How to Be a "Great Intern"

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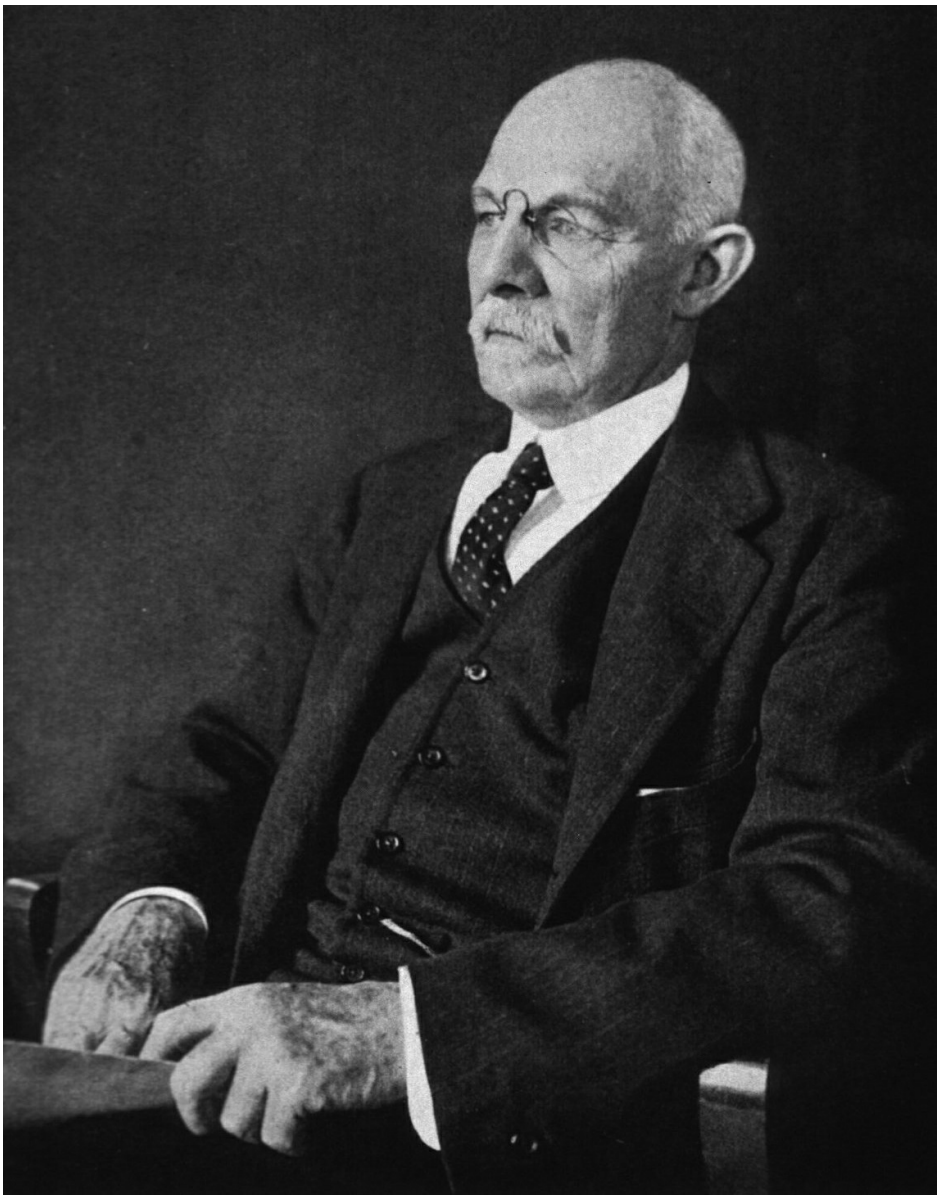

Figure 1: William S. Halsted (1852-1922): *The Father of Modern Surgery*. He established the surgical training framework in the United States during his tenure at Johns Hopkins Hospital.

Introduction

Throughout the course of your internship (postgraduate year one, or PGY-1), you will:

- Save lives and witness them end
- Deliver life-changing news, both good and bad, to countless families
- Serve in the front lines as the face of your department, your hospital, and your specialty to patients and their families
- Learn more than you thought was possible

A number of challenges await you, as well: you just graduated from medical school, but you are expected to expertly manage complex patients. You finally have an MD (and maybe another advanced degree) after graduating near the top of your class, but you find yourself at the bottom of the totem pole yet again. For these reasons and many more, intern year can be one of the most confusing and challenging, but also rewarding and fulfilling years of a surgeon's career.

