

The Craniofacial Surgery Milestone Project

A Joint Initiative of

The Accreditation Council for Graduate Medical Education

and

The American Board of Plastic Surgery, Inc.



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The Craniofacial Milestone Project

The milestones are designed only for use in evaluation of fellows in the context of their participation in ACGME-accredited residency or fellowship programs. The milestones provide a framework for assessment of the development of the fellow physician in key dimensions of the elements of physician competency in a specialty or subspecialty. They neither represent the entirety of the dimensions of the six domains of physician competency, nor are they designed to be relevant in any other context.

Craniofacial Surgery Milestones

Chair: Mary H. McGrath, MD, MPH, FACS

Working Group

Laura Edgar, EdD, CAE

Joseph E. Losee, MD, FACS, FAAP

Donald R. Mackay, MBChB, DDS

Martha S. Matthews, MD

Advisory Group

Timothy Brigham, MDiv, PhD

Arun Gosain, MD

Robert J. Havlik, MD

R. Barrett Noone, MD

John Potts, MD

Rod J. Rohrich, MD

Milestone Reporting

This document presents milestones designed for programs to use in semi-annual review of fellow performance and reporting to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for fellow performance as a fellow moves from entry into fellowship through graduation. In the initial years of implementation, the Review Committee will examine milestone performance data for each program's fellows as one element in the Next Accreditation System (NAS) to determine whether fellows overall are progressing.

For each period, review and reporting will involve selecting milestone levels that best describe a fellow's current performance and attributes. Milestones are arranged into numbered levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert in the subspecialty.

Selection of a level implies that the fellow substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page v).

Level 1: The fellow demonstrates milestones expected of an incoming fellow.

Level 2: The fellow is advancing and demonstrates additional milestones, but is not yet performing at a mid-fellowship level.

Level 3: The fellow continues to advance and demonstrate additional milestones, consistently including the majority of milestones targeted for fellowship.

Level 4: The fellow has advanced so that he or she now substantially demonstrates the milestones targeted for fellowship. This level is designed as the graduation target.

Level 5: The fellow has advanced beyond performance targets set for fellowship and is demonstrating "aspirational" goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional fellows will reach this level.

Additional Notes

Level 4 is designed as the graduation *target* and *does not* represent a graduation *requirement*. Making decisions about readiness for graduation is the purview of the fellowship program director. Study of Milestone performance data will be required before the ACGME and its partners will be able to determine whether milestones in the first four levels appropriately represent the developmental framework, and whether Milestone data are of sufficient quality to be used for high-stakes decisions.

Examples are provided with some milestones. Please note that the examples are not the required element or outcome; they are provided as a way to share the intent of the element.

Some milestone descriptions include statements about performing independently. These activities must occur in conformity to the ACGME supervision guidelines, as well as institutional and program policies. For example, a fellow who performs a procedure independently must, at a minimum, be supervised through oversight.

Answers to Frequently Asked Questions about Milestones are available on the Milestones web page:

<http://www.acgme.org/acqmeWeb/Portals/0/MilestonesFAQ.pdf>.

The diagram below presents an example set of milestones for one sub-competency in the same format as the ACGME Report Worksheet. For each reporting period, a fellow's performance on the milestones for each sub-competency will be indicated by selecting the level of milestones that best describes that fellow's performance in relation to the milestones.

Craniosynostosis — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Understands the diagnosis and special needs of patients with craniosynostosis • Understands the concepts of staged interdisciplinary treatment in the care of patients with craniosynostosis • Demonstrates knowledge of peri-operative management of patients with craniosynostosis 	<ul style="list-style-type: none"> • Understands the indications for and the timing of the staged treatment protocols for patients with craniosynostosis • Understands the surgical principles of complications of craniosynostosis (e.g., infection, CSF leak, asymmetries) • Understands the composition and management of a multidisciplinary craniofacial team 	<ul style="list-style-type: none"> • Demonstrates detailed knowledge of surgical treatment and describes the specific steps of craniosynostosis repair • Compares and contrasts different options for craniosynostosis repair (e.g., distraction, endoscopic approaches, strip craniectomy) 	<ul style="list-style-type: none"> • Demonstrates a sophisticated understanding of staged longitudinal management of syndromic craniosynostosis • Demonstrates a sophisticated understanding of the management of secondary conditions (e.g., midface hypoplasia and malocclusions, enophthalmos, calvarial defects, and intracranial hypertension) 	<ul style="list-style-type: none"> • Demonstrates a sophisticated understanding and contributes to the knowledge of the basic science of cranial suture biology • Contributes to outcomes research
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Selecting a response box in the middle of a level implies that milestones in that level and in lower levels have been substantially demonstrated.

