Emergency Medical Preparedness and Response in Disasters: The Need for Balance between Past Experiences and Scientific Basis

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Taipei
1999 Disaster Medicine training in George Washington University
2000 Designer and team leader of Taiwan DMATs
2005 CEO of Taiwan EMOC Taipei region
2009 Director of NTUH safety and emergency preparedness Dept.
ER doctors (since 1991), PhD in NTU public health (2007), EMBA in NTU business school (2015)
Outlines

- Lessons learned from recent disasters in Taiwan,
- Epidemiology of injury pattern and medical resources needed of disaster victims in Taiwan,
- The fundamental process for medical care in MCI field,
- The differences in special type of events, e.g., nuclear, biological, chemical, hospital internal disasters,
- Tools for evaluating emergency performance (e.g., simulation software, exercise)
- New challenges and potential solutions for emergency room MCI preparedness in Taiwan.
What We Can Do in This Scenario?

What kind of specialty? How many people in your team? Doing what?
We try to practice medicine in all situation......

To someone with a hammer, everything looks like a nail.

~ Mark Twain
We try to save people in disasters, so we need to know more about them......

If the only tool you have is a hammer, you tend to see every problem as a nail

Abraham Maslow
Something we need to know about Emergency Management
Comprehensive Emergency Management

MPRR

Step 01
Mitigation

Step 02
Preparedness

Response
Step 03

Recovery
Step 04
Comprehensive Emergency Management

- Education/Training
- Exercise
- Incident Command System
- Hazard Vulnerability Analysis
- Risk Management
- Continuity of Operation
- Preparedness
- Education/Training
- Exercise
- Recovery
- Mitigation
Hazard vulnerability analysis identify your risks and weak points

Emergency Operation Plan tell you what to do in emergencies

Incident Command System define your command chain and common language in disasters

Continuity of operation guarantee your organization still functioning in disasters

Planning P improve the decision making and coordination in emergencies

Planning P improve the decision making and coordination in emergencies
Great Challenges We Met......
1935: 3200 dead
1999: 2400 dead
2003: 80 dead
1998, 2000, 2002: total 500 dead
2009: 600 dead
Earthquake in Central Taiwan, 1935

R7.1, 3200 died
The physicians provided roadside medical care

1936 Taiwan earthquake, 3200 died
First Aids
Food Supply
Requiem
Resources Management
Temporary School
Flood in Central Taiwan, 1959

Died and missing: 1000
Typhoon Gloria, 1963

Died: 312
Earthquake in Tainan, 1964

Died: 100
Air crash, Far Eastern Airline, 1980

Died: 110
Train Derailment, 1981

31 died, 130 injured
NERP: The beginning of modern emergency response plan for disasters

- **1981**: The "Nuclear Emergency Response Plan" was promulgated by the Atomic Energy Council.

- The National Nuclear Emergency Management Committee (NNEMC，核子事故處理委員會)
Emergency Medical Services System/EMT since 1995
Earthquake in Central Taiwan, 1999

R7.3 2400 died
Confined Space Rescue

Doctors and Fire Fighters/EMT respond to the scene
Temporary Medical Aid Stations

1999 Taiwan earthquake, in Puli
Different departments will work together (but independently)
Some hospitals failed,

1999 Taiwan earthquake, Chu-Shan Hospital
Field clinics outside the hospitals immediately

1999 Taiwan earthquake, Puli Christian Hospital
Responders are Coordinated by Fire Dispatch Center

Taipei City Fire Dispatch Center during earthquake
No. of the Wounded in Chi–Chi Earthquake (according to time frame)

Depletion of local resources
The Demand

Time

Capacity

Army (DOD)

Local EMS

DMAT

Central Gov

Tech Support

NBC Team

Crisis Management

Consequence Management
What were the differences in bio-threat/SARS?

And that would be happened in the CBRNE events!
Fever Clinic Outside for possible patients!

