The COMMON THREAD of PUBLIC HEALTH EMERGENCIES in LARGE-SCALE NATURAL DISASTERS

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Figures 1 a & b:

The range of potential disaster events/incidents with the potential for public health emergencies under discriminators of time, scale, and health outcomes important to a disaster taxonomy.

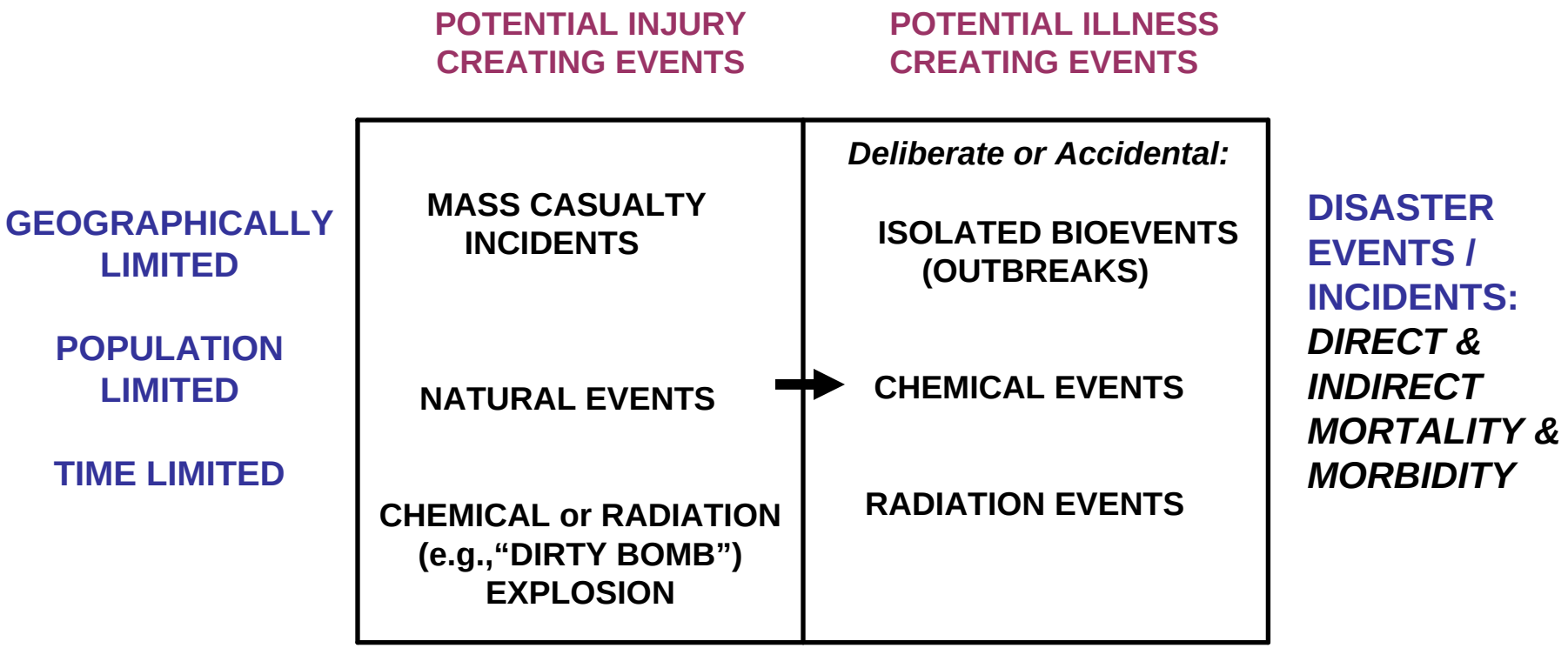

Figure 1a:

These events may never be totally prevented. However, both direct and indirect consequences of injury and illness (including mental health and psychosocial) creating events can be kept at a minimum without resulting in a public health emergency through good planning, prevention, and response. For example, the current Global Public Health Information Network (GPHIN) provides daily early warning of worldwide outbreaks, successfully preventing most from reaching epidemic status.

