

# Trauma Systems Profile

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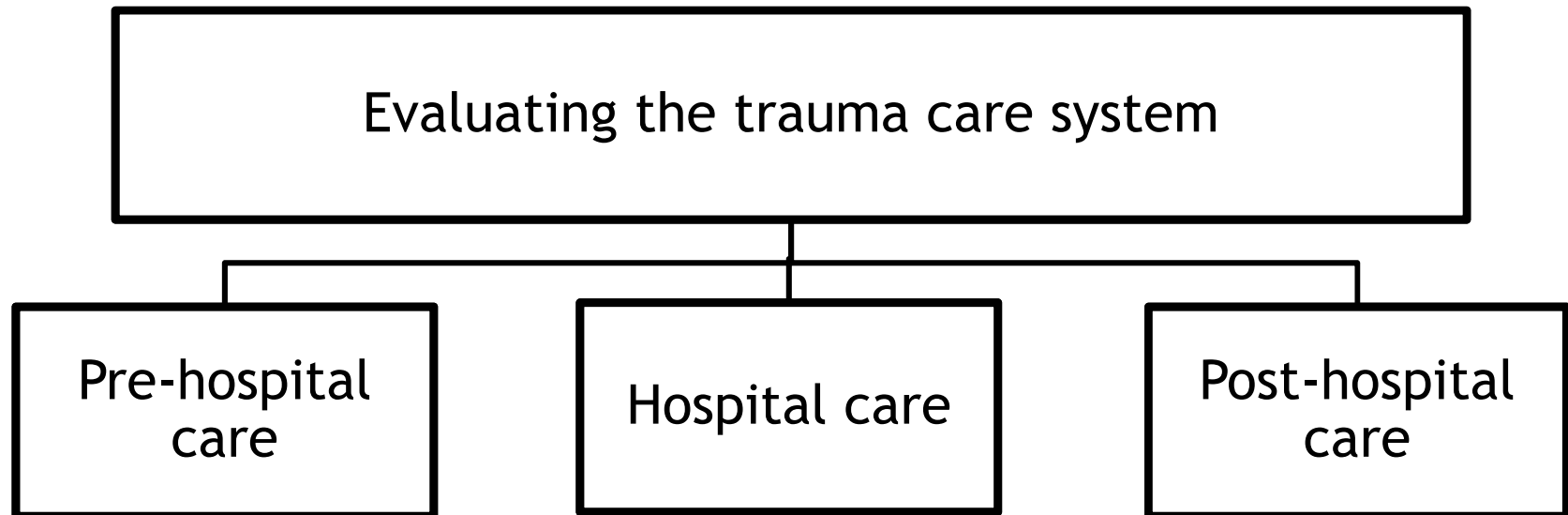
# Learning Objectives

- Briefly describe the “system” and goals involved in the care of the injured patient
- Describe the Trauma System Profile (TSP) tool
- Describe the implementation of the TSP tool in a low- or middle-income country (Kenya)

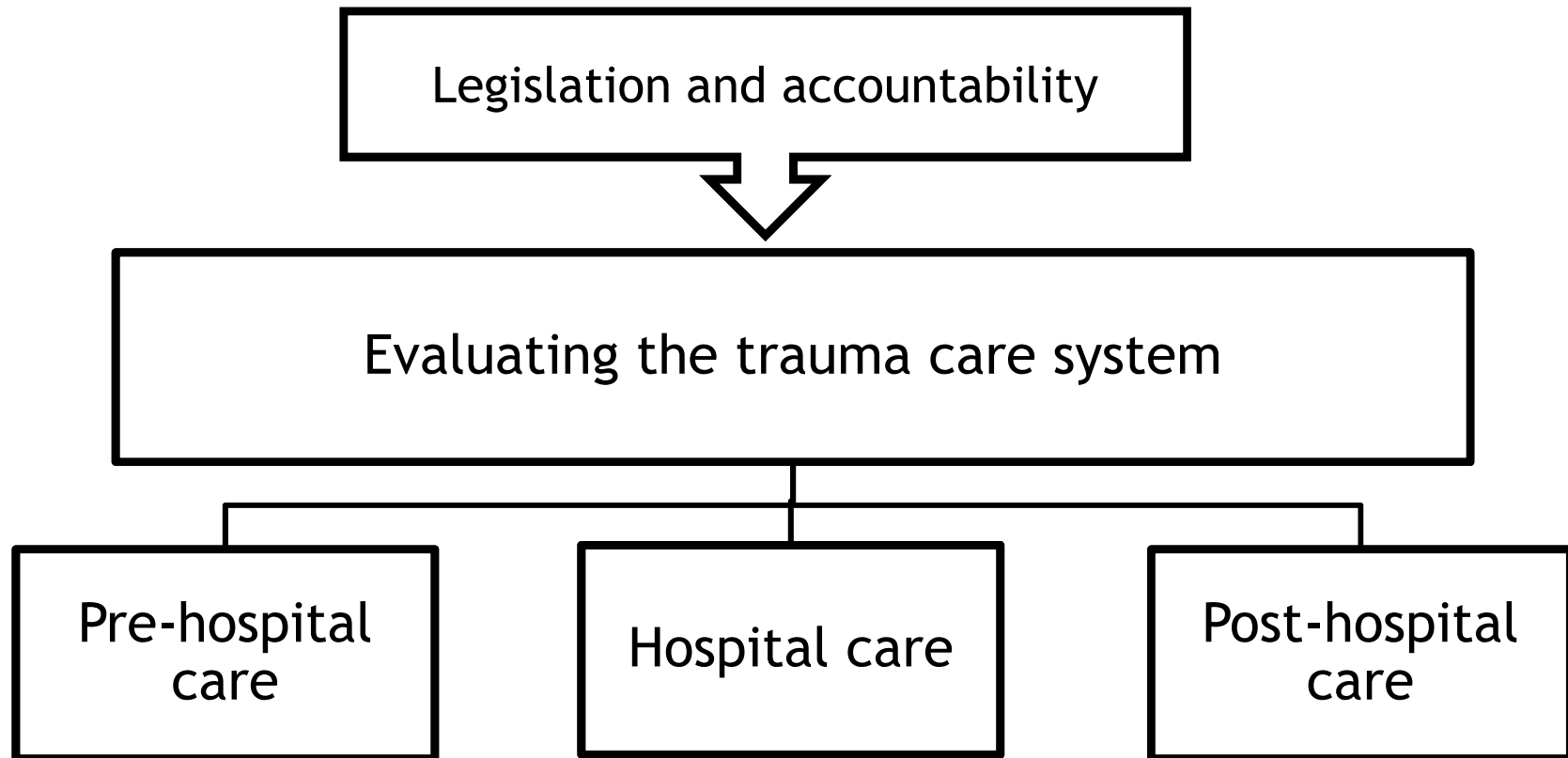
What “System” Must Be in Place, and What Are the Goals for the Care of the Injured Patient?

