Pittsburgh Matrix for PPE

Michael P. Allswede
Director, Strategic Medical Intelligence, UPMC
# The Pittsburgh Matrix

<table>
<thead>
<tr>
<th>Above all Resources</th>
<th>Pre Release</th>
<th>Release</th>
<th>Symptom Occurrence</th>
<th>Illness Occurrence</th>
<th>Deaths/Epidemic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augmented Capacity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surge Capacity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Capacity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Demo of Matrix
UPMC Costs of Care
Gap Analysis

- Combines “Survivor Benefit” with Key Resources
- High Value Resources and Decisions are found in those vignettes with high survivor benefit
- Cost Bioterrorism Units (BTUs) determine per unit pricing for development of key determinants
- Expert panel can predict the impact of gap
Guides Facilities and National Strategy

- Threat will “float” with world events
- Assess value of mitigation strategies
  - Costs of strategy vs. lives saved
- New Technology
  - New tech or medical therapy will alter survival and the value of the asset can be compared with current to justify expenditure
Pre-Event Planning

- Working with local planners, the potential victim load is estimated.
- Medical facilities are queried as to their bed counts, numbers of antibiotics, and available personnel to assess civic healthcare capacity.
- Plot the number of victim load vs. capacity to determine scale of event.
Pittsburgh Matrix for PPE

- PPE solutions must provide safety in the workplace
- PPE solutions must be affordable and easy to store and use
- PPE solutions must not impair work performance in medical niches
Four Studies

- Assessment of Air Movement Factors and Hospital Grading Scale
- Assessment of selected pathogens and chemicals in air
- Assessment of PPE strategies related to affordability and risk
- Assessment of PPE strategies with increasing scale
Assessment of Air Movement

- Fixed Features
  - Single Floor/multi-floor
  - Elevators
  - HVAC characteristics

- Variable Features
  - Use of Elevators/HVAC/Vacuum Tubes
  - Building “envelope”
Assessment of Selected Pathogens and Chemicals

- Pathogen transmission characteristics
  - Survival in suspended air
- Vapor risks
  - Gas characteristics
- Particulate risks
  - Radiation assessment
Assessment of Affordability and Risk

- Matrix assessment combining hospital types and pathogen risks to determine safety strategies for different job descriptions
- Matrix assessment of costs/benefits associated with each strategy
- PPE Recommendations related to risk, and affordability
Assessment of PPE needs with scale

- Assess PPE recommendations over surge capacity spectrum for hospital response to increased victim load.
- Recommendations on PPE strategy vs. facility improvements.