Selecting a response box on the line in between levels indicates that milestones in lower levels have been substantially demonstrated as well as **some** milestones in the higher level(s).

Oro-facial Clefting — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Explains the risks and benefits of treatment for routine oro-facial cleft surgery and obtains consent • Performs routine oro-facial cleft repairs with assistance • Recognizes and manages associated peri-operative patient needs (e.g., airway compromises, feeding difficulties) and obtains multidisciplinary consults 	<ul style="list-style-type: none"> • Formulates a longitudinal treatment plan for oro-facial clefting • Independently performs routine oro-facial cleft procedures • Manages complications (e.g., palatal fistulae) with assistance 	<ul style="list-style-type: none"> • Performs complex and ancillary procedures (e.g., alveolar bone graft, orthognathic surgery, primary cleft rhinoplasty) with assistance • Performs secondary surgery (e.g., pharyngoplasty, cleft lip nasal deformity, palatal fistula) with assistance 	<ul style="list-style-type: none"> • Independently performs complex and ancillary procedures(e.g., alveolar bone graft, orthognathic surgery, primary cleft rhinoplasty) • Independently manages complications and secondary deformities of oro-facial clefting • Plays a leadership role in the cleft team 	<ul style="list-style-type: none"> • Independently treats patients with rare craniofacial clefts (e.g., Tessier clefts, Treacher Collins syndrome)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Craniosynostosis/Craniomaxillofacial/Soft Tissue Conditions— Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Explains the risks and benefits of treatment for craniosynostosis and obtains consent • Explains the risks and benefits of treatment for hypoplastic syndromes (e.g., Pierre Robin Sequence, hemifacial microsomia, Parry-Romberg Syndrome) and obtains consent • Explains the risks and benefits of treatment for acquired craniomaxillofacial defects (e.g., trauma, neoplasm) and obtains consent • Assists with peri-operative care for patients with craniofacial conditions 	<ul style="list-style-type: none"> • Formulates a longitudinal treatment plan for craniofacial conditions • Manages peri-operative care for patients with craniofacial conditions 	<ul style="list-style-type: none"> • Performs craniofacial procedures (e.g., facial nerve reconstruction, mandibular distraction, tumor reconstruction, fronto-orbital advancement, LeFort III osteotomy) with assistance • Manages complications (e.g., CSF leak, post-operative infection, airway compromise) with assistance 	<ul style="list-style-type: none"> • Independently performs craniofacial procedures • Manages secondary deformities of craniofacial conditions (e.g. mid-face hypoplasia, enophthalmos, malocclusion) • Manages complications (e.g., CSF leak, post-operative infection, airway compromise) • Plays a leadership role in the craniofacial team 	<ul style="list-style-type: none"> • Independently manages complex secondary deformities of craniofacial conditions
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Oro-facial Clefting — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Understands the diagnosis and special needs of patients with oro-facial clefts • Understands the anatomy and surgical principles of cleft repair • Understands the concepts of staged interdisciplinary treatment in the care of patients with oro-facial clefts • Understands the genetics and epidemiology of oro-facial clefting 	<ul style="list-style-type: none"> • Understands the indications for and the timing of the staged treatment protocols for patients with oro-facial clefts • Understands the classification systems of rare craniofacial clefts • Understands the surgical principles of secondary cleft surgery • Understands the composition and management of the multidisciplinary craniofacial team 	<ul style="list-style-type: none"> • Demonstrates detailed knowledge of surgical treatment and describes the specific steps of cleft repairs • Compares and contrasts different options for cleft repair • Demonstrates basic knowledge of dental and speech evaluations 	<ul style="list-style-type: none"> • Demonstrates a sophisticated understanding of the orthodontic evaluation and treatment planning for patients with oro-facial clefting • Demonstrates a sophisticated understanding of speech evaluation for patients with oro-facial clefting • Demonstrates a sophisticated understanding of secondary cleft lip, palate and nasal surgery 	<ul style="list-style-type: none"> • Demonstrates a sophisticated understanding of the treatment of rare craniofacial clefts (e.g., Tessier clefts, Treacher Collins syndrome)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Craniosynostosis — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Understands the diagnosis and special needs of patients with craniosynostosis • Understands the concepts