Center for Advancing Microbial Risk Assessment

Charles N Haas - CAMRA co-Director
Drexel University
haas@drexel.edu

CAMRA
Center for Advancing Microbial Risk Assessment

Paradigm questions

- What is the risk from a scenario of exposure to infectious agents?
- What is the residual risk after an intervention?

Example venues

- Water systems (drinking, recreational…)
- Air exposures (indoor & outdoor)
- Miscellaneous environmental exposure routes
  - Surface contact
  - …

CAMRA
Center for Advancing Microbial Risk Assessment

Mission

to develop critically reviewed and interpreted sets of models, tools and information that will be used in a credible risk assessment framework to reduce or eliminate health impacts from deliberate use of biological agents of concern (BAC) as bioterrorists agents in the indoor and outdoor environment.

Partners

Drexel Univ.(co-lead), Univ. of Michigan, Univ. of Arizona, Northern Arizona Univ (*), Carnegie-Mellon Univ, Univ, of Calif-Berkeley

(*) - MSI

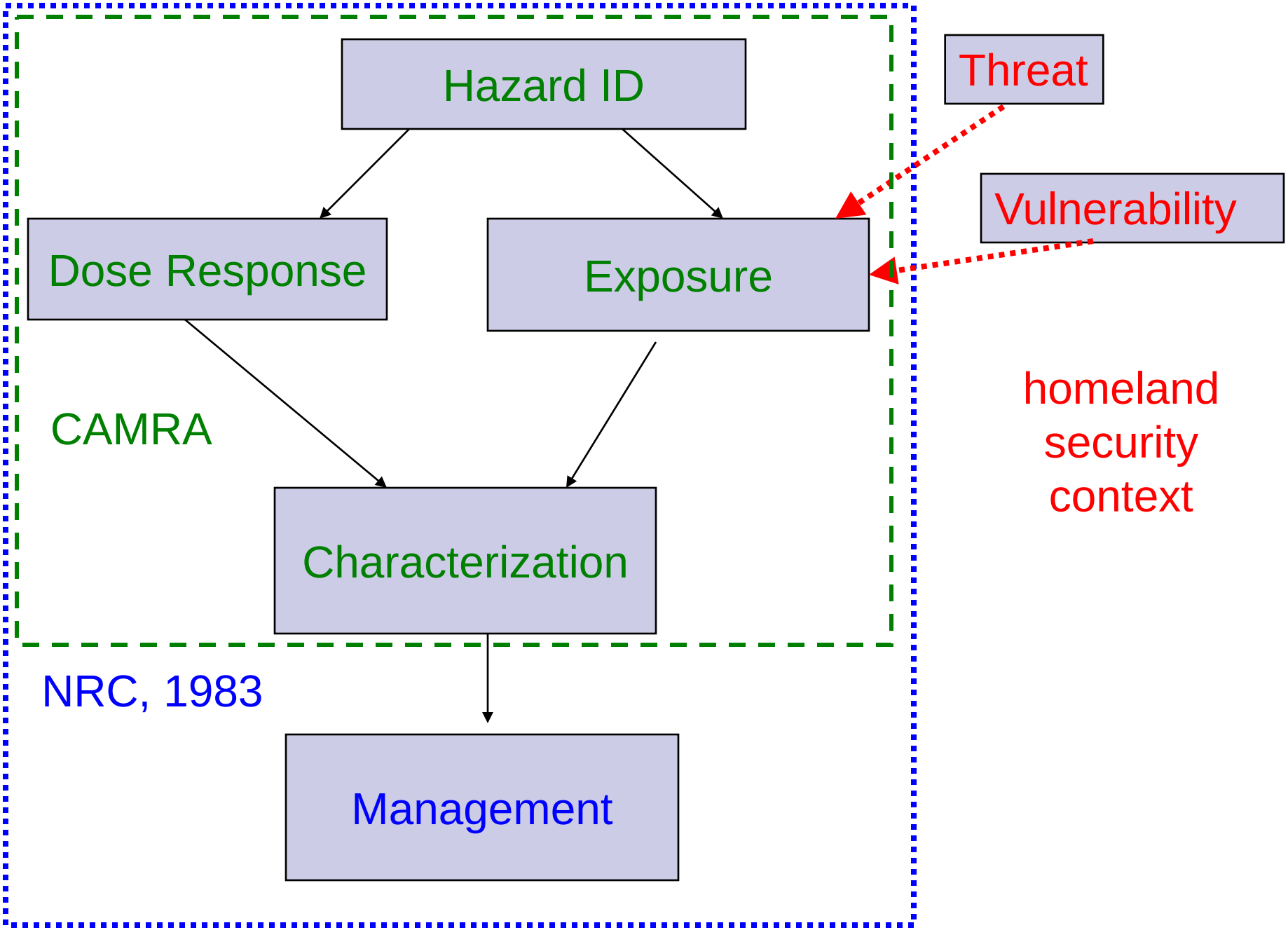
Impact and Relevance

- Provide scientific basis for assessing risks of natural and malicious occurrences of infectious agents
- Provide scientific basis for assessing “how clean is clean”

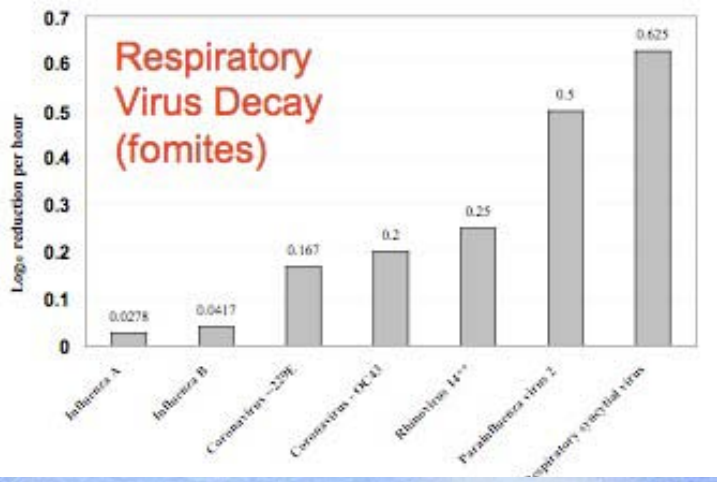
Customers

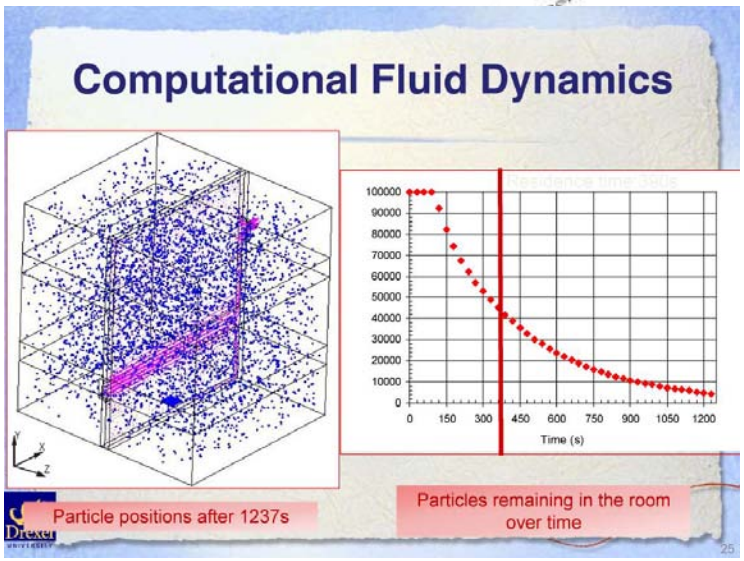
- DHS S&T Chem/Bio
- US EPA - National Homeland Security Research Center
- Local government agencies

