



The Johns Hopkins International Injury Research Unit

WHO Collaborating Center for Injuries, Violence and Accident Prevention

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Trauma Care in Low and Middle Income Countries

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Outline

- Define the global burden of injury
- Review the trauma system components
- Impact of trauma care systems
- Describe how a functioning Trauma System enhances the Health Care System



Burden of Injury

- > 5 million deaths/year
 - 16,000 deaths per day
- Accounts for 9% of all mortality
- In 15-29 year age group: 8/15 leading causes of death are injury related
- Accounts for 16% of disability

Increasing burden of injuries: change in rank order of DALYs for 15 leading causes (WHO 2000)



1999 Disease or Injury

1. Acute lower respiratory
 2. HIV/AIDS
 3. Perinatal conditions
 4. Diarrhoeal diseases
 5. Unipolar major depression
 6. Ischaemic heart disease
 7. Cerebrovascular disease
 8. Malaria
 - 9. Road traffic injuries**
 10. Chronic obstructive pulmonary
 11. Congenital abnormalities
 12. Tuberculosis
 - 13. Falls**
- DALY = Disability-adjusted life year

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2020 Disease or Injury

1. Ischaemic heart disease
2. Unipolar major depression
- 3. Road traffic injuries**
4. Cerebrovascular disease
5. Chronic obstructive pulmonary
6. Lower respiratory infections
7. Tuberculosis
- 8. War**
9. Diarrhoeal diseases
10. HIV
11. Perinatal conditions
- 12. Violence**
13. Congenital abnormalities
- 14. Self-inflicted injuries**

