

Burn Disaster Management Planning: A Preparedness Toolkit (Poster)

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Burn Disaster Management Planning: A Preparedness Toolkit

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Introduction:

Since 2007, Lehigh Valley Health Network's Regional Burn Center (LVHN RBC) has been working with Pennsylvania's (PA) emergency preparedness groups to develop resources for the primary triage and initial treatment of burn patients during a mass/multiple casualty incident (MCI) or weather related emergency (WRE). What has been implemented is a modular program designed to fill gaps in pre-burn center providers' burn triage and treatment knowledge as well as burn treatment equipment availability. The burn preparedness toolkit may be used as a model, in whole or in part, by institutions interested in enhancing the primary triage and initial treatment capabilities of pre-burn center healthcare providers. While these modules are enumerated they do not need to be implemented in any specific order.

Pennsylvania's Emergency Response Resources:

PA is divided into nine counter terrorism task forces (CTTF) that are tasked with assisting and/or directing the emergency response to MCIs and WREs (see Figure 1). LVHN RBC is located in the Northeast PA (NEPA) CTTF and to date has established working relationships with the leadership of this group as well as the groups in Southeast PA (SEPA), South Central PA (SCPA) and East Central PA (ECPA). Building and maintaining these relationships is a central part of the disaster preparedness planning process since ensuring an ongoing partnership with the regional CTTF's strengthens the clinical competencies of emergency responders.

In addition to the nine emergency response groups PA also has a comprehensive network of Emergency Medical Service (EMS) providers. Broken up into 16 councils, the PA state EMS network includes over 3,500 ground and 32 aeromedical ambulances.

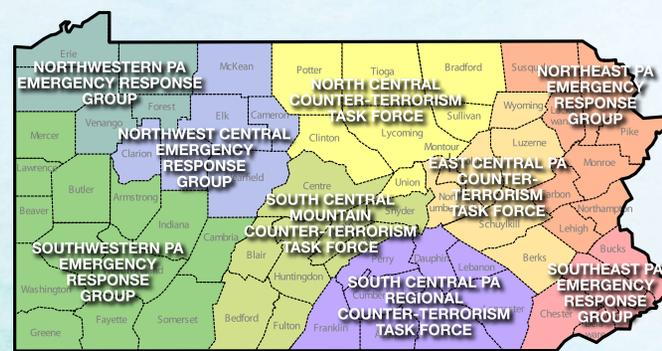


Figure 1. Map of the Pennsylvania Emergency Response Groups.

Module 1: Provide equipment

The first module of our project was to ensure that the material needs of healthcare providers treating burn patients would be met. The NEPA CTTF utilized federal and state grant monies to build 27 Burn Carts that would be deployed throughout the hospitals of NEPA and part of the NCPA CTTFs. These carts are stocked with basic medical equipment needed to treat two to three moderately burned (<30% TBSA) patients or one seriously burned (>30% TBSA) patient for up to 72 hours.

The 24" x 24" x 36" carts have many advantages. First, they are stocked with equipment commonly found in all hospitals. Common equipment was chosen so as materials get close to expiration inventory can easily be rotated by the host institution. Equipment specific to burn care and not stocked by the host institution is rotated on a quarterly basis by a representative of LVHN RBC.

Second, the carts reduce labor requirements for wound management. The primary burn dressing material stocked is a silver impregnated polyethylene netting. Because this dressing maintains its antimicrobial capability for up to 72 hours the need for multiple dressing changes is eliminated. Reducing the number of dressing changes during the first few days of a MCI or WRE is important to ensure that limited human resources can be applied to other areas of need.

Lastly, they are a supply repository. Should any of PA's burn centers run short of materials during a large MCI or WRE or, should one of the burn centers be destroyed, these carts act as a remote equipment stockpile.

The burn cart program continues to expand (See Figure 2 for current burn cart distribution). In 2012 the SCPA CTTF rolled out 16 burn carts to the emergency departments of their region and the SEPA CTTF is currently rolling out 20 burn carts to both the trauma centers in their region and the SEPA surge medical assistance team (SMART).



Burn Carts being prepared in 2008



Burn Cart ready for deployment

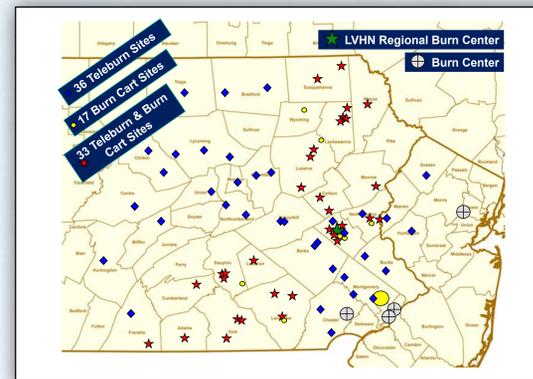


Figure 2. Distribution of Eastern Pennsylvania's Burn Disaster Preparedness assets.

Module 2: Provide guidance

Providing guidance to pre-burn center providers during a MCI or WRE can come in two forms, either through real time direct communication with a burn provider or through pre written policies. LVHN RBC decided that the use of both forms would ensure that when burn patients are being treated by pre-burn center providers, best practices are maintained.