Fever Screening Clinic in NTUH 2003
Psychological Impacts of SARS

- Excessive self-defense measures
- Lack of trust between people
- Negative emotions projection
- Infection control measures isolated feeling of friendship, trust and goodwill
- Alienation in the society
Topic 2
Disaster Epidemiology in Taiwan

Events
- Food: 33%
- Mass Gathering: 8%
- Hazmat: 7%
- Fire/Explosion: 9%
- Traffic: 31%
- Others: 7%

Casualties
- Food: 18%
- Mass Gathering: 8%
- Hazmat: 8%
- Fire/Explosion: 4%
- Traffic: 11%
- Earthquake: 1%
- Flood: 1%
- Others: 1%

Typhoons: 46%
- Food: 18%
- Mass Gathering: 8%
- Hazmat: 8%
- Fire/Explosion: 4%
- Traffic: 11%
- Earthquake: 1%
- Flood: 1%
- Others: 1%
## Result: Events and Casualties

<table>
<thead>
<tr>
<th>Event Type</th>
<th>Casualties</th>
<th>Events</th>
<th>Avg No./event</th>
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</thead>
<tbody>
<tr>
<td>Typhoon</td>
<td>16093</td>
<td>29</td>
<td>554.9</td>
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<tr>
<td>Flood</td>
<td>315</td>
<td>13</td>
<td>24.2</td>
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<tr>
<td>Earthquake</td>
<td>1006</td>
<td>5</td>
<td>201.2</td>
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<tr>
<td>Traffic</td>
<td>3768</td>
<td>279</td>
<td>13.5</td>
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<tr>
<td>Hazmat</td>
<td>2837</td>
<td>63</td>
<td>45.0</td>
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<tr>
<td>Fire/Explosion</td>
<td>1455</td>
<td>86</td>
<td>16.9</td>
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<tr>
<td>Mass Gathering</td>
<td>2739</td>
<td>73</td>
<td>37.5</td>
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<tr>
<td>Food</td>
<td>6166</td>
<td>296</td>
<td>20.8</td>
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<tr>
<td>Others</td>
<td>570</td>
<td>59</td>
<td>9.7</td>
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<td><strong>Total</strong></td>
<td><strong>34949</strong></td>
<td><strong>903</strong></td>
<td><strong>38.7</strong></td>
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</tbody>
</table>
Result: Casualties Arrival

- 59.88%
- 36.21%
- 0.45%
- 0.17%
- Not all patients being controlled by 119

3.29%
Result: Disposition

The majority of patients do not need hospital beds.

- **ICU**: 2.14%
- **OP**: 0.51%
- **Ward**: 8.25%
- **MBD**: 77.26%
- **OBU**: 7.83%
- **Transfer**: 1.05%
- **Dead**: 1.37%
- **Other**: 1.59%
Medical Resources Utilization was different

<table>
<thead>
<tr>
<th></th>
<th>Not Minor</th>
<th>Critical</th>
<th>Bed Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typhoon</td>
<td>13.6%</td>
<td>2.5%</td>
<td>12.9%</td>
</tr>
<tr>
<td>Flood</td>
<td>17.5%</td>
<td>5.8%</td>
<td>14.0%</td>
</tr>
<tr>
<td>Earthquake</td>
<td>8.4%</td>
<td>2.8%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Traffic</td>
<td>24.1%</td>
<td>10.3%</td>
<td>18.0%</td>
</tr>
<tr>
<td>Hazmat</td>
<td>3.7%</td>
<td>2.2%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Fire/Explosion</td>
<td>31.8%</td>
<td>18.9%</td>
<td>27.5%</td>
</tr>
<tr>
<td>Mass Gathering</td>
<td>4.1%</td>
<td>0.9%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Food</td>
<td>3.4%</td>
<td>0.2%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Others</td>
<td>22.7%</td>
<td>13.6%</td>
<td>17.9%</td>
</tr>
<tr>
<td>Total</td>
<td>12.0%</td>
<td>3.8%</td>
<td>10.5%</td>
</tr>
</tbody>
</table>
The Comparison of Medical Resources Utilization in Different Disasters
Hospital Bed Requirement was different among different prefectures/cities
ICU Bed Requirement was different among different prefectures/cities
The fire department played different role in disasters. In fire or road accident, the majority were sent by 119.

The picture showed the percentage of patients sent by 119 in fire incidents.

