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EC News

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Joint Commission News

APPLICABLE PROGRAM: RHC

Physical Environment Requirements for Rural Health Clinics (RHCs) Included in New Accreditation Program

To deliver safe, high-quality care, RHCs must meet specific Environment of Care (EC) standards, as well as other requirements



More than 60 million Americans—approximately one-fifth of the US population—live in rural areas, according to the US Government Accountability Office (GAO). On average, people living in rural communities have worse healthcare quality and health outcomes than individuals living in more populated urban areas. Federally certified rural health clinics (RHCs) are instrumental in providing access to care for individuals who reside in rural communities.

Effective July 1, 2024, The Joint Commission launched a separate Rural Health Clinic Accreditation program that is distinct from the broader Ambulatory Care Accreditation Program. To become accredited, RHCs must comply with the following Environment of Care (EC) standards and elements of performance (EPs), as well as requirements from the other chapters in the *Comprehensive Accreditation Manual for Rural Health Clinics* (or its E-dition® counterpart). These requirements take into consideration RHCs' more limited financial and staffing resources while ensuring that rural clinics can care for patients in a safe, sanitary,

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and secure environment with appropriately maintained equipment. Note that only the EPs applicable to RHCs are included in the new EC standards.

"Compliance with these EPs demonstrates that the RHC has developed a solid administrative construct for managing the physical environment," says Herman McKenzie, MBA, CHSP, Physical Environment Director for The Joint Commission's Standards Interpretation Group.

- **Standard EC.01.01.01:** The rural health clinic plans activities to minimize risks in the environment of care. The rural health clinic has a written plan for managing the following:
  - **EP 4:** The environmental safety of everyone who enters the rural health clinic's facilities.
  - **EP 5:** The security of everyone who enters the rural health clinic's facilities.
  - **EP 6:** Hazardous materials and waste.
  - **EP 7:** Fire safety.
  - **EP 11:** The rural health clinic has a preventive maintenance program to make certain that all essential mechanical, electrical, and patient-care equipment is maintained in safe operating condition.

- **Standard EC.02.03.03:** The rural health clinic conducts fire drills.
  - **EP 2:** The rural health clinic conducts fire drills every 12 months from the date of the last drill in each area in which care, treatment, or services are provided. Fire drills are documented.

  Note 1: *In leased or rented facilities, drills need be conducted only in areas of the building that the rural health clinic occupies.*

  Note 2: *In sites that are used on average 70 hours or less per month, the rural health clinic may choose either to review the fire response plan or to conduct a fire drill every 12 months.*

- **EC.02.03.05:** The rural health clinic maintains fire safety equipment and fire safety building features.
  - **EP 5:** Every 12 months the rural health clinic tests fire alarm equipment and/or processes for notifying off-site fire responders. The results and completion dates are documented.
  - **EP 15:** At least monthly, the rural health clinic inspects portable fire extinguishers. The results and completion dates are documented.

  Note 1: *There are many ways to document the inspections, such as using bar-coding equipment, using check marks on a tag, or using an inventory.*

  Note 2: *Inspections involve a visual check to determine that the correct type of fire extinguisher is present and that there is clear and unobstructed access to a fire extinguisher, in addition to a check for broken parts and full charge.*

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Note 3: *For additional guidance on inspection of fire extinguishers, see NFPA 10-2010: 7.2.2; 7.2.4.*

- **Standard EC.02.04.01:** The rural health clinic manages medical equipment risks.
  - **EP 2:** The rural health clinic maintains either a written inventory of all medical equipment or a written inventory of selected equipment categorized by physical risk associated with use (including all life-support equipment) and equipment incident history. The rural health clinic evaluates new types of equipment before initial use to determine whether they should be included in the inventory.
  - **EP 3:** The rural health clinic identifies the activities and frequencies for maintaining, inspecting, and testing all medical equipment on the inventory. Various maintenance strategies may be used to ensure reliable performance (for example, predictive maintenance, reliability-centered maintenance, interval-based inspections, corrective maintenance, or metered maintenance). Defined intervals may be based on criteria such as manufacturers' recommendations, risk levels, and current rural health clinic experience.
- **Standard EC.02.04.03:** The rural health clinic inspects, tests, and maintains medical equipment.
  - **EP 1:** Before initial use of medical equipment on the medical equipment inventory, the rural health clinic performs safety, operational, and functional checks.
  - **EP 3:** The rural health clinic inspects, tests, and maintains non-high-risk equipment identified on the medical equipment inventory. These activities are documented.
- **Standard EC.02.06.01:** The rural health clinic establishes and maintains a safe, sanitary, and functional environment.
  - **EP 48:** The rural health clinic is constructed, arranged, and maintained in such a manner that patients are safe and have access to the clinic, and there is adequate space for the provision of direct services.
  - **EP 49:** The rural health clinic has a preventive maintenance program to make certain that the premises are clean and orderly.

"These new EPs to Standard EC.02.06.01 address the same concepts as The Joint Commission's legacy EC requirements, but they have been adapted to reflect the uniqueness of a rural health clinic and its surroundings," says McKenzie, explaining the addition of EPs 48 and 49, which are not found in other accreditation programs.

Learn more about the Rural Health Clinic Accreditation Program here. For information on other standards and EPs in this accreditation program, see the E-dition®.