TeleburnSM

The use of telehealth to enhance triage capability has been discussed in many articles on disaster management. LVHN RBC has a successful program, called TeleburnSM, which can be used during a MCI or WRE to ensure that a patient's wounds are assessed by a remotely located LVHN RBC Burn Surgeon.

There are many advantages to the TeleburnSM system in burn patient surge scenarios. Utilizing store and forward technology, providers in referral emergency departments can take a digital photograph of a patient's burn wounds and send it over a secure internet connection to the servers located at LVHN. These servers then transfer the encrypted photographs to a portable, dedicated viewing platform that each burn surgeon carries.

The referral physician then calls the LVHN RBC transfer center to initiate a conversation with the burn surgeon to determine whether the patient needs immediate transfer to a burn center, whether the patient can wait for an outpatient burn center appointment at a later date, or whether the burn wound is appropriate for local resources to treat. Reducing unnecessary patient transfers during an MCI reduces the burden on EMS agencies that will already be stretched thin.

Another reason why using TeleburnSM during an MCI is advantageous is that it is a familiar technology at many of the referral institutions in LVHN RBC's coverage area. TeleburnSM is now operational at over 60 emergency departments, primary care practice offices, emergency care clinics, occupational health clinics, and mobile SMARTs throughout eastern Pennsylvania and western New Jersey (see figure 2). It has been used to successfully triage nearly 2000 burn patients since its implementation in 2008. The familiarity that this usage garners with the referral center providers means that during an MCI or WRE emergency providers will not be attempting to learn how to use a new technology. TeleburnSM is not a tool that sits in the corner gathering dust until needed, it is used every day by referral institutions to gain access to our burn surgeons 24 hours a day, 7 days a week.

Burn Incident Guide

Because LVHN RBC works extensively with the NEPA CTTF, we were asked to build a hazard specific policy for burn patient treatment that could be attached as an appendix to the emergency response plan of the NEPA CTTF coverage area. The Burn Incident Guide (BIG) was modeled on similar plans found in other regions of the country and offers best practice suggestions on the triage, treatment and transport of burn patients. The BIG is also a resource directory indicating where burn specific assets are located in both the state and region.

Module 3: Provide education

In addition to promoting Advanced Burn Live Support, LVHN RBC provides a myriad of courses for all levels of healthcare provider. The most comprehensive of these courses is titled 72 Hours of Burn Care: A Workshop for Disaster Management Teams.

In Pennsylvania there are several SMARTs whose stated missions are to provide surge assistance to MCI impacted areas for up to 72 hours post incident. One of these teams works within the SEPA CTTF and is based approximately 50 miles to the south of LVHN RBC. Because the NEPA CTTF and the SEPA CTTF provide mutual support to each other, it is possible that the SEPA SMART team will assist a burn related patient surge at LVHN RBC. For this reason the commander of SEPA SMART requested that a lesson plan be developed that specifically addresses the needs of the burn patients during the time period of their groups stated mission.

The first class was held on January 12, 2013 and received positive reviews from the 31 participants. Didactic lessons are similar to Advanced Burn Life Support with added topics regarding the specific types of treatments used at our burn center. A hands on session allows participants to work with some of the equipment they will encounter at our burn center, but may have never worked with in their normal professional experience. This class will continue to be updated and can be offered to teams as a continuing education opportunity or as "just in time training" should a team come to our burn center to provide support.

Module 4: Provide opportunities to drill

Active participation in local and state drills is necessary to bring us one step closer to being both prepared for an emergency and ready to quickly implement the steps necessary to overcome the challenges presented. Thus far drills have demonstrated the strengths of the burn preparedness toolkit as well as showing us opportunities for improvement.

Referral centers use these drills as an opportunity to have staff examine the contents of the burn carts, ensure staff are employing best practices in burn care, and to determine the need for additional education should knowledge be lost to time or staff turnover. Anecdotally, we have noticed that TeleburnSM utilization reduces the length of time each referral phone call takes by approximately 50%. This allows the emergency providers and burn surgeon more time for other critical tasks.

Despite these strengths opportunities for improvement also exist. A limited number of telephone lines and transfer center operators causes a queue to form when multiple referral centers attempt to contact our burn center simultaneously. Also, despite ongoing education human error sometimes impacts the transmission of photographs through the TeleburnSM system.

Participation in drills allows LVHN RBC to continue to build trusting relationships with the referral centers. This collaboration not only benefits any patient involved in a future MCI or WRE, but also the patients who are treated for burn injuries under normal operating conditions.

Next Steps:

- Continued expansion and maintenance of the burn cart program to other CTTFs
- Continued expansion of TeleburnSM to emergency providers that treat burn patients
- Lobby other CTTFs to adopt a burn disaster plan similar to the BIG
- Continue to deliver educational opportunities to pre-burn center providers.
- Expand drills to include the Eastern Burn Disaster Consortium to ensure the smooth secondary triage of patients from burn center to burn center.
- Expand and maintain relationships with the providers who will be providing care to burn patients during an MCI or WRE.
- Work on the opportunities for improvement discovered during our drills.



Burn Surgeons and Nurse Practitioners can view Teleburn photos from a computer or their mobile phones



Burn providers utilize mobile phones as a portable viewing platform.



Instructing the first 72 Hours of Burn Care course