

Fall 9-28-2018

Decreasing Costs in the Operating Room by Utilizing the Best Laryngoscope for Direct Laryngoscopy

Summer Stone

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DECREASING COSTS IN THE OPERATING ROOM BY UTILIZING THE BEST
LARYNGOSCOPE FOR DIRECT LARYNGOSCOPY

by

Summer Stone

A Doctoral Project
Submitted to the Graduate School,
the College of Nursing and Health Professions
and the School of Leadership and Advanced Nursing Practice
at The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Nursing Practice

Approved by:

Nina McLain, Committee Chair
Mary Jane Collins, Committee Member

Dr. Nina McLain
Committee Chair

Dr. Lachel Story
Director of School

Dr. Karen S. Coats
Dean of the Graduate School

December 2018

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2018

Published by the Graduate School



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ABSTRACT

Rising healthcare costs continue to be a focus of study in the medical and nursing fields in an attempt to reflect the need for optimal patient care with minimal associated expense and elimination of extraneous expense. Examples of extraneous expenses include wasted or incorrect supplies or equipment, nosocomial infections, staffing problems, and length of stay and readmissions (Olsen, Saunders, Yong, National Academic Press, & Institute of Medicine, 2010). One under-studied healthcare expense is the use of disposable versus reusable laryngoscopes. For this project, a cost-minimization analysis was performed comparing costs related to disposable and reusable laryngoscopes used in anesthesia practice at a 220-bed hospital in North Mississippi over a 6 month period. Data was collected from the anesthesia purchasing agent of the surgical department for both reusable and disposable laryngoscopes. The data was analyzed after being placed in an excel spreadsheet. The results were calculated and disposable laryngoscopes were found to cost \$10,480.04 less than the cost of reusable laryngoscopes. The overall cost for disposable laryngoscope use at this facility was found to be \$11,755.60 and the overall cost for reusable laryngoscope for use at this facility was found to be \$22,235.64. The results were discussed and shared with the anesthesia providers of the facility in which this project was performed and recommendations for future implications were made. Potential risks and benefits related to the use of disposable and reusable laryngoscopes are also explored throughout this paper.

ACKNOWLEDGMENTS

I would like to offer a gratitude of thanks to Dr. Nina McLain for her patience, knowledge, and structure throughout this process. I would also like to thank Dr. Mary Jane Collins for sharing her knowledge and passion for research. The completion of this project would not have been possible without their expertise. I am forever grateful for their guidance and support.

DEDICATION

First and foremost, I would like to give thanks to the good Lord above as I would not be where I am today without Him. I would like to dedicate the completion of this project to my husband, Brandon, and my son, Caiden. Brandon, thank you for always supporting me and encouraging me to chase my dreams. Without your support, none of this would have been possible. As most of my time has been spent away from home, I thank you for stepping up and being “Mr. Mom” while also continuing to be a wonderful father, husband, and provider for our family. Caiden, you are way beyond your years and have been the most supportive child a parent could ever ask for. I pray that you always chase your dreams and make them a reality, no matter what obstacles get in the way. Thank you both for your love and support throughout this process.

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LIST OF ABBREVIATIONS

<i>AACN</i>	American Association of Colleges of Nursing
<i>AANA</i>	American Association of Nurse Anesthetists
<i>ACA</i>	Affordable Care Act
<i>CMA</i>	Cost Minimization Analysis
<i>CMS</i>	Centers for Medicare and Medicaid Services
<i>CRNA</i>	Certified Registered Nurse Anesthetists
<i>FTE</i>	Full Time Employees
<i>IRB</i>	Institutional Review Board
<i>IT</i>	Information Technology
<i>MAC</i>	MacIntosh

