

# Starting a New Orthopaedic Residency Program: A Step-By-Step Guide for Institutions, Hospitals and Program Directors

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Citation: Knopf E. A Starting a New Orthopaedic Residency Program: A Step-By-Step Guide for Institutions, Hospitals and Program Directors. *J Ortho Sci Res.* 2026;7(2):1-16.

<https://doi.org/10.46889/JOSR.2026.7202>

Received Date: 09-04-2026

Accepted Date: 29-04-2026

Published Date: 06-05-2026



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## Abstract

Orthopaedic surgery residency programs consistently rank among the most competitive training opportunities for medical school graduates, with demand far exceeding available positions. Additionally, the rising need for musculoskeletal care and the increasing demand for joint replacement surgeries underscore the critical importance of expanding the orthopaedic workforce. Addressing this disparity by increasing the number of residency training positions is vital to meeting the growing demand for care, mitigating orthopaedic surgeon shortages and fostering a culture of research and innovation through the integration of new residents.

This article provides a step-by-step guide on establishing a new orthopaedic surgery residency program, outlining key considerations such as identifying sponsoring institutions, funding, curriculum development, accreditation requirements, marketing and other essential components. Starting a new program is a complex endeavor requiring meticulous planning and collaboration. This guide is a resource for those working to expand GME and address challenges in the orthopaedic workforce.

**Keywords:** Orthopaedic Surgery; Residency; Graduate Medical Education; Surgical Training; Teaching Hospitals

## Introduction

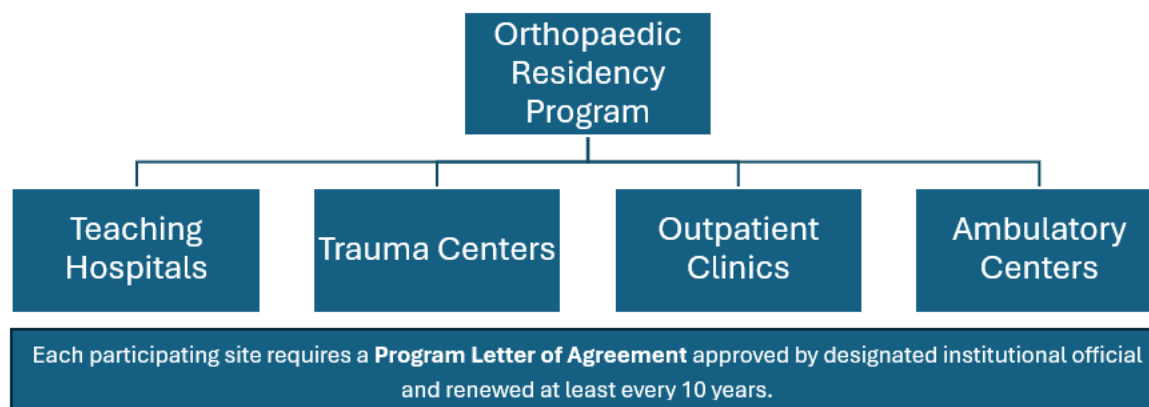
Orthopaedic surgery remains one of the most competitive specialties for medical school graduates [1]. Despite an increasing number of qualified applicants, the availability of residency positions has failed to keep pace [2,3]. Data from the 2022 residency match cycle revealed that approximately 40% of applicants for orthopaedic surgery positions did not successfully match [4]. Between 2008 and 2018, the total number of applicants increased by roughly 15%, while the number of applications submitted per applicant nearly doubled and during the same period, only 11 new orthopaedic surgery residency programs were established [5]. The gap between applicants and available positions may continue to grow as unmatched candidates reapply with additional experience. Only 58% of unmatched orthopaedic applicants from 2016 to 2018 successfully matched on reapplication, highlighting the need to expand residency opportunities [6].

The projected demand for orthopaedic surgeons is rising in tandem with demographic shifts in the United States [7,8]. The shortage is further compounded by rising demand for orthopaedic care, with projections estimating a 174% increase in primary hip arthroplasties by 2030 and a need to double total joint arthroplasty caseloads by 2050 to meet population needs [9,10]. Meeting these future needs will require a robust orthopaedic workforce, highlighting the urgency of expanding residency training programs. This guide offers a practical roadmap for developing, funding and launching new orthopaedic surgery residency programs, addressing key elements such as funding, curriculum, accreditation and marketing.

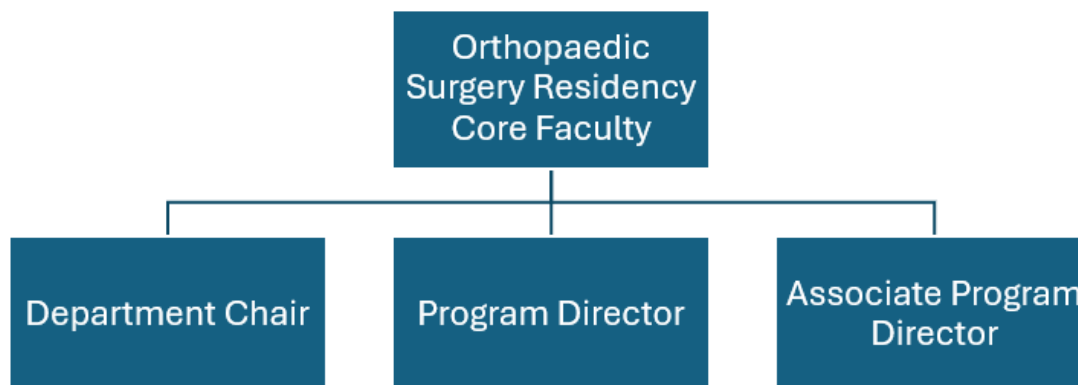
## ACGME Requirements Overview

The Accreditation Council for Graduate Medical Education (ACGME) outlines core standards to ensure high-quality orthopaedic residency training. Programs must span 60 months, with at least 36 months in orthopaedic subspecialty rotations. Multiple participating sites may be used, including hospitals, trauma centers, clinics and ASCs. Each site must have a Program Letter of Agreement (PLA), approved by institutional officials and renewed every 10 years, detailing responsibilities for resident education (Fig. 1). Programs must have at least three core faculty, including an ABOS- or AOBOS-certified Program Director, each dedicating a minimum of 20 hours weekly (Fig. 2). A 1:4 faculty-to-resident ratio is required and each subspecialty must be staffed by at least one certified faculty member.

