



GO CLEAR AWARD[™]

SURGICAL SMOKE EVACUATION RECOGNITION

PROGRAM MANUAL



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OVERVIEW OF THE PROGRAM

“Surgical smoke,” “surgical plume,” “plume,” or “aerosols” are all terms to describe the unwanted by-products of vaporization of tissue caused by surgical energy-generating devices. Surgical smoke can be generated by a variety of energy-producing equipment including lasers, electrosurgical units (ESUs), orthopedic devices, and ultrasonic devices. Surgical smoke is hazardous and can negatively affect the health of surgical patients and perioperative team members.

AORN's mission is to promote safety and optimal outcomes for patients undergoing operative and other invasive procedures. AORN is also committed to providing a safe and healthy workplace for all perioperative team members. AORN collaborates with professional and regulatory organizations, industry leaders, and other health care partners who support the mission. Inspired by our mission and in collaboration with our health care partners, AORN has developed the AORN Center of Excellence in Surgical Safety: Smoke Evacuation Program.

The AORN Center of Excellence in Surgical Safety: Smoke Evacuation is a Surgical Smoke-free Education and Recognition Program. The program is a comprehensive approach to protecting patient and worker safety by promoting a smoke-free environment wherever surgical smoke is generated. Components of the program include testing, intraprofessional education, a gap analysis, and compliance monitoring.

- Pretesting evaluates the perioperative team's current knowledge of what surgical smoke is, the hazards of surgical smoke, and smoke evacuation equipment.
- A gap analysis measures the current percentage of surgical procedures in which surgical smoke is evacuated, the number of smoke evacuators, and current usage of smoke evacuation soft goods (ie, smoke evacuator tubing, smoke evacuator filters, in-line filters, and laparoscopic filters).
- The intraprofessional education is for all perioperative team members. The education is provided in short, online modules composed of didactic content, narration, diagrams, and knowledge check questions. Modules can be completed all at once or one or two at a time.
- After the perioperative team members have completed the education, the post-test evaluates their knowledge of what surgical smoke is, the hazards of surgical smoke, and smoke evacuation equipment.
- If the data from the gap analysis indicate that sufficient numbers of smoke evacuators and soft goods are not available, the facility would conduct product evaluations and purchase the required items.
- Following the completion of the education portion of the program, implementation of smoke evacuation for six months for all procedures that generate smoke, and completion of post-testing and compliance auditing, the facility may apply for the recognition award.

The AORN Go Clear Award is a three-year designation. The facility receives a plaque and a listing on the AORN Center of Excellence in Surgical Safety website that designates the facility as smoke free. The facility can use the AORN Center of Excellence in Surgical Safety: Smoke Evacuation and Go Clear Award logo in their promotional and recruiting materials.

BENEFITS OF THE PROGRAM

Surgical smoke contains gaseous toxic compounds, bio-aerosols, and live and dead cellular material. In addition, it may contain viable cancer cells, viable viruses (eg, hepatitis B, hepatitis C, human papillomavirus [HPV], HIV), bacteria, Mycobacterium tuberculosis, and non-viable particles known as “lung damaging dust.” Roughly 150 different chemicals including benzene, toluene, formaldehyde, cyanide, and aerolin have been identified in surgical smoke.

- **Patient safety benefits of a smoke-free environment**

- › Increases visibility during laparoscopic procedures
- › Decreases smoke absorption by red blood cells that may increase levels of carboxyhemoglobin and methemoglobin
- › Decreases carbon monoxide levels in the peritoneal cavity

- **Workplace safety benefits of a smoke-free environment**

- › Reduces perioperative team members' exposure to surgical smoke
- › According to the Occupational Safety and Health Administration, “each year, an estimated 500,000 workers, including surgeons, nurses, anesthesiologists, and surgical technologists, are exposed to laser or electrosurgical smoke” Laser/Electrosurgery Plume. Occupational Safety and Health Administration (OSHA) Quick Takes. United States Department of Labor <https://www.osha.gov/SLTC/laserelectrosurgeryplume/index.html>
- › Reduces reported health effects of surgical smoke exposure, including acute and chronic inflammatory respiratory changes (eg, emphysema, asthma, chronic bronchitis), hypoxia, dizziness, nasopharyngeal lesions, sneezing, nose and throat irritation, coughing, rhinitis, eye irritation, lacrimation, anemia, anxiety, carcinoma, leukemia, cardiovascular dysfunction, skin irritation, headache, hepatitis, nausea or vomiting, weakness/fatigue, and allergies