CHAPTER I - INTRODUCTION

Healthcare costs continue to be of concern as costs continue to rise (Centers for Medicare and Medicaid Services, 2012). Healthcare expenses in the United States are known to exceed \$2 trillion a year and account for 17% of the country's Gross Domestic Product (Simon, Frelich, & Gould, 2018). Since the implementation of the Affordable Care Act (ACA), hospitals and healthcare providers have a greater incentive to focus on providing quality, value-based, and cost-effective care in order to receive reimbursement (Simon, Frelich, & Gould, 2018). Therefore, many hospitals and providers are more cautious with what tests or labs are ordered and what supplies are needed. Supplies that are used, but are not needed, are frowned upon and there will most likely be no reimbursement for those supplies. Wasted supplies may not pose a large concern for some, but as costs add up, the patient may be left with excessive bills and the hospital could potentially lose profit. In surgery, several supplies are used, not only by the surgeon but also by the anesthesia provider. Laryngoscopes are devices used by anesthesia providers to visualize the laryngeal opening to facilitate tracheal intubation and secure the airway. Therefore, determining the most cost-efficient laryngoscope can potentially benefit both patients and healthcare organizations in cost savings.

Background and Significance

Healthcare is everchanging and although there have been many improvements and technological advancements in health care, one factor that continues to be a problem is the cost of health care. According to the Centers for Medicare and Medicaid Services (CMS) (2012), healthcare costs are rising faster than the economy can keep up and are expected to increase four to eight percent per year through 2020. Although several

factors play into healthcare cost dilemmas, cutting cost when possible based on evidence and research can potentially be beneficial for both patients and healthcare organizations.

Laryngoscopes are used daily by anesthesia providers throughout the world to secure patient airways whether for surgery or in a life-saving event. These laryngoscopes normally involve a blade and a handle, which may be reusable or disposable. For years, the laryngoscope handles and blades were reusable and were sterilized after each patient use. Now that there is a disposable option for laryngoscopes, comparing the costs of disposable and reusable laryngoscopes can help to determine the most cost-efficient use.

PICO/Project Question

Will a cost minimization analysis show the use of disposable laryngoscopes compared to the use of reusable laryngoscopes to be more cost efficient in anesthesia practice? In this project, the costs of both reusable and disposable laryngoscopes will be compared along with the pros and cons of each. A cost-minimization analysis will be conducted showing the comparison.

Problem Statement

Healthcare costs are continuing to rise while also causing many financial problems for not only patients but also for healthcare organizations. One potential reason for the increased cost is waste. Healthcare waste can be listed into six areas—unnecessary services, inefficient services, overpricing, excess administrative cost, missed prevention opportunities, and medical fraud (Olsen et al.,2010). Of these six areas, overpricing and missed prevention opportunities will apply to the purpose of this project. Anesthesia providers use many supplies to secure the airway prior to the start of surgery. By using more cost-efficient supplies that still produce a high quality of care, anesthesia

providers can help in reducing the high cost associated with the delivery of health care. Anesthesia providers can also help with the missed prevention opportunities by educating patients and families during the preoperative and postoperative phases. Anesthesia providers may also utilize standard precautions and infection control guidelines in preventing the risks of infection related to the securing of the airway which may potentially reduce costs over time.

Purpose of the Project

The purpose of this project is to determine the most cost-efficient laryngoscope for use by anesthesia providers. The goal is to improve costs related to supplies used during induction. By determining the most cost-efficient laryngoscope, patients and healthcare organizations can benefit from savings.

Needs Assessment

A needs assessment was performed via a conversation with the chief Certified Registered Nurse Anesthetist (CRNA) at a 220-bed hospital located in North Mississippi. A problem related to the continued use of disposable laryngoscopes because of costs was found as a dilemma in the surgical department. By conducting an itemized cost analysis for both the reusable and disposable laryngoscope, the hospital can determine which laryngoscope is more cost efficient while still meeting the needs of the patients and the anesthesia personnel.