Resident performance is assessed using the ACGME Milestones, which serve as a developmental framework for tracking progress across the six key competencies: patient care, medical knowledge, professionalism, interpersonal skills, systems-based practice and practice-based learning [11,12]. The milestones are organized into Levels 1 through 5, representing the progression from novice to expert. Advancement through milestone levels is based on demonstrated performance rather than post-graduate year, allowing for variability in individual progress [12]. The Clinical Competency Committee (CCC) conducts semi-annual reviews to evaluate milestone achievement and ensure residents are meeting program expectations [13]. Furthermore, the sponsoring institution must also have ACGME-I-accredited programs in general surgery, internal medicine and pediatrics so that orthopaedic residents can be provided with interprofessional training with other specialties [14].



**Figure 1:** Clinical training sites affiliated with an orthopaedic residency program. This diagram illustrates the primary clinical training environments that comprise an orthopaedic surgery residency program. Residents rotate across a variety of affiliated sites, including teaching hospitals, trauma centers, outpatient clinics and ambulatory centers, to gain comprehensive exposure to both inpatient and outpatient orthopaedic care.



**Figure 2:** Core faculty leadership in an orthopaedic surgery residency program. Example of core faculty leadership structure within an orthopaedic surgery residency program. Core faculty typically include the department chair, program director and associate program director, all of whom are required to be certified by the American Board of Orthopaedic Surgery (ABOS) or the American Osteopathic Board of Orthopaedic Surgery (AOBOS). Core faculty are expected to dedicate a minimum of 20 hours per week to the residency program in accordance with ACGME requirements.

## Building the Infrastructure

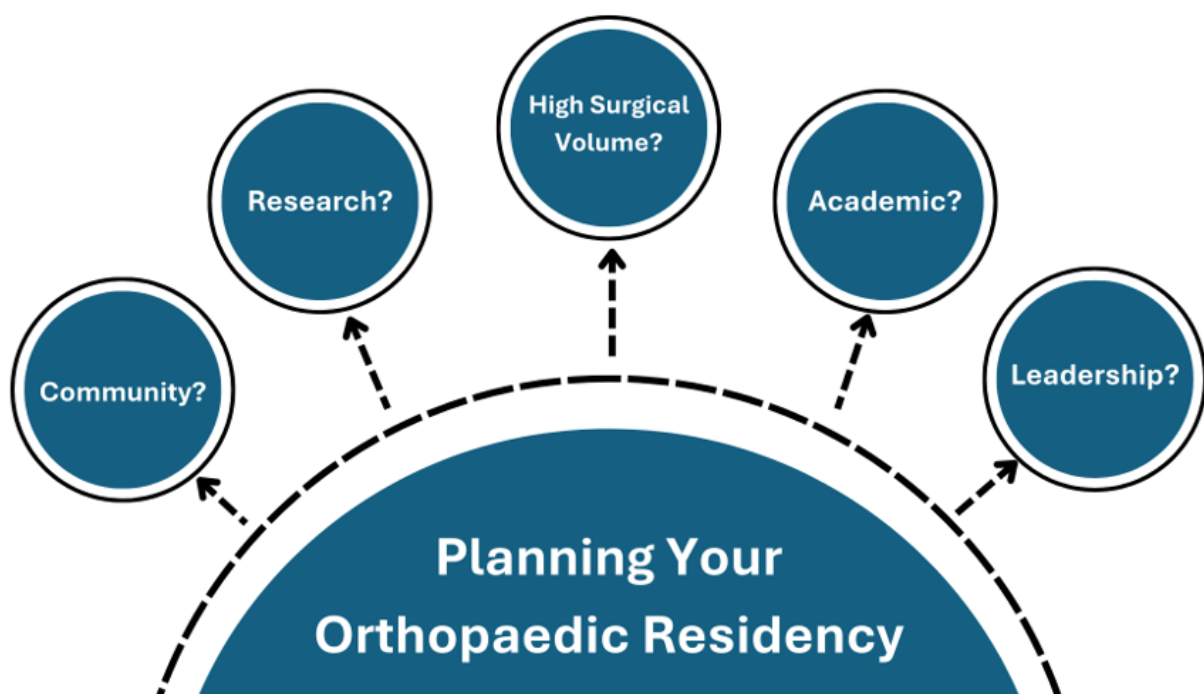
### *Establishing an Institutional Affiliation and Primary Training Site*

The institutional affiliation of a residency program plays a critical role in shaping its clinical and operative experiences, reputation and mission. Partnering with a high-volume medical center that serves a diverse patient population offers residents extensive exposure to complex orthopaedic cases and hands-on surgical training [15]. Alternatively, affiliations with renowned academic institutions emphasizing research and education cultivate a program culture focused on innovation, scholarly activity and leadership development [16]. Programs based at community hospitals in underserved or rural areas appeal to applicants seeking comprehensive clinical training with a strong emphasis on community health [17]. These partnerships not only shape the training environment but also impact the program's reputation and its ability to attract applicants aligned with its values and goals. (Fig. 3).

### *Collaborating with Additional Training Sites*

While the primary site serves as the foundation for the program, partnerships with additional training sites are often essential to meet case exposure and subspecialty training requirements [18]. These sites may include trauma centers, Ambulatory Surgical Centers (ASCs), VA hospitals and private orthopaedic practices. The program must ensure consistency in orthopaedic education across all participating sites by monitoring the clinical learning environment and appointing a site director at each location to oversee resident education and collaborate with the program director [14].

Partnerships between the sponsoring institution and community training sites should be mutually beneficial. For community hospitals, participating as a training site increases surgical capacity, reduces staff workload and needs, while enhancing patient care [19]. For example, rotations at the VA expose residents to the single-payer healthcare model, while rotations at ambulatory care centers provide experience in a private-practice setting [20]. These varied training environments offer residents exposure to various healthcare systems and diverse patient populations and musculoskeletal pathologies, equipping them to navigate unique clinical challenges across different practice settings [21].



**Figure 3:** What do you want your residency to be known for?. Key institutional priorities influencing orthopaedic residency program selection. This example highlights major areas of emphasis that shape residency training, including community service, research, surgical volume, academic affiliation and other mission-driven components. These institutional focuses help define the residency experience and guide applicants in aligning their personal and professional goals with a program's strengths.

