Mass Casualty Incidents
Planning for the Conventional & Non-Conventional

Michael Stein MD, FACS,
Director of Trauma, Department of Surgery
Rabin Medical Center, Beilinson Hospital
Petach-Tikva, ISRAEL

INJURY 2015 – Eden Park, Auckland, New Zealand
August 6, 2015
Mass Casualty Incident

The Rabin Medical Center
Beilinson Hospital

RMC
2000 – 2008
25 “limited” MCIs
10-50 patients each

Nationwide – (Suicide Attacks)
1994 – 2010
160 “limited” MCIs
5-250 patients each
Involving All 27 Acute Care Hospitals in Israel
Mass Casualty Incident

Do we Have MCIs?

Nationwide Mass Casualty Incidents

No Major Earthquakes in last 100 years

5 Full Scale Wars

Train MCI’s – 3

3 Mass gathering trauma disasters
A Few Basic Assumptions...

- Study the Local History of Incidents
- Anticipate: Natural, Man-Made MCIs
- Types of Incidents:
  - **Terror** – Conventional, Chemical, Biological, Toxicological
  - **Accidental** – Large Scale Transportation Accidents (Land, Air, Sea), Mass Gathering Accidents (Sport Stadiums, Musical Concerts)
  - **Natural** – Quakes, Floods, Fire etc.
Mass Casualty Incident

Experience from Leninakan (Armenia)

1988 – Earthquake
25,000 dead
40,000 injured

All 4 hospitals destroyed
(one with whole staff)
Mass Casualty Incident

Leninakan (Armenia)
1988 – Earthquake

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At the Site of Disaster Adapazari, Turkey (1999)

> 200 Aftershocks – 5 significant – 4-5 on Richter’s scale
Earthquakes in Israel
The Syrian-African Fault
Along Jordan & Dead Sea Valleys

- Ramleh
- Safed
- Beit She’an
- Gaza
- Jaffa
- Jerusalem
- Hebron
- Nablus
- Jericho
- Tiberias

Peleg, Reuveni, Stein – IMAJ 4;361-365, 2002
Mass Casualty Incident

Beit She’an – The Jordan Valley

- Dead: 16,000
- Severe Injury: 6,000
- Mild Injury: 83,000
- Displaced: 377,000
- Buildings:
  - Collapsed: 10,000
  - Sev. Structural Damage: 20,000
  - Minor Damage: 105,000

Damage Estimates (7.5–8.0 Richter’s Scale)
Earthquakes in the Holy Land
Mass Casualty Incident

Acute Care Hospitals in Israel

“LEVEL 1” s (6) ~ 700 - 1500 beds
“LEVEL 2” s (14) ~ 350 - 650 beds
“LEVEL 3” s (4±3) ~ 150 - 300 beds

Total Beds: 15,000
Expansion to 28,000 in Full scale war
Population (without West Bank & Gaza) → 7,500,000
"LEVEL I" Centers

- Haddassah, Jerusalem
- Sheba, Tel-Aviv (area)
- Rabin (Beilinson), Tel-Aviv (area)
- Ichilov (Sorasky), Tel-Aviv
- Soroka, Be’er-Sheva
- Rambam, Haifa
Regional & Local
Community, Municipal & Pre-Hospital Plan

Purpose
Policy
Definitions
Organization Affected
Standard Operating Procedures
Responsibilities (Who is in Charge?)
Pre-Hospital

The Goal:
- To save the greatest possible number of patients from death
- To avoid as much as possible serious disability

Achieved By:
- Prompt triage
- Appropriate treatment in Field (Less is More...)
- Rational prioritization of transportation to appropriate designated facility
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Pre-Hospital

Procedures
Communications
Transportation
Deceased Persons
Triage Tape and Priority Selection Criteria
START – Simple Triage & Rapid Transport Forms

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Hospital Preparedness
Types of Terror Threats
(and Non-Terror related Events)

- Chemo
- Bio
- Radiation ??
- Conventional

Textbook Protocols Are OK for Inspections !!
One Page Checklist is critical in a real Incident
When You Plan Your MCI Response

More Basic Issues...

- Unless you are the only hospital in town…
- Evacuation to Multiple Med. Facilities
- EMS – Rational Primary Evacuation Plan
- Prudent “2ry” Distribution
- Make Sure You Have a “HEICS” – Hospital Emergency Incident Command System (5 Components)
  “Commander”, Planning, Logistics, Finances, Operations
- Your HEICS Should be Integrated Within the Local Community Incident Command System: Municipality, Police, Fire Department, EMS
- Have a Hospital Plan/Protocol For MCIs
Mass Casualty Incident

What Scenario Should We Plan And Train For At The **Hospital** Level?