DALY = Disability-adjusted life year



The Trauma Care System

Pre-Hospital
Care

Hospital
Care

Post-Hospital
Care

The Trauma Care System



Pre-Hospital
Care

Hospital Care

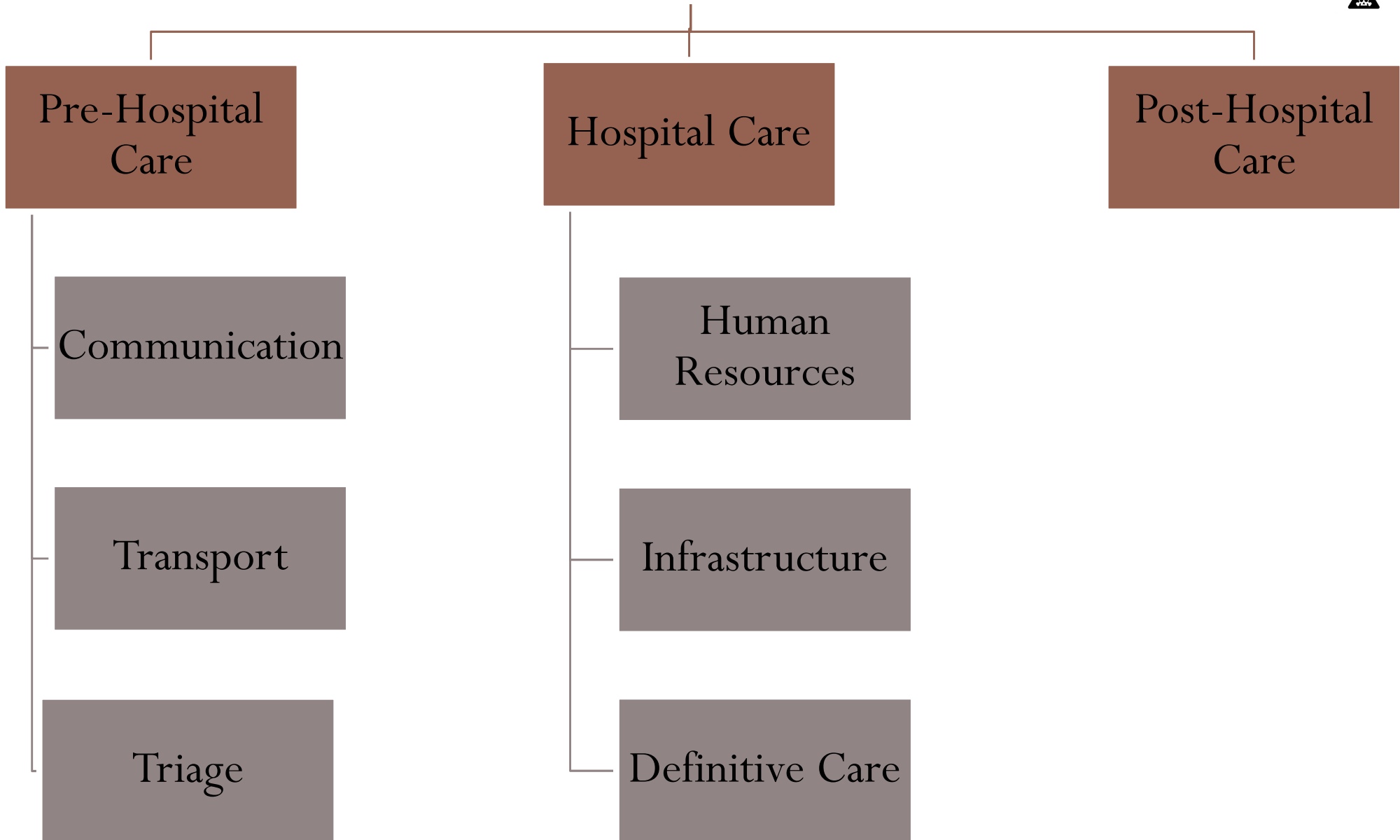
Post-Hospital
Care

Communication

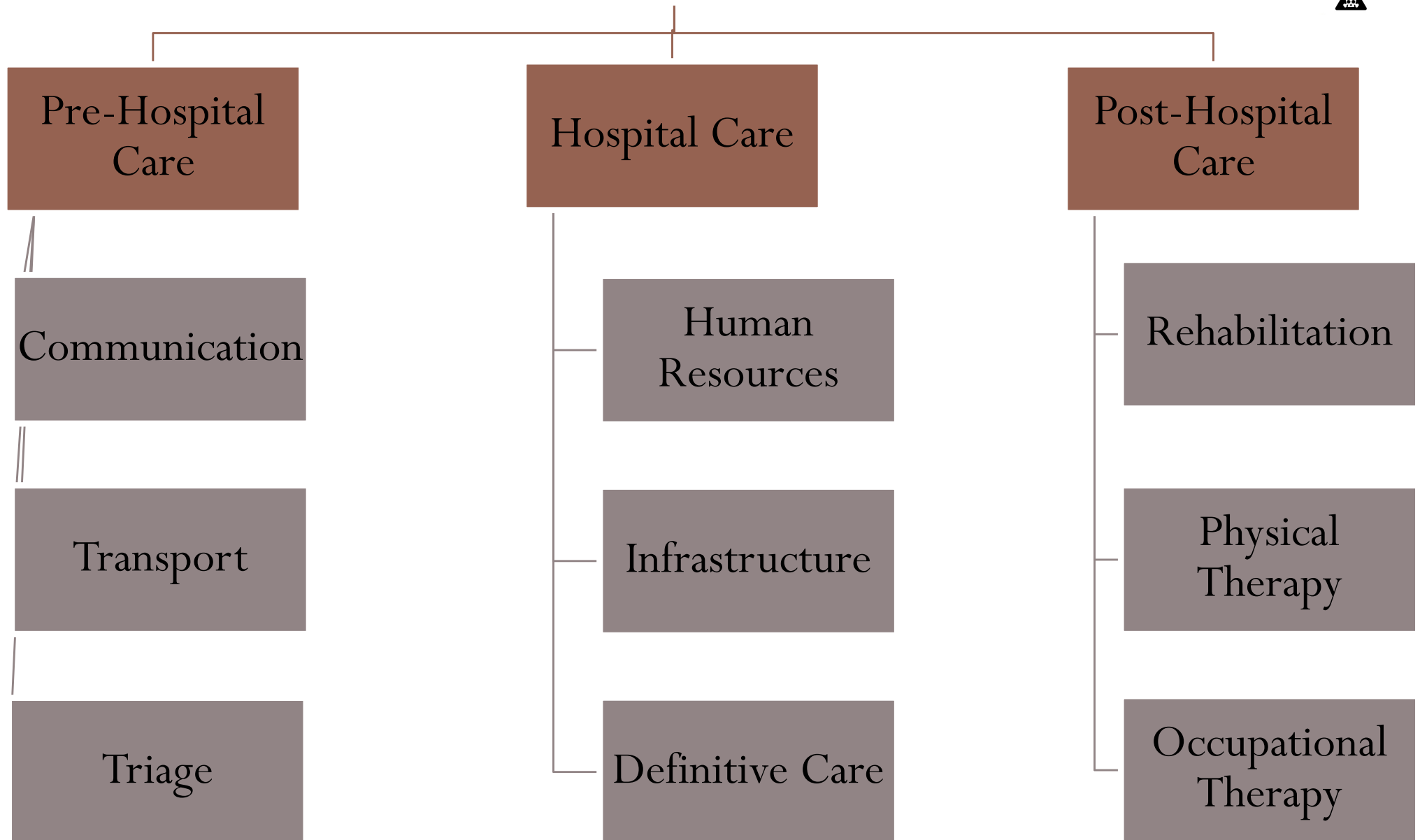
Transport

Triage

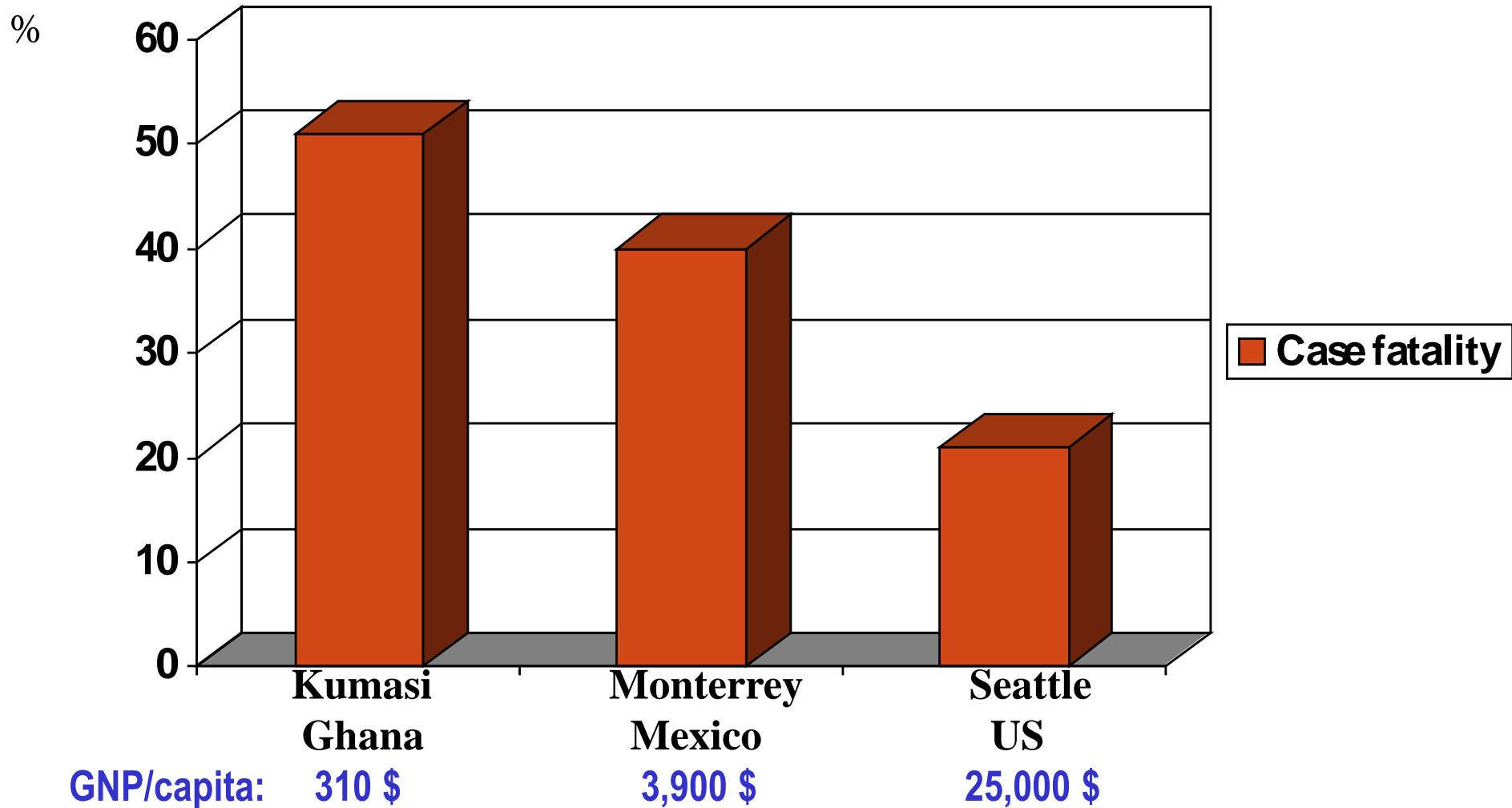
The Trauma Care System



The Trauma Care System



Pre-hospital Case Fatality for Serious Injuries



Source: Mock C et al, 1998



The Evidence: Mortality Reduction

Effectiveness of State Trauma Systems in Reducing Injury-Related Mortality: A National Evaluation

- States with trauma systems had a 9% lower crude mortality rate compared to those without.



The Evidence: Mortality Reduction