## Developing a Budget and Securing Funding for an Orthopaedic Residency Program

### *Initial Start-up Cost*

Launching an orthopaedic residency program requires significant upfront investment in program development, including ACGME application preparation, infrastructure, faculty recruitment across subspecialties and acquisition of training facilities such as simulation labs and skills centers. Application-related costs include a one-time ACGME application fee of \$7,380 and an annual accreditation fee ranging from \$5,125 to \$6,200, depending on program size [21]. These fees are billed through the Sponsoring Institution, which also incurs an additional 2.5% charge based on total program fees [21].

Faculty recruitment is a major expense, often requiring relocation support, start-up compensation and incentives to attract American Board of Orthopaedic Surgery (ABOS) or American Osteopathic Board of Orthopaedic Surgery (AOBOS) certified surgeons. Hiring a full-time program coordinator is essential to manage daily operations, scheduling and accreditation compliance [22]. Additional investments are needed for resident call rooms, conference space, offices and skills training facilities to create a robust educational environment.

### *Strategic Planning for Medicare GME Funding*

Under the Balanced Budget Act of 1997, Medicare sets a resident cap based on the hospital's initial five-year training period. During this "cap-building" window, hospitals should maximize resident enrollment to optimize long-term funding. Medicare GME payments currently average approximately \$140,000 to \$160,000 per resident annually, although the exact amount varies by institution [23]. Institutional factors that influence GME funding include the hospital's Medicare patient volume, resident-to-bed ratios, PRA and geographic adjustments [22,24]. Once a hospital's cap and PRA are set, they generally cannot be changed, except under specific conditions such as expansion into rural or underserved areas [25].

### *Ongoing Costs*

Sustaining program quality requires careful management of ongoing operational expenses. Resident salaries and benefits, typically ranging from \$66,000 to \$90,000 annually per resident, represent a significant recurring cost, along with faculty compensation for teaching, supervision and mentorship [26]. Programs should allocate funding for visiting lecturers, subspecialty education and scholarly activity, including research staff, statistical support and resident stipends for conferences and workshops, while also maintaining skills labs, surgical instruments, implants and models to support ACGME requirements and hands-on training.

### *Funding Sources*

To ensure long-term financial sustainability, programs should consider leveraging multiple funding sources. Primary funding is typically derived from Medicare GME payments, which are composed of Direct and Indirect GME adjustments (DGME and IME, respectively) [22,23]. The DGME payments cover direct training costs (resident stipends, faculty teaching time and GME office operations), whereas the IME payments compensate hospitals for increased patient care costs in the teaching setting [27]. These payments, however, are contingent on resident caps and the proportion of Medicare inpatient volume. Hospitals training residents beyond their Medicare cap must secure other institutional or alternative sources of funding, including through VA affiliations, other health systems and private donations or grants (Table 1) [27,28].

Funding Source	Description	Estimated Amount (U.S. \$)
<b>Medicare Program</b>	Direct GME Payments: Covers salaries and administrative costs. IME Payments: Compensates for additional teaching-related costs.	~\$140-160,000 per resident annually
<b>Medicaid Program</b>	Provides GME funding; varies by state. Examples: \$40M in CA (2021), hundreds of millions in NY.	Varies by state
<b>Veterans' Health Administration (VA)</b>	Covers resident salaries, benefits and training costs for programs within VA medical centers.	~\$163,000 per resident annually
<b>Private/Institutional</b>	Donations, grants, university partnerships and hospital funds.	Varies greatly

**Table 1:** Funding sources for starting an orthopaedic surgery residency program.

## Faculty Recruitment and Development

### *Selecting a Program Director (PD)*

The ACGME outlines specific qualifications for the program director of orthopaedic surgery to ensure effective leadership, educational oversight and resident development. The program director must have at least three years of documented educational or administrative experience and other qualifications deemed acceptable by the Review Committee [29]. Additionally, the director is required to hold current certification from the ABOS or AOBOS as well as an active medical license [14]. Further details for program director and program coordinator qualifications are provided in Table 2.

Role	Qualification	Details
<b>Program Director</b>	Certification	Must be certified by the American Board of Orthopaedic Surgery (ABOS) or the American Osteopathic Board of Orthopaedic Surgery (AOBOS) for at least 2 years and serve as core faculty.
	Experience	Minimum 3 years of clinical practice in orthopaedic surgery following training.
	Licensure	Current medical licensure in the state where the institution is located.
	Trainings	Recommended to participate in ongoing education courses and training during the role.
<b>Program Coordinator</b>	Administrative Experience	Experience in GME administration, detail-oriented, with skills in coordinating rotations, case logs and resident evaluations.
	Technical Proficiency	Proficient in residency management software (ACGME's ADS, Case Log System) and general office applications.
	ACGME Knowledge	Familiar with ACGME accreditation standards, case log thresholds, Milestones evaluations and duty hour regulations.

**Table 2:** Qualifications for program director and program coordinator selection. ABOS = American Board of Orthopaedic Surgery; AOBOS = American Osteopathic Board of Orthopaedic Surgery; GME = Graduate Medical Education; ACGME = Accreditation Council for Graduate Medical Education; ADS = Accreditation Data System.

### *Selecting Faculty Members*

Establishing clearly defined faculty roles and responsibilities is essential to the success of an orthopaedic surgery residency program. Faculty should be selected based on their ability to fulfill key roles such as:

- Clinical Education: Faculty who supervise residents during clinical rotations, providing hands-on training in orthopaedic procedures and patient care
- Research: Faculty who mentor residents in orthopaedic research and guide them in producing high-quality scholarly work
- Academic Teaching: Faculty who deliver educational lectures and lead discussions on orthopaedic topics during grand rounds and resident conferences

Recruitment qualifications should emphasize board certification, significant clinical experience in orthopaedic subspecialties, a history of teaching and academics and research expertise. Faculty may be recruited from private practice orthopaedic surgeons with teaching or academic affiliations, as well as from traditional academic and university-based orthopaedic surgeons.

To recruit faculty, programs can:

- Post openings on orthopaedic boards, journals and society platforms (e.g., AAOS, AOA)
- Network at conferences, online platforms and through mentorship or alumni channels
- Partner with local medical schools and teaching hospitals to identify qualified educators

### *Faculty Compensation and Advantages to Serving as a Faculty Member*

Faculty compensation should be competitive with industry standards to attract qualified candidates. According to a 2023 Medscape survey, the average salary for orthopaedic surgeons was \$573,000 [30]. Faculty salaries should align with or exceed this benchmark, considering regional and institutional factors. Benefits may include insurance, research support, CME and leadership opportunities. Employed faculty may receive dedicated support for teaching, whereas private practice surgeons typically require additional financial and time accommodations, which should be factored into the program budget.

