolutely worth the work.

Assimilating to any new environment takes time, a sense of humor, and a willingness to do things differently than you may have done before. Embrace new opportunities, open your mind to change, and enjoy this new step on your path towards finishing training.

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# CHAPTER 4:

## Finding a Mentor

Joseph M. Galante, MD, MBA, FACS

### Introduction

You are moving to a new stage in your professional life. This stage may involve moving to a new program, a new city, meeting new colleagues, and shifting your support structure. Even those that stay at the same institution will see growth and development in their professional support structure merely with the transition from chief resident to fellow. In the new role as a fellow, one will grow both formally and informally as an Acute Care Surgery (ACS) surgeon. The formal aspects of this process are evident: educational modules, lectures, and clinical instruction. The informal elements, navigating department politics, establishing a national reputation, and finding a mentor, are less clear, yet, just as important. The purpose of this chapter is to provide you with some advice to “find a mentor.”

### What is a mentor?

You may say this is an easy question to answer because one has relied upon mentorship throughout college, medical school, and residency. Mentorship has even contributed to one’s success in matching into a fellowship. While this is true, many often confuse the different roles others play in our lives. There are three categories: advisors, coaches, and mentors. Each serves a function and should not be considered the same. An advisor is often formally assigned to an individual; think of an advisor in college. They have experience steering advisees through a process and guide how to navigate the hurdles one may encounter. This relationship is often limited in duration. As one overcomes limitations and moves forward with their career, the advisors often change to provide new advice for upcoming challenges. While not necessarily assigned, a coach usually focuses on overcoming challenges relating to performance. One can think of a coach for leadership skills. A mentor is a relationship and encompasses all that a relationship entails.

Mentors and mentees have a genuine relationship. Both individuals benefit. Since it is a relationship, it develops like any relationship and is not assigned. The relationship does not have a time constraint and, in many cases, can be life-long. The relationship is dynamic and may look different at the end of fellowship than at the beginning. While an advisor or coach may develop into a mentor, the chances of this occurring are small and rely upon being assigned to someone you connect with. While this chapter is “Finding a mentor,” it may be more appropriate to be titled “Finding a Friend” since that is really what a true mentor becomes.

### How to Find a Mentor

To find a mentor, one must apply the same principles one uses to find a friend. The website “Momtastic.com” provides seven rules for picking friends, and these hold the same for finding a mentor after ever so slightly being tweaked.

#### #1. Pick a friend who will lift you up

Your relationship with your mentor should make you feel good. Your mentor should celebrate your accomplishments. They should be there for you when things don’t go as you would hope. If you dread meeting with your “mentor,” that is probably an unhealthy mentor/mentee relationship, or it may be more akin to an advisory relationship.

#### #2. Pick a friend who is not afraid to act their age

Your mentor should not be someone who is finishing a fellowship with you. While this could be a re-

warding friendship, it does not bring the experience of a mentor to the relationship. Mentors should have the professional experience that you hope to develop.

### **#3. Pick a friend who will push you to be better**

Picking a friend who will push you to be better is important with any relationship, especially a mentor. This “pushing” can be overt or covert. The mentor may suggest you do something to improve, or they may show you through their actions. Mentors should not be a source of negativity for you. The role of the mentor is to build you up and support you. Mentors are in the relationship because they are getting something out of the relationship just like you. They often find joy in seeing your success.

### **#4. Pick a friend with high standards**

We often look at our mentors as role models early in the relationship. We recognize the outward-facing aspects (the chief of the division, the fellowship director, or the famous name at your institution) of people in our fellowship. While many of these people may be a great choice, one should look beyond the titles or fame and choose someone who lives by the standards you would like for yourself. One should set their aspirations very high when seeking a mentor.

### **#5. Pick a friend who is kind**

Picking a kind friend is excellent advice no matter what age you are. Finding a friend or mentor who is kind allows you to build a healthy relationship. Their kindness adds a positive aspect to the relationship. This kindness does not mean they bring you cookies for your meetings; instead, they think about your feelings and needs. Kind mentors help set you up for success and not use you to advance their careers.

### **#6. Pick a friend who can hang out at your house**

While you may not have your mentor over to your house during fellowship, you can use this as a litmus test for finding the mentor. If the person you are developing a relationship with is not someone you would want to in your house, or more importantly, not meet the other important people in your life, this should give you pause. Perhaps you cannot articulate the issue; take this as a sign that you need to look for another mentor.

### **#7. Pick a friend who is real**

Picking someone real goes back to the roles of an advisor or a coach. These are often formal and assigned roles that may not have the personal connection required in a mentoring relationship. You have enough life experience to know who you are and what you are looking for in a friend. Since this is a relationship, the mentor cannot go through the motions or hide their true self. These are signs of a bad relationship, and trying to build on this relationship is like building a house on sand.

Finding a mentor and cultivating the relationship will take a bit longer than your first week of fellowship. You should enter fellowship with that expectation and not rush anything. You are likely to develop many relationships, even more than one mentor, which is ok and expected. In the beginning, some relationships may not work, which is also ok. Forcing a relationship is never a wise choice when developing a lasting friendship, especially with a mentor.

## **Conclusion**

Finding a mentor during fellowship, is an exciting prospect. Over time the relationships will develop, and one day you will suddenly realize that you have a new friend.



# SECTION II: The Basics

Section Editor: Salina M. Wydo, MD, FACS



SCC  
PDS



# CHAPTER 5:

## The Surgical Critical Care Fellowship Case Log

### Christina Colosimo, DO, MS

The Surgical Critical Care Case Log is essential to the successful completion of your Surgical Critical Care Fellowship. In this section, we will look at what is required to be entered into the ACGME Case Log System, review the required categories of cases, and will share tips and tricks for efficient and accurate logging.

There are two main purposes for maintaining a Case Log system. From the fellows' perspective, a Case Log is required to ensure that educational minimums in the specialty of Surgical Critical Care have been met prior to matriculation. From the Program's perspective, it is a way to demonstrate to the ACGME that the Program has sufficient case volume to support the education of the complement (number) of fellows accepted by the Program.

**What Are The Case Minimum Requirements?** (as listed at: [https://www.acgme.org/globalassets/Defined\\_Category\\_Minimum\\_Numbers\\_Surgical\\_Critical\\_Care.pdf](https://www.acgme.org/globalassets/Defined_Category_Minimum_Numbers_Surgical_Critical_Care.pdf))

In order to graduate you will have to have cared for and recorded case minimums in the areas of: advanced mechanical ventilation, airway management, shock, continuous renal replacement therapy, dysrhythmias, neurologic disorders, hepatic failure, non-invasive cardiac output monitoring, nutrition, gastrointestinal disorders, infection, and miscellaneous procedure. Below in the table are the required categories, an explanation of what can be logged under the category and the minimum number of cases required for each category. As an example for mechanical ventilation the explanation states that in order to log a patient case they need to be ventilated for over 48 hours to be counted. The total number of cases require to graduate are 200, however once you hit all the minimums for each category you will be over 200 cases.

|    | Category                               | Surgical Critical Care Requirement  | Required Minimum* |
|----|--|---|-------------------|
| 1  | Advanced Mechanical Ventilation        | Advanced ventilator management of patients with respiratory failure (mechanical ventilation >48 hours)  | 35                |
| 1a | Airway Management                      | Endotracheal or nasotracheal intubation   | 10                |
| 1b | Airway Management                      | Fiberoptic or rigid bronchoscopy  | 15                |
| 2  | Shock                                  | Management and resuscitation of patients with all types of shock, including performance of invasive and non-invasive monitoring techniques and the use of vasoactive agents   | 25                |
| 3  | Continuous Renal Replacement Therapy   | Comprehensive management of patients with acute kidney injury, including use of renal replacement therapies; management of hemodialysis; management of electrolyte disorders and acid-base disturbances; and application of knowledge of the indications for and complications of hemodialysis          | 5                 |
| 4  | Dysrhythmias                           | Diagnosis and interpretation of patients with dysrhythmias and complex cardiac disorders, including application of trans-esophageal and transthoracic cardiac ultrasound and transvenous pacemakers, and the management of cardiac assist devices   | 10                |
| 5  | Neurologic Disorders                   | Preventive management, diagnosis, and treatment of patients with coma, delirium, and other neurologic disorders; evaluation and non-operative management of severe traumatic brain injury and intracranial hypertension, including management of intracranial pressure and acute neurologic emergencies | 10                |
| 6  | Hepatic Failure                        | Diagnosis and management of patients with acute and chronic hepatic failure, including management of ascites, assessment of coagulation status, and use of component therapy; and identification of appropriate candidates for orthotopic liver transplantation   | 5                 |
| 7  | Non-invasive Cardiac Output Monitoring | Diagnosis and treatment of complex cardiac disorders, including application of trans-esophageal and transthoracic cardiac   | 10                |

|    |                            |  |     |
|----|----------------------------|--|-----|
| 8  | Nutrition                  | Nutritional care of critically-ill and injured patients, including use of enteral and parenteral nutrition   | 20  |
| 9  | Gastrointestinal Disorders | Comprehensive management of patients with acute GI disorders (such as C. difficile colitis, GI bleeding, intestinal ischemia, intestinal fistulae, post-operative complications, pancreatitis), including utilization of gastrointestinal endoscopic techniques  | 15  |
| 10 | Infection                  | Comprehensive management of patients with infectious diseases and infectious complications, including application of isolation techniques, pharmacokinetics, drug interactions, and management of antibiotic therapy; diagnosis and management of nosocomial infections; and management of sepsis and septic shock | 25  |
| 11 | Miscellaneous Procedures   | Performance and supervision of ICU procedures, including central venous catheter placement, tube thoracostomy, thoracentesis, paracentesis, diagnostic peritoneal lavage, fasciotomy, escharotomy, and proficiency in management of procedural complications   | 25  |
| 12 | Injury                     | Comprehensive management of severely injured patients with complex co-morbidities  | 20  |
| 13 | Endocrine Disorders        | Comprehensive management of patients with acute endocrine disorders, including those of the pancreas, thyroid, adrenals, and pituitary   | 10  |
| 14 | Organ Failure              | Comprehensive management of patients with multiple organ failure   | 15  |
| 15 | End-of-Life Care           | End-of-life care, including declaration of brain death, palliative care, and withdrawal of support   | 10  |
|    | Summary                    | Total critical care patients managed   | 200 |

\* Patients may fit into multiple categories and may be counted more than once

**Where Do I Log My Cases?** Link to website: <https://apps.acgme.org>

There is also an official app that can be used to facilitate logging (to download the app, go to your device's version of an app store and search "ACGME Case Logs.")

Below is an example of the case logging system (screenshot taken directly from the ACGME website, at <https://apps.acgme.org>).

To add a case, you must create a unique case ID (see below in Tips and Tricks) and fill out all the relevant data fields.

For convenience, the Favorites tab has the categories/codes you, your program and your specialty most frequently use. Under Area/Type/Code there is "Critical Care Patient Management" which contains surgical critical care (SCC) categories and "Surgical Procedure" which contains surgical CPT codes.

### How Do I Get My Login Information?

Upon starting Fellowship, your Program Administration will provide your contact information to the ACGME. In turn, the ACGME will communicate to you via email to establish your user name and password.

### How do I Check My Case Log Process?

Your Program Administrator has access to the Case Log system and may be a helpful resource in checking your progress.

If you choose to check your own progress, the information is available under the Reports tab on your case log home page.

### Tips and Tricks:

When logging cases, some fellows have used MRN numbers as the case ID. The issue with using MRN is that all case IDs logged need to be unique to count. That is to say, if you use the same MRN, any codes logged subsequent to the first will not count towards your case minimums.

Unlike when logging cases for general surgery residency, you can log two categories at the same time by selecting both and submitting. Both will count toward your minimum. This is helpful because it saves time and eliminates the issue of needing unique case ID for every submission.

Check with your Program Administration regarding Program-specific rules. Many programs require Case Logs to be kept up-to-date at specific intervals (e.g., weekly, or every two weeks).

It is easier to log your cases as you progress through fellowship, rather than try to catch up at intervals.

# CHAPTER 6:

## The Acute Care Surgery Fellowship Case Log

Hassan Naser Mashbari, MD, DABS

The Acute Care Surgery Case Log is essential to the successful completion of your Acute Care Surgery (ACS) Fellowship. In this section, we will look at the information required for logging, review the required categories, and will share tips and tricks for efficient and accurate logging.

The American Association for the Surgery of Trauma (AAST) has developed the curriculum for ACS training programs, as well as has published a list of required case numbers. Please visit this link for the latest information (as of the time of this publication, the most recent update was July 2018): <https://www.aast.org/Assets/a2c7be2a-5650-40ac-8d2c-a3764f3a023a/636918093237470000/operative-curriculum-final-revision-july-2018-pdf>.

Historically, the ACS Case Log used to be an Excel spreadsheet; this was the main method to fill and track your cases. Since March 1st, 2021 the new Online Case Log System has been operational. This web-based, ACGME-designed platform will be familiar to most ACS trainees due to its similarity to the system used for General Surgery and Surgical Critical Care. To access the case log system, please visit: <https://apps.acgme.org>. There is also an official app that can be used to facilitate logging (to download the app, go to your device's version of an app store and search "ACGME Case Logs.")

Each fellow will be provided with instructions on how to obtain the username and create a password by their individual institution.

A useful guide video regarding the system and its use can be found at: <https://www.aast.org/media/566e03d6-f1ec-428c-b4ce-db6c1899d273/blankvideoplayer.aspx>

### Tips and Tricks:

Check with your Program Administration regarding Program-specific rules regarding frequency of logging and local requirements. Many programs require Case Logs to be kept up-to-date at specific intervals (e.g., weekly, or every two weeks).

It is easier to log your cases as you progress through fellowship, rather than try to catch up at intervals. If you are going to catch up at intervals, make sure you take notes of the patient information/identifier, and case performed. In particularly high-volume programs, it is easy to lose track and miss the opportunity to electronically capture/log a case.

Note that simulated clinical experiences, such as ASSET, may be used to satisfy up to 1 case requirement per category.

The curriculum also differentiates between which cases are "essential" and which are simply "desired." The distinction is exactly how it sounds.

Inquire if your Program has a list of up-to-date or preferred CPT codes for the listed procedures/categories. Some helpful codes from prior years can be found below:

**Head and Neck**

| <b>PROCEDURE</b>                     | <b>RELEVANT CODES (2012 CPT Manual)</b>                |
|--------------------------------------|--|
| <b>Neck exploration</b>              | <b>60240, 60220, 60225, 30500, 35301, 35201, 38724</b> |
| <b>Intracranial pressure monitor</b> | <b>61105, 61107, 61108, 61210</b>                      |
| <b>Nasal packing for hemorrhage</b>  | <b>30901, 30903, 30905, 30906</b>                      |
| <b>Tracheostomy</b>                  | <b>31600, 31603</b>                                    |
| <b>Cricothyroidotomy</b>             | <b>30615</b>   |
| <b>Burr hole</b>                     | <b>61120, 61140, 61150, 61156</b>                      |
| <b>Canthotomy</b>                    | <b>67715</b>   |
| <b>Tracheal resection/repair</b>     | <b>31370, 31375, 31380, 31382, 31780, 31781, 31800</b> |
| <b>Esophageal resection/repair</b>   | <b>43352, 43410, 43100, 43020</b>                      |
| <b>Thyroidectomy</b>                 | <b>60240, 50220, 50225</b>                             |
| <b>Parathyroidectomy</b>             | <b>60500</b>   |
| <b>Cervical lymphadenectomy</b>      | <b>38724</b>   |

**Thoracic**

| <b>PROCEDURE</b>         | <b>RELEVANT CODES (2012 CPT Manual)</b>         |
|--------------------------|---|
| <b>Thoracotomy</b>       | <b>32095, 32100, 32120, 32150, 32160</b>        |
| <b>Thoracoscopy</b>      | <b>32601, 32654, 32663, 32666</b>               |
| <b>Sternotomy</b>        | <b>21627, 39010</b>                             |
| <b>Pericardiotomy</b>    | <b>32604, 32659, 33020, 33025</b>               |
| <b>Pleural Space</b>     | <b>32035, 32124, 32220, 32320, 32650,</b>       |
| <b>Lung Parenchyma</b>   | <b>32110, 32440, 32480, 32482, 32505, 32851</b> |
| <b>Bronchoscopy</b>      | <b>31622, 31623, 31624, 31645</b>               |
| <b>Diaphragm</b>         | <b>39501, 39540, 39560</b>                      |
| <b>Cardiac</b>           | <b>33300, 33310, 33510, 33533, 33945</b>        |
| <b>Esophagus</b>         | <b>43107, 43117, 43331, 43415, 43425</b>        |
| <b>Thoracic GV Stent</b> | <b>33880, 33881, 33883, 33884, 33886</b>        |
| <b>Trachea/Bronchus</b>  | <b>31805, 32501</b>                             |
| <b>Chest Wall</b>        | <b>0245T, 21600, 21805, 21825, 32820, 32900</b> |
| <b>Thoracic GV Open</b>  | <b>33320, 33330, 34051, 35021, 35216, 35241</b> |
| <b>ECMO/Bypass</b>       | <b>33305, 33315, 33322, 33335, 36822</b>        |

