



Sweeping the Nation

Surgical Smoke Legislation

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Surgical Smoke Contains Harmful Substances

Toxic chemicals	VOCs, aromatic hydrocarbons, carbon monoxide
Lung-Damaging Particles	Fine particulate and ultrafine particulate matter
Viruses	HPV
Cellular Material	Cancer cells
Blood	Blood-contaminated aerosols in breathing zone



HPV

Human papillomavirus (HPV)

Detectable in surgical smoke

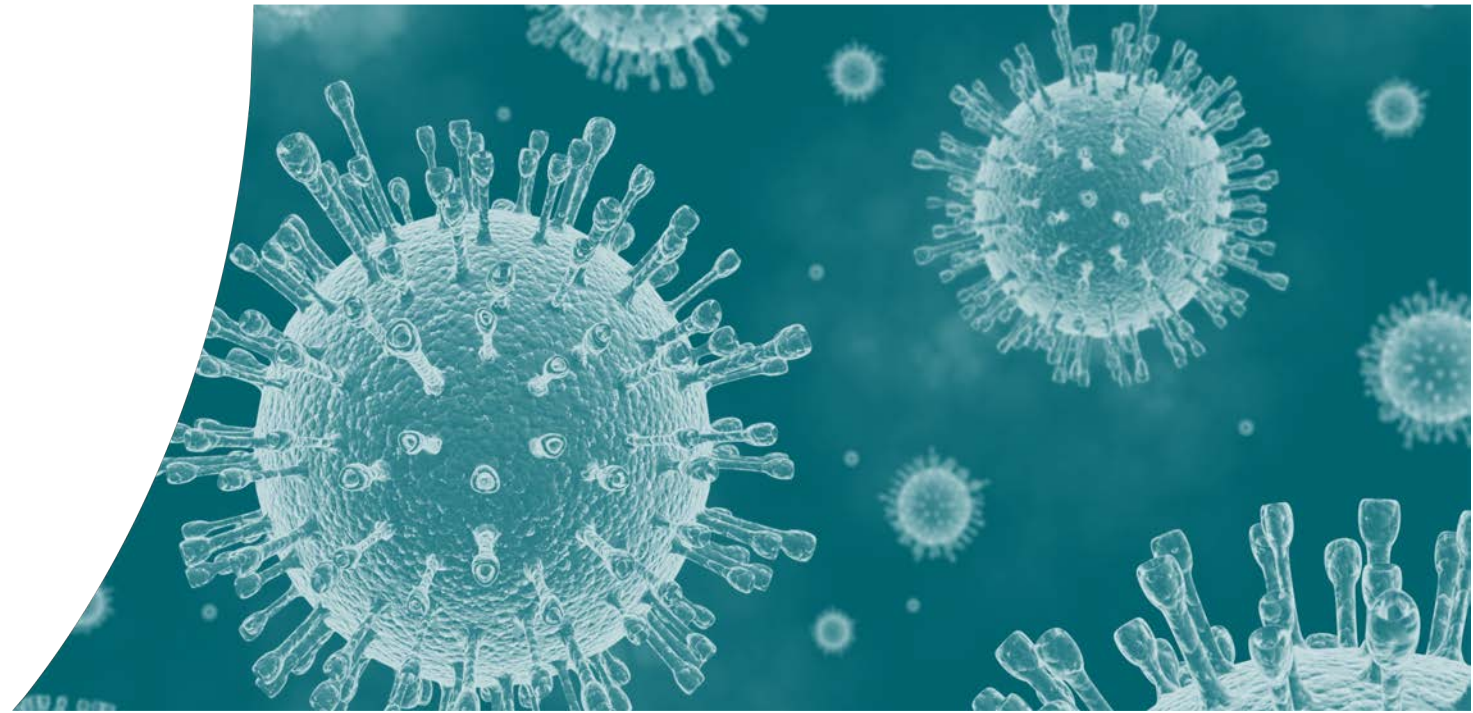
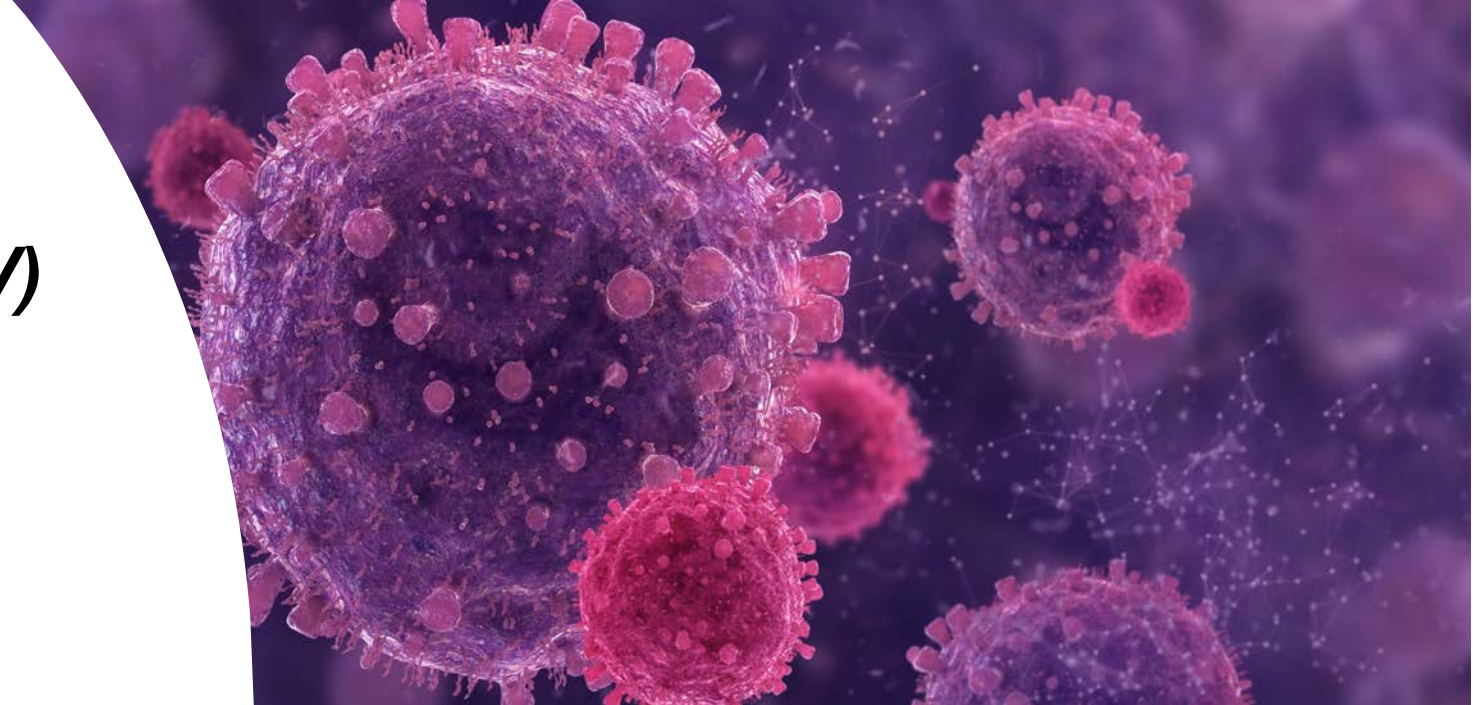
Potentially infectious