- **Recruitment/retention**

- › May attract and retain highly skilled perioperative team members because of the safe, smoke-free environment
- › May reduce costs associated with recruitment and orientation by retaining team members
- › Allows use of the smoke-free designation in recruitment materials

- **Recognition**

- › Worldwide
 - Dedicated AORN website listing facilities that have achieved smoke-free recognition
 - Turn-key, comprehensive marketing tool kit to promote your achievement on your website, social channels, and to local media.
- › Facility level
 - Plaque to display



REGISTRATION PROCESS

- Apply online at the AORN Center of Excellence in Surgical Safety: Smoke Evacuation website at www.aorn.org/goclear.
 - › Facility name
 - › Facility address
 - › Facility coordinator
 - › Secondary contact
 - › Magnet status
 - › Number of perioperative personnel
 - › Total number of personnel
 - › Total number of operating rooms
 - › Total number of surgeries performed per year
- Log in instructions will be provided upon the completion of your registration.
 - › Coordinator log in
 - › Individual log in
- Complete the prerequisites

A decorative graphic of grey smoke or smoke-like patterns rising from the bottom left and drifting towards the top right, partially obscured by the teal header.

PROGRAM OBJECTIVES

- Attract and retain the best clinicians due to a healthier, smoke-free environment.
- Ensure the safety of all surgical patients by protecting them from the hazards of surgical smoke.
- Provide education for perioperative team members on the risks of surgical smoke and teach implementation methods for smoke evacuation.
- Increase smoke evacuation compliance on all surgical smoke generating procedures.



STEPS

1

Pre-requisites

2

Identify the Facility Coordinator & Implementation Team

3

Hold a Kickoff Meeting

4

Perform the Gap Analysis

5

Develop an Action Plan

6

Plan the Implementation of the Smoke-Free Initiative

7

Education Modules

8

Compliance Audit Monitoring

9

Award Application Process

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Recertification

STEP 1: PRE-REQUISITES

1. Committing to a smoke-free environment in the OR
 - Why is it important? (See Benefits of the Program page 4)
2. Securing leadership support (Use Benefits of the Program as talking points)
 - C-suite level (ie, Senior Executive) and Directors of Perioperative Services, Surgery, and Anesthesia
 - › Promotes universal compliance with policies and procedures for smoke evacuation
 - › Provides resources for interventions
 - Personnel (eg, coordinator, implementation team members)
 - Time (eg, meetings)
 - Financial (eg, purchase of additional smoke evacuators, soft goods)
 - › Helps the team navigate organizational bureaucracy
3. Assembling the implementation team
 - Facility coordinator
 - › Potential candidates are the Perioperative Educator, Perioperative Clinical Nurse Specialist, Safety Officer
 - › Assistant coordinators where there are multiple OR suites, departments
 - Multi-disciplinary champions from surgical subspecialties (eg, OB/GYN, Urology, ENT, General Surgery, Orthopedics), Anesthesia Professionals (eg, Anesthesiologists, CRNAs), OR Nurses, Surgical Technologists, First Assistants, and C-Suite Level Leader
 - Include additional departments where surgical smoke is generated (eg, Labor & Delivery, Interventional Radiology, Dermatology)
 - Involve representatives from key departments (eg, Infection Prevention, Materials Management, Risk Management, Employee Health, Patient Safety) in the implementation, development, and promotion of the program
4. Accessing the Online Program
 - For the Facility Coordinator to access program resources, track progress of team members, compliance reporting, etc.
 - For perioperative team members to complete pre- and post-testing and educational modules

DID YOU KNOW?