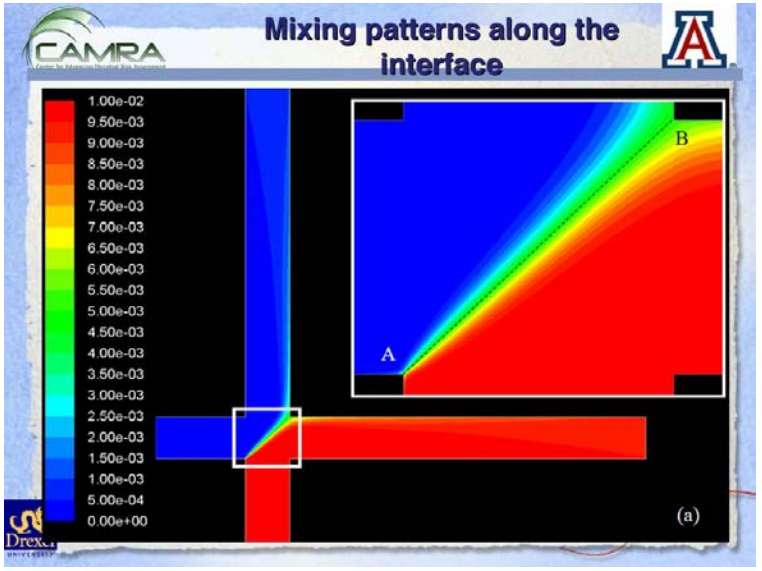
MICHIGAN STATE UNIVERSITY


Hazard ID
Threat
Vulnerability
Dose Response
Exposure
CAMRA
homeland
security
context
Characterization
NRC, 1983
Management