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Joint Commission News

APPLICABLE PROGRAM: BHC

New and Revised Workplace Violence Prevention Requirements Take Effect for BHC Organizations

Effective July 1, added and updated standards and elements of performance for behavioral health care and human services (BHC) organizations are designed to provide a framework for the development of effective prevention strategies



On July 1, new and revised workplace violence prevention requirements become effective for behavioral health care and human services (BHC) organizations. Affecting the "Environment of Care" (EC), "Human Resources Management" (HRM), and "Leadership" (LD) chapters of the *Comprehensive Accreditation Manual for Behavioral Health Care and Human Services* (CAMBHC), or its E-dition® counterpart, the added and updated standards and elements of performance (EPs) are similar to those that took effect for hospitals and critical access hospitals on January 1, 2022.

Posted online as Prepublication Requirements, the EPs address the following:

- The expectations for leadership oversight
- Worksite analysis processes

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- Policies and procedures for the prevention of workplace violence
- Reporting systems, data collection, and analysis
- Implementation of post-incident strategies
- Education to decrease workplace violence

What's new

Specifically, the following requirements have been added or revised:

- **EC.02.01.01, EP 17:** The organization conducts an annual worksite analysis related to its workplace violence prevention program. The organization takes actions to mitigate or resolve the workplace violence safety and security risks based upon findings from the analysis.

  Note: *A worksite analysis includes a proactive analysis of the worksite, an investigation of the organization's workplace violence incidents, and an analysis of how the program's policies and procedures, training, education, and environmental design reflect best practices and conform to applicable laws and regulations.*

- **EC.04.01.01, EP 1:** The organization develops and implements a process(es) for continually monitoring, internally reporting, and investigating the following [only the bullet point related to workplace violence is included here]:

  - Safety and security incidents involving individuals served, staff, or others in locations it controls, including those related to workplace violence

  Note 1: *All the incidents and issues listed above may be reported to staff in quality assessment, improvement, or other functions, as well as to the designated leader of the workplace violence reduction effort. A summary of such incidents may also be shared with the person designated to coordinate safety management activities.*

  Note 2: *Review of incident reports often requires that legal processes be followed to preserve confidentiality. Opportunities to improve care, treatment, or services, or to prevent similar incidents, are not lost as a result of following the legal process.*

- **LD.03.01.01, EP 9:** The organization has a workplace violence prevention program led by a designated individual and developed by a multidisciplinary team that includes the following:

  - Policies and procedures to prevent and respond to workplace violence
  - A process to report incidents and to analyze incidents and trends
  - A process for follow-up and support for victims and witnesses affected by workplace violence, including trauma and psychological counseling, if necessary
  - Reporting of workplace violence incidents to governance

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- **HRM.01.05.01, EP 17:** As part of its workplace violence prevention program, the organization provides training, education, and resources (at time of hire, annually, and whenever changes occur regarding the workplace violence prevention program) to leaders, staff, and licensed practitioners. The organization determines what aspects of training are appropriate for individuals based on their roles and responsibilities. The training, education, and resources address prevention, recognition, response, and reporting of workplace violence as follows:
  - What constitutes workplace violence
  - Education on the roles and responsibilities of leadership, clinical staff, security personnel, and external law enforcement
  - Training in de-escalation, nonphysical intervention skills, physical intervention techniques, and response to emergency incidents
  - The reporting process for workplace violence incidents

These new and revised requirements are included in the July 1, 2024 E-dition® update to the CAMBHC. If you have questions about the workplace violence prevention requirements, contact The Joint Commission's Department of Standards and Survey Methods.

Additional resources

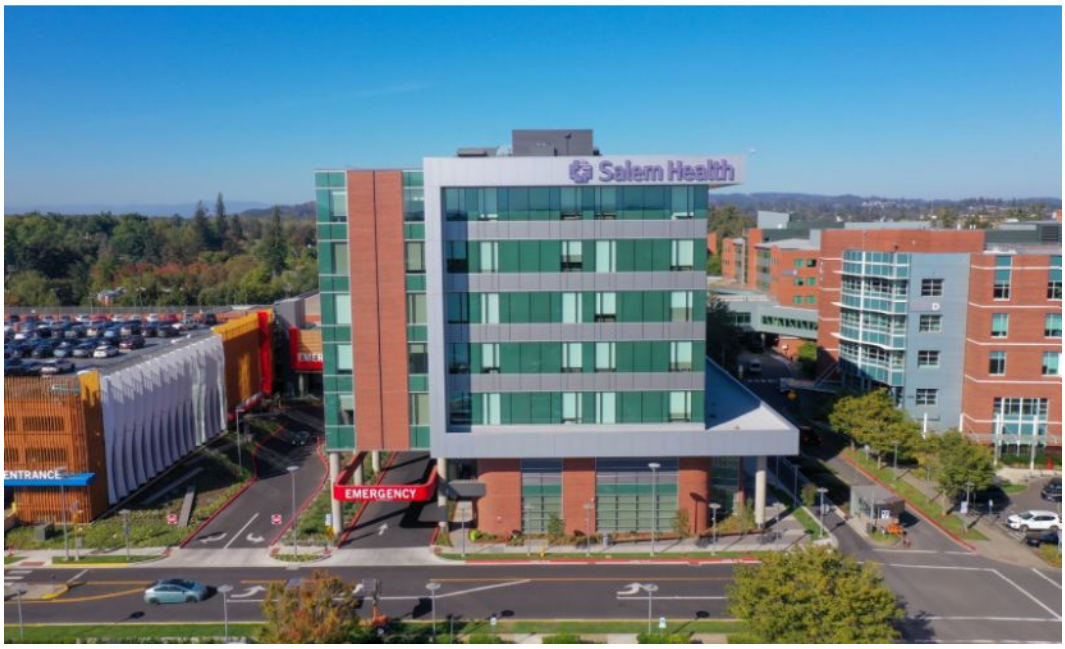
Joint Commission Resources has developed the Sample Environmental Risks for Workplace Violence Assessment Checklist, the use of which is not required by The Joint Commission. This risk assessment tool was originally published in *Environment of Care Risk Assessment*, 4th edition. More information on preventing workplace violence in healthcare can be accessed via the Workplace Violence Prevention Compendium of Resources on JointCommission.org. EC

