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Rib Fracture Management Pathway

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Rib Fracture Management Pathway

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Plan

Problem/Impact Statement

- Rib fractures account for approximately 10% of trauma patients and are markers of serve bodily and solid organ injury, and complications of rib fractures are common.
- Standardized, evidence based initial assessment and in hospital reevaluation that guides management will facilitate consistent and improved initial resource utilization, escalation or de-escalations of care, pain management and improve patient outcomes.

Scope

- There was no standardized method/practice to consistently guide the initial triage and care of rib fracture patients at our institution; this lead to inconsistent management, complicated the utilization of limited resources, OR space and ICU/IMC beds and resulted in clinical outcomes that could potentially be improved.
- The Chest Trauma Scoring (CTS) system is an easy to calculate assessment tool at the time of admission to facilitate improved medical decisions and interventions in an expedient fashion.

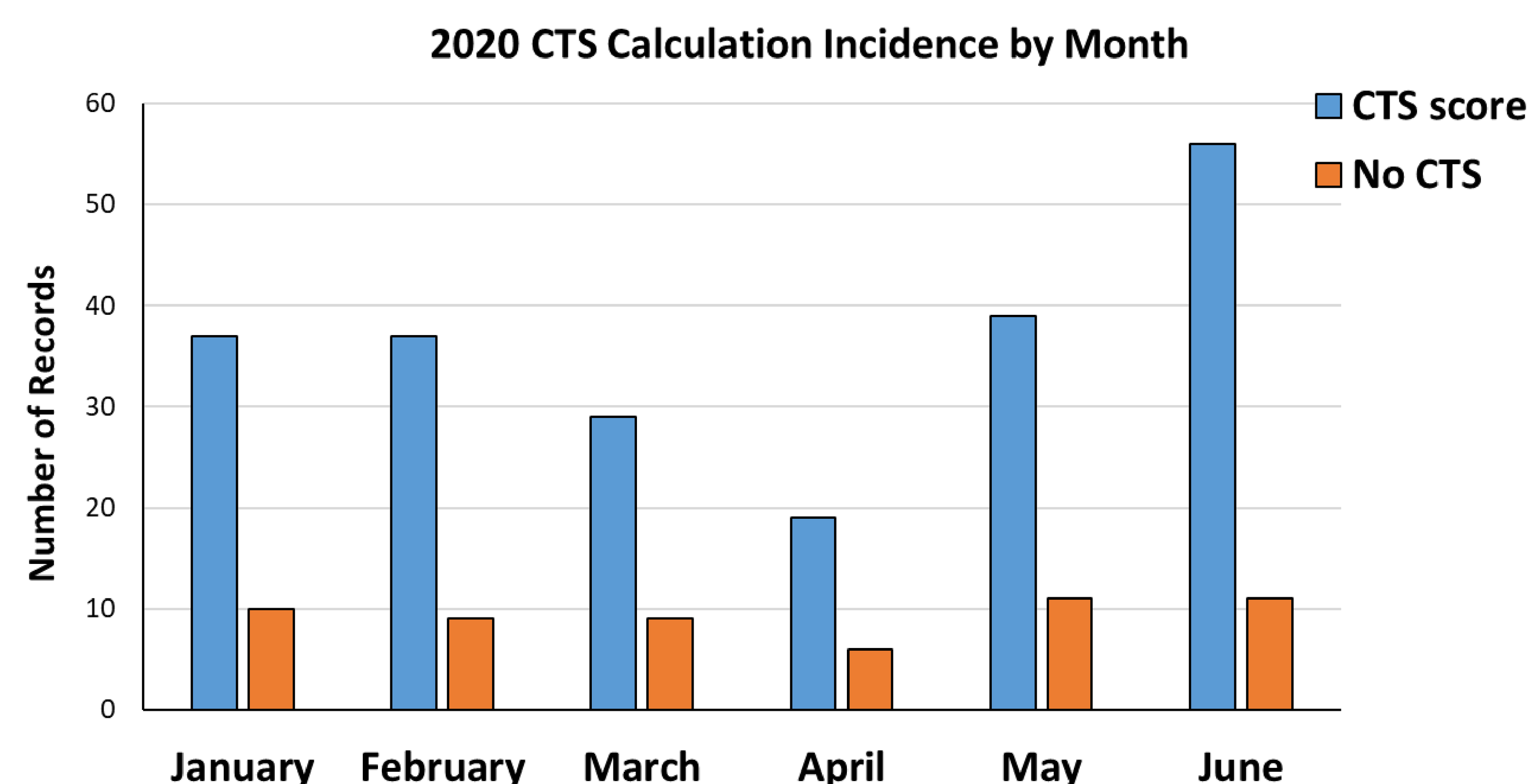
Goals/Objective

- Improved and consistent initial evaluation and triage of patients with rib fractures needed to improve patient care, outcomes and resource utilization.
- Institution of a clinical practice guideline (CPG) including CTS determination at time of admission and CTS guided level of admission to improve care.
- Goal is to improve clinical outcomes and resource utilization.

Baseline Metrics/Current State

- There are a high number of patients admitted with rib fractures to the MMC Trauma Surgery Service, many of whom are elderly and at high risk of complications.
- Complications of rib fractures are common and may include: atelectasis or lobar collapse, pneumonia, pneumothorax, pulmonary effusion or hemothorax, aspiration and acute respiratory distress syndrome (ARDS).

Results



	2019: Not CTS directed n=248	2020: Overall (not taking CTS in account) n=273	2020: CTS calculated at admission n=217	2020: CTS not calculated at admission n=56
Hospital LOS (days), mean ± SD	6.8 ± 8	7 ± 7.7	6.7 ± 5	8.4 ± 13.7
ICU LOS (days), mean ± SD	5.3 ± 4.8	5.3 ± 5.1	4.9 ± 4.7	7 ± 6.4
