

The Utilization of Hospital-Based Decontamination Facility for Chemical Incidents

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Introduction: The constraints of performing prehospital decontamination in mass casualty incidents involving the release of chemical agents at disaster sites in modern cities are notable. Compounding this are highly built-up urban areas with significantly high population density and traffic congestion. This places the burden of performing such decontamination on nearby healthcare facilities. Based on this need, public hospitals in Singapore have been equipped with decontamination facilities. We present a review of the utilization of this facility at our institution.

Method: A retrospective review of the utilization of the hospital decontamination station (HDS) was carried out, noting its frequency, purpose, and outcomes.

Results: Since its construction, the HDS has been deployed successfully many times a year for both routine training and disaster preparedness exercises. Despite the lockdown measures due to Covid-19, with concomitant reduction in social and economic activity, the HDS was activated five times for decontamination of chemical contaminated casualties. It is fortunate that, although HDS training activities were curtailed during this period, emergency department (ED) staff were still able to function effectively using prior experience, donning chemical protective suits, and performing decontamination. The semi-automated HDS facilitated rapid deployment which contributed to ease of use of this resource for timely decontamination of casualties with good outcomes.

Conclusion: Chemical incidents resulting in contaminated casualties are uncommon events. Nonetheless hospitals must be prepared to deal with this situation in a timely manner. The rapidly deployable HDS has become an important resource and an operationally ready solution for dealing with chemical contaminated casualties presenting at short notice to the ED. Regular training and deployment exercises utilizing the HDS provide staff familiarity critical to overall readiness for chemical incidents. This strategy provides a reliable countermeasure in an all-hazards approach to disaster preparedness at the hospital.

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The Effect of Weather and Heat-Related Variation on Patient Presentation and Transport Rates

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Introduction: Mass gatherings are becoming increasingly more common and require adequate preparedness in order to ensure the safety of participants. Standardized planning tools for optimal resource utilization during these events are lacking. We analyzed prehospital data from a high census US theme park to determine whether heat index and wet bulb index are predictive of patient presentation and transport rates.

Method: This was a retrospective analysis of prehospital data from a high census US theme park. Daily EMS data including call and transport volume as well as corresponding local weather information were gathered between May 2021 to September 2022. The relationship between patient presentation rate and transport rate and weather information was analyzed using Analysis of Variance Testing. Patient presentation rates were calculated based on average daily attendance according to unofficial attendance tracking sources. Seasonal attendance variation was accounted for by comparing variations in patient presentation and transports to the average call and transportations rates for that respective month.

Results: A total of 515 days of data were included. We found that higher wet bulb temperature readings correlated with both higher patient presentation rates per 10,000 attendees (>80F 4.09, 70-79F 3.39, <69F 2.84 patients; $P<0.05$) and increased hospital transport rates per 10,000 attendees (>80F 1.38, 70-79F 1.29, <69F 1.09 patients; $P<0.05$). Adjusted for seasonal variation of attendance, higher wet bulb temperatures were likewise correlated with increased presentation (>80F 102%, 70-79F 98%, <69F 93% of average patients per day; $P<0.05$) and transports (>80F 101%, 70-79F 100%, <69F 93% of average transports per day; $P<0.05$). Additional analysis noted similarly increased patient presentation and transport rates on days with higher maximum heat indices.

Conclusion: In the setting of a high census US theme park, higher wet bulb and heat indices were strongly associated with increased patient presentation rates and patient transport rates.

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Challenges and Complexities of Providing Emergency Medical Services During Covid-19 Pandemic in Nepal

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Introduction: During the Covid-19 Pandemic, the Department of Emergency Medicine is the one of most busy in Nepal. Challenges and complexities of providing emergency medical service during the waves of the Covid-19 pandemic in Nepal were analyzed.

Method: Three years (2020 – 2022) of data was analyzed from Covid patients registered in Tribhuvan University Teaching Hospital (TUTH), Institute of Medicine for reference with National Data of Ministry of Health and Population, Government of Nepal.