The percentage varied in different places.
The Role of 119 was Different

• In typhoons and floods, 119 did not play the majority role.
• The pictures showed the percentage of patients sent by 119 in typhoons.
• Less than 50% of the patients were sent by 119.
The aged people need more attention

<table>
<thead>
<tr>
<th></th>
<th>Not Minor</th>
<th>Critical</th>
<th>Bed Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children 0-14Y</td>
<td>5.90%</td>
<td>1.80%</td>
<td>4.90%</td>
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<tr>
<td>Young Adult 15-64Y</td>
<td>11.30%</td>
<td>3.50%</td>
<td>10.00%</td>
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<tr>
<td>Old &gt;65Y</td>
<td>19.80%</td>
<td>4.70%</td>
<td>18.60%</td>
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</table>
Common Injury Patterns

<table>
<thead>
<tr>
<th>Injury Pattern</th>
<th>Casualties</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>Soft Tissue Injury</td>
<td>9674</td>
<td>34.28%</td>
</tr>
<tr>
<td>Medical (including food)</td>
<td>9512</td>
<td>33.71%</td>
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<tr>
<td>Hazmat</td>
<td>2405</td>
<td>8.52%</td>
</tr>
<tr>
<td>Head Injury</td>
<td>2014</td>
<td>7.14%</td>
</tr>
<tr>
<td>Bone Fracture/Dislocation</td>
<td>1816</td>
<td>6.44%</td>
</tr>
<tr>
<td>Burn (Inhalation)</td>
<td>1703</td>
<td>6.04%</td>
</tr>
<tr>
<td>OHCA</td>
<td>352</td>
<td>1.25%</td>
</tr>
</tbody>
</table>

- Many patients had more than one injury pattern
- Among medical illness, 60% was GI problem
- Among burn patients, 35% was inhalation injury.
Disasters are different......

- The epidemiology for disaster health impact was different among different places, local governments should tailored their system.
- Medical resources (esp. ICU and general ward) in different disasters varied, but not as high as we expected.
- Fire department play an important role in pre-hospital medical care, but in some disasters they were not activated.
- We should pay more attention on the aged population in disaster preparedness
Solution 1:
Disaster Medical Assistance System Since 2000
Solution 2: Regional Emergency Operation Center
Solution 3:
Web-based Medical Resources Platform
Emergency Medical Management System

(http://220.228.12.173/)
Solution 4: Medical Care for Hazmat Casualty in designated hospitals
Topic 3
Ideal Response Framework for MCI

- Security
- Damage control
- Medical care
- Rescue/Evacuation
Rescue Scene Control for MCI in Taiwan
Fundamental Process for Field Medical Care

- Incident commander decide the CCP
- Disposition officer decide which ER to send
- ER doctors decide definite cares
Survival of Casualties in Scarce Resources

Time vs. Resources
Triage

Patient Information

Priority
Triage by Location
EX: MCI drill (a fir in long tunnel)
Medical Response to Disasters

- Small volume
- Exceed Single Hospital Capacity
- Exceed Community Capacity
- Extra-Huge

Single Hospital
Daily Event

Field Hospital
Alternative Care Site
Hospitals
Catastrophes
Huge MCI
MCI
Medical Care for Multiple/Mass Casualty Incident

**Step One**
Field Medical Care
- Nearby
- Appropriate
- Diverse

**Step Two**
Emergency Care
- Life saving
- Triage

**Step Three**
Definite Medical Care
- Specific medical need
Role of the Disaster Medical Assistant Team

- Disaster Scene
- Casualty Collecting Point (CCP)
- Emergency Room (ER)
- Definite Care

DMAT

Type 1

Type 2
Composition of the Disaster Medical Assistant Team

1 Type 1

Incorporated into City EMSS
Composition of the Disaster Medical Assistant Team

**2 Type 2**

**Medical Operation Unit**

**Medical Support Unit**
Disaster Medical Assistant Team

Including medical, ancillary and support personnel
Topic 4a Special situation
Hazmat Involved in Disasters

1. Rescue
   - Evacuate
   - Stop leakage

2. Detection
   - Identification
   - Set priority for Decon

3. Decon
   - Washing out All hazmat

4. Triage & Transfer
   - MCI process

Hot Zone  Warm Zone  Cold Zone
Detection, Decontamination and Provide Definite Care
Integrate Live Saving and Hazmat Management
Separate entry for contaminated patients in ER
Decon facility within an ER
Shower nozzles outside an ER
PPE in an ER
Radiation monitoring system in an ER
Topic 4b
Hospital Resilience in Disasters

