

4.

The Longitudinal and Transectional Frameworks

1. *Longitudinal* (temporal) Framework

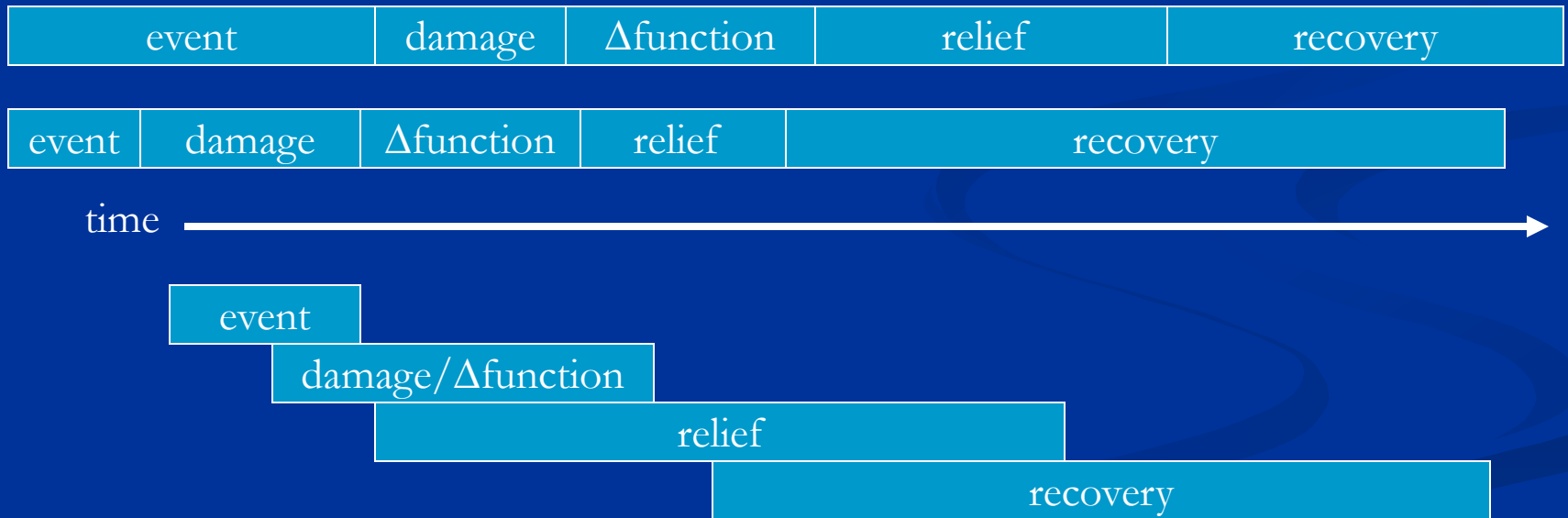
- describes a disaster over time (*Phases*)

2. *Transectional* Framework

- describes component(s) of a society at a particular time (*Snapshots*)

Longitudinal Phases of a Disaster

- Progressive and chronological
- Focus on **properties** rather than absolute time
- Overlap between phases



Pre-event Phase

- the period and associated status of a disaster-affected society prior to the occurrence of an event

Event Phase

- the period during which an event occurs

Damage Phase

- the phase during which structural damage or harm from an event occurs

Functional Damage Phase

- the phase in which changes in the levels of functions of a Basic Societal System, or its components, occur as a result of damage from an event

Relief Phase

- the phase in which interventions are directed at mitigating (limiting) additional injuries and deaths, and relieving pain or distress

Recovery Phase

- the phase in which interventions are directed towards returning the levels of functioning of an affected society to its pre-event levels of function

Longitudinal Phases

clinical analogy

- 2 different patients require hospital admission
- Although the people are different and their diseases may be different, a comparison between their respective clinical courses can be made