A National Evaluation of the Effect of Trauma-Center Care on Mortality

- In-hospital mortality rate was significantly lower in trauma centers compared to non-trauma centers (relative risk, 0.80)
- Lower one-year mortality rate
- Showed that risk of death is significantly lower when care is provided in a trauma center



The Evidence: Cost Effectiveness

The Value of Trauma Center Care

- Regionalization of trauma care is:
 - Effective in improving patient outcome
 - Also Cost-effective

Estimates for Middle East & North Africa



Intervention	Trained Lay First Responders and Paramedic Responders	Staffed Community Ambulance <u>Urban</u>	Staffed Community Ambulance <u>Rural</u>
Cost Per Death Averted			
MENA	\$283	\$3,479	\$10,449
<i>LMIC Average</i>	<i>\$170</i>	<i>\$1,818</i>	<i>\$5,468</i>
Cost per Life Year Gained			
MENA	\$11	\$176	\$530
<i>LMIC Average</i>	<i>\$7</i>	<i>\$95</i>	<i>\$284</i>













Benefits of Trauma Care Systems

- **Saves lives!**
- Emergency Medical Services framework
 - Properly equipped ambulances
 - Adequately trained personnel
 - Faster, improved patient care
 - Impact on care far-reaching: Obstetric and Medical Emergencies



Benefits of Trauma Care Systems

- Capacity building
 - Improved medical understanding of injuries, resuscitation
 - Increased capabilities to treat patients
 - Improvement of Emergency Medicine, Trauma Surgery, of other (Orthopedics, Neurosurgery) specialties
 - Standardization of Care—trauma patients, all presenting patients



