Post-earthquake and Tsunami Tetanus Outbreak—A Case Series of 34 Patients from Banda Aceh

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Introduction: This presentation describes 34 case studies of patients who developed tetanus after the devastating earthquake and tsunami that hit Northern Sumatra on 26 December 2004. It is the largest single reported cluster of cases. The World Health Organization reported 107 cases of tetanus post-tsunami.

Methods: Most of the authors were part of a volunteer medical team from Singapore and the last author is a surgeon from the affected hospital. Together, they worked in Zainal Abidin General Hospital for six weeks. The hospital had been devastated by the calamity and the team worked towards restoring in-patient services. The first ward in the hospital was re-opened on 10 January 2005.

The case definition of tetanus is clinical. Facilities at hand were limited severely with no intensive care or ventilatory support for the majority of patients. The ANZAC and German field hospital provided surgical support. Water, electricity, oxygen, drugs, and sanitation were lacking.

Data were collected by means of a questionnaire administered upon admission. Daily updates on care and outcomes were recorded. Epidemiological data was reported to the WHO to stem a possible epidemic. Retrospectively, all patient charts were analyzed. The Ablett scale was used to grade the severity of the illness.

Results: During the study period when the team worked in the hospital, there were 34 cases of tetanus. Of these, five patients died, six patients remain in the hospital, but are ambulant, and off all sedation, and 23 patients were discharged after clinical care. The case fatality rate is 15%.

A total of 25 (76%) of the patients were male; all are adults.

Only nine (26%) had deep or complex wounds, 22 had superficial wounds, two had no wounds, and two were not assessed. All wounds occurred on the day of the tsunami. Additionally, 20 of the patients had aspiration (near drowning) pneumonia.

The incubation period was >14 days in 29 (85%) of the patients. The clinical features included: (1) trismus: 97%; (2) abdominal rigidity: 74%; (3) generalized spasms: 71%; (4) dysphagia: 53%; (5) dyspnea: 47%; (6) risus sardonicus and opisthotonos: 41%; and (7) sympathetic overactivity: 47%. According to the Ablett scale, 45% of the patients were categorized as severe.

Management was hampered by drug and resources shortages. All but one patient received intravenous diazepam. A total of 24 patients also had intravenous combination and ketamine sedation. Four patients had tracheotomies and two required ventilatory support.

Conclusion: Treating patients with tetanus often is described as requiring intensive care, ventilation, and paralysis. In this presentation, it was found that: (1) intensive care unit and ventilation can be avoided with prudent clinical care and the use of ketamine for sedation and spasm control; (2) good nursing care and infection control measures are cost-effective and can save countless lives; and (3) vaccination programs are required pre- and post-event.

Keywords: Banda Aceh; consequences; diazepam; ketamine; management; Singapore; tetanus; tsunami
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Indian Ocean Tsunami: What Have We Learned So Far? What Do We Need to Know—Application of the Utstein Guidelines and Templates

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We have listened to the presentations of the interventions provided following the earthquake and tsunamis in the Indian Ocean of 26 December 2004. The questions are: (1) What have we learned that will enhance our ability to cope with such events in the future?; and (2) If asked to report on what you have heard, how would you structure your report?

You should be able to answer the following questions:

1. What hazard was responsible for the disaster?
2. What was the precipitating event? What was its scope (amplitude, duration, intensity, scale, and magnitude)?
3. Was there a secondary event? If so, what was its scope (amplitude, duration, intensity, scale, and magnitude)?
4. What do we know about the pre-event health status of the affected populations?
5. What physical damage was created? What functional damage resulted; What health damage was created? What other Basic Societal Functions became impaired, and how did their functional deficits affect the medical and public health functions?
6. Is it possible to partition the event into multiple subevents with different scopes and different types/levels of damage or were all areas affected the same?
7. How was Coordination and Control provided for the responses? What was the authority to do so?
8. Were adequate needs assessments conducted? By whom?
9. Were the responses (interventions) described today directed at specific, well-defined needs?
10. Were the interventions described:
    a. Effective in meeting predefined objectives and accomplishing stated goals?
    b. Efficient in using minimal resources to accomplish the goals?
    c. Cost:effective?
    d. Produce benefits (value) to the target population?
11. Was the pre-event health status restored? How did the intervention contribute to recovery/rehabilitation?