**Abdominal**

| <b>PROCEDURE</b>                     | <b>RELEVANT CODES (2012 CPT Manual)</b>  |
|--------------------------------------|--|
| <b>Endoscopy</b>                     | <b>43235, 43239, 43246, 45300, 45330, 45378</b>  |
| <b>Enteral access</b>                | <b>43246, 43830, 44015</b>   |
| <b>Laparotomy</b>                    | <b>49000, 49002</b>  |
| <b>Diagnostic laparoscopy</b>        | <b>49320</b>   |
| <b>Hepatic mobilization</b>          | <b>47133, 47142, 47120, 47122, 47125, 47130</b>  |
| <b>Damage control techniques</b>     | <b>49002, 47362</b>  |
| <b>Complex laparoscopy</b>           | <b>43653, 44180, 44186, 44187, 44188, 44204, 44206, 47564, 49650, 49652, 49653, 49654, 49565, 49657, 49658</b> |
|                                      |  |
| <b>Liver</b>                         | <b>47133, 47142, 47135, 47120, 47122, 47125, 47130</b>   |
| <b>Management of hemorrhage</b>      | <b>47350, 47360, 47361, 47362, 47010</b>   |
| <b>Spleen</b>                        | <b>38100, 38115</b>  |
| <b>Kidney</b>                        | <b>50010, 50020, 50220, 50240, 50300, 50500, 50340, 50360</b>  |
| <b>Pancreas</b>                      | <b>48000, 48105, 48120, 48140, 48146, 48150, 48153, 48155, 48545, 48520, 48550, 48554</b>                      |
| <b>Stomach</b>                       | <b>43631, 43632, 43633, 43840, 43870, 43501</b>  |
| <b>Duodenum</b>                      | <b>44010, 43840, 44602, 48150, 48547</b>   |
| <b>Small intestine</b>               | <b>44120, 44121, 44130, 44187, 44602, 44603, 44005, 58740, 44050, 44055</b>                                    |
| <b>Colon and Rectum</b>              | <b>44139, 44140, 44143, 44145, 44150, 44160, 44320, 44625, 44626, 45562, 45563</b>                             |
| <b>Appendectomy</b>                  | <b>44950, 44955, 44960, 44970</b>  |
| <b>Anus</b>                          | <b>46040, 46045, 46050, 46060</b>  |
| <b>Biliary system</b>                | <b>47562, 47563, 47564, 47600, 47605, 47610, 47760, 47780</b>  |
| <b>Bladder</b>                       | <b>51550, 51570, 51596, 51865, 51860</b>   |
| <b>Ureter</b>                        | <b>50760</b>   |
|                                      |  |
| <b>Abdominal wall reconstruction</b> | <b>49560 and 15734</b>   |

**Vascular**

| <b>PROCEDURE</b>                        | <b>RELEVANT CODES (2012 CPT Manual)</b>  |
|---|--|
| <b>Left medial visceral rotation</b>    | <b>35761, 49010</b>  |
| <b>Right medial visceral rotation</b>   | <b>35761, 49010</b>  |
| <b>Infrarenal aorto-pelvic exposure</b> | <b>35221, 65251, 35281, 35537, 35540, 35563, 35565, 37617, 37619, 37660, 34502</b>               |
| <b>Brachial exposure</b>                | <b>34834, 35206, 35236, 35266, 35011, 35013, 35522, 35525, 36818, 36819, 36825</b>               |
| <b>Femoral exposure</b>                 | <b>34812, 38420, 35226, 35256, 35286, 35141, 35142, 35556, 35558, 35566, 35721, 37618, 37650</b> |

|   |  |
|---|--|
| <b>Popliteal</b>                                  | <b>35556, 35566, 35741, 35151, 35152</b>                       |
| <b>Management of arterial injury or occlusion</b> |  |
| <b>Open arterial bypass graft</b>                 | <b>35522, 35525, 35556, 35558, 35566</b>                       |
| <b>On-table arteriography</b>                     | <b>36100, 36120, 31640, 75710, 75716</b>                       |
| <b>Thromboembolectomy</b>                         | <b>34001, 34051, 34101, 34111, 34151, 34201, 34203</b>         |
| <b>Repair arteriotomy or venous injury</b>        | <b>35206, 35236, 35266, 35226, 35256, 35286</b>                |
| <b>Amputation of extremity</b>                    | <b>27590, 27592, 27598, 27880, 27882</b>                       |
| <b>Fasciotomy</b>                                 | <b>24495, 25020, 25024, 27496, 27498, 27600, 27601, 27602,</b> |
|   |  |
| <b>Placement IVC filter</b>                       | <b>37620, 27660, 75940</b>                                     |

### **Ultrasound**

| <b>PROCEDURE</b>                      | <b>RELEVANT CODES (2012 CPT Manual)</b> |
|---------------------------------------|---|
| <b>FAST/E-FAST</b>                    | <b>76705, 93308</b>                     |
| <b>Thoracic US – cardiac function</b> | <b>93308</b>                            |
| <b>Thoracic US guided drainage</b>    | <b>76942 and 31552</b>                  |
| <b>US guided CVL placement</b>        | <b>76937 and 36556</b>                  |
| <b>TEE</b>                            | <b>93318</b>                            |
| <b>Percutaneous cholecystostomy</b>   | <b>47490 and 76705</b>                  |
| <b>US guided pericardiocentesis</b>   | <b>76930 and 33010, 33015</b>           |
| <b>US guided IVC filter placement</b> | <b>37191</b>                            |

# CHAPTER 7:

## Studying for the General Surgery Oral Boards

Prerna Ladha, MBBS, FACS and Amelia N. Dorsey, MD

The General Surgery Certifying Examination, commonly known as the “oral boards,” is the final exam on the journey to becoming a board-certified surgeon. The goal of the exam is to ensure you are a safe and knowledgeable surgeon. This is tested through multiple scenarios that are based on the SCORE curriculum – more information about content can be found at [absurgery.org](http://absurgery.org).

### PREPARING FOR THE EXAMINATION

Having gone through an accredited residency program, you have put in countless hours and sacrifice to hone your skills. You ARE a safe surgeon and good clinician- you just have to show this to the examiners. Your subspecialty and/or fellowship may leave you more adept in some topics while others will require more preparation. General advice: take the exam as soon as you can. You are most prepared after the rigorous studying for the written boards. There may be a new job, fellowship, or life events like marriage, caring for relatives or young children to factor into your decision, however, try not to delay too much!

**There are three main aspects of preparing for the test:**

#### 1. Review Material

While you have been preparing subconsciously for this throughout your residency, focused study should ideally begin at least eight weeks before the exam. You may feel as though you need less time if you have just completed the Qualifying Exam

The test requires you to articulate your thought process, management plan, and description of core cases promptly and succinctly. It is nearly impossible to articulate an answer you do not know. Refer to the textbook or materials you used to prepare for the written boards as needed while you read through one specifically designed for the oral boards. Some of the most common resources are: Clinical Scenarios in Surgery (Dimick, et al), How to Win on the American Board of Surgery Certifying Exam (Snyder, Nguyen), Safe Answers (Aji), and Passing the General Surgery Oral Board Exam (Neff), among others. These resources focus on general topics and tips on answering the questions, although some of them may not be up to date on rapidly evolving content/subject matter... Pick one or two resources and know them well. Resist the temptation to buy and try to read them all. Be prepared to describe the core procedures as outlined by SCORE. Some examinees find it helpful to write these out and practice them in front of the mirror.

#### 2. Practice Scenarios

Even if you do know exactly what to do and how to manage a patient in a clinical setting, you may struggle to verbalize your thoughts coherently. The most important tip for passing this exam is: verbalize your knowledge in a concise manner.

While the exam is an ‘artificial’ setting, it is meant to simulate commonly encountered, real scenarios. The key is to start practicing early and often with anyone who has taken the exam previously. Reach out to friends, colleagues or even subspecialty faculty where you are doing fellowship and ask them to do a few mock oral scenarios\* with you. Most people will willingly donate their time- they have all been through this daunting process and were once in your shoes. The most important part of preparing for this exam is undoubtedly practicing oral board scenario. Practice, practice, and more practice!



There are several review courses that are widely used, high-yield, and typically quite helpful. Some of our favorites are:

**Osler:** A fast-paced in-person or virtual course usually the week before your exam

**Pass Machine:** An online review course with multiple video mock orals and written practice scenarios

**Odyssey:** A virtual review course via teleconferencing with options like small groups, shared tutorials, or individual sessions, usually a month before the exam

Ultimately, it is not the resource but how much you take from it that matters. Doing one course in its entirety is generally better than doing fractions of different courses.

### 3. Mental Preparation and Delivery of Material

You ARE a safe surgeon – that was the whole point of your training program. Nervousness and self-doubt are common, but are harmful in the sense that they may impede your ability to confidently and concisely communicate the material to your examiners. Set yourself up to be well-rested and calm (as is reasonably possible). The day before the exam, review your notes and topics that are the most volatile, eg. cancer staging, technical steps, etc. Then, close the book and relax. Get enough sleep. Many examinees recommend refraining from discussing with colleagues right before - this only causes panic.

During the test, state what you would do, how you would do it and why, in a clear, concise, organized, and confident manner. Answer only the question that you are asked – avoid providing excess information. If your examiner wants to know more, they will ask you.

You may have done everything correctly and may still be asked about a complication. Don't be alarmed. It's a test of problem solving, and the examiners may want to test your knowledge and approach to treating complications. Try not to dwell on a case once it has ended - Let it go! The exam requires you to quickly switch gears and focus on the next case, much like real life.

#### Studying during a busy fellowship?

Most people taking the test will be clinically engaged, whether starting their practice or in a busy fellowship. Once they have a date selected, many examinees plan to take the week of the exam off for preparation. Fellowship can be unpredictable and busy. On call, and don't have anything going on? Ask your on-call attending to do a quick scenario with you. Just did an exploratory laparotomy? Try to describe it to yourself in succinct steps. Use small pockets of time to practice when opportunity presents.

#### Nervous test taker? Poor ABSITE scores?

The ABSITE/written boards are very different from the oral boards, as the ability to verbally communicate the material relies on a different skill set than just knowing the information. Make a conscious effort to not let your anxiety get the best of you. Even if you have a history of poor scores, that does not predict the outcome of the oral boards. Every exam is a new opportunity. Much of the oral boards comes down to how you communicate your knowledge.

#### BUSTING COMMON MYTHS

1. **"The examiners are trying to trick you"**- The examiners are objective in their assessment and have nothing to gain by being deliberately obtuse or confusing. Avoid searching for hidden meanings in questions – simply answer the exact question that has been asked.
2. **"A set percentage of examinees have to fail every year"**- Everyone can pass if they meet the standards of the exam.

3. **“Examiners will be more strict if the examinee is repeating the exam due to a prior failure”-**  
The examiners view every attempt impartially. You will be assessed objectively, without any impact from previous attempts.
4. **“You are articulate, and hence do not need to practice”-** You may be well-spoken and have excellent medical knowledge but articulating your thought process concisely and clearly takes practice. Overconfidence is as much a hazard as nervousness or underpreparation.
5. **“You did well on ABSITE and the written boards, so you don’t need to practice”-** As previously mentioned, the skill set used to succeed on the oral boards is different than that of taking a written test. Preparation is key to success.

## FINAL ADVICE

1. You know your stuff -this is your chance to show that you are a safe, knowledgeable, and confident surgeon
2. Establish a study plan, have a couple of resources and know them well! Make sure this study plan involves mock oral scenarios – practicing thinking on your feet and concise delivery is a must.
3. Trust your training and preparation. Stick to the standard, “safe answer.” “Overthinking” or attempting to incorporate novel or controversial treatment strategies can impact your ability to communicate your knowledge in a confident and concise manner.
4. Don’t “make things up!” Rely on established, core principles of general surgery and what you have learned in residency.
5. \*DO NOT discuss your exam scenarios with anyone. This is considered a violation of the Ethics and Professionalism policy of the ABS (available at <https://www.absurgery.org/default.jsp?policyethics>). Consequences of policy violation can include examinees having “their examination scores canceled; be permanently barred from taking ABS examinations; be permanently barred from certification; reported to state medical boards, and/or legally prosecuted under state or federal law, including theft, fraud and copyright statutes.” While this is not a common occurrence, the potential consequences are significant.

# CHAPTER 8:

## Studying for the Surgical Critical Care Boards

Joshua E. Nash, DO, FACS

The Surgical Critical Care Certifying Exam (SCC-CE) is a 200-question exam offered by the American Board of Surgery (ABS), and is the final step in obtain board certification in Surgical Critical Care. The test, which is offered once yearly (usually in September), is a one-day exam, which lasts approximately 5 hours. The questions are delivered in 90-minute blocks, with 10-minute breaks in-between. Like other Board exams, once you finish a block of questions, you will not be able to re-access that same block.

At first glance, the Surgical Critical Care Certifying Exam (SCC-CE) can seem intimidating. Unlike your base certification exam (e.g., surgery, anesthesia, etc.) you have not had your full 4+ year residency interacting with the knowledge needed for the subspecialty on a day-to-day basis. Because fewer people take it, less formal resources for studying are available. Finally, the first opportunity for taking the exam exists in what can be a very busy time in your life, often located temporally around sitting for your primary certification exam, starting your first professional job, moving, and buying a house.

Despite these potential obstacles, the pass rates for the SC-CE historically are similar to the written portion of the general surgery qualifying exam and the format and quality of the questions are also similar. Pass rates over the last several years for both exams have fluctuated from high 80s to mid-90s in percentage passed for all test takers, with first-time test takers reliably having higher passing percentages.<sup>1</sup> There is likely a self-selection effect in being able to graduate a residency and pass this exam, in that medical knowledge but also interest and discipline are needed to study for and pass the test. The reality is that, with preparation, the likelihood you will pass the exam is quite high. However, there are better and worse ways to go about the process.

### CONTENT:

The breakdown of the specific concepts needing to be mastered can be found online at the American Board of Surgery's website.<sup>2</sup> For many, much of the knowledge has likely been obtained in training, and in prior preparation for the ABS In-Training Examination (ABSITE) or General Surgery Qualifying Exam (GS-QE). Trauma and Thermal Injuries, along with managing an Initial Resuscitation, and Fluid and Electrolyte abnormalities, make up almost a third of the exam and should ideally require less review, if complete mastery has not already been obtained for exam purposes. Another 15% of the exam deals with Acute Gastrointestinal, Genitourinary, and Obstetric-Gynecological disorders as well as the Metabolic, Endocrinologic, and Nutritional Effects of Surgical Illness, which also have analogous content in both the ABSITE and the GS-QE, though a proportionally higher amount of the SCC-CE is devoted to this material.

### PREPERATION:

In the best case scenario, you are reading this chapter with a significant period of time before the exam is scheduled. This allows you to make a plan for studying/covering the material. Expect that whatever schedule you make you will be challenged by the busy realities of patient-care as well as that of our personal lives. The best schedule is one that allows for flexibility, but still provides a valuable reminder and motivator for your studies. If you find yourself falling behind your study/preparation goals, discussing the situation with your Program Director should be an option. Remember, they have a vested interest in you successfully gaining certification and are medical educators because they care about their Fellows achieving success.

An efficient way to assimilate the required knowledge is to integrate studying efforts into the day-to-day interaction with the material during your fellowship. While that sounds obvious, there is a subtle difference in your engagement with the material. For instance, while your attending might want you to know the most up-to-date ventilator strategies and research, the exam will be more focused on tried-and-true low tidal volume ventilation, trouble-shooting ventilation/oxygenation emergencies, and classic parameters for weaning a ventilator or requiring the initiation of mechanical ventilation. The difference is akin to reading the latest article in *The New England Journal of Medicine* from a month ago versus a review article that summarizes the major trends in treatment from the last five to ten years.

An advantage is that teaching the fundamentals of critical care to residents under you is an expectation of fellowship. Information at the “review article level” is often analogous to fundamentals and teaching of the residents can be part of your own studying for the exam. There is opportunity to include the more esoteric concepts needed for the SCC-CE into teaching sessions, sequentially working your way through the list.

There are multiple resources for exam preparation. The following are discussed due to familiarity/recognition and are not specifically endorsed by the authors of this handbook. The most helpful, in my experience, was taking the Multidisciplinary Critical Care Knowledge Assessment Program (MC-CKAP) exam which is presented by the Society of Critical Care Medicine (SCCM). This online test mimicked the difficulty of the exam, and an in-depth assessment of performance is provided afterwards. Some training programs choose to offer (or require) this of their trainees, but it can also be purchased independently.

In addition, there are review courses offered by the SCCM, Osler, as well as The Pass Machine, to name a few. The SCCM publishes a review textbook entitled *Multiprofessional Critical Care Review: Adult* that is available on their website.