### **Subspecialty Departments**

Creating subspecialty departments is essential to provide residents with comprehensive training across orthopaedic disciplines. It involves recruiting board-certified faculty to lead clinical care, didactics and research; developing focused curricula around outpatient, inpatient and surgical management; structuring rotations to balance operative experience and academic learning; equipping each department with essential tools, imaging and facilities; and securing funding to support both initial setup and ongoing operations. This approach ensures residents acquire the knowledge and skills needed across all orthopaedic subspecialties.

### **Educational Development**

#### *Content and Curriculum*

The orthopaedic surgery residency curriculum should follow ACGME guidelines, focusing on subspecialty competency-based goals that prepare residents for independent practice. Key components of the curriculum include:

- Responsibilities for patient care, safety and management under graded supervision by credentialed attending physicians
- Consistent clinical teaching from supervising physicians
- Emphasis on mentee-mentor relationships between junior and senior level residents
- Objective evaluations based on resident performance and milestones
- Structured didactic activities integrated into the schedule

Beyond clinical and operative experiences, the didactic curriculum forms the foundation of orthopaedic knowledge. Program developers must decide on a schedule for didactics, balancing daily one-hour sessions or weekly 2–3-hour blocks of protected time. Didactic sessions are critical for preparing residents for the Orthopaedic In-Training Exam (OITE), which serves as a predictor of board readiness. Sessions can be resident-led, faculty-led or a hybrid model based on the program director's preference.

#### *Block Diagram*

Block diagrams are essential for mapping resident schedules. A sample block diagram is available on the ACGME website and has been adapted for Fig. 4. The diagram should include:

- Clinical Rotations
- Didactic Education, including lectures, workshops, simulations and grand rounds
- Research time
- Evaluation and Feedback (See milestone section below).

Academic Year: 2022-2023

Program Name:  Program ID Number:

	1	2	3	4	5	6	7	8	9	10	11	12	13
Rotation Name	Vascular	GS-Gen	Neurology	Hand	Anesthesia	ED	Rad	Gen Ortho					
Primary Focus	GS-Vaso	Other	GS-NSGY	Hand	GS-ICU	GS-ED	GS-Rad	Gen Ortho					
Site													
Number(s)	1	1	1	1	1	1	1	1					
Rotation Duration	1 Month	1 Month	1 Month	3 Months	1 Month	1 Month	1 Month	3 Months					
#½ Day Clinics/Wk	3	3	2	3	0	0	9	3					
Didactic Hrs/Wk	4	4	4	4	4	4	4	4					
#Research Days/Wk	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5					

	1	2	3	4	5	6	7	8	<6 Week Rotations Not Permitted					
Rotation Name	Recon	F&A	S&E	Sports	Peds	Trauma								
Primary Focus	Recon	F&A	S&E	Sports	Peds	Trauma								
Site														
Number(s)	1	1	1	1	2	3								
Rotation Duration	2 Months	2 Months	2 Months	2 Months	2 Months	2 Months								
#½ Day Clinics/Wk	3	3	3	4	4	2								
Didactic Hrs/Wk	4	4	4	4	4	4								
#Research Days/Wk	0.5	0.5	0.5	0.5	0.5	0.5								

	1	2	3	4	5	6	7	8	<6 Week Rotations Not Permitted				
Rotation Name	Spine	Hand	Gen Ortho	Spine	Sports	Peds							
Primary Focus	Spine	Hand	Gen Ortho	Spine	Sports	Peds							
Site													
Number(s)	1	1	5	1	1	2							
Rotation Duration	2 Months	2 Months	2 Months	2 Months	2 Months	2 Months							
#½ Day Clinics/Wk	2	3	3	2	3	3							
Didactic Hrs/Wk	4	4	4	4	4	4							
#Research Days/Wk	0.75	0.75	0.75	0.75	0.75	0.75							

	1	2	3	4	5	6	7	8	<6 Week Rotations Not Permitted				
Rotation Name	Sports	Spine	F&A	Research	Trauma	OnC							
Primary Focus	Sports	Spine	F&A	Research	Trauma	OnC							
Site													
Number(s)	1	1	1	1	3	4							
Rotation Duration	6 weeks	2 Months	6 weeks	6 weeks	6 weeks	3 Months							
#½ Day Clinics/Wk	3	4	5	0	2	4							
Didactic Hrs/Wk	4	4	4	4	4	4							
#Research Days/Wk	0.75	0.75	0.75	5	0.75	0.75							

	1	2	3	4	5	6	7	8	<6 Week Rotations Not Permitted				
Rotation Name	Recon	S&E	Gen Ortho	Elective	Peds Ortho	Trauma							
Primary Focus	Recon	S&E	Gen Ortho	Elective	Peds	Trauma							
Site													
Number(s)	1	1	1	1	2	3							
Rotation Duration	2 Months	3 Months	2 Months	3 Months	2 Months	2 Months							
#½ Day Clinics/Wk	4	3	5	4	4	2							
Didactic Hrs/Wk	4	4	4	4	4	4							
#Research Days/Wk	0	0	0	0	0	0							

**Legend:** A sample core block diagram for orthopaedic surgery residency rotations across all five postgraduate years (PGY1–PGY5), detailing rotation durations and scheduling limitations such as restrictions on rotations shorter than 6 weeks.

**Figure 4:** Sample block diagram for orthopaedic surgery residency. A sample core block diagram for orthopaedic surgery residency rotations across all five postgraduate years (PGY1–PGY5), detailing rotation durations and scheduling limitations such as restrictions on rotations shorter than 6 weeks.

**Resident Schedule (Summarized in Table 3)**

**PGY-1**

During the intern year, residents must complete six months of non-orthopaedic surgery rotations, with at least three months focused on basic surgical skills, perioperative care, medical management and airway management. These six months are divided into:

- Specific surgical rotations (3 months): General surgery, trauma surgery, plastic/burn surgery, surgical/medical ICU or vascular surgery

- Additional rotations (3 months): Options include anesthesiology, emergency medicine, radiology, neurosurgery, pediatric surgery, physical medicine and rehabilitation, rheumatology and other approved specialties. No single non-orthopaedic rotation may exceed two months

Basic surgical skills training typically is included in intern year and can be a dedicated rotation or longitudinal throughout the year, covering initial management of injuries (splinting, casting, traction, immobilization) and basic operative skills (soft tissue management, arthroscopy, fluoroscopy and use of orthopaedic equipment).