Patient A

Baseline health status

Clot to brain

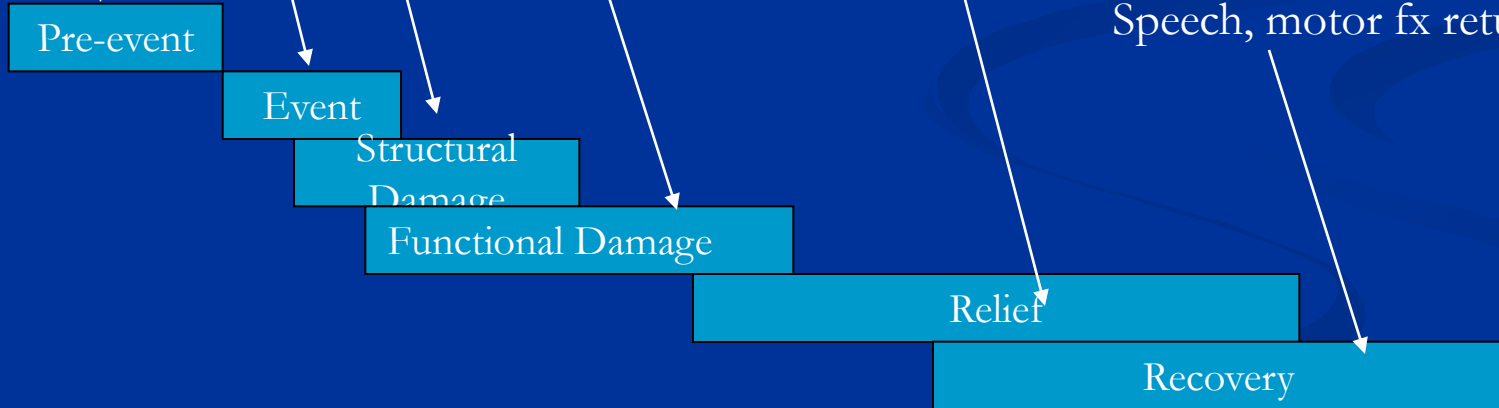
Neuron death

Unable to speak or use right arm & leg

Fibrinolytic treatment

Rehab

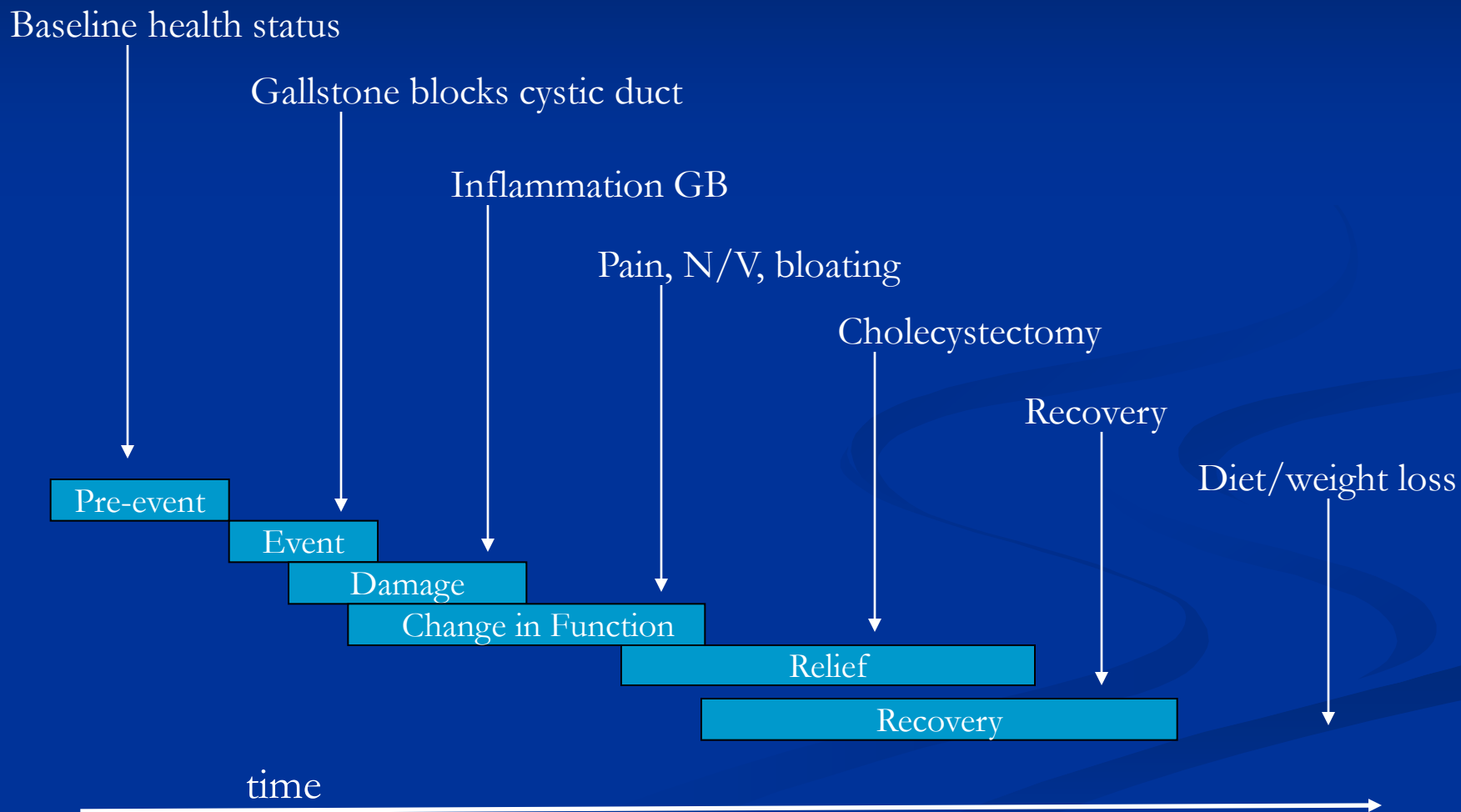
