Accreditation Council for Graduate Medical Education

Neurosurgery Program Director Workshop

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Congress of Neurological Surgeons October 6, 2012



Disclosures

- Hunt Batjer no financial disclosures
- Pamela Derstine no financial disclosures full-time employee ACGME
- Nathan Selden no financial disclosures



Workshop Overview

Didactics [1-2 pm]

- The Next Accreditation
 System
- Assessment Basics
- Milestones
- Clinical Competency Committees (CCC) pt 1
- Clinical Competency Committee Demonstration [2-2:45 pm]

BREAK [2:45-3:15]

Clinical Competency Committees (CCC) pt 2

 Clinical Competency Small Group Practice [3:15-4 pm]

Small Group Debrief and Discussion [4-5 pm]



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Next Accreditation System Goals

- Reduce the burden of accreditation
- Free good programs to innovate
- Assist poor programs to improve
- Realize the promise of Outcomes
- Provide public accountability for outcomes

NAS in a Nutshell

- Continuous Accreditation Model
 - Based on review of annually submitted data
- SVs replaced by 10-year Self-Study Visit
- Standards revised every 10 years
- Standards organized by
 - Core Processes
 - Detailed Processes
 - Outcomes





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To... The Next Accreditation System

Continuous Observations

Ensure Program Promote Potential Fixes the Problem Ovation Problems

Diagnose the Problem (*if there is one*)

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Conceptual Model of Standards Implementation Across the Continuum of Programs in a Specialty



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Trended Performance Indicators

Annual ADS Update

- Program Attrition Changes in PD/Core Faculty/Residents
- Program Characteristics Structure and Resources
- Scholarly Activity Faculty and Residents
- Board Pass Rate Rolling Rates
- Resident Survey Common and Specialty Elements
- Faculty Survey Core Faculty (Nov-Dec. 2012 phase 1 only)*
- Clinical Experience Case Logs or other
- Semi-Annual Resident Evaluation and Feedback
 - Milestones (first reports December 2013 phase 1 only)

* New

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The Goal of the Continuum of Clinical Professional Development



The "GME Envelope of Expectations" * AKA - Milestones



The Continuum of Clinical Professional Development: Authority and Decision Making versus Supervision



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Professional Development in the Preparation of the Neurosurgeon



Milestones

- Observable steps on continuum of increasing ability
- Intuitively known by experienced specialty educators
- Organized under six domains of clinical competency
- Describe trajectory from neophyte to practitioner
- Articulate shared understanding of expectations
- Set aspirational goals of excellence
- Provide framework & language to describe progress

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ACGME Goal for Milestones

- Permits fruition of the promise of "Outcomes"
- Tracks what is important
- Begins using existing tools for faculty observations
- Clinical Competence Committee triangulates progress of each resident
 - Essential for valid and reliable clinical evaluation system
 - ACGME RCs track unidentified individuals' trajectories
 - ABMS Board may track the identified individual



ACGME Goal for Milestones

- Specialty specific normative data
- Common expectations for individual resident progress
- Development of specialty specific evaluation tools



Move from Numbers to Narratives

- Numerical systems produce range restriction
- Narratives:
 - easily discerned by faculty
 - shown to produce data without range restriction¹

¹ Hodges and others *Most recent reference:* Regehr, et al. Using "Standardized Narratives" to Explore New Ways to Represent Faculty Opinions of Resident Performance. Academic Medicine. 2012. 87(4); 419-427.



The "Envelope of Expectations" **Professionalism:**

Accepts responsibility and follows through on tasks

7		Entering PGY-1	Interme Leve	ediate el	Graduatii Resider	ng Aspir nt Go	ational pals
Performance Ability		Resident from the competing vast major a timely magnetic circumstal		lent Resident a works on n and routine directly pro overseeing appropriate regularly so subordinat	Resident effectively manages multiple competing tasks, an effortlessly manages complet circumstances. Is clearly ide by peers and subordinates a source of guidance and sup oviding pairs difficult or unfamiliar circums g it. In difficult circumstances ely seeks guidance. Is sought out by peers and tes to provide them guidance.		anages sks, and complex arly identified nates as nd support in ircumstances.
Resident complete asks on time but n guidance on local practice and/or policy for patient care.				unfamiliar practice ar s guidance ses.	nd/or in		A
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Assessing Milestones