Conceptual Framework

The framework used to guide this project is Donabedian's Quality Improvement Model. Donabedian's model is considered one of the most established frameworks for the clinical setting and is often used as a framework for clinical leadership and health

services research (Talsma, McLaughlin, Bathish, Sirihorachai, & Kuttner, 2014). The purpose of the model is to form a framework that will guide healthcare professionals in implementing strategies to provide quality and safe health care. Donabedian believed that in an attempt to improve quality, three areas should be reviewed—Structure, Process, and Outcomes of Care (Chelluri, 2008). Structure includes human resources, material resources, or any attributes that may pertain to the setting in which care occurs (Sund, Iwarsson, & Brandt, 2015). For the purpose of this project, structure will include anesthesia providers and the surgery purchasing administration within the hospital.

Process refers to the performance of healthcare professionals and actions done during the giving and receiving of care (Sund et al., 2015). Anesthesia providers relate to the process when selecting which type of laryngoscope is to be used during the induction phase of anesthesia. Some providers may choose to use a reusable laryngoscope while others may choose a disposable laryngoscope. The purpose of reviewing the process will be to determine which selection of laryngoscope is the most cost-efficient for both patients and hospital organizations.

Outcome refers to the end result. The outcomes that will be reviewed during this project will pertain to patient quality, decreased infection risks, and an overall decrease in costs. By using Donabedian's three-step process in improving quality which consists of structure, process, and outcomes of care, the most cost-efficient laryngoscope will be determined.

DNP Essentials

The American Association of Colleges of Nursing (AACN) has outlined eight essential competencies that must be present for the Doctor of Nursing Practice degree (AACN, 2016). For this project, each of the eight essentials are met as follows:

- Essential I, Scientific Underpinnings for Practice, was met by conducting a literature review on the cost-effectiveness of disposable and reusable laryngoscopes, along with the benefits and risks of each.
- Essential II, Organizational and Systems Leadership for Quality Improvement and Systems Thinking, was met by determining which laryngoscope is most cost efficient in which the use can decrease costs for both patients and hospital organizations.
- Essential III, Clinical Scholarship and Analytical Methods for Evidence-Based Practice was met by reviewing and utilizing a current literature review and completing an itemized cost analysis for both disposable and reusable laryngoscopes.
- Essential IV, Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care, was met by utilizing the hospital resources available such as the Information Technology (IT) employees in retrieving the data necessary to complete the cost analysis.
- Essential V, Health Care Policy for Advocacy in Health Care, was met because the results of this project can help the hospital to determine the most cost-efficient laryngoscope use to be utilized in the delivery of anesthesia.

- Essential VI, Inter-professional Collaboration for Improving Patient and Population Health Outcomes were met by collaborating with anesthesia providers and hospital management in regards to cost-saving benefits for patients and the organization.
- Essential VII, Clinical Prevention and Population Health for Improving the Nation's Health was met because laryngoscopes are essential in anesthesia practice for securing patient airways. By determining the most cost-efficient laryngoscope, patients can still receive safe, quality, cost-efficient anesthetic care.
- Essential VIII, Advanced Nursing Practice, was met by educating Certified Registered Nurse Anesthetists (CRNA) on the cost analysis results and will be encouraged to use the most cost-efficient laryngoscope based on the evidence and research provided.

Review of the Evidence

Electronic databases searched were Academic Search Premier, Ebsco Host, CINAHL, and Pub Med using the keywords: *disposable laryngoscope, reusable laryngoscope, laryngoscope, laryngoscope costs*. Of the articles reviewed, infection control seemed to be a major topic related to disposable laryngoscopes versus reusable laryngoscopes. Little information was found related to costs comparing the two types of laryngoscopes. Preferences of anesthesia providers also seemed to be a common factor in relation to whether a disposable or reusable laryngoscope was used. For this project, the purpose was to compare costs at a 220-bed hospital to see which type of laryngoscope (reusable or disposable) was more cost efficient.

Infection Control

Anytime infection is mentioned, a red flag arises especially when the infection may possibly be hospital-acquired, also known as nosocomial infection. According to Machan, Monaghan, Mcdonough, and Hogan (2013), nosocomial infections affect approximately 1.7 million people and contribute to approximately 99,000 deaths annually in the United States. Although no information is available for nosocomial infections specific to airway equipment at the facility in which this project is being conducted, the surgical infection and complication rate is no different than the national average according to the Medicare hospital compare website (Medicare Hospital Compare, 2018). Airway equipment used during anesthesia could potentially be a source of nosocomial infections.

