BACKGROUND

• Many BMC departments have trainees who perform tube thoracostomy
• The largest trainee groups performing tube thoracostomy are Emergency Medicine residents and General Surgery residents
• There is no standardized checklist for the procedure.
• Major complications due to tube thoracostomy include injury to the lung, infection, some requiring surgical intervention, increased hospital length of stay, and worse patient outcomes.

Project Scope

• Emergency Medicine residents and General Surgery residents were selected to receive training using a TraumaMan tube thoracostomy simulation trainer in the Solomont Center for Clinical Simulation and Nursing Education

AIM

Objectives

• Develop new protocol for resident placement of tube thoracostomy
• Implement educational program to introduce the procedure
• Provide training to faculty and residents on the protocol
• Ensure that the program is integrated into the yearly resident training

Project outcome metrics

• Documented training of faculty and staff
• Measurable decrease in the complications related to tube thoracostomy procedure

METHODS

• Inter-professional team researched tube thoracostomy best practice from the literature
• Developed protocol using modified Delphi method
  o First draft of protocol was disseminated to every BMC physician who performs tube thoracostomy, to obtain their input
  o Final draft incorporated all improvements
• Curriculum included:
  o Creation of educational videos (special thanks to Rafael Ortega, MD, Vafa Akhtar-Khavari, dept. of Anesthesia)
  o Development of training checklist
  o Documentation of training through HealthStream learning management system
  o Scheduling of a four-hour simulation program using TraumaMan simulator to:
    • Teach procedure and protocol
    • Allow learners to perform skills under observation by attending-level physicians and senior residents
    • Provide feedback

SOLUTIONS

• Process improvement
  o Standardization of procedure and practice across departments
  o New protocol requires a more senior operator to oversee the procedure using checklist
• Standardization of training
  o Video and checklist were disseminated to the Emergency Medicine residents and General Surgery residents
  o Jointly targeting Emergency Medicine and General Surgery faculty and residents will foster increased adherence to the procedure and checklist
  o Secondary gain of better interdisciplinary communication during work due to training together

RESULTS

• A new training program was developed
• Online curriculum content was created
• An educational video was created and distributed via the Internet
• First training session was held in July of 2017 for Emergency Medicine residents
• A joint Emergency Medicine and General Surgery trauma simulation session was adapted to introduce the tube thoracostomy program to 67 trainees
• General Surgery has scheduled future sessions of this training
• Emergency Medicine and General Surgery are coordinating their educational schedules to integrate Emergency Medicine and General Surgery faculty and residents into future programs

NEXT STEPS

• Plan for sustainability of program (e.g., scheduling, resourcing)
• Description of additional work to be completed
• Once all teams have been trained, complication rate from tube thoracostomy to be reviewed for any improvements in outcome
• Plan for expansion of program into other departments as appropriate

CONCLUSIONS

• Our robust training curriculum with visual aids and checklists has improved the teaching and performance of tube thoracostomy at BMC
• Interdepartmental simulation sessions between Emergency Medicine residents and General Surgery residents were useful in introducing the video and checklist to a broader audience and had a secondary benefit of improving communication between the two groups
• Best results will be obtained if this program continues and expands so that everyone who performs tube thoracostomy at BMC will have trained using this standardized program
• Lessons learned
  o Development and implementation of standardized protocols is difficult, especially when multiple departments are involved
  o There are significant barriers to implementation of a single training program across departments, including scheduling conflicts among individual staff and between the residency programs
  o It is crucial to have champions in each participating department