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Case Study: Workplace Violence Prevention

A Strategic Approach to Combating Workplace Violence

Salem Health's Harmful Words and Actions program has established a commitment to safety, respect, and the transformation of workplace culture



Licensed for 644 acute care beds, Salem Hospital in Salem, Oregon, is the flagship facility of Salem Health, which operates two hospitals and many clinics in Oregon's Mid–Willamette Valley. PHOTO COURTESY OF SALEM HEALTH

"It is my commitment to you that unacceptable behavior will be addressed in a timely manner, and individuals responsible for this behavior will be held accountable," emphasized Cheryl Nester Wolfe, RN, MSN, NEA-BC, president and CEO of Salem Health Hospitals and Clinics, a health system based in Salem, Oregon, when introducing the organization's Harmful Words and Actions (HWA) initiative in February 2023.

Designed for Salem Health's nearly 6,000 staff members, the HWA initiative is a highly structured, interactive program that aims to reduce abusive behaviors and violence in the workplace. It does this through a strategically crafted system of prevention, reporting, and resolution.

"Our employees and providers deserve to be treated with respect and dignity, just as we treat patients," Wolfe says. "The acceptance of bad conduct and disrespect must be excised from our thinking and replaced with action. 'Just part of the job' is no more, no longer."

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Escalation drove examination

> **Our employees and providers deserve to be treated with respect and dignity, just as we treat patients.**
>
> **—Cheryl Nester Wolfe, RN, MSN, NEA-NC, president and CEO, Salem Health**



Salem Health's workplace violence prevention program was born of a 38% increase in reported patient-to-staff combative incidents from 2021 through the first half of 2022. In June of that year, Arthur Apodaca, Employee Safety Program manager at Salem Health, and his team began crafting a strategy to address this untenable and, sadly, all-too-common status quo.

"This escalation was not a new trend. It had been steadily increasing over the years, and the COVID-19 pandemic heightened the level of violence and harm experienced by healthcare workers," Apodaca says. "We recognized the need for a different approach and made a commitment to take actionable and innovative steps to break the cycle."

A system gap analysis in July 2022 focused on input from leaders and frontline staff, collecting feedback through various communication channels, including town hall meetings and comments gathered during rounds and via email. "The analysis identified trends in verbal assaults, as well as discourteous and disrespectful behaviors that were not understood or addressed because they simply weren't being reported," Apodaca explains. "Obviously, without a robust reporting system, reports could not help but be few and far between."

Assess to address

Most crucially, support from the top, including from Wolfe and the other members of the organization's executive team, came immediately. Apodaca developed the initiative based on Lean principles—focusing on efficiency with minimal waste, errors, and delays, and an emphasis on quality and consistency to create genuinely meaningful impact. The initiative engaged leadership teams, from executives to directors, managers, and frontline staff, to ensure alignment with those principles.

"It really helped us map out and create workflows in the system for employees who encounter workplace violence," Apodaca says. Goals of the initiative included understanding barriers to reporting, particularly among medical staff, and understanding and overcoming these obstacles within the organization. Salem Health began testing policy and procedural processes and implementing various tactics and strategies in November 2022. An early step addressed one of the more profound findings of the analysis.

"In the process of identifying and addressing harmful behavior as it occurs, we discovered that while some staff members felt empowered to address [these behaviors], others did not," Apodaca says. "So, we took proactive measures to support those people and give them the necessary tools and resources to speak up and expect support."

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Prevention and reaction

During the initial launch of the program, all the leadership teams completed in-person education and training that focused on understanding the nature and impact of *harmful words and actions*, as well as HWA prevention and mitigation strategies, and emphasized leaders' roles in supporting staff. This training covered scenarios, harm categorization, immediate responses, and follow-up actions. New leaders in the organization also receive in-person HWA training as part of their orientation.

For the organizationwide HWA education for all staff, Salem Health used an interactive training module that walks staff members through the process of recognizing disrespectful and disruptive behaviors, responding to incidents, and reporting them. The situations described include threats of violence, verbal and physical abuse, discrimination, and intimidation, both from patients or their loved ones directed toward staff and staff-on-staff incidents of abuse, which occur much less frequently.

The training module features case studies involving disrespectful coworkers as well as verbally abusive, threatening, and even violent patients and visitors. Each scenario includes not only the processes of reacting, reporting, and resolving those situations, but also the prevailing message: As much as possible, strive to prevent those situations in the first place.

An emphasis on de-escalation reminds employees to recognize their own triggers and maintain open communication with leadership. The training includes how to request help and tips on managing potential negative encounters with words and practices that address comfort, safety, uncertainty, empathy, and respect.

Response and communication

The most visible tactic of the Salem Health initiative is HWA "Alert" signs, which are prominently displayed for staff members to see before entering a room or responding to patient requests. These signs warn of possibly erratic patient behavior, so that staff can approach encounters with caution. The "Alert" signs are particularly aimed at frontline employees who do not have access to medical records and, therefore, have no other way of being forewarned about such risks.



