

completion of the workshops. Only ultrasound documentation had a p value less than 0.05. It can be reasonably deduced that focusing on institutionally specific aspects of workflow can help interns expedite their education by familiarizing them with these nuances prior to their first shift.

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### Developing a COVID-19 Vaccination Program for Seafarers in Cork

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**Introduction:** The pandemic brought to the fore the importance of maritime transport as an essential sector for the continued delivery of critical supplies and global trade in times of crisis. Timely vaccination of seafarers secures their health and enables the chain of infection to be broken with the international propagation of the virus via maritime traffic. As part of the COVID-19 vaccination program, the Health Service Executive in conjunction with the Port of Cork company developed a unique pathway for seafarers to access COVID-19 vaccinations once they arrived in Cork.

**Method:** An Excel template was developed by HSE and Port of Cork that would capture key information for seafarers to avail of vaccinations. Once data was captured by the ship's Captain, it was sent to the shipping agent and reviewed by the HSE South Emergency Management Office. Once the data was validated it was sent to the vaccination center so that the seafarer's details could be entered onto the system. Once confirmed, travel arrangements were made from the vessel to the vaccination clinic ensuring a safe staffing level remained on the vessel.

**Results:** A total of 84 seafarers registered for the seafarer's vaccination program. 70 of these seafarers received one or more doses in Cork City Hall Vaccination Centre with the remainder having received one dose in pharmacies in Cork City.

**Conclusion:** This joint initiative developed by the HSE Emergency Management Office and the Port of Cork, the first seafarer's COVID-19 vaccination program in Ireland, ensured seafarers were allowed to avail of a COVID-19 vaccination when they arrived at the Port of Cork. This highlights the requirement for future vaccination programs to consider and incorporate the requirements of seafarers acknowledging the essential role they play in the global supply chain.

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**Compliance with The National Institute for Health and Care Excellence (NICE) Guideline (NG158) Venous Thromboembolic Diseases: Diagnosis, Management, and Thrombophilia Testing; Proximal Lower Limb Venous Ultrasound Time Standards at Wexford General Hospital**  
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**Introduction:** The consequences of missed lower-limb deep vein thromboses (DVT) can be life-threatening. Similarly, inappropriate treatment with anticoagulation in low-risk patients carries a significant risk of harm. Early diagnosis and appropriate treatment with anticoagulation rely on timely ultrasound access. The National Institute for Health and Care Excellence (NICE) recommends timeframes for ultrasound acquisition based on Well's score and D-dimer value.

If rapid ultrasound (Point of care Ultrasound POCUS in our context) demonstrates no features of DVT, it is safe to arrange follow-up scan within eight days without empiric anticoagulation. If, however, no bedside ultrasound is performed, anticoagulation is commenced until a formal scan excludes DVT. NG158 recommends this scan be performed within 24 hours. This audit investigated our compliance with NG158 time standards at Wexford General Hospital (WGH) emergency department (ED).

**Method:** Electronic records for patients undergoing formal ultrasound for suspected DVT between 08/01/2022–10/13/2022 were reviewed using the hospital's databases. Charts were reviewed to determine if POCUS was performed. In total, 42 records met selection criteria. Audit Committee governance review was obtained. Fisher's exact test was used to compare compliance rates between those that underwent bedside ultrasound and those that did not.

**Results:** Overall compliance with NG158 was 40.5%. Compliance rates for those offered bedside ultrasound were significantly higher than those that weren't (58.3% vs. 16.7% p<0.0106). The mean waiting time for a radiology department ultrasound is six days, 12 hours, and 16 minutes.

**Conclusion:** Overall compliance is low, and delays to obtaining formal ultrasound are long. We observed that compliance rates for those who underwent bedside ultrasound were significantly higher than for those who did not. This suggests that bedside ultrasound is under-utilized in our ED. Training more staff to perform bedside scans would alleviate current delays to ultrasound diagnosis and reduce risks associated with empiric anticoagulation.

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### Distribution of Hyperbaric Oxygen Chambers for Noxious Gas Disaster

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**Introduction:** In this study, assuming a toxic gas-generating disaster situation requiring multiple hyperbaric oxygen chambers at the same time in Korea, the regional arrangement of

hyperbaric oxygen chambers and its adequacy for toxic gas-generating disasters were investigated and analyzed based on medical institutions equipped with hyperbaric oxygen chambers.

