

Surgical Smoke Safety Practices Among Trauma and Acute Care Surgeons (TRACS): A 3-Month Audit Post-Surgical Smoke Safety Algorithm Implementation

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Background/Significance

- In trauma and acute care surgery (TRACS), implementing best practices for surgical smoke safety is critical for safeguarding patient and operating room staff health. Surgical smoke, a byproduct of energy-generating devices used during procedures, poses significant health risks if not properly managed.
- Despite its importance, current practice at the project site shows a utilization rate of merely 23% for surgical smoke evacuation devices (SSEs). This highlights the need for an evidence-based quality improvement project aimed at enhancing safety practices.
- Eliminating surgical smoke from the operating room protects patients and perioperative teams from the dangers (immediate or latent) of smoke inhalation.

Objective

Increase the utilization rate of surgical smoke evacuation devices among the TRACS surgeons from 23% to at least 80% during 2nd Quarter of 2024.

Metrics

Outcome metric

- Total number of Open-TRACS procedures with energy-generating devices per month
- Total number of Closed (Laparoscopic)-TRACS procedures with energy-generating devices per month
- Overall Total number of TRACS procedures per month

Process metrics

- Percentage of compliance for the use of EB-Surgical Smoke Safety Algorithm (Review audit tool)
- Percentage of time surgical smoke evacuation device was utilized during appropriate procedures (Audits -Daily/Per case)
- Percentage of time surgical smoke evacuation device utilized by surgical Approach: Open Versus Closed (laparoscopy) Surgery (Audits /Month)
- Percentage of time surgical smoke evacuation device utilized by Surgeon Surgery (Audits /Month)



Actions Taken

- Outcomes of prior 5-physicians Audit (Pilot) and the AORN algorithm on surgical smoke safety shared with providers during a monthly departmental (TRACS) meeting.
- Per case surgical smoke evacuation device utilization audit tool (Used versus Not Used) designed to document real-time surgical smoke safety practice among the TRACS surgeons.
- Trauma Operating Room (OR 3-13) was dedicated for the purpose of this QI Project
- TRACS surgeons were enrolled, and preference cards were updated to include surgical smoke evacuation devices (SSED) designed for open and closed cases.
- Individual surgeon's surgical smoke evacuation device utilization rate monitored for 3 months.