An "Alert" sign is placed on a room door to warn staff of potentially challenging behaviors. PHOTO COURTESY OF SALEM HEALTH

In addition, Salem Health displays signs reminding patients and visitors of behavioral expectations such as treating people with respect, being kind, and refraining from taking photos or videos.

"We also focused on meticulously mapping out workflows and establishing

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a systematic approach," Apodaca says. "This ensures that if an employee encounters a workplace violence event, the individual is equipped with clear steps, from reporting the incident to having assurance that a leader will follow up within 24 hours."

It was a challenging task to establish a robust reporting and support system for thousands of employees. The core responsibilities around monitoring the HWA program fall to Apodaca's team, which triages, reviews, and validates all reports, and then ensures that the relevant supervisors and leaders are informed about incidents within their purview. Then they recommend strategies to address those incidents, document trends, and determine both immediate and long-term tactics to effectively manage these ongoing challenges.

"A lot of what we do is communicate, interpret, and analyze the data and engage everyone, rather than placing all the responsibility on the security team," Apodaca says. "There are only so many people who can provide support. So, to best allocate those resources, we work closely with staff management and the resiliency team, which is something that's unique to Salem Health."



Signs like this remind patients and their loved ones of Salem Health's behavioral expectations.

PHOTO COURTESY OF SALEM HEALTH

Word of Salem Health's success in managing workplace violence has spread among peers within the healthcare facility safety and security communities. At a recent healthcare security event, Apodaca fielded inquiries from other program managers about the HWA initiative's development, including follow-up practices and advocacy from within the Salem Health organization.

"Many organizations are wholly dependent on their leadership, whereas we have teams of people dedicated to providing real-time support and meaningful follow-up, conversation, and solutions," Apodaca says.

On track with results

Before the implementation of the HWA program, incidents of verbal and physical threats and abuse were significantly underreported, Apodaca notes. Therefore, the substantial increase in the number of reported incidents is a salient sign of success. In 2023, the HWA program received more than 1,700 incident reports, compared to about 10% of that number the year before.

In implementing the HWA initiative, Salem Health enhanced its existing online reporting systems. Before system modifications, it took staff more than 15 minutes

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on average to complete a report, which was a barrier to submission. Now the average time is 2–3 minutes.

> **A lot of what we do is communicate, interpret, and analyze the data and engage everyone, rather than placing all the responsibility on the security team.**
>
> **—Arthur Apodaca**



One strength of the initiative is that it evolves holistically as needed. The team has created an impact risk matrix based on real-time data that is cross-referenced with job titles. That information is used to quickly determine where incidents occur, who is affected, and what tactics are best deployed to create more focused training for specific employees based on their experiences.

"We want to make sure that training remains in alignment. And while there is a lot we can do to proactively mitigate harm in high-risk areas, we also have to remember that moderate- and low-risk areas experience harm, too," Apodaca says. "That helps provide meaningful and actionable support to everyone impacted. But the system is only as reliable as the people who make up that system. For us, it's incredibly important that our leaders are very engaged."

Besides the increased reporting, effective response tactics, and de-escalated encounters, one achievement stands above all for Salem Health: compliance.

"We've had over 95% compliance this fiscal year alone, and we're able to track and show that the tools are being utilized," says Apodaca. "And the most satisfying thing we hear from staff is that they feel supported, respected, heard, and valued."

Enhancing Salem Health's Security Measures

Besides implementing Harmful Words and Actions (HWA) training for leadership and staff, Salem Health hired 17 additional officers to enhance security presence and support around the Salem Hospital campus. The organization also increased administrative support, adding a compliance analyst to conduct threat assessments, security risk assessments, and "Alert" follow-ups.



Nine entry points on the campus of Salem Hospital now have a weapons detection system like the one shown. Each is staffed with a security screener. PHOTO COURTESY OF SALEM HEALTH

In addition, weapons detection systems were installed at nine entry points on the Salem Hospital campus, each staffed with a security screener, as well as at 10 additional entry points across the health system.

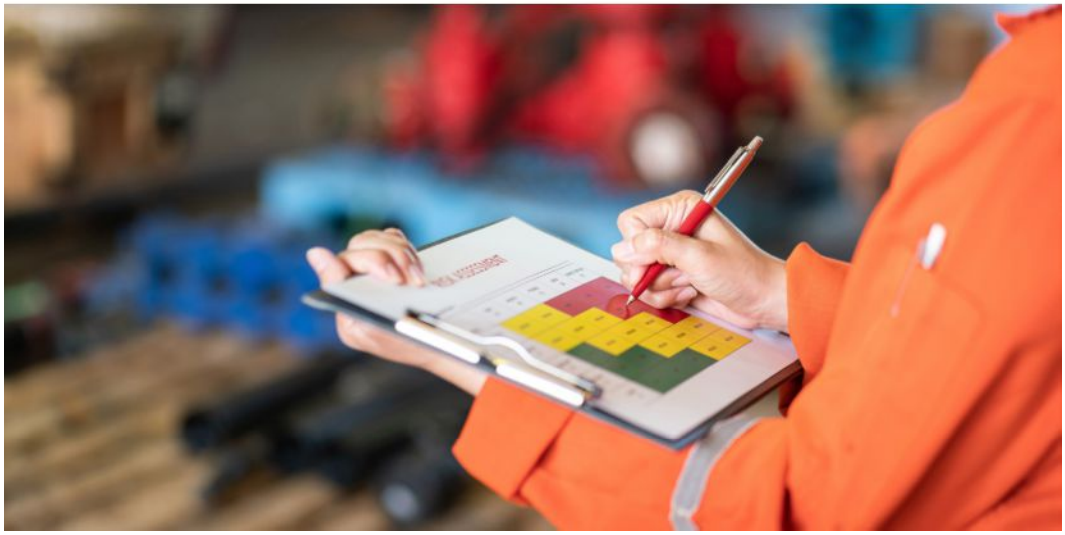
Salem Health, moreover, has developed a strong relationship with the Salem Police Department (PD). The health system meets monthly with a Salem PD lieutenant to discuss current trends, recent events, process changes, and any other concerns. This alliance allows the Salem Health Security Department and the Salem PD to stay connected and partner on how best to serve the community and each other.