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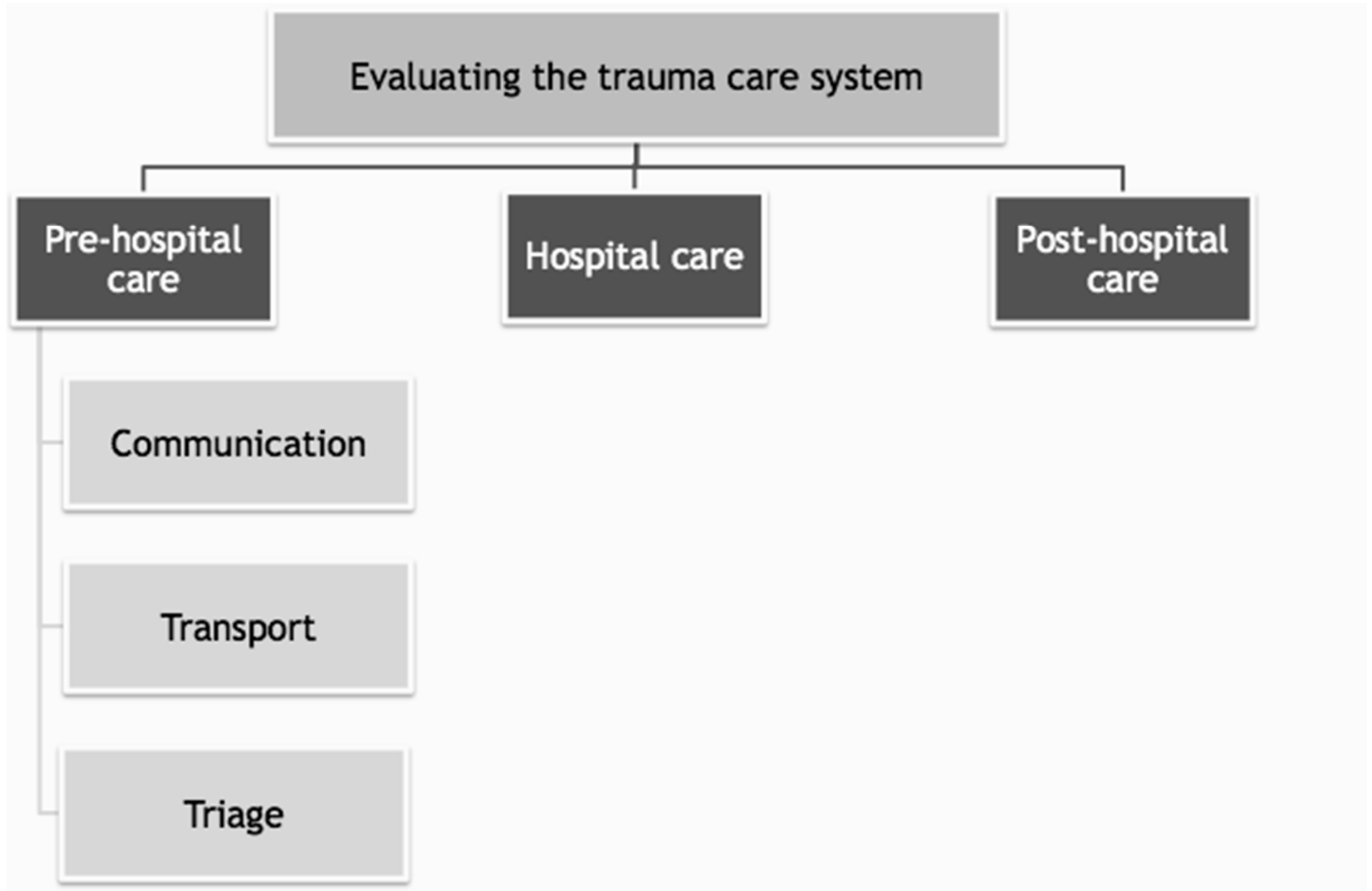
# Evaluating the Trauma Care System



