

CLINICAL UPDATE

Emergency Preparedness for the Occupational Health Nurse: Are You Prepared?

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Abstract: In the U.S., there are approximately 4.6 million workplace injuries that require emergency medical care. Worksite emergencies can occur at any point of the workday and employers and workers need to be prepared to manage them. Providing additional training to workers regarding potential emergencies is essential and could save lives. Teaching life-saving skills is an important part of worksite training now due to increase in violence at work and in preparation for natural and man-made disasters. The occupational health nurse (OHN), through education and skills training, can prepare the worksite for such events. While OSHA requires an emergency action plan for worksite, the OHN should provide additional training in Cardiopulmonary Resuscitation (CPR), Stop the Bleed[®], and active shooter preparedness. According to the American Heart Association, doubling the number of individuals trained in CPR would double the survival rate for cardiac arrest events inside and outside the hospital. Trauma related hemorrhages can lead to death in a matter of minutes. Stop the Bleed[®] training empowers bystanders to administer aid during a life-threatening emergency. Workplace violence has increased and being prepared with active shooter training is essential to reduce worker fatalities. These additional life-saving skills are essential to worksite emergency preparation. The OHN is in a crucial position to provide lifesaving skills to their worksite.

Keywords: emergency preparedness, occupational injury, occupational safety and health administration, first responders, occupational health nursing practice, bleeding control

Workplace safety remains a critical concern as annually, approximately 4.6 million workers across the United States (U.S.) sustain injuries that require some type of emergency medical care (National Safety Council [NSC], 2024).

In 2022, 5,486 worker fatalities were reported in private industry sectors, with falls, being struck by objects, electrocutions, and caught-in/between incidents cited as the leading causes of death (Occupational Safety and Health Administration [OSHA], n.d.-a). Moreover, incidents of workplace violence, including active shooter events and domestic disputes, have risen nearly six percent over the past 2 years, as noted by the Bureau of Labor Statistics (Bureau of Labor Statistics, 2021). These alarming statistics emphasize the need for proactive safety measures and the development of emergency action plans in workplaces. These action plans are essential to enhance preparedness and provide safety measures for workers in the face of potential emergencies.

Key components of a successful emergency action plan include training in basic first aid, Cardiopulmonary Resuscitation (CPR), Stop the Bleed[®] techniques, and active shooter training. These skills empower employees to take immediate action during critical moments, potentially saving lives before pre-hospital emergency personnel arrive.

Stop the Bleed[®]

Early intervention in the event of a trauma-related hemorrhage is crucial, as the entire circulating blood volume may be lost in less than 5 min (Tjardes & Leucking, 2018). The U.S. Department of Homeland Security initiated the Stop the Bleed[®] (STB) campaign in 2015 to disseminate standardized, evidence-based bleeding control training for civilians (Joint Committee to Create a National Policy to Enhance Survivability from Mass Casualty Shooting Events et al., 2015; Jacobs et al., 2014). Stop the Bleed[®] parallels CPR training by empowering bystanders and emergency responders to administer aid to someone with a life-threatening emergency and subsequent hemorrhage outside of a clinical setting (American Heart Association [AHA], 2023b). Through a combination of educational material and skills practice, lay bystanders learn to recognize a life-threatening bleed and apply appropriate measures, including use of military-grade tourniquets, manual

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pressure, and wound packing (Figure 1). Given STB's more recent release, awareness of the training, its contents, and benefits are somewhat limited in the lay community. To this end, specific considerations from the Stop the Bleed® Education Consortium include targeting "anyone taught CPR" and "including STB in existing training programs such as first aid courses, [CPR] courses, and life-saving courses" (Levy et al., 2022).

While STB was developed to reduce potentially preventable deaths where emergency responders were unable to intervene early (e.g., mass casualty events), the practices and principles included in the training are applicable to any bleeding control situation, be it at home, in the community, or at worksites (Joint Committee to Create a National Policy to Enhance Survivability from Mass Casualty Shooting Events et al., 2015). A primary benefit of STB is that it is easily incorporated with other worksite safety trainings, as it is brief and may be delivered in a variety of formats (see Table 1). Of note, however, while STB trainees receive certificates of completion, there are no current

refresher guidelines (e.g., annual, biannual) or regulations such as those that exist for CPR. Thus, it is incumbent upon the occupational health personnel, trainee, and/or employer to ensure personnel are provided regular refresher courses and opportunities for skill demonstration.