HCFs play roles for communities

Hardware and Environ Safety
Protect personnel and patients

Surge Capacity
Response to large volume of patients

Hospital continuity of operation
Electricity, Water, IT, Medical gas, logistic supply
Hospital fires are very dangerous!
Very difficult to evacuate!
Smoke killed a lot of people!
Recently forgot to close doors killed 13!
In case of a fire in the power plant of hospitals?
Human factors related safety issue

**SHEL Model**

1. Hardware
   - 硬體
   - Hardware
2. Software
   - 軟體
   - Software
3. Environment
   - 環境
   - Environment
4. Liveware
   - 人
   - Liveware
Hazard Vulnerability Analysis for Hospitals

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>可能性</td>
<td>人命危害</td>
<td>傷害</td>
<td>財産損失</td>
<td>醫療中斷</td>
<td>衛生</td>
<td>營運中斷</td>
<td>傷害</td>
</tr>
<tr>
<td>1</td>
<td>危害</td>
<td>危害發生的機率</td>
<td>死亡或受傷的可能</td>
<td>硬體的損傷或喪失</td>
<td>服務的中斷</td>
<td>事先的準備</td>
<td>時間、效率及資源</td>
<td>社區互助及資源共享</td>
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<tr>
<td>2</td>
<td>0 = 無</td>
<td>0 = 無</td>
<td>0 = 無</td>
<td>0 = 無</td>
<td>0 = 不適用</td>
<td>0 = 不適用</td>
<td>0 = 不適用</td>
<td>0 = 不適用</td>
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<tr>
<td>3</td>
<td>1 = 低</td>
<td>1 = 低</td>
<td>1 = 低</td>
<td>1 = 低</td>
<td>1 = 高</td>
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<td>3 = 高</td>
</tr>
</tbody>
</table>
Wards/units are different!

- Life support not needed
- Can not move
- Rely on life support

- Housing
- Long Term
- Nursing Home
- RCW
- ICU
- OR
- ICU
- ER
- PSY
- OPD
- HD
- ER
- PSY
- OPD

86
Disasters are different!
Architecture design

The possibility of shelter-in-place
Fire compartment without penetration!
Combination of clear signage, egress, fire doors......
A pragmatic and readable EOP

A lot of EOPS, but where is the true answer for this situation......
Education/Training and exercise!
Topics 5
Tools for evaluating emergency performance
Why performance evaluations difficult?

- Events are different!
- Organizations are different!
- Events can not be repeated!
- Rare events
- Performance differs when psychological prepared!
- History effects
- No comparison
A well-designed exercise, is just like a laboratory for scientific study.
Basic concept for Exercise
What is an acceptable exercise?

01 Set Objective

02 Well design and conduct

03 Exercise evaluation

04 Identify issues need improvement
Types of Exercises
01 Orientation
02 Drill
03 Tabletop
04 Functional
05 Full-scale
Orientation
Drill
Tabletop
Functional
Full-scale Exercise
Blended Learning: Tabletop Drills

- HCF management
- PPE
- Sampling technique and Lab
- Risk communication
- Patients sampling
Choose appropriate types of exercise

- Functional Drills
- Full-Scale
- Games
- Drills
- Tabletops
- Workshops
- Seminars

Planning and education
- Discussion
- Practice

Test ability
Exercise design 4 steps

1. Roles and scope
2. Goals and Objectives
3. MSEL
4. Expected response and forms
Master Scenario and Events Listing

### Event #
- [Insert Method]

### Event Time:
- [Insert appropriate related objectives]

### Who Delivers?
- [Controller]
- Recipient Player(s):
- [Recipient name(s)]

### Event Description:
- [Insert Description]

### Inject:
- [Insert Inject Detail]

### Expected Action(s):
- [Insert Expected Actions]

### Expected Outcome:
- [Insert Expected Outcome]

### MSEL (Summary)

The summary of the MSEL follows. This is a high-level view of MSEL injects in chronological order.

