

# Nurse Anesthesia Program Requirements for Esophageal/Precordial Stethoscope Earpieces: A Survey

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*Student nurse anesthetists are often required to purchase an auscultatory earpiece device for use in the clinical setting. Although the device is required, students have observed that many anesthesia providers in the clinical setting no longer use this piece of equipment.*

*The purpose of this project was to determine the number of anesthesia programs that required mandatory purchase of the auscultatory earpiece by student nurse anesthetists. A brief survey was developed to collect data from the directors of all 105 accredited nurse anesthesia programs in the United States. The survey was completed by 63 (60%) of the program directors,*

*and 62 completed surveys were used in the analysis.*

*Results revealed that 95% of the responding nurse anesthesia programs (59 of 62) require esophageal/precordial stethoscope earpieces for their students, but 46% (27) of those programs provide the earpieces. Most (76%) of the programs required the use of the earpieces in the clinical setting, but only 45% thought that they should be used for monitoring every anesthetic delivered.*

**Keywords:** Anesthesia education, auscultatory earpiece, esophageal stethoscope, precordial stethoscope.

The required use of auscultatory stethoscope earpieces by student nurse anesthetists seems to be controversial. The rationale for using the auscultatory earpiece is to enable the anesthesia provider to continuously monitor respiratory and heart sounds with maximal signal-to-noise ratio. A muffling of heart and breath sounds accompanied by swallowing noises can be the first indication that the anesthetic may be insufficient.<sup>1</sup>

As early as 1987, improved technological advances such as pulse oximeters, capnography monitors, and electrocardiography began to replace the esophageal stethoscope.<sup>2</sup> These newer devices were considered by some to be more accurate and easier to use than the esophageal stethoscopes. In contrast, Petty<sup>3</sup> saw the esophageal stethoscope as essential when an immediate critical judgment was necessary. He saw it as an extension of the anesthesiologist's own senses. Petty further explained that the esophageal stethoscope was important in the ongoing development of the inexperienced professional's ability to detect heart sounds, quality of heart tones, and dysrhythmias, thus contributing to better patient outcomes.

However, by 1995, a study indicated that only 28% of anesthesia providers were listening to their patients with an esophageal stethoscope.<sup>4</sup> By 2001, only 37 of 118 anesthesiology programs required continuous monitoring with esophageal stethoscope earpieces.<sup>5</sup> These data caused questions to arise concerning nurse anesthesia

programs. Are nurse anesthesia programs requiring the individually molded earpieces to be purchased by their students, and are they required for continuous monitoring of every anesthetic delivered?

## Methods

For the project, one of the authors (J.S.) set up a 6-question survey using an online survey program (<http://www.surveymonkey.com>). The survey asked (1) whether the program requires esophageal/precordial stethoscope earpieces, and, if so, (2) under what circumstances would it definitely not be recommended, (3) under what circumstances would it definitely be recommended, (4) does the program require its use for continuous monitoring of every anesthetic delivered, (5) do students purchase their own esophageal/stethoscope earpiece or does the program pay for the earpiece? Both the survey and a cover letter containing an explanation of the project were approved by the institutional review board of the university.

The American Association of Nurse Anesthetists website was accessed to obtain a list of each accredited nurse anesthesia program in the United States and its contact information. An email containing the cover letter and detailed instructions on how to access the questionnaire was sent to the 105 accredited programs. A second email with the same information was sent 14 days later. After 21 days, the survey was closed and the SurveyMonkey program was used to descriptively analyze the results.

## Results

Of the 105 directors of schools of nurse anesthesia, 60% (63) responded. One response was eliminated because the program had just been implemented 2 months before the survey. Of the remaining 62 nurse anesthesia schools responding, 59 (95%) required the use of the esophageal/precordial stethoscope earpiece. Half of those schools required that the student purchase the devices on their own, while 27 (45%) actually provided the earpieces. A total of 47 (76%) of the schools required the use of the earpiece in the clinical area, but comments indicated this depended on the case type, the patient type (usually pediatric vs adult), and/or the anesthetic type.

Respondents recommending the esophageal/precordial stethoscope commented that it allowed close contact with the patient. It allowed the anesthetist to assess quality of heart sounds, and it allowed for immediate, valuable information that other monitors did not display. Thirty-eight (45%) of the respondents thought that the device should be used in all cases. The remaining 34 respondents restricted its use to pediatric cases (21%), prone/field avoidance cases (11%), general anesthesia cases (9%), monitored anesthesia care (MAC) cases (8%), and reactive airway cases (6%).

## Discussion

Survey results revealed that 95% of the accredited nurse anesthesia programs still require their students to have an esophageal/precordial stethoscope earpiece for possible use for continuous auscultatory monitoring. However, 45% of the programs provide the devices to their students. Respondents reported that students use the auscultatory earpieces approximately 76% of the time in the clinical setting, but this depends on the case type. Most program directors (72%) supported continuous auscultatory monitoring, although only 45% suggested it for all cases. Specific exceptions were noted, such as sterile field interference, esophageal surgery, regional anesthesia, magnetic resonance imaging interference, MAC cases,

coronary artery bypass graft procedures, laryngeal mask airway, and cardiopulmonary resuscitation.

Considering the survey outcome, it would seem that the required use of the esophageal/precordial devices by students should continue. Further inquiries should be made to determine the relevance of these devices, including specific inquiries to Certified Registered Nurse Anesthetists and anesthesiologists about device utilization in the clinical setting. Delineation of device utilization would clarify what might appear to be discrepancies between nurse anesthesia schools and actual clinical practice settings. If these devices are considered to be vital for student nurse anesthetists to assist in the development of their assessment skills, they should be advertised as such.

Because 45% of the programs already absorb the cost of the devices, we believe that the remaining programs might consider providing them. As a result of this report, plans for cost absorption are being implemented at the lead author's former school of nursing.

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