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NAS Timeline for NS

- Training phase has begun (7/2012)
 - RRC reviews all data for all programs at spring 2013 meeting (includes 2012 surveys, annual ADS update info, case log reports): will not 'count'
 - RRC determines benchmarks for follow-up actions (e.g., progress report, focused site visit, etc.)
 - Traditional program reviews and non-accreditation requests reviewed as usual (January and June 2013 RRC meetings)
 - Programs establish process for use of milestone reporting tools (Clinical Competency Committees)
- Enter NAS 7/2013
 - First Self-study visits July 2014

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Milestone Advisory Group

- Dan Barrow ABNS Past Chair
- Hunt Batjer RRC Chair
- Kim Burchiel SNS President Elect, RRC Vice-Chair
- Ralph Dacey SNS President
- Arthur Day SNS Past President
- Fred Meyer ABNS Secretary, RRC Ex-Officio

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Milestone Implementation Group

- Nathan Selden (Chair): Common Competencies (IPCS, Prof, PBLI, SBP)
- Aviva Abosch: Functional
- Richard Byrne: Tumor & Epilepsy
- Robert Harbaugh: Trauma & Critical Care
- William Krause: Spine
- Timothy Mapstone: Pediatrics
- Oren Sagher: Pain & Peripheral Nerve
- Gregory Zipfel: Vascular

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NS Milestone Domains

- Brain Tumor (PC/MK)
- Critical Care (PC/MK)
- Pain and Peripheral Nerve (PC/MK)
- Pediatric Neurosurgery (PC/MK)
- Spinal Neurosurgery (PC)
- Spinal Neurosurgery:
 Degenerative Disease (MK)
- Spinal Neurosurgery: Trauma and Infection (MK)

- Surgical Treatment of Epilepsy and Movement Disorders (PC/MK)
- Traumatic Brain Injury (PC)
- Interpersonal and Communications
- Practice-based Learning
- Professionalism
 - Systems-based Practice

Milestones

- Milestone alpha Pilot: June August 2012 (28 programs)
- Program Director Feedback– Oct.-Nov. 2012 (email comments to: ledgar@acgme.org)
- Milestone final drafts: published by 12/31/2012

What's Next?

 Incorporating Milestones into your assessment program

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Miller's¹ Pyramid of Clinical Competence



van der Vleuten, CPM, Schuwirth, LWT. Assessing professional competence: from Methods to Programmes. **Medical Education 2005; 39: 309–317**

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Key Elements of Quality Evaluation of Miller's "Does"

- Trained Observers
 - Common understanding of the expectations
 - Sensitive "eye" to key elements
 - Consistent evaluation of levels of performance
- Many Quality Observations
- Interpreter/Synthesizer Experts
 - Clinical Competency Committee (Resident Evaluation Committee)



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Basics of Assessment*

- Competence is specific, not generic
 - Content specificity is the dominant source of unreliability regardless of method
- Objectivity does not equal reliability
 - Sampling across other factors (e.g., subjective judgments of assessors) improves reliability

* CPM van der Vleuten, et al (2010) Best Practice & Research Clinical Obstetrics and Gynecology <u>24</u>: 703-719

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Basics of Assessment*

- What is being measured is determined more by the format of the stimulus than the format of the response
 - Authenticity is essential
- Validity can be 'built-in'
 - Control and optimize materials, prepare stakeholders, standardize administration, utilize psychometric procedures for "knows" "shows" and "shows how"
 - Built-in validity is different at the 'does' level of Miller's pyramid



Basics of Assessment*



Stimulus format: habitual practice performance Response format: direct observation, checklists, rating scales, narratives

> Stimulus format: hands-on (patient) standardized scenario or simulation Response format: direct observation, checklists, rating scales

> > Stimulus format: (patient) scenario, simulation Response format: menu, written, open, oral, computer-based

> > > Stimulus format: fact oriented Response format: menu, written, open, computer-based, oral

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Basics of Assessment*

- No single method can do it all
 - Any single method is confined to one level of Miller's pyramid
 - Any method can have utility
 - Bias is an inherent characteristic of expert judgment





Basics of Assessment*

The bottom line:

- Strive towards assessment in authentic situations
- Utilize broad sampling perspective to counterbalance unstandardized and subjective nature of judgments



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Assessing "Does"

- Relies on information from knowledgeable people to judge performance
- Stimulus format is the authentic context (unstandardized and unstructured)
- Response format is generic (not tailored to specific context) – global ratings with oral feedback; written comments
- Sample across clinical contexts and assessors to overcome subjectivity of individual assessments
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Assessing "Does"