Speech, motor fx return



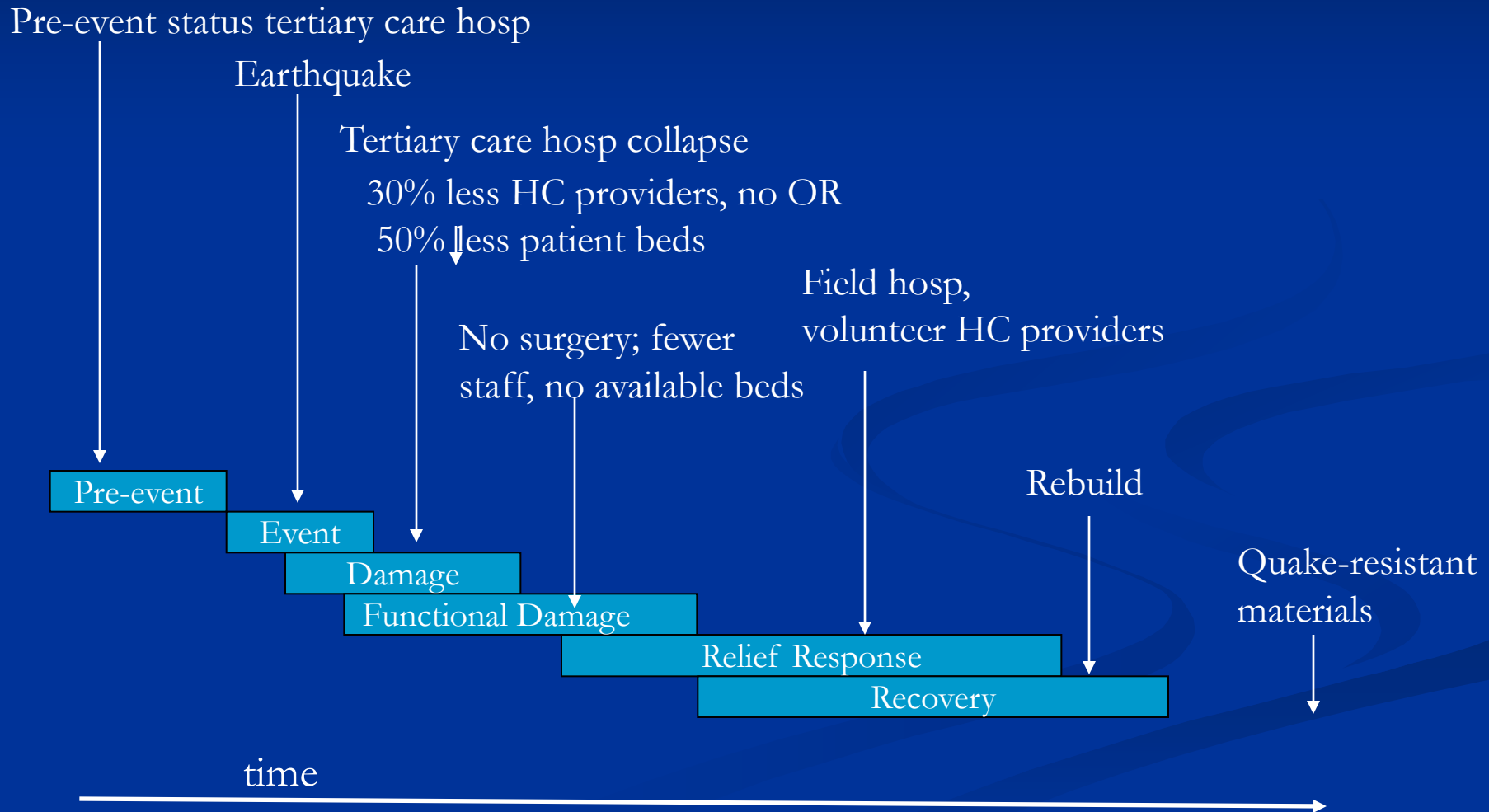
time



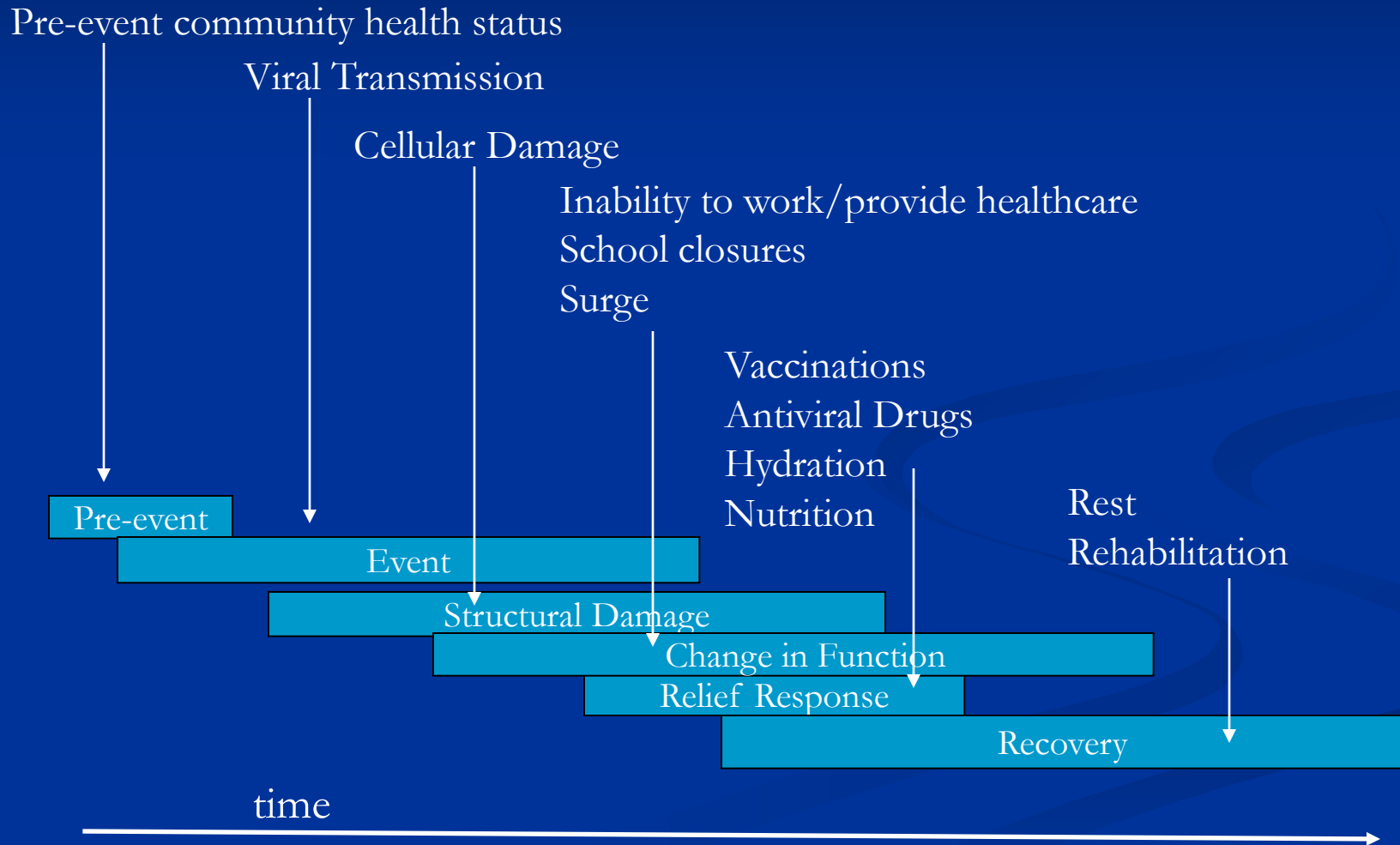
Patient B



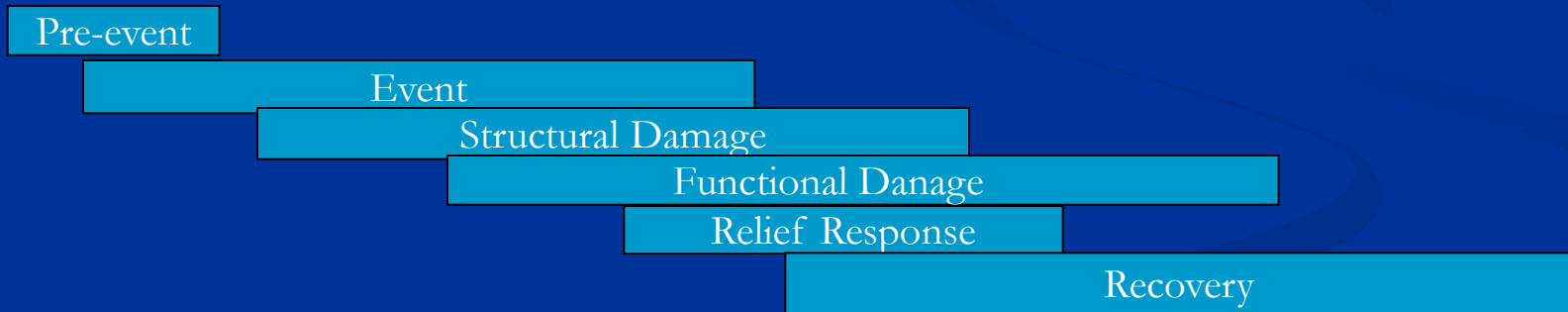
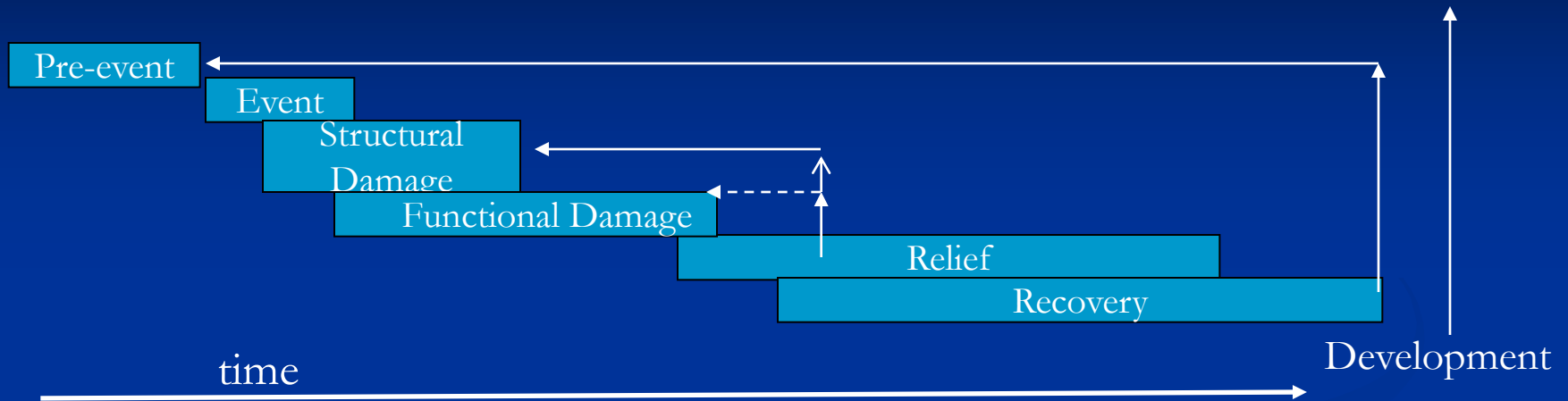
Disaster A