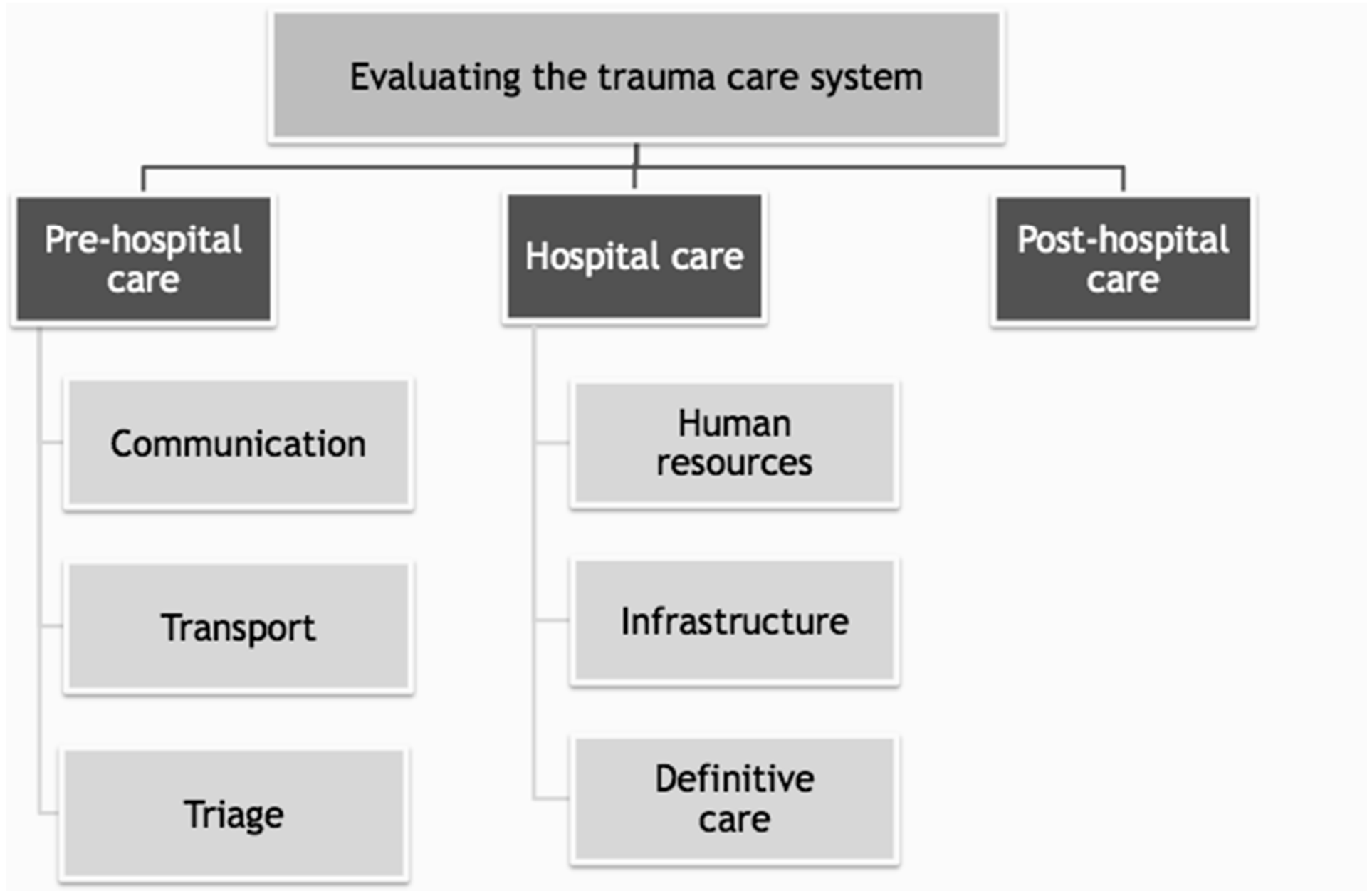
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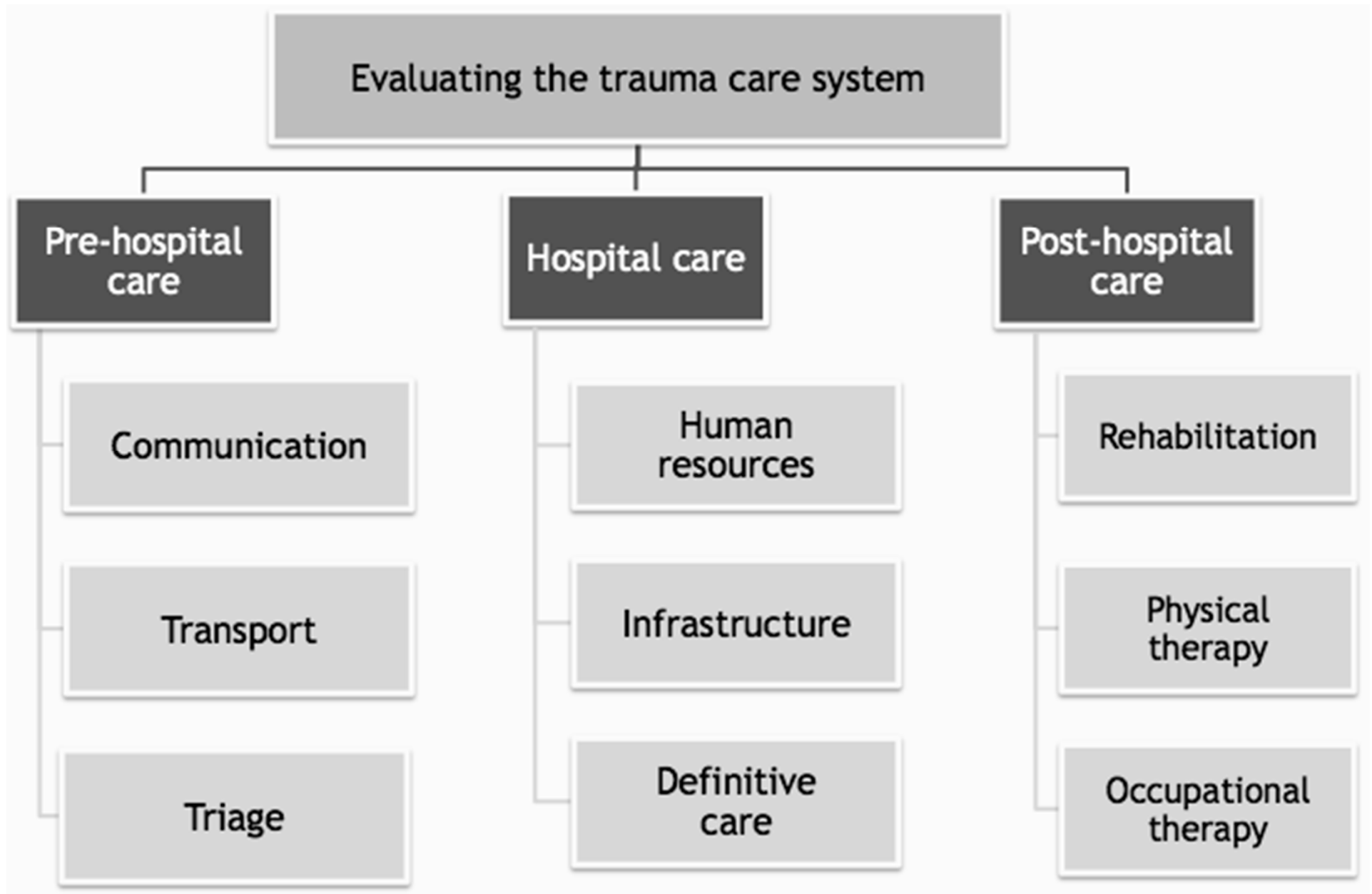
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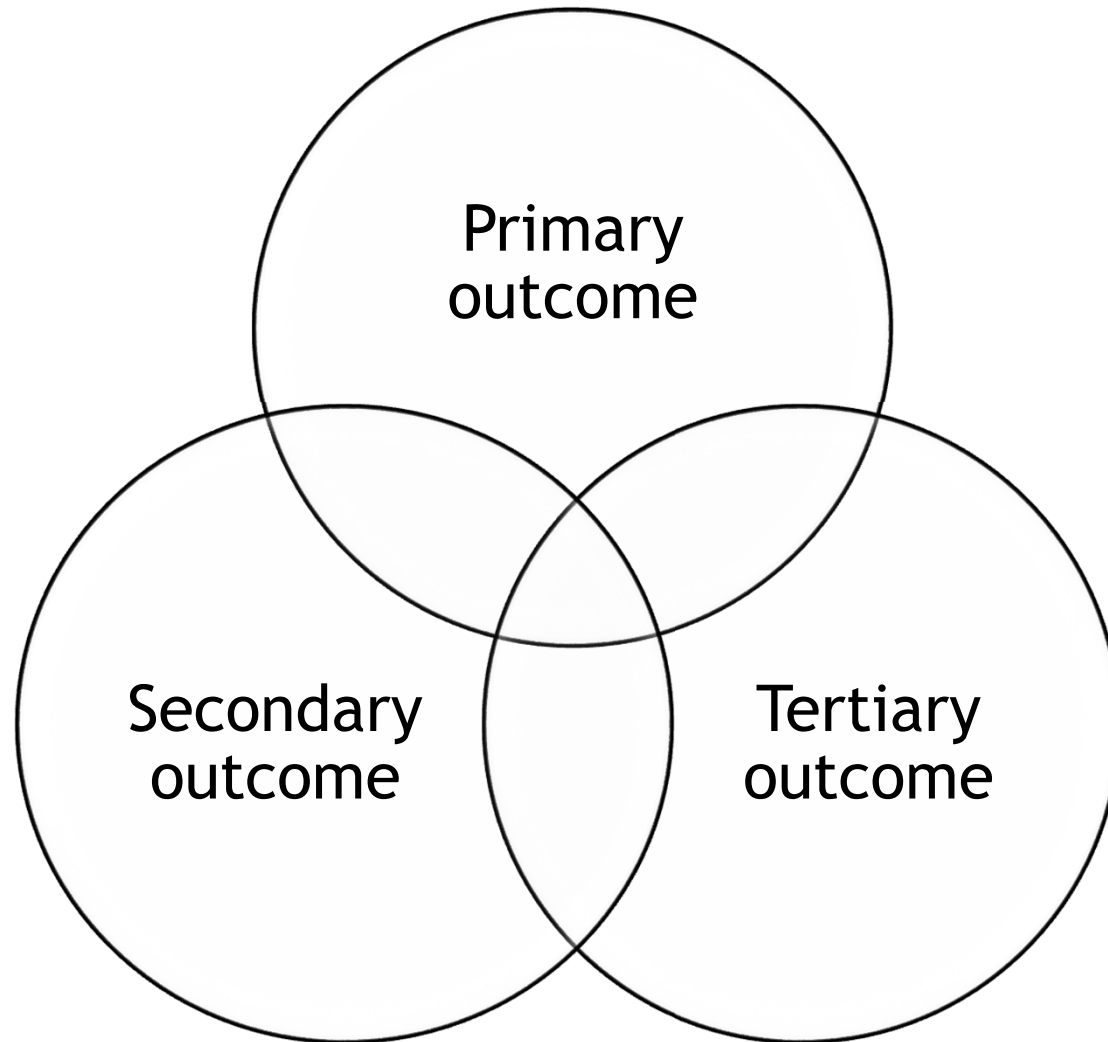