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Applicable Programs: All

Identifying and Assessing Safety and Security Risks

Assemble a team, gather risk data, and select risk assessment tools to meet your organization's needs



All types of Joint Commission–accredited healthcare organizations (HCOs) must identify and evaluate safety and security risks in the physical environment that could affect patients, staff, or visitors, as required by Environment of Care (EC) Standard EC.02.01.01, Element of Performance (EP) 1. To comply with this requirement, HCOs can conduct separate risk assessments for general safety and security or combine these evaluations into a single document or tool.

Keep in mind that The Joint Commission also requires more focused, setting-specific risk assessments such as those to evaluate surgical fire risks or assess the environmental risks for suicide. Such assessments require separate documentation.

The Joint Commission makes the following distinctions between the terms *safety* and *security*. Safety incidents arise from the physical environment itself, from performance of everyday tasks in that environment, and from conditions that affect the environment. A safe environment protects people from harm. Safety incidents most often are accidental such as someone tripping due to frayed carpeting or slipping on an icy sidewalk outside the healthcare facility.

In contrast, security incidents usually are intentional such as theft of narcotics from the pharmacy or infant abduction. Security incidents are the result of actions by individuals, either internal to the organization (staff or patients, for example) or external (such as visitors or community members). A secure environment protects both people and property from harm or loss.

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As EC.01.01.01 requires, your organization's leadership must identify the individuals who will identify and manage safety and security risks in the healthcare physical environment. These individuals will likely come from a variety of departments, including facilities management, safety, security, information technology (IT), infection prevention and control, nursing, and risk management or quality assurance. A multidisciplinary team that brings together multiple perspectives on issues ensures the most comprehensive safety and security risk assessments.

Gathering risk data

To identify safety and security risks in the healthcare physical environment, safety and security managers and environment of care committees should review data to get a big picture of what is occurring in their organization and where potential risks are located. Common data sources for identifying safety and security risks include the following:

- **Environmental tours and rounds.** Recommended but not required by The Joint Commission, *environmental tours* are routine comprehensive facility tours to evaluate physical environment conditions such as complying with the requirement that nothing can rest on sprinkler pipes above the ceiling or ensuring that any security cameras outdoors on campus grounds are functioning. *Environmental rounds* are daily walk-throughs of areas in which staff look for basic issues that can be corrected immediately, such as a wheeled cart in front of medical gas shutoff valves or a propped-open fire door.
- **Job hazard analyses.** The Occupational Safety and Health Administration (OSHA) requires a job hazard analysis of each position to determine the need for personal protective equipment (PPE) for staff in particular roles. High-hazard jobs could pose a threat to anyone nearby and should be addressed in a safety risk assessment.
- **Annual worksite analysis.** The Joint Commission requires each hospital, critical access hospital, and behavioral healthcare and human services organization to conduct an annual worksite analysis related to workplace violence prevention.
- **Incident reports.** HCOs must keep track of all safety and security incidents such as falls, hazardous chemical spills, theft of supplies, and acts of workplace violence or verbal threats, as well as mitigation and abatement activities.
- **Patient satisfaction data.** Patient satisfaction surveys should address—or allow patients to proactively comment on—safety and security issues such as a nurse call cord out of reach or a parking lot that is not lit at night.
- **Trending safety risks.** Risks identified by reputable external sources such as The Joint Commission through its *Sentinel Event Alerts*, by government sources such as OSHA or the National Institute for Occupational Safety and Health (NIOSH), or by safety-focused healthcare societies such as ECRI may merit special consideration.

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- **Results of any root cause analyses (RCAs).** Root cause analyses should be performed for stained ceiling tiles, leaks, and other environmental issues for which the reasons are not obvious.
- **Performance improvement (PI) data.** Were the results of any recent safety- or security-related PI projects disappointing? This data should inform subsequent risk assessments.
- **Infection prevention and control data.** Are health care–associated infections (HAI) on the rise in your organization? If caused by physical environment problems such as inadequate water management or poor air quality, be sure to address these issues in the safety risk assessment.
- **Interviews with department heads.** It is important to proactively interview department heads to gather their safety- and security-related concerns rather than just reviewing incident reports. Such interviews could take place during environments rounds (described above). This helps prevent accidents from occurring.
- **Staff feedback and complaints.** Don't forget to review any staff surveys or formally lodged complaints of unsafe conditions or practices.

Evaluating risks

The Joint Commission doesn't require specific tools for safety or security risk assessments, but JCR has developed a Sample General Safety Risk Assessment and a Sample General Security Risk Assessment you can use for guidance. These tools should be customized to the needs of your organization.