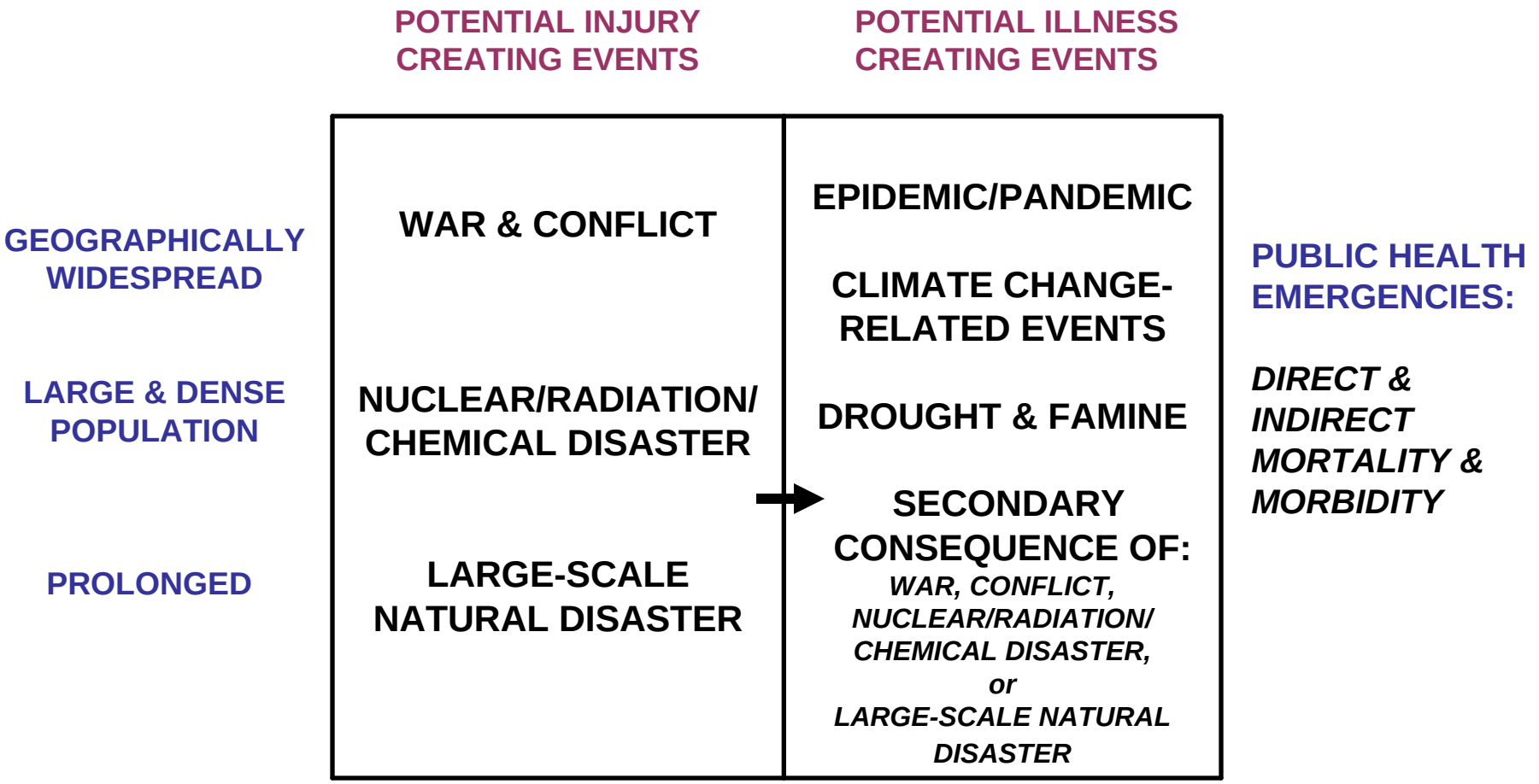

Figure 1b:

These disaster discriminators allow for a public health emergency to occur either directly (e.g., as a consequence of a pandemic or famine) or secondarily as a consequence of destroyed, inadequate, or denied public health protections (infrastructure or systems). Characteristically, indirect consequences (e.g., public health induced preventable illnesses, disabilities, mental and psychosocial illness) exceed direct causes and occur for many years after the precipitating catastrophe.

MODERN DAY PUBLIC HEALTH EMERGENCIES

Disasters that adversely impact the public health system and its protective infrastructure related to water, sanitation, shelter, food, & health

- *Protective threshold is destroyed, overwhelmed, not recovered or maintained, or denied**

- *PH emergencies may occur in large-scale:*
  1. *War and conflict*
  2. *Natural disasters (e.g., Indian Ocean Tsunami, Katrina),*
  3. *Naturally occurring epidemics and pandemics,*
  4. *Deliberate biological, chemical or radiation disasters*