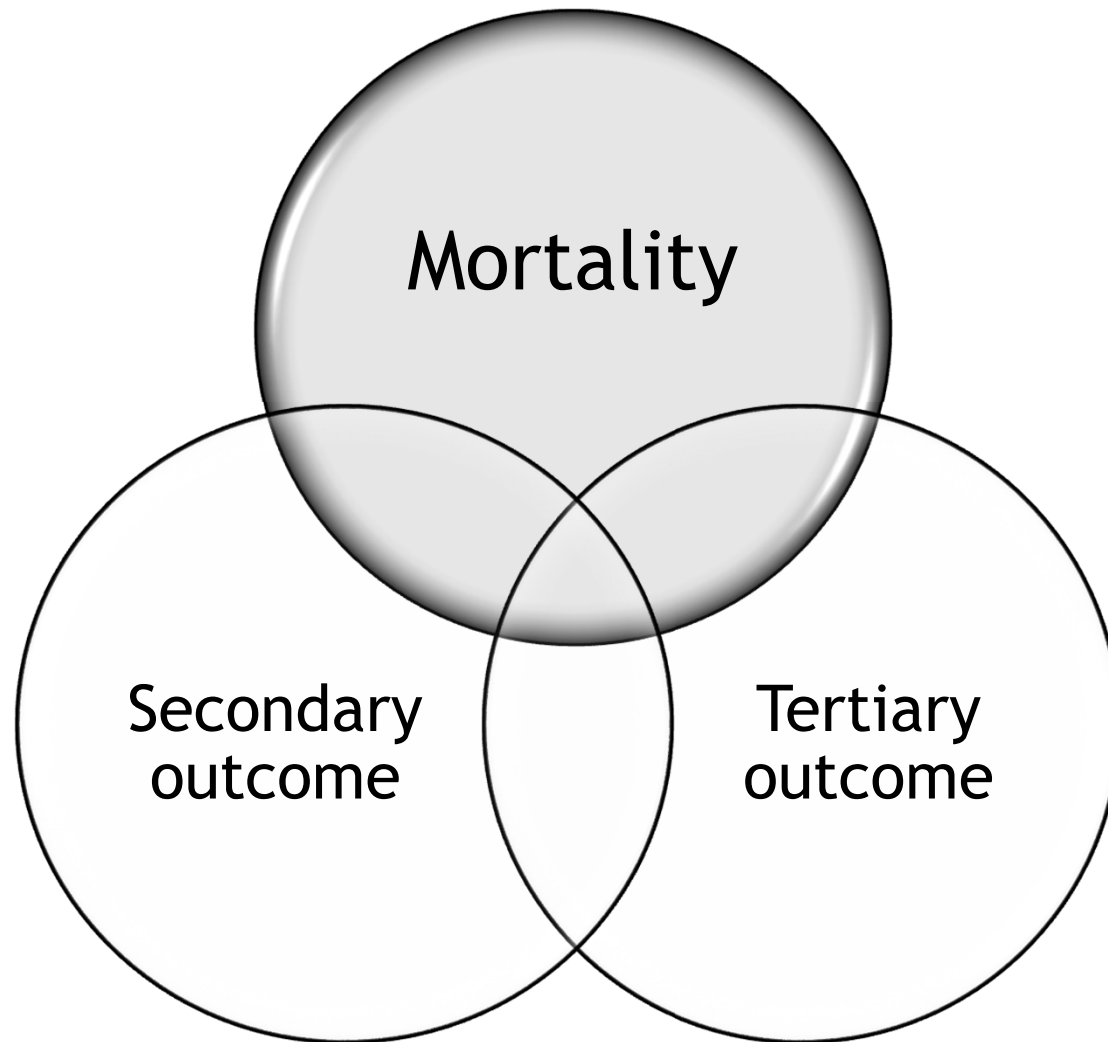
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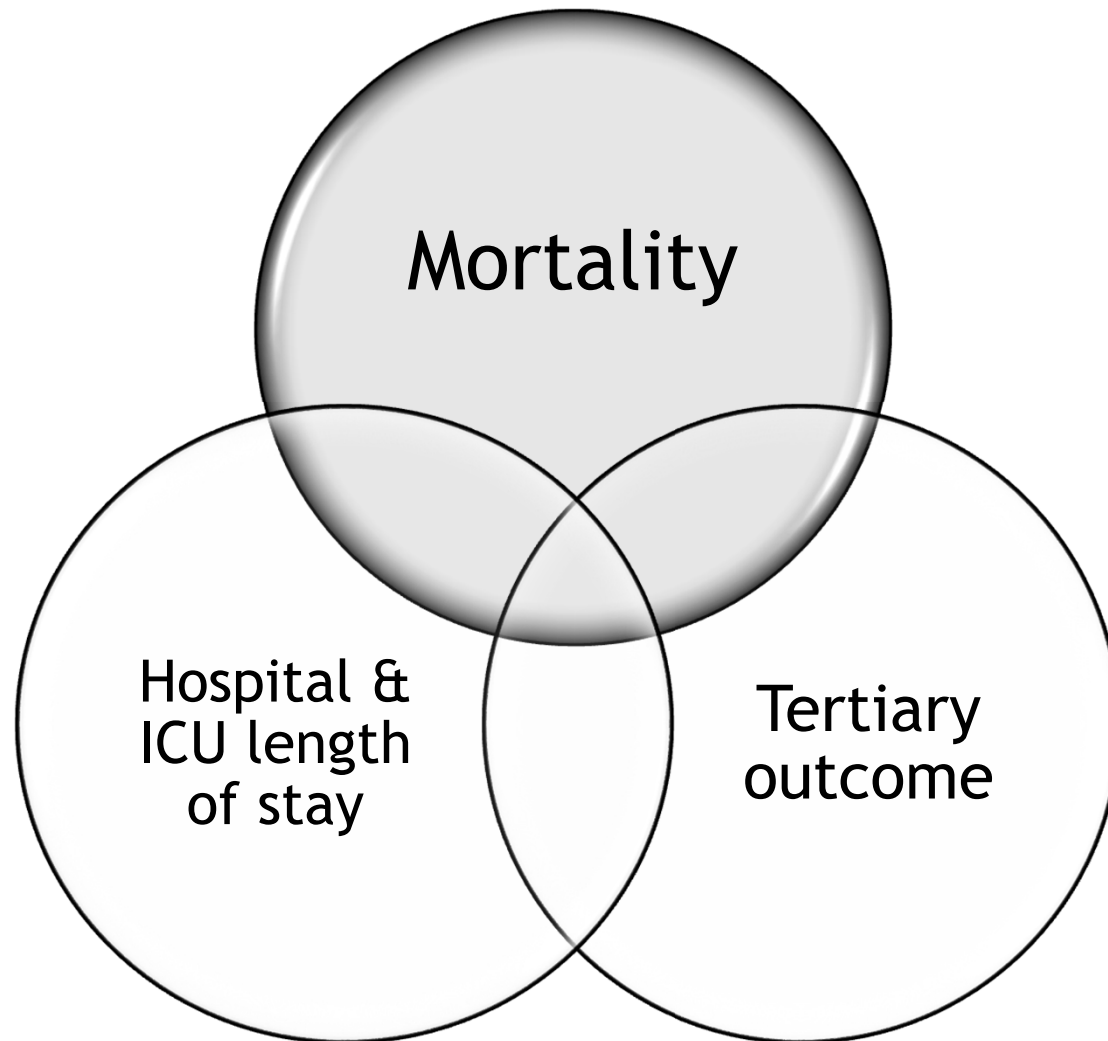