Residents must also complete six months of orthopaedic surgery rotations to develop proficiency in basic surgical skills, learn fundamental patient care, treat orthopaedic emergencies and expand their orthopaedic knowledge base. Additionally, there are rotation services recommended but not required, including plastic surgery, physical medicine and rehabilitation, rheumatology and neurological surgery.

PGY Year	Rotations
PGY-1	<p><b>6 months non-orthopaedic surgery:</b></p> <ul style="list-style-type: none"> <li>- <b>3 months surgical-specific rotations</b> (general surgery, trauma, plastic/burn surgery, ICU, vascular surgery).</li> <li>- <b>3 months broader rotations</b> (anesthesiology, emergency medicine, radiology, pediatric surgery, physical medicine and rehabilitation, rheumatology). <ul style="list-style-type: none"> <li>- No single non-orthopaedic rotation lasts more than 2 months.</li> </ul> </li> </ul> <p><b>6 months orthopaedic surgery:</b></p> <ul style="list-style-type: none"> <li>- Focus on inpatient and outpatient care, emergency management and developing basic surgical skills.</li> </ul>
PGY 2-5	At least <b>36 months</b> on orthopaedic services, with clinical rotations lasting a <b>minimum of 6 weeks each</b> .

**Table 3:** Orthopaedic surgery resident schedule by Postgraduate Year (PGY). All non-orthopaedic rotations in PGY-1 are limited to a maximum of 2 months per specialty. Orthopaedic rotations emphasize progressive responsibility, subspecialty exposure and continuity of clinical education from PGY-2 to PGY-5. PGY, Postgraduate Year; ICU, Intensive Care Unit.

#### PGY 2-5

For the remainder of residency, each clinical rotation must be at least six weeks in length. The final 24 months of education must be obtained in a single program. The core rotations in a resident's clinical experience typically include joint reconstruction, orthopaedic trauma, spine, hand, foot and ankle, sports medicine, pediatric orthopaedics and orthopaedic oncology. Additionally, the delivery of education to the residents must be limited to no more than 80 hours per week with one day a week off averaged over a four-week period, with no work periods exceeding 24 hours of continuous scheduled clinical assignments. A minimum of 6 months of pediatric orthopaedic surgery is also required for all residents.

#### Ensure Appropriate Case Volume and Surgical Load

PGY-2 to PGY-5 residents must complete at least 36 months of orthopaedic service rotations, with a minimum of one half-day per week dedicated to outpatient clinical care. Proper planning is essential to ensure residents achieve adequate case volume. Per ACGME guidelines, clinical experiences must encompass the diagnosis and management of:

- Adult and pediatric disorders
- Joint reconstruction
- Trauma including multisystem trauma
- Surgery of the spine
- Athletic injuries
- Hand and upper extremity surgery
- Foot and ankle surgery
- Orthopaedic oncology

Residents are required to log cases in the ACGME case log system, completing 1,000 to 3,000 cases over the five-year program.<sup>31</sup>

Minimum case requirements for specific procedures are listed with their CPT codes are outlined in Fig. 5 and provide a benchmark for evaluating progress.

To ensure sufficient case volume for residents, a program should consider:

- Recruiting Skilled Faculty: Attract faculty with established reputations, particularly by building relationships with large orthopaedic groups in the community. This strategy is advantageous for community-based programs without access to nearby academic centers
- Optimizing Surgical Workflow: Address barriers such as long operating room turnover times and equipment shortages to maximize efficiency and case numbers. Choose facilities with sufficient personnel and resources to support high-volume surgical care
- Monitoring Case Volume: Regularly review residents' case logs during evaluations

The ACGME publishes an annual national report of case logs for all orthopaedic residents, highlighting the number of cases completed compared to the required minimums.<sup>31</sup> This report serves as a valuable benchmark to evaluate case volume and types, ensuring your proposed program can provide sufficient surgical experience for each resident.

PROCEDURE DESCRIPTION	MIN	NOTE: items count towards total cases and anatomic area.
<b>Minimums that reflect common core competence (3C)</b>		
Operative management of <u>per</u> trochanteric, intertrochanteric, or femoral neck fracture	60	27235, 27236, 27244, 27245
Knee arthroscopy including ligament reconstruction and meniscal pathology	60	29850, 29851, 29855, 29856, 29866, 29867, 29868, 29870, 29871, 29873, 29874, 29875, 29876, 29877, 29879, 29880, 29881, 29882, 29883, 29884, 29885, 29886, 29887, 29888, 29889
Shoulder arthroscopy including rotator cuff management	50	23405, 23406, 23410, 23412, 23420, 29805, 29806, 29807, 29819, 29820, 29821, 29822, 29823
Primary total knee arthroplasty	50	27437, 27438, 27440, 27441, 27442, 27443, 27445, 27446, 27447
Primary total hip arthroplasty	50	27125, 27130, 27132
Intramedullary fixation in long weightbearing bones	50	27506, 27759
Operative management of rotational ankle fracture	30	27766, 27769, 27792, 27814, 27822, 27823, 27829, 27846, 27848
Operative management of fractures of the radius and/or ulna	30	25515, 25521, 25525, 25526, 25545, 25574, 25575, 25606, 25607, 25608, 25609
Decompression of the carpal tunnel	20	29848, 64721
Operative management of pediatric distal humerus fracture	15	24538, 24545, 24546, 24566, 24575, 24579, 24582, 24586
Repair of traumatic tear of weight bearing tendon in LE	10	27380, 27381, 27385, 27386, 27650, 27652, 27664
Prophylactic fixation of pathologic fracture	5	23490, 23491, 24498, 27187, 27495, 27745
<b>NEW MINIMUMS:</b>	<b>MIN</b>	<b>CPT Codes</b>
Emergent amputation	5	11010, 11011, 11042, 11043, 11045, 11046, 23920, 27590, 27591, 27592, 27594, 27596, 27598, 27880, 27882, 27881, 27884, 27886
Emergent fasciotomy	5	25020, 25023, 25024, 25025, 27600, 27601, 27602, 27603, 28008, 27025, 27027
<b>TOTAL BY ANATOMIC AREA:</b>	<b>MIN</b>	<b>(3C minimums also count in these areas)</b>
Femur/Knee	300	27380 27381 27385 27386 27390 27391 27392 27393 27394 27395 27396 27397 27400 27403 27405 27407 27409 27428 27429 27430 27435 27437 27438 27440 27441 27442 27443 27445 27446 27447 27448 27450 27454 27455 27485 27486 27487 27488 27495 27496 27497 27498 27499 27506 27507 27511 27513 27514 27516 27517 27519 27590 27598 29850 29851 29855 29856 29866 29867 29868