Fox-Lewis et al, 2020

HPV DNA detected in
LEEP surgical smoke and
surgeon nasal epithelial cells

Possibly infectious

Zhou et al, 2019



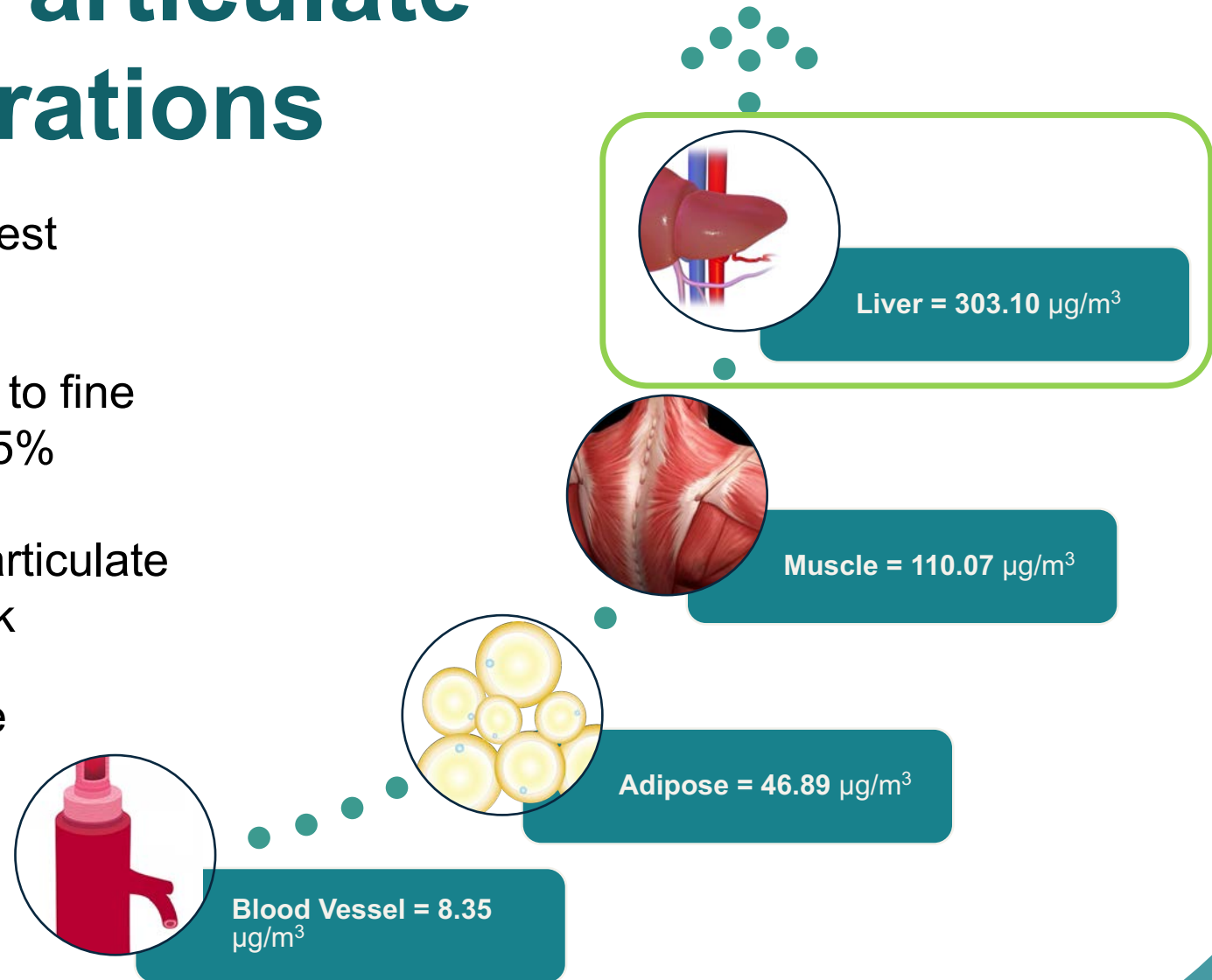
Tissue Type & Particulate Matter Concentrations

Liver tissue found to have the highest concentrations of particulate matter (Tan et al, 2019)

- N95 respirator reduced exposure to fine particle concentration by about 75%

Liver tissue categorized as high-particulate matter tissue with high exposure risk (Karjalainen, 2018)

- Smoke evacuator could decrease exposure by 88%



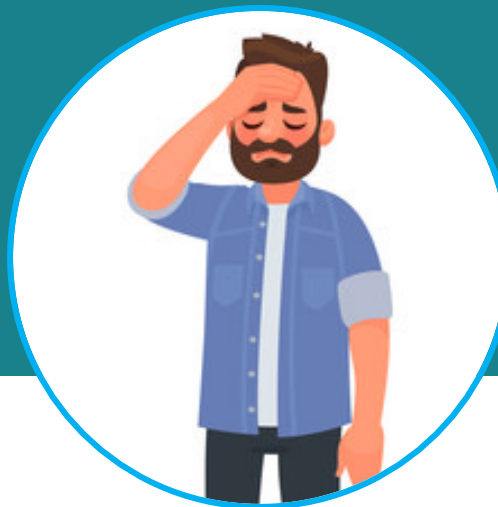


2x

Perioperative nurses report twice as many respiratory issues as compared to the general population

Health Effects

- Respiratory issues
- Anxiety
- Carcinoma
- Skin and eye issues
- Headache, nausea, vomiting
- Lightheadedness
- Throat irritation
- Renal and hepatic issues



**Why is
legislation
needed?**



Agency Recognition of the Problem

1988 OSHA Hazard
Information Bulletins
Hazard of Surgical Smoke

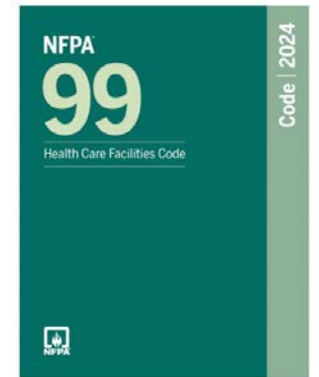
National Institute for
Occupational Safety and
Health (NIOSH)
Publication 96-128



