Practical Considerations for Management of Pediatric Victims

During Hazmat Decontamination

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Practical Considerations for Management of Pediatric Victims During Hazmat Decontamination

by Peter Sternberg, L.C.S.W. 3/24/2005 updated and revised 5/31/2011

Introduction

Hospitals and first responders have methods and protocols for the decontamination of victims who have been exposed to a hazardous material. Hazmat events have recently received more attention due to heightened concerns about bioterrorism. A review of the literature, pertinent web sites and interviews with planners, trainers and responders reveals that there has been little discussion and virtually no protocols or best practice established for the *management* of pediatric victims *during* a hazmat event.

There is reason to believe that without effective communication and guidance, children will be delayed going through the decontamination process and obtaining further treatment, thereby increasing the likelihood of injury. Further, going through decontamination is likely to be experienced by many children as traumatic.

This paper is an effort to examine how best to manage and communicate with pediatric victims during decontamination at a hospital. In a hazmat situation, a hospital can reduce the level and intensity of: physical harm (through expedited treatment), psychological sequelae and nosocomial trauma (brought on by increased stress, increased injury, separation from familiar adults, and chaos). The guidelines proposed here may have value for decontaminating adults and may have value for first responders doing decontamination in the field.

The paper is a synthesis of the author's training in hospital hazmat decontamination and over thirty five years of psychotherapeutic practice working with children and families. In light of the absence of guidelines and best practice in this area, the author proposes specific protocols and interventions to be discussed, adapted, refined and researched.

Assumptions and Background

Physical first aid is the priority in a hazmat situation. Following the protocols of the HICS System for dealing with hazardous material, trained hospital staff will assemble at a designated entrance and decontaminate the victim while protecting themselves and the hospital at large (7). This entails having the staff doing decontamination dressed in at least Level C hazmat gear. Although the staff may be well drilled, in my experience there has been little attention given to the movement of victims through the decontamination process in an orderly and effective way. Beyond that, there has been precious little attention paid to the unique needs of pediatric victims.

Children's unique needs in the area of decontamination include their diminished capacity to withstand hypothermia (1), appropriate dosing of medication (2) and their capacity to comprehend the situation and withstand the absence or incapacitation of the parent or adult. Children are more susceptible to a group response including hysteria.

I became involved in this topic as a member of the Human Services arm of the HICS system at Rush North Shore Medical Center in Skokie, IL where I worked part time as a psychiatric social worker. As the co-chair of a subcommittee of the Hospital's Disaster Planning Committee, I received training in hazmat decontamination. Because of my background working with children and adolescents, I was asked to formulate ideas for handling pediatric hazmat victims. I found nothing in my literature search for specific processing protocols or language for communication with pediatric victims. Consequently, I developed a practical solution to a practical problem that, to my knowledge, has not been previously discussed.

Literature Review

In an effort to explore the literature, my colleagues and I looked beyond mass casualty preparation to cover the topic of responding to children during an acute crisis. Some of the government agency web sites we explored were: Substance Abuse and Mental Health Services Administration, Center for Disease Control, American Academy of Pediatrics, National Institute of Mental Health, National Center for Children

Exposed to Violence. Local hospitals and schools were contacted and interviewed to ascertain what others were doing. The State of Illinois Emergency Response Team for Pediatrics was consulted, as were private hazmat training professionals, school administrators and fire department personnel.