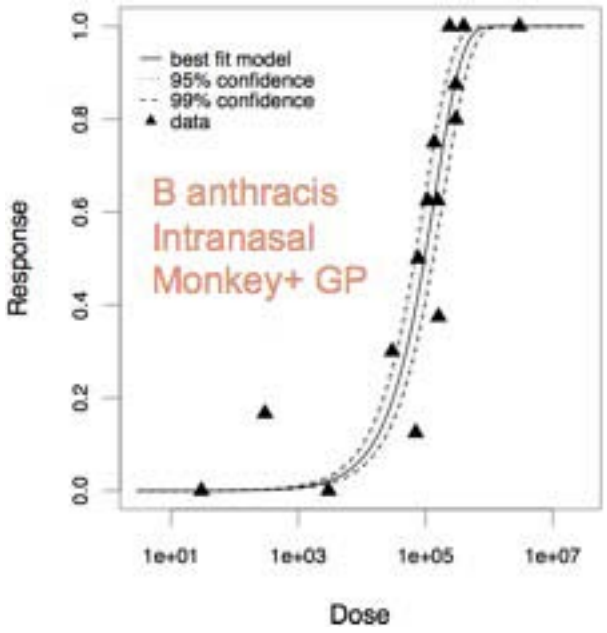
CAMRA: Exposure Assessment



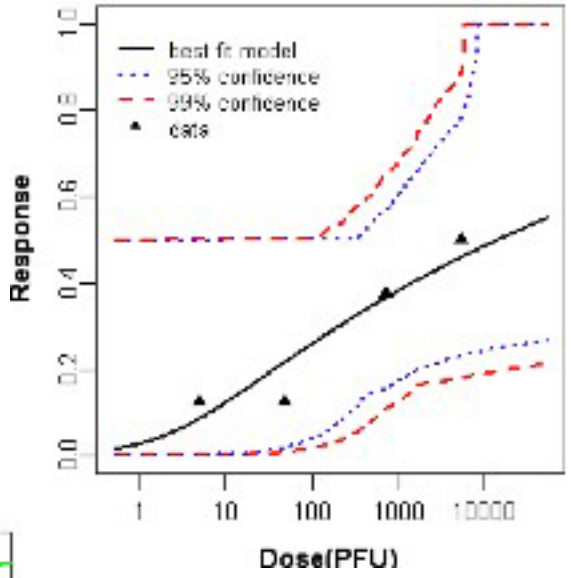


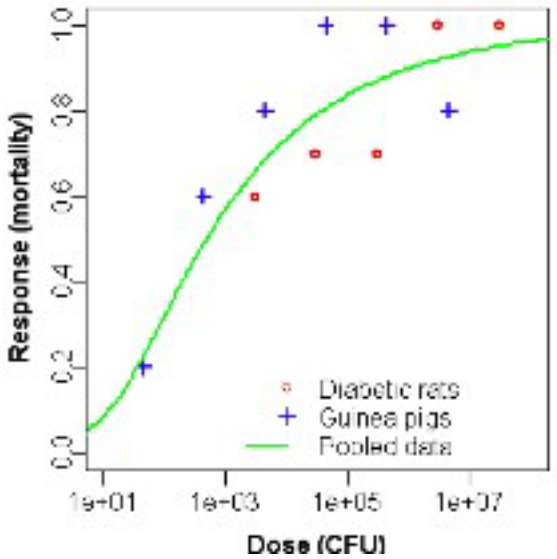


Dose Response Analysis



Lassa Virus
inhalation, GP



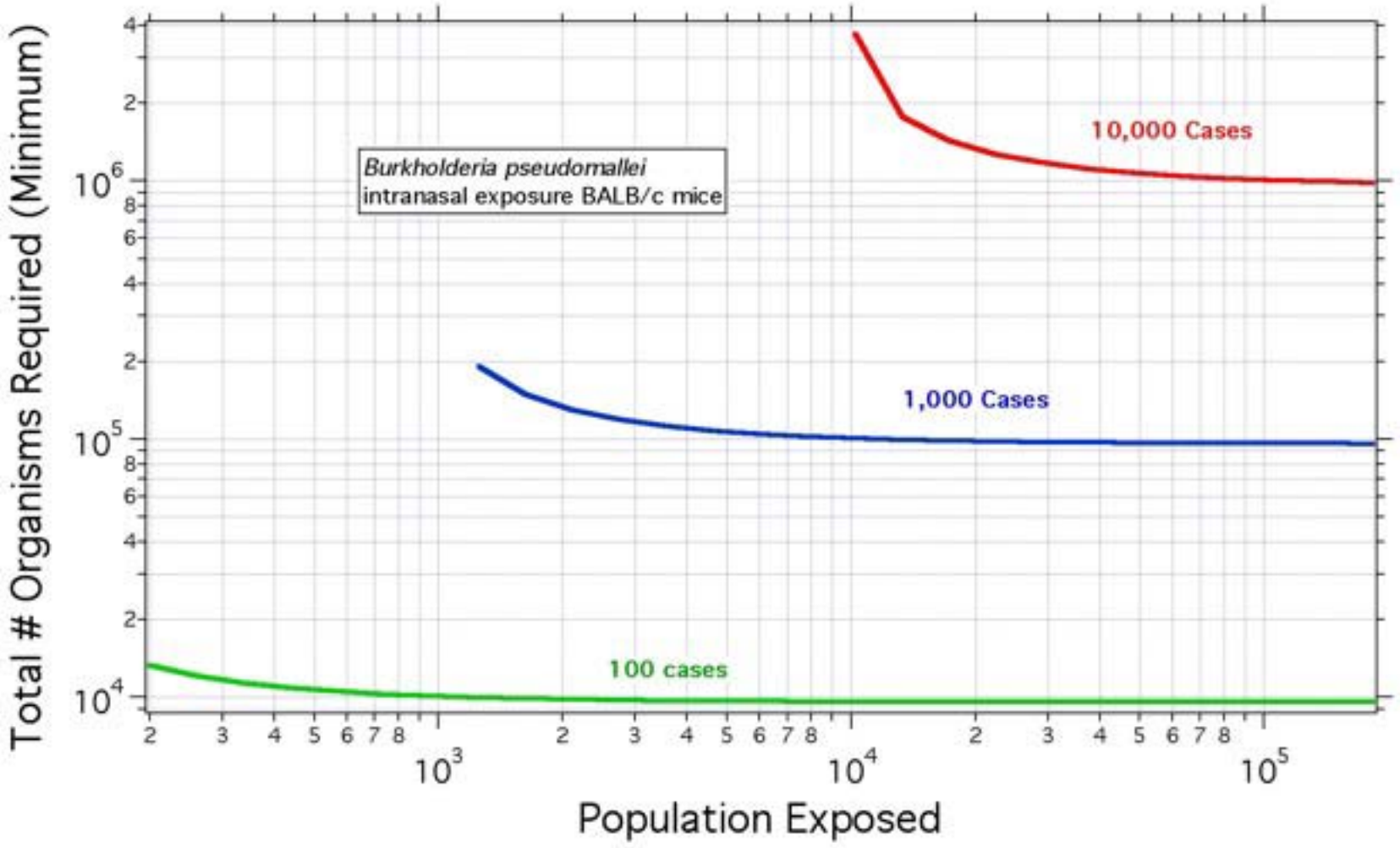


Burkholderia
pseudomallei (ip)