![Graph showing the level of care (%) vs. casualties per hour.

- **Multiple**
- **Mass**
- **Disaster**

Hirshberg, Mattox, Stein
J Trauma, (4) 2005

~ 1000 bed Acute Care Hospital (Level 1 Capabilities)
Mass Casualty Incident

Conventional Threat
Concepts of Management for “Limited” MCI

**Level “A”:**
- Large Hospital (Level I) – up to 4 / 10
- Small Hospital (Level II) – up to 2 / 5

**Level “B”:**
- Large Hospital (Level I) up to Full Capacity of ED (40-60) 8 / 20
- Small Hospital (Level II) up to Full Capacity of ED (15-30) 4 / 10

Concepts of Management for “Large” MCI
- Hundreds of Victims
- More Than The Capacity of The ED
- Need For Deployment of Additional Treatment Sites
Sequence of Events

- Alert the Staff (as per activation level)
- Evacuate the ED
- Open Treatment Sites Other Then The ED
  - HEICS command Ctr., Non-Urgent, ASR center, Info Center
- Mobilize Pre-arranged Equipment Stockpiles
- Medical – Switch to “Mass Casualty” Tmt. Mode
Mass Casualty Incident

Medical Care

**Initial Phase - Modified Guidelines**

MAXIMAL Care for Unstable Salvageable (Except in Futile Cases)

"MINIMAL ACCEPTABLE CARE" for Serious Non-Urgent

NO CARE for Mild Non-Urgent

**Secondary Phase – Completion to Optimal Care**

DEFINITIVE Care – X-Ray, Operations

"Delayed" Optimal Care

2ry Distribution – Only AFTER ALL Victims Arrive

**Late Phase**

Prepare for the Next Incident
Mass Casualty Incident

Exercise, Exercise, Exercise, Exercise...

Hospital Preparedness

Table-Top Exercises
Mass Casualty Incident

Exercise, Exercise, Exercise…

Hospital Preparedness

Large Scale Live Exercises
Mass Casualty Incident

Exercise, Exercise, Exercise...

Hospital Preparedness

Post Drill / Real Incident Debriefing
The Biological Threat

- Anthrax
- Small Pox
- Others (?)

Community Preparedness Year & Months in Advance

15,000 Health Care Personnel Immunized
Mass Casualty Incident

The Chemo Threat
Home Preparedness

Automatic Injectors:
Atropine ± Toxogonin

February 2003

January 1991

The Sealed Room
Mass Casualty Incident

Chemo Threat - Triage Classification

- Walking → Mild
- Lying Down – Breathing → Moderate
- Lying Down – Not Breathing → Severe
Concept of Decontamination

- Field De-contamination (at site)

- Hospital (designated site) De-contamination
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Chemo Threat
Hospital Preparedness

- Hospitalization
  - Severe & Moderate
- Secured Facility
- Decon. Showers
- Mild - Out

Rabin Medical Center
ED

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Chemo Threat

Hospital Preparedness
Additional Equipment

Decon. Site - Cart

Special “Active” Gas Masks with blower
Mass Casualty Incident

Chemo Threat

Hospital Preparedness

Large Scale
300-600 mock casualties – 3 hour drill

Site for Limited Incident
Mass Casualty Incident

Radiological Accident (not Bomb !!)
5 Designated Hospitals
Decon. as for Chemo

Hospital Preparedness

Floor Covered With polyethylene sheets
Mass Casualty Incident

Nuclear Bomb

Hospital Preparedness??
Medical System Preparedness??

- Basically Prevention
- Same as Nuclear Accident & “Dirty” Bomb (probably ineffective)
  - But, on a different scale
- Intelligence & Technology is the answer !!!
  - “Hetz 2 & 3” – (Arrow 2 & Arrow 3)
  - The “Iron Dome” System
Mass Casualty Incident

Summary – 1

- Have Regional MCI plan
- Have Local MCI plan
- Have a Hospital MCI Plan
- Pre-Designate Additional Treatment Sites
- Prepare for Possible Decon. Need
- Have Basic Stockpiles of Equipment
- Educate the Staff
Mass Casualty Incident

Summary – 2

- GOAL – Best Outcome for INCIDENT
  1. Minimize Mortality As Much As Possible
  2. Minimize Morbidity As Much As Possible
- Switch to “Minimal Acceptable Care” Mode Vs Optimal Care Guidelines
- Perform Exercises and Implement Lessons Learned
Thank You

Michael Stein MD, FACS,
Director of Trauma
Department of Surgery
Rabin Medical Center, Beilinson Hospital
Petach-Tikva, ISRAEL
mshtein@clalit.org.il