Many have written articles dealing with terrorism, bioterrorism, crisis, disasters and mass casualties, e.g.: "Trauma and disaster" by Ursano, Fullerton and McCaughey (9), "Disaster Psychiatry: Principles and Practice" by Norwood, Ursano and Fullerton (6), "Facing war, terrorism and disaster: toward a child-oriented comprehensive emergency care system" by Laor, Wolmer, Spirman, and Wiener (4) and "Psychosocial Consequences of Disasters – Prevention and Management" by the World Health Organization (10) to name just a few. Some offer excellent guidance for physical intervention with children, e.g.: "Bioterrorism" by Cieslak and Henretig in Pediatric Annals, March 2003 (3) who explore under the heading "Are Certain of the Problems Unique to Pediatrics?" the fact that children have "unique anatomical, physiological, immunological and developmental considerations that potentially affect their vulnerability to biological agents." The American Academy of Pediatrics in their March 2000 Clinical Report "Chemical-Biological Terrorism and Its Impact on Children: A Subject Review" (1), under the heading of "Special Vulnerabilities in Children," looks closely at the issues of how children might experience certain agents, how they might experience the HAZMAT situation, and how those who will be responding and caring for them need to prepare. An example of the preparation is: "Because children spend the majority of their day in school, community preparation for the chemical-biological threat should include the local education system. Schools may also become a necessary site for triage and treatment of pediatric casualties, requiring community planning include this possibility." Again the **post**-incident situation is addressed, e.g.: "Pediatricians have an essential role in responding to psychosocial sequelae of a chemical-biological incident." Missing from the "Recommendations" section are comments about psychosocial intervention with children **during** the crisis (1). The AAP's monograph on their web site titled: "The Youngest

Victims: Disaster Preparedness to Meet Children's Needs" also overlooks this need (2).

Most of the clinical, academic and governmental agency literature addresses the considerable psychological damage victims – specifically children, can experience going through a disaster. A very useful component of this focus is alerting clinicians, parents and educators on how children are different than adults in their presentation of signs and symptoms of post traumatic syndrome, and offering practical suggestions for intervention, e.g.: "After a Disaster: A Guide for Parents and Teachers" from SAMHSA's National Mental Health Information Center (7).

What appears missing from the literature, from many hospital's disaster planning and hazmat training is a frank rendering of what a hazmat situation involving children is likely to look like *while it is occurring*. For a further discussion of crisis intervention with children and families see *Acute Crisis Intervention with Pediatric Victims and Their Families During a Mass Casualty Event* (7).

Helping a frightened child who is separated from his parent

What does the child (or adult) patient need to see and hear while waiting for treatment or waiting for HAZMAT processing into the hospital? There are two situations to address. In the first, the event is clear and physical injuries are present (bomb blast, nerve agent, etc). In the second, the child is not experiencing physical pain or symptoms. The child is frightened and knows something is quite wrong, but has a limited understanding of her situation. In going through disaster drills at the hospital, I was able to experience and observe first hand what happens to professionals when they are exposed to chaos, adrenaline, inadequate or incomplete communication, and overwhelming demands. Our child patients will be exposed to the same chaotic situation without their primary support system available and with the destabilizing influence of group hysteria. *It is vital that the child patient immediately experience an adult who:*

- *is in charge,*

- *is informed,*
- *is reassuring,*
- *is caring,*
- *is able to explain why the patient is going through the procedure,*
- *is able to explain the process of the procedure, and*
- *is able to explain when the child's world will be upright again.*

How do we communicate with a child or adult who requires decontamination?

In the decontamination situation, the patient will be encountering a hospital employee who is dressed in HAZMAT gear. A person in Level C gear is sealed in a rubber suit. There is no ventilation. Under the best circumstances (cool, not humid weather) they have approximately 20 minutes before they must be rotated out due to being adrenalized, hyperthermic, dehydrated, standing in a pool of their sweat. Within moments of being sealed in the suit, their faceplates will have fogged over from their respiration. Not only are the decontamination workers "working blind" but young children are likely to be frightened when they can not see the worker's face. To have decontamination workers who can see what they are doing and be seen, all faceplates need to be treated with an anti-fogging agent. **Alarmingly, this is not standard practice**.

(A further note: hospital and EMS emergency planners may want to consider the benefits of HAZMAT-geared personnel having a "kid-friendly" emblem or picture affixed to their gear which signals to the child that they are "approachable".)

