

## Orthopedic Surgery: Supply, Demand and Recruiting Trends

A resource provided by Merritt Hawkins, the nation's leading physician search and consulting firm and a company of AMN Healthcare (NYSE: AMN), the largest healthcare workforce solutions company in the United States.

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### Introduction

Merritt Hawkins, the nation's leading physician and advanced practitioner search and consulting firm, produces a series of surveys, white papers, speaking presentations and other resources intended to provide insight into various healthcare staffing and recruiting trends.

Topics for which Merritt Hawkins has provided data and analyses include physician compensation, physician practice metrics, physician practice plans and preferences, rural physician recruiting recommendations, physician retention strategies, physician visa requirements, and the economic impact of physicians, among a variety of others.

This white paper examines supply, demand and recruiting trends in orthopedic surgery.

### Orthopedic Surgery: Scope of Practice

Orthopedic surgeons specialize in diagnosing, treating and repairing injuries, disorders and diseases affecting the musculoskeletal system.

An orthopedic surgeon's duties vary based on the needs of his or her his patients. Orthopedic surgeons diagnose and assess patients' injuries or diseases through diagnostic testing, such as X-rays to look for broken bones, or blood tests to check for rheumatoid arthritis. Despite being licensed surgeons, many orthopedic surgeons recommend and implement non-invasive treatments.

According to the American Academy of Orthopaedic Surgeons, as much as 50% of an orthopedic surgeon's practice is non-surgical. Orthopedic surgeons may cast and splint limbs, recommend rehabilitative exercises, or prescribe supplements and medications to strengthen joints or minimize pain. If surgery is necessary, they repair the injury, disease or damage. They may plate broken bones, reattach tendons and ligaments, or perform joint or hip replacements, among other procedures. Procedures commonly performed by orthopedic surgeons include:

- **Joint Replacement Procedures.** These procedures replace an injured joint with a prosthetic and are among the most common orthopedic operations. Common joint replacement surgeries include hip and knee replacement surgeries.

- **Revision Joint Surgery.** If an existing implant has failed, it may be necessary to remove it and implant a new one. Revision surgeries are often required when the patient received a defective implant or an older implant has failed.
- **Debridement.** Whenever tissue death has occurred and the affected tissue needs to be removed before healing can occur, a debridement procedure is how doctors will remove it. There are some cases where bone is also removed when necessary.
- **Spinal Fusion.** Spinal fusions join the vertebrae together to provide more stability to the spine or to repair damage to the spine.
- **Bone Fusion.** Like spinal fusions, bone fusions use grafting to fuse fractured bones together so that they can heal.
- **Soft tissue repair.** These procedures focus on torn ligaments or tendons.
- **Internal Fixation of Bones.** This type of surgery places fragments of bones together and keeps them in place using pins, screws or plates so that they can heal. In some cases, the devices will remain inside of the body.
- **Osteotomy.** If a child has bone deformities, he or she will need this type of operation to help correct the deformity so that the bone grows properly.

## History and Origins of Orthopedic Surgery

The modern term orthopedics stems from the older word “orthopedia,” which was the title of a book published in 1741 by Nicholas Andry, a professor of medicine at the University of Paris. The term orthopedia is a composite of two Greek words: “orthos”, meaning “straight and free from deformity,” and “paidios,” meaning “child.” Together, orthopedics literally means “straight child,” suggesting the importance of pediatric injuries and deformities in the development of this field.

Andry’s book also depicted a crooked young tree attached to a straight and strong staff, which has become the universal symbol of orthopedic surgery and underscores the focus on correcting deformities in the young.

The ancient Egyptians appear to have carried on the practices of splinting. Two splinted specimens were discovered during the Hearst Egyptian Expedition in 1903. The Greeks had a great deal of orthopedic knowledge with respect to fractures and dislocations, and wrote treatises describing traction, casting and bandaging. They even recommended early mobilization for fractures.