Contamination of laryngoscopes is inevitable since the laryngoscope must be placed into the mouth to visualize the laryngeal opening and supporting structures. Therefore, contamination from saliva will occur. Saliva is the main method of non-parenteral transmission for Hepatitis B (Bhat, Hegde, & Rao, 2010). Although it is beyond the scope of this study, unwanted transmission of viruses via saliva or blood can easily be caused by anesthesia providers themselves. In a study done by Perry and Monaghan (2001), anesthesia machines and monitors used by anesthesia personnel had visible and/or occult blood after surgical cases. After observing the anesthesia staff, Perry and Moonaghan (2001) noted that anesthesia providers were touching the anesthesia machine and the monitors with the same gloves that had been used to intubate. Therefore, anesthesia providers not only disinfecting and properly disposing of laryngoscopes important but also being aware of the potential unwanted cross-

contamination is important. In a study done by Simmons (2000), 20 reusable laryngoscope handles that had been used in a small community hospital and wiped down with a disinfectant were collected and cultured. Of the 20 handles, 100% were found to be contaminated with microorganisms, and 9 of the handles were found to have antibiotic resistant microorganisms (Simmons, 2000). Based on these results, the lack of protocol at institutions for the cleaning of laryngoscope handles can cause an increased risk for the occurrence of nosocomial infections.

According to the American Association of Nurse Anesthetists (AANA) *Infection Prevention and Control Guidelines for Anesthesia Care* (2015), laryngoscope handles are to be wiped down with an “intermediate-level” disinfectant after each use and a “high-level disinfectant or steam sterilization should be used after each use of laryngoscope blades. An intermediate-level disinfectant inactivates bacteria, most fungi, and most viruses, but not bacterial spores (AANA, 2015). A high-level disinfectant inactivates bacteria, fungi, and viruses but does not guarantee the removal of high amounts of bacterial spores (AANA, 2015).

As previously mentioned, the annual death rate due to nosocomial infections is large, with an estimation of approximately 99,000 a year. Nosocomial infections also lead to increased length of hospital stays along with increased costs for patients and hospitals. By ensuring reusable laryngoscope blades are sterilized and cleaned appropriately, the risks of infections will be decreased along with costs and patient outcomes.

Anesthesia Provider Preference

Reusable laryngoscopes have been around for several years and are utilized by many seasoned anesthesia providers. In a survey conducted by Machan et al. (2013) to introduce disposable laryngoscopes into practice, of the twelve anesthesia provider participants, 60% revealed that performance was the main reason for preference of reusable laryngoscopes versus disposable. Performance reasons reported were that reusable laryngoscopes were more rigid, durable, and provided a better view. However, many of the anesthesia providers noticed better illumination with the disposable blades than the reusable blades.

Cost Analysis

For the purpose of this project, a cost-minimization analysis will be used to help determine the most cost-efficient laryngoscope. A cost-minimization analysis (CMA) consists of only evaluating the costs and the effectiveness is left to be assumed (Kleinpell, 2013). A CMA is defined as “an analysis that computes the incremental costs of alternatives that achieve the same outcome” (Kleinpell, 2013, p. 48). Because the disposable laryngoscope and reusable laryngoscope serve the same purpose, only the costs will be calculated. However, the benefits and risks of each laryngoscope type will be discussed to aid in effective decision making, but, for the purpose of this project, will not be calculated.

Summary

The purpose of this project is to determine the most cost-efficient laryngoscope for direct laryngoscopy in anesthesia practice. As seen in the literature, the cost has been and continues to be a concern in health care. Although little evidence of cost related to

laryngoscopes is found in the literature, it is important that this potential problem is explored.