In this chapter, we will describe the responsibilities of a neurosurgical intern, share our guidance on how to make the most of this unique experience, and provide our suggestions for passing on the knowledge and experience you will gain to the next generation.

Transition to Internship

Before it begins

Many graduating medical students will have several weeks or even months off before starting internship. Your most important task during this time will be to find a place to live near your new training program and to settle in well in advance of your orientation day. Beyond this necessity, we recommend avoiding the temptation to study or pre-read anything in preparation for intern year (except for this guide!).

Nothing can fully prepare you for the experience of working as a physician for the first time, and even though your core medical knowledge may be rusty, it will come back to you in the first days and weeks of taking care of patients. Instead, use this time to travel, read for pleasure, check activities off the "bucket list" – you may not have as much consecutive free time off for several years!

First days

Most programs begin with one or more days of orientation, during which you will gain access to the electronic medical record (EMR) system, see occupational health for pre-employment testing, speak with human resources about benefits, receive a pager, and handle other administrative tasks.

We strongly recommend that you invest fully in the orientation week and familiarize yourself with all systems you will be relying on as a resident. Additionally, you may find that your role as a neurosurgery resident requires access to several systems that aren't included in the general orientation for all new interns, such as your institution's PACS (picture archiving and communication system) software, remote EMR access, image sharing utilities such as LifeIMAGE (Newton, MA) or others.

We recommend speaking to senior residents about what software and systems they required access to and ensuring that you get access within the first week of residency – you will not have the time or energy to deal with these kinds of administrative hurdles later!

Additionally, it is your responsibility to ensure that you remain compliant with all assigned training modules, evaluations (of yourself, other residents, medical students, attendings, and your program), screening tests for tuberculosis or other conditions, duty hour logs (usually through MedHub or another medical human resources management system), and case logs (through the ACGME's case log software). Keep in touch with your program coordinator and senior residents for advice on staying on top of your program's administrative requirements.

USMLE Step 3 and licensing

If you thought the end of medical school meant the end of standardized testing, you were wrong! Fortunately, only one step remains in United States Medical Licensing Examination (USMLE) program of standardized tests, and many find Step 3 to be the easiest to pass.

Step 3 consists of two days of testing (with no more than 14 days between sessions) and includes multiple choice questions covering the practice of inpatient and outpatient clinical medicine, population health, behavioral health; questions regarding the logistics, ethics and legal questions surrounding modern medical practice; and 13 computer-based case simulations (CCS) testing your skills at diagnosis and management of common medical and surgical disorders.

A complete guide to studying for and doing well on Step 3 is beyond the scope of this guide, but our recommendation is to purchase the UWorld (http://www.uworld.com) Step 3 question bank and CCS practice cases, and to work through all of the CCS cases and as many practice questions as you have time for.

Most neurosurgical interns find that approximately two weeks of study time is more than sufficient to score at least as well on Step 3 as they did on Step 1 and Step 2; given that the national passing score is around the 3rd percentile, Step 3 is not a difficult test to pass. We recommend getting this exam out of the way as soon as possible during intern year so as not to hinder the licensing process.

Once Step 3 is complete, interns must work with their school's graduate medical education (GME) office to begin the licensing process. While each state's requirements and process is different, we recommend that you complete the process as soon as you have met all of the requirements. Many programs will require you to be licensed before the first day of PGY-3, but your day-to-day responsibilities (including writing prescriptions, signing forms for patients, and talking to pharmacies) depend on your being licensed in your state of practice. Additionally, a state medical license is a prerequisite for applying for a Drug Enforcement Agency (DEA) license, which you will need in order to prescribe controlled substances.

In addition, many states require separate licensing for fluoroscopy operators. Fluoroscopy is absolutely essential for spine surgery and endovascular interventions, and more subspecialties are beginning to incorporate it.In order to use intraoperative X-ray without an attending

needing to be present, you will need to become a licensed fluoroscopy operator, which often can only take place once you obtain a medical license.