The provided safety risk assessment tool includes sections on lighting, hallways and floors/carpets, walls and ceilings, elevators, worker safety, hazardous materials and radiation exposure, sharps and waste management, burns, noise and vibration, smoking, and grounds and outdoor areas. The provided security risk assessment tool is divided into sections related to risks posed by people, security equipment issues, information vulnerability, and building access factors. Feel free to add items to these risk assessments and to organize them differently.

The hallmark of any risk assessment is a scoring mechanism that takes into account the likelihood of occurrence, the potential scope or extent of the harm that would be caused, and the potential severity of the impact. The provided sample tools consist of series of yes-no questions for which "yes" means zero risk. Any "no" responses are risks to be scored based on their likelihood, scope, and impact/severity (column headings in the tools). The proposed scoring methodology assigns a value of 1 to 5 for each identified risk in each of the three assessment columns. A score of 15, for example, would indicate a highest-hazard situation, while a score of 3 would indicate a lowest-level limited risk.

The Joint Commission requires accredited organizations to take action to mitigate identified risks. Safety and security risk assessments enable organizations to prioritize risks so that the most hazardous situations can be addressed first. EC

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Sustainable Healthcare

Combined Heat and Power (CHP) Considerations

By capturing waste heat and converting it into useful thermal energy, CHP systems offer opportunities for cost savings and reduced greenhouse gas emissions

Combined heat and power (CHP) remains an underutilized technology that can significantly reduce greenhouse gas emissions and increase energy efficiency and resilience, emphasizes the US Department of Energy (DOE), which is encouraging large institutions such as hospitals to consider CHP adoption. Currently, more than 200 hospitals in over 30 states use CHP systems, according to the US Environmental Protection Agency (EPA).

The Joint Commission champions environmental sustainability through its Sustainable Healthcare Certification program but does not have a specific position on *combined heat and power*, defined by the DOE as "the concurrent production of electricity or mechanical power and useful thermal energy (heating and/or cooling) from a single source of energy." In CHP systems, power is generated at or near the point of consumption; such distributed generation enhances efficiency and reliability.

In the conventional practice of generating power and heat separately, nearly two-thirds of the energy is wasted—"discharged to the atmosphere as heat during generation, transmission, and distribution," states the EPA on its website. By capturing and using heat that would otherwise be wasted and by avoiding distribution losses, combined heat and power can achieve efficiencies of more than 80%, compared to 50% for typical technologies (such as grid-provided electricity and on-site boilers).

According to the report *Powering the Future of Healthcare—Operational and Financial Resilience: A Combined Heat and Power Guide for Massachusetts Hospital Decision Makers*, CHP systems offer the following key advantages:

- Reduced grid power purchases
- Avoidance of utility peak demand charges
- Better emergency preparedness due to off-grid operations capability
- Substantially reduced greenhouse gas emissions

Long-standing concept

The CHP concept may seem modern, but it actually debuted more than 140 years ago. In 1882, Thomas Edison's Pearl Street Station, the first commercial power plant in the United States, used an integrated CHP system to provide both electricity and steam to part of downtown New York, according to the DOE. However,

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CHP systems fell out of favor during the first half of the 20th century, given the rapid expansion of electrical power throughout the United States and the need for much larger central power plants. The relocation of central power plants from cities to rural areas meant that their waste heat would be less useful as a thermal energy source for other applications.

In the second half of the 20th century, however, the 1970s energy crisis spurred interest in energy conservation and alternative sources of energy. The passage of the Public Utility Regulatory Policies Act of 1978 (PURPA) and the Energy Policy Act of 1992 led to renewed consideration of CHP technologies and an expansion of installed CHP capacity from 12,000 megawatts in 1980 to more than 66,000 megawatts in 2000.

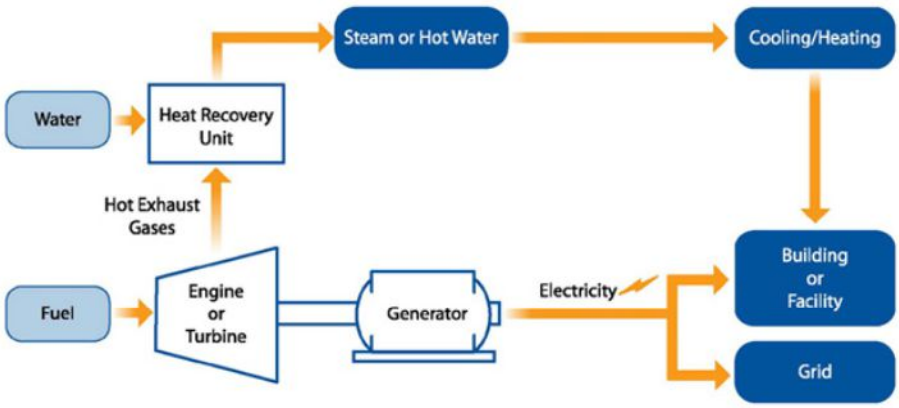
Although the main users of CHP systems remain energy-intensive industries (such as the chemical, petroleum, paper, and steel sectors), hospitals, universities, and other large institutions with nearly 24/7 heat-load requirements have become the fastest-growing CHP market globally in the past several years, points out Advanced Energy United, an educational and advocacy association.