Since it is virtually impossible for the person in HAZMAT gear to verbally communicate through the suit and mask they are wearing, they do not have an effective way to give directions, educate or comfort the victims. They also cannot hear well through the suit and mask. Therefore, without the addition of communication gear, we are adding *factors of stress* to our HAZMAT staff and adding opportunities for personal and system breakdown **- especially when the patients are children.** Here are some potential remedies:

- a wireless headset used in conjunction with an external speaker and an external microphone which enables the person in the HAZMAT gear to communicate,
- signs in and around the decontamination holding area informing the patient through words and pictures what they are about to experience, as well as what response is needed from them,
- a staff member, who is a safe distance from the holding area, communicating with the patients preferably through a microphone and speaker system or at minimum with a bull horn,
- a HAZMAT suited, mic/speaker equipped staff member with the victims awaiting decontamination offering reassurance, information and comfort to keep hysteria (individual and group) at bay and obtain the victim's cooperation, or,
- a two-way communication system in place through which the patient in the holding area can communicate one-to-one with a staff member who is a safe distance from the patient.

Signage:

1. At minimum, we can present a handout to patients as they come into the decontamination holding area.
2. The signage can be a series of pictures with accompanying written material (in several languages).
3. The pictures can address the two most pressing points: a) why the patient is here and being kept out of the hospital and b) how they get decontaminated.
4. This would be more effective if there were outdoor speakers repeating audio that offered a reassuring voice describing points "a and b".
5. A better option includes portable outdoor video monitors repeating video that offers voice and visual reassurance through demonstration of points "*a* and *b*".
6. The language on a sign for why the patient is here and being kept out of the hospital could be: "You are at "*XYZ* Medical Center" in Yourtown. You have

been brought here because of an emergency with something that could be harmful to you and others. We are going to take care of you. We will help find your family and bring them to you as soon as possible."

7. The next sign can address the HAZMAT geared staff member with a series of pictures of a staff member donning the garb with the accompanying language: "One of our staff is dressed this way so they can safely help you".
8. The language on a sign describing the decontamination process could be: "Before the doctor can see you inside the hospital, we must make sure that the dangerous stuff has been washed off of you. Here is how we will do this: the person inside the strange looking clothing will be asking you to come one at a time to pick up a bag, write your name on it, go behind a curtain, then take off your clothes and jewelry and place these items into your bag. You will now put on a gown. We will help you get showered, and then you will enter the hospital."
9. The language on an additional sign could show the showering process with these instructions: "**Please remember this: by removing your clothing you are getting most of the harmful material off of you**. Take a bag. Write your name on it. Now, please remove *all of your clothing*. Take off all of your personal items and jewelry (this includes body piercings) and put them into a bag with your name on it. Seal the bag. Now put on a gown."
10. Written material advising security staff and police on what to say to victims, families and the media could be distributed. Further, it would be quite useful if there was printed material that could be handed *directly to the victims* in the holding area, written for different age groups and languages.

Recorded Audio:

Audio could play continuously on outdoor speakers or could play in conjunction with video. A speaker system could play for the general holding area and a second for the location immediately adjacent to the clothes changing area.

1) "Hello, you are at *XYZ* Medical Center. We are here to take care of you. We want to help you as fast as we can. If you are not with your family right now we will be helping them find you. What you are going through may seem strange or feel scary. We understand that and we want you to feel safe and secure. We are here to help you, and get you to your family as fast as we can. You are here because there may be something on your clothes and skin that can make you and other people sick. We will be helping you get clean so you don't get sick."

   "Before the doctor can see you, we have to make sure that we have removed anything on your clothes and skin that might be harmful to you and others. You will be meeting some hospital staff who are wearing special clothes to keep them safe while they are helping you get clean. Remember, even though they look strange, there is a kind person inside those clothes."

   "We need your help so the doctor can see you as quickly as possible. This is what we need from you:
   - please listen to all the instructions that the hospital people in the odd-looking clothes are giving to you,
   - please remember that after we help you get clean, you will be talking to our hospital staff who are dressed in regular clothes."

