Let There be Light: Evaluating Decontamination Effectiveness during a Large-scale Simulation of a CBRNe Disaster

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Study/Objective: Evaluate the effectiveness of patient decontamination during a disaster simulation using a visual tool.

Background: Chemical, biological, radiological, nuclear, and explosive (CBRNe) disasters have significant impact on affected populations. Health care workers (HCWs) must be prepared to execute a Disaster Plan in order to mitigate the negative health outcomes of such events. Decontamination constitutes a major component of disaster response. It optimizes health outcomes by limiting the incidence of secondary, contaminant-mediated injury. Maintaining a “locked down” of the decontaminated care area also reduces the risk of significant injury among exposed HCW and uncontaminated patients. This study proposes an objective assessment of decontamination effectiveness, which lacks in the literature.

Methods: We organized the largest documented pediatric, hospital-wide, disaster simulation with 64 simulated patients and 97 HCW participants. After a brief training, participating HCWs executed the decontamination procedure for the first time. Liquid-based Glo Germ™ was randomly applied on different body areas, and recorded in 30 simulated patients. Using an ultraviolet light, two independent raters evaluated the total contaminated body surface area before and after decontamination. Simulated patients triaged as contaminated went through a sequence of undressing, followed by low-pressure, high-volume water and soap washing. Effectiveness of decontamination was calculated using a prepared standardized diagram of body surface area. Inter-rater reliability was assessed with a two-way, mixed consistency, average-measures, intraclass correlation coefficient (ICC) using SPSS.

Results: Undressing followed by washing led to an average 80.6% reduction in total body contamination (95% CI [73.6-87.6]). The ICC was 0.91 (95% CI [0.81-0.96]), indicating that decontamination was evaluated similarly between raters.

Conclusion: A liquid-based visual tool, used as a way to determine decontamination efficacy, is easily obtainable and innovative, and it can help establish verifiable decontamination standards in disaster literature. Undressing followed by washing led to an average 80.6% decrease in total body contamination.

Preparing a Tertiary Medical Center for a “Dirty-Bomb” Threat

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Study/Objective: To review hospital preparations and drill design, of a tertiary medical center for a “dirty-bomb” scenario.

Background: Terror risk in general, and specifically the risk of terror related to a dirty bomb deployment has increased in recent years. Though the radiation injuries expected to occur in such a scenario are minor, in comparison to the conventional injuries, the psychological impact and the resulting area contamination are expected to be significant. The Israeli Ministry of Health guides and evaluates public hospitals preparedness measures, for a variety of conventional and none conventional scenarios; these include radiological threats. In April 2016 following 6 months of preparations, a “dirty-bomb” drill was conducted at the Bellinson tertiary medical center.

Methods: Descriptive analysis of the drill design and the preparatory actions.