CHAPTER II - METHODOLOGY

Target Outcome

The expected outcome of this project was to determine the most cost-efficient selection of laryngoscopes used by anesthesia providers for direct laryngoscopy. The results were used so that future implications will consist of using the most cost-efficient laryngoscope in everyday use. The hope was that this project will improve the cost benefits for both patients and the hospital organization.

Population and Setting

For this project, the main focus was the cost comparison of disposable and reusable laryngoscopes that are currently being used on surgical patients at a hospital located in North Mississippi. The hospital was a 220-bed facility. The surgery department has 9 functioning operating rooms with approximately 6,000 surgical procedures performed a year.

Design

A cost analysis for both the disposable laryngoscope and reusable laryngoscope were conducted. The data was placed in an excel document with itemized expenses for both the disposable and reusable laryngoscopes. The results were calculated and shared with anesthesia providers and the surgery management staff.

Barriers

A potential barrier for this project was that prices may vary among different brands of disposable and reusable laryngoscopes. Only the types of laryngoscopes currently used at the hospital in which this project took place were accounted for in the data. Employee wages for sterilization labor can also vary amongst hospital

organizations and can play a factor in the calculation related to reusable laryngoscope cost. Another barrier was the limited research on the cost benefits of reusable versus disposable laryngoscopes. By completing this project and sharing the results, it is hoped that more research within other healthcare organizations can be conducted to improve cost savings.

Methodology

After obtaining approval from the hospital in which the project was conducted, the purchasing agent for the anesthesia department was contacted to obtain costs related to disposable and reusable laryngoscope use. Institutional Review Board (IRB) approval was not needed for this project as shown in Appendix B. Costs of sterilization for reusable laryngoscopes was determined by adding the expenses related to the sterilization process. These costs consist of the products used for sterilization along with labor costs for employees responsible for conducting the sterilization process. Costs related to disposable laryngoscopes were also calculated by adding the cost per box ordered over a 6-month period. The costs for disposable laryngoscopes include disposable handles, MacIntosh (Mac) three blades, Mac four blades, and Miller two blades. The number of boxes ordered over a 6-month period was retrieved from the operating room purchasing agent. The data was collected and the information was recorded in an excel spreadsheet. The costs were calculated and compared. A cost analysis report was written and reviewed by a panel of experts. The cost analysis report was delivered to the chief CRNA along with a recommendation of laryngoscope selection. The data for this project is stored on a password-protected computer and will be destroyed 6 months from the date of this presentation.

Summary

The purpose of this project was to determine the most cost-efficient laryngoscope for use during direct laryngoscope to improve potential cost for patients and the hospital bottom line. As mentioned, this project was conducted at a 220-bed facility in North Mississippi, and data was collected for costs directly related to both the disposable laryngoscope and non-disposable laryngoscope. The results will be discussed in the next chapter.

CHAPTER III – RESULTS

Analysis

For this DNP project, data was obtained from the purchasing agent for the anesthesia department. The cost of supplies required for sterilization per hospital policy was obtained and organized in an excel spreadsheet. The cost of each supply was then calculated on a per month basis and then added together to obtain an overall monthly cost for sterilization supplies. These results are shown in Table 1 below.

Table 1

Supply Cost for Non-Disposable Laryngoscope Handles and Blades

Supply	Unit of Measurements	Cost	Estimated Monthly Usage	Total Cost per Month
Autoclave Steam Indicators	box	\$73.84	1	\$73.84
Heat Seal Pouch	box	\$131.50	3	\$394.50
Detergent Soap	each	\$268.35	2	\$536.70
Biological Test	each	\$3.03	30	\$90.90
Total Supply Cost per Month				\$1,095.94

Because employees are needed to perform the sterilization process, employee wages and hours were also obtained from the nurse manager of the surgical unit. Currently, 3 full-time employees that work in the sterilization department and an estimation was made of 3 hours per day to perform sterilization of non-disposable laryngoscope handles and blades. These employees work 5 days a week. The data was organized in an excel spreadsheet and the monthly labor cost for sterilization of non-disposable laryngoscope blades and handles were calculated as shown in Table 2 below.