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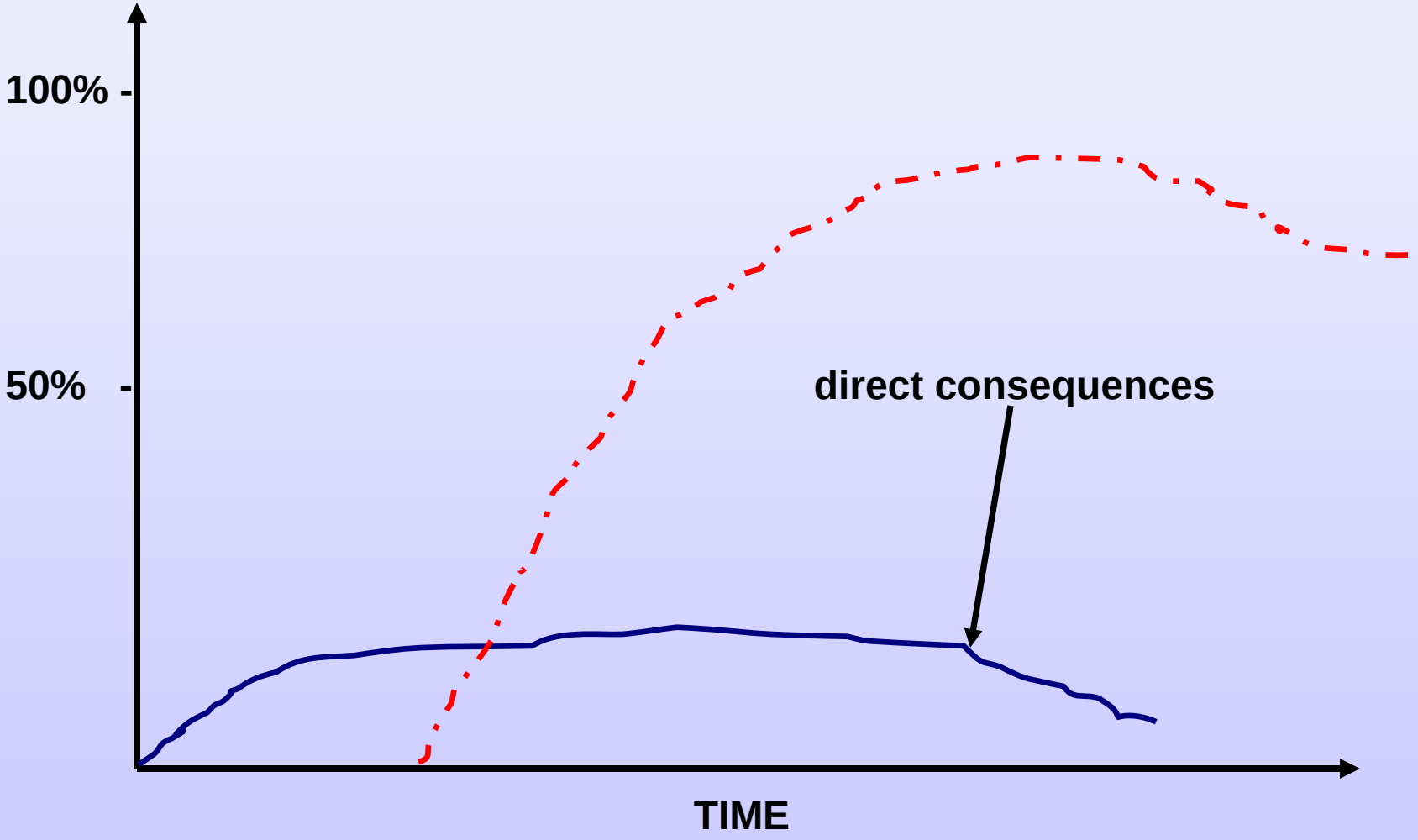
* Burkle FM: DMPHP, 2008

DIRECT AND INDIRECT DEATHS



Postwar Public Health Effects of Civil Crises*

- *'Decay' function extends up to 10 years after each civil crises*

- *CE-DAT Mortality Surveys (1999-2005)*
  Indirect deaths:
  - *> Conflict = 71%*
  - *> 6 month transition period = 83%*
  - *> Drops to 45% in 4 years*

- *Primarily women & children; Mental health: most common long term victims*

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*Ghobarah, Huth, Russett

What Happens When the Shooting Stops?

Worsening:

- *Access to healthcare*

- *Suicide, depression, alcohol & drug rates:*

  Out of work males & IDPs in camps; & Croatia, Afghanistan, Katrina studies

- *Increase in Gender Based Violence (GBV):*

  Intimate partner rates as marker of community breakdown & economic/physical insecurity (DRC, Iraq, Katrina)

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What Happens When the Shooting Stops?