Two types of assessment instruments

- Direct performance measures
 - Observation of single concrete situation (e.g., OPR; direct encounter card); repeated across encounters and assessors
 - Exposure to learner over time (e.g., peer assessment, MSF, single expert/mentor global assessment)
- Aggregation Methods
 - In-depth, multiple competency domains, longitudinal
 - Logbook or portfolio (may include case details, complications, approaches, outcomes; project documents; publications [drafts/final]; etc.)
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Assessing "Does"

- A feasible sample is required to achieve reliable inferences
 - 8-10 irrespective of instrument or what is being measured
- Bias is an inherent characteristic of expert judgment
 - relieve assessor of potentially compromising, multiple roles; use multiple assessors
- Validity resides more in the users of the instruments than in the instruments that are used
 - standardizing trivializes the assessment

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Assessing "Does"

- Formative and summative functions are typically combined
 - if a learner sees no value in an assessment, it becomes trivial
- Successful feedback is conditional on social interaction
 - coaching, mentoring, discussing portfolios, mediation around multisource feedback
- Qualitative, narrative information carries a lot of weight
 - richer and more appreciated than quantitative ACGME
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Assessing "Does"

- Achieve rigor in summative decisions with non-psychometric qualitative research procedures
 - Prolonged engagement
 - Triangulation
 - Peer examination
 - Member checking
 - Structural coherence
 - Time sampling
 - Thick description
 - Stepwise replication
 - Audit

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- Credibility

- Transferability

Dependability

*Driessen et al (2005) Medical Education <u>39</u>: 214-220

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Assessing "Does"

- Clinical Competency Committee
 - Uses predefined criteria (i.e., milestones) to make judgments more transparent (audit)
 - Members discuss milestones to achieve common understanding (structural coherence)



Assessing "Does"

- **Clinical Competency Committee**
 - Receives input from mentor (prolonged) engagement), many assessors and different credible groups (time sampling, stepwise replication, triangulation)

 - Incorporate narrative information in decisions (thick description)
 - Incorporate learner's point of view in assessment procedure (member © 2012 Accreditation Council to C G M E checking) Graduate Medical Education (ACGME)

Assessing "Does"

- Clinical Competency Committee
 - Discusses inconsistencies in assessment data (structural coherence)
 - Document assessment steps; provide opportunity for appeal (audit)
 - Difficult decisions require more time, input, consultations (until 'saturation')

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Neurosurgery Milestones

Nathan R. Selden, MD, PhD Campagna Chair of Pediatric Neurosurgery Residency Program Director





Milestones - Key features

- Minimal standards of experience by detailed case categories
- Objective and reproducible, consensus assessments of key milestones within every competency
 - Clinical Competency Committee
 - Development of additional assessment tools
- Developmental progression across training
 - Extends to practice: 'Lifelong Learning'





Matrix vs. Milestones

Competency	Objective	Teaching Methods	Assessment Tools	Educational Goals
Medical Knowledge (Technical Skills)	 Lumbar Puncture Ventriculostomy CSF Sample Shunt tap Traction Stereotactic frame placement 	 AANS/SNS On-line modules Conferences Supervised learning Bootcamp 	•Faculty and Program Director evaluations	Proficient (4)

- The "Matrix" is a comprehensive curriculum for neurological surgery
- Reflects RRC case categories and ABNS written examination question content categories
- SNS CoRE, Curriculum Subcommittee (Chair: Tim Mapstone) OHSU

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Matrix vs. Milestones

evel 1	Level 2	Level 3	Level 4	Level 5
 Perform a history and physical examination in a comatose patient and assign GCS score. Evaluate a polytrauma patient and assign Injury Severity Score. Provide initial management of a polytrauma patient. Provide routine perioperative care for patients with TBI. Detect and report an altered neurological examination. Place an ICP monitor and external ventricular drain. 	 Explain risks and benefits of neurosurgical procedures for TBI. Interpret diagnostic imaging for a neurotrauma patient. Organize emergency surgical team; position for craniotomy with cervical precautions. Assist with routine procedures (e.g. burr hole, craniotomy for hematoma or penetrating injury). Recognize and initiate work-up of complications (e.g. hematoma, seizure, sepsis, monitor drift). 	 Formulate an interdisciplinary treatment plan for patients with polytrauma. Select patients for operative intervention. Independently perform routine procedures. Perform complex procedures with assistance (e.g. repair of vascular injury or CSF fistula, posterior fossa hematoma). Manage complications with assistance. Manage ventricular drain. 	 Prioritize the management of injuries in a polytrauma patient. Independently perform complex procedures. Manage unexpected intraoperative events (e.g. cerebral edema, hemorrhage, or air embolus). Adapt standard treatment plans to special circumstances (e.g. medical co- morbidity, coagulopathy). Independently manage complications. 	 Systematically review treatment outcomes for TBI. Participate in quality improvement for TBI care. Participate in developing a plan for triage in a disaster management scenari Reconstruct complex craniofacial injuries.