## The Modern Era

The 20th century saw the rapid development of treatments to better control infections as well as a wide range of medical technologies. In particular, the invention of the x-ray in 1895 by Wilhelm Conrad Rontgen improved the ability of physicians to diagnose and manage orthopedic conditions ranging from fractures to avascular necrosis of the femoral head to osteoarthritis.

The modern era of orthopedics is commonly thought to begin when Russell A. Hibbs, M.D, took the surgical helm of New York Orthopedic Hospital in 1898. His introduction of innovative surgical interventions for the treatment of orthopedic injuries helped the practice move from the repair of broken bones to the surgical specialty that it is today. He is particularly noted for pioneering spinal fusion, reporting on the results of this procedure in 1917. His legacy lives on into the new millennium through the application of his theories on spine, hip and knee surgery, the devices used in those procedures, and an educational society that bears his name.



The two World Wars served as a catalyst in the development of the subspecialty of orthopedic trauma, with increasing attention placed on open wounds and proficiency with amputations, internal fixation, and wound care. Dr. Marius Smith-Peterson at Harvard introduced arthroplasty in 1923 which made possible the mobilization of people with hip fractures.

In 1942, Austin Moore performed the first metal hip arthroplasty, also for the treatment of hip fractures. The field of joint replacement was subsequently advanced by the work of Sir John Charnley at the University of Manchester in the 1960s.

### **Education and Training**

Orthopedic surgeons undergo years of rigorous education and training before operating on patients. Their education starts in a bachelor's degree program, typically in pre-medical studies, biology or a similar field. After receiving an undergraduate degree, they attend an additional four years of medical school taking advanced courses in anatomy and physiology, pharmacology and biochemistry. They also participate in clinical rotations that introduce them to specialties in medicine, including surgery.

After medical school, orthopedic surgeons continue their training through five years of residency education. Typically, they spend one year of residency training in general surgery and four years in orthopedic surgery. Residents start out observing licensed surgeons and gradually become more involved in surgical procedures under supervision.

First-year residents work closely with experienced orthopedists, but fourth- and fifth-year residents typically practice with very limited supervision.

### **Orthopedic Surgery Subspecialties**

Many orthopedic surgeons elect to do further training, or fellowships, after completing their residency training. Fellowship training in an orthopedic sub-specialty is typically one year in duration (sometimes two) and sometimes has a research component involved with the clinical and operative training. Examples of orthopedic sub-specialty training in the United States are:

- Hand and Upper Extremity
- Shoulder and Elbow
- Total Joint Reconstruction (arthroplasty)
- Pediatric Orthopedics
- Foot and ankle surgery
- Spine surgery
- Musculoskeletal oncology
- Surgical Sports Medicine
- Orthopedic Trauma

These specialty areas of medicine are not exclusive to orthopedic surgery. For example, hand surgery is practiced by some plastic surgeons and spine surgery is practiced by most neurosurgeons. Additionally, foot and ankle surgery is practiced by board-certified Doctors of podiatric medicine (D.P.M.) in the United States. Some family medicine physicians practice sports medicine; however, their scope of practice is non-operative.



## Licensure and Board Certification

Orthopedic surgeons must be licensed in the state they in which they practice. Requirements vary slightly by state, but usually surgeons must have a degree from an approved medical school, complete an approved residency program, and pass a licensing exam. Most commonly, doctors of medicine take the U.S. Medical Licensing Examination and doctors of osteopathy take the Comprehensive Osteopathic Medical Licensing Examination. The American Board of Orthopaedic Surgery offers board certification in orthopedic surgery to surgeons who complete an approved residency; have two years of work experience in orthopedic surgery; and pass written and oral exams to demonstrate their competency. While board certification is voluntary, it helps orthopedic surgeons showcase their professionalism and expertise.

## PRACTICE SETTINGS

According to the American Academy of Orthopaedic Surgeons' 2016 Census, 35% of orthopedic surgeons are in a private practice group.