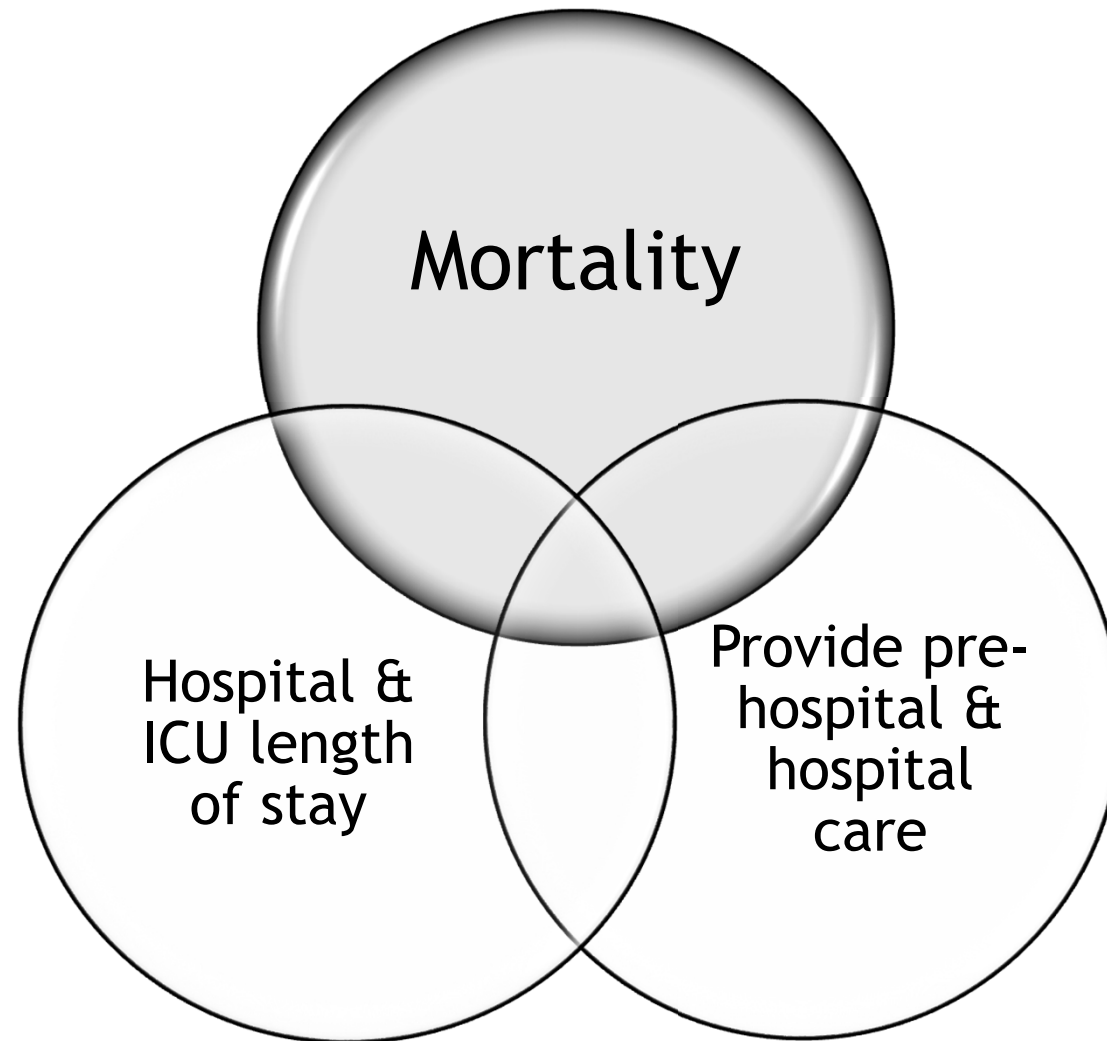


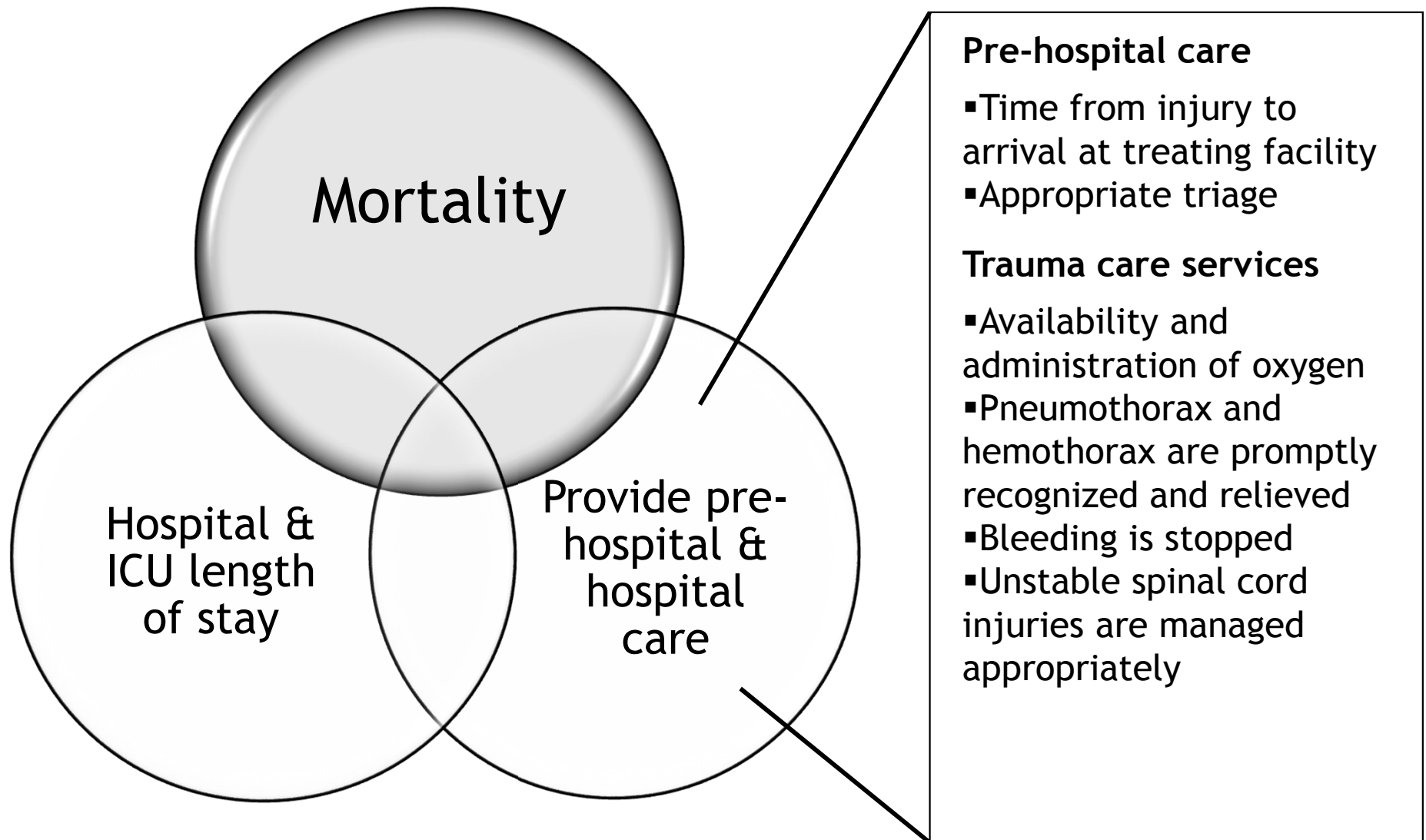
# Outcomes









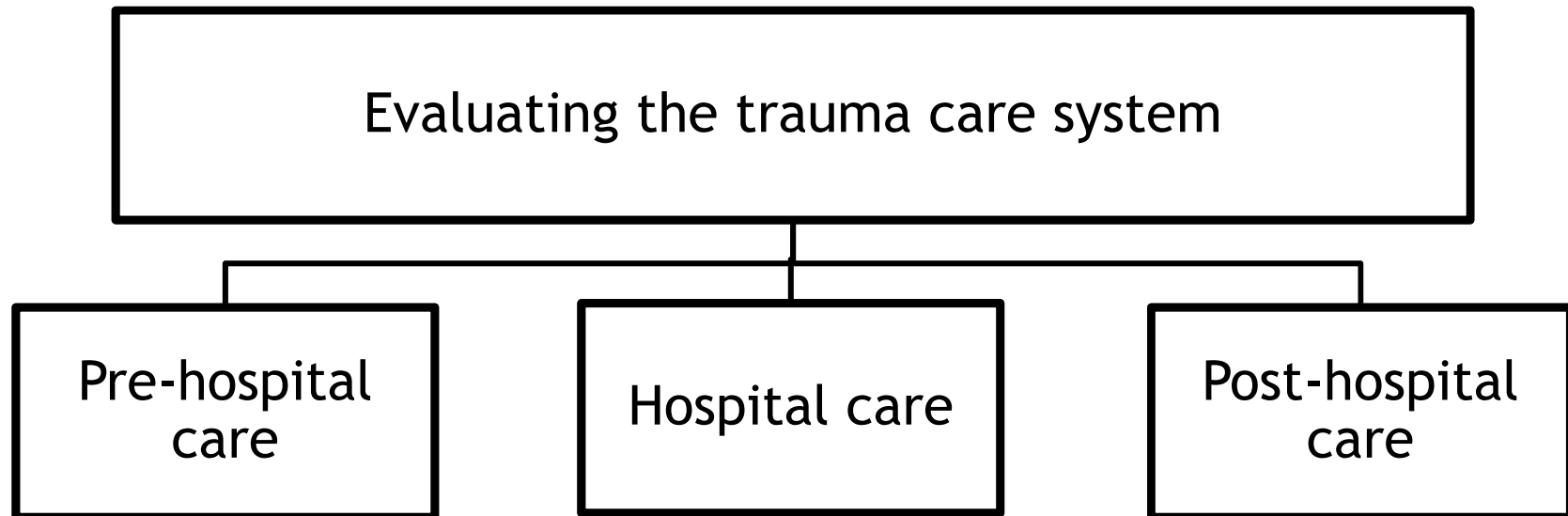


# The Trauma System Profile (TSP) Tool

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- Specific aims
  - To understand and evaluate the formal and informal systems of transport to the health care facility
  - To evaluate the existing communication system for response to the injured patient
  - To explore the capabilities of participating health care facilities to triage the injured patient
  - To evaluate the hospital-based resources and the infrastructure available for the injured patient in the acute care setting