- The Milestones are a reporting tool for the developmental stage of individual residents with regards to skills, knowledge and attitudes
- Created by all specialties as part of ACGME reform initiative

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Assessment vs. Reporting

- Assessments: Specific tools to objectively evaluate knowledge and skills
 - Some we have:
 - ABNS written examination, SANS
 - 360 degree evaluations
 - Clinical/operative observation & proctoring
 - Some we may adopt:
 - OSCI (objective structured clinical interview)
 - Surgical skill simulator assessment
- Milestones: Reporting instrument





Milestones Group: Principles

- Synthesizing PD & Advisory Group Input
 - Economize
 - One page per milestone
 - Fewer milestones
 - Milestones are representative biopsies, not comprehensive curricula
 - Individual competencies should be repeated across levels consistent with development
 - Milestones should be systematically organized across subspecialty
 - Stick with the core

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Milestones Drafts

- Available here today
 - 20 one page milestones
 - Medical Knowledge and Patient Care for subspecialties (including Critical Care)
 - 'General' Competencies: Professionalism, Communications, PBL, SBP





Neurosurgery Milestones

- Specialty based
 - Tumor: MK & PC
 - Functional & Epilepsy: MK & PC
 - Vascular Neurosurgery: MK & PC
 - Pain & Peripheral Nerve: MK & PC
 - Pediatrics: MK & PC
 - Critical Care: MK & PC
 - TBI: PC
 - Spine: MK, MK & PC





Neurosurgery Milestones

General

- Professionalism
- Interpersonal Skills & Communication
- Practice-based learning
- Systems-based practice
- Total
 - 20 milestones
 - 20 pages





Milestone Description: Bra	in Tumor – Medical Knowledg	je		
Level 1	Level 2	Level 3	Level 4	Level 5
 Correlate neurological deficits with tumor location. Correlate radiographic tumor location with ventricular, cranial nerve and vascular anatomy. Describe the pathophysiology of mass lesions and obstructive hydrocephalus. Describe acute symptomatic medical therapy for neoplastic mass lesions (e.g. steroids, ventricular drainage). 	 Describe the use of radiation and chemotherapy for brain and spinal cord tumors. List indications for biopsy or resection of brain and spinal cord tumors. Categorize brain and spinal cord tumors. Categorize brain and spinal cord tumors by age, histology, and radiographic appearance. Describe the non-neoplastic differential diagnosis of various mass lesions. Describe the natural history of common intrinsic brain tumors. 	 Describe the genetics of brain tumors and genetic markers that impact prognosis. Describe the use of advanced imaging in tumor evaluation and surgical planning (e.g. MR tractography, functional imaging, spectroscopy). Describe the use of neuro-navigation and intraoperative imaging for brain tumor surgery. Describe the role of skull base surgical approaches in tumor resection, attendant complications, and their management. 	 Describe expected outcomes after surgery for brain and spinal cord tumors. Describe the role of radiosurgery in brain tumor therapy. Describe the role of palliative care for brain tumor patients. Describe personalized medicine approaches for brain tumor treatment. 	 Contribute to the peer-reviewed literature in brain and spinal cord tumors. Participate in brain tumor research and clinical trials.
Comments:				

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Comments:				



Early Learner

- Demonstrates competence occasionally; usually shows ability to learn in routine, repetitive or non-stressful situations
- Requires supervision

Competent

- Demonstrates competence under routine circumstances
- Can perform without supervision in predictable circumstances
- Recognizes limitations and accesses support when needed

Proficient

- Demonstrates competence under most circumstances through intuition and analytical thought processes in unpredictable situations
- Is consistently trusted to deal effectively with complex problems



- Demonstrates competence through understanding the conceptual whole with adaptability to the circumstance
- Can recognize errors or inadequacies in knowledge, judgment, skills
- Is a persuasive lifelong learner
- Is a resource mentor, teacher, and role model in this area.