Benefits of Trauma Care Systems

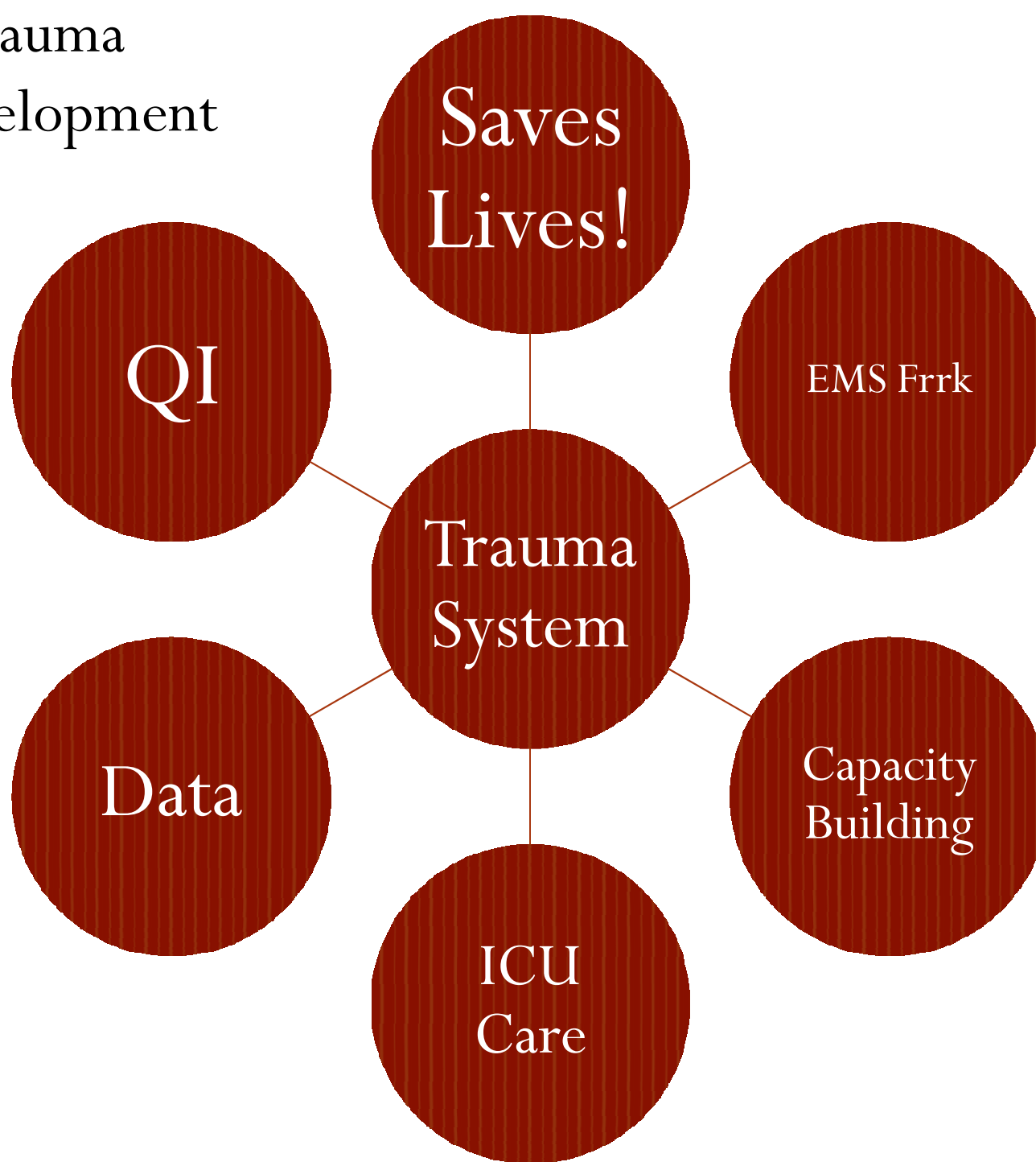
- Intensive Care Unit (ICU) development/expertise
 - Trauma patients are typically young, healthy
 - But require a skill set universal to providing care to the sickest patients
 - Skill advancement of staff, physicians, residents, and students



Benefits of Trauma Care Systems

- Trauma registry development
 - Accurate data collection
 - Treatment outcome data
- Quality improvement
 - Program development crucial to success trauma system
 - Identifies systemic problems
 - Leads to improved treatment algorithms
 - Emphasizes better patient care