#### REFERENCES AND HELPFUL LINKS:

1. <https://absurgerydata.shinyapps.io/PassRates/> (Accessed 3/10/2022)
  - a. Pass rates and data associated with the exam
2. <https://www.absurgery.org/xfer/SCC-CE-RECERT.pdf> (Accessed 3/11/2022)
  - a. Content outline for the exam. Breaks exam down into different categories and how much (in percent) how much each will be represented on the exam
3. <https://www.absurgery.org/default.jsp?certscce>
  - a. About the exam. General requirements, test schedule (usually offered in September)
4. <https://www.absurgery.org/xfer/ABSTestGuide.pdf>

The Guide to ABS Multiple-Choice Examinations. Written by the ABS, this document contains information regarding the exam development and scoring, tips for how to prepare, tips for test-taking, and advice after the test.

# **SECTION IIIA:** Navigating Fellowship as a Clinician

**Section Editor: Matt Strickland, MD, MBA, FACS, FRCSC**



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# CHAPTER 9: Maintaining Your Surgical Skills

Erik Q. Roedel, MD, FACS

Starting a surgical critical care fellowship is an exciting and sometimes intimidating process. For many fellows who are moving to fellowship immediately after residency the idea of a period with low operative volume can understandably be very concerning. The operative experience of fellows can vary widely between fellowships depending on whether the program is a one- or two-years and whether it's strict critical care, mixed trauma/critical care, or an acute care surgery-style program. There is no doubt that the first few years of practice after residency are vital for skills consolidation. However, with the right mindset and a little humility you can leave fellowship a safe, competent, and confident surgeon.

The first step in developing your plan for skills maintenance is understanding the problem. What is surgical skill? Most of us can picture in our minds surgeons we have worked with that we view as highly skilled. However, when pushed, we often struggle to specifically describe what set them apart. Typically, we envision a surgeon who is knowledgeable and technically calm, smooth, and efficient. When thinking about the success of a skilled surgeon, it helps to isolate a few different sub-skills:

1. Judgement
2. Setup
3. Sequencing
4. Prioritization
5. Problem Solving
6. Muscle memory/Smoothness

The second part of developing your plan for skills maintenance is self-reflection. What are your strengths and weaknesses? What were the strengths and weaknesses of your training program? Understand there are always compromises in training. High volume programs can create solid muscle memory and technical abilities but may have limited time to develop judgment and prioritization. Lower volume programs may leave time to amass large amounts of knowledge but limit the technical experiences that solidify setup, sequencing, and smoothness. The other things to consider are what are the limitations of your fellowship? Talk with second year and graduating fellows and try to get an idea of their operative experiences. Ask about volume, breadth, and complexity. Is it critical care procedures only? Trauma and ACS? Is there any opportunity to participate in elective or emergent general surgery cases? Are there structured sub-specialty rotations or opportunities to do electives? Finally, you can inquire if the program supports off duty employment or moonlighting. Keep in mind, you may have limited free time, and this could impact your duty hour requirements and your ability to get the most out of your training. Once you have honestly assessed your own strengths and areas of improvement, you can work towards developing and maintaining those critical skills.

## Judgement

Surgical judgement is understanding who to operate on, when to operate, when not to operate, and when one approach might be superior to another. This tends to be one of the strengths of critical care training. This dedicated time to better understand complex physiology in an academic environment will only help to improve your surgical judgement. Some of this can be learned by keeping abreast of the literature but a lot of it comes by discussing decisions with senior faculty who have a wealth of experience. When you encounter trouble or complications, ask yourself very deliberately if this could have been avoided had the decisions leading up to surgery been different.

## Setup

Once the decision to operate is made, often what sets a skilled surgeon apart is what they do before the incision. Positioning, port placement, incision location and length, and team preparation can make a huge difference in efficiency and outcome. This is an area where time away from the operating room can be challenging. This is also an area where book chapters and instructive videos tend to skimp on content. One technique to improve your setup skill is to reach out to your mentors and keep a book or binder of preference cards with notes. If you remember a previous staff or colleague that was really slick with a certain operation, don't be afraid to reach out and ask for their preference card and technical tips. Most will be flattered you ask and more than willing to help. When you do get to the OR, don't skimp on the pre-operative huddle. Force yourself to think through the operation and take time to pause before "points of no return". Make sure you and your whole team are prepared.

## Sequencing

Understanding, organizing, and anticipating the key techniques and steps in any operation is vital to reduce redundancy and improve efficiency. Something as simple as verbalizing what needs to happen next can dramatically improve efficiency as this allows the support team time to prepare. Push yourself in every case to be deliberate about having a surgical plan and to anticipate what tools and equipment you're going to need next. Even observing cases during downtimes in the ICU can significantly improve your ability to sequence. This is also an area where technology has substantially improved training. There is a wealth of surgical technique videos and simulators available to help rehearse. Ask if your fellowship program has subscribed to any surgical video services and always be cognizant of the content source.

## Prioritization

This is another area you will strengthen during fellowship, especially if your program includes trauma or emergency general surgery. Prioritization is the core principle behind damage control surgery and a large component of critical care medicine. For example, compare the importance of the oncologic principles in an elective colon cancer resection compared to a damage control laparotomy for a gunshot wound to the abdomen. In the elective cancer case, you generally know what you're getting yourself into and your priorities are relatively simple: meticulous attention to margins, careful tissue handling to prevent tumor spread, and minimizing risk of additional surgical complications. In damage control surgery, on the other hand, we often are dealt a set of cards without the opportunity to prepare and we must quickly figure out the optimal operative sequences to stop bleeding, control contamination, and harness runaway physiology. of the ability to prioritize means taking stock of all the necessary operative tasks that need to be done and sequencing them correctly. This skill is vital in surgery, especially when dealing with emergencies and is often the skill that sets trauma surgeons apart from high volume elective surgeons.

## Problem Solving

This is particularly pertinent when a patient's unique anatomy or pathology does not allow you to follow the normal sequencing of a well-rehearsed operation. Fellowship is often a terrific time to learn other approaches or tricks that you may one day use to bail yourself out of a difficult situation. Be open-minded about the perspectives and approaches that faculty and co-fellows can teach you. An important part of acute care surgery and critical care is focusing on fundamentals and principles for relatively rare and unpredictable pathology.

## Muscle Memory/Smoothness

Finally, there is the issue of idle hands. There are some skills in surgery that can only be improved

with repetition. There is no denying that if you have limited time to be in the operating room during your fellowship you will notice a decrement in your ability to smoothly perform certain moves and sequences. Although to some degree you may have to make peace with atrophy of some technical skills while you grow in other areas, this can be mitigated. Take advantage of technology and capitalize on the wealth of new simulation and training techniques that are often available to you in an academic setting. Inquire about participating in structured technical experiences like ASSET or BEST and capitalize on any opportunity for cadaveric or other fine motor-focused simulation. Also remember simulation doesn't have to be fancy. Take advantage of expired materials and suture and hold impromptu suturing and anastomotic sessions with your co-fellows.

In summary, reconciling a critical care fellowship with a nascent surgical career can be challenging and, unfortunately, surgery is a skill that is perishable. However, trust in the foundation of your surgical residency, be purposeful in your education, and seek opportunities to maintain the skills that are vulnerable to times of decreased operative volume. If you carry these principles into your early career as a surgical attending and have the humility to seek mentorship and growth at all phases of your career then I have no doubt that someone will one day be inspired by you as that slick, skilled surgeon.

Below: A work of art made of expired vascular grafts created by military surgeons on deployment. Finding opportunities to practice is a necessary part of skill maintenance during periods of low operative volumes.





# CHAPTER 10:

## Becoming a Clinical Junior Attending

**Matt Strickland, MD, MBA, FACS, FRCSC**

Many newly minted surgeons finally enter independent practice with the belief that the clinical aspect of that transition should be the easy part. They have, after all, spent the better part of a decade mainly seeing patient, working on clinical teams, and working towards clinical certifications. It may come as a surprise, then, that the clinical aspect of those early years can be one of the major sources of stress, insecurity, and emotionally taxing situations. The challenges of transitioning to clinical junior attending can be anticipated and addressed.

### **You're still learning**

It is so important to remember that although you may be done your formal training as a student, resident, and fellow, you still have a lot to learn and that this is both expected and normal. One of the thrilling (and at times terrifying) aspects of a surgical career is that we continue to see new cases and novel situations decades into our working lives. With almost every patient we care for, we have the opportunity to further hone our judgement. The field of acute care surgery is sufficiently broad that expertise is a lifelong pursuit, not a threshold crossed on the last day of fellowship. Making peace with this fact allows you to ask for help, put systems in place to continue your progression, and be more forgiving to yourself when you make mistakes.

### **Find clinical mentors**

Just like at every phase in your training, a good mentor helps you get better faster. Even though you may feel at the top of your game, mind loaded with studies to guide your every clinical decision, the value of experience cannot be overemphasized. Be humble about this and appreciate that senior surgeons may have decades of additional practice and repetitions that you're just starting to build. Mentors may also be contemporaries in terms of years in practice, but who have specialized in a different area and thus have skills to teach. Many young faculty find ways to enhance their skills by spending time with the local thoracic or vascular surgeons. Asking a senior partner for help is nearly always a win-win since most surgeons value the opportunity to mentor.

### **Build a support system**

You almost undoubtedly had a group of people who acted as your support system during training. Now, you should tweak that roster to help you as a junior clinical attending. Some members will probably stay constant—perhaps a spouse who helps you with difficult emotional situations—but you should cultivate a group of other junior attendings with whom you can discuss clinical cases and the trials and tribulations of being early career. Your former co-fellows, former co-residents or other junior surgeons at your institution are well-suited to fill this role. There are numerous tools to facilitate communication with this support system. With a few keystrokes, you can ask a clinical question to colleagues across the country or “poll the room” in a group chat to help give you confidence in your decisions and consider things you might be missing. A group of peers going through the same thing you are is invaluable in normalizing the experience.

### **Find a niche**

Developing an area of clinical sub-specialization (or sub-sub-specialization) has several tangible benefits. For one, it may allow you to improve patient care by bringing in a new set of skills, tools, or algorithm to your institution. As the local expert on a topic, even a relatively minor one, your more senior

partners may turn to you for mentorship and seek out your opinion. This not only fosters feelings of self-worth but clearly demonstrates your value as a new hire. Niches, if chosen well, may evolve into research tracks and even the creation of new programs or services lines. Of course, developing an area of expertise may be easier said than done. Some fortunate junior attendings may have picked up skills during training that don't exist at their current institution—REBOA, ECMO, rib-plating for example—but others will have to look more carefully at what opportunities exist at their center.

### **Don't neglect the business side**

Referral streams and billing are not aspects of practice that receive much attention during training but may become large stressors once you're an attending. Depending on your practice model, you may be expected to perform elective work which, in turn, may require you to develop relationships with referring clinicians. The surgical aphorism that you should be "available, affable, and able" certainly holds true while building a referral base. See patients promptly and then communicate clearly with the referring physicians to build trust. While you were probably able to ignore billing and coding as a trainee, you should invest some time early on to understand the ins and outs of how you'll produce revenue. Just as you have mentors and a support system to help with clinical care, you should identify individuals who can help you master the business side of your clinical practice.

### **Figure out your preferences**

One experience nearly all junior attendings will share is the sudden realization that they can now do things their own way. Whereas you were once handed an instrument or suture because that's what was on your attending's case cart, you're the one who now gets to call the shots. It's useful to realize this ahead of time because you can start taking formal notes on what your mentors use while you're still a trainee. What needle are you going to use to close? Which stapler, energy device, camera, anal retractor do you want? There is a tendency amongst junior attendings to initially be dodgy when the scrub tech asks because they haven't had to make the decision themselves—"Errr...what do we have?" Being specific conveys expertise and being thoughtful allows you to match the tools and equipment to how you operate best.

### **Prioritize good communication with patients**

You may feel like you've been at this surgery thing forever, but your patients and their families will probably look at you with more doubt and skepticism than your gray-haired partners. This makes it especially important to communicate well with your patients. Plan on taking more time to build trust with them and their families. This will not only serve you well if complications or poor outcomes occur, but will also increase satisfaction. Beyond the intrinsic importance of a better patient experience, these patients are more likely to speak positively about you to referring doctors, nurses, and other members of the health care team. It takes time to build a track record of excellent outcomes and patients have a hard time evaluating your surgical skills, but they'll certainly judge you on your bedside manner and how much time you took to help them and their families through a difficult situation.

Survey studies have shown that nearly two-thirds of early career general surgeons are classified as burnt out. Clearly this is a discouraging statistic since, for many, becoming an attending is viewed as the finish line—the point where "real life" begins after so much training. Regardless of whether you work in an academic or community hospital, clinical work is going to be a big part of what you do and a big source of stress in your first years as an independent surgeon. Rather than considering yourself fully fledged, remember that your time as a junior clinical surgeon is a period of ongoing development and growth. That mindset won't solve all your challenges, but it will take some of the sting out of your complications and remind you that mastery of surgery is a lifelong commitment.

# CHAPTER 11:

## Working With Residents and APPs in the ICU

Joshua S. Ng-Kamstra, MDCM, MPH and Jonathan Felarca, MScN, APRN-Rx

Integrating into a clinical team at a new institution can be a significant source of stress for critical care fellows, especially given the high stakes of the work and the expectations placed on the clinical junior attending. With the right preparation and approach, fellows can foster excellent working relationships with residents and advanced practice providers (APPs).

### Working with Residents

Fellows who have recently finished residency may innately understand the perspective of the residents rotating through the ICU, whereas those who are coming back to training from independent practice may need to spend time reflecting. Try to remember what initiated your interest in critical care as a junior trainee and work to create the conditions that will spark the same passion in others. Before you start work in the unit, you can ask your program director for documents that describe goals and objectives for both surgical and nonsurgical trainees in the ICU. These should lay out expectations for knowledge and technical skills, the daily and weekly schedule, and overall workflow. You should also review your unit's policies that outline who is permitted to perform which procedures, what level of fellow, APP, or attending supervision is required, and how competency to independently perform the procedures is determined.

Try to arrive at the ICU early, especially when you begin. This will allow you to get a sense of the residents' morning routine, including how patients are distributed. Arriving early sends the message that you plan to lead from the front and that you are accessible. It will also allow you time to introduce yourself to the residents. Get to know the residents with whom you are working: learn their names, residency programs, level of training, and career goals. This will not only help you tailor your expectations and pedagogical approach for each resident but will also indicate that you see them as individuals and that you care about their well-being. You can reiterate institutional expectations to residents as the basis for a successful ICU rotation. Verbalizing these expectations up front will allow you to provide early feedback to residents who are struggling so that they can make timely adjustments to their approach.

As you work with the residents, note where each person is on their learning journey, but try not to be anchored by first impressions. You will find that different residents will need different levels of supervision. For a strong senior resident caring for a stable patient, you might simply offer minor suggestions, but for a junior resident caring for a severely unwell patient, you will need to supervise closely, verifying all orders carefully. Frequent, well-structured feedback can strengthen your working relationship with each resident, regardless of their level of training.

Finally, remember that the stress of working in the ICU can take a toll on everyone, and particularly those who are early in training. Make sure to debrief with your residents after stressful events such as difficult airways, cardiac arrests, or patient deaths. Learn the signs and symptoms of burnout, which is common among ICU trainees.<sup>1</sup> Take a genuine interest in the residents' well-being and advocate on their behalf.

Preparation, communication of expectations, appropriate supervision, and collegiality will help you bring out the best in your resident team.

## Working with APPs

Advanced practice providers have worked in ICU environments in the USA since the 1990s.<sup>2</sup> These providers, trained as nurse practitioners or as physician associates/assistants (PA), undertake extensive training and perform many of the same roles as physicians.<sup>3</sup> Nurse practitioners first complete a 4-year bachelor of science in nursing which is followed by either a master of science in nursing (about 2 years), a doctor of nursing practice (3-4 years), or PhD (3-5 years), and a final licensing exam. PAs complete a 4-year bachelor's degree followed by an accredited PA program (2-3 years) and a licensing exam; some PAs go on to complete doctoral degrees. To work in critical care, both types of providers then typically undergo specific critical care training, either in the form of an on-the-job apprenticeship model or a formal fellowship program. Many of the APPs you will work with have been working in critical care for longer than you have been in medical training. It is therefore important to recognize the breadth and depth of their knowledge and skill.

You should be able to access your institution's policies that govern the role and practice of APPs in critical care, to better understand how these colleagues work at your hospital. It is critically important to get to know the APPs with whom you will be working. Remember their names and ask about their career history and training. You will find that some providers have come to the surgical ICU from other backgrounds such as medical, neuro, or cardiovascular ICU. This specialist knowledge can be particularly helpful when you inevitably encounter complex nonsurgical diagnoses in the unit. It is also helpful to know how long an APP has been associated with the SICU service, as they may help fill you in on clinical or logistical nuances particular to the program or specific attending.

It is good practice to ask APPs what they need from you to have a good working relationship. Most will have had both positive and negative experiences working with your predecessors and will be happy to share. Common complaints are that physicians ignore their expertise, so an important pearl is to listen first when an APP shares an opinion or concern. And while thoughtful academic discussion is often appreciated, APPs are not trainees and should not be treated as such.