Disaster B



Longitudinal Phases



Longitudinal Phases

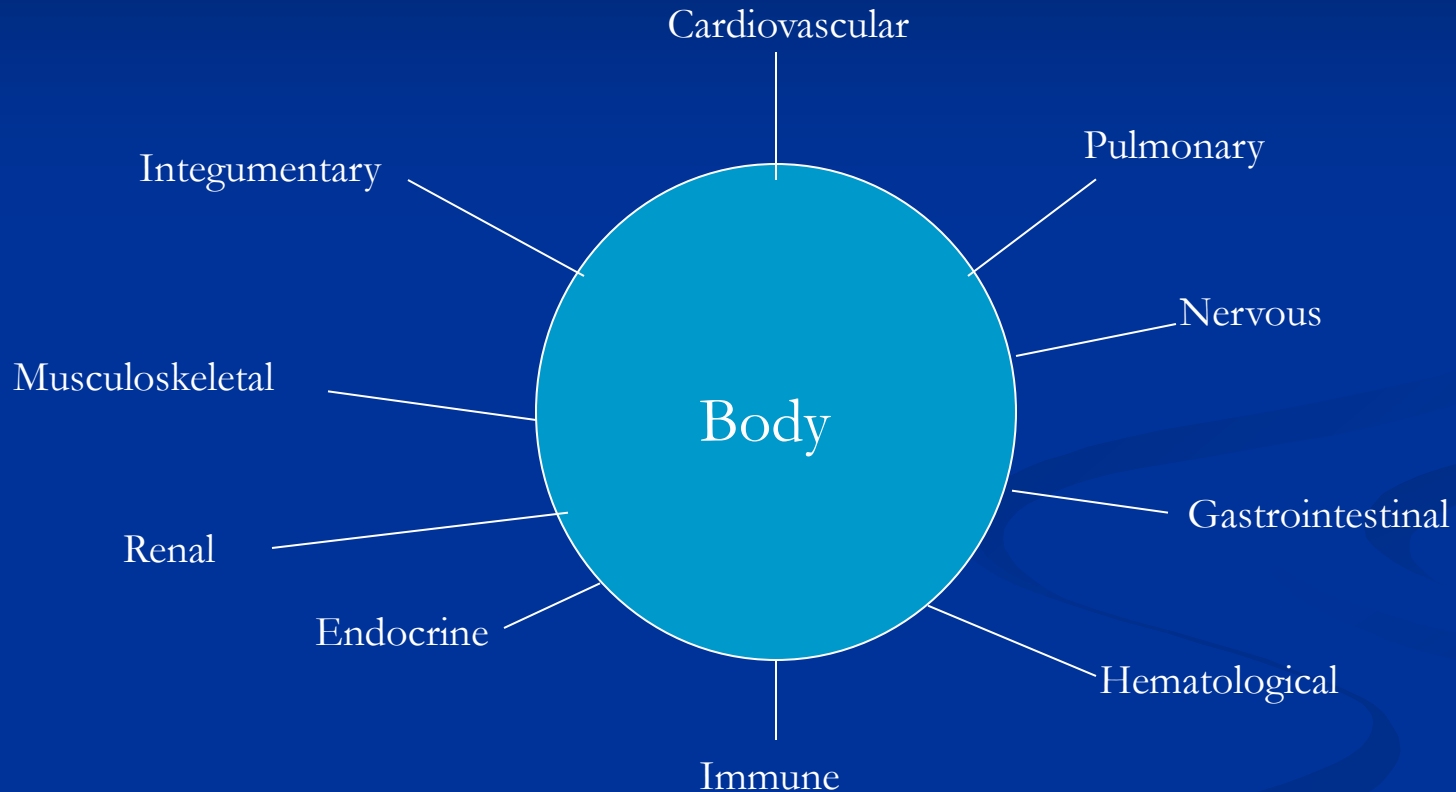
	Society A	Society B
Disaster A Pre-event		
Event		
Structural Damage		
Functional Damage		
Relief Response		
Recovery		
Disaster B Pre-event		
Event		
Structural Damage		
Functional Damage		
Relief Response		
Recovery		

- Compare any phase of any disaster in any society to the same phase in a different disaster or society:
 - *Structural damage* from a hurricane in Florida to *damage* from a bomb in Madrid or to a cyclone in Myanmar
 - Responses in the *Relief Phase* of a chemical release in India to responses in the *Relief Phase* of a famine in Sudan or to a chemical release in Melbourne.
 - What are the differences/similarities and why? What can be learned to make it better next time?

However.....

- The longitudinal clinical course does not provide an adequate description of the *patient's* functionality and needs
- Clinicians describe patient's condition based on organ system's function

