EMERGENCY NURSES ASSOCIATION

Position Statement

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Hemorrhage Control

Description

Uncontrolled external hemorrhage is a common cause of preventable death and is increasingly recognized as a serious public health concern (Bulger et al., 2014; Chambers et al., 2019; Charlton et al., 2021; Lei et al., 2019; Weinman, 2019). Bleeding can be a life-threatening emergency, causing death within minutes. Immediate bystander intervention is critical to controlling bleeding, minimizing blood loss, and saving lives (Charlton et al., 2021; Zwislewski et al., 2019). In recent years, active shooter and terrorist attacks using knives and explosive devices have highlighted the need for strategies to deal with uncontrolled external hemorrhage at the incident scene (Chambers et al., 2019; Goolsby et al., 2019; Moore, 2017). Delays in clinical intervention are due to the emergency service response time and personnel restrictions related to safety concerns at the scene (Charlton et al., 2021; Lowndes et al.,2019). As a result, multiple strategies have been devised to enable bystanders to control the bleeding until emergency medical services (EMS) arrive and transfer the patient to a definitive care facility (Lei et al.,2019; Scerbo et al., 2017). Nurses may take on numerous roles within these scenarios, including applying hemorrhage control techniques within their scope of practice, being involved in community injury prevention programs, and researching and evaluating hemorrhage control interventions (Weinman, 2019). Ultimately, the involvement of all nurses, not just emergency nurses, in hemorrhage control is an opportunity to save lives.

Emergency nurses have a critical public health and educator role within any hemorrhage control strategy (Schroll et al., 2020; Sidwell et al., 2018). Key areas of responsibility include professional education and community collaboration based on evidence and research into the effectiveness of hemorrhage control interventions. The literature provides examples of nurses working within a public health and injury prevention role by educating and empowering their local community in Stop the Bleed techniques and promoting the accessibility of hemorrhage control kits. These actions may improve clinical outcomes.

ENA Position

It is the position of the Emergency Nurses Association (ENA) that:

1. Hemorrhage control techniques such as direct pressure, the application of topical hemostatic agents, and tourniquet application are part of all nurses' scope of practice.

2. Emergency nurses promote and participate in public awareness campaigns and advocate for hemorrhage control education and training for healthcare workers and laypeople.

3. Emergency nurses collaborate with other disciplines and specialties, including EMS and other first responders to develop, implement, and evaluate hemorrhage control strategies.

4. Injury prevention community education, particularly in schools and other places where large volumes of people congregate (i.e., athletic facilities, concert venues, universities), includes emergency nurses.

5. Emergency nurses advocate for the deployment of bleeding control kits in readily accessible public areas such as airports, schools, and stadiums.

6. Emergency nurses are involved in the development of evidence-based hemorrhage control guidelines, policies, and procedures and contribute to hemorrhage control research.

Background

Severe penetrating injuries can result in life-threatening blood loss within 5 minutes (Jacobs et al., 2014; Lowndes et al., 2019). Uncontrolled bleeding remains the primary cause of death in 35% of trauma patients (Chambers et al., 2019; Charlton et al., 2021; Jacobs et al., 2014), and evidence suggests that 57% of traumatic hemorrhagic deaths could be prevented through bystander intervention using basic bleeding control methods (Lei et al., 2019; Scerbo et al., 2017).

In 2013, as a result of an increase in mass casualty incidents, particularly the Sandy Hook Elementary School shooting, the American College of Surgeons convened a multidisciplinary meeting to develop a strategy to reduce death and injury from penetrating trauma in an out-of-hospital environment (Jacobs & Joint Committee to Create a National Policy to Enhance Survivability from Intentional Mass Casualty Shooting Events, 2015). The expert group published a document titled The Hartford Consensus directing all responders, both health care and civilian, to undertake additional education and increase their access to the necessary equipment to control severe bleeding at the incident scene (Jacobs & Joint Committee to Create a National Policy to Enhance Survivability from Intentional Mass Casualty Shooting Events, 2015). The consensus documents aimed to increase survival from these penetrating trauma injuries by making military bleeding control materials available within a civilian setting. The Hartford Consensus recommendations include the application of tourniquets and wound packing, materials and skills previously considered unsuitable for a civilian setting. The transfer of these skills empowers community bystanders to take an active role as first responders (Jacobs & Joint Committee to Create a National Policy to Enhance Survivability from Intentional Mass Casualty Shooting Events, 2015; Jacobs et al., 2016; Moore, 2017).