Critical care APPs often function independently, but a good collaborative working relationship benefits everyone. Keep lines of communication wide open, respect their expertise, and be sure to listen.

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# **SECTION IIIB:** Navigating Fellowship as an Educator

**Section Editor: Matt Strickland, MD, MBA, FACS, FRCSC**



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# CHAPTER 12:

## Educating Your Team as a Junior Attending

Zachary D. Warriner, MD, FACS

A substantial portion of succeeding as a Surgical Critical Care fellow relates to ones' ability to effectively lead and manage a team. Regardless of your own clinical prowess, if you are unable to provide appropriate instruction and training to those you supervise, the educational experience you share will be lacking, even when appropriate care is delivered. Ensuring you are prepared to educate while managing the many other demands of transitioning into your new role as junior faculty will set you, and your team, up for academic and clinical success. The following provides some overarching topics for consideration and preparation.

### **Establish a baseline**

It is important to recognize that not all learners are created equal. It is critical to assess an initial level of understanding as an effective educator will meet the learner where they are, rather than assuming an existing knowledge base where none exists. For example, discussing the nuances of advanced ventilator support before your team understands the basics is not productive or worthwhile. This can be as simple as directly asking "tell me what you know" of the topic in question. This opens communication and prevents you from assuming the instruction you provide will even be understood, let alone internalized. Explaining the intricacies of how a clock works before your learners know how to tell time is a frustrating experience for all involved.

### **Provide clinical reasoning**

Providing your team insight into your clinical reasoning by explaining your thought process is an excellent opportunity to assess understanding and provides a perfect format for discussion of not only your plan, but the knowledge you used to formulate it. Imparting this wisdom, even when seemingly obvious or elementary to you, may form a critical synapse in the mind of your learner. This is of particular importance when dealing with complex or combined pathology, as these patients rarely follow a reliable textbook pattern. Critical to this discussion is the clear demarcation between evidence-based medicine, anecdotal experience and personal opinion. As the leader of your team, it is important to remember that you will certainly be viewed as the team's content expert, so assuring the information you provide is accurate, up to date, and supported by the literature is paramount. Owning what you know, as well as what you don't, is key.

### **Set expectations and provide feedback**

If you expect your team to do something, say it. This direct approach allows you to outline what you recognize as important, rather than assuming these values are shared. No one knows they should read a text, publication, or other reference if they are unaware it exists. If something has been effective for you, sharing this information as a potential resource for your learners is an essential method for providing education, albeit indirectly. Similarly, if your team does not meet these expectations, address them. Without directed feedback, learned or repeated behaviors will persist. Identifying errors in clinical care, understanding of pathophysiology, or understanding of treatment modalities is critical to effective education. As a junior attending, you have a unique opportunity to interact on a relatively close level with your trainees/learners. As you progress, this perceived distance will be-

come greater, making it harder not only to relate, but to communicate. Maintaining this open communication will be appreciated by those for who you are responsible.

### **Graduated autonomy, choosing your battles and ownership**

As your team advances with your instruction and direction, their need for your immediate availability and reliance on you for all clinical decisions will decrease. While you should celebrate this much anticipated autonomy you have cultivated, this newfound independence has the potential to be both frustrating for you as the experienced provider, as well as dangerous for the patient. Graduated autonomy is a necessary part of medical and surgical training, without which none of us would be in our current clinical positions. It is important to recognize that this still requires supervision on your part. Assuring optimal outcomes for patients must be your highest priority and this must coincide rather than compete with trainee education. Conversely, it is often necessary to limit your tendency to course correct after every decision. This will discourage your team, and often has the unintended effect of deterring your learners from ongoing attempts to advance clinically and educationally. Your team won't always make the exact same decision as you. After assuring theirs is a safe approach to treatment, allowing this autonomy is an important part of transitioning from the immediate decision maker to the supervisory role.

### **Conclusion**

The transition to junior faculty is difficult in many aspects. Beyond your own clinical burden and academic expectations, you will be measured on your ability to educate those around you. Moving into this educational position of leadership affords many opportunities, but it comes with sacrifice. You will find yourself in many positions where you, the most skilled and appropriate provider to perform a procedure, provide an intervention, or make a clinical decision are in a supervisory role. Remember that you too, as a trainee, were once afforded such opportunities which helped make you the clinician you are today. It is a near certainty that this transition will be difficult. Know that this feeling is not unique and finding a comfortable and appropriate balance is an important step in delivering patient care safely while helping your team and its members prosper. It is time to help others achieve the same success you have enjoyed.

# CHAPTER 13:

## Teaching Residents and Students in the ICU

Michael J. Kim, MD, MA, FACS, FRCSC

While managing critically ill patients, intensive care physicians may find it difficult to balance teaching residents and medical students with their various clinical priorities. As an example, from my recent ICU rounds, I had a post-esophagectomy patient with respiratory distress, a postpartum hemorrhage with massive transfusion requirements, a traumatic brain injury patient with a change in mental status and a blunt trauma patient followed by orthopedics and neurosurgery. My team consisted of an ICU fellow, two residents, and a fourth-year medical student. I needed to triage the acuity of these patients, delegate tasks and consider the educational needs of each member of my team (fictional names applied).

Based on acuity, I assigned my fellow, Derrick, to manage the airway of the patient in respiratory failure. I asked Jenny, a second-year surgical resident to place a central line in the postpartum bleeding patient. I sent Scott, a third-year anesthesia resident to assess the TBI patient, and Melissa, the medical student, to check on the status of our trauma patient awaiting the operating room. Not only are these very different clinical situations, but teaching is particularly difficult because of the differences in backgrounds and abilities for the four trainees on my team. To help the educational process, I present the use of two different clinical teaching models and highlight some of the professional dynamics that complicate the roles of learners in the ICU.

### **BID for Procedural Teaching**

As Derrick gathers equipment to prepare for intubation, I quickly employ the BID model by asking him what he wants to focus on for this procedure. Described initially for teaching in the operating room, BID is a framework for setting learning objectives, teaching in the moment, then providing feedback.<sup>1</sup>

- 1. Briefing - Set objectives with the learner** - Derrick is almost at the end of fellowship, so he is quick to establish his own objective; maximizing his view during fiberoptic intubation of a difficult airway. After he verbalizes this need, I ask our ICU nurse practitioner to get a view of the airway with a laryngoscope while Derrick operates the bronchoscope and inserts the ET tube.
- 2. Intra Procedure Teaching - Focus on the established objective but allow for opportunistic teaching points** - I stand at the side and watch the screens as the two of them work together to secure the airway. I offer coaching on angles for both scopes, and speak up at one point because Derrick does not suction the back of the mouth. Overall, he successfully completes the intubation without much direction from me.
- 3. Debriefing - A structured approach to feedback after the encounter** - In a quiet moment afterwards, I ask Derrick to reflect on what went well and what he could do better. I reinforce the positive steps, making sure to be specific: "you did a nice job watching the screen for the video laryngoscopy so you could quickly place the bronch through the vocal cords. Some people get confused as to which screen to watch but you kept an eye on both." I then offer a general rule that he can use the next time he performs a similar procedure: "it's useful to have an experienced set of hands like an NP if you're dealing with a tough airway like this. Remember to utilize that experience instead of trying to do everything yourself." Lastly, I make corrections to improve his performance: "For a few seconds, you lost the image on the bronchoscope because of sputum in



the pharynx. Remember to use your hand-held suction because thick secretions can obscure the scope. There was no drop in his O2 sats, but the next patient might not have as much reserve.”

With a more junior learner like Jenny, I might need to help her set a learning objective in the briefing process if she has little experience with the procedure. I start by asking her what she wants to learn, and she replies only that she is nervous about creating a pneumothorax with a subclavian line. My response is to then focus the teaching around this concern: “let’s work on identifying important landmarks for the line placement to help you avoid an angle that might cause a pneumothorax. That’s how I stay out of trouble with this procedure.”

### **One-Minute Preceptor for Patient Assessment**

The One-Minute Preceptor (OMP), initially established for outpatient office teaching, has been applied to teaching around critically ill patients.<sup>2,3</sup> Once I ensure that the patient is not imminently unstable, I apply the five microskills of the OMP to Scott’s assessment of the TBI patient.

- 1. Get a commitment** - “So the patient dropped his GCS from 14 to 11, what do you think is happening?” This step requires Scott to synthesize information and focus on what he thinks is most likely. While difficult for some trainees, committing to a diagnosis or problem is particularly important with critically ill patients.
- 2. Probe for supporting evidence** - “You think this is a seizure, what makes you think that? How can you be sure this isn’t a worsening head bleed?” This is my chance to explore Scott’s knowledge and how he is reasoning through the process.
- 3. Teach general rules** - “As always, a good physical exam is crucial for these TBI patients.” The principle should be succinct and applicable to a broad number of cases.
- 4. Reinforce what was done well** - “Nice work checking the medication list and making sure we didn’t sedate the patient into a coma. Also glad you ordered the STAT head CT.” Be specific. This is a chance to help the learner understand what they should continue doing as part of their assessment.
- 5. Correct errors** - “If you’re really thinking seizure, it’s reasonable to give anti-epileptics while waiting for CT. Just make sure they don’t sedate the patient too much if he’s not intubated.” Again, be specific about what could have been stronger and how they can improve it for next time.

### **Modeling Communication Practices**

Melissa reports that our polytrauma patient has high intracranial pressure and may need a craniectomy but also has an open femur fracture. Based on their notes, she is not clear which surgical team is going to operate first. As the acuity of the situation is quite high, I go to the operating room to speak directly with the attending orthopedist and neurosurgeon. With surgical services, there is often a hierarchy of junior and senior residents involved with decision making. My actions in this instance demonstrate the “resident bypass” phenomenon, where inter-specialty communication happens at the highest level.<sup>4</sup> This is due to a potential lack of knowledge or decision-making authority on the part of trainees, breakdown in communication systems, and the acuity of critical patient care. Resident bypass prioritizes patients, but it leaves trainees like Melissa out of the loop and results in missed learning opportunities. To mitigate this problem, I ask her to come with me and listen to the conversations with the surgical teams. She is thereby included in the process of planning for urgent craniectomy followed immediately by external fixation of the femur. Afterwards, we have time to discuss the steps in making this plan and I can explain the thought process of the specialists involved. While these examples address certain issues regarding teaching residents and students in the ICU, the underlying principle is that faculty should target educational efforts to the specific needs of individual learners while balancing the acuity of patient needs. My hope is that the strategies described here can help clinical teachers in their everyday educational efforts.

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# CHAPTER 14:

## Teaching Residents in the Operating Room

Kevin Chow, MD and Elizabeth Benjamin, MD, PhD, FACS

### Skills Acquisition – Automaticity of Technical and Non-technical Skills

The role of a clinical educator has expanded over the years. The American College of Surgeons calls on the need for a combination of both technical and non-technical skills. Technical skills are mechanical and learned through repetition. Non-technical skills reflect cognitive and interpersonal skills that complement technical expertise and knowledge. They underpin an individual's ability to anticipate, identify, and mitigate error, translating to clinical judgement, operative decision making, and leadership skills. These non-technical skills can be more difficult to assess and teach in our current surgical environment.

Having a progressive curriculum to automate technical skills is key to allow for the acquisition of non-technical skills. The goal is to minimize cognitive load during mechanical tasks to allow for processing of situational awareness, communication, and intra-operative planning. Some non-technical skills can also be automatized over varying time frames as the learner develops and as practice patterns evolve. The often-cited strategy to become an expert involves not just 10,000-hours of effort but requires deliberate practice and the receipt of personal instruction under a teacher who is able to assess the learner individually and determine what is needed to develop and improve.

### Educational Tools and the Growth of Simulation – “The new see one, do one, teach one”

The traditional “see one” step has evolved from simple textbooks and clinical observation, largely due to the rapid expansion of multimedia and simulation training. Cadaveric models have enhanced surgical atlases and simulation courses; vast video libraries now include fully narrated operations and operative simulations. These advances allow learners to “see one” before ever entering the OR, familiarizing themselves with the anatomy, surgical steps, and techniques creating a mental roadmap for the case.

“Do one” and “teach one” has also shifted to the simulation environment. Low-fidelity models develop automatic skills such as the basic use and coordination of laparoscopic instruments. Simple models can be used for repetitive practice of tasks, like suturing and creation of anastomoses, or to automatize aspects of rare and high intensity procedures such as cricothyroidotomy. High-fidelity models, including 3D simulators or perfused cadavers, provide an environment to not only hone technical skills but also to create scenarios around which to teach non-technical skills. These scenarios are particularly suited for extreme clinical environments where learner autonomy is typically curbed due to time-critical algorithms or life-and-death stakes, such as trauma resuscitations or intraoperative codes. The simulation environment allows one to slow down, understand the decision points, receive feedback, and “see one, do one and teach one” before ever entering the clinical environment, accelerating the path to skills acquisition and autonomy while maintaining patient safety.

### Understand the Learner

Often a forgotten aspect of surgical training is that varying levels of residents represent varying levels of understanding and proficiency. There is a need to match the learner with the teacher and to teach to the level of the learner. This requires insight and patience on the part of the teacher, to properly set expectations. A master surgeon may not be best suited to break down the steps of a basic procedure, but instead will be better suited to discuss the judgement considerations during an operation. Ongoing technical assessments, using validated tools in line with competency-based training and entrusted professional activities, are critical to understand the progression of the learner throughout their training. They verify skills acquisition and critically assess the learning environment to confirm that the learners' needs have been met by the programs created.

### **Pre-Op Brief**

This pre-brief allows for preoperative identification of learning objectives and acts to set expectations for the operation to come. Clearly identifying learning objectives facilitates a structured and targeted teaching model for the operative environment. Explicitly discussing the goals gives the resident specific objectives and the expected level of competence while reinforcing the role of the faculty as an instructor. This is a critical step in the teaching whether it be performed quickly while scrubbing or more thoroughly during pre-operative case conferences.

### **Find Teachable Moments**

Interactions between surgeons and residents can be divided into four categories: instrumental, pure teaching, both instrumental and teaching, and banter. Instrumental interactions are done with the sole purpose of moving the operation forward successfully. Pure teaching provides education to the trainee, shapes judgement, or enhances resident performance without directly affecting the outcome of the case. Instrumental and teaching interactions balance both approaches by providing instruction to the case but also supports it with a broader explanation of the situation and leads to a better understanding. Banter is any unrelated discussion but may humanize both parties and create an environment conducive for teaching and learning. High-acuity situations often demands instrumental interactions without additional communications to ensure patient safety while banter and pure teaching help set the tone in the OR and provide lasting lessons. It is the surgeon's responsibility to determine when it is appropriate to be instrumental but should capitalize on teaching opportunities as they arise. Similarly, it behooves the student to appreciate the educational pearls present in all interactions.

### **Opportunities for Autonomy**

Autonomy is a key element of surgical training and progression to full autonomy is a journey that requires immense respect from both the student and the teacher. While not all parts of the operation need to be performed autonomously to provide effective education, it is the responsibility of the teacher to find aspects of any procedure that can be performed with autonomy by the learner based on level of experience. Having clear expectations and objectives prior to starting the operation can push the teacher to provide more autonomy and, conversely, help the learner understand the decision to provide more or less autonomy based on performance.

### **Post-Op Debrief**

The debrief is comprised both of evaluation and constructive feedback for the learner. They reinforce the goals and teaching points that are important to the faculty and allow the learner to ask questions, clarify teaching points, and receive feedback regarding both technical and non-technical skills. It can stimulate self-directed learning and reflection. Try to avoid the standard "good job" feedback and give constructive, actionable advice. However, don't forget to provide some motivation with encouragement and recognition when appropriate. An enthusiastic surgical mentor who conveys his or her passion for the subject is one of the best motivating factors for a resident. These debriefs can be short or structured, but the importance is in doing them regularly, even if it is just during skin closure.

The key elements of intraoperative training are to set expectations, define a path, find the teachable moments, prioritize interactions and autonomy, and most importantly, foster an environment of mutual respect and understanding.

**Tell me and I forget. Teach me and I remember. Involve me and I learn.**

# CHAPTER 15:

## Becoming a Mentor for Younger Trainees

Galinos Barmparas, MD, FACS

Mentoring is part of being a good clinician, educator, researcher, and leader. Throughout your career, the expectations from your mentorship may progressively change and that will likely depend on your own experiences, accomplishments, and the leadership or other roles you may assume. Becoming a sought-after mentor requires a constant conscious effort and a lot of practice. Even experienced mentors continue to alter their approach to mentoring using their prior experiences as a guide.

As you start your fellowship, and as you are adapting to your new environment and are simultaneously trying to grow clinically and academically, the following may serve as a guide to becoming a successful mentor. These are steps you should build on, and not necessarily follow religiously.