Transectional Structure of the Body



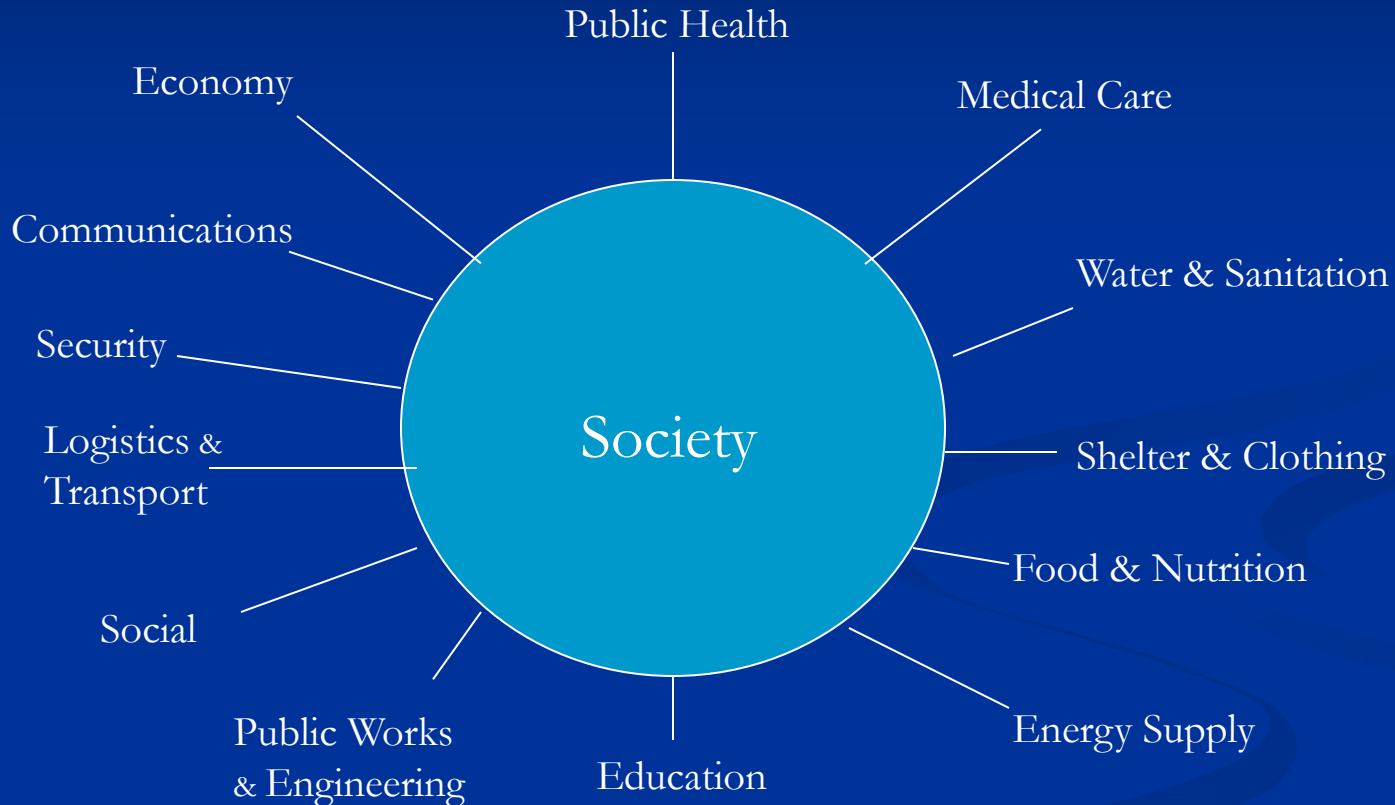
Transaction Framework of a Society

- Method for organizing society into *functional* components or systems
- Provides generic and reproducible *descriptors* of a society

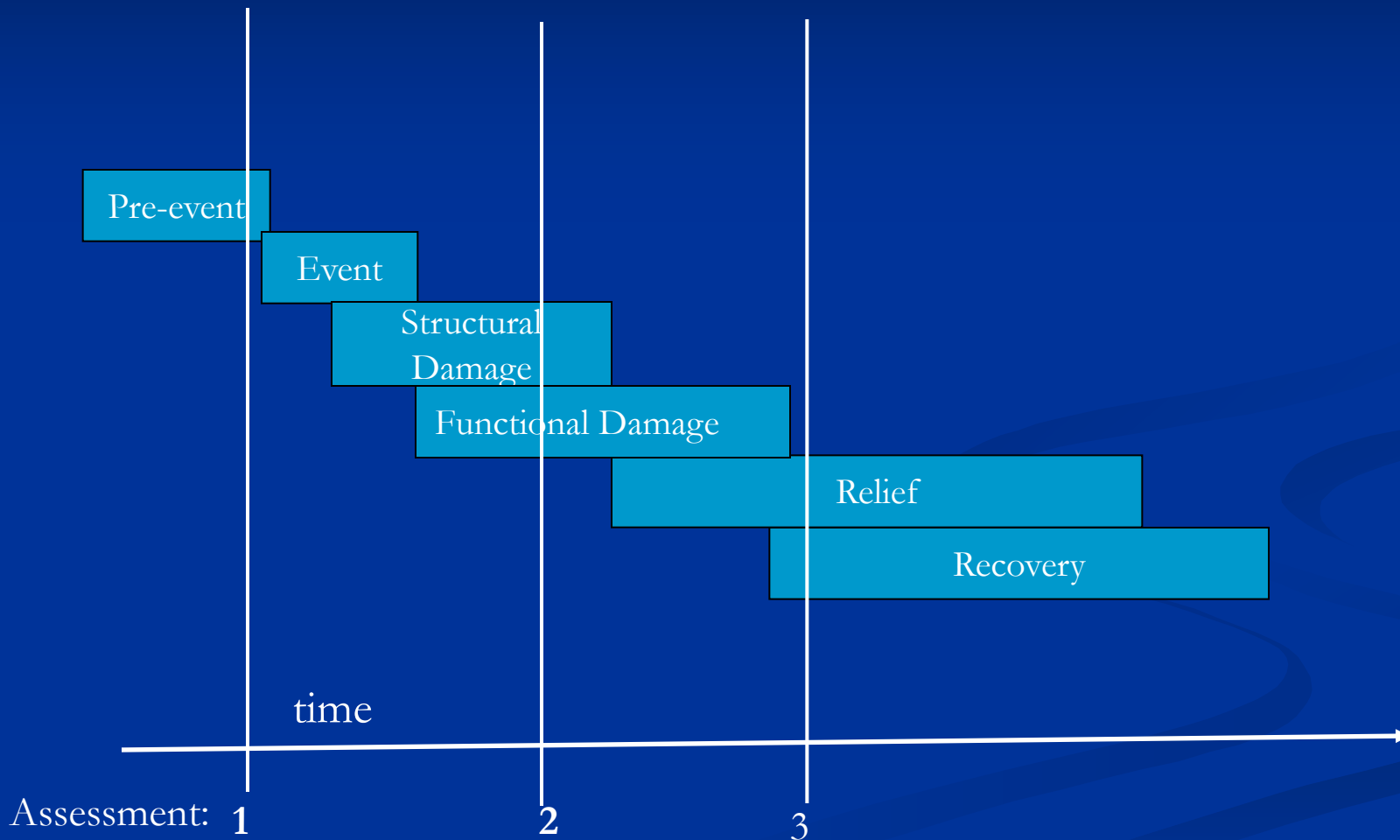
Basic Societal Function Systems

- Public Health
- Medical Care
- Logistics and Transport
- Security
- Energy
- Water and sanitation
- Economy
- Education
- Public Works and Engineering
- Food and Nutrition
- Shelter and Clothing
- Communications
- Social