Responsibilities

Depending on your training program, your intern year may expose you to neurosurgery and neurosurgical patients every day or hardly at all. Regardless of the configuration of your rotations, almost every intern will have the experiences detailed below. We recommend discussing each rotation with a PGY-2 or another senior resident who recently completed it in order to get the latest information about expectations, responsibilities, and learning goals for each rotation.

Floor work

Most patients admitted to the hospital have an “acute care” or “med-surg” bed, which means that they are generally stable and require assessment and intervention every 4-8 hours. This describes most neurosurgery patients before and after surgery. An intern responsible for caring for such “floor status” patients will generally be assigned to a team or a service led by one or more attendings, a chief resident, and potentially one more senior residents and/or advanced practice providers (APPs).

Floor interns are generally responsible for pre-rounding on patients.Pre-rounding may or may not include seeing the patients before formal rounds, but usually includes getting vital signs, lab results, and finding out about overnight events. Other responsibilities include leading floor rounds with the rest of the team, writing daily progress notes, performing floor procedures (such as insertion of lumbar punctures and removal of drains, performance of shunt taps, insertion of EVDs, and more), working with rehabilitation therapists, working with social work and case management to find placement options for patients, and discharging patients.

Depending on the training program, there may be APPs – nurse practitioners (NPs) and physician assistants (PAs) - available to assist with any or all of these tasks. Always remember, though, that no task is too small for you, no job is below you, and nothing is not your responsibility, as you are the doctor and your patients, seniors and attendings will be looking to you to make sure all the work gets done.

Many neurosurgical residents view floor work as their least favorite aspect of residency. We believe this is not the right view; floor rotations represent an opportunity to hone patient interaction skills, management of medical comorbidities, and interdisciplinary as well as interpersonal dynamics.

As we can all identify a senior colleague who might benefit from a refresher in one or more of these domains, it is incumbent on the neurosurgical intern to invest the time to develop them at the beginning of residency and continue to work on them throughout his or her career. While early surgical experience is important, enjoyable, and valuable, we believe that intern year is the perfect time to *learn to be a doctor before you learn to be a surgeon*, as the operative demands of senior and chief residency make it difficult to spend as much time developing patient care skills.

A floor intern is usually the patient's primary point of contact on the medical team and may be the only physician he or she sees throughout the hospitalization. Therefore, each patient interaction likely carries more weight for the patient than it does for the intern. As a physician, your

words carry the weight and the authority of the entire treatment team, so ensure that all the plans you communicate with your patients are approved by your seniors.

However, your unique relationship with the patient gives you the opportunity to spend more time discussing your patients' hospital course, treatment options, side effects, and aspects of their personal lives that no one else on the team will have time for. These conversations go a long way in easing patients' anxiety about their hospitalization or their condition. Taking this opportunity to connect with your patients can be one of the most rewarding parts of neurosurgical training.

While discharging patients can seem like one of the dullest and most repetitive aspects of floor work, it can be one of the most important. The discussion you have with a patient leaving the hospital may be the last time that patient ever has contact with the medical system! Therefore, it is your responsibility to discuss the details of all treatment rendered, expected recovery, physical activity limitations, diet restrictions, new/existing/future medications, medications to stop, warning signs to look out for, return precautions, and follow-up information witheverypatient you discharge.

While every medical school teaches students to avoid jargon with their patients due to differing levels of medical literacy, it is easy to forget that many patients lack even basic verbal or numerical literacy and may not be able to comprehend simple-appearing instructions such as *"take two tabs twice a day before meals"* or *"call the clinic if your temperature is greater than 101.5°F"*.

While it is easy to hand the patient the automatically-generated after-visit summary that pops out of the printer as soon as you click the button in the EMR system to discharge a patient, it is critical to discuss all discharge orders and instructions with each patient. Be sure to document an accurate neurological exam for all patients leaving, as that exam will serve as the new baseline when the patient calls the clinic or presents to the emergency department (ED) with a new problem.