2) "Remember, you are here because there may be something on your clothes and skin that can make you and other people sick. The best way to keep you from getting sick is to help you get out of all of your clothes and to help you take a shower. You are coming to the point where you will be asked to go behind a screen and remove all of your clothes. After you take off your clothes, you will put on a gown. You will put all of your clothes and jewelry into the bag with your name on it. We will show you where to put the bag. The shower will happen in a special area so that we can keep the hospital clean and safe. We

> will try to keep your shower as private as possible. We understand how unusual this is. Thank you for your patience, your understanding and for your help in getting through the cleaning process. We will get you inside as fast as we can."
>
> "After we are finished helping you get clean, you will go inside the hospital. As you go in, we will get you wrapped in clean garments and you will be with our hospital staff. They will be helping you with any physical problems you are having, they will be helping your family find you, and you will have a chance to talk about what you've been going through."

Live Interaction

A clinical staff member's ability to interact in the holding and decontamination areas, and then communicate through the use of a speaker system or bullhorn has a distinct advantage. They are able to monitor and respond. Even though there may not be an opportunity for two-way communication, at least a clinical person is able to assess the status of individuals or the entire group. Staff may then offer specific advice, reassurance, comfort and direction. Further, clinical staff can provide direction to security and police personnel on site if needed. It is, of course, preferable that the clinical person have a background in crisis intervention with children. If two-way audio contact is not viable, a large dry-erase board, could provide much needed two-way communication between the suited staff and victims, and suited staff and the decon boss in the warm zone.

The obvious advantage of an interactive system is that unfolding developments in the holding area and the showering area can immediately be assessed and responded to with reassurance, comfort and direction. The value of this is clear when you consider how demanding the process looks when everything goes *ridiculously smoothly*: people (of all ages and backgrounds/languages) in fear and distress, kept in a perimeter by security and police who have to keep their distance, waiting patiently for their turn to take instruction from someone who cannot hear them very well, who looks frightening, and who cannot speak to them clearly, taking their turn to strip down, letting go of wallets and

jewelry, either being watched or scrubbed by more people dressed in frightening garb, finally being let into the hospital. If we have more than two adults to decontaminate, what is the likelihood of this process going well?

Triage

As currently accounted for, the decontamination holding area is likely to be a mass of children and adults in various stages of physical and psychological distress with no means of determining who is most in need of treatment. Because of their size, children are more susceptible to the harm of hazardous materials and hypothermia.

"Appendix A" shows an algorithm for what I call "*Parking Lot Triage*". This algorithm was put together in an effort to get the sickest and/or most vulnerable kids *to the front of the decon line*.

The algorithm also suggests the administration of medication for victims who display symptoms that are or will soon become critical if not addressed immediately. I am suggesting that hospital victim surge plans include the possibility of healthcare workers in HAZMAT gear administering medication at the direction of an ED physician.

Summary

What Can Be Done Now:

- Identify hospital staff who have skills working with children or working with parents and families. These staff members are a resource for training other hospital staff, participating in drills, and providing specialized care in the event of a mass casualty disaster.
- **Preparation** for victim surges, family surges, including decontamination processing in inclement weather. Consideration needs to be given to space, lighting speakers, shelter and heat – particularly in the decontamination scenario.

- **Communication with child and adult victims and their families** who are awaiting entry into the hospital is a vital concern. As discussed earlier, a vitally important issue is communication *to* and *from* the staff inside the HAZMAT gear with the decontamination area boss.
- **Practice communication with other facilities** to standardize forms and methods for sharing information.

In a mass casualty situation, the demands on the HEIC System and the resources of the hospital will be taxing and *chaos* and *fear* will further compromise the scene. All this will be amplified when the victims of the event are children. Increased communication, (practiced with drills) between staff and victims, and between members of the triage and decon team will likely hasten physical first-aid, reduce damaging psychological sequelae and reduce "nosocomial trauma."

