## Incidence of Infectious Diseases within the First Month following the Bam Earthquake

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The earthquake in Bam, Iran, killed >40,000 people, injured >30,000, and left 75,000 homeless. The affected people also faced an increased risk of infectious diseases. Many were sleeping outdoors in the first few days following the earthquake, despite the cold temperatures of December and January. Other risk factors included the inadequate access to a water supply network and sanitation, and the past history of endemics of typhoid fever, cholera, malaria, and coetaneous leshmaniasis in the area.

Using the records of Bam-area medical centers, the incidence of infectious diseases during a three-week period starting one week after the disaster have been assessed. The infectious diseases that were recorded include: acute severe watery diarrhea, dysentery, acute respiratory infection, suspicious malaria, suspicious measles, suspicious meningitis, suspicious hemorrhagic fever, acute icter, acute floppy paralysis, suspicious brucellosis, suspicious salmonellosis, anthrax, coetaneous leshmaniasis, tuberculosis, and animal bite.

Over that three-week period, 6,241 patients suffering from acute respiratory infections were visited. Acute respiratory infections, with an incidence rate of 6.93%, were the most common reason for medical visits. The second most common infectious disease was enteric infections (incidence rate of 8.2%); 738 patients with enteric infection were seen during the period of study. The next most common diseases were cuetaneous leshmaniasis, suspicious malaria, and animal bite, with an incidence rate of 0.075%, 0.058%, and 0.023%, respectively. Cold temperatures, lack of shelter, lack of heating facilities, and the high number of people in the camps might have been factors contributing to the high incidence of respiratory infectious diseases. The high incidence of enteric infections may be linked to the collapse of the water supply network and lack of adequate access to sanitation and safe food.

**Keywords**: Bam; earthquake; infectious disease; Iran; respiratory
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## The Rationale of Fever Surveillance to Identify Patients with Severe Acute Respiratory Syndrome (SARS) in the Emergency Department of a Tertiary Care Center in Taiwan

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**Objective**: The purpose of this study was to establish a predictive scoring system and determine its effectiveness for severe acute respiratory syndrome (SARS) cases confirmed by Reverse Transcription Polymerase Chain Reaction (RT-PCR) from fever patients during the SARS outbreak of 2003.

**Methods**: A prospective study was conducted in the emergency department of a tertiary care center during the SARS outbreak in Taiwan. The scoring system was divided into two stages: (1) triage: taking temperature, symptoms, and history using a structured questionnaire; and (2) screening station: measuring complete blood count (CBC) and chest x-ray (CXR). Data were analyzed with multivariable and logistic regression analysis. The confirmative diagnosis of SARS cases was made according to results of RT-PCR.

**Results**: A total of 737 patients were presented to the emergency department for ruling out SARS from 29 March–30 June 2003. A total of 484 patients with a documented temperature >38.0°C (100.3°F) and an age older than 18 years (adult patient) were enrolled in the study for final analysis. Six items (dyspnea, diarrhea, travel, close contact, hospital, and household history) were identified as predictive indicators in the triage stage. The triage scores were derived from the sum of these six items. At the cut-off value of one point, the sensitivity and specificity were 81.8% (18/22) and 73.6% (340/462), respectively. Four items (leukocytes, thrombocytopenia, lymphopenia, and CXR) were identified as predictive indicators in the fever screening stage. The screening station scores (sum of 10 items) consisted of triage scores, white blood count, and CXR. At the cut-off value of three points, the sensitivity and specificity were 95.5% (21/22) and 87.2% (403/462).

**Conclusions**: Detailed history-taking is the key for early identification of SARS cases in an endemic area. The current SARS scoring system easily is applicable and highly effective in screening SARS patients during SARS outbreaks, not only in the emergency department, but also in the community.

**Keywords**: fever surveillance; Reverse Transcription Polymerase Chain Reaction (RT-PCR); screening; Severe Acute Respiratory Syndrome (SARS); Taiwan; triage
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## Implementation of the Hospital Emergency Incident Command System (HEICS) during an Outbreak of the Severe Acute Respiratory Syndrome (SARS) at a Hospital in Taiwan

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**Background**: Although various aspects of the operational response and clinical management of the severe acute respiratory syndrome (SARS) have been reported from hospitals in several countries, little has been reported about overall hospital emergency management during a SARS outbreak. Furthermore, despite the growing popularity of the hospital emergency incident command system (HEICS) as an organizational tool for hospital emergency management in the United States and elsewhere, little has been reported about the application of HEICS to actual hospital emergencies of any type. Accordingly, the implementation of the HEICS at the National Cheng Kung University Hospital (NCKUH) during the outbreak of the SARS in early 2003 was characterized.