Progression (Not Grade)



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Comments:				

Milestone Description: Bra	in Tumor – Patient Care			
Level 1	Level 2	Level 3	Level 4	Level 5
 Perform a history and physical examination in patients with brain or spinal cord tumors. Provide routine peri- operative care for patients with brain or spinal cord tumors. Initiate the work-up of a patient with a brain or spinal cord tumor. Recognize signs of and initiate work-up for neurological deterioration. 	 Explain risks and benefits of neurosurgical procedures for brain and spinal cord tumors. Interpret diagnostic studies. Assist with routine procedures (e.g. resection of non- eloquent glioma or metastasis, stereotactic biopsy). Recognize and initiate work-up of complications (e.g. hematoma, infection, seizure, hydrocephalus). 	 Formulate a work-up and treatment plan for patients with brain, skull base or spinal cord tumors. Independently perform routine procedures. Perform complex procedures with assistance (e.g. resection of eloquent glioma, ventricular or posterior fossa tumor). Manage unexpected intra-operative events (e.g. sinus bleeding, cerebral edema). Manage complications with assistance. 	 Independently formulate a treatment plan for patients with co-morbidities or other complicating factors (e.g. systemic illness, radiation, chemotherapy). Independently perform complex procedures. Adapt standard treatment plans to special circumstances (e.g. previous surgery, anticipated neurological morbidity). Independently manage complications. 	 Systematically review treatment outcomes for brain and spinal cord tumors. Participate in quality improvement for brain and spinal cord tumors. Participate in or lead a multidisciplinary brain tumor team or program.
Comments:				

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Level 1	Level 2	Level 3	Level 4	Level 5
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Comments:				

Level 1	Level 2	Level 3	Level 4	Level 5
Perform a history and physical examination in patients with epilepsy or movement disorders.	 Explain risks and benefits of neurosurgical procedures for epilepsy and movement disorders. 	 Formulate a work-up and treatment plan for patients with epilepsy or a movement disorder (e.g. Parkinson disease, essential tremor) 	 Independently formulate a treatment plan for patients with co-morbidities or other complicating factors (e.g. eloquent seizure 	 Systematically review treatment outcomes for epilepsy and/or movement disorders. Participate in quality
 patient for medical comorbidities affecting functional neurological surgery. Provide routine perioperative care for functional neurosurgical patients. Initiate the work up of a patient with an apparent seizure. Recognize and initiate treatment of status epilepticus. 	 Interpret diagnostic studies. Assist with routine components of functional procedures (e.g. burr hole, craniotomy, generator change). Recognize and initiate work-up of complications (e.g. hematoma, seizure, infection, device malfunction). Place stereotactic head-frame. 	 Independently perform routine functional procedures (e.g. DBS placement, subdural electrode placement, topectomy) Perform complex functional procedures with assistance (e.g. temporal lobectomy). Manage complications with assistance. Perform stereotactic targeting using frameless and frame- based systems. 	 focus). Independently perform complex procedures. Adapt standard treatment plans to special circumstances (e.g. previous surgery, neuropsychological limitations). Independently manage complications. 	improvement for epilepsy and/or movement disorders.

Milestone Description: Brain Tumor – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
 Perform a history and physical examination in patients with brain or spinal cord tumors. Provide routine peri- operative care for patients with brain or spinal cord tumors. Initiate the work-up of a patient with a brain or spinal cord tumor. Recognize signs of and initiate work-up for neurological deterioration. 	 Explain risks and benefits of neurosurgical procedures for brain and spinal cord tumors. Interpret diagnostic studies. Assist with routine procedures (e.g. resection of non- eloquent glioma or metastasis, stereotactic biopsy). Recognize and initiate work-up of complications (e.g. hematoma, infection, seizure, hydrocephalus). 	 Formulate a work-up and treatment plan for patients with brain, skull base or spinal cord tumors. Independently perform routine procedures. Perform complex procedures with assistance (e.g. resection of eloquent glioma, ventricular or posterior fossa tumor). Manage unexpected intra-operative events (e.g. sinus bleeding, cerebral edema). Manage complications with assistance. 	 Independently formulate a treatment plan for patients with co-morbidities or other complicating factors (e.g. systemic illness, radiation, chemotherapy). Independently perform complex procedures. Adapt standard treatment plans to special circumstances (e.g. previous surgery, anticipated neurological morbidity). Independently manage complications. 	 Systematically review treatment outcomes for brain and spinal cord tumors. Participate in quality improvement for brain and spinal cord tumors. Participate in or lead a multidisciplinary brain tumor team or program.
Comments:				

