

required. This case is similar to high-falling calcaneus fractures. This may have occurred as a result of an upwards blast impact that may have been weakened because of the thickness the layer of snow. Thick layers of snow may help protect civilians from mine injuries. This potential protective affect may be useful for researchers aiming to decrease mine injuries.

Prehosp Disaster Med 2011;26(Suppl. 1):s121–s122
doi:10.1017/S1049023X11004031

(P1-72) Advanced Surgical Cooling Garment to Combat Heat Stress in CBW Ppe and Hot Surgical Environments J. Mcisaac

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Introduction: Heat stress is an occupational hazard for all personnel requiring Personal Protective Equipment (PPE). Even “breathable PPE” increases measurable heat stress in active troops and surgical personnel. A novel negative-pressure, semi-permeable surgical cooling vests for use in the operating theater was jointly developed by Mountain Laurel Biomedical, Hamilton Sundstrand, and Hartford Hospital.

Materials and Methods: Surgical personnel alternated between wearing cooling garment vs no cooling under their surgical gowns (PPE) during surgical procedures lasting up to several hours. Tympanic temperatures were monitored for safety. A questionnaire was completed after the conclusion of surgery to assess perception of comfort. Trials began at ~18 deg C, but ambient temperature was increased to 24 deg C (40–50% RH) for the third series of trials. Results: The study was terminated prematurely. After wearing the cooling vest, surgeons refused to complete additional control trials due to the heat. They demanded to use the cooling device for all surgery, even outside the protocol! Vest wearers remained dry and reported a statistically significant ($p < 0.0001$) greater level of comfort compared to control subjects. The weight, fit, and mobility restriction of the vest was not clinically significant.

Conclusion: Active cooling and drying using a negative pressure cooling vest improves subjective thermal comfort with minimal perceived impact on mobility during surgical procedures. This technology may have utility in other fields that utilize PPE. The Chemical Biological Warfare (CBW) ensemble, in particular, is a promising candidate. Heat stress from PPE ensemble even if “breathable” –Cooling at ~100 watts with 18 deg C water –Semipermeable membrane allows condensation removal. Wearer stays cool and dry. –Negative pressure prevents coolant loss if punctured –Minimal perceived restriction of shoulder, neck, and waist range of motion – Light weight ~1.5 lbs. (0.68 kg) – Quick disconnects allow options for cooling source.

Prehosp Disaster Med 2011;26(Suppl. 1):s122
doi:10.1017/S1049023X11004043

(P1-73) Medical CBRN Training for Military Health Staff and Its Benefits

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Objective: The increasing threat of the use of chemical, biological, radiological, and nuclear (CBRN) agents requires significant

military medical preparedness and response, including training. The initiatives for CBRN training by Gulhane Military Medical Academy, which is under the Health Command of the Turkish Armed Forces, will be discussed, and the training program and educational model for medical CBRN defense will be highlighted.

Method: The training is given to military hospital staff once or twice a year. Hospital staff is trained over a period of five days, with practical issues regarding medical CBRN defense covered during the last two days. A questionnaire is given to trainees at the beginning and at the end to ascertain the adequacy of the course.

Results: So far, this medical CBRN training has been given to 150 military health staff including physicians, nurses, and medical non-commissioned officers. According to the survey, they benefited greatly from this training, and there was a statistically significant increase in CBRN knowledge when the initial and final scores of the survey were compared ($\chi^2 = 3.089$; $p = 0.002$).

Conclusion: Through this planned trainings, staff are trying to become well-trained in detection, personal protection, decontamination, and the organization aspects of CBRN defense to apply the proper prophylactic measures, diagnosis, and treatment. Feedback suggests this program also helped “train the trainers”, providing extensive information to other staff working in military hospitals.

Prehosp Disaster Med 2011;26(Suppl. 1):s122
doi:10.1017/S1049023X11004055

(P1-74) Introduction of the Portable Decontamination Unit of Gulhane Military Medical Academy

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Introduction: Chemical, biological, radiological and nuclear (CBRN) cases are seen as an increasing risk because of the increasing threat of international terrorism. Decontamination is one of the basic components of the intervention for CBRN exposure. The introduction portable decontamination unit in the hospital setting is described in this presentation.

Method: The general properties, facilities, and capabilities of the portable decontamination unit, which is present in the GATA CBRN Department of the Turkish Armed Force’s Health Command, were evaluated.

Results: The portable decontamination unit in the hospital has a metal frame that is 54 m² wide. It is composed of two tents that weigh about 300 kg. The metal frame, metal legs, and tent cloth are stored in carrying bags. Four people can construct the tents in 10 minutes. An educated squad of four people can prepare the decontamination system and instructions in 25–30 minutes. The unit consists of two lines: one for outpatients and another for inpatient decontamination, which includes a rail system. Each decontamination line contains an undressing, shower, and dressing section.