

An Intense Elective in Critical Care

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The Intensive Care Unit is an intimidating place, and because of this, it is an area often overlooked by undergraduates searching for extra-curricular experience. It is a fast paced, demanding specialty that is often poorly understood by students due to the limited exposure that clinical rotations allow. Intensive care, however, has lots to offer students and can help develop essential skills that can be tough to obtain anywhere else in the hospital.

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What is the ICU?

ICU's generally receive the sickest patients from all over the hospital, including medical and surgical specialties, all with life-threatening afflictions. With the stakes so high, intensive care specialists become experts in managing acute serious injury and disease. Intensive care boils down to one thing: monitoring. More nurses, closer observation and loads of technology allow intensivists to predict trouble before it happens and intervene before things go poorly. This combination provides the perfect opportunity to hone nearly every clinical skill required of a medical student.

What can I get from Intensive Care?

Data Interpretation

Each patient in the ICU generates enormous amounts of data ranging from body chemistry and physiology to radiology. Critical care is the perfect location to learn the

intricacies of how to interpret lab data, chest x-rays and microbiology culture reports and correlate them to the clinical condition. In addition, the extensive monitoring in the ICU provides a window into the pathophysiology underlying disease and the compensations made to regain homeostasis. A severe case of Acute Respiratory Distress Syndrome (ARDS) requires near hourly monitoring of blood gases, acid status, electrolytes and lactate in addition to frequent chest x-rays to monitor progression. No other department in the hospital will cultivate these skills as often or as well as the ICU.

Master your principles

Intensivists are masters of applying first principles to clinical medicine and the ICU is the ideal place to integrate all the knowledge you've been learning for the first few years of medicine. Combined with advanced continuous monitoring and frequent lab tests, the ICU becomes a lesson in assimilation. Applying physiology, biochemistry, anatomy, microbiology, and pharmacology to each and every pathological problem is the essence of integration. For example, a complex pneumonia becomes a lesson on microbiology, drug resistance and therapeutics, hypoxia, acidosis, ventilation and chest wall mechanics, and each must be understood to direct effective management.

See the Signs

Physical exams are a vital part of the ICU experience that can easily be overlooked with the exhaustive monitoring and highly trained nursing staff's careful observation. From a student's point of view, you couldn't ask for a better collection of pathological signs to learn from, all of which are beautifully integrated with the biodata being recorded. Learning to time cardiac murmurs with continuous ECG, following changes in icterus with daily liver enzyme results, and neon green sputum in a ventilated patient with a *Pseudomonas nosocomial* infection, are but a few examples. Where at first the huge amount of

data can appear overwhelming, it quickly becomes evident that it unlocks the mysteries that help explain the physical signs we're trained to elicit.

Cutting Edge

Because ICU patients are the sickest in the hospital, they often require the greatest amount of modern technology and pharmacology available. Although it's unlikely to be a finals case, understanding how continuous dialysis, ECMO, or high-frequency ventilators influence the patient's course make the days challenging and produce plenty of elaborate talking points for your consultants in the future.

Lending a hand

Critical care is much more than data interpretation and adjusting medications; the ICU is packed with adrenaline filled moments and hands on emergency procedures. Patients in critical care are often straddling the fine line between life and death and often, swift action is needed to intervene when things take an unexpected turn for the worse. Under careful instruction and supervision during my course in the ICU I was intubating patients, siting arterial lines, inserting central lines using ultrasound, performing fluid taps on infected joints, observing colonoscopies and assisting on percutaneous tracheostomies with a consultant surgeon. Few other departments will require such a wide range of procedural medicine, and especially to allow students to get this involved.

Tag-team approach

Intensive care patients are complicated and require a diverse team to manage effectively. Although the intensivists are the patient's primary doctors, there are daily encounters with multiple medical specialties, microbiologists, surgeons and radiologists. Nearly all specialties are linked with the ICU and, as a student team member, you can acquire knowledge from all of them. As an undergraduate, this broad exposure can be invaluable when selecting a specialty in the future.

Answer the call

Ever wonder what it's like to wake up at 3:30am to a patient crashing on the unit? Some teams may allow you to stay overnight to do voluntary in-house call, and I highly recommend you leap at the opportunity. The hospital becomes a different place at night, and emergencies seem to find you when you least expect it. There is usually a much smaller staff overnight, which often favours a little extra student involvement and teaching as an extra set of hands becomes invaluable. On one occasion I was sleeping on the unit, only to awake to a pound of the door just after 3am encouraging me to respond to an intentional drug overdose that was just helicoptered in. By this time the team was comfortable with me helping out, so I got to insert her arterial line and central line, with a resident at my hip coaching the procedure. On another occasion, a resident and I responded to a call that converted to a code and I found myself performing CPR for 10 minutes

before racing to the ICU to admit the patient. While incredibly intimidating, going on call tests all of your skills as a doctor under pressure, and gives you hours of 1-on-1 time with the team. I can safely say, I learned more about myself and the field of medicine in 30 hours of call than I did in any daytime shift.

It's All About Communication

Intensivists are masters of critical care medicine, but they must also be highly skilled at communicating difficult ethical and legal decisions. Patients and their families are highly stressed, filled with emotion, and are often forced to make tough decisions under pressure. Learning to express complex explanations while ensuring patients and their families feel respected is incredibly challenging. I had the privilege to sit in with family meetings and treatment discussions with experts in the field of crisis communication, and the lessons I learned will be applied daily for the rest of my career.

Recognising sickness

One of the most important skills developed in the ICU is how to differentiate between the extremely sick and the unwell. The severity of an illness is expressed in the patient's face, body position, their vitals and in their story. As students, we rarely get to see severe illness because they are well managed by the time we poke around to take a history. The unpredictability of the ICU demonstrates this distinction, and also fosters recognition of how patients and their families handle it all. This may be the most important reason to train in critical care.

As a student, the ICU also likely serves as the first contact with one of the most privileged situations in medicine: witnessing the end of someone's life. Although rare, some patients in critical care inevitably lose their battle to disease. These experiences introduced me to a side of medicine that is rarely taught and almost never experienced as an undergraduate and I feel fortunate to have been given the opportunity to care for patients in their last hours. Although not a welcome experience, I felt honoured to partake in such an important private moment.

Limitations

Although the ICU can offer a wealth of knowledge and experience to vast disciplines of medicine, it cannot provide all the skills needed to prepare for finals. Due to the severity of illness, and the level of injury and interventions, there are often very few histories to be taken. In addition, patient numbers are often small to allow more concentrated focus on each person's complexities. While this limits the case exposure, it opens the door for more full understanding of a case, especially if you are allowed to participate in the management. I was very privileged to 'carry' my own patients under careful supervision, to assess and develop daily care plans, and write supervised orders for medications and investigations. This level of true doctoring is so rare as a student that I treasure each and every opportunity I have been given.

Conclusions

Critical care is a demanding specialty, and as such, will make a demanding elective. You'll be tested mentally from every concept and specialty in medicine, challenged emotionally as you interact with anxious patients and their families, and pushed physically as you race about the ICU and the hospital tending to the sickest it has to offer; but it is worth every ounce of effort invested. An adrenaline-fueled elective in Critical Care medicine has so much to offer students that I urge you to challenge yourself to your limits and return more knowledgeable, confident, and more effective on the wards when faced with difficult patients.

