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Milestones in Simulation: Mapping Critical Actions in Simulation to the Milestones in Emergency Medicine

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41 Mental Practice as an Adjunct to Improving Pediatric Resuscitation Skills

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Background: The number of pediatric resuscitations that trainees experience is limited, and simulation is used to augment Emergency Medicine resident experience with managing critically ill pediatric patients. Mental practice (MP), the rehearsal of cognitive or technical skills without physical performance of that skill, has been used as an adjunct to improve procedural and crisis resource management skills. However, this technique has received mixed reviews.

Educational Objectives: To explore the concept of MP as a tool to train residents to better manage pediatric patients with respiratory failure.

Curricular Design: MP was incorporated into one of our regularly scheduled interdisciplinary simulation workshops. Participants were divided into teams completing a 40 minute MP session followed by a 40 minute simulation. During the MP session, the faculty coach described the technique of MP. Residents were assigned to roles, and then given a brief EMS report - child with altered mental status and impending respiratory failure. Residents were instructed to use online resources, the faculty preceptor, and their colleagues in visualizing a step by step plan to fulfill their roles. For example, the airway person detailed specifics such as: proper bag-valve mask technique, rate of ventilation, troubleshooting poor chest rise, rapid sequence intubation technique, and other airway issues that might arise. The team leader was asked to focus on team coordination, situational awareness, and communication among team members.

Teams then completed a pediatric simulation of the same case followed by a group debrief.

Impact/Effectiveness: Compared to a prior simulation of a child with respiratory failure, there was no apparent improvement in demonstrated skills. Team members, concentrating on individual roles appeared to communicate less and have difficulty coordinating tasks. Team performance may have improved with use of specific check lists during the MP session and more robust team leadership training. MP itself may be a complex skill that takes practice. It is imperative that we find ways to better educate our residents to manage less common but critically important patient presentations.

42 Milestones in Simulation: Mapping Critical Actions in Simulation to the Milestones in Emergency Medicine

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Background: The Accreditation Council for Graduate Medical Education (ACGME) mandates that all accredited residency programs assess the development of their resident physicians along a framework provided by the Milestone Project. Individual residency programs task their clinical competency committees (CCCs) to monitor and record trainees' progress along these predefined milestones. Suggested sources for this information involve many aspects of the residency program and should include simulation performance. Resident performance in simulation can be applied to the milestone levels.

Educational Objectives: We sought to create an assessment tool that directly ties resident actions in simulation to specific milestone levels.

Curricular Design: At the beginning of case development, our faculty considers how a proposed simulation case can measure performance along select milestones. Our cases run for approximately 15 minutes allowing us to observe actions related to 4-6 milestones. Critical actions that should be performed during the case are then used as anchors for milestone levels. These anchors are then written into a pre-generated template. As a result, we create an assessment form paired to the proposed simulation case (see images). At our institution, we upload the form into New Innovations, an online residency management suite. Case writing proceeds routinely with the scenario appropriately triggering the critical actions (milestone anchors). Each time we run the simulation case, we select one resident to lead the resuscitation team. We assign one faculty member to observe that resident during the case and to complete the assessment form in real-time. The forms are archived and later reviewed by members of our CCC.

Impact/Effectiveness: We expose individual residents to approximately 36 cases paired with these assessment forms over a four-year residency. Our CCC examines the results of these assessments and incorporates that data into our residents' semi-annual reviews. As per the intent of the Milestone Project, our CCC considers milestone performance in simulation to be one of many data points that contribute to the overall assessment of each resident. By incorporating this tool in simulation and in CCC meetings, we can use the framework of the Milestone Project to more precisely provide meaningful assessment of our residents.

Simulation Case Evaluation Form
Ethylene Glycol Overdose

Simulation Case Evaluation Form
Ethylene Glycol Overdose

Performance of Focused History and Physical Exam (PC2)

Abstracts current findings in a patient with multiple chronic medical problems and, when appropriate, compares with a prior medical record and identifies significant differences between the current presentation and past presentations.

- Level 1 Performs and communicates a reliable, comprehensive history and physical exam
Action: Obtains PMH and SH
- Level 2 Performs and communicates a focused history and physical exam which effectively addresses the chief complaint and urgent patient issues
Action: Palpates and visualizes the entire patient (manikin) front and back
- Level 3 Prioritizes essential components of a history given a limited or dynamic circumstance
Prioritizes essential components of a physical examination given a limited or dynamic circumstance
Action: Asks for all three components of the GCS
- Level 4 Synthesizes essential data necessary for the correct management of patients using all potential sources of data
Action: Recognizes the need for intubation AND Identifies intoxication as the likely cause of the patient's condition.

Diagnostic Studies (PC3)

Applies the results of diagnostic testing based on the probability of disease and the likelihood of test results altering management.