Intensive care unit (ICU)

Interns in some programs have patient care responsibilities in the ICU, where patients generally require intense, hourly care by a dedicated nurse or a nurse covering only one or two other patients. ICU-level care can be one of the most challenging aspects of residency, as neurosurgical patients can be incredibly sick with several medical comorbidities, and even well-appearing patients can rapidly deteriorate. These patients may be in a dedicated neurosurgical, neurological, or surgical ICU, or they may stay in a medical or joint medical/surgical ICU. There are several variations of ICU management schemes:

- "Open" ICU – each department (such as neurosurgery) acts as a primary team, managing daily care for its own patients. There may or may not be other teams following and providing recommendations, such as medical ICU, composed of internal medicine, anesthesia, and emergency medicine providers, or neuro-critical care, composed of neurologists who have been trained in critical care medicine.
- "Closed" ICU – medical, surgical, or neurological ICU teams are the primary providers for each patient in "closed" units, with neurosurgery and other services acting as consultants, giving recommendations to the primary team pertaining to their service.

Many of the same principles regarding care of floor status patients apply to ICU-level care, but a heightened sense of awareness and attention to detail is required. Especially in neurosurgery, patients can deteriorate from their baseline status quickly. We recommend rounding frequently on ICU patients (even outside of formal rounds with the entire team), immediately responding to all pages from nurses (who usually have many years of experience caring for neurosurgical ICU patients), and making an attempt to evaluate the patient for any new complaint of pain or neurological change, no matter how minor.

Every senior resident has a story about picking up on an important issue early in its course by frequent, vigilant rounding – and many also have stories of problems they missed because they postponed seeing a patient

with what they thought was a minor complaint.

Several patient care topics are unique to ICU-level patients: management of the ventilated patient, invasive blood pressure monitoring and vasopressors, deep sedation, management of status epilepticus, brain death exams, and many more. While your department may have a formal curriculum regarding these topics, learning can be found in unexpected places – a respiratory therapist with down time, a pulmonary/critical care fellow leading an impromptu teaching session for his or her team, an ICU nurse with a stable, comatose patient. As almost everyone in the ICU setting has more experience than you, take the opportunity to learn from those around you.

No one expects interns to operate completely independently in any setting. Therefore, the principle of "loading the boat" applies to the ICU care more than to any other setting: when in trouble, call a senior, consult another service, or contact the chief or attending. No one will belittle you for asking an earnest patient care question, especially when the alternative is making a mistake alone.

Furthermore, challenging clinical scenarios can often be solved by a fresh set of eyes thinking about the patient for the first time. For all these reasons, we recommend bringing others on board sooner rather than later when dealing with a deteriorating or complicated patient.

Consults

Many interns are responsible for seeing new consults and admitting new patients to the neurosurgical service. While most patients come from the ED, patients admitted to other services can develop neurosurgical problems. In either case, consulting residents are tasked with seeing the new patient, obtaining a full H&P, staffing with an attending and/or a chief resident, either admitting the patient to the neurosurgery service or making recommendations to the primary team, and performing or preparing for any procedures that the patient requires.

Seeing consults may seem like an upgrade from floor work, but the pace

can be trying at times. Several consults can come in simultaneously or immediately after one another, leaving little time for documentation. Additionally, the consult question may not be the true neurosurgical issue, as the person who called may not be as familiar with neurosurgical issues as you.

Callers may also down-play, intentionally or not, the severity of the issue they are calling about. Therefore, we recommend that you see the new patient immediately or as soon as possible, gather all relevant information including documentation from other care settings and relevant imaging, and begin the process of staffing the patient with a chief resident or attending.

Different programs have different cultures regarding when to send a (secure) text message or when to call a chief resident or an attending on the phone. Some attendings may only want to be woken up for emergently operative cases. Others want to hear about every consult over the phone. Still others want a secure text message or email. We recommend speaking to senior residents who may know each attending's preference.

Document your findings and communicate your recommendations promptly – other services may be relying on you to know the next steps of care. If the patient requires a procedure, either set up and perform the procedure as soon as possible or begin the process of calling the staff required to do so.

Operating room

Interns often get the chance to begin learning how to operate. Some programs have dedicated rotations or apprenticeship-like arrangements where interns can spend structured time in the operating room learning from specific attendings, while other programs leave early operative experience up to interns to go into ORs and expose/close cases whenever they have downtime.

We recommend talking to senior residents in your program to learn about

what the culture of the program is regarding interns in the operating room. While any early operative experience is valuable, the primary goal of intern year is to learn to become a good doctor and to take care of patients safely, effectively and efficiently. An optional trip to the operating room should never come before any patient care tasks you are responsible for! Any time you are in the operating room, ensure that your patients are covered and that your pages are being answered!