Transectional Structure of Society



Transectional “Snapshots” during Longitudinal Phases

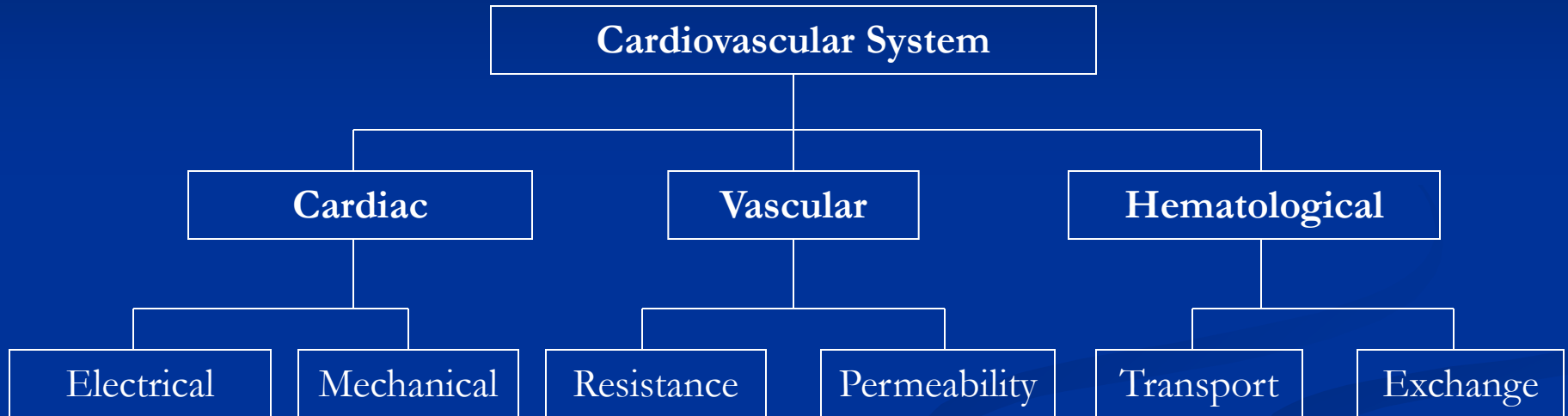


Society A				Society B	
		Medical Care	Security		
				Medical Care	Security
Disaster A	Pre-event				
	Event				
	Relief				
	Recovery				
Disaster B	Pre-event				
	Event				
	Relief				
	Recovery				

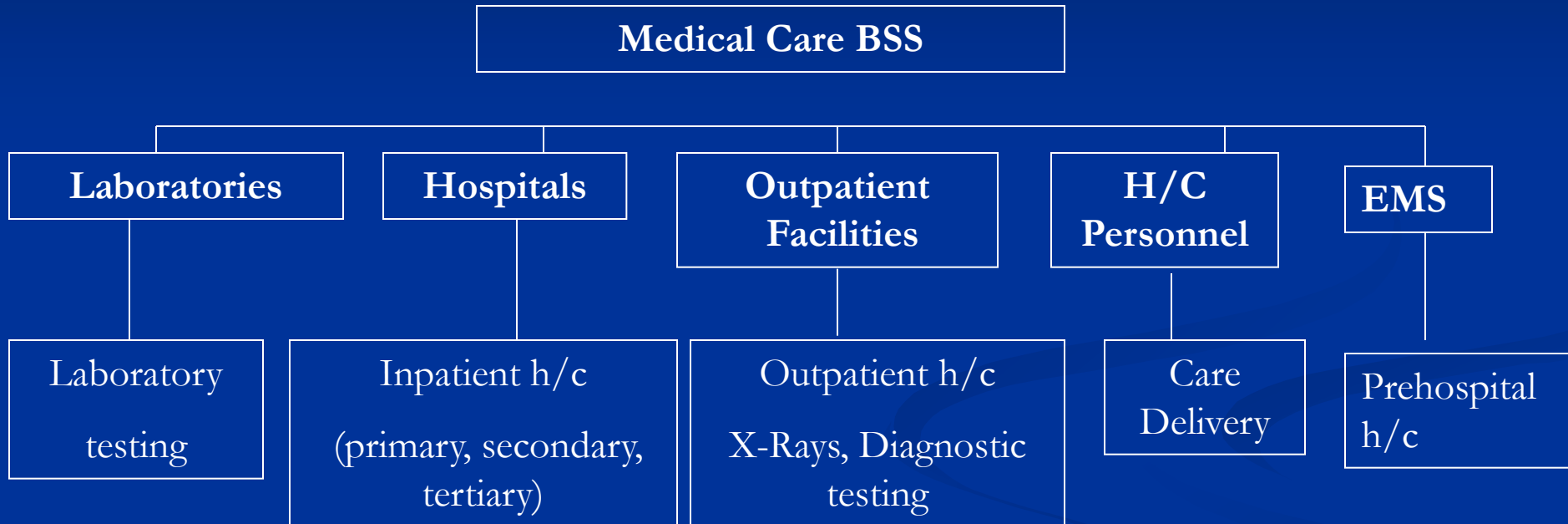
<p>Longitudinal</p> <p>↓</p>	<p>Transactional</p> <p>→</p>	<p>Society A</p>	<p>Society B</p>
<p>Disaster X</p>		<p>Disaster X in Society A</p>	<p>Disaster X in Society B</p>
<p>Disaster Y</p>		<p>Disaster Y in Society A</p>	<p>Disaster Y in Society B</p>

Systems (both society's and the body's) consist of components that are dependent and interdependent

Components of the Cardiovascular System



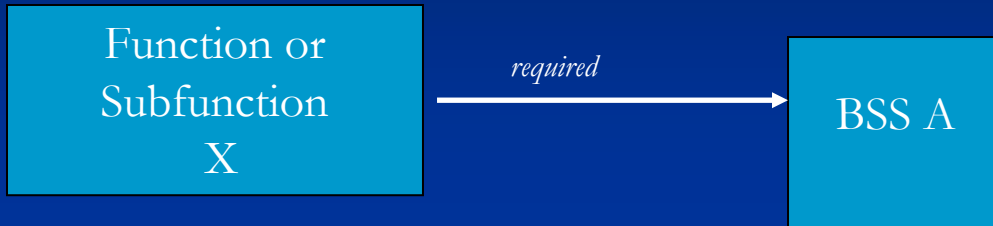
Components of the Medical Care BSS



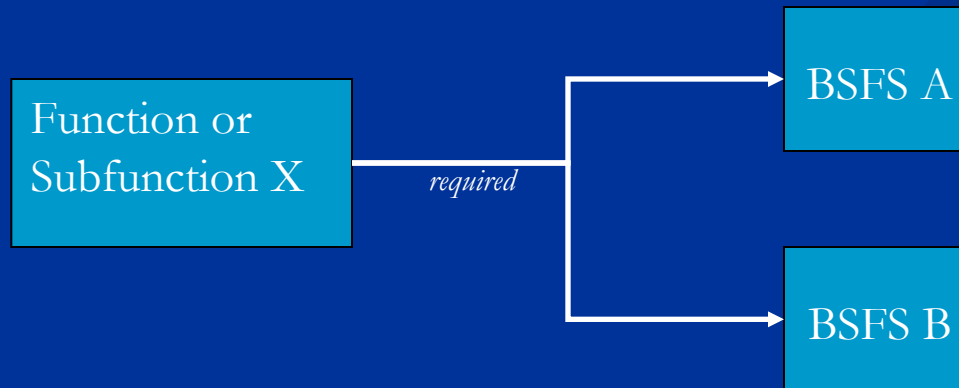
Interrelationships between BSSs

- No BSS can function in isolation
- Medical Care relies on:
 - Energy to run lights, machines, and refrigeration
 - Education to train personnel
 - Transportation to bring supplies
- Transportation relies on:
 - Public Works and infrastructure
 - Energy to supply fuel