Areas for Further Development and Research

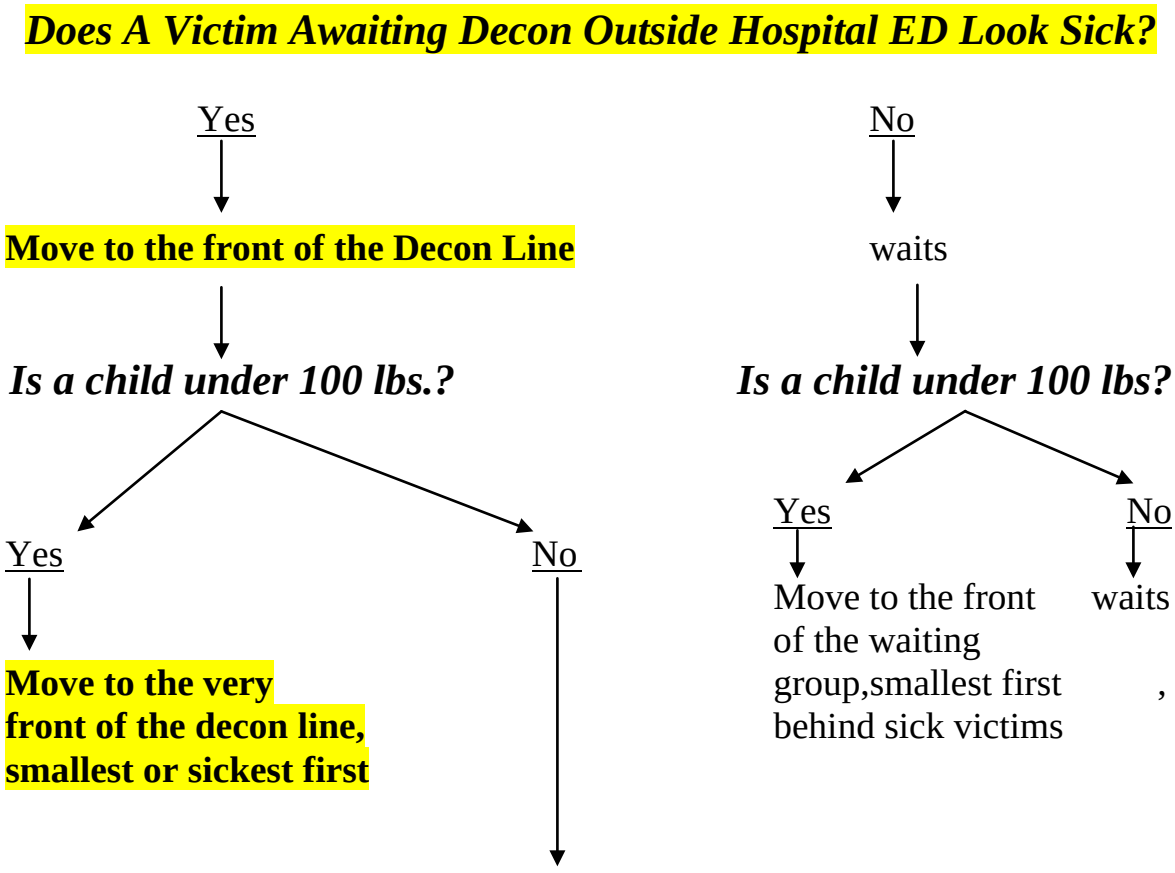
Fortunately, there are few mass casualty events we can research. Obviously the ethics of providing care limit the design of any research on human subjects and the unpredictability of the time and the nature of the event is another research limitation. However, there are agencies that are likely to be involved wherever and whenever a disaster occurs, such as the American Red Cross, the CDC, etc. These agencies are uniquely positioned to record the HAZMAT event and gather data for later analysis.

I propose that the professional community develop lines of inquiry that would further develop what has been proposed in this paper. Data collection tools can be tested and refined. Collaboration between researchers and the agencies mentioned above could result in their access to these tools. Information from an unfortunate event could then inform our emerging best practice.

The author is currently developing guidelines for conducting realistic pediatric mass casualty drills.

Appendix A

Hospital "*Parking Lot*" Triage Algorithm



If the Victim is:

* Drooling
* Tearing
* Urinating on themselves
* Defecating on themselves
* Can't Breath
* "Looks Wet"

Consider Immediate Administration of Atropine

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