ORIGINAL ARTICLE

Inter-Rater Reliability and Reception of the Michigan Opioid Safety Score

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Purpose: *The Michigan Opioid Safety Score (MOSS) combines health risk, respiratory rate, and sedation measurement to guide safe opioid administration. This study was designed to assess reliability and nursing acceptance of the MOSS tool.*
Design: *Cross-sectional survey.*
Methods: *Nurses without prior exposure to the tool were asked to participate in an online survey. In part I, raters utilized the MOSS to answer questions based on four fictional case scenarios. In part II, anonymous opinion of the tool was queried.*
Finding: *Participants correctly scored 58.1% of patient scenarios, while appropriate clinical action was 80.5%. The intraclass correlation coefficient was 0.83. In terms of opinion, a majority of raters agreed the tool positively impacted patient safety (59.2%), improved confidence in opioid therapy (59.2%), and was easy to use (53%).*
Conclusions: *Participants interpreted case scenarios with excellent inter-rater reliability and had a generally positive opinion. These study findings suggest the MOSS is a reliable safety instrument.*

Keywords: *opioid safety, oversedation, opioid-induced respiratory depression, multimodal analgesia.*

SERIOUS ADVERSE EVENTS related to opioid therapy continue to trouble efforts to safely treat pain in the hospital setting.[1] Considered the most dangerous of unintended consequences, opioid-induced respiratory depression (OIRD) occurs in up to 17% of patients.[2] Although more frequently near 0.5% depending on reporting definitions, the absolute number of patients who experience OIRD is substantial given the considerable number of patients treated with opioids.[1,2] Despite this preventable complication being the focus of an Anesthesia Patient Safety Foundation symposium (2006) and a Sentinel Event Alert from The Joint Commission (2012), patients continue to suffer from OIRD.[3,4]

Significant efforts have been undertaken to identify risk factors for OIRD in an effort to stratify at-risk patients.[4,5] In addition, sedation assessment tools directed at reducing unanticipated opioid oversedation have done so with success.[6,7] Moreover, the encouragement of multimodal analgesia to improve pain relief has proven to decrease opioid related side effects.[5] Despite these efforts, consensus among health professionals is that more needs to be done to prevent OIRD.[8,9] Although aforementioned factors have been individually identified as means to decrease

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Conflict of interest: None to report.

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OIRD, no tool combines these factors to promote safer opioid administration.

Developed by researchers at Beaumont Health—Royal Oak, the Michigan Opioid Safety Score (MOSS) encourages use of multimodal analgesia and incorporates risk factors with sedation assessment into a single point of care nursing tool.[10] Using evidence-based risk factors, patients are initially assigned up to two points based on risk groupings. Two additional points are added when the measured respiratory rate is less than 10 breaths/min at time of assessment. Points assigned based on risk grouping and respiratory rate generate a risk stratification score of 0 to 4. A sedation assessment STOP modifier may override the numeric score if a patient is excessively sedated, drifts off to sleep during combination, or are difficult to arouse. Corresponding actions recommended based on risk stratification scoring and sedation assessment are detailed as the final step in the tool's use with interpretation levels of SAFE (zero to one points), CONCERN (two points), CAUTION (three to four points), and STOP. Included in each interpretation level is proposed interventions with multimodal analgesia suggested at all levels. The tool is intended to assist ongoing decision making regarding therapy in patients with acute pain being treated with opioids (Appendix).

Study Aims and Methods

The focus of this two-part research study was to assess reliability and solicit anonymous opinion of the MOSS tool. Since introduction of the MOSS tool in 2014, no studies have been undertaken to assess its reliability nor is there any published data regarding anonymous opinion from health professionals focused on the tool itself. The findings of this study are intended to provide additional information to those considering implementation of a sedation assessment tool in the clinical setting.

Design

The study tool was an online survey that began with 16 questions associated with four fictional patient scenarios. Each scenario started with a paragraph outlining information regarding the patient for whom opioid treatment is proposed. This overview included time and type of surgery, medical history, available orders, and any recent therapies. After the initial paragraph, an encounter between the rater and fictional patient is detailed, which included the patient's severity of pain and mental status. Finally, the patient's respiratory rate is given. Four questions follow each scenario.

After the scenario-focused section, participants were asked questions to evaluate their perception of the tool. At the conclusion of the survey, raters had the option to comment on the study.

The anonymous study was conducted using the security-encrypted online service, SurveyMonkey. A single answer choice was required for all 20 questions. Content received by each rater included a single document made up of a short overview detailing the use and purpose of the tool in addition to the MOSS tool itself. Participants were able to pause the survey and complete at a later time. No further education was provided.

Setting and Participants

After institutional review board approval, the study was conducted at a 1,070-bed level I trauma hospital where approximately 50,000 surgeries are performed annually. This suburban Detroit hospital is home to multiple training programs in the fields of nursing and medicine and serves as the primary hospital affiliate to Oakland University William Beaumont School of Medicine and Oakland University School of Nursing. The queried sample consisted of orthopaedic surgical floor nurses whose care is primarily focused on perioperative patients admitted under an orthopaedic surgeons' care. All 81 part-time and full-time orthopaedic staff nurses were eligible to participate. None of the queried nurses had previous experience with the MOSS tool.

Data Collection and Analysis

For each patient scenario, respondents were asked to use the MOSS tool to apply risk stratification scoring; confidence that they appropriately scored the scenario was then evaluated using a standard five-level Likert-item scale. The clinician was then asked to choose the corresponding action