Performance Indicators for the Evaluation of Musculoskeletal Trauma Systems

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Purpose: Trauma is a leading cause of mortality and morbidity worldwide, disproportionately affecting low- and middle-income countries. Musculoskeletal (MSK) trauma is responsible for the majority of non-fatal injuries globally. MSK trauma care must be evaluated to improve the quality and equity of care delivery. There currently does not exist a systematic means of assessing MSK trauma system performance. The purpose of this study was to identify performance indicators (PIs) that measure quality and equity of MSK trauma care.

Methods: A systematic literature review was performed that identified PIs related to MSK trauma care. Specific MSK trauma care PIs as well as general trauma care PIs applicable to patients with MSK injuries were included. PIs were organized according to phase of care (general, prevention, pre-hospital, hospital, post-hospital) within a modified Donabedian model (structure, process, outcome, equity). A panel of 21 experts representing 45 countries was assembled to identify priority PIs utilizing a modified Delphi approach.

Results: The literature search identified 1206 articles and 114 underwent full text review. We included 95 articles that reported 1231 PIs. 29 countries were represented. A total of 542 unique PIs were identified. Most indicators pertained to the hospital phase of care (n = 313, 58%) and structural characteristics (n = 231, 42.5%) while preventative PIs (n = 25, 4.5%) were less common. The PIs most commonly reported were trauma system-wide (n = 35 articles) as well as in-hospital specific mortality (n = 15 articles) and presence of trauma registries (n = 16 articles). Only 67 PIs (12.5%) were specific for MSK trauma. No article focused on PIs for MSK trauma. After 5 rounds of surveys our panel identified 60 priority PIs. These focused on access to trauma care; processes and key resources for polytrauma triage, patient stabilization, and hemorrhage control; reduction and immobilization of fractures and dislocations; and management of compartment syndrome and open fractures.

Conclusion: The literature has reported many PIs relating to trauma care, but few specific to MSK injuries. To create quality and equitable trauma systems, MSK care must be incorporated into development plans with continuous monitoring and improvement. The PIs identified by our expert panel and organized in a modified Donabedian model can serve as a method for evaluating MSK trauma care. All injured patients regardless of socioeconomic status require timely access to a well-equipped trauma system capable of providing initial evaluation and management of polytraumas as well as appropriate care of MSK emergencies.