In 2015, the U.S. Government launched its aforementioned Stop the Bleed® campaign (American College of Surgeons, n.d.) based on the findings of the Hartford Consensus (Jacobs & Joint Committee to Create a National Policy to Enhance Survivability from Intentional Mass Casualty Shooting Events, 2015). The Stop the Bleed initiative is an essential component of a multidimensional approach to controlling hemorrhage and reducing death at the scene. A key aspect of this initiative is the empowerment of the community to undertake an injury prevention role, particularly in schools and other places where large volumes of people congregate (Charlton et al., 2021; Jacobs & Joint Committee to Create a National Policy to Enhance Survivability from Intentional Mass Casualty Shooting Events, 2015; Moore, 2017). Civilian bystanders act as first responders, implementing bleeding control interventions while awaiting the EMS. Key components of this strategy include education on the practical aspects of hemorrhage control, civilian access to appropriate equipment such as tourniquets and hemostatic dressings, bleeding kits, and the ability to coordinate transportation of the patients to a receiving trauma center in a timely manner (Andrade et al., 2020; Goolsby et al., 2018; Lei et al., 2019; Villegas et al., 2020). To achieve this goal, training programs for control of hemorrhage need to be available to the public and offered by employers to schools and universities, religious groups, and other community facilities with a large

footfall of people. The aim is to ensure hemorrhage control education is widely available and as universally recognized as CPR and AED training and forms an integral component within the chain of survival in penetrating traumatic injury. The skills to control hemorrhage are simple, evidence-based, and relatively easy to teach to a large number of people, and most importantly, to potentially save lives.

The increasing incidence of international mass casualty events (New Zealand – 2019, Manchester –2017, Paris – 2015, Sri Lanka – 2019) and active shooter incidents (Las Vegas – 2017, Orlando – 2016, Pittsburgh – 2019, Stoneman Douglas High – 2018) demonstrate the need for community focused initiatives to address the risk of hemorrhage (Gabbe et al., 2020; Rozenfeld et al., 2019; Skryabina et al., 2020; Zhu et al., 2020). There have been at least 558 gunshot incidents within school grounds nationally, with an average of 19 mass shootings a year since 2013 (Everytown for Gun Safety, n.d.). In 2019, there were 39,707 fire-arm related deaths in the United States (National Center for Injury Prevention and Control, Division of Violence Prevention, n.d.). Emergency planning, incorporation of prevention, and development of risk assessment and response plans should occur in all areas where large volumes of general public congregate such as schools, places of employment, sporting events, concerts, and shopping malls (Amberson et al., 2020; Percy et al., 2011; Skryabina et al., 2017). Retrospective incident reviews highlight the critical period of community response time between the incident and the emergency medical services intervention (Charlton et al., 2021; Reed & Carman, 2019; Kerslake Arena Review, 2018). This time period is when traditional responder roles are adopted and the community responder role is activated. In October 2017 in Las Vegas, during an active shooter incident in which 58 people died, over thirty minutes elapsed before health care providers were able to assess and treat patients (Zwislewski et al., 2019). The independent review of the Manchester terrorist attack in the United Kingdom (U.K.) notes that training the general public in first aid, including hemorrhage control, provides the emergency services with a large pool of potential volunteers who can offer direct assistance to the injured (Kerslake Arena Review, 2018). In 2019, at least 12 states introduced or passed legislation to inform, educate and empower their citizens to become immediate responders who can save a life in the event of a bleeding emergency (American College of Surgeons, 2019).