- **Being a mentor, first means to be a good role model:** You are expected to practice as you preach. Be humble, embrace honesty and trust, be dedicated and consistent, maintain high standards, and approach everything systematically. Always adhere to your values, respect others and seek respect. Don't criticize, but rather try to understand and relate. Most importantly, never compromise patient safety and always treat your patients humanely.
- **Be the best teacher you can ever be:** Knowledge is highly valued amongst the highly motivated individuals that will be surrounding you. Try to always reference best available evidence and at the same time, be aware of its limitations. Give clinical pearls and tips. Avoid being dogmatic. Experience is important, so do not fully dismiss it, even when it goes against what you think is best evidence. Give well prepared lectures and find opportunities to teach.
- **Make them shine:** Who doesn't like positive feedback? Give liberal credit to your younger trainees and acknowledge their contributions in front of your supervisors. Go out of your way and send that email to the program director to acknowledge good performance. This will show your confidence, not only in them, but also in yourself. You will be surprised how much more dedicated they will become and how much they will value you as a mentor. Don't worry about proving yourself that much. Your supervisors know very well where to look for your own contributions.
- **It's not "always sunny in Philadelphia!":** Never hesitate to give appropriate feedback to your juniors on something they can learn from or they could have done better. Avoid blaming and make it a positive educational experience, not only for the person involved, but also for your entire team. No one is perfect and no one knows it all. Admit your own missteps too and be open about what you learned from them.
- **Find your own good mentors and copy them!** There is no patent on good mentoring. In fact, good practices ought to be taught and propagated. Aim to copy what you perceive as good practices from your own mentors and adapt them to your relationship with your mentee.
- **Develop a relationship:** Dedicate the time and effort necessary to connect with your mentee at a personal level. This relationship will serve you both and make your interactions with your mentee more relevant and meaningful. Most importantly, this will lead to a long-term professional and personal relationship.
- **Make it formal, but also remain available:** Although you may be "mentoring" your mentee informally on a daily basis through various interactions in the clinical setting or even outside the hospital, it may be useful to establish formal meetings at a frequency that you see fit. These meetings will allow for both parties to prepare and discuss specific issues and plans. At the same time, you should make yourself available and accommodate ad lib and even "urgent" requests for a meeting or a phone call.

- **Listen more and talk less:** In our eagerness to be good mentors, we often feel that we should be the ones talking and making the plans for our mentee. By doing so, we waste a great opportunity to understand what our mentee is exactly seeking. Allowing your mentee to do the talking will give you the opportunity to further understand their aspirations and what they really want to accomplish.
- **Help them define their aspirations:** Your mentee will always be seeking “success.” Often, however, they are unable to define what success means for them. We frequently have a mental image of what success looks like and we tend to fit every individual within that image. Success, however, is not (and should not be) the same for everyone. Try to help your mentee set their priorities based on what they value the most. Success is only meaningful when it aligns with what they value and when it brings long-term fulfillment and happiness.
- **It’s OK to not have an answer:** Believe it or not, your mentee does not expect you to have all the answers. Do not hesitate to say, “I don’t know,” and to acknowledge your limitations. At the same time, however, you should try your best to get that answer or guide your mentee on where to find it. You are surrounded by highly motivated individuals who will be seeking advice and mentorship from any available source. Embrace that because different mentors are able to address different needs for your mentee.
- **Your mentee is probably going to select you, not the other way around:** Often, this occurs because your mentee just wants “to be like you!” They are inspired by your accomplishments, your values as a clinician and a person, the respect your peers have for you, and the communication and leadership skills you project. Most importantly, they are probably most inspired by your dedication to what you do. Occasionally, you may find yourself in an “officially” assigned or even “forced” mentorship position. Understand that you cannot force mentorship. You still have to follow all the previous steps to prove that you may be “useful” to your mentee, rather than expect your mentee to do the work. It may take time, and it may be harder, but never give up on your mentee and try to make the most out of this situation.
- **There is no one-size-fits-all:** You may be looking for a recipe on how exactly to be a good mentor, but it should not follow a strict algorithm. Your mentorship will have to be tailored towards your mentee’s aspirations, priorities, and even skills. It is crucial that you take into account their diverse background and their life experiences. Acknowledge that your advice will be based on your own experiences and those may not necessarily serve or apply to your mentee.
- **Put it on your CV:** You may think that including “Mentorship” and the names of your mentees on your CV is excessive or even inappropriate. Quite the opposite. By doing so, you acknowledge the importance of mentorship as part of being an academician and you demonstrate your ability to continue doing so in your future roles.

As a resident, your role as a mentor may have been mostly focused on educating your junior peers on the elements of sound clinical and surgical practice and on instilling in them the qualities and values of being a good clinician. Now that you are a fellow, however, this role will probably take a different meaning and the expectations from your junior peers will expand substantially. This is your chance to get to the next level of your academic and leadership growth. Welcome this opportunity to work on defining yourself as a mentor and allow for this experience to advance your own aspirations and self-motivation.

# **SECTION IVA:** Navigating Fellowship as a Scholar

**Section Editor: Jonathan P. Meizoso, MD, MSPH**



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# CHAPTER 16:

## Doing Research at a University-Based Institution

Lucy Zumwinkle Kornblith, MD, FACS

The surgeon-scientist has a long track record of advancing medicine. Nobel laureate surgeons have pioneered basic to clinical advances in medicine, from discovering insulin to successful cellular and organ transplantation.<sup>1,2</sup> They have all been known to be passionate and devoted to their trades and their science, and to be creative, persistent, and keen observers. Yet, with growing pressures and responsibilities in academic medicine,<sup>3</sup> including balancing clinical productivity, administrative and regulatory burdens, clinical work hour expectations, and other university environmental pressures, there has been an overall decline in both the number of academic surgeon-scientists and their grant funding, as well as in federal research funding to surgical departments.<sup>3-6</sup> Despite these challenges, the academic surgeon-scientist has not become obsolete, and their contributions to the advancement of medicine are perhaps more needed than ever.

However, under current conditions, the aspiring future academic surgeon-scientist cannot rely solely upon passion, devotion, creativity, and good scientific questions. Rather, strategy and training are needed to balance all responsibilities and advance research programs. Many university-based surgical residency training programs provide structured research training and experiences to continue the legacy of producing academic surgeon-scientists. However, with the commonality of post-residency clinically focused fellowship training in the academic surgery path, there is often a natural break in research training and productivity as the aspiring academic surgeon moves from residency to fellowship training. This time is usually not structured to research exposures, experiences, or training. Some believe this is a poor time to focus on research because it is the vital period of clinical polishing in training. However, for the future academic surgeon-scientist, it remains possible to be successful in pursuing a scholarly focus during fellowship training while at a university-based institution, with focused strategies outlined below:

### START EARLY

During the time between your fellowship match and the initiation of your fellowship training, many critical things are happening: you are finishing your residency training, you are studying for your boards, you may be preparing to move, etc. Despite this being a busy time, if you intend to integrate research into your fellowship training successfully, you must start building the configuration you will need to succeed as soon as you match. A goal of identifying projects, resources, and mentors before starting your fellowship training will set the foundation for success.

**Identify projects:** Identifying projects of course involves understanding the literature in your area of interest and, importantly, the gaps in the science. However, suppose you don't have a mentor or resources to study what you are interested in during your fellowship. In that case, it isn't easy to build something from the ground up in such a short clinically focused training period. Although it is essential to identify projects you are interested in for your future career, during fellowship training it may be more important to identify projects that you are interested in that are also likely to be successful in your fellowship training environment. So, in a seemingly reverse manner, success in doing research during fellowship training at a university-based institution doesn't necessarily start with a scientific question that you want to focus on in your career. Rather, it may start with knowing what is already happening, what resources are being used and available, and who is already doing research at that institution. Then once you have done that, working backward to figure out what interests you within those spaces can be the next step.



**Identify research mentors:** In a short fellowship training time period, having a good mentor who can support your research interests with resources, ideas, existing projects, and networking is critical. A good mentorship relationship often starts with a good mentee. Like everything else, the more you put into something, the more you get out. In this situation, doing research at a university-based institution is likely to be plentiful in mentors and resource options, but finding the right fit for you is central to success. As soon as you have matched into your fellowship training position, this is an excellent time to begin to explore. Start by examining the faculty list within the division/department you are joining. Use the university website and faculty profiles that detail research efforts as well as PubMed to understand the faculty research portfolios. Speak to faculty within your current circle that may know and have existing research relationships with faculty based where you have matched into a fellowship training position. After you have done your due diligence in investigating, initial communication through email, with an attached curriculum vitae, and a request for a remote meeting is a great place to start. Research faculty are often interested in collaborating with people who are interested in what they do. As such, the demonstrated initiative of a future fellow reaching out in advance cannot be overstated. After meeting, if you think the faculty and their research align with your interests in doing research during your fellowship training, make sure to let them know and initiate engagement with them and their team.

**Build rapport with your mentor and their team:** Initially reaching out, meeting with a mentor, and voicing your interest in a project and desire to work with them is only the first step. Don't stop there. Most people performing research at an academic center will have organized research meetings, infrastructure, collaborators, and funding avenues. Once you have identified a mentor, capitalize on the post-COVID-19 academic era by attending remote research meetings when able with your future mentor as soon as you have matched. Request to attend their research meetings and to meet their collaborators that may be associated with projects you are interested in. There is no education on current science more outstanding than simply being present and hearing about it.<sup>7</sup> Set up PubMed search functions: This does not solely involve typing a topic into the search bar. Create an NCBI account (<https://www.ncbi.nlm.nih.gov>) and set up advanced searches that send you abstracts daily to stay updated in your area of interest.<sup>8</sup>

## BE STRUCTURED

**Identify resources and build timelines:** No sustained research can happen entirely without funding or support. However, there are many types of funding, and an excellent place to start is with national, regional, and local grants that support trainee research. Address early what scholarships or funding opportunities your mentor thinks you might consider applying for. Start by setting a timeline to understand the deadlines for national, regional, and local grants funding opportunities. Find funding mailing lists, and subscribe to them. Considering writing a 'grant' application for at least one of these opportunities, even if only for the experience of writing a grant and of getting your ideas formulated about what your focused fellowship training years of research are going to entail. Although securing research funding is not expected of fellows, if you build a timeline, apply for some seed/societal funds, and begin to attend research meetings with your future mentor before you have initiated fellowship training, or early in your fellowship training, you are setting yourself up for success and productivity during the rest of your career. This allows you to 'try on for size' a combined practice of being an academic surgeon with a focus on clinical excellence and research productivity simultaneously.

**Network:** The more connections, the better. You won't know what someone may have to offer you without making a connection. The first place to start with this is the combination of your mentor and your timeline. Make sure your proposed timeline entails a plan to submit abstracts to national meetings. Make sure your mentor knows you want to meet their collaborators at these meetings. For

every person you make a scientific connection to, engage with them, learn about their science, and follow-up with them.

### THINK EARLY AND OFTEN ABOUT THE FUTURE

**Generate data, and write, write, write:** If you have set yourself up to ‘hit the ground running’ when you start your fellowship training through good mentorship relationships, project plans, and timelines, this will allow you to generate data and begin writing early. As much as possible, you should have a goal of writing for every abstract and manuscript deadline that is within reason during your fellowship training. In this process, you will develop a back and forth with your mentor for editing that will help move the research needle forward at all times.

**Maintain up-to-date curriculum vitae (CV):** Every abstract you write, research presentation you give, medical student you mentor through research projects, etc., should end up on your CV. Update your CV in real-time to keep track of your entire research portfolio and to be ready for when you begin job searching as an aspiring academic surgeon-scientist.

**Begin the job search related to research:** It is essential to use your fellowship training time to test out being a busy academic surgeon with a research portfolio at a university-based institution. If you determine this is the right career path for you, then your job search should include the following research considerations: availability of research resources (facilities, equipment, staff, access to collaborators), training opportunities, committed mentorship (experience, funded, etc.), and departmental support in the form of finances, time, and training. These combinations will help develop you into the best version of yourself as an academic surgeon-scientist, and will optimize a supportive environment and ultimately success in research.

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# CHAPTER 17:

## Doing Research at a Non-University Based Institution

**Jason McCartt, MD, FACS and Samuel Wade Ross, MD, MPH, FACS**

Engaging and impactful research can be accomplished, and even thrive, at non-university based institutions. Successfully completing research endeavors at these institutions requires navigating many of the same roadblocks and difficulties encountered at university affiliated institutions, but sometimes without as many administrative hurdles. Conversely, support personnel and resource availability at non-university affiliated institutions will likely push research towards clinical outcomes. Some barriers may include identifying appropriate projects, understanding the local institutional review board (IRB), statistical support, and resources available for abstract and manuscript preparation. By identifying and planning for these possible barriers, prospective researchers can better achieve their goals during fellowship.

Trainees may enter their fellowship with previous research experience and unique research and clinical interests. However, given the limited duration of fellowship training (1-2 years), realistic expectations are necessary. Development of a project from concept to completion may not always be achievable in a one-year time frame. Determining current staff interests and ongoing investigations may prove more fruitful given the short duration of fellowship training. It can be very beneficial to find available projects that spark the trainee's interest to continue and collaborate on. By seeking out and determining ongoing staff interests and projects, trainees may also identify strong candidates to serve as research mentors during their fellowship. These staff, who have demonstrated an interest in academic pursuits, will be indispensable in navigating through a new system of approvals and resources. Early identification of research mentors can pay large dividends in achieving academic success during a fellowship. However, caution should be taken to select not just any project. Ideas and topics that are close to your clinical or academic interests are more likely to generate passion for a project and see it through to a successful endpoint. If possible, mentors should be sought out before the fellowship starts, as soon as the match occurs, to help identify these projects and topics early.

Fellows should evaluate the strengths of their institution to identify opportunities for academic pursuit. All programs have inherent strengths, early observation and discussion with staff will help individuals identify potential outlets for research. Evaluate the existence or possibility of clinical databases within your institution's patient population. Determine what large databases your institution has ready access to such as the National Inpatient Sample (NIS), the National Surgical Quality Improvement Program (NSQIP), the Trauma Quality Improvement Program (TQIP), and the National Trauma Data Bank (NTDB). These local and national databases can be an easy source of retrospective clinical data for the trainee attempting to complete projects within the scope of their fellowship. These data sources can elicit numerous clinical questions and analyses of the data. For those individuals looking to accomplish prospective or randomized trials, it is imperative to determine that the patient population exists within their institution to accomplish said task. Given the short time frame of fellowship in comparison to residency, it is also helpful to continue and complete projects left by outgoing fellows. Fellow driven research projects allow for increased productivity for the prior fellows as well as yourself, as the projects you are unable to complete can be picked up by the incoming fellows after you. This creates a cycle of ongoing research that can be advantageous in terms of the number of abstracts and manuscripts but also in the impactfulness of the completed research. Research with high rigor and merit is usually prospective, more complex, multi-year and multi-institutional work that is often the hardest to accomplish and therefore layering multiple subsequent fellows' efforts on the projects is required.

IRB's share similarities across most institutions; however, the individual requirements for a given project will be unique based on your IRB's standards. Establishing a point of contact early in your fellowship within or with knowledge of individual IRB requirements is imperative. This point of contact can serve as a guide in completing the necessary documentation to proceed, amend, or continue research endeavors within your institution. In addition, someone with experience with your institution's review board can provide valuable information regarding the timeline for approval of any submitted projects. By understanding timelines for approval, trainees can ensure they have ample time for completion and submission of desired research. In addition, it can be very constructive to have someone with knowledge of the review process proofread any documentation prior to submission to avoid possible delay or requirement for resubmission. This is another area where a research mentor can prove invaluable. Many facilities have templates or prior submissions that can be updated and altered for quick submission. Additionally, retrospective studies, especially from the trauma registry, are usually exempt and can be fast-tracked in a matter of days to weeks.

Securing funding for research is a challenge faced by all physician scientists and fellowship trainees are not immune to this challenge. Research grant applications provide an opportunity for trainees to obtain funding for novel research. Grant applications can be utilized to fund a spectrum of health-care research. These grants aim to invest in valuable research achievements and opportunities, support innovative opportunities to solve complex problems, and achieve improvement in specific healthcare needs. Most grant applications aim to support excellence in research and equity in the medical field as a whole, but with a focus on a specific field or topic of interest. For example, SAGES grants will often target minimally invasive techniques. Some challenges trainees may encounter in completing research grants include the limited availability of research funding, competition for grant acquisition, and the impact of writing/reviewing/resubmitting grants while completing fellowship training. Grant funds that are approved will provide valuable resources to the trainee at the non-university based institution, as there are not always large pools of funding for IRB fees, database fees, and especially travel. Seeking out individuals at your institution with grant submission experience can provide valuable insight for the young academic surgeon. Notable examples of smaller societal scholarships and grants include EAST, AAST, and SAGES for young investigators.

Once projects have been selected and begun, additional foresight can help prevent delays or last-minute requirements. By monitoring submission deadlines for abstracts at both national (AAST, EAST, WTA, SCCM) and local (state/regional) societies, the trainee will ensure they are prepared to submit to the most appropriate venue. It can be beneficial to ensure that additional plans are made in the event of delays that result in an inability to complete the project for planned submission by a given deadline and have a backup submission target in mind. Early determination of planned statistical analysis can also assist in preventing delays. If advanced statistical analysis is required, ensuring the availability of support either through staff members with experience or through the availability of a biostatistician is mandatory. If additional statistician assistance is required and not readily available at your institution, plans should be made for funding to ensure no significant delays are encountered. As the project moves toward completion, and preparations for abstract and manuscript writing occur, division of labor between other fellows, staff, or resident/medical students can ensure timely completion of these endeavors. Again, a research mentor can be indispensable in assisting in the final steps of a given research project and helping assign other faculty members, residents, and students to help with the required work.

