UC Health
Air Care & Mobile Care

Evaluation of a Performance Improvement Bundle to Achieve DASHH-1A Success

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Background

Definitive Airway Sans Hypoxia or Hypotension on the First Attempt (DASHH-1A) is a quality metric used across HEMS, CCT, and EMS programs to evaluate the safety and effectiveness of their airway management performance. With excellent airway practitioners on our staff, we were perplexed as to why we did not meet the GAMUT achievable benchmark of care in DASHH-1A airway management.

Purpose

The ability to achieve DASHH-1A success is multifactorial. This quality improvement project aimed to improve our program's DASHH-1A success rate. Our objective was to determine what may be impacting our success rates, both negatively and positively, to ultimately improve our DASHH-1A success rates, targeting a 10% relative improvement in performance.

Methods

Four investigators each reviewed a different patient population (interfacility trauma, interfacility medical, scene trauma, scene medical) to evaluate trends in their respective cohorts which may impact DASHH-1A success. A brief literature review of current RSI practices was also conducted.

Following these studies, we implemented a performance improvement plan and compared our adult DASHH-1A success rates for the 16-month periods pre- and post-intervention. All pediatric and crash airways were excluded.

Intervention

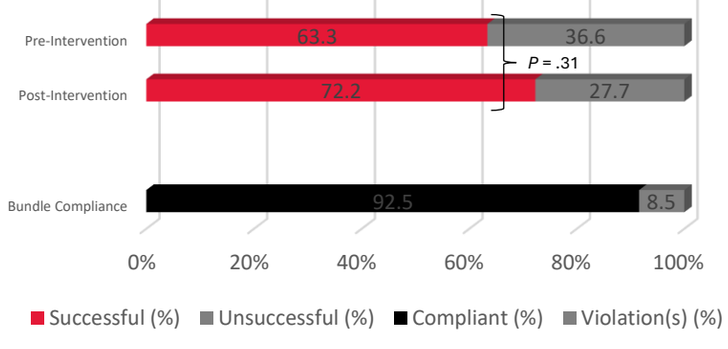
Existing RSI practice:

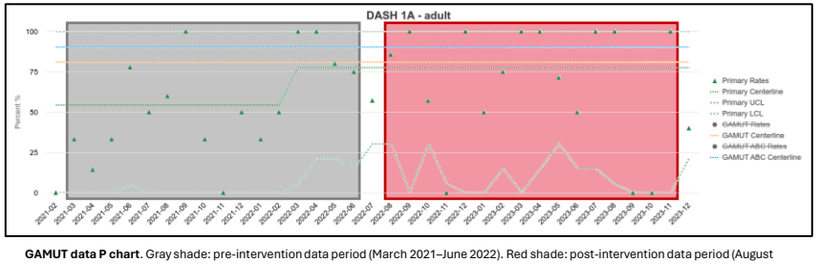
- Mandatory use of RSI checklist (see supplemental material)
- Encouraged pre-intubation resuscitation
- Apneic oxygenation during intubation attempt
- Video laryngoscopy encouraged
- Bougie-first for all standard geometry (DL/VL)

New bundle elements:

- Place on transport monitor before beginning RSI
- Target pre-RSI saturation >97%
  - Consider nasal cannula *plus* NRB, BVM/PEEP, or NPPV to achieve goal
- Target pre-RSI SBP >100 mmHg
  - If SBP <100 mmHg despite fluids/blood, administer push-dose epi
- Perform BVM ventilations during apneic period (i.e., after paralytic)
- Rocuronium dose at 1.5 mg/kg
- Use standardized template to document procedure

Results





GAMUT data P chart. Gray shade: pre-intervention data period (March 2021–June 2022). Red shade: post-intervention data period (August 2022–November 2023)
Primary centerline (green): Average performance of our program. UCL (upper control limit) & LCL (lower control limit): expected variation above and below centerline. GAMUT centerline (orange): Average performance of all GAMUT programs. GAMUT ABC (achievable benchmark of care) centerline (blue): Excellent performance that has been achieved by a peer group.

Results

DASHH-1A success was achieved in 38/60 advanced airways (63%) in the pre-intervention period, and 39/54 advanced airways (72%) in the post-intervention period, resulting in a 14% relative increase in DASHH-1A success. While not statistically significant ($P = .31$) , this met our pre-specified PI goal of 10% relative improvement.

We had a 92% compliance rate with the utilization of our DASHH-1A Bundle.

Discussion

Not only did this study reflect an improvement in our DASHH-1A success, but our affiliated emergency department subsequently adopted many components of this new process.

The use of a standardized documentation template allowed us to perform a deep dive into potential causes of success vs failure.

A limitation of our study was our small sample size, N=114 total patients.

Conclusion

The implementation of a DASHH-1A bundle of care had a high degree of compliance and was shown to improve our program's overall adult DASHH-1A success rate.

References & Supplemental Material