**Survival Flight Video Laryngoscopy Lesson Plan:**

**A Formal Reflection post-Implementation**

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**26 November 2014**

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**CEP 800**

**Brief Description of Lesson Plan and Implementation to Date**

The purpose of this lesson plan and subsequent instruction was to assist the flight nurses at the University of Michigan Survival Flight in gaining competency, and eventual proficiency, in video laryngoscopy. Video Laryngoscopy (VL) has significant advantages over Direct Laryngoscopy (DL) in achieving high *first pass success rates* (i.e., the ability to place a breathing tube into the trachea on the first attempt). One of Survival Flight’s measurements of success is at least 90% of all endotracheal tubes be successfully placed on the first attempt.

With the above in mind, and with the understanding of the type of learner that the majority of the Survival Flight Nurses are, the teaching strategies involved a layered approach with both didactic (lecture-based) education and practical (hands-on training). This approach includes an introduction to equipment and nomenclature, lecture material, guided practice with intubation manikins, scenario training with human patient simulators and supervised instruction with anesthesiologists in the operating room. Final competency testing and evaluation of each flight nurse is to be done by the Survival Flight Medical Director. Neither supervised training on live patients nor final competency check off have been accomplished as instruction has just begun for the majority of staff.

As some degree of instruction needed to be implemented quickly, there were a few variations to the original lesson plan. Introduction to equipment by a subject matter expert was accomplished by the sales representative from Verathon Medical (the manufacturer of the video laryngoscope that we use), who happened to be making a service call at our institution last week. This actually was better for our staff since the systems expert for the equipment that we use (a device called the GlideScope® (GVL)) was available to answer all technical questions.

An interactive PowerPoint presentation was designed and built to reinforce the information provided by the sales representative, and provides additional instruction on procedures and troubleshooting. A quiz at the end of the presentation provides a means of evaluation and individual self-reflection with respect to the flight nurse’s ability to answer the following essential questions:

1. How does video laryngoscopy differ from direct laryngoscopy?
2. What do you see as advantages that video laryngoscopy has over direct laryngoscopy with the goal of achieving *first-pass* success?
3. What do you see as the limitations of video laryngoscopy as a skill?
4. Within the framework of Survival Flight Airway Management Standards and Clinical Guidelines, how might you incorporate the skill of video laryngoscopy into your treatment plan with the goal of achieving *first-pass* success?

To date, 8 of 22 nurses have successfully completed this didactic component. This is a promising sample size as I believe that I will be able to proceed with the remainder of the curriculum and finish by years end.

Scenario-based education utilizing human patient simulation was conducted on 4 Survival Flight nurses who incidentally, are the newest nurses on staff. This instructional component was accomplished inside the aircraft, in the Emergency Department, and with simulators whose age range was newborn through adult. Pre- and post-competency evaluation was conducted utilizing the GVL competency that was attached to my original lesson plan. First-pass success was achieved in 5 of 8 intubation attempts during scenario work (roughly 63%). This was quite promising considering the limited amount of practice that each of these 4 flight nurses had, as well as the fact that each of them are quite novice when it comes to advanced airway management. Additional practice, video debriefing and guided instruction will improve this particular metric.

**Reflection of Instruction and Use of Technology**

This lesson was neither intended to supplement nor supplant existing curriculum. As airway management is already central to Survival Flight initial and recurrent education, I would consider this a key learning module within established an established program. The broad learning goals for this instructional experience are to learn the skill of video laryngoscopy and be able to competently perform this skill in a wide variety of patient care settings and situations. One underlying assumption was that more instructional time would be devoted to the actual skill, rather than the technical aspects of the device itself. To date, this has held true and the learners have required very little instruction or coaching on how the device works, or troubleshooting the technology.

While each flight nurse has his / her own learning style, there is a standard approach to instruction that will accommodate each individual. Subject Matter Experts (SME) are available for personal instruction and scenario-based education is accompanied by a thorough debrief so that misconceptions and potential problems are addressed. *Constructivism* has been best displayed during scenario work where participants had no prior knowledge of patient condition, had to interpret the situation within the framework of their own understanding and what they had learned to date, and quickly react within the parameters of their environment. Additionally, elements of *Behaviorism* have been apparent by what was observed from each flight nurse following initial instruction. Evidence related to how much was learned, to what degree and what learning still needed to take place was discovered by instructors providing evaluation and the learners following video debrief as they were able to observe their own behavior (in my mind, the most powerful learning aspect of the entire lesson plan).

With respect to affordances for how information is being represented, this particular instructional plan is quite useable. It is standardized, involves subject matter experts, allows participants to make mistakes and learn from these mistakes, and provides context (i.e., places the participant in situations that are realistic with respect to the job requirements of a flight nurse). However, constraints include the use of new technology that could potentially be daunting for some staff, limited availability of subject matter experts on short notice, and attempts to extrapolate existing knowledge of laryngoscopy to this new and arguably much different skill (a dangerous misconception that will be evaluated and addressed with anyone who seems to be having initial difficulties).

In order for this lesson to be a success, learners and teachers need to understand the difference between VL and DL, and be able to competently operate the video laryngoscope. While it is assumed that each participant will be able to successfully navigate the lecture material contained in the content management system (CMS), and have a certain degree of proficiency with respect to scenario-based education utilizing human patient simulators, added demands are placed on instructors as resources for assisting with navigation within the CMS as needed and troubleshooting technical difficulties in the simulators as they are encountered. Student assessment is accomplished via video debriefing and final competency evaluation by the Survival Flight Medical Director.

Technology plays a large role in this lesson, not only for implementation of instruction, but the skill itself. This technology is designed to provide valuable didactic instruction, improve skill and ultimately clinical outcomes. Simulation and scenario-based education will enhance problem solving. The video laryngoscope itself, once a certain degree of proficiency is attained, will hopefully increase confidence when performing the low volume, high risk skill of tracheal intubation.

My expectations of the participant’s use of the technology were mixed. Since they have all used simulation, video debriefing and interactive presentations in their learning, I did not expect this particular technology to be too problematic. However, this, in addition to a new skill to learn could prove to be overwhelming for some. While only a handful of nurses have actually progressed through the course of instruction, to date, they report that they have more confidence with respect to video laryngoscopy and have observably performed well during intubation with over 60% first pass success and 100% success on the second pass.

The main questions that students had with respect to the technology had to do with differences in psychomotor skill between video (VL) and direct (DL) laryngoscopy. These questions were asked and addressed during debriefing of videotaped scenarios and procedures. What was discovered by both teacher and student was how valuable video analysis of one’s own practice is in learning and correcting misconceptions and mistakes. For me, this was the largest “take home” lesson of this assignment and will assist me in the future as I plan and evaluate instruction for my team.