Table 2

Labor Cost for Non-Disposable Laryngoscope Handles and Blades

		Total Cost for 3 FTE
Number of Full Time Employees (FTE)	3	
Cost per Hour per Employee	\$14.50	\$43.50
Total Hours a Day per Employee	3	\$130.50
Total Days Worked a Month per Employee	20	\$2,610
Total Labor Cost per Month		<u>\$2,610</u>

To finalize the monthly cost required for non-disposable laryngoscope use in the operating room, the final total from Table 1 and the final total from Table 2 were added together. The total cost per month for non-disposable laryngoscope handles and blades were found to be \$3,705.94. This amount was then multiplied by 6 for a total cost over a 6 month period, which was found to be a grand total of \$22,235.64.

The cost per box of disposable handles, MAC #3 blades, MAC #4 blades, and Miller #2 blades were obtained from the purchasing agent for the anesthesia department. The number of boxes that were ordered for each disposable blade type and the disposable handles from September 1, 2017, to February 1, 2018. The data was then placed into an excel spreadsheet and the results were analyzed. The total cost for each type of blade and the disposable handles per box ordered over the 6 month period were calculated. The results were then added together to achieve an overall cost for disposable laryngoscopes from September 1, 2017, to February 28, 2018. The results calculated for the cost of disposable laryngoscopes are shown in Table 3 below.

Table 3

Cost for Disposable Laryngoscope Handles and Blades from September 1, 2017 to February 28, 2018

Supply	Unit of Measure	Cost	Boxes Ordered from September to February	Total Supply Cost
Disposable Handles	box	\$179.95	40	\$7,198.00
MAC #3 Blades	box	\$94.95	35	\$3,323.25
MAC #4 Blades	box	\$94.95	11	\$1,044.45
Miller #2 Blades	box	\$94.95	2	\$189.90
Total Cost for Use of Disposable Laryngoscopes				\$11,755.60

Results

After costs were calculated for both disposable and non-disposable laryngoscope use over a six month period, the results were compared. Based on the calculations, the disposable laryngoscopes were more cost efficient than non-disposable laryngoscopes. With the total cost over a 6-month period for non-disposable laryngoscopes totaling \$22,235.64 and disposable laryngoscopes totaling \$11,755.60, disposable laryngoscopes were found to be more cost efficient than reusable laryngoscopes by a total of \$10,480.04, which equals a potential cost savings of 52.9%. Factors specific to the facility in which this project was performed could have altered these results. These factors and limitations will be discussed in the next chapter.

Summary

The purpose of this project was to determine the most cost-efficient laryngoscope for use during direct laryngoscopy. Based on the results above, it can be concluded that

disposable laryngoscopes were found to be the most cost-efficient with a cost-savings of potentially 52.9% over a 6-month period. The dissemination and findings of these results will be discussed in the next chapter.

CHAPTER IV – DISCUSSION

Presentation of Results to Anesthesia Providers

After the cost analysis was completed, results were informally presented to the anesthesia providers of this facility. Several experienced anesthesia providers did not agree to completely implementing the use of disposable laryngoscopes due to personal reasons. However, all did agree that the disposable laryngoscopes were a more cost-efficient option. Upon further discussion, the anesthesia providers did agree to continue the use of disposable laryngoscopes in this facility.

Limitations

Several limitations could have altered the overall results of the findings in this project. One limitation is that the project was conducted in a 220-bed hospital with nine functioning operating rooms in which approximately 6,000 anesthesia procedures are done per year. Therefore, these results may differ in a smaller or larger facility. Another limitation was that there was no data to determine the exact number of general anesthetics performed over this 6-month period, but instead, results were based off a number of boxes ordered for disposable laryngoscopes and the cost to maintain use of non-disposable laryngoscopes.

Future Implications

Future projects conducted at this facility should focus on the infection rates from a year when non-disposable laryngoscopes were used in every procedure compared to infection rates of a year when the facility used disposable laryngoscopes. By collecting data on infection rates and comparing the information based on which blade was used

during which time, results can be further narrowed down in determining if one blade or the other decreases the risk of infection.