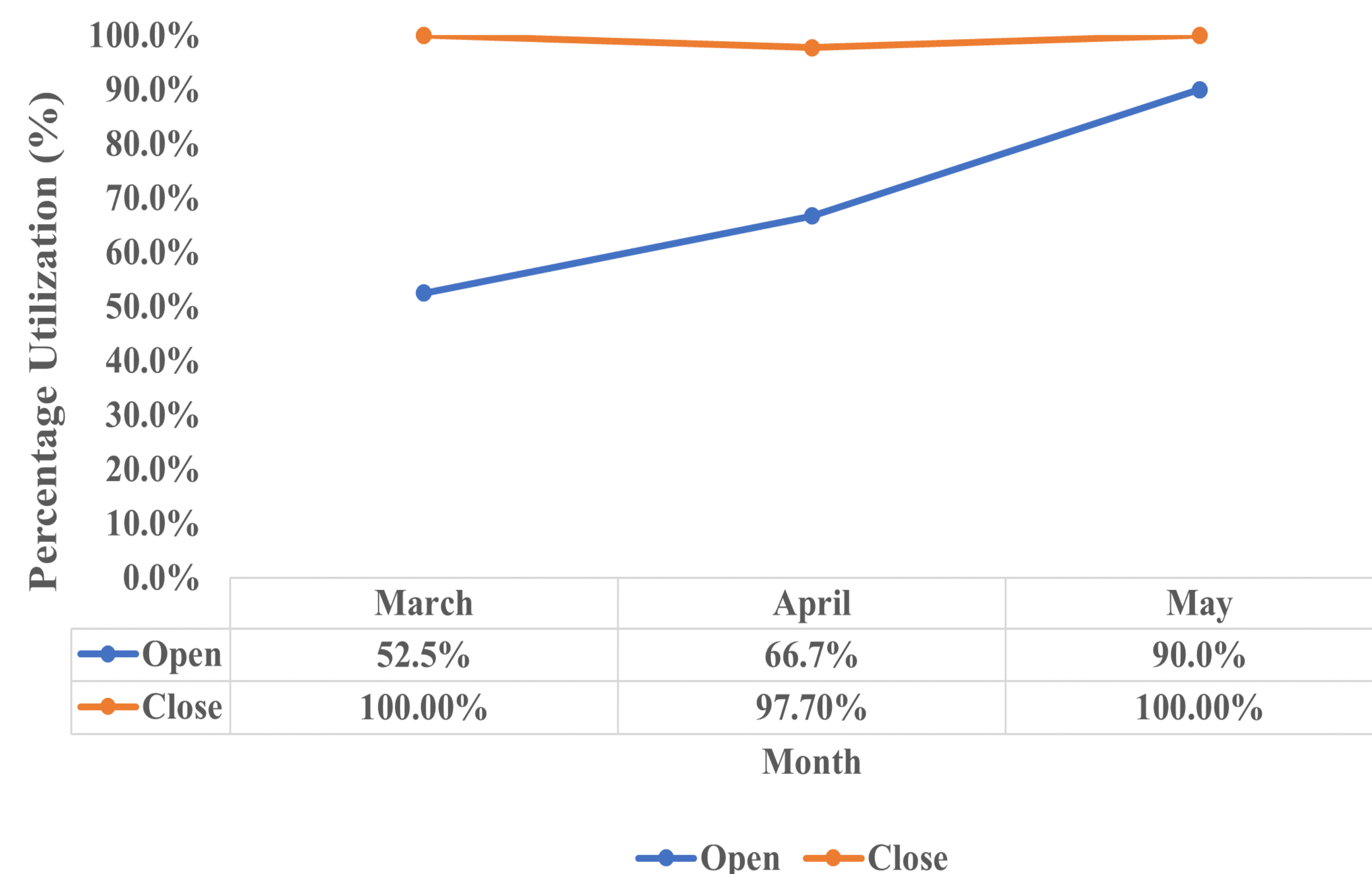


Fig 1: Percentage Compliance/SSED utilization by month

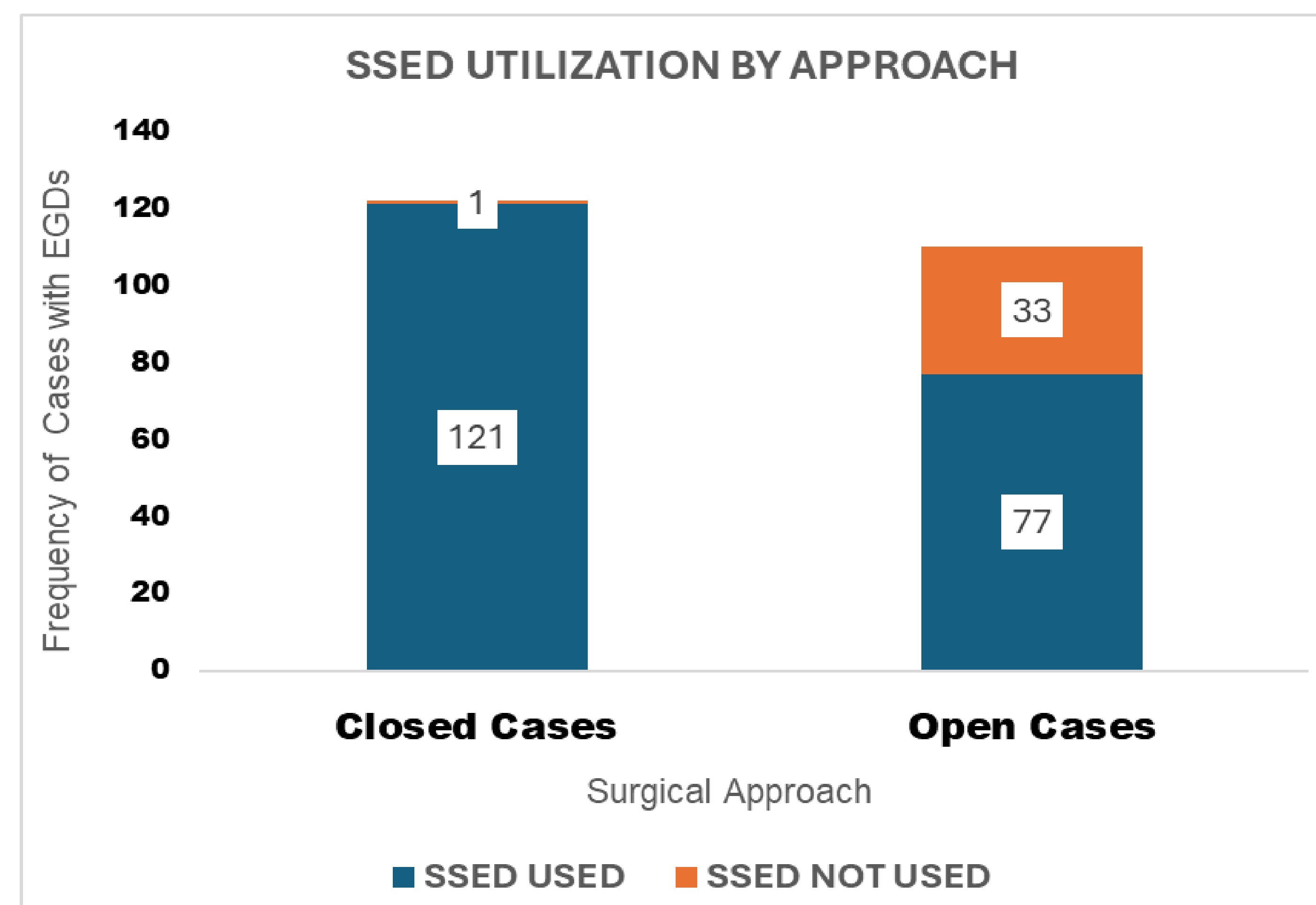


Fig 2: Overall SSED Utilization by Surgical Approach

Analysis

- The overall rate at which surgical smoke evacuation devices (SSED) were utilized during appropriate surgeries increased from 23% to more than 80%.
- The findings indicate significant improvements in SSED usage, particularly in closed surgeries, where the utilization rate reached 99.18%.
- The surgical smoke evacuation device Utilization audit revealed an opportunity for increased compliance during open surgeries
- The structured approach, including education and monitoring, has proven effective in promoting the adoption of SSE devices. This will, in turn, reduce surgical smoke exposure and improve the operating room environment for both patients and staff.

Next Steps

- Commence planning with SMCF operating room leadership and surgical department governance on how to expand the surgical smoke safety advocacy to other surgical specialties and to other Sanford campuses
- Integrate a Planned Smoke Evacuation (PSE) in the Surgical Time Out.
- Plan to extend the AORN evidence-based surgical smoke safety algorithm to other Sanford campuses.
- Training and re-training of surgical staff on various types of surgical smoke evacuation devices

Surgical smoke (Hazardous)

Energy-generating Device (e.g., Diathermy, Ligasure, Harmonic scalpel etc) or laser

Human Tissues (Skin, Blood vessels, bone)



SURGICAL SMOKE IS DANGEROUS!

SUPPORT A SMOKE-FREE OPERATING ROOM TODAY!



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