

SURGICAL SMOKE IN THE OPERATING ROOM

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PRACTICE PROBLEM

- An electrosurgical unit (ESU) cuts and coagulates tissues during surgical procedures by using electrical currents at high frequencies at the end of an electrode (1).
- Researchers Georgesen and Lipner (2018) found that surgical smoke poses numerous risks to the surgeon and staff, including the transmission of infectious diseases, mutagenicity and direct injury.
- Research has shown that the long-term effects of inhaling surgical smoke are potentially dangerous for all surgical staff exposed.

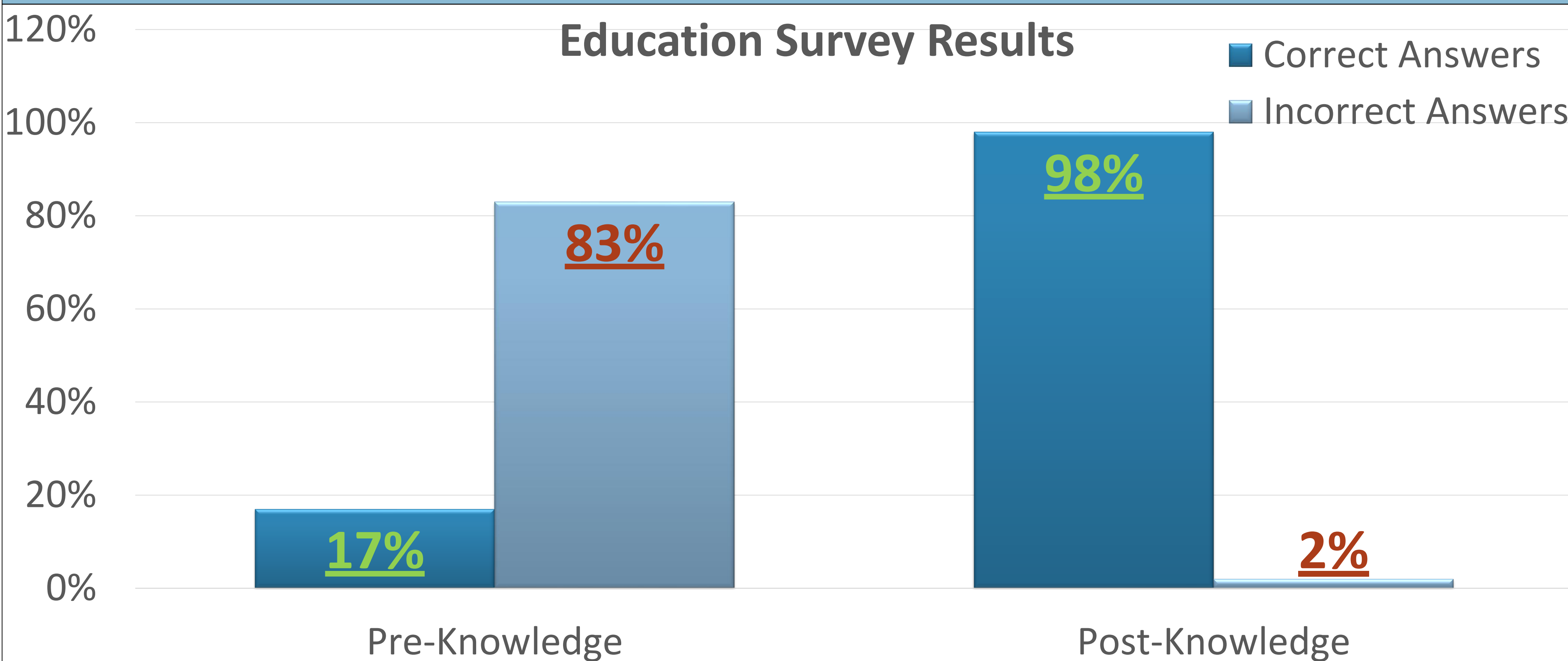
PICOT QUESTION

Will the knowledge of surgical smoke, its hazards and preventions, encourage staff in the operating room to utilize surgical smoke evacuation devices during surgical procedures?

LITERATURE/EVIDENCE

- A literature search was conducted using key words surgical smoke and evacuation. The results demonstrated the harmful aspects of surgical smoke to perioperative staff when not effectively evacuating smoke.
- A literature review by Limchantra et al. (2019), studies have shown that surgical smoke consists of chemical compounds in the gaseous phase along with particles of cells, bacteria, and viruses.
- Literature states inhalation of particulate matter found in surgical smoke irritates the lungs and the smaller particles can be absorbed into the blood stream (4).
- According to (Fencl, 2017), using a smoke evacuation system in addition to room ventilation is the first line of defense against surgical smoke exposure.

OUTCOMES



KEY EBP PRACTICES

- Following a knowledge pre-survey and its results, it was determined that the surgical staff was unaware of the hazards of surgical smoke.
- After reviewing literature, there is ample evidence in the use of surgical smoke evacuation devices to eliminate harmful particles from the surgical environment.

IMPLEMENTATION

- Using the IOWA model, the surgical team evaluated current practices during surgical procedures.
- An education plan was developed to make the facility “smoke-free” including ideas to review procedure changes and create competencies for surgical staff.
- An EBP pre-survey was conducted to evaluate staff knowledge on surgical smoke.
- Surgical staff were enrolled in the AORN GO Clear Award program to complete learning modules.
- Education regarding smoke evacuator devices and their functionality was presented.
- All surgical staff were expected to utilize surgical smoke evacuation devices for all surgical procedures.
- A post-knowledge survey was conducted.
- A 3 month audit was performed to document consistencies of smoke evacuation use.
- The facility submitted documentation to be recognized as part of AORN’s Surgical Smoke-Free Recognition Program.

OUTCOMES

- After reviewing the pre-knowledge survey with surgical staff, they were then more aware of surgical smoke during cases and were eager to learn more from modules and other education pieces.
- Post-education survey results showed a vast increase in surgical smoke knowledge among surgical staff verifying staff have gained necessary knowledge to protect patients and themselves.
- Surgical staff who utilized surgical smoke evacuators reported feeling safer overall during surgical procedures.
- The facility is recognized as being the first Baylor Scott & White hospital to obtain the AORN Surgical Smoke-Free Program: Go Clear Award.
- Annual surgical smoke competencies will be assigned to all staff exposed to surgical smoke.
- Policies and procedures for surgical smoke safety were developed, reviewed periodically, and revised as necessary.

REFERENCES

1. Association of periOperative Registered Nurses/ AORN. (2021). AORN. <https://aorn.org/>
2. Fencl, J. L. (2017). Guideline Implementation: Surgical Smoke Safety. AORN Journal, 105(5), 488–497. <https://doi.org/10.1016/j.aorn.2017.03.006>
3. Georgesen, C., & Lipner, S. R. (2018). Surgical smoke: Risk assessment and mitigation strategies. *Journal of the American Academy of Dermatology*, 79(4), 746–755. <https://doi.org/10.1016/j.jaad.2018.06.003>
4. Limchantra, I. V., Fong, Y., & Melstrom, K. A. (2019). Surgical Smoke Exposure in Operating Room Personnel. *JAMA Surgery*, 154(10), 960. <https://doi.org/10.1001/jamasurg.2019.2515>

**27-30
unfiltered
cigarettes:
the average daily
impact of surgical
smoke to the OR
team (1)**