Discussion

Because of the rising concern of infection and costs, the chief CRNA at a hospital in North Mississippi approached the researcher about conducting a cost analysis on the use of reusable versus disposable laryngoscopes. An evidence review was conducted as summarized throughout this paper. The purchasing agent for the anesthesia department was contacted and data was collected for both the disposable and reusable laryngoscopes. The data was then organized into an Excel[®] spreadsheet and the costs were calculated for each type of laryngoscope. A cost analysis was conducted. After calculation of the results and completion of the cost analysis, the results showed that disposable laryngoscopes were more cost-efficient than reusable laryngoscopes by a total of \$10,480.04 over a 6-month period.

Summary

In summary, based on the evidence-based literature related to infection risk due to laryngoscopes along with the rising concern of healthcare costs, the researcher recommends that implementing the use of disposable laryngoscopes into the everyday use in anesthesia practice at the facility in which this project was conducted will potentially improve cost savings for both patients and the hospital bottom line. Although no specific findings related to infection and laryngoscopes were found for this specific facility, based on the evidence-based literature reviewed, the researcher believes that by using disposable laryngoscope, the risk of infection may be reduced, thereby, improving

quality of care. Due to limited research specifically related to cost and laryngoscopes used during direct laryngoscopy, this topic should be explored more in the future.

APPENDIX A – DNP Essentials

Essential I	Scientific Underpinnings for Practice	Conduction of a literature review and an evidence-based study
Essential II	Organizational and Systems Leadership for Quality Improvement and Systems Thinking	Determining which laryngoscope is most cost efficient in which the use can decrease costs for both patients and healthcare organizations
Essential III	Clinical Scholarship and Analytical Methods for Evidence-Based Practice	Review of and utilization of current literature reviews and completion of cost analysis for disposable and reusable laryngoscope blades
Essential IV	Information Systems/Technology and Patient Care Technology for the Improvement of Transformation of Health Care	Hospital resources such as the Information Technology employees were utilized for retrieving necessary data for completion of this project
Essential V	Health Care Policy for Advocacy in Health Care	Results will help to determine the most cost-efficient laryngoscope for use in anesthesia practice
Essential VI	Inter-professional Collaboration for Improving Patient and Population Health Outcomes	Collaboration with anesthesia providers and hospital management in regards to cost-saving benefits for patients and the hospital organization
Essential VII	Clinical Prevention and Population Health for Improving the Nation's Health	Laryngoscopes are essential in anesthesia practice for securing patient airways. By determining the most cost-efficient laryngoscope, patients can still receive safe, quality, cost-efficient care.
Essential VIII	Advanced Nursing Practice	Educating Certified Registered Nurse Anesthetists on the cost

		analysis results and evidence-based research in the literature.
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APPENDIX B – IRB Approval Letter



COLLEGE OF NURSING
SCHOOL OF LEADERSHIP & ADVANCED NURSING PRACTICE
118 College Drive Box 5095 | Hattiesburg, MS 39406-0001
Phone: 601.266.5462 | Fax: 601.266.4077
Website: <http://www.usm.edu/nursing> | Email: nursing@usm.edu

August 30, 2018

To Whom It May Concern:

The doctoral project submitted by Summer Stone has been reviewed by Patsy Anderson, DNS, RN, who is a College of Nursing and Health Professionals representative of The University of Southern Mississippi, Institutional Review Board. The project is a cost benefit analysis of various types of laryngoscopes and as such does not involve human subjects research. Since the project does not use human subjects, this project does not require IRB approval.

In this doctoral project, proper protection of organizational data will be adhered to by Ms. Stone and her advisor, Dr. Nina McClain. If Ms. Stone's project changes to include human subjects, he will notify his doctoral project advisor, and apply for IRB approval.

Sincerely,

Patsy Anderson, DNS, RN
USM Institutional Review Board Member
College of Nursing and Health Professions Representative
228-865-4538

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