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Almost Half of Injured Haitians Are Likely to Be Children, Paediatric Emergency Study Indicates

This information should guide relief workers on the ground, according to Jeffrey Upperman, M.D. and Robert Neches PhD, co-developers of the Paediatric Emergency Decision Support System (PEDSS), a software tool to help medical service providers more effectively plan for, train for, and respond to serious incidents and disasters affecting children.

The PEDSS group has set up a blog to help guide the choice and distribution of relief supplies. The numbers are if anything understated, according to Neches, but the calculations use the latest available reports from relief efforts on the ground.

PEDSS uses statistical methods to estimate how many of the potential victims of a disaster (so far, earthquakes have been most studied) in a given specific location (i.e., Los Angeles) will be children, and what they will need. Children have special needs for equipment, including thinner hypodermic needles, appropriate pharmaceuticals in childrens dosages, and medical specialists in paediatrics and in other areas.

Such needs in Haiti are particularly intense, because fully 35 percent of the population is under 15, meaning the estimated total number of injuries (250,000) contains far more children than it would in other areas.

PEDSS software tools work with seven age groups, ranging from 0-1 month up to 12-18 year-olds. Applied to Haitian demographics they predict that injuries to persons under 18 make up close to half of the total -- some 111,000, or 44 percent.

The same report details how many injuries are expected for each of eleven diagnoses, ranging from abdominal trauma to spine injury, in each of the age groups. Thus, for example, the model estimates that about 1000 children aged 6-8 suffered crush injuries.

The software then uses these numbers to predict which medications and supplies each victim group would require. Thus, for example, for treatment of the numerous crush injuries projected the program lists the drugs required and totals the amounts needed. The crush list begins "Calcium Gluconate 1 g/10mL" and projects that 265263 doses will be needed. Such estimates can help relief organisations procure the right supplies in the right quantities.

Upperman's immediate superior at Childrens Hospital is Dr. Henri Ford, Vice President and Chief of Surgery. Ford is of Haitian descent, and is now in Haiti. While preparing Ford for what to expect, Upperman asked Neches about the feasibility of turning the PEDSS system, which the pair began developing in 2006, to focus on the post-earthquake emergency.

Neches mobilized the ISI team. Combining information provided by Childrens Hospital Miami and the CalTech Seismology Center with their own research, the team made the necessary changes and was producing results in days.

Neches is a division director at USC's Information Sciences Institute specializing in command-and-control computer systems designed to help decision-makers allocate resources in emergency situations.

The U.S. Department of Health and Human Services appropriated $1 million in 2007 to support the effort, which is now working through a web interface with emergency service providers nationwide. Los Angeles County has supported work on the L.A. area earthquake module, which has become a model for parallel modules for other quake-prone areas.

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IIn addition to Neches and Upperman, CHLA epidemiologist Rita Burke and ISI researchers Tatyana Ryutov, Craig Milo Rogers and Venkata Pingali worked on the Haitian studies. The PEDSS team is actively sharing the current results, methodology and software with colleagues and users.

"Children are one of the groups most vulnerable to disasters," says a recent U.N. report. "More than 10 000 schools were destroyed in Pakistan during the 2005 earthquake and many others by this year's Hurricane Felix in the Caribbean, and by the recent floods in Uganda. Approximately 34 million children worldwide are attending school in areas threatened by earthquake risk. Millions of other children are threatened by volcanoes, hurricanes, drought, wildfires, storms and floods."

Text of the study is at http://viterbicms.usc.edu/sites/9/assets/099/67347.pdf
Haiti Paediatric Action Blog is at http://think-fast-decisions.blogspot.com/

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