In addition to ensuring all workplace employees are trained in STB, appropriate bleeding control supplies should also be made available for use (Levy et al., 2022). Standard bleeding control kits are available for purchase via a variety of retailers but may also be modified and pieced together to fit the needs of the worksite. Typically, these kits will include nitrile gloves, a military-grade tourniquet, trauma shears, hemostatic gauze, a compression bandage, and a permanent marker. For large facilities or employers in need of many kits, items may be purchased in bulk to provide a more cost-effective method of building kits. Occupational health personnel should encourage employers to strategically place bleeding control kits in the workplace. At minimum, bleeding control kits should be kept alongside and in equal proportion to other emergency equipment, such as automated external defibrillators (Levy et al., 2022). In other words, one bleeding control kit for every set of emergency equipment. Further, bleeding control kits should be easily and quickly accessible to employees working in high-risk areas or with dangerous equipment. Occupational health personnel may provide guidance to employers through conduction of worksite hazard evaluations and estimating the amount of time it would take for an employee to move from their workstation to the location of bleeding control kits.

Cardiopulmonary Resuscitation and Automated External Defibrillators

Sudden cardiac death accounts for up to 15% of all deaths in the U.S. annually (Chugh et al., 2004). A recent systematic review and meta-analysis showed pooled prevalence rates of employee sudden cardiac deaths at 2.8% (Amantea et al., 2024). Rapid response to sudden cardiac death, including CPR and use of automated external defibrillators (AED) increase out of hospital cardiac arrest survival. In fact, according to the American Heart Association (AHA), doubling the number of individuals trained in CPR would double survival in both in-hospital and out of hospital cardiac arrest survival (Merchant et al., 2020). Despite the incidence of sudden cardiac death in the workplace, the Occupational Safety and Health Administration (OSHA) does not specifically require the use of AED in workplaces and states in the general duty clause that one or more persons should be trained in first-aid (including CPR) and should have access to appropriate "supplies and equipment." This recommendation may be waived if a workplace is in "proximity"-defined as 3 to 4 min away-from a medical clinic, hospital, emergency medical service (EMS)-that routinely provides CPR and is accessible (Occupational Safety and Health Administration [OSHA], 2007). Given the time it would take for EMS to be activated and arrive to the workplace

Table 1. Options for STB Training Completion

Course option	Estimated time requirement	Content	
		Lecture	Hands-on skills
ACS STB Version 2.0 course (In-person)	60–90 mins	X	X
Virtual course*	20 mins	X	
Interactive course*	25 mins	X	
ACS STB skills-only course**	14 mins		X

ACS = American College of Surgeons; STB = Stop the Bleed®. All courses require a 1:10 student-to-instructor ratio to meet certification guidelines.

*Requires completion of skills course for certification. **Requires completion of virtual or interactive course for certification.

or to move the employee from the workplace to a hospital or clinic, the goal of CPR/AED access within 3 to 4 min is highly unlikely.

A number of CPR/AED training providers are available, and training is based typically on the curricula of one of the two major emergency cardiac care curricula developers: The American Red Cross (ARC) and the AHA. The basic content in a CPR/AED course includes adult, child, and infant CPR techniques, and rescue breathing/ventilation for adults, children, and infants. Management of choking in adults, children, and infants is also included, as well as the use of the AED (American Heart Association [AHA], n.d.; American Red Cross, 2024). While both organizations provide a number of CPR training products including CPR with AED training, generally the AHA training is more in-depth and tends to be required of healthcare providers. American Heart Association certification in CPR lasts for 2 years before renewal is required. Training in CPR from the ARC is not as detailed, and their CPR certification is good for 1 year before renewal is required. The standard for a “passing” grade on the written examination differs between the AHA and the ARC, with the AHA requiring a score of 84% and ARC requiring a score of 80%. Employers seeking CPR training for their workers should investigate which training is available—AHA versus ARC—and determine which would be best for their workforce based on cost, quality, and accreditation requirements (if relevant).