Scheduling a weekly or monthly research meeting can be helpful to keep all parties on track for abstract and manuscript deadlines. It also can be used to help refine research questions and pose new ideas for novel studies to continue the cycle of research. This frequently pays dividends by cross-pollinating ideas and expanding the number of projects to which a fellow can contribute and be an

author. It also helps in triaging which studies should be submitted to which meetings as there can be an institutional cap of acceptances for many subspecialty meetings. Likewise, most conferences have mandatory manuscript submissions, and over submitting to one meeting can lead to an overextension of capabilities in writing multiple manuscripts for one meeting. During manuscript drafting and editing, the fellow should work with the senior author, usually the principal investigator on the project, to draft a significantly polished product before circulation to other authors and final submission. The creation of ancillary work, like visual abstracts, medical illustrations, and figures, can be challenging without a medical illustrator or medical editor, but online services are available. Simple internet searches will result in a multitude of primers and “how-to guides” to be able to complete these yourself with some practice.

While non-university affiliated institutions may lack some resources available to a large university associated institution, this does not preclude the completion of academic endeavors. Trainees at these institutions have published impactful and care altering research. Many of the difficulties encountered with completing academic pursuits during a fellowship are shared between university affiliated and non-university affiliated institutions. However, the trainee that identifies and anticipates roadblocks at their institution will achieve more academic productivity. Keys to success include identifying a strong research mentor, understanding your local IRB, and identifying resource gaps and addressing them early to avoid delays.



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# CHAPTER 18:

## Getting Involved With Multi-Institutional Trials

Joseph J. DuBose, MD

As you enter fellowship training and move deeper into the world of academic medicine, research becomes an ever more important part of your professional career. Not all of you will feel the call to engage robustly in research endeavors, but you will all find that your chosen vocation will require you to become proficient in the interpretation of emerging data as you decide how to incorporate the findings of emerging scientific evidence into your practice.

In addition, the advancement of any academic career will likely require some degree of direct engagement in research endeavors. In the least, most of you will ultimately find employment at a trauma center and American College of Surgeons trauma center verification requires some demonstration of academic activity involving research or process improvement.

However, actively participating in research early in your career can be a challenging enterprise. Many things will pull at your time within the workplace as young faculty and protected time for research for most individuals without a basic science / translational science lab is negligible. Furthermore, the research efforts at each institution are coordinated differently, and the availability of research support and mentors may prove highly variable depending upon your employment situation.

One useful approach to overcoming these challenges is through engagement in multi-institutional studies. Each of the trauma organizations you will be exposed to (AAST, EAST, WTA, SCCM) has specific committees designed to promote the development and execution of multi-institutional efforts in trauma and acute care surgery. A perusal of the websites of these organizations will allow you to review ongoing studies and studies in development. Finding studies that align with your interest area and that are achievable with your available resources and time is not challenging with these resources. All the materials you will need to get your local Institutional Review Board approval to participate and get started are readily available from these web resources.

In addition to meeting the research requirements of your academic aspirations or institutional needs, involvement in multi-institutional efforts have other significant benefits for your personal and professional future. You cannot work in the multi-institutional study arena without meeting new people and expanding your peer and mentor network. Speaking from personal experience, these relationships serve you well as you advance through your life. Both professionally and personally, your life will be enriched through these interactions.

So, consider getting involved with ongoing multi-institutional research efforts through our professional organizations. As you become comfortable with the process, you can even turn burning clinical questions you identify into efforts that you lead!

# **SECTION IVB:** Navigating Fellowship as a Leader

**Section Editor: Jonathan P. Meizoso, MD, MSPH**



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# CHAPTER 19:

## Becoming a Leader in the ICU

Nicole L. Werner, MD, Chelsea R. Horwood, MD, and Clay Cothren Burlew, MD

**Effective ICU leadership is a function of critical care expertise and knowledge in conjunction with mutual respect and an effective team-based approach.** It may take weeks to months, and sometimes years, to establish yourself as a leader in the ICU. Titles and prior training (e.g. critical care fellowship) do not automatically translate into being a meaningful leader in the ICU. However, it does signify experience, which gives you the opportunity to assume a leadership role. This experience should be combined with mutual respect for all involved parties to allow for a holistic approach to patient care.

The most important step in becoming an ICU leader is **learning the culture** of your ICU. Start by getting to know the people who work in it – the nurses, respiratory therapists, dieticians, pharmacists, etc. Intensive care is teamwork, and it is important to know who is on the team and how their individual expertise can contribute to the overall care of the patient. It starts with as little as learning, and using, all providers' names. People feel part of the team when you refer to them by name and not their title. It is also important to learn the protocols and practice patterns of each specific ICU. Most units spend a lot of time and effort developing, updating, and maintaining their protocols; learning and following the protocols shows your support (and knowledge) of the unit. Third, make a point to be physically present in the unit outside rounds. This allows you to check in with ICU staff, address problems, and learn the day-to-day workflow. It also allows you to address problems in a timely manner, which in turn improves the care of patients. Finally, take time to learn the leadership structure of the ICU, and how it collaborates with other ICUs in the institution. Establishing collegial relationships with other ICU physician and nursing leaders can be beneficial when collaborative efforts are helpful to advance critical care within the hospital as a whole.

An effective leader in the ICU **respects the multi-disciplinary team.** The staff who work in the ICU are highly-educated and skilled. Nurses, pharmacists, and respiratory therapists often have to “work their way up” to a position in the ICU and are some of the best at what they do in the hospital. The complexity of care in the ICU makes it impossible to take effective care of the patient without having a multi-disciplinary approach. Treating members of the ICU team like they are an inferior class would be a critical failure. Instead, place value on what each specialty brings to the care of the patient and what expertise they can provide. This builds respect among all invested providers. It is not only acceptable, but important to reach out when management strategies involve many different disciplines. Follow through on your plans, admit your mistakes, and ask for help when needed. Finally, never underestimate the impression you impart, and how important valuing the other members of your team can add to that impression.

**ICU leaders are effective communicators.** This involves making clear plans on rounds and making sure information and/or decisions are relayed to all of the appropriate team members. It is also important to listen to your ICU team members – successful communication is a two-way street. It is extremely important to discuss your decisions and why a treatment plan was decided upon. Effectively communicating your thought process allows for open communication and encourages engagement by all parties to help in the care of the ICU patient.



If you are interested in ICU leadership, you should **make an effort to get involved**. Ask to join ICU leadership meetings and be an active participant. Get involved in ICU quality improvement projects and protocol development. This allows you to know team members on a different level and shows you value their input. Another way to get involved is by leading informal multi-disciplinary education. Choose a pertinent topic to one of the ICU patients that would be of interest to nursing, residents, pharmacists, etc., and offer a 10-minute talk after rounds. This will demonstrate your knowledge, but also shows that you care that the whole ICU team is educated about important topics.

Like other forms of leadership, **mentorship is important**. Start by identifying someone you respect and ask them to be your mentor. Setting up monthly or bi-monthly meetings can be an effective way to protect this time. During your meetings, take time to ask about difficult ICU cases or how to approach challenging ICU situations. A mentor often can help you get more involved with the unit by suggesting projects or committees for you to participate in. Your mentor does not necessarily need to be in your ICU/hospital system; the important thing is that it is someone who is willing to spend the time with you and help you grow as a leader. Leadership comes with time and mutual respect, incorporating all members of the team and being an effective communicator.



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# CHAPTER 20:

## Getting Involved with In-Hospital Committees and Quality Improvement

**Jonathan P. Meizoso, MD, MSPH**

Fellowship is an exciting time that symbolically marks the official beginning of your career as a trauma and acute care surgeon. During the months leading up to the start of your fellowship, it is important to reflect on your future career aspirations. One avenue of interest may be in local leadership at the hospital or trauma center where you work, which can manifest in many different ways, including participation in hospital and quality improvement committees. Luckily, there is no scarcity of leadership opportunities within these organizations and committee leaders are always eager to welcome a new member to the team, particularly in the form of an interested trainee with new ideas.

The strategies for becoming involved in these organizations are not exclusive to your local institution. The first step is identifying an area of patient care or quality that interests you. Finding an area of interest will ensure that you approach any project with the passion and commitment that it deserves. Once you have identified this area, speak to a mentor within your division who can guide you or better yet, introduce you, to the leaders in that area at your institution. For example, if you are interested in improving your institution's massive transfusion protocols, talk to your trauma medical director and ask them to introduce you to the local director of transfusion services or chair of the hospital's transfusion committee. Contact these leaders and tell them that you're interested in participating in their committee, and then volunteer for projects as they come up to show your commitment. It cannot be overstated that, if you volunteer for a project, you need to be able to follow it through to completion. This will not only look favorably on you and your division, but it will also help to establish a solid work ethic for a career as a busy surgeon with other academic and quality improvement interests.

Involvement in quality improvement initiatives at your institution is another way to establish yourself as a leader during fellowship. If your aspirations are to become a trauma medical director one day, speak to your current trauma medical director and ask them if they are willing to mentor you for this role. Actively participate in your trauma center's morbidity and mortality conferences not only by presenting cases, but also by identifying potential solutions to process problems within the system. Most trauma centers also have an active quality improvement program that is coordinated by the trauma program managers. Learn who these people are at your institution and approach them as well. These programs within a trauma center generally welcome additional help with open arms and are always eager to hear a different perspective on how to improve patient care.

In summary, getting involved with any initiative within your institution depends on identifying an area of interest and communication with your leadership that this is an area that you would like to help improve. However, you will be your own "rate-limiting step." Success as a leader in local hospital committees and quality improvement programs depends on your ability to attend meetings, volunteer for projects, and appropriate follow through and completion of tasks. Starting early during your fellowship will help ensure that you have set yourself up for a rich and fulfilling experience.

# CHAPTER 21:

## Getting Involved With National Organizations

**Julia R. Coleman, MD, MPH**

While the primary focus of fellowship is to hone one's clinical skills, an added benefit of this period of training is the opportunity to explore non-clinical aspiration or interests within medicine. This may be in the form of surgical education, administration, research, humanities, or leadership development. Engagement in national organization is one great mechanism to explore these non-clinical interests.

There are several national organizations which allow opportunities for engagement at the level of a fellow, but before you decide where to invest your energies, it is important to think about your goals by engaging in a national organization. Are you interested in participating or leading multi-institutional trials (MIT)? Are you interested in injury prevention and advocacy? Are you passionate about mentorship and surgical education? Knowing your professional goals before engaging in national organizations will maximize the benefit of the experience.

All of the national organizations which welcome membership of SCC/ACS fellows are united by opportunities to advance science, find mentors, develop leadership skills and become part of the fabric of these national organizations, receive grant funding, present scholarly work on a national forum, and engage in committee work that supports educational, advocacy, and research efforts. Below is a brief summary of some of the largest national organizations with opportunities to engage at a fellow level.

The American Association for the Surgery of Trauma (AAST), formed in 1938, is one of the national scholarly organizations dedicated to the field of trauma and care of the critically ill surgical patient. There is an opportunity to join as an Associate Member (open to surgical residents, fellows, and attending surgeons within 7 years of completing training) – all fellows in AAST-affiliated fellowship are automatic members. Benefits of membership include access to the AAST e-Learning CME library, discounted registration to the annual meeting, ability to sponsor Associate candidate members, discounted subscription to the Journal of Trauma and Acute Care Surgery, and opportunity to volunteer on committees or the leadership Council.

The Eastern Association for the Surgery of Trauma (EAST), established in 1986, provides a forum for the exchange of knowledge to advance the care and rehabilitation of the injured patient, with particular emphasis on interdisciplinary collaboration, scholarship, fellowship and developing leadership among early-career surgeons active in the care of the injured patient. Fellows can join as Fellow-in-Training members. Membership benefits include the opportunity to engage in the robust and active committees (range from MIT to literature review to education), volunteer at a community outreach event, propose a practice management guideline, and participate in the Mentoring Program (where you are paired up with a senior member who serves as your mentor in a structured program over a year period).

The American College of Surgeons Committee on Trauma (ACS COT) is a standing professional committee of the ACS appointed by the Board of Regents which focuses on improving the care of the injured patient. The COT is responsible for development and implementation of trauma systems evaluation, trauma registry data aggregation, consultation and certification of hospitals, trauma quality improvement, and education. As a fellow, one can engage on the state level with the state COT chapter, whose activities span from supporting ATLS and Stop the Bleed courses in the state

to state-level advocacy on injury prevention. After fellowship, one can remain involved on a regional or central level, as well as apply for the Future Trauma Leaders (FTL) program, which is a mentorship program the COT offers involving in-depth training and mentoring opportunities to junior trauma and acute care surgeons (not more than five years out from fellowship completion).

The Surgical Critical Care Program Directors Society (SCCPDS), formed in 2008, is dedicated to academic leadership, resources for professional growth, continuing education, support for incoming SCC professionals, and networking for SCC Program Directors, SCC Professionals, and current and future SCC Fellows. The annual SCCPDS meeting allows for networking and presentation of research on a national forum, and the organization has fantastic resources online for future and active fellows. Every year the SCCPDS gives an annual Research Award to recognize fellows for significant research endeavors. The SCCPDS also maintains guidelines for board certification and an active job board for fellows exploring post-training job opportunities.

Western Trauma Association (WTA), formed in 1970, is another national scholarly organization committed to the improvement of trauma care through research, education, sharing of clinical experiences, and the development of physicians of all specialties who are involved in the care of trauma patients. While fellows may apply for membership within WTA, the membership requirements are more stringent and competitive. Membership is open to MDs or DOs who are Board Certified or eligible for Board Certification. Candidate must also have submitted, within three years of the time of application, a scientific abstract as an author or co-author for consideration by the Program Committee and have attended a meeting within three years of the time of application. Benefit of membership involves the annual meeting which includes a diverse, multidisciplinary scientific program focused on improving the care of injured patients, outdoor activity by participation in winter sports, and interactions with friends and family in a spirit of collegiality, in addition to the opportunity to engage in committees which create evidence-based algorithms and conduct cutting edge MITs.

The Society of Critical Care Medicine (SCCM), formed in 1970, is the largest non-profit medical organization dedicated to promoting excellence and consistency in the practice of critical care. SCCM offers free membership for those in designated critical care training programs. Fellowship program directors who maintain a Professional or above membership with SCCM may enroll fellows in the Sponsored Fellows Program. Sponsored fellows receive the benefits of Professional Membership at no cost, if they are a part of a designated critical care training program. Membership benefits include discounts of up to 25% on SCCM educational programs and resources, subscription to Critical Connections, membership in up to three specialty sections, opportunity to join a local chapter, volunteer opportunities in the Creative Community in Critical Care, and eligibility to apply for grants and awards.

Regardless of the organization you chose to engage in, these all have fantastic opportunities for academic engagement, leadership development, and integration into the larger "family" of trauma surgery across the country. These experiences can ultimately serve as a launching pad for greater engagement in these national organizations throughout your career.

# **SECTION V:** Finding Your First Job

**Section Editor: Kovi E. Bessoff, MD, PhD**



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# CHAPTER 22:

## Finding Job Availabilities

Ara Ko, MD, MPH and Saskya Byerly, MD

The job search begins with introspection of your desired career trajectory and life goals. In the field of acute care surgery, this may include knowing your preferred clinical time partition among trauma, emergency general surgery, and critical care. Questions you may also ask yourself to inspire insight include: Are you interested in doing research and if so, do you prefer basic science or clinical outcomes? Do you enjoy teaching? Are you looking to build an academic career or would you prefer devoting most of your time to clinical work? Do you also want to have an elective practice? Does geographic location matter and if so, urban or rural? Would you choose a community/private practice or university affiliated hospital? What level of trauma center would you pick?

The physical job search may start as early as one year prior to the completion of your fellowship. Based on your ideal job criteria, you may research institutions of interest and contact key personnel at these hospitals. You may hear tips from your colleagues, program directors, trauma directors, or other attendings regarding potential job openings. Additionally, you may come across this chapter and find these strategies useful:

### National Societies

National societies often have career centers and job postings available on their websites. You can peruse postings for surgeon positions according to region/state and job title. There are often postings for a variety of job descriptions based on level of experience as well as academic versus community/private practice type jobs. Here are some (but not all) of these types of websites:

<https://www.aast.org/careers/jobs>

<https://www.east.org/education-career-development/career-management/jobs>

<https://surgeonjobs.facs.org/>

<https://careers.amtrauma.org/>

<https://careers.jamanetwork.com/jobs/surgery-trauma/>

Other commercial job search engines may include PracticeLink, Glassdoor, or even Google.

Another great resource recently birthed out of the COVID pandemic, is the virtual job fair hosted by AAST-EAST-SCCPDS. In this forum, job seekers and employers can connect on a virtual platform, giving candidates broad exposure to the types of jobs available to the acute care surgeon.