- Level 1 Determines the necessity of diagnostic studies
Action: Orders CMP
- Level 2 Orders appropriate diagnostic studies
Performs appropriate bedside diagnostic studies and procedures
Action: Orders bedside blood glucose and EKG
- Level 3 Prioritizes essential testing
Interprets results of a diagnostic study, recognizing limitations and risks, seeking interpretive assistance when appropriate
Reviews risks, benefits, contraindications, and alternatives to a diagnostic study or procedure
Action: Orders Serum Osmolality, ASA, Tylenol, AND Ethanol level
- Level 4 Uses diagnostic testing based on the pre-test probability of disease and the likelihood of test results altering management
Practices cost effective ordering of diagnostic studies
Understands the implications of false positives and negatives for post-test probability
Action: Orders toxic alcohol levels AND begins specific treatment for toxic alcohol ingestion before levels are available

Diagnosis (PC4)

Based on all of the available data, narrows and prioritizes the list of weighted differential diagnoses to determine appropriate management.

- Level 1 Constructs a list of potential diagnoses based on chief complaint and initial assessment
Action: Includes structural, metabolic, and toxic causes on the differential diagnosis of altered mental status
- Level 2 Constructs a list of potential diagnoses, based on the greatest likelihood of occurrence
Constructs a list of potential diagnoses with the greatest potential for morbidity or mortality
Action: Constructs the differential diagnosis of an anion gap acidosis
- Level 3 Uses all available medical information to develop a list of ranked differential diagnoses including those with the greatest potential for morbidity or mortality
Correctly identifies "sick versus not sick" patients
Revises a differential diagnosis in response to changes in a patient's course over time
Action: Constructs a differential diagnosis of an osmolality gap
- Level 4 Synthesizes all of the available data and narrows and prioritizes the list of weighted differential diagnoses to determine appropriate management
Action: Provides a specific treatment (i.e. Fomepizole, dialysis) for toxic alcohol ingestion based on the POC lab

Pharmacotherapy (PC5)

Selects and prescribes, appropriate pharmaceutical agents based upon relevant considerations such as mechanism of action, intended effect, financial considerations, possible adverse effects, patient preferences, allergies, potential drug-food and drug-drug interactions, institutional policies, and clinical guidelines; and effectively combines agents and monitors and intervenes in the advent of adverse effects in the ED.

- Level 1 Knows the different classifications of pharmacologic agents and their mechanism of action.
Consistently asks patients for drug allergies
Action: Obtains allergy history
- Level 2 Applies medical knowledge for selection of appropriate agent for therapeutic intervention
Considers potential adverse effects of pharmacotherapy
Action: Gives Bicarbonate
- Level 3 Considers array of drug therapy for treatment. Selects appropriate agent based on mechanism of action, intended effect, and anticipates potential adverse side effects
Considers and recognizes potential drug to drug interactions
Action: Gives Fomepizole
- Level 4 Selects the appropriate agent based on mechanism of action, intended effect, possible adverse effects, patient preferences, allergies, potential drug-food and drug-drug interactions, financial considerations, institutional policies, and clinical guidelines, including patient's age, weight, and other modifying factors
Action: Provides adjunctive treatment with cofactors (i.e. thiamine) to decrease amounts of toxic metabolites AND gives Fomepizole based on POC lab

Disposition (PC7)

Establishes and implements a comprehensive disposition plan that uses appropriate consultation resources; patient education regarding diagnosis; treatment plan; medications; and time and location specific disposition instructions.

- Level 1 Describes basic resources available for care of the emergency department patient
Action: Has patient admitted
- Level 2 Formulates a specific follow-up plan for common ED complaints with appropriate resource utilization
Action: Asks for post-intubation CXR, post-treatment ABG
- Level 3 Formulates and provides patient education regarding diagnosis, treatment plan, medication review and PCP/consultant appointments for complicated patients
Involves appropriate resources (e.g., PCP, consultants, social work, PT/OT, financial aid, care coordinators) in a timely manner
Makes correct decision regarding admission or discharge of patients
Correctly assigns admitted patients to an appropriate level of care (ICU/Telemetry/Floor/ Observation Unit)
Action: Consults toxicology
- Level 4 Formulates sufficient admission plans or discharge instructions including future diagnostic/therapeutic interventions for ED patients
Engages patient or surrogate to effectively implement a discharge plan
Action: Arranges emergent dialysis

43 Military Emergency Medicine (EM) Residency Guide: Demystifying the Military Match and Application Process

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Background: The military match process for Emergency Medicine can be confusing and challenging to navigate. One can easily get lost in the maze of military jargon and service specific information. The military match impacts 1) students who join the Health Professional Scholarship Program (HPSP) or Health Services Collegiate Program (HSCP for Navy only), 2) students who attended a military service academy for undergraduate training and attend a private medical school and 3) students who attend the Uniformed Services University of the Health Sciences (USUHS). The purpose of this document is to serve as an overview of the military match process for both students and their advisors.