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**Methods:** A 14-question survey was administered via structured interviews to individuals occupying activated HEICS leadership positions at the NCKUH about the organization, structure, and function of the HEICS units and sub-units they led and the job actions they performed from 25 March to 16 June 2003.
**Results:** A total of 33 persons (87%) occupying 39 of 44 (89%) activated HEICS leadership positions directly participated in the survey. Collectively, the participants reported: (1) the creation of four new HEICS unit leaders and corresponding units during the outbreak, including the infection control officer (management section) and the SARS assessment, isolation, and critical care unit leaders (operations section); and (2) the creation of six new HEICS sub-units, including functional areas for fever screening, the SARS assessment, and resuscitation outside of the hospital, and SARS patient care, SARS critical care, and employee isolation inside the hospital; and (3) the performance of new job actions related to infection control by all HEICS unit leaders.
**Conclusions:** The HEICS provides a flexible framework that appears to have assisted the NCKUH in the organization of its emergency response to the SARS outbreak in Taiwan.
**Keywords:** coordination and control; hospital emergency incident command system (HEICS); implementation; outbreak; severe acute respiratory syndrome (SARS); Taiwan
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### Pandemic Planning for Primary Care: How to Set Up a Community Assessment Center

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New Zealand has strengthened its national pandemic plans over the past two years. However, the organization of primary care in a pandemic has received less attention, even though this sector is both essential and highly vulnerable in a pandemic. A review of the literature suggests that this situation may be common in other countries. The concept of non-traditional sites for delivery of basic health services is mentioned in a number of national plans, but often do not appear to be fully developed.

This presentation will describe a project in Wellington, New Zealand, which assessed whether community-based assessment centers (CACs) would be feasible in the region. Community-based assessment centers are defined as centers which would provide triage, initial assessment, and outpatient management of cases of pandemic illness. The rationale is to streamline services, relieve the burden on other primary care services, and improve triage to secondary care. Such centers also could be used to distribute antiviral medication and vaccines.

Based on the literature, a checklist for CACs was developed. This checklist then was used to assess potential sites in the region. Using FluAid, the anticipated excess consultations in primary care were assessed, as well as whether the proposed sites could cope with the load.

This study concluded that CACs are feasible and would be a useful part of the primary care response to a pandemic. Considerable detailed planning is required in the interpandemic period, including funding, supplies, development of detailed resources, and a strong focus on infection control training in primary care.
**Keywords:** community-based assessment centers (CACs); pandemic; primary care; review
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## *Theme 10: Planning for Mass Gatherings*

*Chairs: Andrew Bacon; Demetrios Pyrros*

### Hajj: The Oldest and Largest Mass Gathering

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**Introduction:** Hajj is an annual, six-day, religious event, in which >2.5 million Muslims from >140 countries, including Saudi Arabia, gather at the holy shrine of Mecca to perform this cornerstone ritual of Islam. This study aimed to give an overview of Hajj and the different health problems repeatedly encountered in this event.
**Methods:** An extensive review was conducted using the computerized databases Medline and Medscape for searches from 1960 through September 2004. Articles containing information pertaining to Hajj were read, abstracted, analyzed, and compiled.
**Results:** Various large-scale, health problems and critical illnesses were reported during Hajj. Non-communicable problems included stampede mass casualties, motor vehicle trauma, fire-related burn injuries, skin diseases, accidental hand injury during animal slaughter, under-utilization of automated external defibrillators (AEDs), and terrorist actions. Communicable problems included outbreaks of multiple infectious diseases; for example, a new strain meningococcal meningitis and Rift Valley encephalitis.
**Conclusions:** Hajj represents a challenge to Saudi health authorities. Hajj reconnaissance and developing an understanding of various factors and problems associated with it should be the first step for planning, prevention, and resource allocation of hazards.
**Keywords:** disease; Hajj; mass gathering; Saudi Arabia
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### Emergency Planning for Mass Gatherings at Dragon Stadium in Porto, Portugal

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Football, or soccer as it is called in the United States, is probably the most popular sport in Europe. The passion people have for it makes football games, especially those of the Europe Cup, mass gatherings with special characteristics. History has presented us with sad examples of what can happen if things go wrong during football matches.

The Dragon Stadium at Porto is a new UEFA, five-star facility that frequently holds major football events, such as Portuguese Superleague games and Champions League matches. The average attendance is well over 30,000 people per game.



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