9.3.8 Medical Plume (Surgical Smoke) Evacuation and Filtration

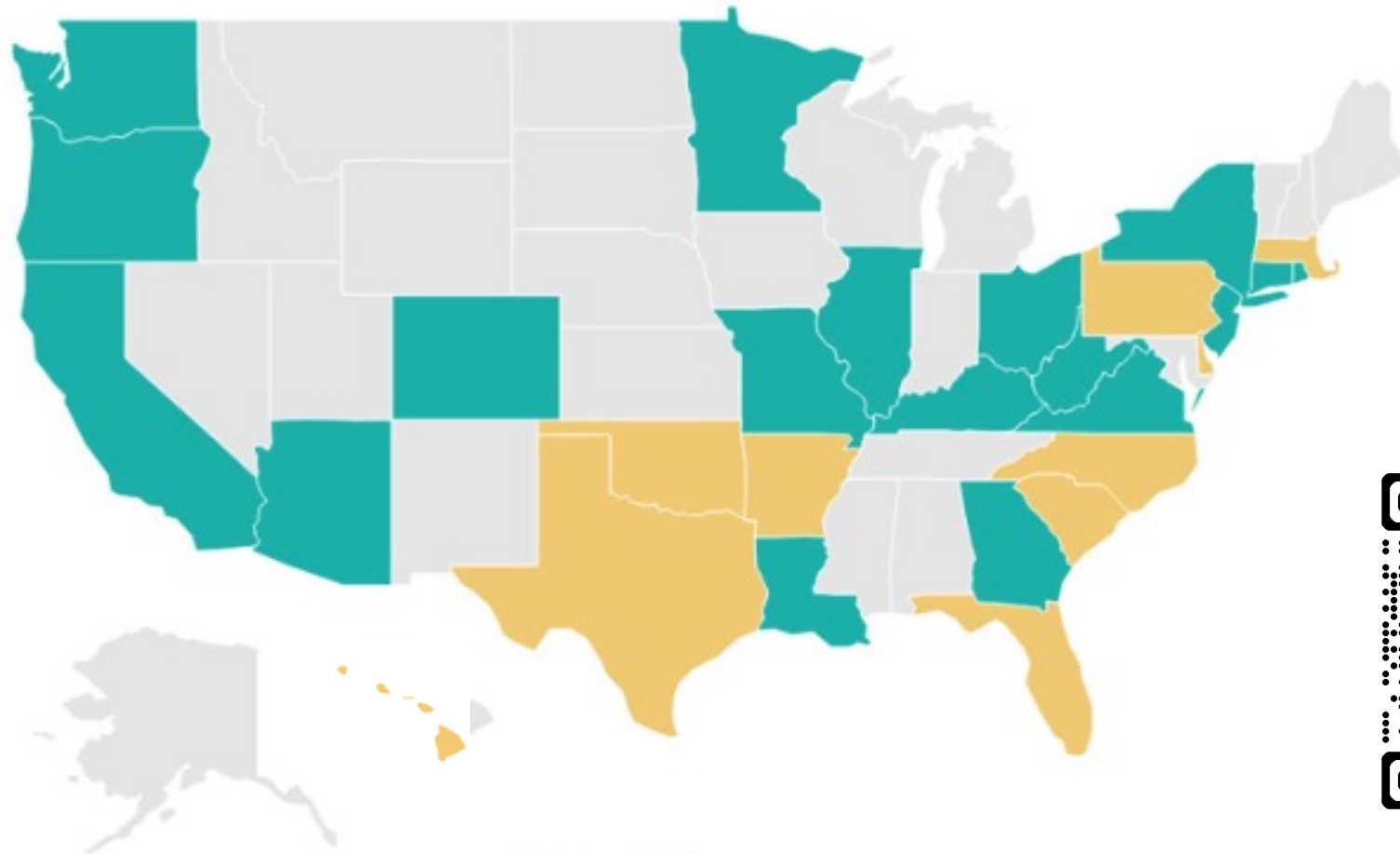
9.3.8.1 All medical plumes (ie, surgical smoke) generated by the use of energy devices (eg, ESUs, lasers) during medical and surgical procedures shall be captured as close as possible to the point of generation (ie, point where the energy device contacts the tissue) by one or a combination of the following methods:

- 1) Dedicated local exhaust ventilation system that discharges in accordance with 9.3.8.2
- 2) Connection to return or exhaust duct after air cleaning through ULPA and gas phase filtration (eg, activated carbon)
- 3) Point of use surgical smoke evacuator with ULPA and gas phase filtration (eg, activated carbon) for air cleaning and return to the space for air cleaning and return to the space
- 4) Medical-surgical vacuum system with an in-line filter with ULPA and gas phase filtration (eg, activated carbon) for small amounts of plume in accordance with 5.1.3.7.4

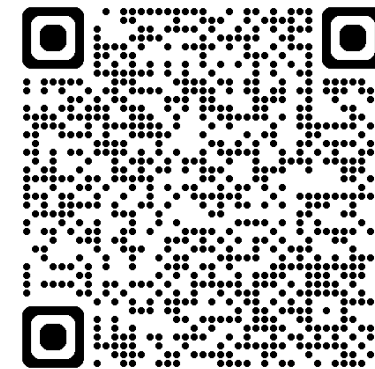


2024

2025 Projected Surgical Smoke Evacuation Map



**18 states
have
legislation
in place!**



<https://www.aorn.org/get-involved/government-affairs/policy-agenda/surgical-smoke-free-or/smoke-bills>

SURGICAL SMOKE LAWS

STATE	EFFECTIVE DATE	REQUIREMENTS	ENFORCEMENT AUTHORITY
Arizona	July 1, 2024	Hospitals and outpatient surgical centers shall adopt and implement policies to prevent human exposure to surgical smoke by using a smoke evacuation system for each procedure that generates surgical smoke (A.R.S. §36-434.01)	The Arizona Department of Health Services shall ensure compliance during any onsite inspection and in response to any complaint received. Report noncompliance to the Department of Health Services.
California	June 1, 2027 (see explanation in Requirements column)	California Division of Occupational Safety and Health Standards (Cal/OSHA) must submit to its board a proposed regulation for the evacuation of surgical smoke by December 21, 2026. The Cal/OSHA Board must consider the proposed regulation for adoption by June 1, 2027.	Cal/OSHA will enforce as prescribed by the final adopted regulation.
Colorado	May 1, 2021	Hospitals and ASCs shall adopt and implement a policy that prevents human exposure to surgical smoke via the use of a surgical smoke evacuation system during any planned surgical procedures that is likely to generate surgical smoke (Col. Rev. Stat. § 25-3-120)	Report noncompliance to the Colorado Department of Public Health and Environment.
Connecticut	January 1, 2024	Hospitals and outpatient surgical facilities shall develop a policy for the use of a surgical smoke evacuation system to prevent a person's exposure to surgical smoke, and shall implement such policy and, upon request, provide a copy of such policy to the Department of Public Health (Conn. Gen. Stat. § 19a-490bb)	Hospitals and outpatient surgical facilities shall provide copies of their policy to the Department of Public Health upon request. Report noncompliance to the Department of Public Health.
Georgia	July 1, 2022	Hospitals and ambulatory surgical centers shall adopt policies for the reduction of human exposure to surgical smoke. (Georgia Code § 31-7-23)	Report noncompliance to the Georgia Department of Community Health.

Surgical Smoke Legislation



Anticipated Legislation

- Arkansas
- Delaware
- Florida
- Hawaii
- Massachusetts
- North Carolina
- Oklahoma
- Pennsylvania
- South Carolina
- Texas

Laws Going Into Effect

- Minnesota

If Your State is Working on Legislation...

Connect with your legislators

Talk with family and friends about surgical smoke

Reach out to your local AORN chapter

Prepare to participate in advocacy requests

If Your State Isn't on the List...