12. Were the responders invited by the affected country? By whom?
13. When was the intervention terminated? By whom? Why?
14. What were the differences in responses to different areas and why?
15. How will the effectiveness, efficiency, efficacy, benefits, and costs of each intervention be determined? By whom?
16. Was the responding unit self-sustaining?
17. How were the responders credentialed?

To learn what we must, it is essential that all of the above questions eventually be answered and reported in a structured way that is readily accessible and reproducible.

Keywords: coordination and control; earthquake; evaluation; Guidelines; Indian Ocean; interventions; lessons learned; reports; responses; structure; templates; tsunami; Utstein
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Free Papers—Theme 7: Prehospital Care—A Medical Speciality?

Reporting Quality of Randomized, Controlled Trials in Prehospital Care

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Background: Emergency medical services (EMS) often provide the "golden hour" of care in most emergency and disaster settings. EMS systems utilize unique, disciplined, and sensitive approaches to the identification and stabilization of patients in the prehospital environment. Despite the increasing skill set of prehospital emergency practitioners, the majority of prehospital healthcare interventions have not been subjected to rigorous research in the form of randomized, controlled trials (RCTs). Many international, prehospital, clinical practice guidelines continue to reflect local needs and traditions rather than evidence-based practices. While RCTs are considered to be the "gold standard" of study design in primary research, they are difficult to conduct in out-of-hospital settings primarily due to the ethical issues involved and the uncontrollable and unpredictable nature of the prehospital environment. Therefore, the few RCTs that have been conducted in this setting may suffer from problems in methodology and quality. Trials with poor methodological quality have exaggerated estimates of treatment effect and incomplete reporting of trials cause difficulties in assessing trial methodological quality.
Objective: To examine the quality of reporting of randomized, controlled trials (RCTs) in prehospital care.
Methods: The CENTRAL database of the Cochrane Library will be searched for RCTs in prehospital or out-of-hospital settings. An exhaustive list of search terms will be used to identify prehospital trials. Two reviewers independently will assess trials using the consolidated standard of reporting trials (CONSORT) checklist. Disagreements will be resolved by consensus. Inter-rater reliability will be assessed with percentage agreement. Mean number of checklist items will be reported across all trials. The influence of time (1970s, 1980s, 1990s, and 2000s) will be explored with logistic regression.
Results: The study is taking place currently and the results will be presented during the conference.
Conclusion: This study attempts to explore the methodological quality of RCTs conducted in prehospital settings, and thereby highlights the difficulty of conducting them.

Keywords: emergency medical services (EMS); out-of-hospital; prehospital; quality; randomized, controlled trial (RCT)
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Feasibility of Informed Consent in Emergency and Prehospital Research: How Do We Ensure the Patient's Voice is Heard?

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Informed consent is a vital part of ethical research. However, in emergency care research fields, especially those studies involving ambulance services and emergency departments, it is sometimes necessary to conduct trial interventions without patient consent. When treatment is time critical, it also may be impossible to get consent from the next-of-kin within the treatment timeframe. Prehospital and emergency medicine is one of the few areas where informed consent laws can be relaxed to allow research to proceed under strict guidelines. In emergency health situations, even when informed consent is sought, there is no real assessment of the patient understanding of the proposed intervention or ability to appraise the potential outcomes. In times of a health emergency, patients and their lives are most vulnerable, and coercion, intended or otherwise, is a strong possibility. This presentation will explore the process of informed consent, and whether informed consent is feasible in emergency health research.

This presentation also will address issues relating to emergency health research such as proxy consent, medical staff influence, and the rights of the unconscious patient. The potential for conflict arising from differences in culture and values between patients and healthcare professionals also will briefly be discussed.

The prehospital and emergency care setting is a research situation where patients are particularly vulnerable to violation of their rights. These issues are relevant to all research requiring informed consent, in addition to research where the participant and proxy understanding of the possible outcomes and potential harm is questionable. Most of all, these issues affect anyone who may one day be in an emergency health situation, or have to make decisions about health for someone else.

Keywords: emergency; ethics; informed consent; next-of-kin; patients; prehospital; research
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