# Evaluating the Trauma Care System





- Emphasize care of the patient at the local level
- Emphasize “complete” care of the injured patient
  - Pre-hospital, hospital
  - Caveat: post-hospital care
- Utilize both quantitative and qualitative methods
- Should be as comprehensive as possible
- Need to be performed at time intervals to insure accuracy and to observe changes/improvements

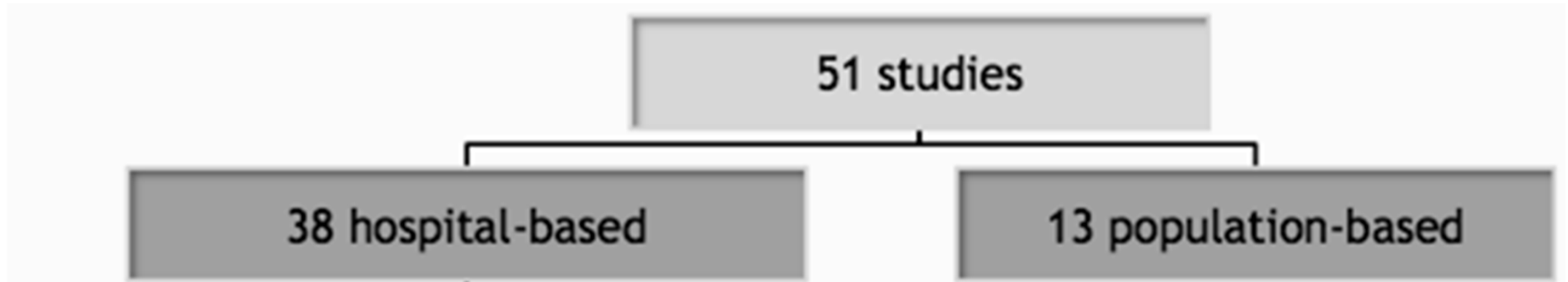
- Comprehensive literature review
- Retrospective hospital data review
- Key informant interviews
- Focus group discussions
- Hospital care flowchart development
- Hospital checklist, WHO Essential Trauma Care Project

# TSP Implementation: A Case Study in Kenya

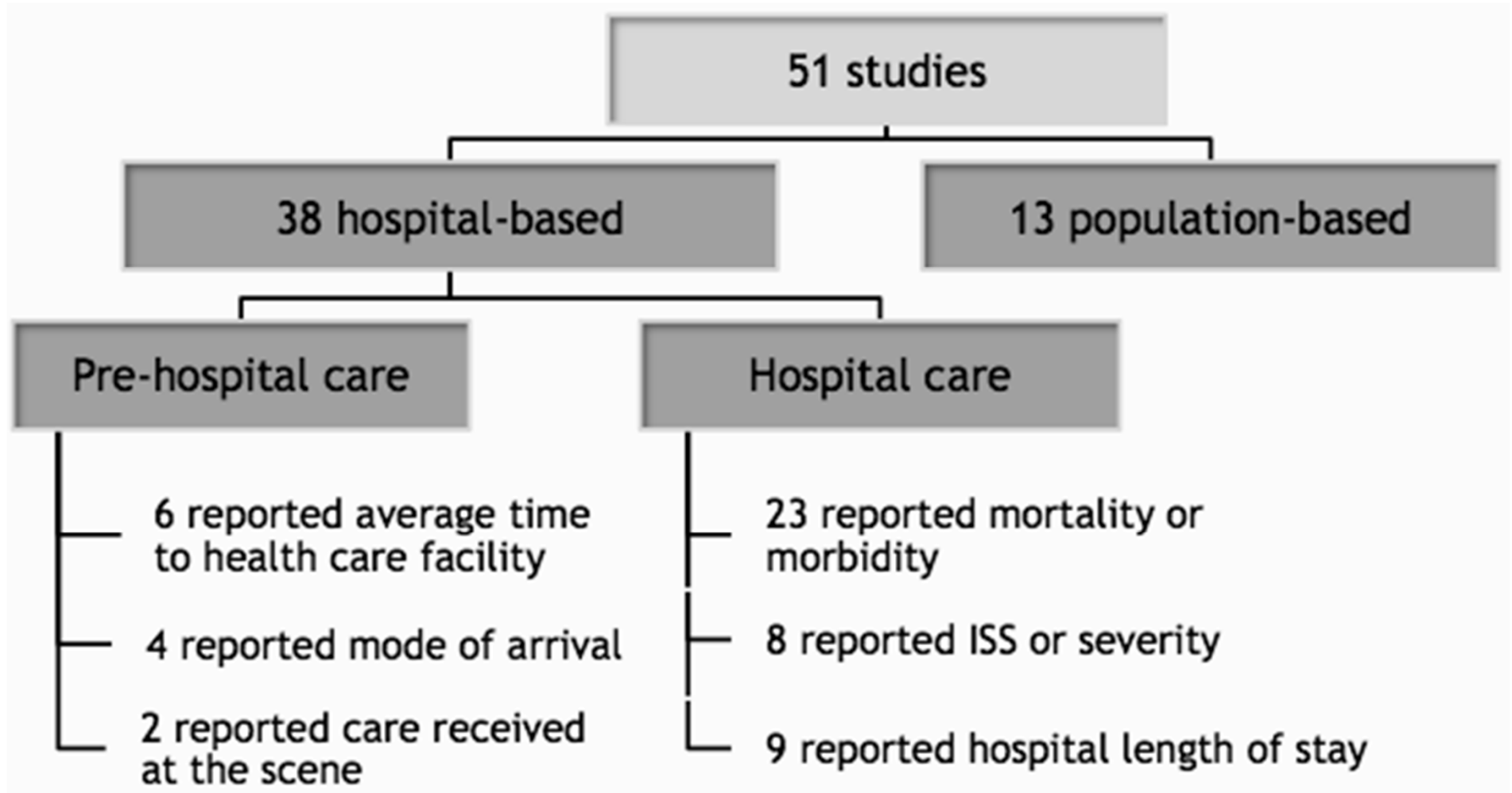
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- Performed as part of the Bloomberg Philanthropies Global Road Safety Program
- Used to evaluate the status of trauma care in Kenya
  - Concentrated on two districts: Thika, Naivasha
  - National implications
- Part of an ongoing effort to improve the care of the injured patient in Kenya
- To be repeated at the end of the intervention period to evaluate progress/successes