Probably the most important surgical skills to begin learning well are preparing the operating room, opening, and closing. While your other duties may preclude you from staying for an entire case, the time between when the patient comes into the room and the critical portion of the case as well as the closure may be the highest-yield opportunities for learning techniques such as OR setup, using a scalpel, dissecting through tissue or achieving hemostasis with monopolar/bipolar electrocautery, and closing dura, muscle, fascia, and skin with various sutures.

Pay close attention to how each attending likes to set up their OR, expose and close, and which specific tools are used. Where will each team member stand? Where does the microscope get wheeled into the field (and is it balanced?) If a Mayfield clamp is to be used, are the pins prepared? Does the attending use Raney clips? Which drill bits are used to create bur holes or decorticate facets and transverse processes? Which sutures and needles are used to close all the layers of the scalp or the back? What kinds of dressings are preferred? Knowing preferred techniques for each attending at your institution will make you a more efficient surgeon during your senior residency.

Off-service rotations

While many interns jump into their first year of residency eager to learn as much about neurosurgery as possible, all neurosurgical trainees are required to rotate through several non-neurosurgical services to supplement their neurosurgical knowledge. Examples include general surgery, other surgical subspecialties, neurology, neuroradiology, neuropathology, ICU, or others.

All of these rotations are designed to teach interns complementary skills and knowledge bases. The teams you work with on these rotations deserve your full respect and attention – off service rotations are not vacations from neurosurgery! You are expected to fully participate in all of the day-to-day activities of the teams with which you rotate, including call (though, of course, this varies by program and institution). You may even be required to round on your neurosurgery patients before going to off-service rotations for the day, which often start later. As with all aspects of this year, check with a senior resident for guidance.

All that being said, just because neurosurgery interns may be foreign to other services, your presence is not an opportunity for senior residents on these teams to "dump" undesirable work onto you. Contact your program director if you feel that you are being given work simply so that others don't have to do it.

Above all, take the opportunity of being on another service to dive into the subject matter and figure out good strategies for retaining the information – since much of it will be on your written neurosurgery board exam!

Clinic

Many interns are expected to rotate through various attendings' clinics. The pace is very different than an inpatient service, and responsibilities may vary. In general, interns in clinic independently see patients, prepare a presentation, present to an attending, devise a plan, and see the patient together with the attending to present the plan. Programs vary in requirements, but many interns spend one half day per week in clinic.

One of the most important roles of a surgeon is deciding which patients need surgery, what type of surgery can best address the patient's problems, and when to operate. These are all skills that are best learned by working with senior attendings in clinic, who have the clinical judgment and experience to make these decisions on complex patients. Use clinic time as an opportunity to absorb some of this judgment and experience, as well as your attendings' bedside manners, as you build your own

practice style.

Mentorship

As a new physician, you will have plenty of responsibilities, challenges, and difficult situations to handle. The Latin root of the word “doctor” means “to teach”, and that is one of your new responsibilities. While you may not encounter formal teaching opportunities until senior residency (if your program is set up for this at all,) informal educational moments occur constantly during a normal working day in a hospital.

Medical student rotators always appreciate the opportunity to learn something practical about patient care, new or useful ways to remember key information, or interesting clinical scenarios they may not have been exposed to in their lectures. Furthermore, depending on the time of year, senior medical students may be beginning the process of applying to residency.

Beyond giving them the link to *The Neurosurgical Atlas* Medical Student Guide for Matching in Neurosurgery, you can tell them about your own path to neurosurgery, provide sample personal statements, and offer to help them with their specific application materials. None of us, the contributors to *The Neurosurgical Atlas*, could have achieved the successes we have enjoyed without this kind of individual mentorship, and it is not easily forgotten.

Other opportunities for teaching or mentorship exist as well. While nurses may know much more than you in the beginning of residency, the approach to patient care taught in medical school and nursing school is very different. If you have built a good relationship with nurses, the exchange of ideas and patient care mentalities can be a very rewarding experience, and each party has the opportunity to influence future physician-nursing relationships for a lifetime. Additionally, while advanced practice providers (APPs) will initially have much to teach you about day-to-day patient care, your deep interest in neurosurgery may have led you to learn about specific types of patients or operations in great detail, which all team members appreciate learning about.