		29870 29873 29874 29875 29876 29877 29879 29880 29880 29881 29882 29883 29884 29885 29886 29887 29888 29889
Pelvis/Hip	285	27097 27098 27100 27105 27110 27111 27120 27125 27130 27132 27134 27137 27138 27140 27146 27147 27151 27179 27181 27185 27187 27202 27215 27216 27217 27218 27226 27227 27228 27235 27236 27244 27245 27248 27286 27290 27295 29860 29861 29862 29863 29914 29915 29916
Forearm/Wrist/Hand/Fingers	200	26910 26951 26776 26785 25028 25035 25040 25020 25023 25024 25025 25000 25001 25031 25065 25066 25075 25107 25263 25260 25391 25450 25455 25490 25491 25492 25515 25525 25526 25545 25574 25575 25606 25607 25685 26535 26536 26531 26416 26418 26420 26426 26428 26432 26433 26434 26437 26440 26442 26445 26449 26676 29846 29847 29848 25392 25393 25394 25400 25405 25415 25420 25425 25426 25430 25431 25440 25441 25390 26608 26615 26478 26250 26260 26262 26320 26340 26341 26350 26352 26356 26357 26358 26370 26372 29840 29843 29844 29845 26650 26665 26542 26685 26686 26706 25265 25270 25272 25274 25275 25280 25290 25335 25337 25350 25355 25360 25365 25370 25375 26841 26843 26105 26110 26115 26111 26116 26113 26117 26170 26180 26185 26200 26205 26210 26215 26236 26100 26080 26479 26480 26548 26550 26551 26553 26554 26587 26590 26591 26593 26540 26541 26735 26746 26756 26765 25109 25110 25111 25112 25115 25116 25118 25210 25215 25230 25240 25248 25250 25251 25259 25695 25800 25805 25810 25820 25825 25830 25900 25905 26040 26045 26055 26060 26070 26075 26080 26479 26480 26596 26483 26485 26489 264690 26492 26494 26496 26518 26520 26525 26530 26715 26727
Leg/Ankle/Foot/Toes	30	27650 27652 27656 27658 27659 27664 27665 27675 27676 27680 27681 27685 27686 27687 27690 27691 27695 27712 27715 27720 27722 27724 27725 27726 27727 27730 27732 27734 27740 27742 27745 27756 27758 27766 27829 27832 27846 27848 27870 27871 28020 28060 28035 28110 28111 28112 28113 28114 28116 28118 28200 28234 28238 28240 28250 28260 28261 28262 28264 28270 28272 28280 28285 28286 28288 28288 28289 28291 28307 28308 28309 28310 28312 28313 28315 28320 28322 28340 28341 28344 28345 28360 28406 28415 28420 28496 28505 28525 28531 28546 28555 28576 28585 28606 28615 28636 28645 28666 28675 28705 28715 28725 28810 28820 28825 29891 29892 29893 29894 29895 29897 29898 29899 29900 29901 29902 29904 29905 29906
Shoulder	150	20103 23020 23030 23040 23044 23065 23066 23075 23071 23073 23076 23077 23078 23100 23101 23105 23106 23156 23170 23172 23174 23180 23182 23184
		23190 23195 23200 23210 23220 23333 23334 23335 23395 23397 23450 23455 23460 23462 23465 23466 23470 23472 23473 23474 23485 23490 23491 23515 23530 23550 23585 29807 29819 29820 29821 29822 29823 29824 29825 26826 29827 29828
Humerus/Elbow	65	23930 23931 23935 24000 24006 24065 24066 24075 24071 24076 24073 24077 24079 24100 24101 24102 24105 24149 24150 24152 24155 24160 24164 24200 24201 24300 24301 24305 24310 24320 24330 24331 24332 24340 24360 24361 24362 24363 24365 24366 24370 24371 24400 24410 24420 24430 24435 24470 24495 24515 24516 24615 24635 24665 24666 24685 24800 24900 24920 29830 29834 29835 29836 29837 29838
Spine	50	20660 20661 22206 22207 22210 22214 22220 22222 22224 22318 22325 22326 22327 22533 22551 22554 22556 22802 22804 22808 22810 22812 22842 22843 22845 22856 22857 63020 63030 63040 63042 63045 63046 63047
Oncology	25	20220 20225 20245 20932 20933 20934 23200 23210 23065 23220 23071 23073 23075 23076 23077 23078 23200 23210 23220 23150 23155 23156 23490 23491 23900 23920 24065 24066 24071 24076 24077 24079 24105 24110 24115 24116 24150 24152 24155 24490 24590 24591 24592 24900 25065 25066 25071 25073 25075 25076 25077 25078 25170 25110 25120 25125 25130 25135 25136 26117 26118 26160 26200 26205 26210 26215 26250 26260 26262 26910 27040 27041 27043 27045 27047 27048 27049 27059 27065 27066 27067 27070 27071 27075 27076 27077 27078 27187 27236 27323 27324 27327 27328 27329 27330 27337 27364 27365 27495 27590 27613 27614 27615 27616 27618 27619 27632 27634 27646 27647 27880 27881 27882 27884 27886 27888 27889 27892 27893 27894 28039 28041 28043 28045 28046 28047 28100 28102 28103 28104 28106 28107 28171 28173 28175
<b>PROCEDURE DESCRIPTION</b>	<b>MIN</b>	<b>NOTE: * items do not count towards total cases or pediatric minimum</b>
<b>CODES DO NOT COUNT FOR TOTAL CASE MINIMUMS</b>		
Operative care of the pediatric patient*	150	Requires the ADS "Pediatrics" box to be checked when a case entered that satisfies an ortho minimum. Credit only for operative cases.
Closed Reduction with manipulation*	150	23505 23525 23545 23575 23605 23625 23650 23655 23665 23675 24505 24535 24565 24577 24600 24605 24620 25635 25660 25675 25680 25690 26605 26607 26641 26645 26670 26675 26700 26705 26725 26742 26755 26770 27502 27503