The role of laypeople in responding to community health emergencies is increasingly acknowledged and is recognized as a key component in the chain of survival. Many studies establish the effectiveness of training the general public in cardiopulmonary resuscitation (CPR) and automated external defibrillators (AED) use to saves lives (Chambers et al., 2019; Olivet-Pujol et al., 2018; Riggs et al., 2019). The literature suggests numerous similarities between public access defibrillators and the Stop the Bleed initiative (Chambers et al., 2019). These similarities include placing hemorrhage control kits in easily accessible areas where large numbers of people congregate, ensuring bystander equipment is easy to understand in an emergency situation and for ongoing maintenance and audit requirements (Charlton et al., 2021; Goolsby et al., 2018; Latuska et al., 2019; Lei et al., 2019). In response to this initiative, at least eight states (California, Illinois, Indiana, Missouri, North Carolina, New York, Tennessee, and Texas) introduced legislative bills that mandate hemorrhage control kits be readily available in public schools and other government facilities (Cardio Partners, 2020). Collectively, evidence in the literature supports the use of Stop the Bleed kits. However, a real-world limitation is the lack of enforcement of the equipment's quantity, placement, and contents (Goolsby et al., 2019). Jacobs and the Joint Committee to Create a National Policy to Enhance Survivability from Intentional Mass Casualty Shooting Events (2015) suggest Stop the Bleed kits should minimally include an effective tourniquet, compressive dressing, rolled gauze, trauma shears, and nitrile gloves (Goolsby et al., 2019; Journal of Emergency Medical Services Staff, 2016). Emergency planning teams should equip public sites with bleeding control supplies for a minimum of twenty people, with larger venues planning for larger number of patients

(Goolsby et al., 2019). When preparing for distribution, important considerations are ongoing mandatory training and monitoring and maintenance of supplies and equipment.

Tourniquet application is a crucial component of hemorrhage control (Charlton et al., 2021; Goolsby et al., 2019; Lowndes et al., 2019). Historically, tourniquets were not applied outside of the military due to the risk of prolonged ischemia due to incorrect or inappropriate placement (Chambers et al., 2019; Ode et al., 2015; Zietlow et al., 2015). Current evidence demonstrates that amputation is rarely necessary, and the benefits of reducing bleeding and saving lives from tourniquet application outweighs the potential risk (Scerbo et al., 2017). Goolsby et al. (2019) acknowledged a greater than four-fold increase in mortality from hemorrhagic shock for patients who had tourniquets placed after arrival at hospital compared to application at the incident scene. This finding has important clinical and practical implications for educating the general public and reviewing traditional role responses for healthcare workers. The American College of Surgeons Committee on Trauma and the Hartford Consensus directs that all professional responders have the education and necessary equipment to apply tourniquets and topical hemostatic agents in civilian settings (Jacobs & Joint Committee to Create a National Policy to Enhance Survivability from Intentional Mass Casualty Shooting Events, 2015; American College of Surgeons, n.d.). Similar initiatives exist globally, including Citizen Aid in the United Kingdom (U.K.) (Citizen Aid, n.d.; Hunt, 2020). Good Samaritan protection is extended to include bleeding control interventions by bystanders, to encourage a willingness to respond (Moore, 2017; Jacobs & Joint Committee to Create a National Policy to Enhance Survivability from Intentional Mass Casualty Shooting Events, 2015). Evidence suggests that individuals require access to ongoing training to increase recall of this relatively rarely used skill to enable an increase in confidence and competence and willingness to respond and to reduce barriers to intervention (Andrade et al., 2020; Chambers et al., 2019; Lowndes et al., 2019).

Hemorrhage control techniques, including the use of tourniquets and hemostatic agents, should be incorporated into undergraduate nurse education and ongoing nursing education as a component of their injury prevention role (ENA, 2018; Latuska et al., 2019; Varanelli et al., 2019). Controlling hemorrhage in the community setting is a public health priority and is essential as a part of the patient's chain of survival. Evidence supports the application and use of tourniquets and hemostatic agents to be included in every licensed nurse's educational preparation and scope of practice (ENA, 2019) and should be considered a component of essential clinical skills such as CPR and AED use. Education and familiarization with bleeding control techniques and equipment can improve the individual's willingness to respond, increase user's confidence, and ultimately improve clinical outcomes (Baruch, et al., 2016; Ross, et al., 2018;). Emergency nurses have an opportunity to lead the way in controlling emergency hemorrhage through empowering and educating community members and collaborating with community partners, businesses, and local EMS colleagues.

Resources

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