Talk about the problem of surgical smoke with colleagues

Use the Guideline and tools for education

Find out who could be a sponsor of legislation in your state

Connect with AORN Government Affairs

3 Steps: How to Advocate for Change

1

Identify the problem

- Surgical Smoke

2

Describe how the problem impacts you

- Health effects
- Impact on quality of life

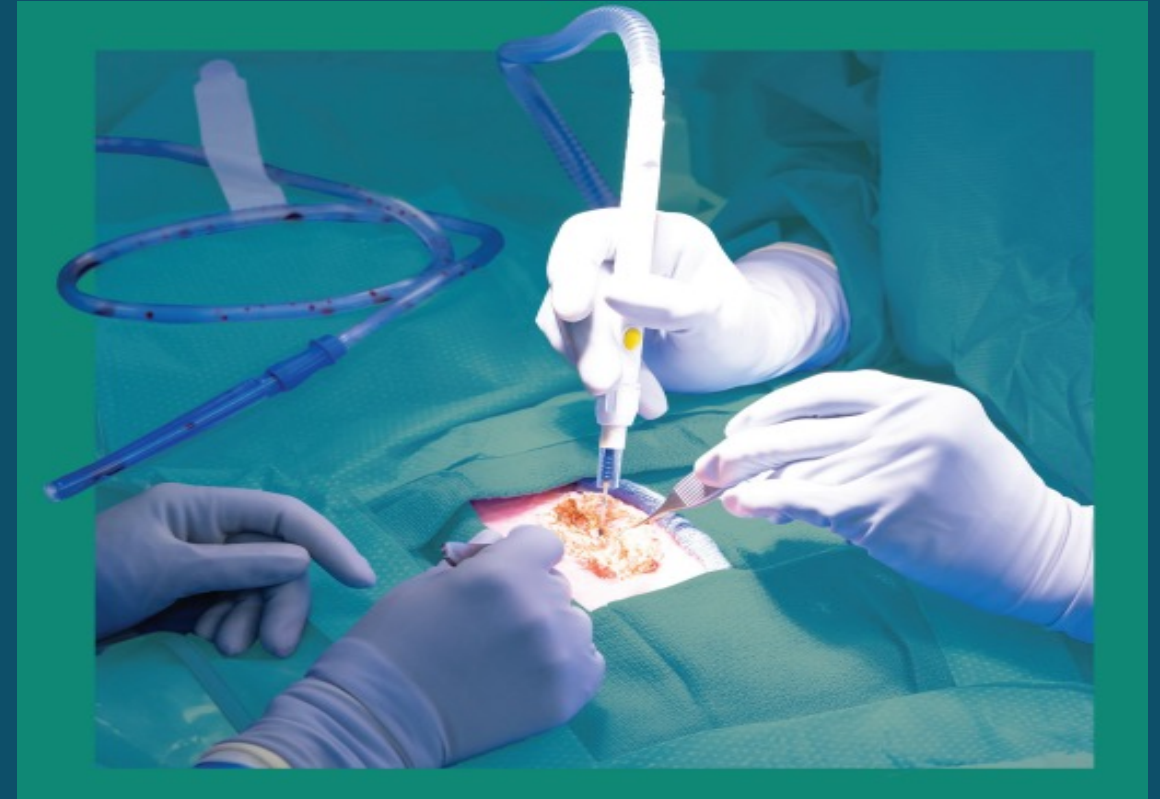
3

Present the solution

- Evacuation of surgical smoke

AORN Surgical Smoke Safety Guideline

1. Smoke-Free Environment
2. Smoke Evacuation *and Filtration*
3. Respiratory Protection **NEW**
4. Education
5. Policies and Procedures
6. Quality



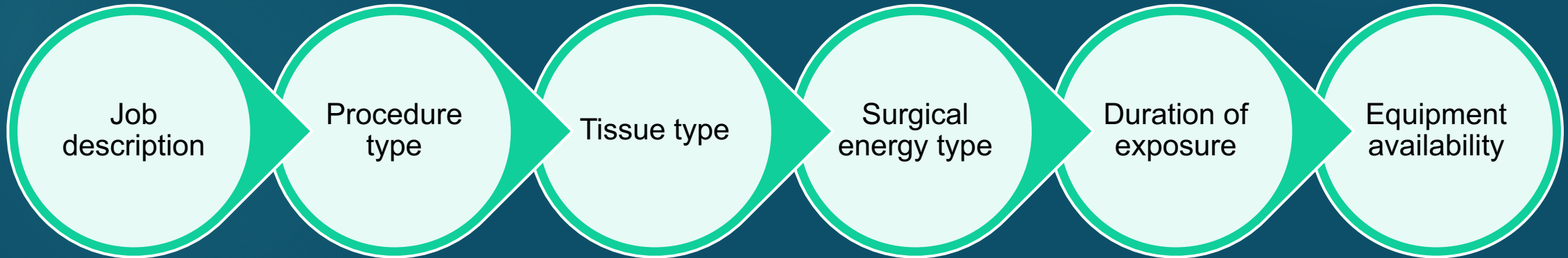
Smoke-Free Environment



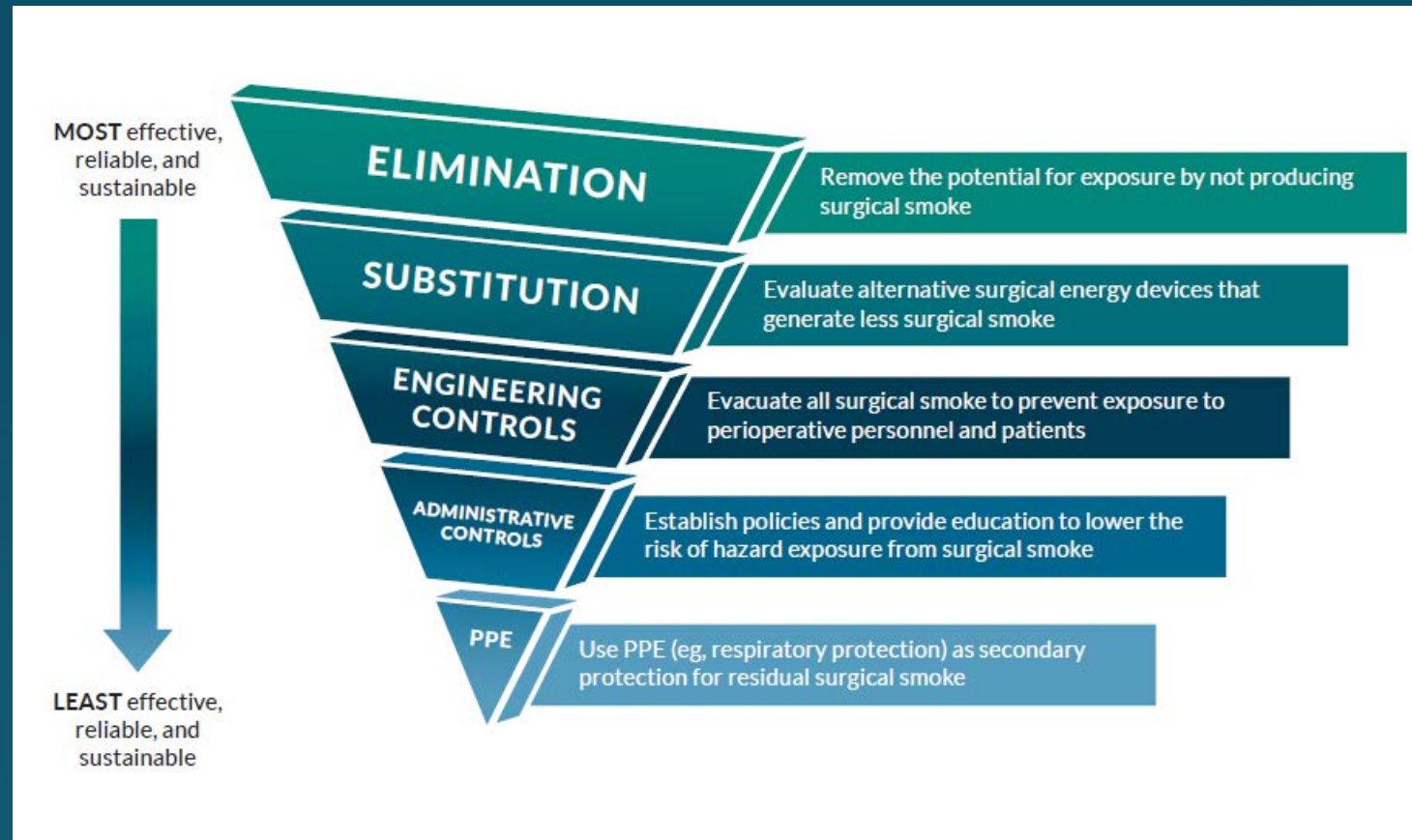
The health care organization should provide a surgical smoke-free work environment. *[Recommendation]*