of staged interdisciplinary treatment in the care of patients with craniosynostosis • Demonstrates knowledge of peri-operative management of patients with craniosynostosis 	<ul style="list-style-type: none"> • Understands the indications for and the timing of the staged treatment protocols for patients with craniosynostosis • Understands the surgical principles of complications of craniosynostosis (e.g., infection, CSF leak, asymmetries) • Understands the composition and management of a multidisciplinary craniofacial team 	<ul style="list-style-type: none"> • Demonstrates detailed knowledge of surgical treatment and describes the specific steps of craniosynostosis repair • Compares and contrasts different options for craniosynostosis repair (e.g., distraction, endoscopic approaches, strip craniectomy) 	<ul style="list-style-type: none"> • Demonstrates a sophisticated understanding of staged longitudinal management of syndromic craniosynostosis • Demonstrates a sophisticated understanding of the management of secondary conditions (e.g., midface hypoplasia and malocclusions, enophthalmos, calvarial defects, and intracranial hypertension) 	<ul style="list-style-type: none"> • Demonstrates a sophisticated understanding and contributes to the knowledge of the basic science of cranial suture biology • Contributes to outcomes research
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Craniofacial Conditions — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Understands the diagnosis and special needs of patients with hypoplastic syndromes (e.g., Pierre Robin Sequence, hemifacial microsomia, Parry-Romberg Syndrome) • Understands the concepts of staged interdisciplinary treatment in the care of patients with craniomaxillofacial conditions • Understands facial proportions and aesthetic relationships • Demonstrates knowledge of peri-operative management of patients with craniomaxillofacial conditions 	<ul style="list-style-type: none"> • Understands the indications for and the timing of the staged treatment protocols for patients with craniomaxillofacial conditions • Understands the surgical principles of common complications of craniomaxillofacial surgery (e.g., enophthalmos, malocclusion, osteomyelitis) • Understands diagnosis and treatment of acquired craniomaxillofacial defects (e.g., trauma, bone tumor) • Understands the principles and interpretation of cephalometric analyses 	<ul style="list-style-type: none"> • Demonstrates detailed knowledge of surgical treatment and describes the specific steps of craniomaxillofacial repairs • Compares and contrasts different options for craniomaxillofacial repair (e.g., distraction, fat grafting, alloplastic materials, cranioplasty) • Demonstrates knowledge of orthognathic work-up and management of dento-facial anomalies 	<ul style="list-style-type: none"> • Demonstrates a sophisticated understanding of staged craniomaxillofacial surgery (e.g., protocol for hemifacial microsomia) • Demonstrates a sophisticated understanding of the management of complications of craniomaxillofacial conditions (e.g., malocclusions, enophthalmos) • Demonstrates a sophisticated understanding of the management of severe craniomaxillofacial trauma 	<ul style="list-style-type: none"> • Demonstrates a sophisticated understanding and contributes to the knowledge of the basic science of craniomaxillofacial conditions
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Craniofacial Soft Tissue Conditions — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Understands natural history and diagnosis of hemangiomas and vascular malformations • Understands craniofacial manifestations of other soft tissue conditions (e.g., neurofibromatosis, neoplasms) • Understands the diagnosis and management of facial nerve palsy 	<ul style="list-style-type: none"> • Understands the principles of extirpation and reconstruction for craniofacial soft tissue conditions • Understands treatment options for facial nerve palsy • Understands craniofacial concepts in the exposure and reconstruction in cranial base surgery 	<ul style="list-style-type: none"> • Understands the timing and indications for non-surgical and surgical treatment for hemangiomas and vascular malformations • Understands the indications for maxillofacial prosthetics and alloplastic implants • Understands adjunctive contouring procedures (e.g., microsurgical tissue transfer, fat grafting) 	<ul style="list-style-type: none"> • Understands the principles of complex procedures (e.g., multi-stage facial nerve reconstruction, staged arterio-venous malformation treatment) used to treat craniofacial soft tissue conditions • Understands the sequelae of surgical and non-surgical interventions (e.g., surgical deformity, osteoradionecrosis, atrophy) and options for management 	<ul style="list-style-type: none"> • Understands novel diagnostic and treatment modalities for vascular anomalies
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Comments:				

Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Understands the leadership, management and funding of the craniofacial team • Describes how practice variations affect cost and resource consumption • Understands principles of diagnosis, evaluation and management, and procedure coding 	<ul style="list-style-type: none"> • Consistently uses tools to prevent adverse events (e.g., checklists, briefings) • Uses health care resources responsibly • Codes routine diagnoses, encounters, and surgical procedures; documents medical necessity 	<ul style="list-style-type: none"> • Leads team by promoting situational awareness and input by all team members • Codes complex and unusual diagnoses, encounters, and surgical procedures • Practices cost-effective care (e.g., managing length of stay, operative efficiency) 	<ul style="list-style-type: none"> • Formally analyzes shared team experiences to prevent future errors using proven analysis techniques (e.g., root cause analysis, failure mode effects analysis) • Establishes timeline and identifies resources for transition to practice 	<ul style="list-style-type: none"> • Participates in advocacy activities for health policy for craniofacial patients
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Comments:				

Practice-based Learning and Improvement				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Is aware of one’s own level of knowledge and expertise, and uses feedback from teachers, colleagues, and patients • Teaches patients, families, and junior learners 	<ul style="list-style-type: none"> • Continually seeks and incorporates feedback to improve performance • Develops a learning plan and uses published review articles and guidelines • Assesses and provides feedback to junior learners 	<ul style="list-style-type: none"> • Demonstrates a balanced and accurate self-assessment of competence; investigates clinical outcomes and areas for continued improvement • Selects evidence-based information to answer specific questions 	<ul style="list-style-type: none"> • Performs self-directed learning with little external guidance using evidence-based information • Develops a process to remain current in knowledge over time • Organizes educational activities at the program level 	<ul style="list-style-type: none"> • Independently plans and executes a research project • Develops an educational curriculum and assessment tools
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Professionalism				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates behavior that conveys compassion, honesty, and genuine interest in patients and families • Exhibits professional behavior (e.g., reliability, industry, integrity, and confidentiality) 	<ul style="list-style-type: none"> • Recognizes ethical issues in practice and is able to discuss, analyze, and manage ethical situations (e.g., genetic counseling, patient's life expectancy and functional capacity) • Recognizes individual limits in clinical situations and asks for assistance when needed 	<ul style="list-style-type: none"> • Understands the beliefs, values, and practices of diverse and vulnerable patient populations, and the potential impact on patient care • Prioritizes and balances conflicting interests of self, family, and others to optimize medical care 	<ul style="list-style-type: none"> • Develops a mutually agreeable care plan in context of conflicting physician and patient values and beliefs • Recognizes signs of physician impairment and demonstrates appropriate steps to address impairment in self and colleagues 	<ul style="list-style-type: none"> • Develops programs to ensure equality of care in diverse, vulnerable, and underserved populations
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Comments:				

Interpersonal and Communication Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Develops a positive relationship with patients and teams in uncomplicated situations, and recognizes communication conflicts • Understands the patient’s/family’s perspective while engaged in active listening • Appreciates effective communication to prevent medical error • Participates in effective transitions of care • Ensures that the medical record, including electronic medical record (EMR) and photographs, is timely, accurate, and complete 	<ul style="list-style-type: none"> • Negotiates and manages simple patient-, family-, and team-related conflicts • Responds to the social and cultural context of the patient and family • Understands the effects of computer use on information accuracy and potential effects on the physician/patient relationship • Manages transitions of care and optimizes communication across systems 	<ul style="list-style-type: none"> • Sustains working relationships and manages complex and challenging situations, including transitions of care • Customizes the delivery of emotionally difficult information 	<ul style="list-style-type: none"> • Negotiates and manages conflict in complex and challenging situations, including in vulnerable populations, and develops working relationships across specialties and systems of care • Organizes and leads family/craniofacial care team conferences • Uses multiple forms of communication (e.g., e-mail, patient portal, social media) ethically and with respect for patient privacy 	<ul style="list-style-type: none"> • Develops models/approaches to managing difficult communications and seeks leadership opportunities within professional organizations • Coaches others to improve communication skills
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				