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PROGRESS OF A LARGE-SCALE IMPROVEMENT PROJECT FOR MECHANICAL VENTILATION IN SAUDI ARABIA

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Introduction/Hypothesis: The National Approach to Standardize and Improve Mechanical Ventilation (NASAM) is a national collaborative quality improvement that is conducted across ICUs in Saudi Arabia.

Methods: This initiative is designed as a data-driven project with an electronic portal for data entry that allows real-time performance feedback and benchmarking. The project utilizes the concept of the comprehensive unit-based safety program (CUSP) designed to help clinical teams make care safer by combining improved teamwork, clinical best practices, and the science of safety. This collaborative project aims to improve evidence-based practices specifically: use of subglottic suctioning; spontaneous awakening trial; spontaneous breathing trial, less frequent use of neuromuscular blockers and early mobility. NASAM includes ongoing training, coaching, and peer-learning through regular twice-monthly webinars and site visits. The project is being conducted across 6 healthcare sectors in Saudi Arabia in collaboration with the Johns Hopkins Armstrong Institute for Patient Safety and Quality. The project aims to show improvements in rates of ventilator-associated events.

Results: The project was launched in January 2019. 78 ICUs from 48 hospitals in 27 cities have registered. Data on daily care processes on 20,000 patient days have been collected from the first 6 months (Table). Preliminary data on 20,000 patient days from 78 ICUs representing 48 hospitals across Saudi Arabia Care Process Percentage Subglottic suctioning compliance rate 27.6% Spontaneous awakening trial (SAT) compliance rate 51.0% Percentage of ventilated patient days without sedation 39.8% Spontaneous breathing trial (SBT) compliance rate 54.1% Percentage of actual RASS score (-1 to 1) 35.9% Percentage of achieving RASS target 27.7% Percentage of ventilated patients receiving neuromuscular blocker 5.1% Percentage of ventilated patient days that achieved weight bearing 0.59% (standing and above)

Conclusions: Launching a novel national quality improvement collaborative across Saudi Arabia is feasible. Results from the first 6 months show significant opportunities to improve the care of mechanically ventilated patients

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IMPLEMENTATION OF A PERIPHERAL NOREPINEPHRINE PROTOCOL IN A MEDICAL INTENSIVE CARE UNIT

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Introduction/Hypothesis: Vasopressors are typically administered through central venous access due to the risk of tissue ischemia with extravasation. Recent studies have demonstrated safety of peripheral vasopressors, which may decrease the need for central venous access and therefore central-line associated bloodstream infections. We implemented a peripheral norepinephrine (PNE) protocol in our medical intensive care unit (MICU) and evaluated adherence to the protocol, as well as safety outcomes.

Methods: A PNE protocol was implemented in a 64 bed MICU on 2/12/19. Patients were selected by clinicians. The protocol requires the following: dose ≤ 15 mcg/min, maximum infusion time of 48 hours, two peripheral lines 20 gauge or smaller located in the forearm with ultrasound confirmation. Off protocol, emergent use was allowed, but excluded from analysis. A separate electronic PNE medication order panel was created for use in the MICU only with the standard concentration 64mcg/mL and linked with nitroglycerin paste and phenolamine orders in case of extravasation. Implementation required iterative phases to ensure safety and adherence to the protocol. Phase 1 ensured appropriate IV access and nursing documentation. Phase 2 incorporated documentation by the licensed independent practitioner to ensure all elements of the protocol were followed. Phase 3 added exceptions for emergent use or if actively obtaining central line and required appropriate IV access within 1 hour of infusion.

Results: 131 patients received PNE after implementation of the protocol, with 59 patients included in analysis after exclusion of emergent use. In Phase 1, 38 patients were administered PNE with 19% meeting protocol line criteria. Lack of documentation and knowledge of requirements of the protocol were the major challenges. In Phase 2, 15 patients received PNE and 100% met protocol line criteria. In Phase 3, 82% of 22 patients receiving PNE met protocol line criteria. Overall, 5 (4%) of 131 patients experienced extravasation; 4 of the 5 occurred in Phase 1 and of these only 1 met our PNE protocol criteria.

Conclusions: Implementation of a PNE protocol in the MICU required a multiprofessional approach and repetitive plan-do-check-act cycles in order to maintain protocol adherence and ensure patient safety.

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