Requiring vent, n (%)	25 (10%)	31 (11%)	17 (8%)	14 (25%)
Vent Days, mean ± SD	5.4 ± 5	6.3 ± 5.7	7.2 ± 6.2	5.3 ± 5.2
Intubated, n (%)				
Prehospital	0	0	0	0
Referring Facility	3	0	0	0
ED	6 (2%)	9 (3%)	3 (1%)	6 (11%)
In-hospital mortality, n (%)	5 (2%)	7 (3%)	4 (2%)	3 (5%)
Discharge Disposition				
Home or self care	82 (33%)	98 (36%)	79 (36%)	19 (34%)
Home with Services	57 (23%)	75 (27%)	61 (28%)	14 (25%)
Hospice	5 (2%)	3 (1%)	3 (1%)	0
Nursing Facility	54 (22%)	41 (15%)	36 (17%)	5 (9%)
Rehab	40 (16%)	44 (16%)	32 (15%)	12 (21%)
Other	10 (4%)	12 (5%)	6 (3%)	6 (11%)
Unplanned Intubation, n (%)	6 (2%)	7 (3%)	6 (3%)	1 (2%)
Unplanned ICU admit, n (%)	8 (3%)	5 (2%)	5 (2%)	0

6 Month Review of Jan-June Unexpected ICU Admissions:

2017: 8 out of 188 = 4%
2018: 8 out of 222 = 3.6%
2019: 8 out of 248 = 3%
2020: 5 out of 273 = 2%

Do

Countermeasures

By When	Who	Deliverable
End Q1		Finalized cross specialty engagement and education required for CPG implementation.
End Q2		Full implementation of CPG with cross specialty collaboration beginning in the ED through hospitalization.
End Q3		Initial data acquisition
End Q4		Continued data acquisition, interpretation and data analysis, modification of practice guideline as data directs and revision of practice.

Study

Outcomes

- Established a Trauma Rib Fracture Management Guideline (MMCT-CPG ID:01) that was reviewed and agreed upon by the Trauma Surgery Service at MMC.
- Implemented CPG ID:01 January 2020.
- Worked across clinical divisions and departments (trauma surgery, surgical critical care, nursing and respiratory therapy) to implement daily PIC scoring.
- Monthly assessment of CTS and PIC scoring in the medical record and determination of CTS guided initial level of admission and effect on outcomes to include unanticipated escalations of care, need for mechanical ventilation and hospital discharge.

Act

Next Steps

- Review patient charts in further detail to determine which patient characteristics contribute to a CTS score that places patient at an inappropriate level of care.
- Incorporate these patient characteristics into the calculation of the CTS score so that we can be more accurate in calculating appropriate level of care for patients.
- Evaluate how the PIC+ scoring system can be integrated into the above decision making algorithm.