Below is the breakdown for orthopedic surgeon practice setting:

1. Private practice group: 35%
2. Hospital center: 17%
3. Academic practice: 15%
4. Solo private practice: 11%
5. Multispecialty group private practice: 9%
6. Academic private practice: 4%
7. Military: 2%
8. HMO: 2%
9. Public institution: 1%
10. Locum tenens: 1%

An additional 3% of orthopedic surgeons serve in an undefined "other" practice setting.

*Source: American Academy of Orthopaedic Surgeons 2016 Census*

## A Limited Supply

The supply of orthopedic surgeons in the United States is dictated by the number of residency training positions that are available in the specialty. The number of these positions is limited by the cap Congress placed on federal funding for physician graduate medical education in 1997. Typically, all of these positions are filled during the annual Resident Match, as orthopedic surgery is a highly prized specialty among medical school graduates.

The chart below indicates the current supply of orthopedic surgeons in the U.S.

### Current supply

#### Specialty: Orthopedic Surgery

Total Physicians: 22,274

	Total	% of Total
Total Physicians in Patient Care	17,354	78%
International Medical School Graduates	1,114	6%
Board Certified	14,548	84%
Research	50	<1%
Administrative / Teaching	186	1%
Last Year Residents	719	4%
Female	936	5%
Male	16,418	95%
Age		
45 and over	14,277	82%
55 and over	9,921	57%

As these numbers indicate, slightly over 700 orthopedic surgeons come out of residency training each year, replacing those who retire, pass away or are otherwise removed from the workforce. Close to 60% of orthopedic surgeons are 55 years old or older, and a wave of retirements in the specialty can be anticipated. This “retirement cliff” may lead to a circumstance in which the number of orthopedic surgeons leaving the field will be larger than those entering.

Though over 50% of students entering medical school are now female, and while female physicians dominate the ranks of specialties such as pediatrics and obstetrics/gynecology, only 5% of active orthopedic surgeons are female. Similarly, though approximately 25% of all active physicians are international medical graduates (IMGs), only six percent of orthopedic surgeons are IMGs.

### A Growing Demand

While the supply of orthopedic surgeons remains limited, demand for orthopedic surgery services is increasing, driven largely by population aging. Over 10,000 baby boomers turn 65 every day, and this population group is the fastest growing in the country. **The number of people 65 and older is expected to reach 83.7 million in 2050, according to the U.S. Census Bureau, up from about 44 million today.** Though seniors comprise only 14% of the current population, they generate 37% of diagnostic tests and procedures and 34% of inpatient procedures, according to the Centers for Disease Control and Prevention.

The effect of population aging on demand for orthopedic surgery is reflected in the fact that the number of

hip replacements among inpatients 45 and older increased from 2000 to 2010, from 138,700 to 310,800, and from a rate of 142.2 per 100,000 people to 257.0 per 100,000 people, while demand for knee arthroplasties is projected to jump by 673% by 2030 (*Centers for Disease Control and Prevention/AAMC*).

Demand for orthopedic surgeons also is reflected in the number of search engagements Merritt Hawkins conducts for our clients, which is tracked in our annual *Review of Physician and Advanced Practitioner Recruiting Incentives*. Since we began tracking this data, orthopedic surgery has consistently been among our most requested recruiting assignments, generally in the top ten during most of our history, but rarely, if ever, out of the top 15.

### Looming Shortages

In its April, 2019 report on physician supply and demand trends, the Association of American Medical Colleges (AAMC) projected a shortage of up to 122,000 physicians by 2032. Of these, up to 55,000 will be primary care physicians, but an even larger number (67,000) will be specialists. Among specialists, there will be a shortage of up to 23,000 surgeons, according to the AAMC. A 2016 Health Resources and Services Administration (HRSA)/ Department of Health and Human Services (HHS) workforce analysis projected shortages in nine out of 10 surgical specialties by 2025, with the largest shortages in general surgery, urology, ophthalmology and orthopedic surgery (see chart below).