# Kenya Literature Review

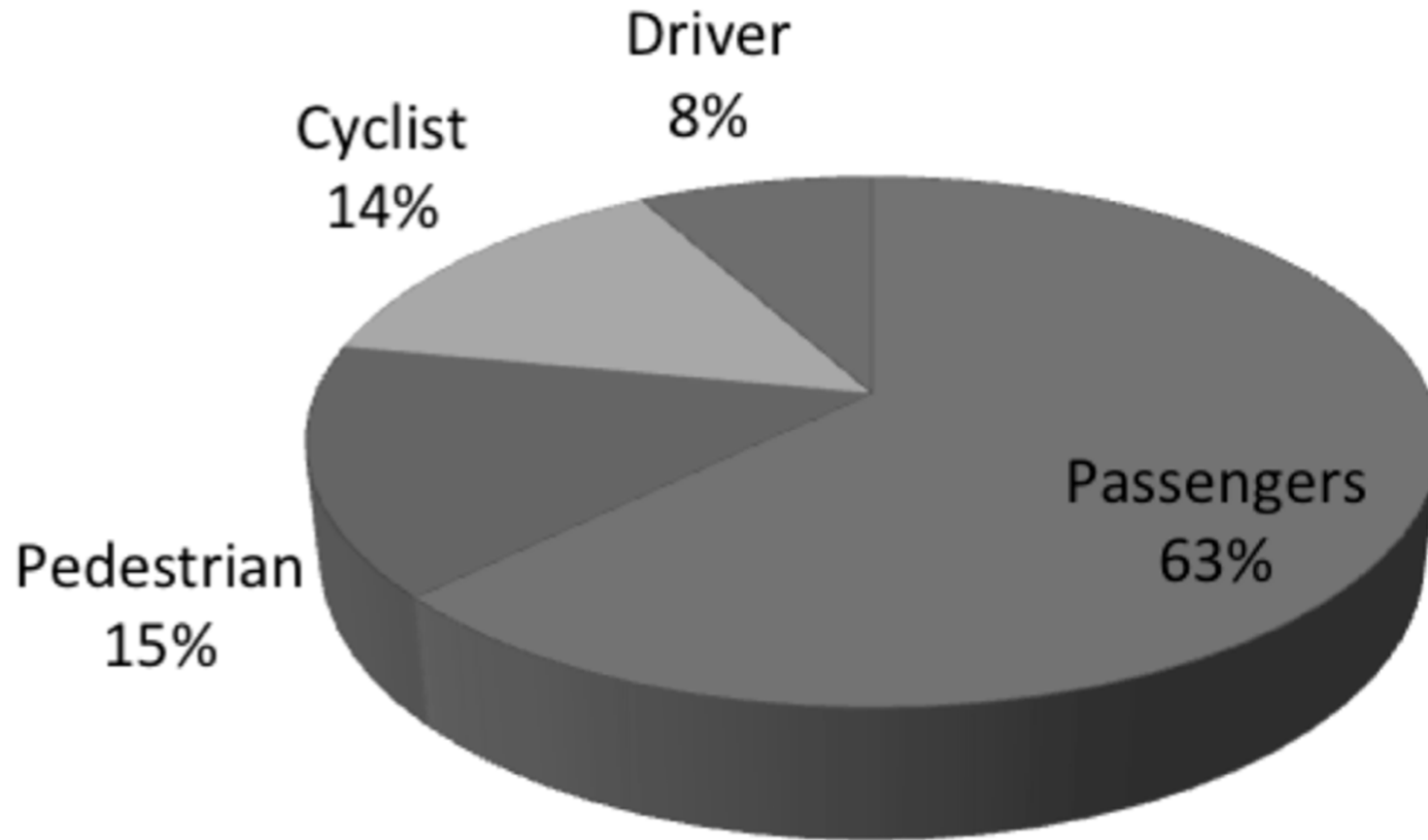


# Kenya Literature Review



# Retrospective Data Review, Thika

- Type of road users among RTI victims at Thika Level 5 Hospital in 2009 (n = 300)



# Key Informant Interviews

## Participant Profile: Key Informant Interviews (n=23)

Location	Occupation
<b>Naivasha</b>	
District Ministry of Health	Administrator
NDH Administration	Hospital Administrator (n=3)
NDH Casualty Department	Doctor
NDH Operating Theater	Doctor Nurse
NDH Laboratory	Laboratist
<b>Thika</b>	
District Ministry of Health	Administrator
NDH Administration	Hospital Administrator
Private sector	Public Health Worker
Police	Police (n=2)
TDH Casualty Department	Doctor Nurse
TDH Inpatient Ward	Nurse (n=2)
TDH Operating Theater	Doctor Nurse
TDH Laboratory	Laboratist
TDH Radiology	Radiology technician
<b>National Level</b>	
Ministry of Health	Administrator (n=2)



# Focus Group Discussions

## Focus Group Discussions (n=12)

Location	Participant Group
<b>Naivasha</b>	
Urban	Men Transporters Community Health Workers
Rural	Men Women Youths
<b>Thika</b>	
Urban	Men <i>Matatu</i> Drivers Transporters
Rural	Men Women Youths

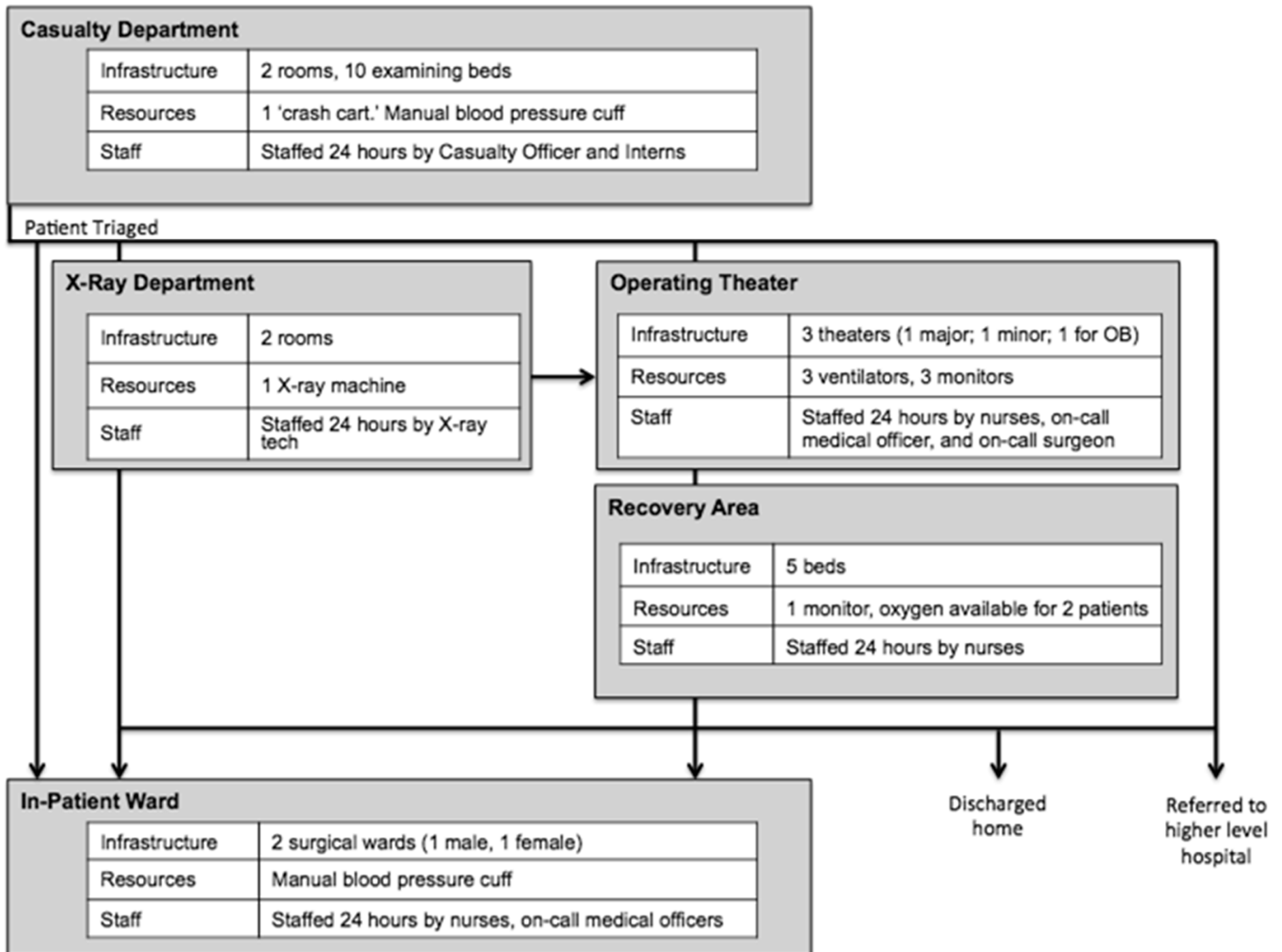
## Findings: Pre-hospital Care

- Care seeking by the injured patient
  - Dependent on the severity of the injury and availability of *money and transport*
- Communication systems
  - A “**999**” *emergency number* exists; community members do not use
  - Unclear if and when phone call is answered and whether response is initiated
  - Red Cross has emergency phone number