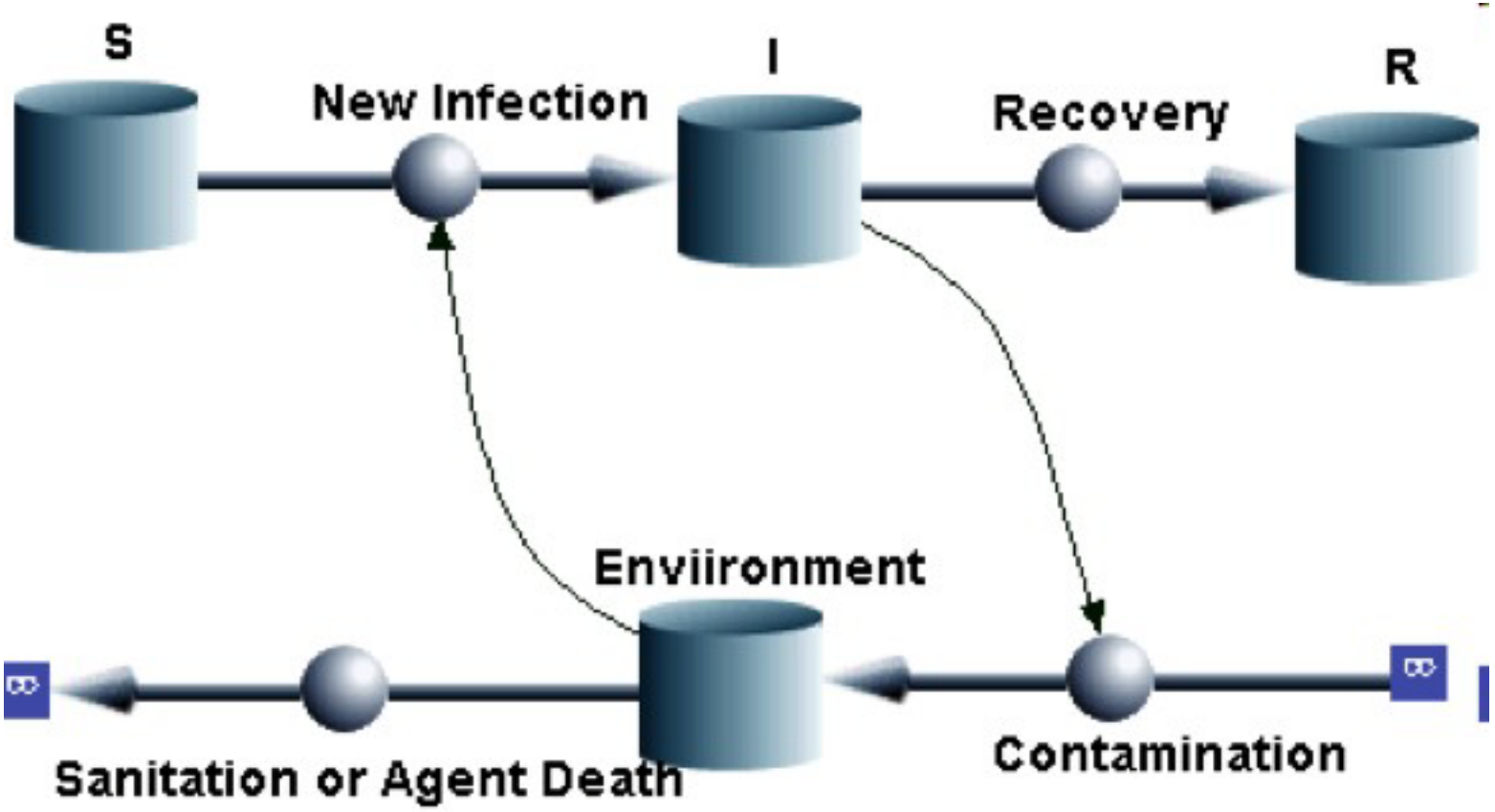
Dose Response

- New data (oral tularemia/animals)
- Dose-time-effect models (Y Huang)
- Multiple dosing effects

Another view of dose response



Population Transmission - Incorporating the Environment



Characterization - Example Decision Tree (Gurian *et al.*)