You can contact Medtronic if you need additional assistance with securing leadership support, developing the business case, performing a gap analysis, and/or product evaluation, contact Medtronic to schedule a complimentary consultation. (AORN does not endorse or support any manufacturer's product.)

WHY IT'S IMPORTANT

Support from the top demonstrates to employees that the surgical-smoke free initiative is a top priority at the organization.

STEP 2: IDENTIFY THE FACILITY COORDINATOR & IMPLEMENTATION TEAM

The individuals that comprise the team are responsible for starting and sustaining the smoke-free initiative. Their engagement and belief in a smoke-free environment will greatly contribute to its positive results.

ROLES & RESPONSIBILITIES OF THE TEAM MEMBERS

FACILITY COORDINATOR

- Manages the day-to day activities, testing, departments, gap analysis, etc
- Identifies champions
 - › Creates an understanding of the champion role
 - › Listens to concerns
- Develops a plan to address concerns
- Communicates
 - › Creates a vehicle for communication for the project team and the perioperative team
 - › Develops a plan for communications for the project team and the perioperative team
- Encourages team involvement
- Obtains team feedback
- Manages documentation of Center of Excellence in Surgical Safety: Smoke Evacuation program activities
- Educates personnel about the smoke-free initiative
- Promotes psychological safety of the team
- Invites input from all team members
- Encourages team members to contribute
- Promotes active listening and learning from each other

CHAMPION

- Serves as a role model for the smoke-free initiative
- Meets with the project team
- Communicates with physician groups as needed
- Assists with implementation of smoke-free interventions

TEAM MEMBER CHARACTERISTICS

- Is dedicated to the project aim of a smoke-free environment
- Is willing to promote the initiative
- Has a positive outlook
- Is willing to provide quality information and feedback
- Is focused on the broader view of patient and workplace safety

FACILITY COORDINATOR

- Has all of the characteristics above, plus
 - › Has strong leadership skills
 - › Is skilled at conflict management
 - › Shows attention to detail
 - › Is enthusiastic about the smoke-free initiative
 - › Is able to see it through despite difficulties
 - › Is respected by others

WHY IT'S IMPORTANT

Creating a team with the right attitude from the beginning will make all the difference in the final outcome of your smoke-free initiative.

STEP 3: HOLD A KICKOFF MEETING

- Review the goals of the program
- Review team members' roles and responsibilities
- Review time commitments

WHY IT'S IMPORTANT

Setting expectations from the start will improve communication throughout the entire initiative. Encourage your team to ask questions and take ownership early on.

STEP 4: PERFORM THE GAP ANALYSIS

- The gap analysis measures the current percentage of surgical procedures evacuating surgical smoke, the number of smoke evacuators, and current usage of smoke evacuation soft goods (ie, smoke evacuator tubing, smoke evacuator filters, in-line filters, and laparoscopic filters)
 - › Use the Gap Analysis tool
 - › Consult with your Materials Manager for product usage
 - › Contact your smoke evacuator vendor's account manager or sales professional
- Results of the gap analysis determine the need for additional equipment (eg, evacuator, soft goods)
 - › Contact your smoke evacuator vendor's account manager or sales professional
 - › Use the Product Evaluation form
 - › Purchase additional equipment as needed

WHY IT'S IMPORTANT

Specifically knowing where your team, equipment, and processes can improve will allow you to make the right decisions that will benefit your team as well as your patients.

STEP 5: DEVELOP AN ACTION PLAN

- Who will be affected and how?
- What resources will be needed?
(Use the Gap Analysis tool)
- What are the possible barriers and how can they be overcome?
- How will you measure progress and success?
(Use test results and the Compliance Monitoring Tool)
- How will you share the plan and with whom?

WHY IT'S IMPORTANT

It's important to build the program around your specific circumstances, team dynamics, and environment. Having a plan will improve communication, keep your team motivated, and help ensure you reach your smoke-free initiative goals.