Common CHP systems, configurations

As the DOE explains, CHP systems are characterized by the type of prime mover (the initial source of motive power)—whether a reciprocating engine, combustion or gas turbine, steam turbine, micro-turbine, or fuel cell—and the type of fuel used. Natural gas is the most common fuel used in CHP systems, but renewable fuels such as biogas (landfill or digester gas, for example) and wood waste can be used to further improve the favorable environmental impact of combined heat and power. Especially environmentally friendly due to their minimal or no emissions, fuel cells use an electrochemical process to convert hydrogen into electricity and water; the hydrogen can be produced through a variety of reforming processes. For boiler/steam turbine CHP systems, low-cost sustainable fuels such as biomass or process waste are among the options.

Every CHP system involves the recovery of heat that would otherwise be wasted and conversion of that heat into useful thermal energy. The two most common CHP system configurations are shown in Figures 1 and 2:

Figure 1. Combustion Turbine or Reciprocating Engine with Heat Recovery Unit

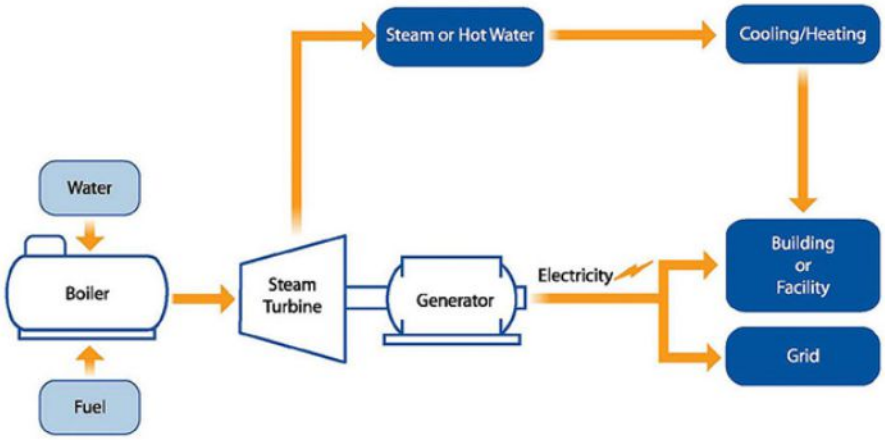


Source: US Environmental Protection Agency. What Is CHP?

Reciprocating engine or combustion turbine CHP systems burn fuel (natural gas, oil, or biogas) to turn generators to produce electricity and use heat recovery devices to capture the heat from the turbine or engine. This heat is converted into useful thermal energy, usually in the form of steam or hot water.

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Figure 2. Steam Boiler with Steam Turbine



Source: US Environmental Protection Agency. What Is CHP?
With a steam turbine CHP system, steam produced in a boiler turns a turbine to run a generator to produce electricity. The steam leaving the turbine provides useful thermal energy. A variety of fuels can be used for this type of system such as natural gas, biomass, or oil.

Taking stock

Given the complexity of CHP systems, the multiplicity of choices, and the upfront capital investment, the EPA recommends that HCOs ask themselves the following questions to assess whether any of their hospitals would be good candidates for combined heat and power:

- Does the hospital pay more than 10 cents per kilowatt hour on average for electricity (including generation, transmission, and distribution)?
- Are hospital administrators concerned about the impact of current or future energy costs on the hospital's financial health?
- Are there concerns about the reliability of the hospital's energy supply?
- Does the hospital operate for more than 5,000 hours per year?
- Does the hospital use thermal energy in the form of steam, hot water, or chilled water year- round?
- Does the hospital expect to replace, upgrade, or retrofit central plant equipment in the next three to five years?
- Is the hospital planning a facility expansion or new construction project in the next three to five years?
- Has the hospital already implemented energy efficiency measures but still has high energy costs?
- Does the hospital have sustainability or emission reduction goals?

Each "yes" answer adds to reasons to consider CHP technologies, according to the EPA.

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Resources

On their websites, both the DOE and the EPA provide considerable information on combined heat and power, some of it overlapping. A good place for HCOs to start gaining an understanding of the technology is "CHP for Hospitals: Superior Energy for Superior Patient Care" on the EPA's site. This page has links to other useful articles, tools, and one-page case studies of hospitals that have been using CHP technologies for years.

Another useful page on the EPA's site is CHP Documents and Tools, which provides links to FAQs, a CHP screening tool, a CHP energy and emissions savings calculator, a catalog of CHP technologies, and many other resources.

The Joint Commission's online Sustainable Healthcare Resource Center has a link to *Advanced Energy Retrofit Guide—Practical Ways to Improve Energy Performance: Healthcare Facilities*, prepared by the National Renewable Energy Laboratory. More than 200 pages, this guide addresses combined heat and power along with other energy-saving technologies. EC

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Environment of Care Q&A

A newly updated Joint Commission FAQ clarifies ventilation requirements for bronchoscopy procedure rooms



Q. What are the ventilation requirements for bronchoscopy procedure rooms?

A. The Joint Commission references the 2012 edition of the National Fire Protection Association (NFPA) *Health Care Facilities Code* (NFPA 99-2012), which requires compliance with the 2008 edition of ANSI/ASHRAE/ASHE 170 *Ventilation of Health Care Facilities* (ASHRAE 170-2008). Table 1 of ASHRAE 170-2008 states that bronchoscopy procedure rooms must be under negative pressure in relation to adjacent spaces and have 12 air changes per hour (ACH), with all room air directly exhausted outdoors.*

However, The Joint Commission acknowledges that there might be circumstances in which this isn't feasible, as a newly revised FAQ on JointCommission.org clarifies. Emphasizing that a healthcare organization (HCO) "cannot risk-assess out of a code requirement," The Joint Commission recognizes that extenuating patient-specific circumstances may arise that would preclude a bronchoscopy from being performed in a space specifically designed for that purpose. These circumstances may include but are not limited to scenarios in which patient safety concerns take precedence—for example, the need to perform the procedure immediately or the inability to move the patient safely—or the need to perform the procedure along with other critical procedures in a positive-pressure environment such as the operating room (OR).