Results: On November 15, 2022, there were 5,969,338 Covid PCR tests and 1,452,639 Covid Antigen tests in Nepal with

1,000,826 (16.8%) PCR, 152,197 (10.5%) being positive. The cure rate was 98.7% (988,316 cases). There were 12,019 mortalities with 1.2% case fatality. In TUTH 2020 – 2022 records; 3,794 total severe Covid-19 patients were admitted; In the first year, only two patients (1M:1F); In the second year 2,056 patients 1.8M:1F and in the third year 1,736 with 1.1M:1F. The age groups with the first wave vs the second wave were 6.42% vs 5.47% of 0–20 years; 24.22% vs 26.84% of 21–40 years; 30.57% vs 30.87% of 41–60 years and 38.57% vs 36.87% of above 60 years. The hospital mortality rate was 751 (19.8%). Challenges were due to resource limitation, limited PPE, scarcity of oxygen, medication, and ventilators. In TUTH, all levels of emergency management and various definite care were provided 24/7 hours in the pandemic period. There are a lot of challenges in Pre-Hospital Emergency Care Service due to a limited number of designated Advance Ambulances during transportation of severe Covid patients. With these challenges and complexities, there were six deaths of their own hospital staff due to severe Covid-19.

Conclusion: The challenges and complexities of providing emergency medical services during the Covid-19 pandemic in Nepal have been overcome with teamwork and activation of the emergency care system in Nepal.

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Establishment of a Medical System for Emergency Radiation Exposure (One local city in Japan)

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Introduction: Japan is the only country to have experienced the atomic bombings and still has many nuclear power plants. In 2011, a nuclear power plant accident occurred during a major magnitude 9.0 earthquake, and there was a great deal of concern about radiation exposure medicine for the public. It is necessary to provide appropriate radiation exposure medicine.

Method: The facility is located within the IAEA's UPZ, and in the event of an emergency, it is necessary to provide medical care for a large number of people exposed to radiation, so an advanced radiation exposure medical facility was built in 2015 (the surrounding population is approximately 300,000).

Results: The basics of radiation exposure medicine are: 1) medical priority, 2) prevention of the spread of radioactive materials, and 3) protection of our responders from radiation exposure. Everything from whole body assessments, contamination examinations due to exposure, medical procedures (including advanced medical procedures), and decontamination were able to be performed. The facility is also equipped with WBC (whole body counter) that can assess internal exposure. A support system for other medical facilities was being developed in the region by forming a team that can respond to radiation exposure.

Conclusion: With the current system, not only radiation exposure medicine will be handled, but also CBRNE and other such

services in the future. For this reason, repeated training and human resource development are very important.

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Issues in Psychiatric Hospitals that were Revealed Through COVID-19 Infection Countermeasures

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Introduction: Infection countermeasures that consider patient characteristics are needed at psychiatric hospitals.

Method: Based on the experience of implementing countermeasures against infection by COVID-19, which has become a pandemic disaster over the past few years. This report is on the current situation and issues of infection countermeasures in psychiatric hospitals.

Results: Reasons for why it is difficult to take COVID-19 countermeasures in psychiatric hospitals included the following: for patient predispositions—it is difficult to promote understanding and practice of infection countermeasures such as proper wearing of masks, hand hygiene enforcement, zoning, etc. For environmental predispositions—it is difficult to ventilate because windows and doors cannot be opened, and it is difficult to isolate infected individuals as there are few private rooms. Countermeasures included the following: recreation should be limited to that which does not involve speaking and having everybody face the same direction, ensuring sufficient space between people during meals, installing ventilation equipment in hospital wards, handle care in private rooms until the hospitalized patient is judged to be not infectious, and conducting zoning and isolation on a hospital ward level. Results showed that although COVID-19 outbreaks occasionally occurred in hospital wards, this did not result in spread throughout the hospital.

Conclusion: Future challenges include improving the quality of infection countermeasures in hospitals through thoroughly educating hospital personnel who are unaccustomed to taking infection countermeasures.

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Practical Trauma Training in Ukraine: An EMT Type 1 NGO's Implementation of Trauma Training for Healthcare Providers and First Responders in Ukraine from March 2022–October 2022

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