The health care organization should evaluate the perioperative team's risk of exposure to surgical smoke. *[Recommendation]*



Hierarchy of Controls



Use the OSHA-endorsed CDC/NIOSH hierarchy of controls to reduce the perioperative team's exposure to surgical smoke and establish safe practices *[Recommendation]*

Smoke Evacuation and Filtration



Evacuate and filter all surgical smoke.
[Recommendation]



Research on Smoke Evacuator Effectiveness

Smoke evacuators:

Tokuda et al,
2020

- **lowered VOC concentrations and decreased personal exposure**

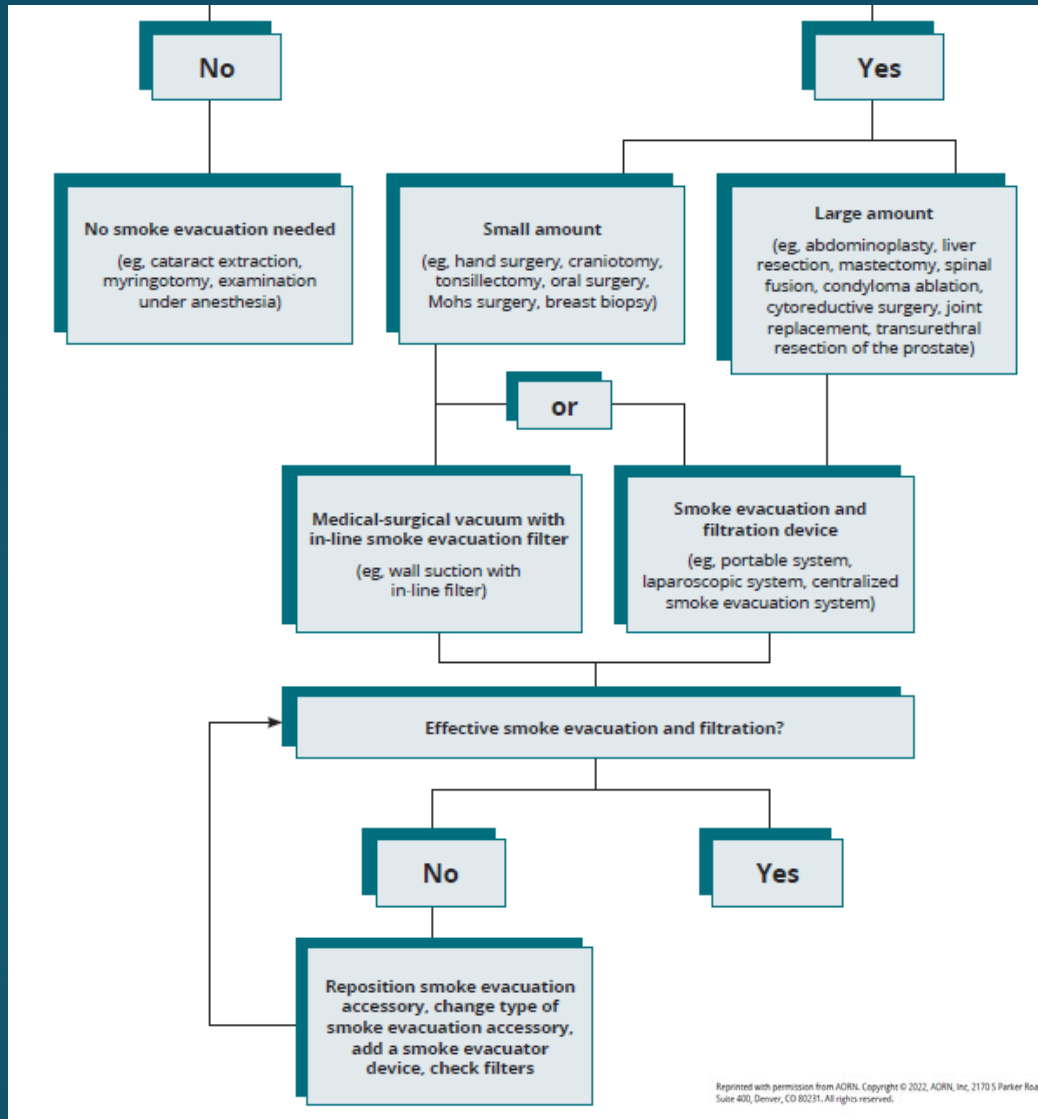
Benson et al,
2019

- **decreased ultrafine particle exposure by 6-fold**

Seipp et al,
2018

- **reduced 99% of surgical smoke under optimal conditions**

Is Surgical Smoke Anticipated?



In collaboration with the perioperative team, determine a surgical smoke safety plan before the procedure and reassess the plan as surgical smoke management needs change.

[Recommendation]

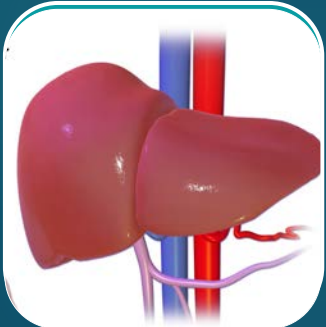
NEW

Respiratory Protection



Wear respiratory protection (eg, a surgical N95 filtering facepiece respirator) in conjunction with smoke evacuation and filtration when participating in procedures using smoke-generating surgical devices on tissue containing HPV. *[Recommendation]*

NEW



For open smoke-generating procedures involving the liver, respiratory protection (eg, a surgical N95 filtering facepiece respirator) may be worn in conjunction with smoke evacuation and filtration. *[Conditional Recommendation]*