## Findings: Pre-hospital Care

- First aid management
  - Provided by “good Samaritans” or the police
  - No trained personnel at the scene
- Transport
  - Provided by community members, the police, or taxis
  - Hospital ambulances are “old,” “unreliable,” “not good,” “not functional”

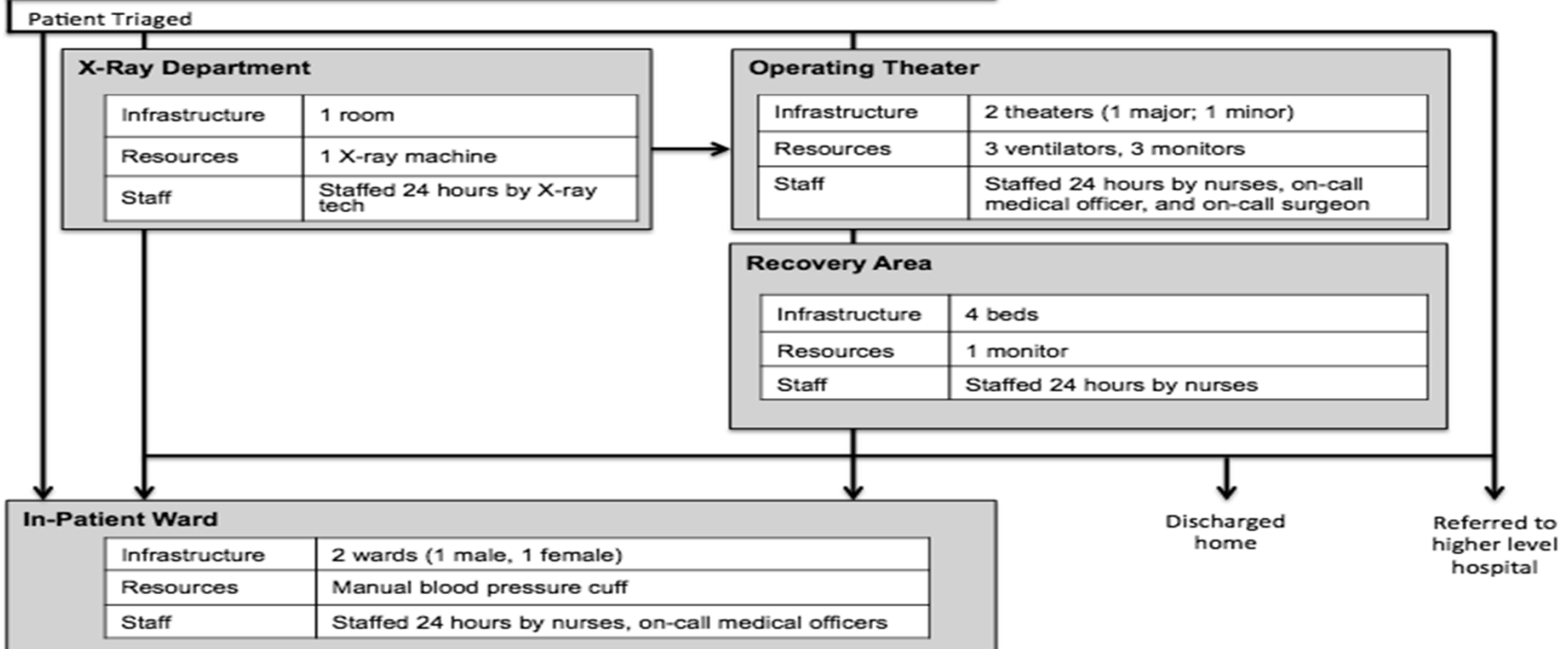
# Findings: Patient Flow, Thika Hospital



# Findings: Patient Flow, Naivasha District Hospital



Out Patient Department	
Infrastructure	3 rooms, 6 examining beds
Resources	3 manual blood pressure cuffs available
Staff	Staffed 24 hours by Casualty Officer and 3 interns



# Findings: Hospital Capability Checklist

Capability	Rating	Comments
<b>Clinical Capabilities</b>		
Basic airway management	Adequate	
Advanced airway management	Partially adequate	<ul style="list-style-type: none"> <li>Performed in operating theater</li> <li>Mechanical ventilation available only in operating theater</li> </ul>
Chest tubes	Partially adequate	<ul style="list-style-type: none"> <li>Sometimes only performed in wards or operating theater</li> </ul>
Oxygen	Partially adequate	<ul style="list-style-type: none"> <li>Not available for all patients</li> <li>Pulse oximetry not available</li> <li>Arterial blood gas measurements not available</li> </ul>
External hemorrhage control	Adequate	
IV access and appropriate fluids	Partially adequate	<ul style="list-style-type: none"> <li>Central venous lines not available</li> </ul>
Blood transfusion capabilities	Partially adequate	
Basic closed fracture management	Adequate	<ul style="list-style-type: none"> <li>Designated POP department</li> </ul>
Wound care	Adequate	<ul style="list-style-type: none"> <li>Operating theater available 24hr/day for surgical toilet</li> </ul>
Splinting of fractures	Adequate	
External fixation	Partially adequate	
Internal fixation	Inadequate	<ul style="list-style-type: none"> <li>Not currently available</li> </ul>
Spinal immobilization	Partially adequate	<ul style="list-style-type: none"> <li>Available once patients arrive at hospital</li> </ul>
<b>Organizational and Administrative Capabilities</b>		
Documentation of trauma cases	Partially adequate	<ul style="list-style-type: none"> <li>Ranges from hand written log book to electronic medical records</li> </ul>
Trauma Care course certification	Absent	<ul style="list-style-type: none"> <li>Formal trauma care training not available</li> </ul>
Trauma quality improvement program	Absent	<ul style="list-style-type: none"> <li>Formal program not in place</li> <li>Trauma registry not available</li> </ul>
Trauma team	Partially adequate	<ul style="list-style-type: none"> <li>Ranges from not present to an emergency response team</li> </ul>

Rating on a four-point scale: Adequate (present and used appropriately); Partially adequate (present, but use is either not assured, not available all the time, or not readily available); Inadequate; Absent. Source: World Health Organization. (2004). *Essential trauma care project checklists for surveys of trauma care capabilities*. Geneva, Switzerland.

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- Infrastructure
  - Casualty departments small, not capable of treating multiple patients
  - Facilities, equipment outdated
- Resources
  - Lack of trauma care equipment
  - Hospital ambulance used mostly for transfer of patients to higher level of care
- Training
  - Minimal, or complete lack of formal training

# Summary

Setting	Challenges	Specifics
Pre-Hospital	Trauma Care Training	Lack of first aid skills for community members and police
	Ambulance Transport System	Ambulance is not available in the pre-hospital setting
	Communication System	Not a centralized system; dependent of police
Hospital	Infrastructure	Lack of or inadequate casualty departments
	Resources	Lack of trauma care equipment
	Training	Lack of formal trauma care training for health care providers and trauma care emergency response team
	Trauma Surveillance System	Lack of hospital-based trauma registries

## Summary

- Care of the injured patient requires a comprehensive and integrated system to impact outcome
- Utilization of the Trauma System Profile (TSP) tool allows evaluation of existing care and identifies areas for improvement

**Thank you!**