STEP 6: PLAN THE IMPLEMENTATION OF THE SMOKE-FREE INITIATIVE

- Develop a timeline
- Inform the perioperative team about the benefits of the initiative, objectives, time lines, and program components
 - › Short overview during staff and section meetings
 - › Emails
 - › Letters
 - › Unit-based posters
 - › Newsletters
 - › Bulletin boards
- Education Activities
 - › Online modules
 - › Face-to-face presentation
- Develop policy and procedures (Use the P & P template)
- Conduct product evaluation if additional equipment or supplies are needed (use the Product Evaluation tool)
 - › In-service education on new equipment and supplies

WHY IT'S IMPORTANT

It's important to build the program around your specific circumstances, team dynamics, and environment. Having a plan will improve communication, keep your team motivated, and help ensure you reach your smoke-free initiative goals.

STEP 7: EDUCATION MODULES

PRE-TEST

- Assesses general knowledge of surgical smoke, hazards, prevention methods
- All perioperative team members (eg, Surgeons, Anesthesiologists, CRNAs, RNs, Surgical Technologists, First Assistants) must complete the pre-test
 - › How to determine which team members must take the test
 - All perioperative team members that are employees of the facility
 - At a minimum 90%-95% of the top participants in smoke-generating procedures (ie, Surgeons, Anesthesiologists, CRNAs, First Assistants)

EDUCATION

- The intraprofessional education is for all perioperative team members
 - › The online education format consists of short modules of didactic content, narration, videos, diagrams, and knowledge check questions
 - › Modules can be completed all at once or separately
- All perioperative team members (eg, Surgeons, Anesthesiologists, CRNAs, RNs, Surgical Technologists, and First Assistants) should complete the modules.
- Program administrators will be able to track each perioperative team member as they go through the modules through to completion of the post test.

POST-TEST

- The post-test evaluates the perioperative team's knowledge of surgical smoke, hazards, and prevention methods, after completion of the online modules
- 90% of team members must have a passing grade of 80%
- All perioperative team members (eg, Surgeons, Anesthesiologists, CRNAs, RNs, Surgical Technologists, First Assistants) should complete the post-test

DID YOU KNOW?

In a NIOSH survey 49% of the respondents participating in laser procedures reported never having any training on the hazards of surgical smoke.

Reference

Steege Andrea L, Boiano James M, Sweeney Marie H. Secondhand smoke in the operating room? Precautionary practices lacking for surgical smoke. *Am J Ind Med.* 2016

WHY IT'S IMPORTANT

The intraprofessional education is the cornerstone of the program. Providing your team with the tools they need to make your patients and team safer will affect your facility's success for years to come.

STEP 8: COMPLIANCE AUDIT MONITORING

- The Facility Coordinator or designated individual(s) will conduct an audit of smoke evacuation compliance wherever surgical smoke is generated in the facility
 - › Direct observation will determine compliance with the surgical smoke evacuation policy
 - › Use the compliance audit tool
 - › Frequency TBD (eg, weekly, bi-weekly, monthly)
- An alternate method to measure compliance is to review the patient's perioperative record if the facility is currently documenting smoke evacuation and type of smoke evacuation used
- After three months of smoke evacuation, the compliance audit results are submitted for the AORN Center of Excellence in Surgical Safety: Smoke Evacuation Go Clear Award

WHY IT'S IMPORTANT

A three month audit report will provide a snapshot of your facilities efforts and will help provide data on what areas to focus on moving forward.

STEP 9: AWARD APPLICATION PROCESS

Once you have completed the AORN Center of Excellence in Surgical Safety: Smoke Evacuation program, you will submit your compliance audit results of three months. The award criteria is based on your facility's education performance, smoke evacuation compliance, and ensuring your facility has the proper operating room equipment.

Submit the following criteria to the Center of Excellence in Surgical Safety: Smoke Evacuation Project Coordinator at goclearpc@aorn.org.

CRITERIA

1. Education Completion
 - 90-100% of staff enrolled in the program must complete the education component.
2. Post-test Score
 - A minimum of 90% of staff enrolled must have an 80% or higher score on the posttest.
3. Compliance Audit Form Completion
 - 90-100% compliance rate by week 12.
4. Adjunct Technology Devices
 - 1 smoke evacuation device per OR (or per procedure room) that generates surgical smoke.