Finally, as you progress through intern year and approach the transition to PGY-2, think about how you will pass on what you have learned to the next generation of interns. Try to remember, or better yet, write down all the times you wish you had known how to do something during your internship, and compile all of these pearls into a document you can share with next year's interns.

You may wish to formalize these tidbits into an "intern survival guide" that could include important phone numbers, program-specific responsibilities, common patient pathways, institution-preferred protocols for managing pain, nausea, constipation, and other common conditions, and a page prevention checklist that will keep next year's class as efficient as you have learned to be by the end of intern year!

When it Gets Tough

Dealing with dying patients, demanding attendings, and quarrelsome colleagues can be difficult for everyone. But when these trying aspects of life in the hospital are compounded with sleep deprivation, the potential for harm to an intern's physical and mental health can arise. *Regardless of your baseline physical and mental health, feelings of sadness, guilt, hopelessness, exhaustion, mood swings, weight loss or gain, isolation from loved ones, and more can happen to anyone!* **You are not alone.** As isolating as residency can feel, a world of support is available to you, and you should not feel that it is a sign of weakness to take advantage of it.

Your first line of support for work-related issues is your senior resident cohort. People who have gone through exactly the same feelings of stress, inadequacy, and exhaustion as you have will be able to empathize, provide tips on how to become more efficient, and help you manage your time and work-life balance more effectively. We hope that your program is the type of place where residents see each other as a second family and support each other through difficult times.

While it can be hard to be away from friends, significant others, and family, these people are in your life because they love and support you. While they may not be able to relate to some of the specific issues you

encounter as a resident/intern, especially if they are not in the medical field, they know you better than anyone else in your life and can support you through difficult times.

A small amount of effort to stay in touch with these people during residency can ensure that they are happy to support you when you need it! Your program director and program coordinator are confidential sources of support and mentorship you should always feel comfortable going to for advice about difficult situations.

A senior attending colleague may be a good alternative to the program director if you worry about how discussing your scenario with the program director may impact your training. Additionally, the office of graduate medical education (GME) at your institution is a good resource for finding the support you need as well.

Do your best to maintain physical and mental health by getting as much sleep as possible, doing some form of exercise at least once a week, and keeping up with some of the hobbies you enjoyed before residency.

The authors of this chapter are aware of how ridiculous this advice can sound in the midst of a 120-hour workweek when you feel like the weight of the entire hospital rests on your shoulders – we have been there! We have also seen how much happier and healthier we and our colleagues are when we force ourselves to have time for a game of tennis, a hike or run, a jam session with friends, an afternoon of wine tasting, or any other leisure activity.

Mental health in medicine has far too long been a taboo topic that many have avoided due to fears of being rejected from programs, denied disability insurance, or stigmatized as “weak” or “needy”. Tragically, several of your resident colleagues have committed suicide during the course of neurosurgical training likely in part due to this taboo.

If you or any one of your colleagues is thinking about hurting yourself, get help. We cannot emphasize this enough. Visit your campus health service, occupational health department, or outside health provider if you feel that

you need mental health support your department cannot provide. Many institutions offer their faculty and staff free, confidential, unaffiliated counseling sessions – please take advantage of this opportunity if you need it, and do not hesitate to suggest it to colleagues who you may see struggling. Support each other at all costs!

Pearl and Pitfalls

Internship is a whirlwind of learning and a roller coaster of emotions and new experiences that you will remember forever. As intimidating as the transition from student to real-life physician can be, everyone can be successful with the right attitude, work ethic, and preparation. Keep your head down, work hard, and you will emerge from internship (and, eventually, residency) with the skill set and experience you need to be an incredible neurosurgeon.

Don't forget:

1. **Be humble, hard-working, and gracious for your chance to participate in the care of sick patients.**
2. **When in doubt about whether something is your job, do the work.**
3. **Triage and prioritize effectively: Complete the most urgent or important tasks for the sickest patients first.**
4. **Everyone who works in the hospital has something to teach you and deserves your respect.**
5. **Healthy patients can get sick quickly.**
6. **Some patients are going to die, regardless of what you do.**
7. **Almost every patient and family you interact with in the hospital is having one of the worst experiences of their lives. Show them kindness and empathy.**
8. **Call for help early and often if you need it – this goes for both your patients and for you!**
9. **If today seems like the worst day of your life, tomorrow can only be better.**

10. **There may come a day when you cannot do this job. Today is not that day!**

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