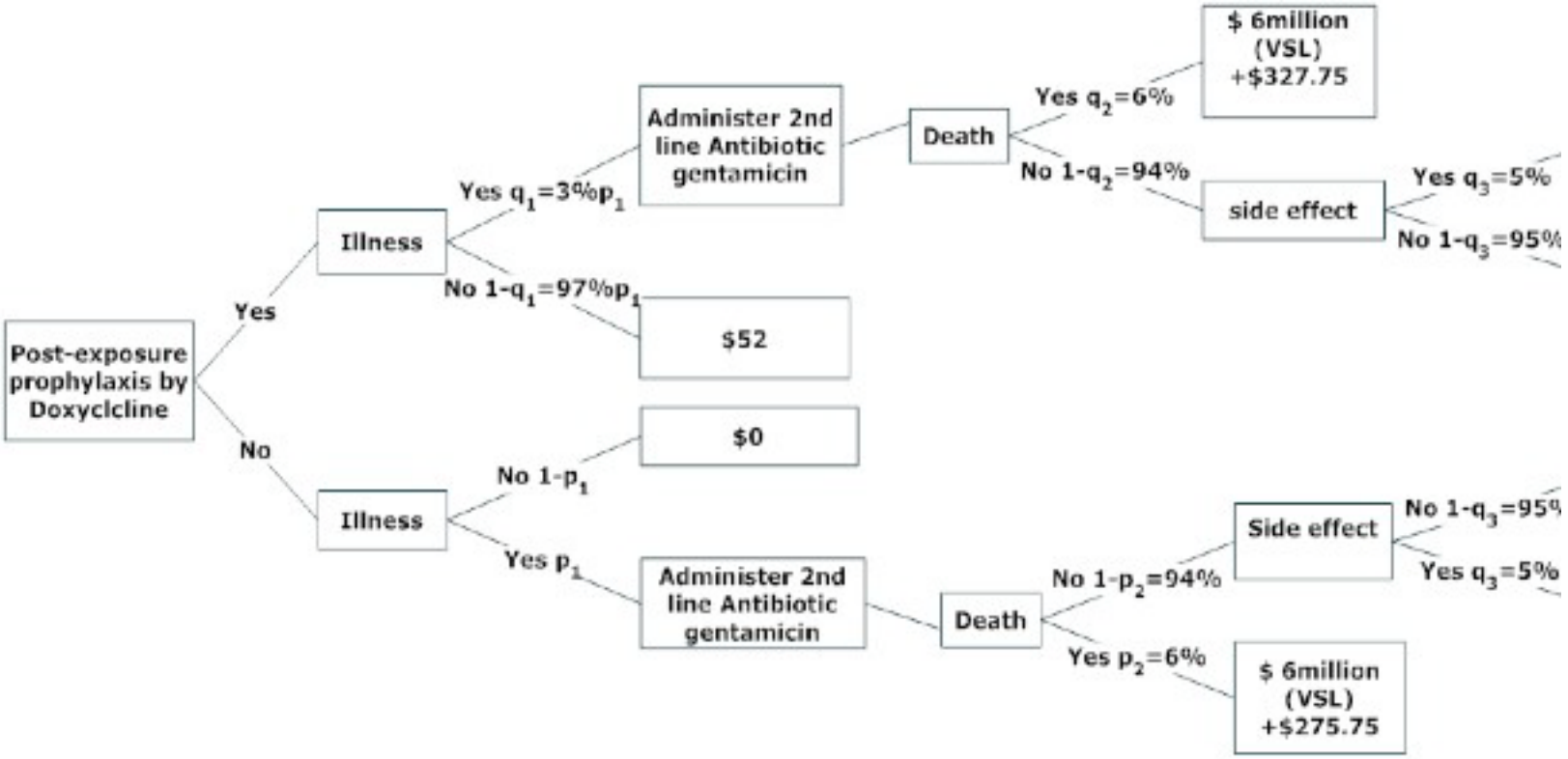


Fig. 1. Decision tree. q_1 is the probability of illness (aerosolized Y. pestis) after prophylaxis; p_1 is the probability of illness without prophylaxis; q_2 and p_1 are the probability of death of patients treated with second line antibiotic; q_3 is the probability of side effects, VSL is the value of statistical life.

For further information

www.camra.msu.edu

Haas@drexel.edu