partnership is to develop an evidence-based tool, which, in conjunction with existing nutritional guidelines, will guide Merlin's strategic approach to nutritional crises.

Methodology: Specific research questions relating to vulnerable populations were developed from the systematic assessment of the perceived need of Merlin headquarters (HQ) and field staff. A robust, systematic, critical, literature review was conducted that was sensitive to the broad types of evidence in this field. An evidence-based matrix for the level of evidence that facilitated a critical review for each research question (or evidence gaps) was developed. This matrix allowed identification of the relationships between programmes and population indicators.

Results: This paper describes a proactive approach to how such a partnership works, and presents some of the findings: The evidence matrix is presented for the following research questions on a population of seriously malnourished children:

1. What is the evidence for measuring specific prognostic indicators, particularly those related to redefining care for sub-sets of this population?
2. What is the evidence for comparative programmes outcome indicators?
3. What is the evidence on the relative importance of contextual factors?

These generic and pragmatic findings will be applicable to other NGOs in this field.

Keywords: assessment; emergencies; evidence; health; matrix; needs; populations; standards; tools; vulnerability

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Symposium: Clinical Issues in Disaster Medicine

Early Laser Ablation Accelerates The Healing of Partial-thickness Sulphur Mustard Burns

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Introduction: In man, the chemical warfare agent, sulphur mustard (SM), is a potent blistering agent. Skin exposure can produce partial-thickness burns that may take six times longer to heal than the equivalent depth thermal burns, possibly as a result of residual alkylation. The aim of this study was to investigate the use of early laser ablation as a means of accelerating this exceptionally slow rate of healing.

Methods: Four circular, partial-thickness, SM burns were induced on the dorsum of nine large, white pigs (under general anaesthesia). At 72 hours post-exposure, three burns per animal were ablated with a single pass of an Ultrapulse 5000C CO_2 laser, at a fluence of 5-6 J.cm-2. All burns were dressed with silver sulphadiazine and a semi-occlusive dressing. Three animals were culled at 1, 2, and 3 weeks post-exposure respectively, and all lesions excised for histological analysis. Burn depth was confirmed, and measurements of the radii of regenerative epithelium were made so that the area of the zone of re-epithelialisation in each lesion could be calculated.

Results: Laser-treated lesions showed a statistically significant increase (350%) in healing rates compared to controls (p <0.005). At two weeks, the laser treated sites were 95% healed in comparison with control sites (28% healed).

Conclusions: These data suggest that laser ablation may be efficacious in the treatment of SM-induced skin lesions.

Keywords: chemical warfare agent; sulphur mustard; laser ablation; chemical burn

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Crush Injury and the Kidneys: What Are the Lessons to be Learnt from Recent Earthquakes?

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Many areas of the world are prone to earthquakes. In the last few decades, earthquakes have affected populations in areas such as China (1976, 200,000 deaths), Armenia (1988, 25,000 deaths), Japan (1995, 5,000 deaths), and Turkey (1999). Review of the medical literature that followed these and similar events, highlight the significance of crush injuries on renal function. The review may facilitate enables assessment of the clinical management of these patients within the cohort of a disaster. Emergency services throughout the world regularly are exposed to non-earthquake-related crush injuries. Crush injuries occur due to structural collapse or from industrial or vehicular accidents.

While focussing on the particular goal of renal resuscitation, this paper reviews the overall management of crush injury. It includes the pathophysiology and the emergency and ongoing management. It particularly examines the published literature following earthquake disasters, and how this can be translated into management of smaller incidents.

Keywords: crush injury; crush syndrome; earthquake; emergency medical services; renal failure; renal resuscitation

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Pain Relief for the Injured in Disasters

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In a disaster situation, the first need for those who potentially can be saved is the provision of basic life support. Oxygen administration, if possible, also is a high priority. Along with rescue and retrieval, an easy, inexpensive supply of medications for pain relief is the next priority, but only rarely is it included in disaster packs.

Injected agents including narcotics are not practicable, although ketamine has been mentioned through the years. Cylinder supplies of nitrous oxide/oxygen mixtures are bulky, heavy, and difficult to clean between patients.

Inhaled methoxyflurane has many characteristics suiting it for stockpiling and use in disasters. It is an inhaled analgesic. It is simple to administer, involves minimal training, and is very safe when administered corretly. Methoxyflurane is very effective in relieving suffering in most conscious, injured victims, and can be used in combination with oxygen. It can be preloaded and thrown to trapped victims. It has a three-year shelf life. The analgesic device and co-packed medication can be stockpiled as it