

involvement, and inter-sectorial planning; (2) health communication and promotion policies that facilitate both vertical and horizontal communication and share information among government agencies, non-governmental organizations (NGOs), and local communities; (3) coordination of aid at local, regional, and global levels, among private and public inter-institutional relief groups, and identification of local contexts and international providers; and (4) creation of a global culture of health and hazard mitigation planning that is dynamic, ongoing, culturally appropriate, and that fosters comprehensive medical/public health training programs.

Keywords: communication; coordination; disaster; Ecuador; global culture; hazard; mitigation; model; planning; public health; training; volcano

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Arsenicosis: A Public Health Challenge

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A large part of West Bengal, India and Bangladesh are located in the Gangetic delta. Nearly 76 blocks in nine districts of West Bengal and two-thirds of Bangladesh are contaminated by arsenic. New areas in other states of India have been identified as having arsenic contamination in ground water tables. Due to possible toxicity in humans from this contamination, corrective/preventative actions are needed on an emergency basis.

The World Health Organization (WHO) has identified the safe limit of arsenic contamination in drinking water as 0.01 mg/l. The safe limit of arsenic contamination in drinking water tables has been identified by the Indian Government's Department of Public Health Engineering as 0.05 mg/l. Nine districts are identified as being contaminated by arsenic, including the city of Kolkata. In total, approximately 38,677 km² are affected, and place 13 million people at risk for arsenic toxicity. A conservative estimate places six million people as consumers of arsenic-rich water, causing health problems in >300,000 people.

People living in arsenic-risk zones, who have not tested their drinking and cooking water using a shallow tube well (50–180 feet) are at the greatest risk for arsenicosis. Also at risk for developing arsenicosis are people in communities in which: (1) any kind of arsenic removal plants were developed, but the plant no longer is operative; (2) the people are not using filtered water from the plant for drinking or cooking; and (3) any kind of arsenicosis symptoms have been identified in even a single person. People at risk for arsenicosis include: (1) poor people whose nutritional intake capacity is low; and (2) those <12 years of age and the elderly, due to their low body defense mechanisms. In addition, women are more vulnerable than men because women usually spend more time in the home, and are more likely to drink contaminated water, while men usually consume water outside the home, leading to reduced toxicity.

There are several medical/research/engineering institutions in the state of West Bengal that are working on different aspects of arsenicosis, including treatment, research, and engineering. Their clinical inputs can be separated into

four stages: (1) pre-clinical; (2) clinical; (3) complications; and (4) malignancy.

Arsenic is a major public health problem, especially in developing countries like India and Bangladesh. All of the stakeholders working in different dimensions must share information and work together for the public interest. The scientific information must be shared with the community, and some non-governmental organizations (NGOs) potentially could be partners.

Keywords: arsenic; Bangladesh; contamination; India; risk; treatment; water; West Bengal

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Free Papers Theme 3: Children in Disasters

Orthopedic Injuries in Children Following the Bam Earthquake

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Introduction: Children are one of the most vulnerable age groups in natural disasters, in terms of both physical and psychological injuries. In this paper, pediatric orthopedic injuries following the earthquake in Bam, Iran, in December 2003 are assessed. Such an assessment helps determine the general preparedness necessary in a referral hospital that should admit pediatric patients in the aftermath of a natural disaster.

Methods: All patients <16 years old who were referred from Bam to three hospitals in Tehran (Milad, Imam Hossein, and Baqiyatallah Hospital) within one week of the earthquake were included. Questionnaires containing items about demographic data, types of injury, and operative/non-operative treatment were completed by visiting the cases and using their medical records. Injuries of limbs and the pelvis are discussed as orthopedic injuries, and classified in two groups: (1) joint/bone injury; and (2) soft tissue injury. Patients also are classified in three age groups: (1) <6 years old; (2) 6–10 years old; and (3) 11–16 years old.

Results: A total of 119 patients <16 years old were admitted in the hospitals during the period of the study. Thirty-three patients (27.7%) were <6 years old, 26 (21.8%) were 6–10 years old, and 60 (50.4%) were 11–16 years old. Of these, nine patients (7.4%) had only soft tissue injury, 25 patients (21.0%) had only bone/joint injury, and 49 patients (41.1%) had both kinds of injuries. In total, 83 patients (69.7%) had orthopedic injury. Both kinds of injury were much more common in the lower extremities than the upper. Of patients who had orthopedic injuries, 52 (62.6%) underwent surgery. The frequency of bone/joint injury and soft tissue injury was not significantly different among different age groups. Also, the need for surgery has not been correlated with a specific age group. The need for surgery was highest in patients suffering from both kinds of injury.

Conclusion: Following an earthquake, most of the referred pediatric patients, regardless of age, suffer from orthopedic