<table>
<thead>
<tr>
<th>Event #</th>
<th>Event Time</th>
<th>Event Description</th>
<th>Responsible Controller</th>
<th>Recipient Player(s)</th>
<th>Expected Outcome of Player Action</th>
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</thead>
<tbody>
<tr>
<td>01</td>
<td>Time</td>
<td>Start of Exercise (Brief)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Time</td>
<td></td>
<td></td>
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<tr>
<td>03</td>
<td>Time</td>
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<td>04</td>
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<td>21</td>
<td>Time</td>
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</tr>
</tbody>
</table>
Example 1: Improving MCI process through Anylogic software

How many personnel are appropriate for our disasters?
Through Blue Print Analysis, 4 critical components were identified......

- Space
- Process
- Personnel
- Time
Basic Process

**Input**
- Patients
- Volume & Severity

**Throughput**
- Medical Procedures

**Output**
- Disposition & Transfer
Setting the Severity and Volume according to our databank

<table>
<thead>
<tr>
<th>Patients Arrival</th>
<th></th>
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<tbody>
<tr>
<td>Arrival per Hour</td>
<td>12</td>
</tr>
<tr>
<td>Patients per Arrival (Min)</td>
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</tr>
<tr>
<td>Patients per Arrival (Max)</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data</th>
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</tr>
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<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>
Basic Medical Process

Priority Setting

Primary Medical Care

Definite Medical Care
For space and layout
Paths to connect the areas
Setting the numbers of staffs in every locations, adjust later.

### Resources

<table>
<thead>
<tr>
<th>No. of</th>
<th></th>
<th>Triage EMT</th>
<th>T1 EMT</th>
<th>Obs EMT</th>
<th>Ambulance</th>
<th>Transporter</th>
<th>T2 EMT</th>
<th>T3 EMT</th>
<th>T0 EMT</th>
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<tbody>
<tr>
<td>Traige EMT</td>
<td></td>
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<tr>
<td>T1 EMT</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>T2 EMT</td>
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</tbody>
</table>
Setting the time consumed for every process (observed in ordinary EMS activity)

<table>
<thead>
<tr>
<th>Patients Treatment</th>
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</thead>
<tbody>
<tr>
<td>Triage Time Min</td>
</tr>
<tr>
<td>Triage Time Mean</td>
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<tr>
<td>Triage Time Max</td>
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<tr>
<td>T1 Time Min</td>
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<td>T1 Time Mean</td>
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<td>T1 Time Max</td>
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<td>Route Time</td>
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<tr>
<td>Mean</td>
<td>5</td>
</tr>
<tr>
<td>Max</td>
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</tr>
</tbody>
</table>
Process for Field MCI

1. Scene rescue
2. Prepare for transfer
3. Ambulance
4. Hospitals
Process for Hospital MCI

- Triage
- Medical TX
- Holding
- Disposition
- Definite Care
More detailed procedures with resources required
KPI Parameters
For example: Time to triage, treatment, hospitals
For Example: No. of patients treated

Queue Size

Queue Size Time Plot -1

Queue Size Time Plot -2
For Example: Resources Utilization

Resources Utilization

- Triage: 0.909
- T1: 0.595
- T2: 0.02
- T3: 0.69
- Obs: 0.857
- T0: 0.843
- Transport: 0.526
- Ambulance: 0.181

Resources Utilization Time Plot-1

Resources Utilization Time Plot-2
We can view in 3D
Outcomes of the model
Outcomes of the model
Outcomes of the model

- **Pt Time to Triage**
  - Time to Triage

- **Pt Time to T1 Tx**
  - Time to T1 Tx

- **Pt Time to T2 Tx**
  - Time to T2 Tx

- **Pt Time to T3 Tx**
  - Time to T3 Tx

- **Pt Time to Hospital**
  - Time to Hospital
We can compare between different resources and challenges.
Validating in full scale exercise
We can also use it for ER......
Example 2
New style of Tabletop Drills for Validating EOP, or education purpose
Functional Tabletop Exercise  ver2 since 2008
Functional Tabletop Exercise ver2
Resources are monitored
An MCI tabletop drill in NTUH
Too validating current EOP for MCI
Example 3
Full-scale exercise in Taipei Main Station
Survey and choose spots in advance
Time-sequences
Maps for the events
Evaluation form (to evaluate first responder)