#### Projected Shortage of Surgeons by 2025

Exhibit 1: National Estimates of Supply and Demand of Surgical Specialty Physicians, 2013 -2025 Specialty	Baseline Estimates (FTEs, 2013)		Projections (FTEs, 2025)	
	Supply = Demand	Supply	Demand	Difference
General Surgery	28,190	30,760	33,730	-2,970
Colon/Rectal Surgery	1,710	2,120	1,990	130
Neurological Surgery	5,160	4,930	6,130	-1,200
Ophthalmology	18,470	16,510	22,690	-6,180
<b>Orthopedic Surgery</b>	<b>25,420</b>	<b>24,350</b>	<b>29,400</b>	<b>-5,050</b>
Cardiothoracic Surgery	4,490	3,600	5,410	-1,810
Otolaryngology	9,440	9,190	10,810	-1,620
Plastic Surgery	7,720	7,280	8,770	-1,490
Urology	9,910	8,830	12,460	-3,630
Vascular Surgery	3,050	3,410	3,930	-520
<b>Total</b>	<b>113,560</b>	<b>110,980</b>	<b>135,320</b>	<b>-24,340</b>

Source: Health Resources and Services Administration (HRSA)

As these numbers indicate, HRSA projects a shortage of 5,050 orthopedic surgeons by 2025.

### Orthopedic Surgery: Compensation

Orthopedic surgeons are among the most highly compensated types of physicians in the United States. Below is a chart showing current compensation for orthopedic surgeons as tracked by several sources, including Merritt Hawkins' 2019 *Review of Physician and Advanced Practice Recruiting Incentives*.

It should be noted that Merritt Hawkins' number is the **average starting salary** for orthopedic surgeons, not including bonuses or other compensation. By contrast, the other sources show average total compensation pre-tax.



## Average Compensation for Orthopedic Surgeons

Sullivan Cotter	\$649,401
Integrated Healthcare Strategies	\$631,654
Medical Group Management Association	\$623,227
American Medical Group Association	\$591,245
Merritt Hawkins	\$536,000

## Recruiting Recommendations

Given the current limited supply of orthopedic surgeons and the strong demand, hospitals, medical groups and others seeking physicians in this special should consider incorporating a variety of best practices to enhance their recruiting success. Some of these are reviewed below.

### More Sub-specialization

A first factor to consider is that it is becoming increasingly difficult to recruit orthopedic surgeons because candidates are becoming more and more specific on the style of practice they are seeking and more committed to practicing in the specific geographic location they prefer. Many orthopedic surgeons are electing to complete fellowships such as Sports Medicine and wish to focus their practice exclusively on their subspecialty in (typically) a suburban location. Prior to this trend, most candidates often would complete their general orthopedic surgery training and then specialize through experience rather than a fellowship. Many of these physicians would be willing to practice general orthopedics with a subspecialty emphasis. Today, they wish to concentrate exclusively on their subspecialty, and not all opportunities can offer this option.

### Offer a Competitive Practice Environment

It is important to structure the practice opportunity to be as attractive as possible. Not all candidates are seeking the same thing, but in general a positive practice opportunity for many orthopedic surgeons might include an existing practice in which a physician is about to retire, so that the new physician will have an established referral network and patient base. Many orthopedic surgeons would prefer to join a private group in which they can receive ancillary revenue from an ambulatory surgery center (ASC).

Like other physicians, orthopedic surgeons prefer a controllable lifestyle, and a call schedule of 1:4 or better is preferred by most. Few candidates are seeking a solo practice. They prefer to have at least four or five colleagues for call and for comradery.

ORS trauma call is a major negative for many candidates, particularly if they are focusing on a subspecialty. For example, a foot and ankle orthopedic surgeon usually does not want to have to be called into the ED for a fractured hip on an 80 year old.