NEW

 GUIDELINE *ESSENTIALS*

**Key
takeaways**



**Policy &
Procedure
templates**



**Customizable
presentations**



**Competency
tools**



How-to videos



**Clinical Case
Studies and
FAQs**



**Educational
resources**



<https://www.aorn.org/essentials/surgical-smoke>





GO CLEAR AWARD™

SURGICAL SMOKE EVACUATION RECOGNITION

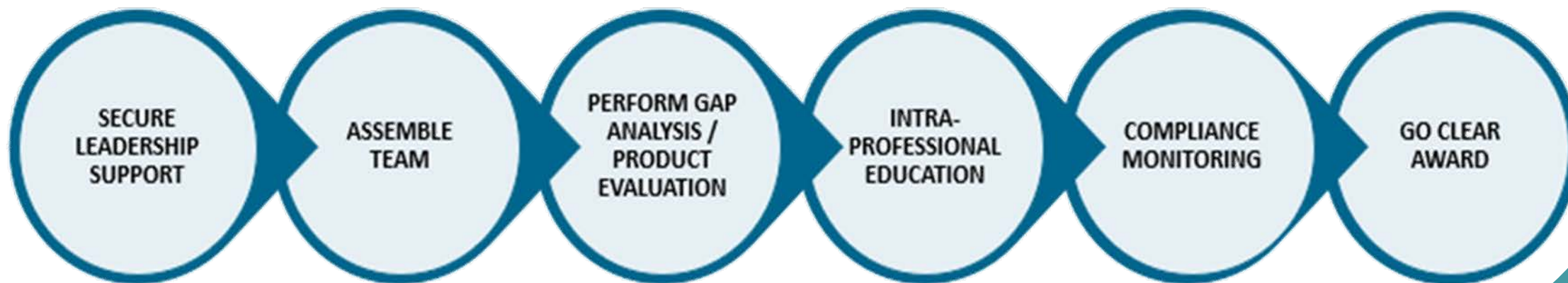




GO CLEAR AWARD™

SURGICAL SMOKE EVACUATION RECOGNITION

A comprehensive Surgical Smoke-Free Recognition Program to ensure a safe environment wherever surgical smoke is generated to protect patient and worker safety



PROGRAM BENEFITS CREATING A SAFER ENVIRONMENT



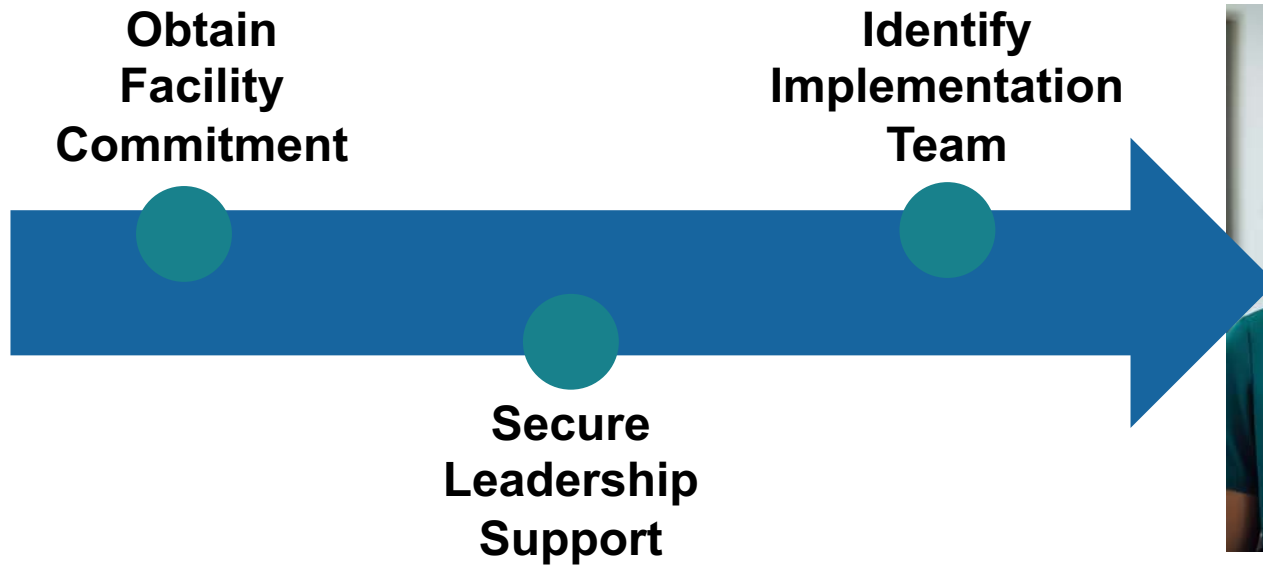
Provide a smoke-free environment for patients and perioperative team members.

Deliver surgical smoke education for the entire perioperative team.

Provide education on smoke evacuation methods for perioperative team members.

Increase smoke evacuation compliance on all surgical smoke generating procedures.

GETTING STARTED PREREQUISITES



Who is Your Smoke Safety Champion?

GAP ANALYSIS

EVALUATE EQUIPMENT NEEDS

Equipment	• # of surgical smoke evacuators • Usage of soft goods (e.g. tubing and filters)
Evacuation	• Understand current smoke evacuation • % of procedures evacuating surgical smoke
Results	• Use Gap Analysis results to determine equipment needs • Start evaluating products using Product Evaluation Forms



***AORN does not endorse any product or device**

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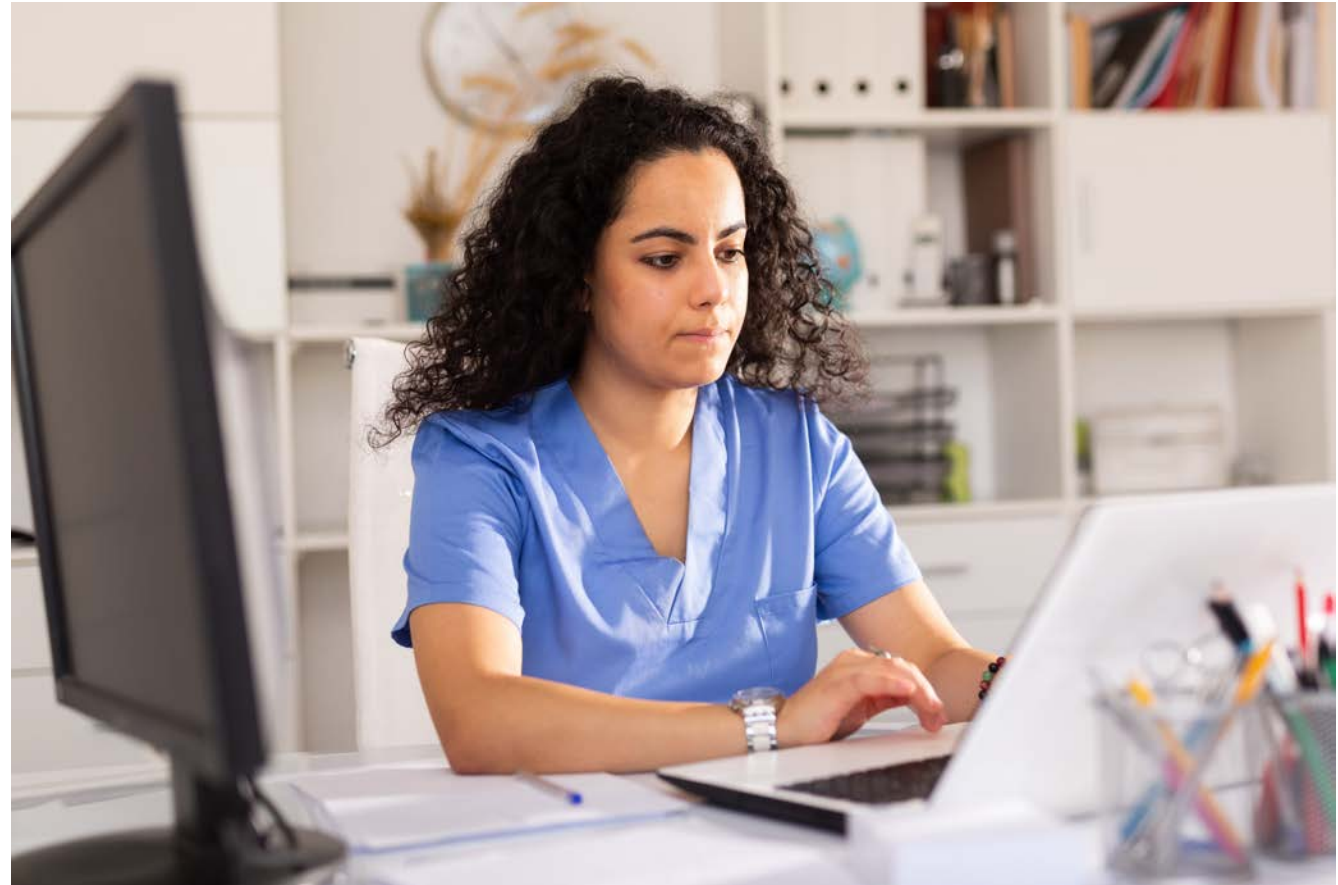
Getty Images/iStockphoto