* This applies to bronchoscopy procedure rooms built on or after the adoption of NFPA 99-2012 on July 5, 2016. There may be different requirements for bronchoscopy rooms designed and built prior to that date.

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To address these extenuating circumstances, the HCO must have an established process in place for determining the appropriateness of performing the bronchoscopy in a non-controlled environment. This process must address the patient's specific risk factors and activities designed to mitigate the risks such as using a high-efficiency particulate air (HEPA) filtration system or scheduling the patient in the OR at the end of the day. Note that The Joint Commission will cite an organization for not following its own policies or processes. EC

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- Exploring the Life Safety Chapter, August 22–23, 2024
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- Hospital CMS Update, Oakbrook Terrace, Illinois, September 11, 2024
- Behavioral Health Care and Human Services Conference (in-person only), Rosemont, Illinois, October 24–25, 2024
- Ambulatory Care Conference (in-person only), Rosemont, Illinois, November 7–8, 2024
- Environment of Care Base Camp, November 19–20, 2024
- Exploring the Life Safety Chapter, November 21–22, 2024

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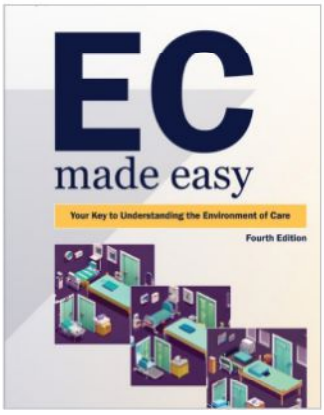
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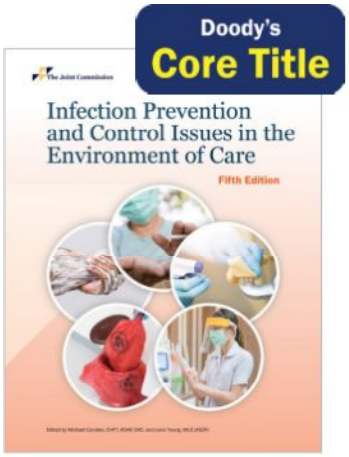


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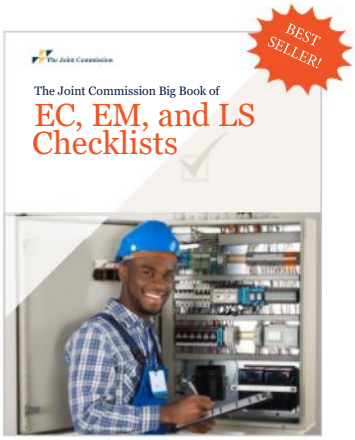


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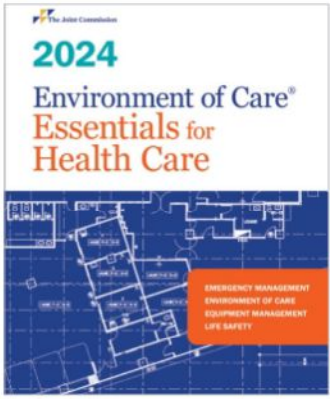
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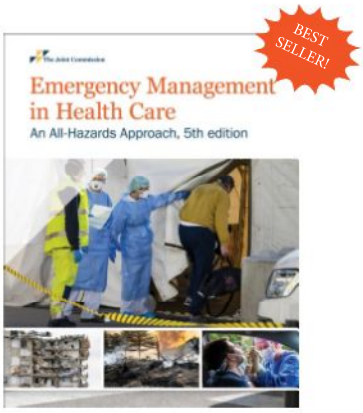
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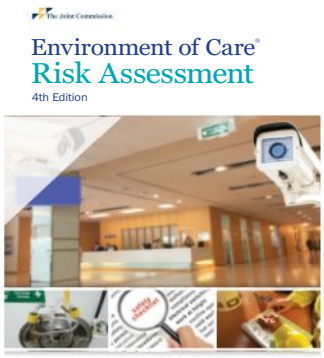
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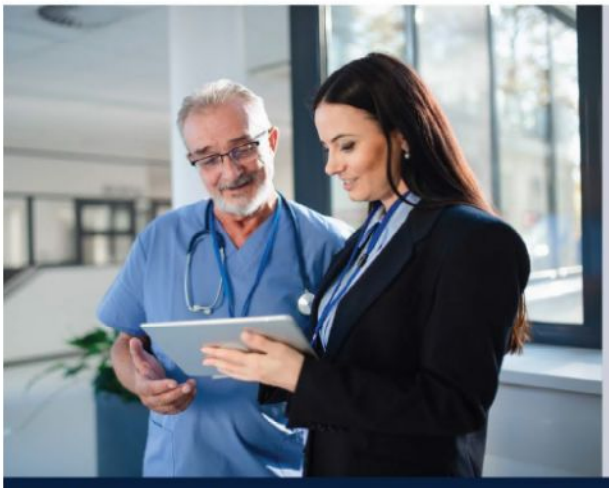
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