Level 1	Level 2	Level 3	Level 4	Level 5
Perform a history and physical examination in patients with epilepsy or movement disorders. Evaluate and treat a patient for medical comorbidities affecting functional neurological surgery. Provide routine peri- operative care for functional neurosurgical patients. Initiate the work up of a patient with an apparent seizure. Recognize and initiate treatment of status epilepticus.	 Explain risks and benefits of neurosurgical procedures for epilepsy and movement disorders. Interpret diagnostic studies. Assist with routine components of functional procedures (e.g. burr hole, craniotomy, generator change). Recognize and initiate work-up of complications (e.g. hematoma, seizure, infection, device malfunction). Place stereotactic head-frame. 	 Formulate a work-up and treatment plan for patients with epilepsy or a movement disorder (e.g. Parkinson disease, essential tremor). Independently perform routine functional procedures (e.g. DBS placement, subdural electrode placement, topectomy) Perform complex functional procedures with assistance (e.g. temporal lobectomy). Manage complications with assistance. Perform stereotactic targeting using frameless and frame- based systems. 	 Independently formulate a treatment plan for patients with co-morbidities or other complicating factors (e.g. eloquent seizure focus). Independently perform complex procedures. Adapt standard treatment plans to special circumstances (e.g. previous surgery, neuropsychological limitations). Independently manage complications. 	 Systematically review treatment outcomes for epilepsy and/or movement disorders. Participate in quality improvement for epilepsy and/or movement disorders.

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Perform a history and physical examination in patients with epilepsy or movement disorders. Evaluate and treat a patient for medical comorbidities affecting functional neurological surgery. Provide routine peri- operative care for functional neurosurgical patients. Initiate the work up of a patient with an apparent seizure. Recognize and initiate treatment of status epilepticus.	Explain risks and benefits of neurosurgical procedures for epilepsy and movement disorders. Interpret diagnostic studies. Assist with routine components of functional procedures (e.g. burr hole, craniotomy, generator change). Recognize and initiate work-up of complications (e.g. hematoma, seizure, infection, device malfunction). Place stereotactic head-frame.	 Formulate a work-up and treatment plan for patients with epilepsy or a movement disorder (e.g. Parkinson disease, essential tremor). Independently perform routine functional procedures (e.g. DBS placement, subdural electrode placement, topectomy) Perform complex functional procedures with assistance (e.g. temporal lobectomy). Manage complications with assistance. Perform stereotactic targeting using frameless and frame- based systems. 	 Independently formulate a treatment plan for patients with co-morbidities or other complicating factors (e.g. eloquent seizure focus). Independently perform complex procedures. Adapt standard treatment plans to special circumstances (e.g. previous surgery, neuropsychological limitations). Independently manage complications. 	 Systematically review treatment outcomes for epilepsy and/or movement disorders. Participate in quality improvement for epilepsy and/or movement disorders.

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Milestone Description: Traumatic Brian Injury – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
 Perform a history and physical examination in a comatose patient and assign GCS score. Evaluate a polytrauma patient and assign Injury Severity Score. Provide initial management of a polytrauma patient. Provide routine perioperative care for patients with TBI. Detect and report an altered neurological examination. Place an ICP monitor and external ventricular drain. 	 Explain risks and benefits of neurosurgical procedures for TBI. Interpret diagnostic imaging for a neurotrauma patient. Organize emergency surgical team; position for craniotomy with cervical precautions. Assist with routine procedures (e.g. burr hole, craniotomy for hematoma or penetrating injury). Recognize and initiate work-up of complications (e.g. hematoma, seizure, sepsis, monitor drift). 	 Formulate an interdisciplinary treatment plan for patients with polytrauma. Select patients for operative intervention. Independently perform routine procedures. Perform complex procedures with assistance (e.g. repair of vascular injury or CSF fistula, posterior fossa hematoma). Manage complications with assistance. Manage ventricular 	 Prioritize the management of injuries in a polytrauma patient. Independently perform complex procedures. Manage unexpected intraoperative events (e.g. cerebral edema, hemorrhage, or air embolus). Adapt standard treatment plans to special circumstances (e.g. medical comorbidity, coagulopathy). Independently manage complications. 	 Systematically review treatment outcomes for TBI. Participate in quality improvement for TBI care. Participate in developing a plan for triage in a disaster management scenario. Reconstruct complex craniofacial injuries.
Comments:				

