Disaster Preparedness &
The Regional Verified Burn Center

Lehigh Valley Health Network

- 3 Hospital Campuses
- Located in Allentown and Bethlehem, PA
- Regional Burn Center located at Cedar Crest Campus in Allentown
- ABA/ACS Verified Adult & Pediatric Burn Center
- Regional Resource Level I Adult Trauma & Level II Pediatric Trauma Center.

Lehigh Valley Hospital
Regional Burn Center

- Regional Burn Center is located 50 miles Northwest of Philadelphia and 30 miles west of New Jersey
- Northernmost Burn Center in Pennsylvania
- Serves approximately 63 counties with referrals from 100 facilities in PA, NY and Western NJ
- Catchment area is approximately 4500 square miles with a population base of over 2 million people
- Annual Admissions:
  - 820 Annual Burn Admissions
  - 70+ Annual Adm. of complex major wounds (Non-Burn)
  - Time to 1st OR = 0.86 days
  - Average Overall LOS = 5.8 days
  - Annual Mortality Rate = 1% (National Average ~3.5%)
Regional Burn Center Capabilities

- Total Burn Center Beds = 18
  - Universal beds, designed to accommodate critical care through Med-Surg & Rehab
  - 3 Full-time Burn Surgeons
  - 6 Physician Assistants
  - 2 Nurse Practitioners
- Comprehensive outpatient program
  - Burn Recovery Center
- Extensive outreach and education with referral facilities as well as regional EMS

Burn Injuries

- Are not like other trauma injuries
- Complex multi-system involvement
- Require lengthy course of treatment
  - Estimated 30% of victims in MCI will have Burn Injuries
  - Average burn TBSA is > 50% in most mass casualties
- Burn surgeons have expertise to treat burns AND trauma injuries/victims

Burn Center Specialty

- Burn centers are highly specialized
  - Thousands of Trauma Centers compared to Burn centers
    - Total Burn Centers in U.S. = ~128
  - Only 54/128 of these centers are verified by the American Burn Association and the American College of Surgeons
  - Disaster Planning and the ABA – Formally recommend involvement and coordination of regional response through a Regional Verified Burn center
Burn Disaster Planning

- A Mass Casualty Burn Disaster is defined as any catastrophic event in which the number of burn victims exceeds the capacity of the local burn center to provide optimal burn care.

  - **Capacity** includes availability of burn beds, burn MDs, burn RNs, other support staff, ORs, equipment, supplies, and related resources
  - **Surge Capacity** is the capacity to handle up to 50% more than the normal maximum number of burn patients

Primary Burn Triage

- Goal of burn patient triage is to transfer patients to the Burn Center within 24 hours
  - There are multiple factors that can potentially delay this from occurring
  - Optimal triage of Burn patients is achieved through direct communication between Incident Command and the closestVerified Regional Burn Center
  - Preparation of first responders and referral facilities is integral to the success of the triage process

Benefit-to-Resource Ratio Based on Age & Total Burn Size

<table>
<thead>
<tr>
<th>Age Group</th>
<th>0 - 10%</th>
<th>11 - 25%</th>
<th>26 - 40%</th>
<th>41 - 60%</th>
<th>61 - 75%</th>
<th>76+</th>
<th>80+</th>
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<tbody>
<tr>
<td>0 - 5.99</td>
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<td>Medium</td>
<td>Medium</td>
<td>Low</td>
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<td>6 - 12.9</td>
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<td>13 - 19.9</td>
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<td>30 - 39.9</td>
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<td>40 - 49.9</td>
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<td>60 - 69.9</td>
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<td>Low</td>
<td>Expedient</td>
<td>Expedient</td>
<td>Expedient</td>
</tr>
</tbody>
</table>

*Table provided by Jeffrey R. Saffle, MD, Director, Intermountain Burn Center, Salt Lake City, Utah*
Secondary Burn Triage

Secondary triage is the transfer of burn patients from one burn center to another, upon reaching surge capacity

- Secondary triage should be implemented when capacity reaches 50% above normal maximum capacity
- Transfer should be to Verified burn centers first, when feasible, then to other burn centers
  - Formal Transfer Agreements are in place with Pennsylvania Burn Centers

Potential For Enhanced Triage Capabilities

- Enhanced triage and management with LVH Tele-Burn Program
  - Use of existing triage and transfer program that could be used for:
    - Victim Identification
    - Burn Center guided triage through use of photos over secure network
    - Burn Center guided wound management for referral hospitals based on initial wound photos

Burn Cart Project

The Concept...
Design, planning and distribution of a Regional & Commonwealth Template
Burn Cart Purpose & Design

• Purpose
  – Enhance regional member hospital & Commonwealth preparedness & response capabilities for a mass casualty or surge of burn patients.
    • This project is not intended to provide burn supplies for day-to-day use...

• Design
  – Based on existing theoretical models outlined in literature that are conceptually based on Israeli models
  – Innovation
    • Adapted to include modern burn wound dressings
      – Minimize wound care → optimize resource utilization
    • Provide specialty supplies to initiate the management of one to three minor to moderately burned patients for 24 to 72 hours

Burn Cart Distribution

• Distribution
  – NEPA – 22 Carts
    • 19 NEPA-ERG Member hospitals
    • 3 carts for Mobile Surge Hospitals
  – EMS of NEPA – 5 Carts
    • 1 Cart to be stored at EMS of NEPA
    • 4 additional carts for distribution in Luzerne & Wyoming Counties

Burn Cart Maintenance

• Designed for low maintenance
  – Supply rotation and replenishment can be done at any member hospital
  – Specialty Burn wound dressing with 2-year shelf life
    • NEPA Project - Burn specific wound dressings will be rotated with the assistance of the product manufacturer & LVHN Burn Center
Burn Cart Training Plan

- Standard manual to be included with each cart
  - Complete list of supplies

- Initial Management Guidelines
  - Including wound management

- Adjunct Triage Criteria for Burn
  - Detailed Triage process developed by the ABA
    - Identify patients that would benefit from immediate transfer to the Burn Center
    - Identify patients that could be managed at member hospitals

Burn Cart Program

Regional Benefits

- Added Burn care component for hospitals and counties within region and Commonwealth
- Improved preparedness for standardized management of patients with burn injuries
- Improved outcomes for burn injured victims through collaboration with Regional Burn Center
- Overall enhanced emergency preparedness for regional and multi-regional response

Lessons Learned

- Challenges
  - Coordination of actual supplies for project!
  - Adequately preparing all member hospitals for appropriate use of cart
  - While the LVH Burn Center has experienced great success with modern burn wound treatment methods, there is still a lack of consensus within the burn community