### Cold Calls (or Emails)

You may already know the specific institutions or hospitals you are interested in securing a job. Alternatively, you may have a certain geographic location in mind but are not familiar with the hospitals nor are aware if they are hiring. Do some research on their institutional websites which may also have a listing of job openings. Even if none are posted, you can find the email of the chief of acute care surgery or trauma director and contact them directly. If taking this "cold call/email" approach, be prepared to send an email of interest with an attached cover letter briefly explaining who you are, your training/qualifications, career trajectory, and the type of position or practice you are looking for. An updated curriculum vitae (CV) should also be attached.

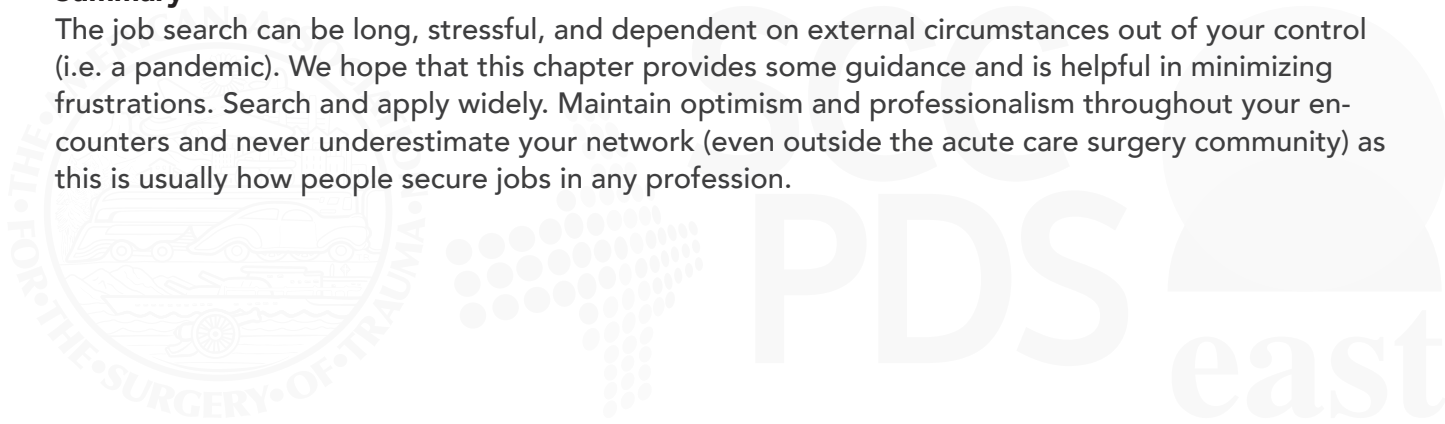
You may be surprised by how many responses you receive. Most may actually sound like, “Thank you for your interest in working with us at \_\_\_\_\_. Unfortunately, we are not hiring at this time but will keep you in mind should a position open.” But some may be anticipating an opportunity to hire that is not yet posted and will respond positively. Since the job search can span over most of the fellowship year, hiring needs also change during that time and you may be contacted at a later date.

### **Word of Mouth**

This is the least structured or systematic approach to the job search but is often the best way to find a job opening. As you work hard and excel in residency and/or fellowship, you continue to build your reputation as a dependable and productive colleague. If you’re a member of a national or regional society, your contributions, work ethic and reliability are also noticed by potential future partners. Even while interviewing for different fellowship programs, you have already made impressions on your interviewers and they may keep you in mind as a potential future partner as well. When you attend society meetings, your program director, attendings, or chief of trauma will frequently introduce you to colleagues looking to hire. Alternatively, they may hear of anticipated job openings through their professional network, particularly those that have not been formally posted. Remember, there is a lag time between existence of a job opening and the posting of one. Don’t be afraid to ask around.

### **Summary**

The job search can be long, stressful, and dependent on external circumstances out of your control (i.e. a pandemic). We hope that this chapter provides some guidance and is helpful in minimizing frustrations. Search and apply widely. Maintain optimism and professionalism throughout your encounters and never underestimate your network (even outside the acute care surgery community) as this is usually how people secure jobs in any profession.



# CHAPTER 23:

## Exploring Jobs in the Community Setting

Biren Kishor Juthani, DO

Margaret Wolfe Hungerford once wrote, “Beauty is in the eye of the beholder.” Similarly, the perfect job will depend on what you want out of the job. Is it a job where you spend one week each on trauma, acute care, SICU, and elective general surgery? Or a job where you spend one week covering simultaneously trauma, acute care, and SICU and next week you’re off? Or something in between those two types of jobs? Lucky for you, trauma/critical care/acute care jobs in the community setting come in a wide variety of forms, all with their own strengths and weaknesses.

Community hospitals, especially trauma centers, not affiliated with university or graduate medical education programs (i.e. no surgery residents), function quite differently than what you may be used to as a surgery resident/fellow. Since the majority of graduates will take community positions, here are some relevant questions you should first think about with regards to how you would like them to fit into your practice. Consider these questions as a launching pad to explore a particular theme/topic rather than scripted questions, but hopefully they will be of use to you during the interview.

### What type of immediate clinical support staff is available?

Your immediate support staff may or may not consist of PAs or NPs. In general, most of the general surgery experience for PAs and NPs will come from their previous/current jobs.

Consider and ask your potential partners how the PAs and/or NPs function within the practice. Here is a more guided list of questions to help you elucidate more information about precise role of how PAs or NPs would be supporting you:

1. How many years of experience do they have working in general/trauma surgery?
2. Is the staff available 24/7/365? Are they available in-house or do they take home call?
  - A. If they take home call, are they first call for ER/floor/trauma etc.? If they are not first call, when do they get called in from home?
  - B. Similarly, while they are in-house, are they first call for ER/floor/trauma etc.?
  - C. If the staff is not available 24/7/365, is there a system in place to provide coverage during uncovered shifts? I.E. Per diem/locum PA/NP coverage?
3. Do they come to the operating room with you? If not, then what type of assistance will you have in the operating room?
4. What is their role and responsibilities when it comes to rounding, writing notes, ordering meds, admitting patients, seeing consults, and discharges?
5. What is their expectation for performing bedside procedures?
6. Do they staff the outpatient clinic?
7. What is the average turnover rate for the staff? If the turnover rate is high (>50%), try to figure out why - you may not always get the most direct answer to this.

Keep in mind that PAs & NPs have different career objectives from residents and fellows. The staff is there to facilitate you doing your job, not learn how to do your job.



### **What type of mentorship/support from other partners is available?**

No longer having a designated surgeon to discuss cases/assist in cases is a big and often intimidating transition upon leaving fellowship and becoming an attending. Trust that as a board certified surgeon your training has prepared you to handle bread and butter surgical diseases and operations. However, there will be complex cases or times when you could use a second set of “eyes and hands” to help confirm/refute your thought process.

During your interview process, your potential partners know that this is your first job out of training. They SHOULD expect that you will need some guidance/mentorship. Many community surgery jobs will have a mix of private practice and hospital employed general surgeons. In this varied non-academic setting, there may not be a formalized mentorship program in place as it generally is in academic settings. However, the practice may have senior partners with whom you feel you could develop a rapport that evolves into a mentorship. It is important for you to figure out what type of mentorship, formal or informal, is available and exactly who you can turn to for any clinical issues that arise.

In terms of making or breaking good relationships with your partners, a crystal clear understanding of expectations for call and coverage is a must. Make certain you understand how the call schedule works and exactly who covers patients you admit and/or operate on - many places will have different versions of who is responsible for what. For instance, it may be tradition for the operating surgeon to round on their own patients daily. Conversely, find out whose patients you are responsible for rounding on when you're on call/weekends.

### **What type of speciality support is available?**

Many community hospitals will have other general surgical subspecialties such as colorectal, bariatric, surgical oncology, etc. - it will be up to you to find out exactly how these specialties function in conjunction with the general/trauma/acute care surgery group you're considering joining.

For example, it may be the case that the colorectal group handles all types of colon and rectal emergencies and elective cases including reversal of colostomies done for diverticulitis. In another example, there may be a hernia specialist who prefers to be consulted on any and all hernia patients.

Depending on your personal goals, you may want to consider these aspects when evaluating community jobs. Ask yourself, and be honest, if you could not do any complex abdominal surgery cases by yourself and if this arrangement works for you.

Determine what type of surgical diseases/cases you are interested in and ask if a particular job will allow you to handle those independently - your interviewees will be honest (perhaps in a roundabout way) and tell you if that will be a possibility or not.

Additionally, find out what medical specialists and other surgical sub specialists are available at the hospital. Many community hospitals will not have the full armament of a typical academic/university hospital specialists. The way you will have to manage certain patients will differ based on resources available to you, i.e. limited interventional radiology capabilities, managing complex orthopedic/spinal trauma patients, advanced endoscopists, etc.

**If there is a clinic component, ask all you can about it!**

Many community jobs will have a clinic component - trauma and/or general surgery clinic. As most of you will have spent most of your fellowship in the in-patient setting, find out as much as you can about their clinic structure. Ask about what the clinic schedule for you would look like. Ask if you will be expected to evaluate and treat elective general surgery patients. Find out where the referrals are coming from - within the system, outside the system, hospital/ER only, etc.

Keep in mind the other surgical specialties mentioned above - if there is a robust colorectal, hernia, and surgical oncology practices then chances are you will most likely be referred only minor surgical procedures. On the other hand, if no other specialties are available within 50 miles, then you will be expected to handle a diverse set of elective surgical issues.

Finally, this is especially important if you will have an elective practice component (and your contract is/will become RVU based), find out how you will be marketed. Ask if there is a process in place to announce new surgeons, arrange meet and greet with local primary care physicians, and any other strategies in place to help you start an elective practice.

**Summary**

A perfect job for you in a community setting will smoothly blend your personal life with your goals and aspirations regarding a career in trauma/acute care/critical care/general surgery. Be ready for your goals/aspirations/personal life to change, perhaps dramatically, once you are practicing as a new attending. This is a big transition and it's impossible to foresee different scenarios so keep an open mind. My goal in writing this chapter is to help you consider some big picture aspects of community jobs. While they might be different from academic settings and uncommonly discussed in training, they may actually fit very well into your life and practice. Wishing you the best of luck in this next step in your journey!

# CHAPTER 24:

## Locum Tenens: What Is It? Is It for Me? How Do I Start?

**Katherine Kelley, MD**

Locum tenens, or travel medicine, can be a full time job or part time way to supplement income. There are opportunities as a general surgeon, as an intensivist or as a trauma surgeon. Locum tenens assignments are typically a recurring one week or weekend per month assignment although some are longer and some allow single night coverage opportunities. The largest advantages of locum tenens are the flexibility and variety. With locum tenens assignments you have the ability to approve any dates you want, allowing you to work all month or just one weekend. This can allow greater freedom for travel including long international trips for recreation or work. Assignments can vary in location: limited to within one state or across the country. In addition to the geographic variety it is also an opportunity to experience many different practice patterns from small critical access hospitals to large level 1 academic centers, and everything in between. At most community hospitals there are advanced practice providers or surgical assists in the operating room rather than residents, allowing you to do the operation without needing to let the resident take over. There are also assignments with residents if that is what you prefer.

With the many advantages of locum tenens come several disadvantages. The most important thing to keep in mind is that many places require locum tenens coverage for a reason. Some jobs are in locations that may be undesirable and some hospitals provide less than ideal care. Depending on the structure of the hospital there may be little to no support from residents or advanced practice providers. There is also a wide range in operative volume, ranging from non-stop 48 hour shifts to week-long stretches without an operation. Trauma coverage without concurrent emergency general surgery coverage at many level 2 centers leads to these low operative volumes. Locum tenens also does not provide any academic support for research. Finally, while it is starting to gain traction, locum tenens is still looked down on by many academic centers and may make it harder to participate in societies or obtain full time positions.

If you decide to pursue locum tenens there are several important factors that cannot be ignored. As a locum tenens you are on your own for health insurance which is typically purchased through the state health insurance exchange. Locum tenens are also independent contractors and generally taxes are not withheld. This requires quarterly estimated tax payments. This 1099 income will also not qualify you to purchase a house until you have 2 years of adequate 1099 income. Retirement savings is also all independent and either a SEP IRA or independent 401K should be set up before starting. Every state in which you work requires its own medical license. There is an interstate medical licensure compact (IMLCC) that allows for easier and faster processing of licenses for the member states but that is only if you qualify by living or working in one of the states that participates. The full license fee must still be paid for each individual state license as well as the initial IMLCC fee, which can add up. There are many locum tenens recruiting agencies that will help find jobs, complete licensing and privileging paperwork and once you have an assignment make all of the arrangements. Travel is either paid for up front or reimbursed. Licensing fees will also often be paid by recruiting agencies. Some will ask for the right to be your sole representative in that state for the assistance but most will not.

Whether as a long term career plan, a two to three year time exploring options, or a few months while continuing the search for the ideal full time job or waiting for a partner to be ready to move to a new city, locum tenens is an important option to consider. If you do not want to take or stay in a job that does not feel right, locum tenens is a way to continue operating and making money without committing to the wrong job.

# CHAPTER 25:

## Networking in Surgery

Thomas G. Weiser, MD, MPH

**“If I have seen further, it is by standing on the shoulders of giants.” – Isaac Newton**

Our networks are the relationships, interactions, and historical connections that exist across our profession. In medicine, our networks allow us to work across geography and over time to build relationships, develop ideas, and support our colleagues’ and our own professional development. This typically occurs through the sharing of information, knowledge, and experience, the building of relationships, and the establishing of new – and reestablishing of old – connections.

Networking matters because our experiences during medical school and surgical training only expose us to a finite number of individuals, most of whom are within our own institution or program. Yet there are many inspiring mentors, productive researchers, talented clinicians, and outstanding educators; thus, our lived experience is naturally limiting. However, there is a long history of robust intellectual exchange across the profession. In particular, the history of surgical progress is one of incremental progress punctuated by dramatic improvements, both of which are spread through fellowships, visiting scholarships and professorships, and personal mentorship. The forefathers of surgery are our “giants”, and they lend us their shoulders to stand upon so we might make the world of surgery and our own practice more scientifically driven, more responsive to the needs of our patients, and more humane.

At the start of my career, even as early as my decision to become a surgeon, I tried to focus on the things that I felt really mattered in the world. These included ideas and concepts that I was interested in and that I wanted to explore deeply. I said “yes” to unusual opportunities that were not part of the normal pathway of success for surgical academia. And I spent time listening to others and learning from them, working to understand their successes and failures, and seeking their advice and guidance. The critical part of networking was a genuine interest in the efforts and pursuits of others as a means of developing my own critical thinking.

I have learned about networking and its value not because it was taught, but because I was lucky to have had mentors who cared for me, looked out for my career, encouraged me to explore a bigger world than what I was aware of, and who made the introductions to others that opened doors for me. But this is only part of the story; I took risks that were uncomfortable because I believed that the rewards were high and that the journey would lead me to understand myself and my world in a deeper, more profound way.

Networking is most successful when one has a specific focus; when one listens and demonstrates genuine interest and enthusiasm for a subject; when one is persistent and seeks advice and guidance from different sources; and when one says “yes” to novel ideas and to risk and then follows up and keeps working towards solutions. Ultimately networking is about gaining, developing, and promoting knowledge. As the American entrepreneur Keith Ferrazzi notes: “The currency of real networking is not greed but generosity.”

# CHAPTER 26:

## Securing the Right Job

David A. Spain, MD, FACS

If you've seen one practice model, then you've seen one practice model... every single practice out there is unique. So, there are no answers for you. But, we can review which questions you should be asking to secure your first job. It's important to remember there is no such thing as a "dream" job. Every single opportunity you look at will have some flaws. But if you ask the right questions, you might find a great job. The first question you have to answer for yourself is do you want an academic position or private practice. But what is "academics"? When I ask most applicants this question, what they really mean is teaching - "I want to work with residents". When I hear academics, I want to know what your scholarly/research focus will be. Most private practice jobs in Acute Care Surgery are at level II trauma centers.

### Questions common to all opportunities:

- What is the work culture? Is this a cohesive team, a loose association of individuals or everyone for themselves?
- How stable is the model and leadership?
- What are my opportunities for development and growth?
- How is the work load distributed?
- How do they handle the money and how transparent is it?
- How would I fit in and how could I contribute to the mission?

### Academic Questions

The clinical work at most academic level I trauma centers is pretty similar with trauma, emergency general surgery and surgical critical care, although the balance may vary widely based on location and demographics. Some important questions to consider:

- What is the role/status of the Acute Care Surgery Program in the department and hospital?
- What is the commitment of the Acute Care Surgery program and the department as a whole to the three missions (patient care, research and education)?
- How does this align with my needs?
- How would I be mentored initially?
- How will my research effort be supported and nurtured?
- When and how will I transition to independence (both clinically and academically)

### Private Practice Questions

There is a lot more variation in the clinical work and work-load distribution at level II trauma centers.