**Method:** It is assumed that all hospitals with hyperbaric oxygen chambers should be included theoretically if a large number of patients require hyperbaric oxygen treatment in the event of a toxic gas disaster. First, we received data from the manufacturer that provided the hyperbaric oxygen chambers, interviewed the persons in charge, and then contacted the relevant hospitals to check the placement in the second step. Afterwards, the deployment of hyperbaric oxygen chambers and population-based deployment status, the simultaneous capacity of hyperbaric oxygen treatment, and the ability to perform hyperbaric oxygen treatment in response to toxic gas disasters based on region were analyzed.

**Results:** The annual number of hyperbaric oxygen chambers showed the first increase period in 2015 and the second increase period after 2019. Even when analyzed based on population-based, simultaneous capacity, and treatment performance, the distribution of hyperbaric oxygen therapy chambers was uneven especially in special areas.

**Conclusion:** In preparation for future disasters, a regional arrangement plan for hyperbaric oxygen chambers should be established and implemented. The national monitoring system and the long-distance transport system should be established until proper distribution.

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### Early Clinician Exposure to the Physiologic Damage of Firearms: A Feasibility Study

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**Introduction:** In comparison to many nations in the developed world, the United States has more cases of civilian ballistic injuries. Both low and high velocity firearm injuries are frequently encountered in American urban trauma centers, and physicians become familiar with these traumatic injury patterns. Physicians from other nations may rarely encounter such injuries. With an increase in international conflict, there is an increased need for clinicians to participate in international medical aid which may include patients with ballistic injuries. Clinicians with limited familiarity of such injuries may result in under-triage and delayed recognition of injury severity, resulting in increased morbidity and mortality of patients. This study aims to show that a course on ballistic injuries will improve clinician recognition of injury patterns and comfort levels managing these patients.

**Method:** Clinicians participated in a course which was designed to introduce ballistic injury patterns. The course was reviewed and supported by emergency medicine physicians who work in a large level I trauma center in the Southeastern United States and serve in clinical roles with EMS and community law enforcement. Course content included demonstrations of firearm injuries by discharging weapons into gels and models

designed to replicate human body tissue. Participants were surveyed prior to and after completing the course regarding their comfort with firearms and firearm related injuries.

**Results:** Participants reported increased comfort level with the management of ballistic injuries. The course requires a full day of expert physician time, approximately US\$600 in supplies if performing live demonstrations, and the cost of designated space for safe firearm discharge and use.

**Conclusion:** This course or a similar course with pre-fired demonstration rounds proved to be feasible and beneficial for those who will likely encounter firearm injuries in their clinical environment. There are both quantifiable and perceived benefits for physicians.

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### Developing Contents of Practical Training for Decontamination of Radiation-contaminated Patients Using VR Training Simulator

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**Introduction:** The KIRAMS establishes radiological emergency institutions and provides training for emergency medical agents. However, because of the uniqueness of radioactive accidents, the current training program has a limitation in the realistic description. Therefore, training programs based on virtual augmented reality technology that can describe radiological emergencies are required. In this study, the contents of practical training for decontamination of radiation-contaminated patients as a part of radiation disaster prevention personnel training using VR simulator are developed.

**Method:** Environments and devices required for treating patients with complex radiation damage are made visible using VR simulator to enable practical training of techniques and practices that will be required in actual radiation emergencies or training. The VR decontamination training content uses three Point tracking techniques to calculate the location of the head-mounted display device and the hand to visualize the movements. Additionally, Universal Render Pipeline technology was used to develop realistic visualizations of situations.

**Results:** In this study, VR decontamination treatment practice content was developed, which allows a single trainee to go through the entire treatment process of treating radiation-contaminated patients. The radiation-exposed patient's treatment process is composed of nine subprocesses, including wearing personal protective equipment, obtaining samples from openings, taking measurements, cleaning contaminated injuries, and so on. A checklist user interface was used to enable trainees to check their progress. The trainee can practice patient treatment with a controller while using VR decontamination treatment content. Additional functions such as narration, sound effects, animation, and so on were added to high educational effects.

**Conclusion:** In this study, VR decontamination treatment content was developed using VR training simulator to practice