A Step-Wise Metric Validated Curriculum for Robotic Surgery Competency

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Background
Training in robotic procedures traditionally has been reserved for the final year of surgical education following determination of competency in laparoscopy. Introduction of new technologies can have a high learning curve necessitating the discussion of measured progression and metrics. The robotic surgical curriculum at Texas Tech is competency driven over five years of training using validated metrics to provide step-wise progression through orientation and simulation to achieve competency.

Materials & Methods
The curriculum develops an algorithm for graduated proficiency-based competency as a progression over five years. Metrics were developed by Intuitive Surgical Co. for the Da Vinci robotic surgical console. These metrics normally apply to licensed surgeons in practice (standard time for completion of 6 months) compared with the Tech curriculum that distributes training over a five-year curriculum. Metrics include speed and efficiency in docking the robotic arms and timed simulation drills, followed by subjective expert evaluation of proctored cases in human subjects. Quality-based outcome metrics include length of the procedure, length of hospital stay, and postoperative complications.

Results
The curriculum was implemented in July 2014 to include 18 residents over a year progression of training (July 2014–May 2015). Post-graduate year (PGY) five residents progressed through the entire curriculum to complete a total of 34 robotic cholecystectomies and achieve certification status by Intuitive Surgical Co. Six residents (PGY 3-4) completed the arm docking and simulation models. Two of those six progressed to completion of portions of proctored cases with the senior study surgeons while three of six were able to complete portions of robotic procedures with proctors in private practice settings. The remaining PGY 1-2 residents (9/18) completed orientation and robotic arm docking curriculum segments.

Conclusions
The Texas Tech robotic surgery curriculum demonstrates that advanced technology can be safely and effectively taught to residents through a progressive metrics and competency-based curriculum. Initial outcomes evaluation of robotic cholecystectomies completed by PGY-5 residents demonstrated no significant difference in operative times, patient length of stay, or complications when compared to resident-performed laparoscopic cholecystectomies documented in the literature.

Trauma Evaluation and Management Program for Third Year Medical Students

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Background
Trauma evaluation and management (TEAM): Early Care of the Injured Patient is an approach to teaching the principles of care of the acutely injured patient to medical students and multidisciplinary team members. It provides a framework to demonstrate the purpose and concepts of immediate management of the injured patient and basic understanding of the fundamental principles of trauma care. Due to the acuity of trauma situations, these concepts are difficult to teach in a lecture format or in “real-time” as patients are being cared for. The TEAM program is based on the American College of Surgeons Advanced Trauma Life Support (ATLS) program.

Materials & Methods
The TEAM program is led by a trauma surgeon faculty from TTUHSC and senior residents. It is approximately 90 minutes – 2 hours in length and incorporates didactics, small group discussion and simulation of clinical skills and occurs once during the surgery clerkship. The TEAM program supplements the one week long Trauma and Acute Care Nights rotation on which all third year medical students rotate.

Results
This activity will be implemented in the upcoming academic year with pre and post test data to evaluate effectiveness.
Conclusions
The TEAM program is a valuable component of the general surgery clerkship educational experience. The combination of didactics, small group discussion and simulation is an effective way to augment the clinical teaching of trauma evaluation and management principles to third year medical students.

CAUTI (Catheter Associated Urinary Track Infection) Prevention: Eliminating CAUTIs Once and For All

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Background
CAUTI continues to be a problem in the ICU unit. Although a significant reduction in CAUTI rates have been seen since the initiation of Foley rounds, CAUTI occurrences are still being seen in the unit. Re-establishing nursing awareness to the situation, reinforcing plans and implementing a nurse-driven protocol are the goals of this intervention with the aim to minimize the frequency of CAUTI and improve overall patient safety.

Materials & Methods
Educating nurses on how to prevent CAUTI occurrence, implementing a nurse-driven protocol and continuing weekly Foley-catheter rounds will improve nursing awareness to CAUTIs and, therefore, improve patient safety in the ICU unit. Re-educating nurses on UTI bundle and catheter maintenance was initiated to increase awareness of the situation. A nurse-driven protocol was developed to allow nurses to discontinue urinary catheters without a physician’s order if the appropriate indications were not met. Foley-catheter rounds were continued weekly to determine if nurse compliance is being met and education is effective. Review of monthly CAUTI rates will determine effectiveness of interventions.