Employers who decide to implement AED in the workplace should register the device with the manufacturer so that they will receive timely notification regarding any recalls or other issues that may emerge. The AED should be placed in areas such as where workers are clustered, just outside confined spaces, or in workplace clinics (Occupational Safety and Health Administration [OSHA], 2003). An AED Program must also be established that includes records of AED checks, supply stocking, arranging routine maintenance checks, and communication with manufacturer for any updates, recalls, etc. (American Heart Association [AHA], 2023a). More detailed

guidance for workplace AED installation and program establishment may be found in the materials included in the reference list.

Emergency Plan and Active Shooter

Employers are required by OSHA to have an emergency action plan, and it must be in writing and available for review. If an employer has 10 or less employees, then they may communicate the plan orally (Occupational Safety and Health Administration [OSHA], n.d.-b). According to OSHA, the minimum requirements of an emergency action plan must include: how to report fires and other emergencies, evacuation procedures and emergency exit route assignments, procedures for employees who remain to operate critical plant operations before they exit, how to account for all employees after an emergency evacuation, rescue and medical duties for employees, and name or job title of employees who can be contacted by employees who need additional information about the emergency plan or their duty under the plan (Occupational Safety and Health Administration [OSHA], n.d.-b). Employers may only have the minimum requirements of an emergency action plan but adding the additional training of Stop the Bleed® and CPR can provide necessary lifesaving skills that could be needed during an emergency. While active shooter training is not an OSHA requirement, unfortunately due to an increase in violence at work, this training is a necessary piece of emergency planning.

In June 2024, the Federal Bureau of Investigation (FBI) released its annual active shooter report in the United States, declaring 48 active shooter incidents in 2023 (Federal Bureau of Investigation [FBI], 2024). While this is a decrease from 2022 (50 incidents), this is still an increase of 60% since 2019 (Federal Bureau of Investigation [FBI], 2024). Due to the increase in active shooter incidents, adding active shooter training is essential to the workplace. In the U.S. there are several training programs available including, Active Shooter Attack Prevention and Preparedness® (ASAPP) and Run Hide Fight® (RHF) (Federal

Table 2. Resources

Stop the bleed	https://www.stopthebleed.org/training/
CPR/AED	https://cpr.heart.org/-/media/CPR-Files/Training-Programs/AED-Implementation/2023-updates/KJ1683-AED-Program-Checklist.pdf https://cpr.heart.org/en/cpr-courses-and-kits/heart saver
Emergency action plan	https://www.osha.gov/etools/evacuation-plans-procedures/eap/minimum-requirements https://www.osha.gov/etools/evacuation-plans-procedures/eap/develop-implement/checklists https://www.osha.gov/etools/evacuation-plans-procedures/emergency-standards
Active shooter	https://www.fbi.gov/how-we-can-help-you/active-shooter-safety-resources#:~:text=The%20FBI%20conducts%20outreach,%20education,%20and%20training%20with%20internal%20and
Additional resources	https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.38

CPR = Cardiopulmonary Resuscitation; AED = Automated External Defibrillator.

Bureau of Investigation [FBI], n.d.). The OHN can also reach out to their local law enforcement for training and planning, access resources from the U.S. Department of Homeland Security, or their local FBI field office about ASAPP training.

Occupational Health Nurse Implications

The OHN should be involved in all aspects of emergency planning at the worksite to provide guidance, knowledge, and expertise in this area. Being prepared and providing training to all employees is essential in the event of a worksite emergency. Emergency training and education empowers the worker and provides them additional knowledge and skills they can apply at work, at home, or in the community. Table 2 provides resources and training available to the OHN to provide the additional skills previously discussed. The OHN should advocate for additional training in emergency preparedness to increase the chances of survival from a worksite emergent medical event.

Finally, policies and procedures should be evaluated to ensure they include not only employee training on safe handling of equipment and precautions for day-to-day operations, but also steps to take in response to an emergency. Occupational health personnel may also assist employers and employees in conducting drills to promote efficiency in worksite emergency response. Providing worksites with the additional training of Stop the Bleed®, CPR, and active shooter training can save lives, and the OHN can lead the worksite in providing these additional skills and implementing plans for annual training refreshers as well as onboarding for new employees.

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IRB Approval

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