ONLINE EDUCATION PROGRAM CORNERSTONE

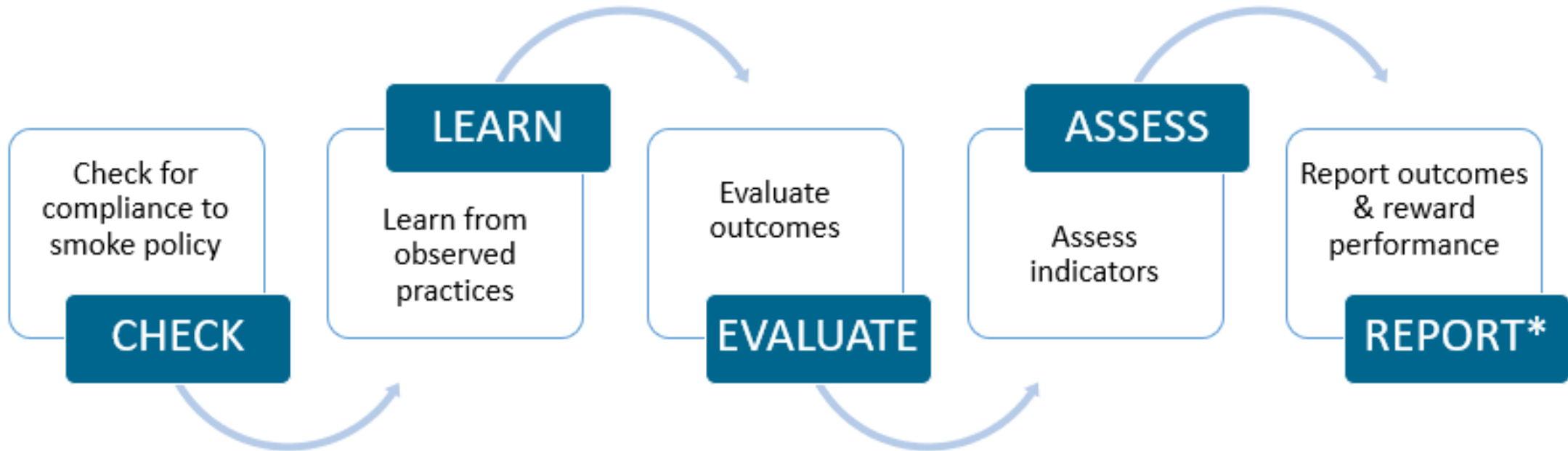
Pre-test Knowledge Assessment

Intraprofessional Educational
Modules and Quizzes

Post-test Knowledge Assessment



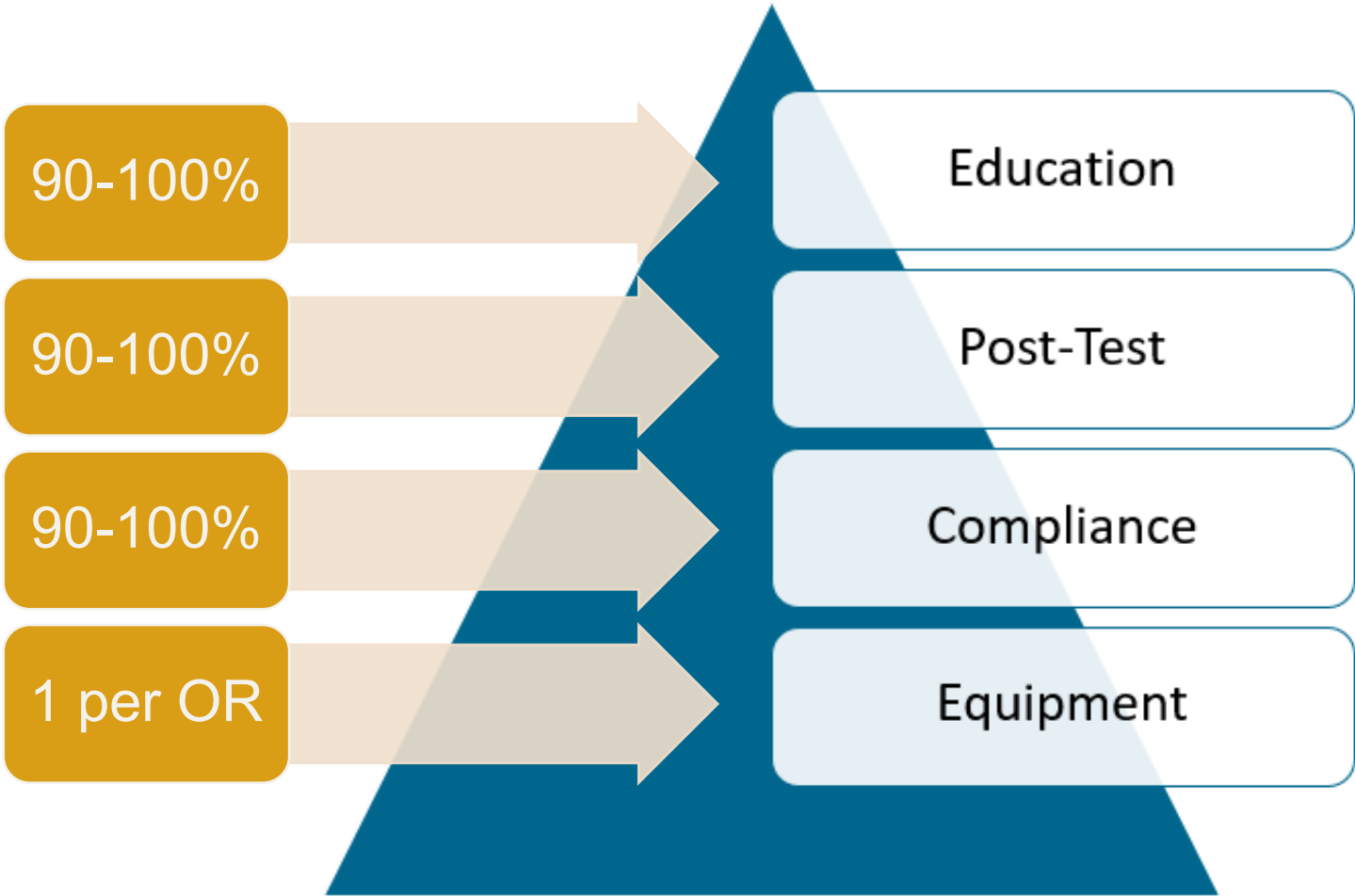
COMPLIANCE MONITORING CONDUCT A CLEAR AUDIT



**Must have three (3) months of compliance audit results before submitted for the AORN Go Clear Award*

AWARD CRITERIA

CRITICAL FACTORS



RECOGNITION RECOGNIZING FACILITIES FOR THEIR COMMITMENT



AWARD PLAQUE | AORN WEBSITE | AORN EXPO | MEDIA KIT

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GO CLEAR AWARD™

Surgical Smoke-Free Recognition Program

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Thank you!