| 1. | 単位人員初步災害應變評核表 |
| 2. | 觀察地點： |
| 3. | 日期： |
| 4. | 時間： |

<table>
<thead>
<tr>
<th>評核項目</th>
<th>評核標準</th>
<th>說明</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 是否立即把危險區域的人救出？</td>
<td>是</td>
<td>人員最後離開的時間與救援人員的最後報告時間相同。</td>
</tr>
<tr>
<td>2. 是否通知其他人員災害的發生？</td>
<td>否</td>
<td>通知其他人員災害的發生。</td>
</tr>
<tr>
<td>3. 是否正確地通知災害？</td>
<td>是</td>
<td>通知災害的正確性。</td>
</tr>
<tr>
<td>4. 是否正確地指揮疏散？</td>
<td>是</td>
<td>指揮疏散的正確性。</td>
</tr>
<tr>
<td>5. 是否正確地執行預案？</td>
<td>是</td>
<td>預案的正確性。</td>
</tr>
</tbody>
</table>

For example
Evaluation form (to evaluate EOC)

For example
**Evaluation form (for terrorists identifying)**

For example:

<table>
<thead>
<tr>
<th>物品編號</th>
<th>發現時間</th>
<th>發現地點</th>
<th>發現之單位</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
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<td>009</td>
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</tbody>
</table>
For example

Evaluation form (for overall management)
Prepare message cards
Prepare the simulators
Prepare the simulators (injured with vital sign and wound description)
Prepare the simulators (suspicious boxes)

We show this photo to the security officers under test, had them to find out the bad guys in the station......
Prepare the simulators (suspicious bad guys)
Explain to the evaluation team leaders
Explain to the evaluators in each area
Logistics for the evaluators and controllers
範例:

Start!
One of the evaluation form
Topic 6
New challenges and potential Solutions for ER MCI
The society and healthcare change a lot, but the EOPs do not!
For ER in metro areas, something we learned in recent decades......

- A MCI occurs in the community, usually only a few patients show up in your ER.
- Sometimes large volume of patients showed up in your ER without 119 noticed.
- The MCI patients may not as severe as your in-patients or patients waiting in the ER.
- Only a small portion of MCI patients require admission. (10-15%)
- Some patients require surgical treatment, but not emergent/urgent surgery.
- Only a few MCI patients require transfer. (1-2%)
- During MCI, we need a lot of non-medical personnel, but usually call back medical personnel.
To minimize the disruption of ER operation, an escalating activation would be more realistic.
The arrangement of treatment areas for the MCI patients

Should we have separate areas for green, yellow, and red patients?
Too much space already occupied by the ER holding patients
We need a more delicate personnel call-back plan......

The cost is very high in new Labor Act, but the effect.......
Staging Area for staffs, cars, supplies
The role and procedure of triage need improvement!

Triage tags = priority + patients ID + records

Maybe IT technology can help a lot!
Patients safety issues, esp. identification

Patient identification errors are common in ER, also in MCI.
Hand writing medical records in paperless ER?

- Now most of ER in Taiwan are paperless.
- If we planned hand writing medical record in MCI, some problems would happened:
  - No image
  - No lab results
  - Difficult in communication between medical personnel
  - No prescription
  - Many IT-assisted patients safety mechanism disappeared.

20 years ago, it was very common in MCI!
Communication and liaison
Not only equipment, but also contact points

- What kind of message?
  - Field information
  - Special hazards
- Related respond dept.
  - Fire
  - Health
  - Social welfare
- Neighborhood hospitals

Do we need radios?
Do we need new social media?
The bottleneck for inter-hospital transfer......

It is not an IT issue only. Healthcare, insurance and patients will play the major role!
Taiwanese people do not choose a place that no one wait!
Patients information vs. privacy protection
The status board is for the planning sectors, not for the public!
We need a new model for patients information/family units operation
Should we release patients status/information to the media?

Every culture is different!
In Sunflower Student Movement, the police dept. wanted the hospitals to send the students names, could we do that?
There are scientific theories behind emergency preparedness.

Emergency Management
"Home, home on the range" – Taiwanese Song