Results
CAUTI rates have significantly reduced but continue to be present in the ICU unit. The goal is to further decrease CAUTI in the unit. Current practices and lack of education make it challenging to completely eradicate CAUTIs. Therefore, continuing education is the main focus of this study.

Conclusions
Although weekly Foley-catheter rounds have been continued since October 2014 by current nurse residents, nursing compliance to UTI Bundle and catheter maintenance has been a challenge in reducing CAUTI rates. Continuing education emphasizing the importance of preventing CAUTI, and implementing a nurse-driven protocol will aid in minimizing the occurrence of CAUTIs in the ICU. This nurse-driven protocol was initiated and introduced to nurses in the ICU on July 14, 2015 and will be an ongoing project effective from this date.

Right to the Core

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Background
Patient safety is the goal in the operating room. The steps taken towards proper communication between the team members in the surgery starts from the assessment of the patient to the transfer of the patient to the recovery room. It is vital to have appropriate communication to eliminate any errors that will jeopardize the safety of the patient. The goal is to improve communication techniques in order to advocate for patient safety.

Materials & Methods
Problem - Improve communication to improve patient safety in the operating room. Intervention – data collection, start surgical team huddles prior to case initiation. Comparison – Current practices makes it challenging to communicate with other members of the surgical team. Outcomes - Improved communication; Short-term goal: within 2 weeks; Long-term goal: within 3-6 months.

Results
The survey was given to 25 nurses and surgical technologists at two weeks and 23 of the nurses and surgical technologists answered that the intervention improved communication among the team members and had a positive impact on the outcome. Only two survey participants felt that no improvement was made following the intervention. The data collection is currently at three months of debriefing questions asked at the end of the surgery. The data collected for three months show that out of 465 surgeries, 69 surgeries needed to improve for better outcomes. Out of 488 surgeries, 69 surgeries had something wrong happen during the surgery. Out of 499 surgeries, 79 surgeries had good outcomes.

Conclusion
After doing the research, the surgical team needs effective communication to influence the goal of patient safety. The surgical team each plays a role in each surgery. The obtainable outcome after the surgery is for the patient to be able have a positive recovery. The communication starts in the beginning of the shift to communicate any changes or obstacles in the operating room daily. The importance of the operating room communication will let the team members know how long the surgery will last, and introduce the team members involved in the surgery.

Resource Effective Disaster Training in the Simulation Center

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Background
Emergency physicians are frequently required to make rapid tri-
age decisions especially in mass casualty incidents. EMS first responders receive training in rapid triage of patients into four classifications: immediate (red), observation (yellow), wait (green), and expectant (black), but less frequently is this training combined with ED physicians in an inter-professional scenario outside of large-scale system-wide disaster training exercises. We created a rapid (6-minute) six patient disaster scenario that required ER physicians to interact with volunteer EMS crews to provide stabilization and categorization of patients. 36 residents were assessed individually over a three week period and combined debriefing helped to provide key training and management points for all healthcare providers.

Materials & Methods
As part of a 10 month simulation curriculum for Emergency Department residents a six patient mini-disaster simulation was designed allowing emergency physicians in training to interact with EMS personnel to demonstrate critical thinking, rapid triage and brief therapeutic intervention. 6 simulated patients were moulaged to demonstrate expected injury patterns and transported into a room for evaluation one-at-a-time at set intervals. Each of the following clinical presentations required triage and stabilization by the ED resident: elderly head trauma, lower extremity amputation, muscular back pain, pneumothorax, pulseless arrest and lower extremity fracture. Each EMS crew was expected to provide clinically relevant information and vital signs to the provider and the ED resident was then able to provide triage using the standard START (Simple Triage and Rapid Treatment) system and simple clinical interventions including: needle decompression, tourniquet application, intubation, neurologic examinations and pulse checks.

Results
Resident physicians and EMS crews gained increased experience in a controlled setting exchanging clinically relevant information. EMS crews could understand how ER physicians prioritize patient management and ED physicians were instructed on judicious use of the triage tag system to allow for appropriate utilization of healthcare resources. This type of training could be incorporated into other care scenarios including the integration of nursing care and multi-tasking and patient re-assessment.

Conclusions
This was a successful training exercise teaching key components of the START triage system in an inter-professional teamwork environment with otherwise low resource utilization. EMS crews were noted to provide relevant clinical information in an effective manner overall and residents were found to effectively triage most patients with the exception of tendency for over- triage in potentially ill patients, not currently demonstrating signs of severe disease and an relative inability to give up on care even in a disaster scenario.