Worsening:

- ***Number of girls in school:***

  Last to go to school especially in insecure environments; or used to help support family; delayed enrollment correlates with high child mortality rates

- ***Dengue fever marker of urban decay:***

  Governance and economic decline…lack of trash pickup (Asian mega-cities/disaster prone areas)

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The "Common Thread" of PH EMERGENCIES & NATURAL DISASTERS

KATRINA:

- *1 year post-disaster: 47 % increase in mortality over baseline*
- *Public health system disrupted and unable to provide basic surveillance*

INDIAN OCEAN TSUNAMI:

- *2+ years post-tsunami: large gaps in shelter, sanitation, potable water, health facilities and workers*

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CYCLONE NARGIS: Perfect Storm Concept

- ***Poor baseline epidemiology:***
  - ***U5MR: 106/1000 lb; IMR: 76/1000 lb; Chronic Malnutrition Rate: 31-61%***
- ***Profound political repression & unrepresented minority groups***
- ***Expansive deforested delta area***
- ***Warming Indian Ocean, soaring storm intensity, heavier rainfall, low vertical wind shear***

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PUBLIC HEALTH INFRASTRUCTURE & SYSTEMS

- ***Rapid increase in density of populations:*** ***Overcrowding especially in disaster prone areas: 78 million per year***
- ***Deficient dwellings; aged infrastructure***
- ***Available infrastructure and capacity to respond in crises: especially potable water & sanitation***
- ***Ecological & environmental changes***

HAITI

- ***Health problems similar to US in the early 1900s, except for HIV/AIDS***
- ***Environmental degradation is high***
- ***Forested areas: down from 40% to 2%***
- ***Recent post-hurricane flooding a consequence of deforestation***
- ***Is this a development or emergency situation?***

Natural Disasters & Conflicts

- *Disasters keep governments honest by defining the public health & exposing its inequalities & deficiencies**

- *The way in which the state & other sectors act in response & recovery is largely predicated on the kind of political relationships that existed between sectors before the crisis***

*Burkle, BMJ, 98
**Bhavnani R Natural Disaster Conflict

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Disasters & Political Change: Large natural disasters 1899-2005*

- *Disasters often hit politically peripheral regions catalyzing regional political tension*
- *Existing inequalities can be exacerbated by post-disaster governmental manipulation*
- *The repositioning of political actors in the aftermath of a disaster unfolds at multiple levels*

**Pelling M & Dill K, Chatham House Briefing Paper 2006*

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Disasters & Political Change: Large natural disasters 1899-2005*

- *Regimes are likely to interpret spontaneous collective actions by Non-Governmental sectors as a threat & respond with repression*

- *In the aftermath, political leaders may regain or even enhance their popular legitimacy*

**Pelling M & Dill K, Chatham House Briefing Paper 2006*

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Disaster Diplomacy**

- *Examines whether or not natural disasters induce international cooperation amongst enemy countries*

- *2004 tsunami impacted > 12 countries, many with internal or external conflicts*

- *Most effective at the "edge of chaos"…that narrow region where there is sufficient structure to hold & exchange information*

- *Some disaster diplomacy is feasible, but rarely yield positive, lasting results*

Bhavnani R Natural Disaster Conflict; Comfort L: Disater: Agent of Diplomacy or Change in International Affairs*

MEASURES OF EFFECTIVENESS

- *How rapidly a Health Information System (HIS) is mobilized: timely & accurate*

- *How rapidly a surveillance system is restored: focusing on access & availability of essential services*

- *Key indicators that define vulnerable populations*

- *Ensure surveillance & services across all population cohorts*

Anticipating Vulnerabilities

- **New Orleans City**
  - *23.2% below poverty line, 34% of African-Americans (68% of population)*
  - *No access to a car:*
    - *~ poor African-Americans 52.4%*
    - *~ 26% of New Orleans city*
    - *~ 14% of New Orleans metro*
  - *If over 65, under 17, more likely to live in a household without access to a car compared with other age groups*

EXAMPLES OF VULNERABILITY

- *Chronic disease not on medication: 28.4%*
- *Those on medication did not have upon arrival: 46.7%*
- *Still lacking medication: 20.6%*
- *Pregnant: 4.2%*
  - *Additional 2.7% "unsure"*
- **Access**
  - *no regular health provider: 31.5%*
  - *no or unsure access: 19.5%*
- *Special care*
  - *Diet: 10.2%*
  - *Ambulation: 5.7%*


WE MUST ATTACK AMERICA'S INFRASTRUCTURE BEFORE IT COLLAPSES...
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QUESTIONS?