Questions?

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Compliance & Operations > Safety > Nursing Safety: Surgical Smoke

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NURSING SAFETY: SURGICAL SMOKE

OVERVIEW

During laser or electrosurgical unit use, the thermal destruction of tissue creates a smoke byproduct, or “surgical smoke/plume”. Surgical smoke can result in respiratory irritation and has in-vitro mutagenic potential. While there are no known cases of transmission of infectious disease through surgical smoke, the potential for generating infectious viral fragments (i.e., venereal warts) exists.

Surgical smoke can:

- include carcinogenic and mutagenic cells
- include 150 hazardous chemicals (16 of which are on the EPA Priority Pollutant List!)
- include trace toxic gases
- exposes staff to biological contaminants, including aerosolized blood, potentially cancerous cells, and bacteria
- human papilloma virus (HPV) from HPV lesions and other viruses

EXPOSURE REDUCTION CONTROLS

For these reasons, the ASC should provide a surgical smoke free environment for staff. A rapidly increasing number of states have already adopted laws requiring healthcare facilities, including ASCs, to begin implementing controls to reduce or eliminate staff exposure to surgical smoke. ASCs should consider OSHA-endorsed CDC/NIOSH controls such as:

- eliminating the use of surgical smoke generating devices when possible
- using a safer alternate device, when possible

SEARCH



PATIENT SAFETY

[Patient Safety Overview](#)
[Culture of Safety](#)
[National Patient Safety Goals](#)
[Universal Protocol](#)
[Safe Surgery Checklist](#)
[Approved Abbreviations](#)
[Abuse Reporting](#)
[Safety Resources](#)

Nursing Safety: Surgical Smoke



Compliance & Operations > Policies & Procedures > Safety

Surgical Smoke

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- [Blood Transfusions](#)
- [Code Blue Response and Management](#)
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- [DVT Risk Assessment and Prevention - AAAHC](#)
- [Emergency Equipment and Supplies](#)
- [Environmental Standards and Logs](#)
- [History and Physical](#)
- [Incapacitated Healthcare Professional](#)
- [Instillation of Eye Drops and Administration of Eye Ointments](#)
- [Interfacility Transfer: Emergency](#)
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- [Laser Practice and Safety](#)
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POLICIES AND PROCEDURES

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Education > Webinars & Training > Quick Training

Surgical Smoke Evacuation

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QUICK TRAINING: ASC EMPLOYEE EDUCATION

When the topic doesn't warrant a full course or inservice but you do need to document that an employee received training.

Email courtney.leonis@vmghealth.com to propose future Quick Train topics.

COMING SOON

- Fall Prevention
- Self Harm

QUICK TRAINING DOWNLOADS

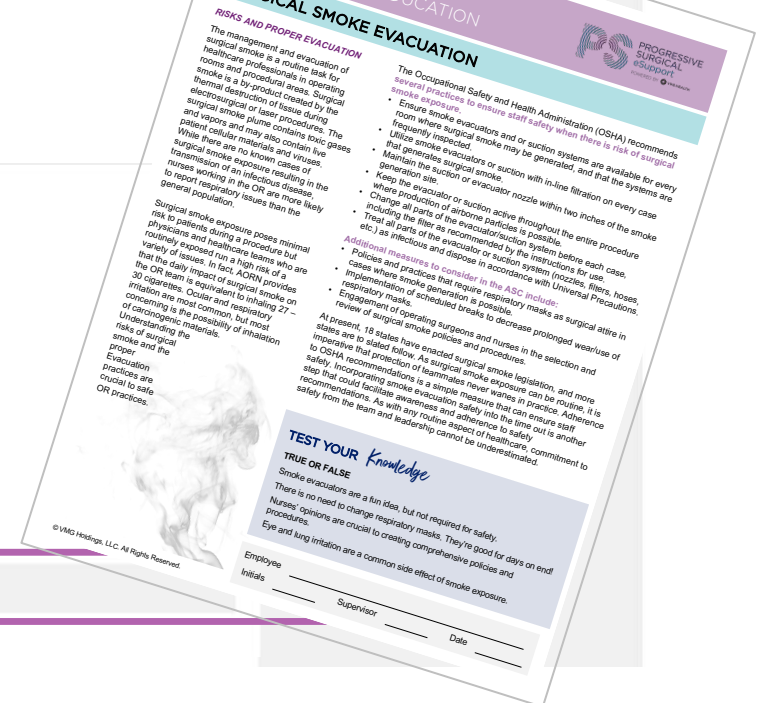
- + CONFLICT RESOLUTION
- + OPHTHALMIC LASER LENS HIGH-LEVEL DISINFECTION
- + PAIN MANAGEMENT
- + PATIENT POSITIONING IN THE OR
- + POINT OF USE CLEANING
- + SITE MARKING AND TIME OUT
- + SURGICAL SMOKE EVACUATION

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QUICK TRAINING ASC EMPLOYEE EDUCATION SURGICAL SMOKE EVACUATION





PROGRESSIVE
SURGICAL
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ASC nurse leaders who want
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and profitable ASC **with confidence.**



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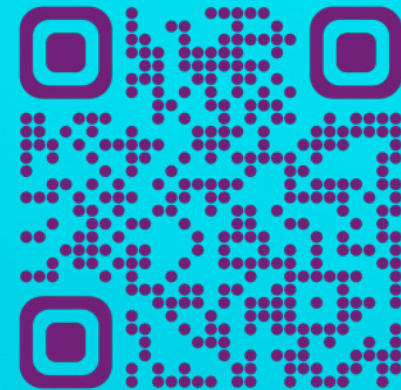
RUNNING AN ASC CAN BE OVERWHELMING





Join our *Private* Facebook Group

A place to **connect, support,**
and **network** with other ASC
managers all over the country.



Upcoming Webinars

DATE	🕒	CE	WEBINAR TOPIC	SPEAKER
APR 25	60	RN, CASC	Navigating Patient Complaints and Grievances: Enhancing Your QAPI Program	Debra Stinchcomb MBA, BSN, RN, CASC <i>VMG Health</i>
MAY 19	20		Before the OR: Presurgical & Preadesthesia Assessments	Apryl McElheny MBA, MSN, RN, CASC, CIC <i>VMG Health</i>
JUN 27	60	RN, CASC	Ensuring Staff Safety: A Comprehensive Guide to ASC Employee Health Programs and Infection Control	Vanessa Sindell, MSN, BSN, RN, CAIP <i>VMG Health</i>





2025 WEBINAR CALENDAR

