Outline for Brain Injury/Disorders of Consciousness Simulation Training for Residents and Fellows

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Introduction:

Disorders of consciousness (DoC's) are a classification of neurological syndromes that involve the disruption of wakefulness and/or awareness. Serious ethical considerations in the management of DoC's have been identified as diagnosis, prognostication, and treatment modalities of these disorders have continued to evolve. DoC's pose profound challenges for patients, families, and healthcare providers.

We know of the different classifications of DoC's as leading to different outcomes with accompanying prognosticating factors. These classifications include coma, minimally conscious state (MCS), and persistent vegetative state (PVS). Comatose patients do not experience sleep-wake cycles and are unaware of their environment. In terms of the prognosis of coma, it is known that coma can persist for up to four weeks, after which comatose patients typically either recover and awaken, transition into a MCS or PVS state, or die[1]. PVS patients are in a state of wakefulness and do not have awareness of themselves or their environment. In PVS patients, the ascending reticular activating system is intact leading to wakefulness; however, patients lack awareness due to cerebral hemisphere damage. PVS patients therefore exhibit only reflex behaviors.

Duration of coma is typically linked to prognosis characteristics and recovery chance. This transition from coma into MCS or PVS states leads to questions regarding medical interventions and ethical considerations for patients and their families, as patients who are in PVS or MCS can remain in these states for many years without noticeable changes in wakefulness and awareness[1]. Consequently, disorders of consciousness often lead to uncertainty surrounding prognosis, treatment options, and the potential for recovery. Physicians are tasked with balancing hope and support with the responsibility to convey accurate information and facilitate informed decision-making. Likewise, surrogates for these patients are often placed in situations where prognosis may change, or the patient may have varying levels of decision-making capacity. It has been reported that there is only a 68% accuracy rate of surrogates correctly predicting a patient's treatment preferences, and this rate did not improve among surrogates who had previously discussed such preferences with the patient[2]. Regarding knowledge of the patient's condition, one study has shown that 90% of caregivers of patients in PVS thought of the patient as conscious.[3]

This simulation aims to highlight the importance of effective communication and ethical deliberation in the care of these patients. Through this simulation, medical residents will be able to gain valuable insights into the complexities of surrogate communication and medical decision-making in the context of disorders of consciousness.

Learning objectives:

1. Knowledge
    a. Outline standard taxonomy of disorders of consciousness.
    b. Explain common challenges and best practices regarding diagnosis and prognosis for patients with a disorder of consciousness.
    c. Explain how covert awareness has been detected in some patients using fMRI.
    d. Review options for treatment and comfort.
    e. Describe best practices for communicating with surrogates.
    f. Describe best practices for communicating with MCS+ patients.
2. Skills
    a. Perform a clinical examination for diagnosis from brain injury.
    b. Communicate effectively with the patient's family about disorders of consciousness.

Measurement of learning objectives:

A pre/post survey method will be used that will contain the following questions:

Questions:

1. I am confident in my ability to describe standard kinds of disorders of consciousness and the behavioral differences between them (1.a;1.b.).
2. I am confident in my understanding of the diagnostic error rate, challenges, and fMRI studies detecting covert awareness in some patients believed to be in a vegetative state (1.c.).
3. I am confident in my understanding of the "window of opportunity" and how clinical nihilism has been recently challenged by data on recovery and treatment of patients with TBI (1.d; 1.e.).
4. I am confident in my ability to communicate appropriately with surrogates about brain injury (1.f; 2.a.).
5. I am confident in my ability to communicate appropriately with patients in a minimally conscious state (1.g.).

Simulation outline:

Brief:
Presentation of case to group. One resident will be asked to volunteer to enter the room, diagnose the patient, and deliver the diagnosis to the family member.

Simulation:
One to two participants will undergo a simulation where they conduct an assessment for DoC on a SimMan exhibiting behavioral signs of unresponsive wakefulness syndrome. The participants will need to communicate with a surrogate about their findings. These participants will be observed by the other participants. The simulation will last 10-15 minutes.

Debrief:

A debrief session will then be run with two content experts and one framework expert. The Gather, Analyze, Summarize (G.A.S.) framework of debriefing will be used to guide the debriefing session. During the "Gather" phase, learners are encouraged to provide a recapitulation of the simulation experience to establish a shared mental model. During the "Analyze" phase, learners are encouraged to reflect on and analyze their actions to determine what went well and what did not go well during the simulation. Finally, in the "Summarize' phase, learners are provided a review of lessons learned and are encouraged to focus on what they will do differently in their future clinical encounters. In the second (analyze) phase of the debrief, the learning objectives outlined above will be delivered to participants.

Surrogate Script:
Your primary role is to give the participants opportunities to explain the vegetative state in understandable terms, answering common questions (e.g., "Will they wake up?"), and exploring ambiguities (e.g., "Will they recover?"). Your role in the simulation occurs before and after the participants perform their clinical examination.

Works Cited:

1. Laureys S, Owen AM, Schiff ND. Brain function in coma, vegetative state, and related disorders. The Lancet Neurology. 2004;3(9):537-546. doi:10.1016/s1474-4422(04)00852-x

2. Shalowitz DI, Garrett-Mayer E, Wendler D. The accuracy of surrogate decision makers: a systematic review. Arch Intern Med. 2006;166(5):493-497. doi:10.1001/archinte.166.5.493

3. Tresch DD, Sims FH, Duthie EH Jr, Goldstein MD. Patients in a persistent vegetative state attitudes and reactions of family members. J Am Geriatr Soc. 1991;39(1):17-21. doi:10.1111/j.1532-5415.1991.tb05900.x