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Level 1	Level 2	Level 3	Level 4	Level 5
 Perform a history and physical examination in a comatose patient and assign GCS score. Evaluate a polytrauma patient and assign Injury Severity Score. Provide initial management of a polytrauma patient. Provide routine perioperative care for patients with TBI. Detect and report an altered neurological examination. Place an ICP monitor and external ventricular drain. 	 Explain risks and benefits of neurosurgical procedures for TBI. Interpret diagnostic imaging for a neurotrauma patient. Organize emergency surgical team; position for craniotomy with cervical precautions. Assist with routine procedures (e.g. burr hole, craniotomy for hematoma or penetrating injury). Recognize and initiate work-up of complications (e.g. hematoma, seizure, sepsis, monitor drift). 	 Formulate an interdisciplinary treatment plan for patients with polytrauma. Select patients for operative intervention. Independently perform routine procedures. Perform complex procedures with assistance (e.g. repair of vascular injury or CSF fistula, posterior fossa hematoma). Manage complications with assistance. Manage ventricular drain. 	 Prioritize the management of injuries in a polytrauma patient. Independently perform complex procedures. Manage unexpected intraoperative events (e.g. cerebral edema, hemorrhage, or air embolus). Adapt standard treatment plans to special circumstances (e.g. medical comorbidity, coagulopathy). Independently manage complications. 	 Systematically review treatment outcomes for TBI. Participate in quality improvement for TBI care. Participate in developing a plan for triage in a disaster management scenario. Reconstruct complex craniofacial injuries.
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Comments:				
Milestone Description: Interpersonal and Communication Skills				
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Level 1	Level 2	Level 3	Level 4	Level 5
 Describe the ethical principles of informed consent. Use EMR and radiology access systems for timely reporting of clinical information. Create accurate patient orders and demonstrate use of EMR dosing and drug interaction safety mechanisms. Describe methods to compassionately break bad news. Identify elements of safe patient hand offs and procedural pause. 	 Obtain and document informed consent. Complete timely and accurate operative notes and ACGME case log entries. List the elements necessary for E&M coding at each encounter type/level. Participate in breaking bad news to a patient or family. Participate in an advanced directive discussion. Lead procedural pause. Use checklists and informatics to support patient hand offs. 	 Obtain and document informed consent in challenging circumstances (e.g. language or cultural barrier). Utilize HIPPA protection safeguards for PHI and EMR. Design and implement an EMR template. Break bad news to a patient or family member. Lead and document an advanced directive discussion. Supervise patient hand offs. 	 Create or update a neurosurgical care pathway and order set; implement use. Manage and document an unexpected outcome (e.g. patient, care team and risk management communication). Lead response to an intra-operative or critical care emergency. Quantify evidence for risk-benefit analysis during informed consent for a complex, elective neurosurgical procedure. 	 Design consent instrument for a human subject research study; file an IRB application. Utilize EMR with IRB approval to conduct formal clinical research and/or QI; Report results. Design and implement a procedural safety or sign out exercise. Design and implement a team building and communications exercise.
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Milestone Description: Systems-Based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
 Define medical errors, near misses, and sentinel events; provide system-based examples of each. 	 Use protocols and checklists for patient handoffs, medication orders, and emergencies. 	 Report problematic behaviors, processes, and devices including errors and near misses. 	 Conduct root cause or failure mode analysis of systems-based errors and effect prophylaxis. 	 Lead multi-disciplinary patient safety team or initiative. Design and implement cost-effective patient
 Identify the range of practice variation (e.g. medication, laboratory tests, imaging, and procedures). Assist care coordinator with discharge and outpatient services arrangements. Describe U.S. health payment systems. Work in inter- disciplinary teams to enhance safety and quality. 	 Describe the cost impact of practice variation in the context of system and national health resource utilization. Effect inter-facility transfer, including records and physician communication. Describe principles of ethical coding (e.g. diagnostic, E&M and procedural). 	 Use health care resources responsibly (e.g. test ordering, operating room efficiency, timely discharges/transfers). Coordinate interdisciplinary inpatient care. Accurately code diagnoses and procedures using ACGME case log. 	 Cite peer-reviewed cost and outcomes data to support resource utilization decisions. Coordinate team for interdisciplinary procedure. Establish timeline and identify resources for transition to practice. Improve care systems to achieve optimal patient care. 	 care pathways with monitoring and feedback mechanisms. Lead interdisciplinary care team or clinic. Mentor colleagues in practice building and administration.
Comments:				

