

Title: #01-099 Skills Maintenance in Emergency Medicine

1. Main Research Question or Hypothesis and Specific Aims

The purpose of this laboratory is to train and maintain the skills of our emergency medicine physicians. Many of the procedures that will be performed on the anesthetized sheep are used very occasionally, and it is necessary to have the physician's continuously trained in spite of the limited amount of times that these procedures can be appropriately used. All of our Emergency Medicine Residents are expected to go through this laboratory. Now that our residency is up and running, the first year resident will be doing the procedures under the supervision and instruction of a third year resident and a faculty physician; principally myself or Robert Knopp, MD. The laboratory is designed for which we will train one first-year resident, one third-year resident and occasionally nurses from the Emergency Department will also be expected to rotate through this lab. In addition, we have an Emergency Room Technician in attendance.

The scenario for this lab is as if a single physician and a nurse were working in a small emergency department in a rural community. We are following the model set up at Hennepin County Medical Center, which was developed by Ernie Ruiz, MD.

2. Background & Significance

This laboratory is extremely important to the ongoing development of the Emergency Medicine program at Regions Hospital, as well as the Emergency Medicine residency. It is necessary to keep our residents trained in these procedures, as they will not only be performing them, but teaching them to students, rotating residents and physician assistants. As a Level I Trauma Center, it is necessary that the emergency physicians be trained appropriately for patients that we see, and the laboratory will meet these needs.

3. Impact

In the practice of emergency medicine, there are many procedures which the physician must be proficient in, in spite of the fact that they are used very rarely. Examples of these would be cryothyroidotomy, internal cardiac massage, and thoracotomies. The emergency physician needs access to training and re-training in order to keep themselves proficient in these procedures. This is particularly true in the teaching setting in which the physicians are expected to teach these procedures to residents who also must develop skill in these procedures on a limited number of patients. Therefore, there is a significant need for skills training for emergency medicine personnel.

The rarity of using these procedures is magnified in the small emergency setting. This is complicated by the fact that the physicians who are working in these emergency departments may be rotating through them on an occasional basis. It is necessary then to have mechanisms available to teach physicians in those settings, so that they, too, can experience these procedures and become familiar with them.

The procedures that are presently being performed include, venous cutdown, conversion of a small intravenous to a trauma line, insertion of both short and long arterial lines, intubation, endotracheal tube exchanger, retrograde intubation, Eschmann introducer, combitube intubation, intubating around the combitube and with an Eschmann, transtracheal needle ventilation, cryothyroidectomy, tracheotomy, relief of tension pneumothorax with needle, thoracostomy, outpatient treatment of pneumothorax with a heimlich valve, chest tube insertion, peritoneal lavage (both open and closed), application of rain eclipse percutaneous cystostomy, triple lumen external jugular and thoracotomy.

4. Approach (Method - Analysis - Sample Size)

It is necessary that these procedures be done on live animals. Mannequin use does not substitute for training in most of these procedures. Airway studies, intubations, chest tubes, peritoneal lavage are procedures in which the physician must be familiar on live patients, having to deal with the potential difficulties and complications in that setting. Sheep have been used very successfully in this program and afford the students the opportunity to practice in a situation that is close to that of the human model. It is our intention to do one lab for each month (thus 12 labs per year). Restraints will not be used; the animals will be asleep. The animals will be fully anesthetized during the entire procedure; therefore, the only pain will be that of the original puncture for an IV. Under the direction of the animal lab facility, with appropriate anesthesia, there is no potential pain during the procedure lab. At the conclusion of the lab, the animals will be euthanized.

5. Investigators

The investigators have practiced emergency medicine at Regions Hospital for many years and have used many of these procedures in their practice. In addition, they have been trained in Advanced Trauma Life Support and Advanced Cardiac Life Support. They have also taught these programs.

6. Environment

N/A

7. Resources and Expenses

Emergency Medicine Residency Education Budget

8. Post Project Treatment Commitments

None

9. Data Access and Privacy

None of the sheep's relatives will be notified.

10. Other Review

None

Regions Procedure Lab - 3rd and 1st Year Residents

G1 Resident:

Date:

G3 Resident:

Time: 9:00am-2:00pm

Student:

Meet: ED Reception Area

Staff:

The procedure lab will begin in September, with the 3rd year resident teaching the 1st year. Either myself or Dr. Knopp will be in the lab the entire time, for questions, recommendations, or assistance.

A copy of the procedure manual will be distributed to the first year residents several weeks before their scheduled dates. It is strongly recommended that the procedures listed below be reviewed before the actual lab. The G-1 will be expected to verbalize the performance of the procedure prior to actually doing it.

The third year resident will be expected to thoroughly review the procedures, including indications, contraindications, materials needed, and the actual performance. Please feel free to add your own techniques and ideas (e.g. present a case scenario: a child with extensive burns needs venous access - the groin is burned - what are your options - discuss intra-osseous, and lead into saphenous cutdown).

The procedures will be done in the following order (references are to page numbers in Dr. Ernie Ruiz' manual - fifth edition).

1. Venous cutdown p.13
2. Intraosseous line p.19
3. Conversion of small IV to trauma line p.7
4. Arterial line - short and long p.14
5. Compartment pressure
6. Intubation, esophageal detector device p.23
7. ET Tube exchanger p.20
8. Eschmann p.27
9. Combitube p.32
10. Intubating around Combitube, and with Eschmann
11. Trans-tracheal needle ventilation p.40
12. Cricothyrotomy p.42
13. Tracheotomy p.44
14. Pneumothorax - needle thoracostomy p. 11
15. Ptx - outpatient Rx with Heimlich valve p. 11
16. Chest tube insertion p. 54
17. Peritoneal lavage - closed and open
18. Raney clips p. 78
19. Percutaneous cystostomy p.2
20. Triple lumen external jugular p.8

Please feel free to contact me or Dr. Knopp if you have any concerns or questions.

Bob Dahms