The compensation must be competitive, with the majority of candidates seeking a potential of \$750,000 annually, and often considerably more if they are fellowship trained in total joints, spine, surgery, etc.

The other reality is that location makes a significant difference to today's candidates. Because there are a lot of options in a competitive market, and because orthopedic surgeons earn high incomes regardless of location, it may be difficult to attract candidates to traditionally challenging locations with just a high income potential. It therefore is important to make all other aspects of the practice as positive as possible.



Some hospitals or groups may need to offer incentives beyond what candidates usually will find in a large metro areas. Smaller hospitals may consider offering in the neighborhood of \$300,000 in student loan repayment, spread out over three to five years, if they are committed to attracting younger orthopedists. Younger candidates are unlikely to be offered student loan repayment by practices in larger cities, and younger candidates continue to come out of training with higher levels of debt.

It also is important to be practical about candidate parameters (see below).

### **Candidate Parameters**

Many hospitals (particularly those in smaller communities) seek orthopedic surgeons who are able to “do it all,” including general orthopedics, total joints, sports medicine, etc. Hospitals realize how much revenue orthopedics generate, and they become invested in recruiting young, energetic, and motivated orthopedic surgeons. However, most orthopedic surgeons who want to relocate to a smaller community are in the latter stages of their careers. They are tired of the cut-throat competition in the big cities, the high overhead costs, the low reimbursements, high cost of living, etc. In addition, their children may be grown and they are in a position to relocate to a smaller community. These are key advantages for hospitals or groups located outside of major metropolitan centers.

It therefore is important to consider candidates in the latter stages of their careers, both because they may be seeking smaller communities and because more experienced orthopedic surgeons are often comfortable doing full spectrum orthopedic surgery. By contrast, candidates coming out of training can be very specific about the type of practice they want, and most do not want a truly full scope orthopedic practice. They also believe they are going to be most successful practicing in a large health system in a major city, or being part of a large orthopedic group in a metro are. Most young orthopedic surgeons will not consider looking at a smaller community, and typically their spouse is very much against it. They are going to want a larger group where they can limit their call, but also maximize the cases they do in their subspecialty. Often, larger groups are not seeking generalists because everyone else in the group subspecializes.

Keep in mind that hospitals or groups that will only look at a fellowship trained orthopedic surgeon dramatically limit their pool of potential candidates. Because the push to become fellowship trained is relatively new in this specialty, there are many outstanding residency trained orthopedists who have, through experience, sub-specialized in total joints, sport medicine, etc. By indicating that they need someone to do hip replacements and will only look at someone fellowship trained and board-certified, health facilities remove what may be qualified candidates from consideration. You will need to be prepared to answer questions regarding percentages of how much total joints that surgeon can do in their practice as well to pay them more than what the surveys are listing for an ORS.

As with other types of physician searches, it is important to remain open minded and consider not just more experienced candidates but those from different backgrounds, whether they are U.S. medical graduates, international medical graduates, male, female, white or minority.

### **Remain Flexible**

As when recruiting any other specialty, hospitals and medical groups need to be open minded and flexible when it comes to recruiting orthopedic surgeons. They need to understand what is competitive in the market, what the market trends are, and what distinguishes younger candidates from older candidates.

For example, younger candidates completing their residency and typically are very well trained and





familiar with the latest treatment protocols, technology and procedures in their subspecialty. However, often they are not equipped to truly evaluate a practice opportunity and do not realize the importance of choosing an opportunity in a location that is not overly saturated and that does have an established referral network. They may be impressed with how modern or deluxe the facilities are at a hospital or group in a major metro area, but they may not understand that they will have to fight tooth and nail to build a busy practice.

