

demonstrated substantially enhanced visibility when compared to the standard-of-care.

Conclusion: We present a new, luminescent guidewire that may enhance the safety and efficacy of endovascular procedures, especially where light conditions are suboptimal or for emergency situations when procedures have to be as fast and efficient as possible.

Prehosp. Disaster Med. 2023;38(Suppl. S1):s212–s213
doi:10.1017/S1049023X23005435

A «Push&Plug» Lifesaving Device to Prevent Exsanguination

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Introduction: Severe bleeding from external wounds is a major reason for death. Immediate control of hemorrhage is of highest priority. We present the novel Acute Wound Occluder (AWO) which was developed for rapid and targeted wound occlusion. Here, we present the design, in-vitro testing, and in-vivo performance compared to QuikClot[®] using a clinically-relevant pig model.

Method: AWO is made of an applicator with pushing function into which a self-expanding, Silicone coated Nitinol meshgraft is mounted to enable plugging into the wound-channel. In-vitro tests included biocompatibility, cytotoxicity, skin sensitization, and aging validation. Next, 12 pigs underwent standardized sized femoral-artery puncture to mimic life-threatening bleeding and were either treated with the AWO (n=6) or QuikClot[®] (control). Animals were followed-up for 4hrs, before device-removal macroscopic assessment.

Results: The AWO successfully passed all in-vitro tests. The AWO could be delivered within 40±15 seconds to the wound to achieve instant bleeding control, and no additional manual compression needed. Quick Clot application was less convenient, with approximately four minutes (application 56±8ss, plus three minutes of manual compression) to achieve bleeding control. In all AWO treated pigs, exsanguination could be prevented immediately, no major blood-pressure drops occurred, with four pigs where bleeding could be completely stopped, and two pigs with irrelevant oozing which stopped within 75-150 seconds leading to minimal blood-loss of 12ml and 2ml. Tissue-analysis showed only small hematomas in five out of six animals. In contrast, QuickClot treated pigs showed significant bleeding and a blood-loss of 19ml. All six pigs showed substantial hematomas, two out of six showed very large hematomas. AWO application appeared to be safe with no periprocedural adverse-events (AEs) or collateral damage to surrounding tissues.

Conclusion: The AWO enables rapid and targeted control of life-threatening bleeding without any AEs. The AWO may represent a promising hemostatic device for bullet or knife-stab wounds.

Prehosp. Disaster Med. 2023;38(Suppl. S1):s213
doi:10.1017/S1049023X23005447

Benefits of RFID Technology in the Provision of Medical Services at Mass Gathering Events

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Introduction: Radiofrequency Identification (RFID) is becoming a ubiquitous technology that provides methods of tracking and organizing complex processes, and has had previously described benefits when used in medical and clinical situations such as disaster and mass casualty incidents. However, the potential benefits of this technology have not yet been examined or applied to mass gathering events such as music festivals using the medical lens.

Method: RFID at music festivals was observed and characterized at a Canadian multi-day festival through a combination of (1) observation of real world application of the use of RFID-enabled attendee wristbands and (2) the development of a proposed implementation framework using expert input in event medical care, public health, festival safety and event organization. Potential roles for RFID technology in enhancing attendee safety, facilitating event medical care and collaborating with other on-site services, and promoting research agendas for these unique events were explored.

Results: Observed and theoretical roles for RFID fell into four main domains: (1) the presence of important encoded personal health data and contacts specific to individuals that would be accessible in case of an emergency, (2) the unique, anonymous identification of attendees who access (and re-access) medical as well as other services, including during handovers between these services, (3) support for any larger public health research projects aimed at understanding the behaviors and flow of attendees, including recreational substance use and related harm reduction efforts, and (4) the storage of festival-tailored data throughout the event on RFID-enabled wristbands (eg previous medical visit details, self-entered substance use history, etc).

Conclusion: The use of RFID at music festivals has clear benefits. It allows for the dynamic access and retrieval of important data that can aid safety and support the provision of timely and tailored medical care. Security and privacy issues need consideration where attendee data is concerned.

Prehosp. Disaster Med. 2023;38(Suppl. S1):s213
doi:10.1017/S1049023X23005459

Sudden Cardiac Arrests During the 2021 Taipei Marathon after COVID-19 Confinement in Taiwan

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Introduction: Large-scale mass-sporting events pose unique challenges for emergency health teams. Data is limited in athletes with sudden cardiac arrests (SCAs) and the emergency medical services (EMS) in major sporting events that took place after the coronavirus pandemic.

Method: This retrospective observational study describes data from the Taipei Marathon event that took place on December 19, 2021, in Taiwan. The temperature was about 15.2–19.3°C.