Dependency and Interdependency



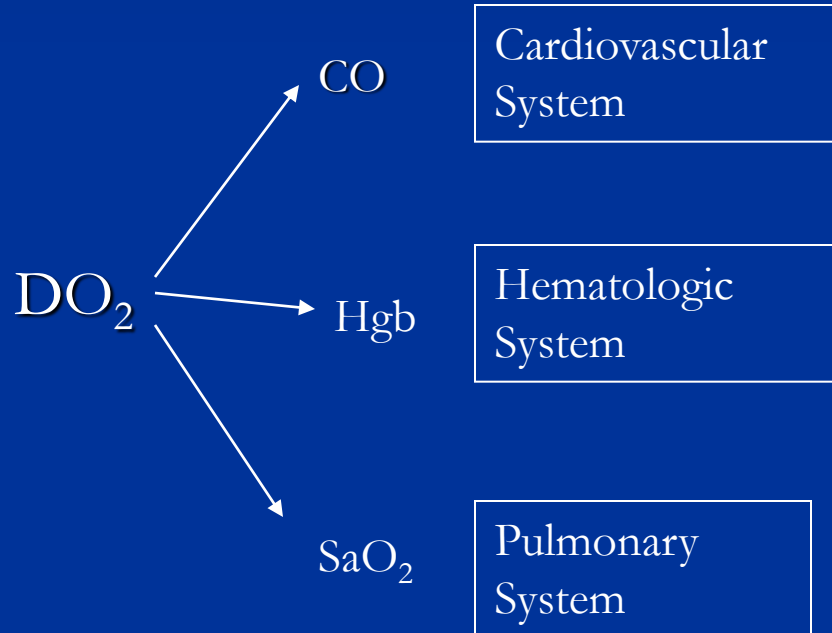
BSS A is **dependent** on function or subfunction X