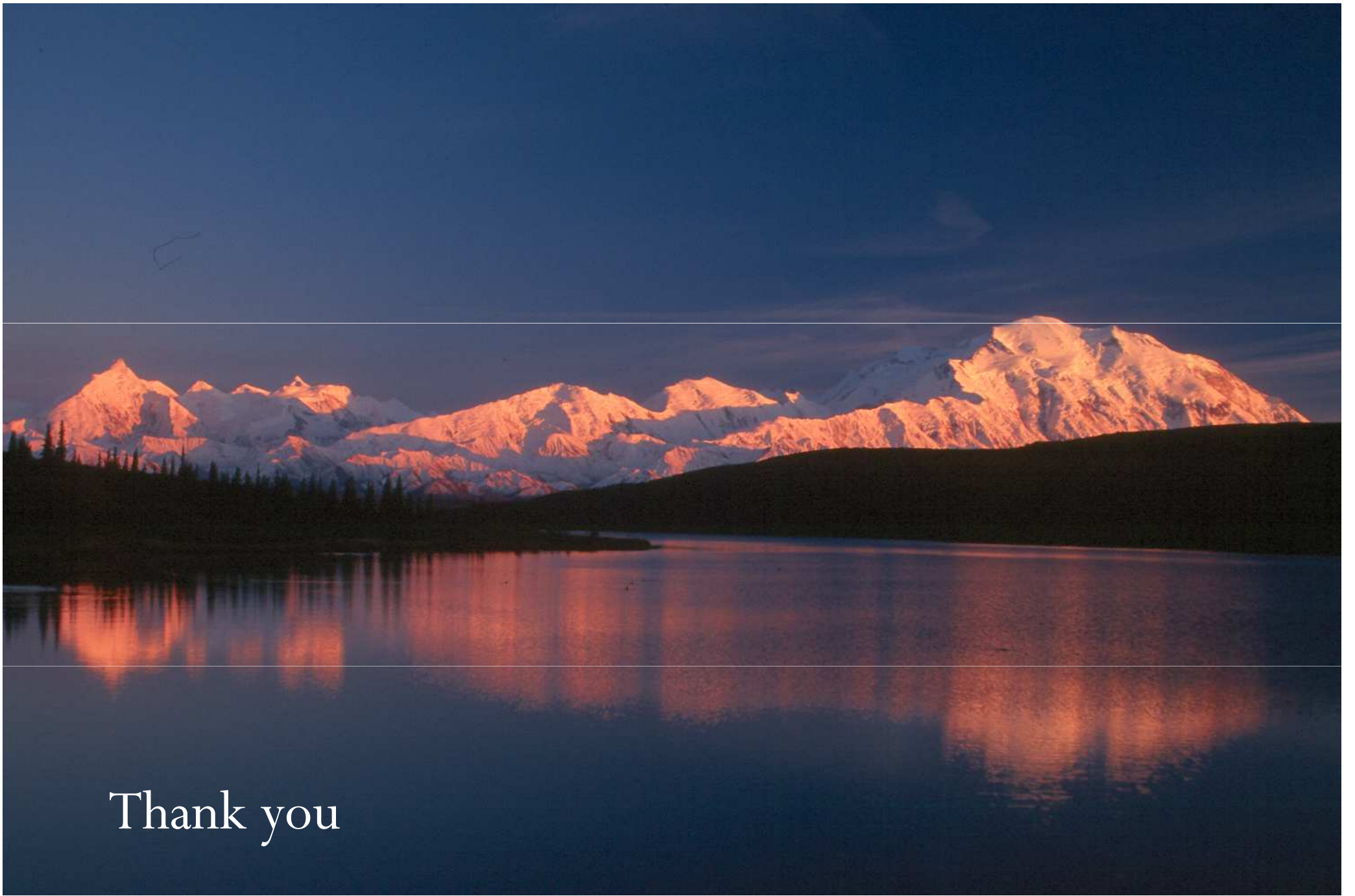
Impact of Trauma System Development





Trauma Care impact on LMICs

- Saves lives!
- Trauma system integral to a successful health system
- Capacity building integral to trauma system development and improvement
- Improved patient outcomes



Thank you

