Solution: Code Critical Airway: A Bridge to Safety

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IDENTIFICATION:
• The problem to be solved was how to decrease complications associated with critical airway situations in an acute care hospital.
• The problem was identified through the hospital’s occurrence reporting system, root cause analysis cases, practice committee reviews, anecdotal information and event observation.
• Baseline data was often incomplete and unorganized. We worked to improve data collection and complete missing information. Then we were able to analyze data from 42 calls. From this information we performed a FMEA that identified additional issues:
  o Communication
  o Equipment
  o Nursing assessment skill, knowledge of tracheostomy emergencies and the emergency code system
  o Team efficiency
  o Determination of the best airway management plan
• We increased the effectiveness of the existing emergency team to manage critical airway situations within 5 minutes.
• There is little published research on the outcome and utility of a critical airway team. Literature searches, list-serve and benchmarking databases inquiries result in a few published research articles related to critical airway teams.

PROCESS:
• The team utilized complexity framework, FMEA and PDSA methodology to meet our goal to improve the management of critical airway situations.
• New databases were developed to capture usable data.
• Observational data was gathered, quantified and analyzed.
• Team efficiency was evaluated based on achievement of critical benchmarks and patient outcomes.
• The team emphasis is on prevention of unneeded mortality and morbidity from major airway emergencies.
• Event reviews are completed on each critical airway call.
• Simulation training is used to increase critical thinking, skill and teamwork.

SOLUTION:
• The Code Critical Airway Team was developed to provide a coordinated team of hospital personnel for emergency resuscitation, immediate evaluation and prompt disposition of patients with critical airways. The team emphasis is on prevention of unneeded mortality and morbidity from major airway emergencies.
• Code Critical Airway is called for any patient who requires intubation and/or has a “critical airway” defined as: unable to intubate, inadequate mask ventilation, patients with dislodgement of their surgical airway that results in a compromise of the airway and patient with body habitus suggestive of a difficult airway or airway stenosis.

• The Code Critical Airway Team is led by the most senior physician and should consist of: trauma surgeon (attending or senior resident), anesthesiologist/CRNA, ENT surgical resident, clinical specialist/clinical supervisor, and respiratory therapist.

• The effectiveness of the Code Critical Airway Team was examined to improve patient outcomes; several additional opportunities were identified and addressed through FMEA, complexity framework and PDSA methodologies.
  o A standard practice “Practice Guidelines for Tracheostomy Tube Changes” was developed by members of the critical airway team to assure patient safety during changes resulting from dislodgement, rupture of the cuff, occlusion and elective changes. The solution was implemented hospital-wide. Annual education is provided each year along with training on all emergency codes. Code Critical Airway decreases the number of codes/calls to bring the appropriate team to the patient’s bedside. Data show a decrease in trach-related calls that were the major of reasons for inappropriate calls.
  o A retrospective chart review was performed from August 2006 – April 2007 on all “Code Critical Airways” called. The charts were examined for time, location of code, admitting service, reason for code, procedure performed and outcome. The code airway system was beneficial in the management of difficult intubations. We had a decrease in the inability to intubate related to earlier calls, equipment changes, updates and increase efficiency of the team.

• Data continues to be collected, analyzed and disseminated. Changes to the system are based on both quantitative and qualitative data.

Simulation training has improved communication and teamwork. Handoffs occur between the primary team, Anesthesiology, Trauma and ENT. Teamwork scenarios have decrease chaos during the code and improved communication.