Milestone Description: Systems-Based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
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Comments:				

Milestones Scoring

- Goals
 - Objective
 - Reproducible
 - Transparent to public and stakeholders
 - Enforceable (only competent residents advance)
- Method

OHSU

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- Clinical competency committee (CCC)





CCC

OHSU

BRAIN INSTITUT

- Clinical Competency Committee
 - Six to eight senior faculty
 - Includes Program Director, Chair
 - Represents core subspecialties
 - Meets every six months to review assessments (in resident portfolio) and determine milestone levels
 - Works by consensus



Resident Promotion

- Determined by
 - Initially: Comparison to peers in program
 - Eventually: Comparison to national specialty benchmarks
- Tempo of individual resident development
 - Can vary within limits
- Endpoint for safe independent practice
 - Does not vary
 - Proficiency in the core competencies of the specialty as identified by the milestones is required





Resident Promotion

- Failure to progress
 - Remediation or Probation
 - Assign mentor
 - Require additional readings, SANS, testing
 - Assign skills lab and/or simulator practice
 - Add or modify rotations
 - Repurposing to another specialty or separation from the training program





Program Evaluation

- Milestones progress by residents will be used as part of program quality evaluation and accreditation
- Why not 'game the system'?
 - Milestones are biopsies of the broader field of neurosurgery: don't 'train to the test'
 - Milestones performance on key areas of the specialty assess the preparedness of the individual for unsupervised practice: this is our duty to safety and the excellence of neurosurgery





- Faculty Burden
 - Time
 - One CCC meeting every 6 months
 - Combine with Residency Advisory Committee function
 - Milestones will inform and improve program quality
 - Benefits
 - Subspecialty milestones representation is mark of seniority, engagement with residency
 - Formal educational role for faculty P&T file
 - Ability to influence resident development and progress
 - Price of entry for teaching and clinical supervision



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- How to develop new assessments?
- Most assessments are already in place
- The Society of Neurological Surgeons will help
 - Share individual program ideas and accomplishments via the Program Director Toolkit (www.societyns.org)
 - Accomplish core formal assessments in groups
 - PGY1 Boot Camp (introductory emergency & technical skills)
 - Junior Resident Course (NEW in 2013)
 - » Breaking bad news
 - » Structured clinical evaluations
 - » Surgical simulation

OHSU

BRAIN INSTITUT



How to develop new assessments?

- SNS Neurosurgical Portal
 - Comprehensive online learning tool
 - Embodies SNS Matrix Curriculum
 - » Didactic material: Radiology, Pathology, Anatomy
 - » Operative videos
 - » Lectures: SNS-AANS Modules, CNS University
 - » Focused assessment: SANS
 - Linked to relevant Milestones criteria
 - Automatic reporting to PDs





- Will milestones affect length of training for individual residents (lengthen or shorten)?
 - Not envisioned immediately
 - Any proposed change to length of individual's training period would need *prospective* consideration by the ABNS





- No pediatric attending on site how do we complete Pediatrics MK & PC milestones?
 - PD should collaborate with pediatric rotation director
- Important areas of my subspecialty are not represented
 - Milestones are an assessment reporting tool, not a curriculum (think 'biopsy')
- How are we doing compared to other surgical specialties?
 - Neurosurgery milestones have been refined in multiple steps and are more carefully consolidated and edited than most
 - We are one of 7 early adopter specialties for July 1, 2013





- Discoverability
 - Discoverable according to existing state and federal laws for education and employment, *no change*
- Liability
 - Milestones data may be used for non-promotion or separation decisions
 - Properly employed, milestones *improve* the status quo:
 - Created in specialty wide consultative process
 - Implemented correctly, reflect transparent consensus of multiple expert faculty with access to formative data





Timeline

- Spring 2013 Form a CCC and prepare for milestones evaluations
- July December 2013 First evaluation period
- December 2013 First milestones evaluations submitted to ACGME (via web)





Thanks

BRAIN INSTITU

- Allan Friedman Chair, Working Group
- Hunt Batjer Chair, RRC
- Ralph Dacey President, SNS
- Kim Burchiel President-elect, SNS
- Nick Barbaro Secretary, SNS
- Tim Mapstone Chair, SNS Curriculum SubCom
- Pam Derstine ED, Neurosurgery RRC
- Laura Edgar Milestones Project, ACGME

OHSUHeidi Waldo – Program Coordinator, OHSU