		27503 27510 27517 27532 27552 27562 27752 27762 27768 27781 27788 27810 27818 27825 27831 28605 28630 28635 28660 28665 26775
Irrigation and debridement including fractures, joint sepsis, and arthroplasty sepsis.*	50	20103 23030 23040 23044 23930 23931 23935 24000 25028 25035 25040 26990 27310 27331 27840 28192 27030 27610 27607 27892 27893 27894
Removal of deep implant*	25	20680
Application of an external fixator*	15	20690 20692 20693 20696

**Legend:** Adapted from ACGME. Minimum case requirements for orthopaedic surgery residency as defined by the ACGME. Procedures listed under “Minimums That Reflect Common Core Competence (3C)” also count toward their respective anatomic area totals. CPT codes identify qualifying procedures. “Total by Anatomic Area” reflects cumulative requirements for each anatomical region. “New Minimums” indicate recently designated procedural thresholds. Asterisked items (\*) are tracked but do not count toward total case minimums; for pediatric procedures, only operative cases with the “Pediatrics” flag in the case log qualify.

**Figure 5:** Sample orthopaedic case schedule log. A sample case schedule log used in orthopaedic surgery residency programs to document the distribution of surgical procedures across different training sites, helping ensure residents meet case requirements at each location. Original Source: Accreditation Council for Graduate Medical Education. Program Accreditation Council for Graduate Medical Education (ACGME).

### Orthopaedic Milestones

ACGME-I outlines the updated milestones for orthopaedic surgery training programs [12]. The milestones are a framework to assess the development of residents and fellows in key competencies essential for practicing orthopaedics and are divided into sub-competencies.

### Key Components of the Milestones Include

- Patient Care: Evaluates the ability to provide care that is compassionate, appropriate and effective for treating health problems and promoting health
- Medical Knowledge: Assesses mastery of musculoskeletal anatomy, biomechanics, pathology and clinical sciences, with a focus on their application to patient care
- Systems-Based Practice: Focuses on navigating and utilizing healthcare systems to deliver cost-effective, high-quality orthopaedic care, including perioperative planning and collaboration with multidisciplinary teams
- Practice-Based Learning and Improvement: Involves evaluating outcomes in orthopaedic procedures, integrating new evidence into practice and improving surgical techniques and patient care protocols
- Professionalism: Emphasizes ethical decision-making and sensitivity to diverse populations, particularly in the context of orthopaedic care and patient advocacy
- Interpersonal and Communication Skills: Assesses the ability to effectively exchange information and collaborate with patients, their families and other health professionals

### Resident Wellness

Creating a resident wellness component is an ACGME requirement to prevent burnout and support resident success. A previous study revealed a 56% burnout rate among PGY-2 orthopaedic residents, with higher rates observed in larger programs and among female residents [32]. To prioritize resident wellness and foster a supportive environment, the following steps can be implemented [33]:

- Adhere to the ACGME resident 80-hour work week-limit [33]
- Design rotations and schedules to ensure reasonable work hours and adequate time off and to attend personal appointments [33]
- Provide access to confidential mental health services at the request of the resident and offer resident resources for stress management, mindfulness and resilience training [33,34]
- Promote exercise by providing access to a gym facility as part of resident benefits [35]
- Organize workshops on time management, financial planning and career development [36]
- Implement policies that prevent and address burnout, harassment and discrimination [37]
- Host regular social events and team-building activities to foster camaraderie and support [38]
- Allow for flexibility in the schedule to accommodate for personal and family needs

### **Initiate Curriculum and Program Design**

Using the educational vision alongside ACGME and ABOS requirements will be used to create a defined curriculum. Once rotation directors are established, a preliminary timeline should be made for the different educational aspects you want included in the curriculum such as policies, didactic sessions and board review. Other important steps to be prepared for are program evaluations, clinical competency evaluations and creating a quality and safe learning environment.

### **Faculty Development and Alignment**

After faculty have been hired, there should be a comprehensive orientation that covers the program's curriculum, policies and expectations. This should be done well in advance to the start of the program, to ensure that all faculty understand the goals and are well-integrated into the program and its culture. Faculty collaboration is key to achieving consensus on teaching methods and educational objectives, particularly when integrating their varied orthopaedic specialties.

### **Steps To Program Accreditation**

#### *1. Application:*

An initial application to start an orthopaedic residency program must be submitted to the ACGME in order to receive accreditation. The application will consist of the following portions: 1) Duration of resident education, 2) Sponsoring Institution and participating sites, 3) PLA with rotating institutions and outpatient surgery sites 4) Program director, faculty information and other resources, 5) Educational curriculum and specialty-specific educational program, ensuring the ACGME competencies are met, 6) Patient safety, quality improvement, supervision of residents, professionalism and resident well-being and on-call activities, 7) Case log with total number of orthopaedic cases to be completed at each participating institution (Fig. 6). A sample application could be viewed on the ACGME website [39]. A similar application will have to be submitted to receive continued accreditation for the program.

Once submitted, the application undergoes a site visit, during which the ACGME provides feedback. After revisions, the RRC, typically reviewing new program applications once annually, will evaluate the submission. Most applications must identify residency slots or secure external funding. If approved, programs must establish infrastructure, hire support staff and coordinate with the Designated Institutional Official (DIO). Some institutions use consultants to assist with application preparation and revisions before final submission. Some sponsoring institutions will hire a consulting firm or outside resources to assist with the program application, edits and revision with the experts, the final step is to submit the application to the ACGME and await a response detailing the next steps.

#### *2. Site Visit Preparation*

Once your application is reviewed by the ACGME, you will be notified of your site visit date. This visit involves interviews with leadership, program director, faculty, support staff and rotation site chiefs. making it essential to thoroughly prepare in advance. Reviewing the ACGME's guide on site visit preparation and your detailed application is a critical first step. To help faculty understand what to expect, consider organizing a mock site visit. With the assistance of the DIO or an experienced colleague who has navigated the process, this exercise can identify areas for improvement and ensure readiness prior to the official visit. The site visit typically spans several days, during which the ACGME representative will verify the program's compliance with all required policies and standards, commitment of the institution and resources and faculty engagement and involvement. Proper preparation can help ensure a smooth and successful visit.