Younger orthopedists also may assume that all orthopedic surgery opportunities in smaller communities are about the same, which is an error. Not having built a practice, they may not be willing or able to take call, which is a key to building a practice, or spend time after hours with coaches and administrators if they are specializing in Sports Medicine. These are generalizations, but they underscore the importance of remaining flexible and not committing only to candidates from Central Casting (i.e., young, U.S. trained, eyes of blue).

Remaining flexible also means understanding what, realistically, is going to attract a qualified candidate to your opportunity. For example, just because a hospital has never offered student loan repayment in the past, doesn't mean that it should rule out the idea in today's market.

### **Know Your Opportunity**

It also is important that whoever is conducting the search for an orthopedic surgeon become extremely conversant with the orthopedic department and how the practice is structured. The recruiter must know all the relevant details regarding the opportunity, including call schedule, satellite clinics, OR schedules, wRVU rates, average number of wRVUs per orthopedist, details of the contract, etc.

Too often, candidates come back from the interview and report that they enjoyed meeting with hospital staff and that the facility was impressive, but they did not have any of their questions answered regarding "what will my specific practice look like?" They are still unsure about the number of patients they can realistically expect to see, number of patients per day in the clinic, number of cases they will be doing per year, number of wRVU's they can expect to accrue and the other "nuts and bolts of the practice." Candidates even walk away from some interviews not knowing how call will be structured.

Knowing exactly what the strengths and weaknesses of a practice are gives candidates a feeling of confidence. Candidates want to join a practice where they feel that leadership knows exactly what they are doing, making them feel that they will be highly successful if they were to join the practice.

Keep in mind there are a lot of different kinds of fellowships in orthopedic surgery. They are not as standardized as other specialties, such as cardiology, and can be called a lot of different things. Also, consider that some surgeons will complete multiple fellowships yet still be in a general practice, for a variety of reasons. It may be difficult to target certain physicians unless their subspecialty is fairly straight forward, like spine.

### **Conclusion**

As with many other specialties in today's market, demand for orthopedic surgeons exceeds supply. It is therefore important when recruiting for this specialty to understand market dynamics, be flexible and creative when considering candidate parameters, compensation and practice structures, and to thoroughly understand the specifics of the practice.



## About Merritt Hawkins

Established in 1987, Merritt Hawkins is the leading physician search and consulting firm in the United States and is a company of AMN Healthcare (NYSE: AMN), the largest healthcare workforce solutions organization in the nation. Merritt Hawkins' provides physician and advanced practitioner recruiting services to hospitals, medical groups, community health centers, telehealth providers, and many other types of entities nationwide.

The thought leader in our industry, Merritt Hawkins, produces a series of surveys, white papers, books, and speaking presentations internally and also produces research and thought leadership for third parties. Organizations for which Merritt Hawkins has completed research and analysis projects include **The Physicians Foundation, the Indian Health Service, Trinity University, the American Academy of Physician Assistants, the Association of Academic Surgical Administrators, and the North Texas Regional Extension Center.**

This is one in a series of Merritt Hawkins' white papers examining a variety of topics directly or indirectly affecting the recruitment and retention of physicians and advanced practice professionals, including physician assistants (PAs) and nurse practitioners (NPs).

Additional Merritt Hawkins' white papers include:

- ❖ Physician Supply Considerations: The Emerging Shortage of Medical Specialists
- ❖ Physician Emotional Intelligence: Going Beyond "A-Type" Personalities
- ❖ Ten Keys to Enhancing Physician/Hospital Relations: A Guide for Hospital Leaders
- ❖ Rural Physician Recruiting Challenges and Solutions
- ❖ Psychiatry: "The Silent Shortage"
- ❖ NPs and PAs: Supply, Distribution, and Scope of Practice Considerations
- ❖ The Physician Shortage: Data Points and State Rankings
- ❖ RVU FAQ: Understanding RVU Compensation in Physician Employment Agreements
- ❖ The Economic Impact of Physicians
- ❖ International Physicians and Immigration Requirements: An FAQ
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