BSS A and BSS B are **interdependent** on function or subfunction X

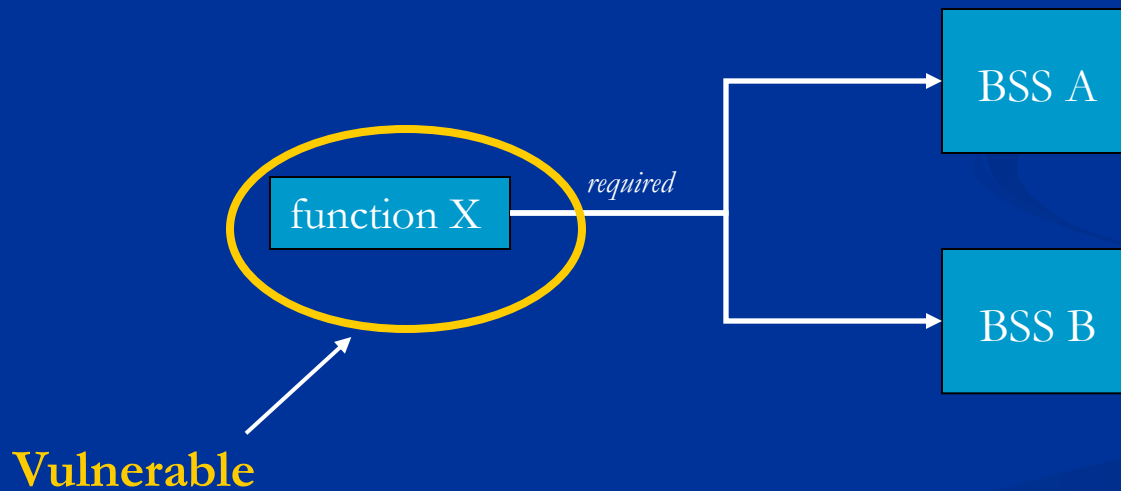
Physiologic comparison

■ $DO_2 = CO \times Hgb \times SaO_2$

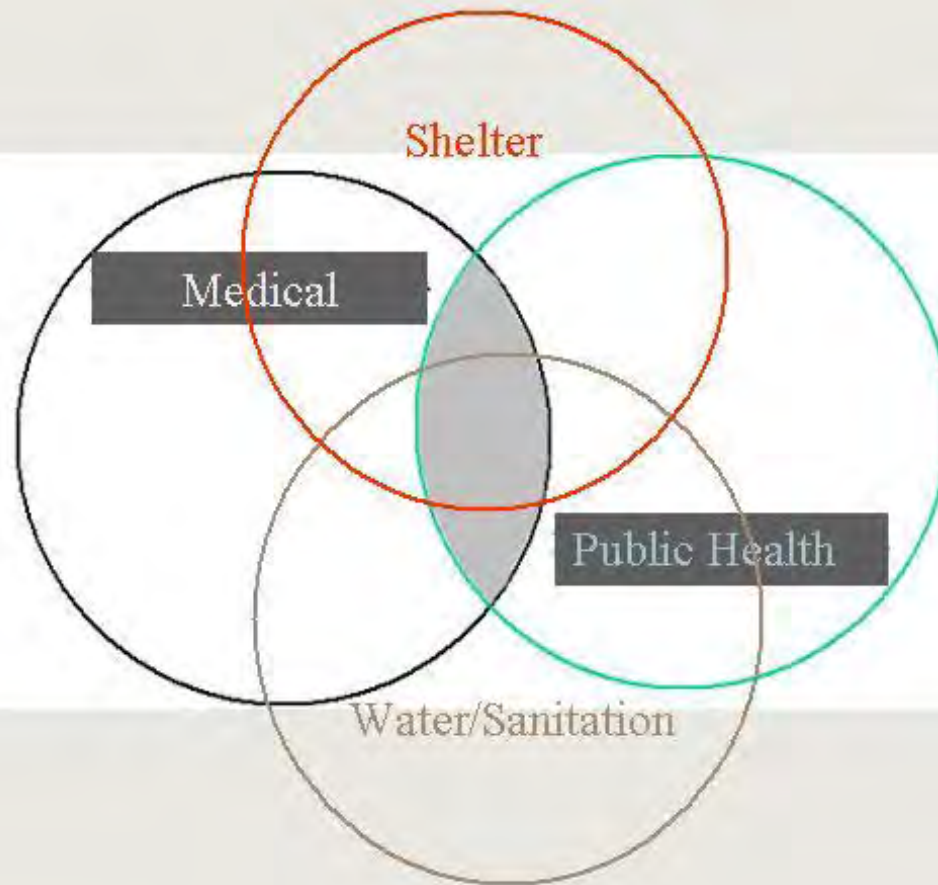


Dependence and Interdependence

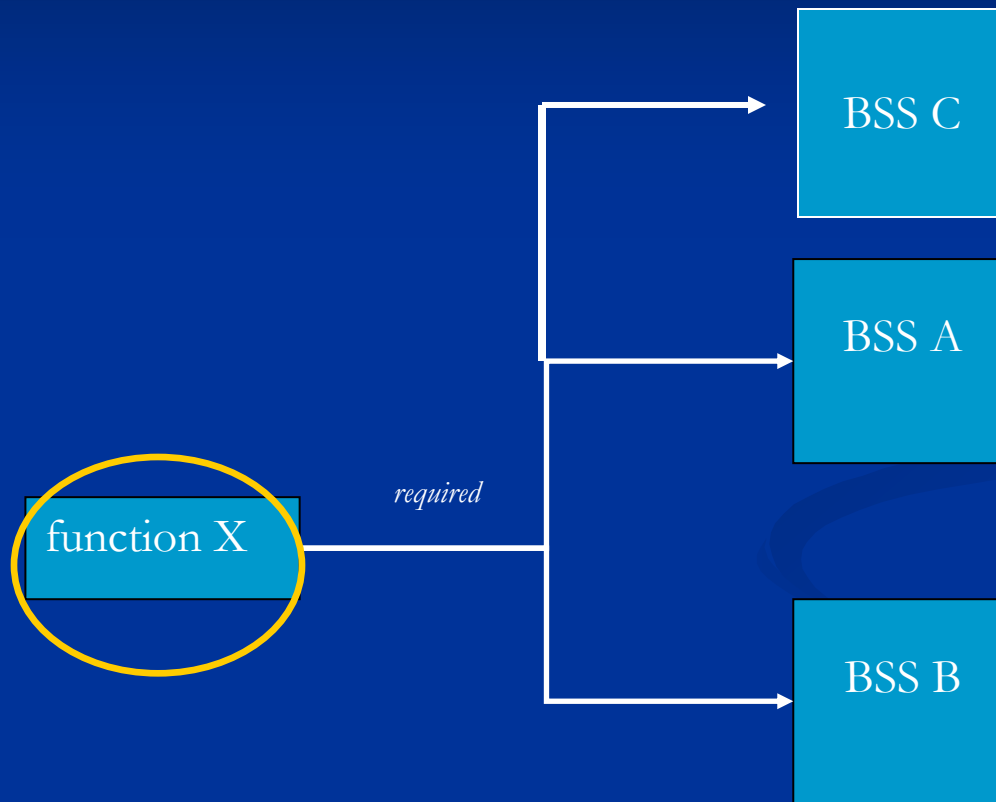
- Any function that is required by more than one BSS is an area of *vulnerability* for society



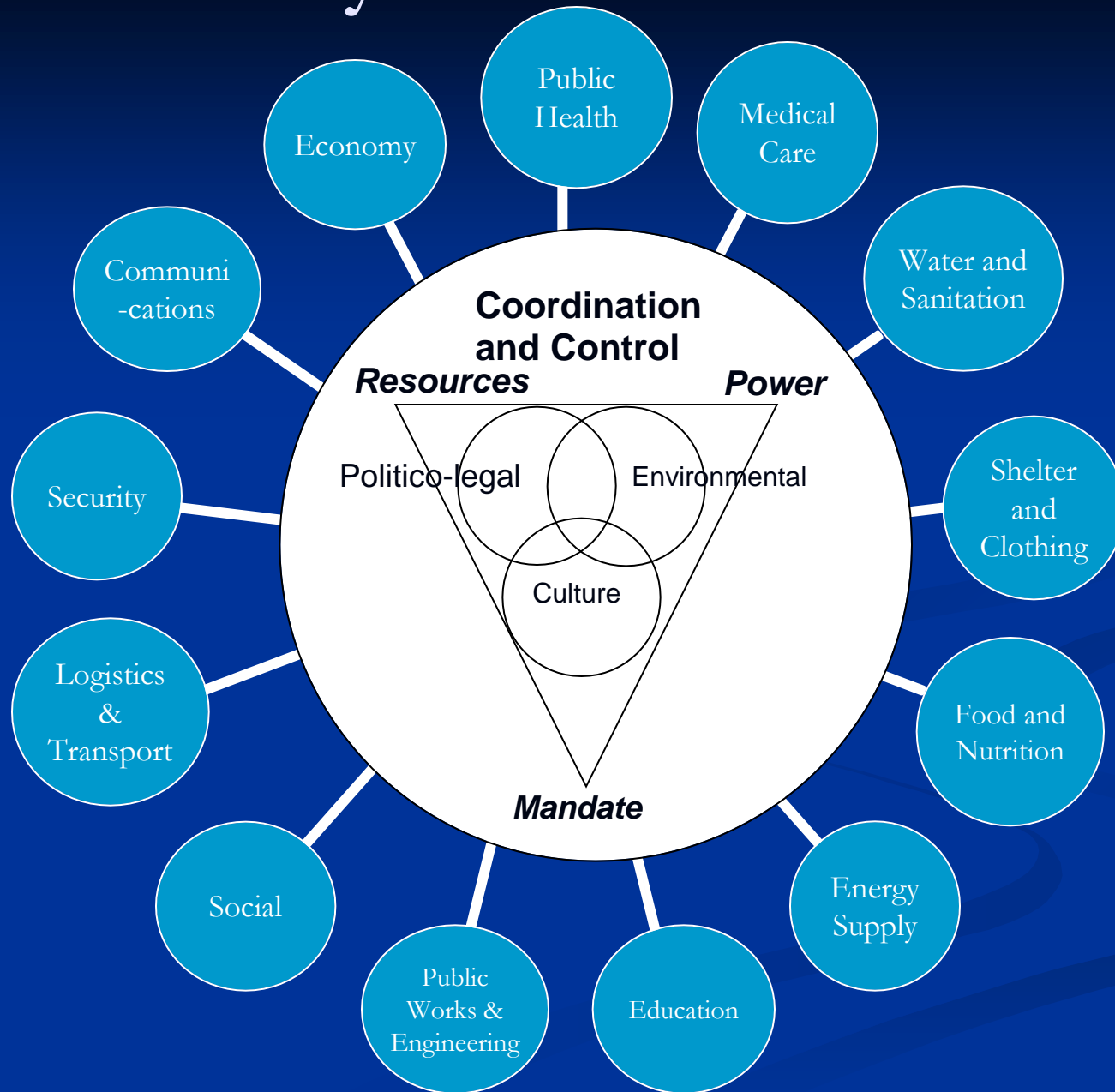
Interdependence



Priorities



Priorities set by Coordination and Control



*Most Problems in
Disaster Management
have been related to
inadequate
Coordination and Control*

Coordination and Control

Roles and Responsibilities

1. Contingency *planning* and *preparedness*
2. Maintain *inventory* of available resources (goods & services)
3. Select most appropriate *indicators of function*
4. *Surveillance* and *monitoring*
5. *Information* management
6. *Monitor* status of each BSF system
7. *Coordinate* overall activities of each BSF system
8. *Activation* of contingency plans
9. *Decision-making*
10. *Set Priorities*
11. Define *goals/objectives* of interventions / responses

Coordination and Control

Roles and Responsibilities (continued)

12. Apply appropriate *indicators*
13. Exercise *authority*
14. *Resource management*
15. Initiate *action* as needed
16. *Prevent* resources not needed
17. Define *progress*
18. Provide *information* to all parties
19. *Interact* with the media assuring accuracy of reports
20. *Liaison* with external governments, non-governmental, inter-governmental agencies, commercial private sector
21. Provide *quality assurance* and **control**

All are Subfunctions of Coordination and Control