CATEGORY	Site #1	Site #2	Site #3	Site #4	Site #5	Site #6
Knee arthroscopy						
Shoulder arthroscopy						
ACL reconstruction						
Total Hip Arthroplasty (THA)						
Total Knee Arthroplasty (TKA)						
Hip fracture						
Carpal tunnel release						
Spine decompression/posterior spine fusion						
Ankle fracture fixation						
Closed reduction forearm/wrist						
Ankle and hind and mid-foot arthroscopy						
Suprachondylar humerus percutaneous pinning						
Operative treatment of femoral and tibial shaft fractures						
All pediatric procedures						
All oncology procedures						

**Figure 6:** Orthopaedic surgery minimums that reflect Common Core Competence (3C). Adapted from ACGME. Minimum case requirements for orthopaedic surgery residency as defined by the ACGME. Procedures listed under “Minimums That Reflect Common Core Competence (3C)” also count toward their respective anatomic area totals. CPT codes identify qualifying procedures. “Total by Anatomic Area” reflects cumulative requirements for each anatomical region. “New Minimums” indicate recently designated procedural thresholds. Asterisked items (\*) are tracked but do not count toward total case minimums; for pediatric procedures, only operative cases with the “Pediatrics” flag in the case log qualify.

## Marketing and Recruitment

### *Develop Your Marketing Strategy*

If the program receives approval, the next step is to get the name of the program out to the public. It is important to think about how you plan to notify prospective students about the new residency program and consider registering for services needed to establish a connection between prospective applicants and the program, such as ERAS, NRMP and FREIDA as well as more orthopaedic specific sites such as Orthogate and MSOS. Clerkship directors and other notable faculty within medical schools can be contacted so they can learn more about the program and potentially recommend applicants. Developing a strong online presence is another great way to build name recognition. Utilizing social media and finding someone who can manage those accounts will further work to adequately market the program [40,41]. Other activities that can be conducted by faculty include networking at conferences and other professional events and meetings or visiting career days held by medical schools.

### **Engage Everyone in Active Recruitment**

Recruitment requires the collective effort of all program members to ensure success. Although orthopaedic surgery positions are highly sought after, a well-crafted marketing strategy, engaging the entire team to implement these plans can optimize quality of applicants and recruitment [40,41]. Once the program’s recognition has been established, the process of selecting applicants can begin. Given the inherent uncertainties of a new program without a precedent or legacy, it is essential to impress candidates with the quality of education, case volumes and surgical experience and new innovative teaching and training techniques and curriculum [42]. Emphasizing the unique benefits of joining a new program, particularly one with opportunities for growth, input, innovation and leadership opportunities can help attract strong candidates. When interviewing, aim to review 15-20 applicants per position and consider inviting a broad pool. After interviews, rank all candidates you would seriously consider, prioritizing those whose strengths align with your program’s mission and goals.

### Timeline

This report includes a timeline designed for those interested in establishing orthopaedic programs, outlining the estimated duration of each step in the process (Table 4). We estimate the total time required to establish a program to be between 3- 5 years, though this timeline may vary depending on institutional requirements, regulatory environments and other factors.

Step	Tasks	Approximated Time to Complete
<b>Initial Planning and Feasibility</b>	<ul style="list-style-type: none"> <li>- Determining the need for the residency program in your region or location.</li> <li>- Engaging with key stakeholders such as faculty, administration and potential partners.</li> <li>- Preliminary budget planning to cover expenses for faculty, staff, facilities and other resources.</li> </ul>	6-12 months
<b>Curriculum Development</b>	<ul style="list-style-type: none"> <li>- Design program structure, including rotations, block diagrams, clinical experiences and didactic training</li> <li>- Define each ACGME Milestone and competency goal, how your program will complete them and learning objectives for each stage of the residency.</li> <li>- Develop methods for resident progress and program effectiveness</li> </ul>	6-12 months
<b>Approval and Accreditation Application</b>	<ul style="list-style-type: none"> <li>- Obtain approval from institution's governing bodies.</li> <li>- Prepare all documentation and materials for the ACGME application.</li> <li>- Coordinate the site visits and reviews by the ACGME to receive program approval.</li> </ul>	12-12 months
<b>Recruitment and Hiring</b>	<ul style="list-style-type: none"> <li>- Hire a program director, faculty members and support.</li> <li>- Appoint a program coordinator to manage all day-to-day operations of the program.</li> <li>- Develop marketing strategy to attract applicants and promote the program.</li> </ul>	6-12 months
<b>Program Implementation</b>	<ul style="list-style-type: none"> <li>- Set up infrastructure by establishing necessary facilities, equipment and administrative support.</li> <li>- Recruit residents by sending out interview invites and creating a match list.               <ul style="list-style-type: none"> <li>- Conduct Orientation for the new residents.</li> </ul> </li> </ul>	6-12 months
<b>Program Launch and Initial Operation</b>	<ul style="list-style-type: none"> <li>- Officially start the residency program.</li> <li>- Monitor and evaluate the program's effectiveness and make adjustments as needed.</li> </ul>	12 months

**Table 4:** Timeline to create an orthopaedic surgery residency program. Timelines are approximate and may vary based on institutional resources, regulatory requirements and program complexity. ACGME = Accreditation Council for Graduate Medical Education.

### Conclusion

Orthopaedic surgery remains one of the most competitive specialties and the increasing demand for orthopaedic services highlights the urgent need for additional residency programs. This paper provides a step-by-step guide to assist aspiring program directors and institutions in taking the first steps toward establishing their own program. Key considerations include becoming well-versed in ACGME and ABOS guidelines, develop a detailed understanding of your programs application and seek advice from well-seasoned experts in the field. The process of creating a residency program is a significant undertaking that will shape the careers of future orthopaedic surgeons and contribute to meeting the growing needs of patients. By following a structured approach and focusing on the principles outlined in this guide, establishing new residency training positions and orthopaedic surgery programs can make a lasting impact on the profession and the communities they serve.

### Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

### Funding Statement

This research did not receive any specific grant from funding agencies in the public, commercial or non-profit sectors.

### Acknowledgement

The authors have no acknowledgments to declare.

### Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

### Ethical Statement

The project did not meet the definition of human subject research under the purview of the IRB according to federal regulations and therefore was exempt.

### Informed Consent Statement

Informed consent was not required for this study due to the use of anonymized data with no identifiable personal information.

### Authors' Contributions

All authors contributed equally to this paper.

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