WHY IT'S IMPORTANT

A three month audit report will provide a snapshot of your facilities efforts and will help provide data on what areas to focus on moving forward.

STEP 10: RECERTIFICATION CRITERIA

- The facility should apply for recertification after 3 years
- Submit the Go Clear Award Recertification Attestation to goclearpc@aorn.org which certifies your facility is still smoke-free. If your facility is no longer smoke-free, the following steps are required to uphold the Go Clear Award.
 - › Compile compliance auditing results from the past 3 months via the program's compliance audit form found in the Center of Excellence in Surgical Safety: Smoke Evacuation [Resource Center](#)
 - Submit the audit results using the link on found on the final page of the audit form
 - If your facility cannot meet the compliance criteria, restart the process with the pre-test, gap analysis, education modules, compliance monitoring, and post-tests
 - The intraprofessional education modules remain accessible for interested staff members to access at any time

WHY IT'S IMPORTANT

Promoting a smoke-free environment is an on-going initiative that will require continual facility-wide focus. Revisiting your Center of Excellence in Surgical Safety: Smoke Evacuation certification every three years will help you and your team keep patient and worker safety top of mind.

TIPS FOR IMPLEMENTATION & INCREASING COMPLIANCE

Increasing understanding of the hazards of unevacuated surgical smoke to patients and perioperative team members through the education program

- Knowledge
- Awareness

Gain support of the C-suite level and Directors of Perioperative Services, Surgery, and Anesthesia

- Universal compliance with policies and procedures for smoke evacuation
- Financial—purchase of additional smoke evacuators, soft goods (eg, tubing, filters, in-line filters, laparoscopic filters)

Include personal stories of the hazardous effects of surgical smoke

- Examples of their own team member stories
- Smoke Tool Kit vignettes
- Surgeons with HPV

Use statistics/trends of sick days

- Headaches, flare-up of asthma/bronchitis, coughs
- Lost productivity figures
- Cost of sick days

Recruit champions

- Cheerleaders for the campaign to become smoke free
- Highly regarded team members at all levels (eg, Surgeons, Anesthesiologists, Surgical Technologists, RNs, CRNAs, First Assistants)
- Able to discuss the hazards and health consequences
- Overview and benefits of the program at departmental meetings

Use administrative controls

- Development of a P & P (See Policy and Procedure template)
- Competency (See Competency template)
- Hazard evaluation

Start the program after the gap analysis and purchase of equipment (ie, smoke evacuators and soft goods) if needed

Conduct a product evaluation—work with the Materials Management Department to find vendors that are in the preferred purchasing contract (See Product Evaluation tool)

- Evacuators
- Soft goods (eg, tubing, ESU pencil with tubing incorporated, laparoscopic filters)

Update preference cards to include smoke evacuation soft goods and evacuators

- Have all equipment and supplies available in the room before the procedure starts

Update custom packs to include smoke evacuation soft goods

- Work with the Materials Management Department to find vendors that are in the preferred purchasing contract

Include smoke evacuation in the preoperative briefing

- Amount of smoke anticipated
- Type of evacuation needed (eg, smoke evacuator, suction tubing with in-line filter, none)

Celebrate incremental progress toward a smoke-free environment

- Bagels and donuts
- Pizza
- Sub sandwiches
- \$5 gift cards

Create a Book of Evidence

- An example of a creative way to educate personnel on smoke is to assemble a “Book of Evidence” that contains journal articles, surveys, etc., about the hazards surgical smoke.
- This document could also include personal stories on surgical smoke exposure from personnel.
- Make your facility’s Book of Evidence available to all perioperative team members!

Use reminder posters from the current and updated smoke evacuation tool kits.

A decorative graphic at the top of the page featuring swirling, smoke-like patterns in shades of gray and white, partially obscured by a teal banner.

RESOURCES

AHRQ CUSP Tool Kit. Available at www.ahrq.gov/cusptoolkit. Accessed July 18, 2016.

AORN Management of Surgical Smoke Tool Kit. Available at <https://www.aorn.org/guidelines-resources/tool-kits/management-of-surgical-smoke/tool-kit>. Accessed July 18, 2016.