Data Completeness Analysis

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Data Validation Concepts

- Trauma registry data is key for performance improvement
- Non validated trauma registry data may produce unreliable reports
- Data validation can be put into two buckets: Is it there? Is it correct?
- Missing data rates can significantly impact risk-adjusted benchmarking
- TQIP reports unknown model variables in reports. These include:
  - Sex, Race, SBP, Pulse, GCS Motor, Midline Shift, Pupillary Response, Transfer-In status, Pre-hospital Cardiac Arrest & Major Hospital Events
- Other variables considered by TQIP for risk adjusted modeling
  - Certain pre-existing conditions, confirmed COVID-19, mechanism of injury, maximum injury severity in certain body regions

Data Completeness Analysis

- Goal to review percent missing on identified data points
- Data points selected based on those impacting risk-adjusted modeling or essential for current projects i.e., time to definitive care
- Results will differ from TQIP analysis as they have certain inclusion criteria such as ISS => 9 for Level I & II centers
- ArborMetrix project will include all patients for analysis
- Completed on CY2021 data included 32 centers (2 centers missing)
  - Completed cumulative analysis on Jan – June 2022 for comparison
- Referring hospital information not required by state in 2021 but was reinstated as a required data field for 2022

Results

- Sex, race, pre-hospital cardiac arrest & transfer in status missing at a less than 1% rate
- SBP and pulse average rate of missing 5 to 7%
  - Range 0 % to 22 % missing
  - 6 centers missing 12% or greater
- GCS motor average rate of missing 9%
  - Range 0% to 38%
  - 9 centers missing 12% or greater
- Similar missing averages for January – June 2022 data

Results – Prehospital Scene Data Fields

- Scene prehospital dispatch date & time average rate of missing 11%
  - Range 0% to 56%
  - 9 centers missing at 12% or greater
  - Missing rate up to 16% for January to June 2022
- Scene & transport time lapse average rate of missing 11% & 16%
  - Range 0% to 82%
  - 16 centers missing at 12% or greater
  - Missing rate up to 17% & 21% for January to June 2022
- If patient is received from referring hospital, scene EMS information missing rate increases to 66% (Jan – June 2022)

Results – Referring Hospital Information

- Referring hospital LOS average missing rate of 25% (not state required)
  - Range 0% to 100 %
  - 13 out of 22 centers missing at a rate of 12% or greater
  - Average missing rate 32% for Jan - June 2022 (required by state at this time)
- Referring hospital BP, pulse & GCS missing rate of 40% to 46%
  - Average missing rates the same for Jan – June 2022

Results – Other Take Aways

- Heights missing at average rate of 14%

  – Range 0% to 98% missing

  – Important to calculate BMI and document obesity as a pre-existing condition

- Facility transferred to from ED missing at average rate of 31%

  – Range of 0% to 100% missing

  – Issue with how centers are capturing. Need consistency in state.

  – Hope to have need to "trick" field fixed with 2023 update

Next Steps

- Data completeness rates for SBP, HR, GCS motor, GCS total, unassisted respiratory rate, temperature, height, weight, as well as EMS scene time, EMS transport times and ED LOS at referring facilities as part of ArborMetrix analytics

- Share scorecards with centers

- Will refine list for review of data points for review for 2022 based on trouble areas

Next Steps

- Follow up with centers with significant issues

- Share tips and tricks to improve data capture from centers with low missing rates

- Expectation that centers will continually monitor their missing rates

- Eventually include data completeness/validation rates in center PBP