- Who is on the call panel at the hospital?
- Is this a single group providing coverage, multiple groups (who may be in competition) or all individuals?
- Who determines the call schedule and what are the metric used?

At some level II trauma centers, the "trauma" surgeon is only there to cover trauma call and may be explicitly prohibited from elective and even emergency general surgery. Such opportunities should be avoided at all costs. The ICU in many level II trauma centers are staff by non-surgeons. So you must explicitly ask what are the opportunities to do:

- Elective general surgery
- Emergency general surgery
- Critical care

Some level II trauma centers may be affiliated with a training program and thus provide an opportunity for teaching surgical residents. But even without trainees, there is often a need for a committed teacher to contribute to other hospital staff who have educational needs such as OR staff, nurses, and technicians. Many level II trauma centers provide robust opportunities for community engagement for things such as injury prevention or teaching Stop the Bleed, etc.

### **Negotiating**

The contract for most academic jobs are generally more straightforward. There's usually not much wiggle room for salary but you may be able to negotiate a "signing bonus" and moving cost. You'll have much more leeway in negotiating support for your research or education program. You should lean heavily on your mentors to guide you in what to ask for.

The contracts for private practice jobs are much more variable. It is well worth the money to hire a contract lawyer (or employment specialist) to review the offer and advise you. One of the key questions you want to ask them is in the unfortunate event that this doesn't work out, what are the financial risk or liabilities if I have to leave this practice in 2 or 3 years?

### **Bad Match**

What happens if, despite your due diligence and best efforts, your first job is not a good fit? In general, most of us realize this can happen for any number of reasons in academic surgery. So, finding the next opportunities shouldn't be too bad – as long as you've not raised any red flags. As mentioned, extricating yourself from a private practice contract can be much more challenging – so know exactly what you are signing up for and get professional advice if you do need to leave.

### **Summary**

There are lots of great opportunities out there but no job will be a perfect fit. The challenge is to find the one that best fits your needs

- What are your "must haves" that you need to be happy?
- Everything else is negotiable

**This really gets back to knowing yourself, your core values, and what's important to you.**

# CHAPTER 27:

## Organizing Your CV

Joseph V. Sakran, MD, MPH, MPA, FACS

As you think about the organization of the curriculum vitae (CV), it's important to note that there are many ways that one can think about structuring the professional experience that each of you has had. It's also important to note that depending upon the institute you are a part of (or the one you are applying to) there may be a specific format required for your CV. Finally, it has become clear to me over the years that not all CVs should be structured in the same way. For example, an opportunity within academic medicine may require you to focus on slightly different content vs private practice. Your CV will also change significantly if you begin to look for other professional opportunities outside of traditional medicine (private sector or public service jobs).

### Below you will find some helpful tips on how to prepare your CV:

- **Professional appearance:** The professional appearance of the document is important. Keep it simple and easy to read. This is not the time to get fancy. If your CV is cluttered with information, it will make the document difficult to read. Make sure there are no spelling or grammatical errors.
- **Methodical timeline:** It's not necessary to list every little thing you have done in life. Consider the narrative you want people to understand or leave with reviewing your CV.
- A common approach is to place information in chronological order with a date, with the most recent position at the top. Never leave a gap: it's confusing for employers and ends up simply raising questions.
- **Name/title/contact:** I would not put personal information such as home address. However, I recommend adding social media platforms if you use them. Primarily LinkedIn and Twitter. Employers will look you up anyways, so you might as well make sure they have the correct information.
- **Education:** Be sure to include both your undergraduate and graduate experience under the educational part.
- **Appointments at institutions:** You can incorporate your post-graduate training under the appointments section.
- **Licensure:** Including all state licenses if you have more than one. Including your NPI and DEA numbers may be helpful.
- **Certifications:** There are some basic and specific requirements that can be helpful for your future employers. Certifications that you can list include FLS, FES, ACLS, ATLS, and PALS.
- **Memberships in organizations:** Include memberships to organizations such as ACS, AAST, EAST, and AAS. In addition to highlighting involvements in committees, you could also describe the leadership opportunities that have helped develop and hone your professional skills.
- **Honors and awards:** Avoid listing any honors and awards prior to college unless it's incredibly impactful to the work that you have done.
- **Research experience and grant support:** Any research experience or grant support can be listed under appointments at your institution. This can also be used as a way to flush out one's scientific interest and prior funding experience.
- **Publications:** Under the publication section, make sure you put your name in bold. Separate out original, peer-reviewed scientific research from book chapters and other non-peer-reviewed work. Include any opinion pieces to help showcase your talent as a writer.
- **Presentations:** Listed presentations can include any scientific communication, grand rounds, and keynote talks.
- **Service outside of medicine:** You can include any service outside of medicine including participation on any board of directors group or community service.

# CHAPTER 28:

## How to Market Yourself for Your First Job

**Lisa M. Knowlton, MD, MPH, FACS, FRCSC**

After years of schooling and applying to stressful matches for residency and fellowship, you are finally about to spread your wings and find your first attending position - congratulations! This exciting time can often be overshadowed by a sense of being overwhelmed when it comes to navigating the job market for the first time, on your own. A career in medicine often does not prepare young physicians for some of the 'real-world' challenges of marketing oneself for a position, knowing what opportunities are the best fit, and understanding some of the practical considerations of contract negotiation. Below are some practical tips for putting your best foot forward on the job interview circuit and making yourself stand out as a desirable candidate.

### 1. Know thyself

This may seem obvious, but it is imperative to have an honest conversation with yourself regarding your personal goals prior to embarking upon your job search. Your career to date has been highly structured, with limited opportunity for career flexibility, and little autonomy. This might be the first opportunity where you find yourself having to consider what you truly want out of your career and then finding a job that fits that vision. Knowing the type of position you are looking for (whether it be academic vs. private practice vs. other), your preferred location (and list of locations you wouldn't move to), whether you would like to be involved in research or education, which leadership or professional development opportunities you would like to pursue, and your goals in terms of work-life balance all play an integral role in optimizing job satisfaction. It is important to acknowledge that there are aspects outside of your clinical productivity that contribute to your happiness. Understand that timing plays a significant role in finding your dream job and recognize that you might have to take a job that won't be the perfect fit in all areas. Compromises can and should be made. What matters is that you have a strong sense of what your 'must-haves' and 'non-negotiables' are, as well as the areas in which you are willing to make accommodations. Rather than being guided by the fear of job scarcity, applicants will present the best version of themselves if they seek out opportunities for which they are a good fit and where they can realistically thrive and excel.

### 2. Identify your strengths

What makes you the best applicant for the job? Once you have identified potential positions of interest, it is important to focus on application materials, such as your cover letter, curriculum vitae, and practice for interviews. Make a list of your strongest traits, as well as opportunities for improvement and self-growth. This may prove more challenging than expected, and prior evaluations can prove to be a helpful resource for objective feedback.

Once you have completed a comprehensive self-evaluation, set yourself up for success by developing an 'elevator pitch' or brief thirty to sixty second summary of where you have been, where you want to go, and how you plan on achieving your goals by leveraging your specific skillset. Being able to succinctly convey your goals and why you are the best fit for a position will demonstrate that you are confident, mature, and goal-oriented – all signs of an excellent candidate.



### 3. Leverage your network

Now is the time to connect with colleagues, including peers, mentees, and mentors in order to both identify potential job opportunities and make it known that you are actively seeking a position. Leveraging connections is a critical component of marketing oneself. This can be done via one-on-one meetings, or at informal networking opportunities including conferences such as the AAST. The Associate Membership has organized job fairs, happy hours and other networking activities during which you can connect with colleagues and make it known that you are searching for a position. The medical community is smaller than one would think and soliciting a recommendation from a trusted colleague can carry tremendous weight during the hiring process. Identify three to five mentors who can provide you with strong recommendation letters and meet with them proactively to review particular areas of achievement you would like them to highlight. Discuss which positions you are actively targeting and ensure they concur that they are a good fit. It is perfectly acceptable, and in fact encouraged, to ask referees if they feel they can provide you with a strong letter of support. If the answer is equivocal, it is better to find this out early and mitigate the risk of having a lukewarm evaluation submitted on your behalf.

The internet and explosion of social media has also created a vastly expanded network which can be leveraged for marketing purposes if done appropriately. Physicians should, where possible, maintain an updated institutional profile where accomplishments can be highlighted. Additionally, many have now created LinkedIn and Twitter accounts, where there is an opportunity to highlight your areas of clinical or academic interest, link your publications, or engage in thoughtful dialogue with colleagues around the world on healthcare-related topics. When done well, a social media presence can unlock a broad network of professional contacts. It is incredibly important to have a heightened awareness, however, that all content you publish online is traceable. Be selective and judicious with comments, photos, and any content posted. In the same way that this content can be beneficial, negative content demonstrating poor judgment or biases can also be incredibly detrimental.

As you progress in your job interviews, you may have a handful of finalists from which you are forced to choose, or you may be left feeling as though none of the positions is the right fit. Trust the process and acknowledge that, like everything in life, timing is everything. Job opportunities will constantly become available and there are ample opportunities for everyone. Knowing yourself well enough to recognize when a position is suited to you is the first step.

# CHAPTER 29:

## Dos and Don'ts of Job Interviews

Kaitlin A. Ritter, MD

Interviewing for your first job is often the culmination of years of hard work and dedication. In preparing for your interviews, it is important to bring the same sense of planning and organization to this process as you have to your education to this point. Below we will review some basic dos and don'ts of interviewing to help you find the perfect job.

### Dos

1. **Perform a self-assessment** – Even before applying for a job it is important to perform an assessment of your wants and needs from a future employer. What type of practice model are you interested in (university v community)? What type of split do you want for your practice pattern? Do you want more time in ICU or do you want to be taking level 1 trauma call? What geographic location are you interested in? For the first time in while you will have the option to choose where you (and your family) end up in the country; take advantage. It is important you have insight into your needs to optimize your application and interview process.
2. **Do your homework**- Before an interview you should do your basic research about the department and the faculty. It is not critical to know every detail about the institution but having a general sense of the type of practice, department structure, and affiliated hospitals/centers are important things to understand. Being prepared with this knowledge ahead of time will allow you to optimize your interview time to learn the more nuance elements of the department.
3. **Be prepared**- During your self-assessment you will have created a list of wants and wishes for your first job. Asking questions about academic appointments/advancement, work-life balance, family planning, and mentorship are just the tip of the iceberg. Formulating a list of standard questions to ask your potential employer will help you keep your interview process organized and make sure you obtain all the necessary data to make an informed decision.

A unique element of the recent seasons has been the impact of COVID-19 on the interview process and the implementation of virtual interviews. Many employers are starting their interviews with a first round phone or virtual interview to allow applicants to get a flavor for their institution without the cost or coordination required to bring the applicant out to the site. As part of your preparation for virtual interviewing make sure you have a quite dedicated space for your session. We all understand that technical hiccups, day of emergencies, and wayward toddlers (<https://www.youtube.com/watch?v=Mh4f9AYRCZY>) happen, but preparation prior to your interview can help minimize these interruptions.

4. **Be honest**- While this seems like a straightforward thing, being honest with yourself, your family, and your interviewers is critical to finding a position where you will be happy and thrive. Be honest with what you need from an employer to be successful. While some compromises will be necessary, make sure you don't agree to things you can't deliver upon or accept conditions that will not set you up for success.
5. **Talk to everyone**- Pay attention to who the department has you interview with. There should be a combination of the more senior leadership in addition to mid-career and early career faculty. Every person will have a different experience and perspective of the department. Junior faculty may provide you the best insight into what your career at that institution may look like and can speak to many of the concerns you may have as a first year faculty. Mid-career and senior faculty may be future mentors and talking with them may give you a sense of the type of support they would be able to provide in the future.

## Don'ts

1. **Don't be rude to anyone-** Your interview starts the moment you submit your application. Every interaction, email, and phone call is data which will be used in assessing your candidacy. Be polite to everyone, regardless of their position in the organization. Always be professional and courteous when interacting with coordinators. Respond to emails in reasonable time frames and avoid last minute cancelations (with the understanding that true emergencies do arise).
2. **Don't speak negatively-** all programs have their own challenges and bumps that can result in hurt feelings or frustrations. During an interview it is important to remain positive and reframe these challenges as opportunities for growth or future change. Trauma is a very small world and you will be shocked at the connections you would never know existed. Don't say anything the day of an interview you would not want repeated.
3. **Don't be scared to ask the hard questions-** With the above caveat regarding negativity, it is still important to ask the questions you need answers to. Asking the hard questions can be intimidating, but if phrased in a professional manner are completely appropriate and a necessary part of the interview.



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# CHAPTER 30:

## What to Know Before You Sign: Negotiating the Optimal Agreement

**Kimberly A. Davis, MD, MBA, FACS, FCCM**

After at least five years of surgical residency and one to two years of fellowship training, the time has come for you as an individual to determine the next steps in your career and life – your first position as an attending physician. As many of your prior positions have been determined to a large extent by the match, this truly represents the first time that you will be making a completely autonomous decision about your career. Obvious factors that will play into your decision will include the climate and reputation of the institution you are thinking of joining, the relationships that you have or hope to develop with your future colleagues and your long-term career aspirations. Less important but still germane may be geographic considerations and proximity to family and/or other support mechanisms.

In evaluating a position, it is extremely important to understand both your expectations and those of the institutional leadership. An understanding of the clinical scope of the job is important: is it mostly ICU, trauma or general surgery; or is there an expected balance? Will you be expected to grow an elective practice and if so, what will be your niche? Do these expectations align with who you are? For example, if you thrive on a busy operative trauma experience, an urban, predominantly blunt center with a lot of general surgery may not be the best fit for your goals. You should ask whether the clinical load is split evenly among the partners, or whether some have protected time which may impact the weeks of clinical service. Understanding the expectations for service as a full-time clinical employee (FTE) is important. Most busy programs recognize the stressors inherent in what we do, and define an FTE by weeks of service, ranging from 24-36 weeks per year. How much vacation, academic and administrative time is built into the job? It is also important to understand what you may or may not be allowed to do, particularly as it pertains to endoscopy, advanced laparoscopy and/or thoracic and vascular interventions. You should also understand call responsibilities: is call 12 hours? 24 hours? 36 hours? Is there mandatory time off post call to allow for adequate recovery? Is there enough redundancy that the temporary (or permanent) loss of a partner can be absorbed somewhat painlessly?

It is equally if not more important to understand how your performance will be evaluated, and whether your compensation will be impacted by changes in clinical productivity. Most surgeons are evaluated on the number of relative value units or RVUs that they generate; work related RVUs can form the basis of compensation in some compensation models. However, at least 50% of all work done by acute care surgeons is based on evaluation and management codes, or the more “cognitive” component of surgical care. E+M codes are reimbursed at rates like those of primary care and general internal medicine and are significantly lower than procedurally based codes. Thus, while it may be reasonable to expect a busy surgical oncologist to generate 12,000 RVUs a year, most acute care surgeons will generate approximately 5-8000 RVUs. Be cautious if your salary will be based solely on RVU generation, as you may be challenged to meet whatever target is set, particularly early on in a career, as it can take up to three years to build an elective practice. Equally important is to understand if there is an “at risk” component to your salary – are you guaranteed 100% or is 10-20% dependent on meeting metrics, often related to patient throughput or quality metrics. Prior to any salary negotiation, you should be familiar with AAMC (for academic positions) or MGMA (for non-academic positions) compensation metrics for your position in your region of the country. Most

junior faculty are started at the lower end of the scale or range (25-50% AAMC for rank), so it is also important to understand how determinations for salary adjustments are made.

Other things to review and understand include benefits and other policies. Benefits include life, health, disability, and liability insurance. In terms of liability insurance, understanding total and per event coverage should be provided as well as information regarding a "tail" (malpractice coverage for at least two years after you depart) should you elect to leave your position. Policies that you should familiarize yourself with include those around vacation, maternity/paternity leave, educational support and opportunities, mentorship, and career guidance etc.

Most institutions will pay for your move and offer a signing bonus payable once licensing and credentialing have been achieved. Most contracts will have non-compete clauses should you terminate your employment – 15 miles is reasonable in most urban/suburban environments. You should ask about administrative support, office space, provisions of communication devices (cell phones, computers, pagers etc.), retirement benefits and whether loan forgiveness or assistance programs are available. As a junior faculty member, you can likely successfully negotiate salary, protected time for research (you should have a track record), a sign on bonus and your start date. Things that are probable non-negotiable include the contract language, termination clauses, non-compete clauses and benefits structures.

Like everything that you have done up to this point in your career, remember to ask for help and guidance as you decide on your first position. Your mentors should be able to point out any potential issues that may arise as you negotiate this next step. Remember if a job seems to be too good to be true, it may be – look for prior attrition in the departments or groups you are evaluating as a high level of employee churn is often a sign of difficult working conditions. Take your time making this decision and enjoy the next steps of your career.

# ACKNOWLEDGMENTS

We would like to thank Erin Lillis, Brea Sanders, Dora Russell, Dr. Linda Dultz, Dr. Laura Godat, & Christine Eme for their contributions and dedication in compiling and distributing this handbook. This would not have been possible without their hard work.



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