Trauma Care System in Mainland China

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07/September/2014
Disclosures

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Presentation: 2014 ITLS Conference

- Financial Disclosure:
  - The contents of this presentation are solely the responsibility of the author and have no financial interest with any commercial company
An organized Trauma System links the necessary resources to maximize patient recovery.
China - World largest Population

- 1.36 billion by the end of 2013
- Urban: 731.1 million
- Rural: 629.6 million
- Licensed doctors: 1.5 million

http://data.stats.gov.cn
Population Density

Person number per KM²

- >600
- 100-400
- <1
China - Facts

- World largest developing country
- The fourth land mass in the world
- Urbanization and industrialization are accelerated
- Unprecedented increase of vehicles
- Total GDP more than 9 trillion USD (2013)
- 5.2% of GDP is for health care
# Health expenditure

<table>
<thead>
<tr>
<th>Country</th>
<th>Health expenditure as % of GDP 2009</th>
<th>Government Health Expenditure</th>
<th>Private Health Expenditure</th>
<th>Total Health Expenditure as % of GDP 2009</th>
<th>Government Health Expenditure as % of Total Health Expenditure 2009</th>
<th>Private Health Expenditure as % of Total Health Expenditure 2009</th>
<th>Per Capita Total Health Expenditure (US$) 2009</th>
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Source: Chinese Health and Family Planning Statistics Yearbook·2013
China - Physicians

<table>
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<tr>
<th>Year</th>
<th>Healthcare personnel</th>
<th>Healthcare technician</th>
<th>Licensed assist. physician</th>
<th>Licensed physician</th>
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<td>7.21</td>
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<td>9.11</td>
<td>6.67</td>
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<td>8.61</td>
<td>6.20</td>
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- Licensed physician are graduated from medical schools
- We have **5.08 million** licensed physician in China, the actual number in practice may be **only 1.5 million**, the number of emergency physicians is not available
China - Physicians

Number of licensed physicians per 10 thousand persons

- **Average**: 19
- **Cities**: 32
- **Rural Areas**: 14

Licensed (assist.) physicians in cities
Licensed (assist.) physicians in rural areas
China - Automobile

Jan – July 2013

• The automobile amount increased by 9.53 million
• The number of drivers increased by 9.04 million

<table>
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<th>Year</th>
<th>Automobile amount</th>
<th>Drivers</th>
<th>Highway mileage</th>
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<td>1986</td>
<td>3.62 million</td>
<td>5.17 million</td>
<td>0.96 million km</td>
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<td>2012</td>
<td>120 million</td>
<td>&gt; 200 million</td>
<td>4.24 million km</td>
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Number of serious traffic accident: 80 happened in 1996, while 25 in 2012

Ultra-wide view of the 2nd inner ring in Beijing
China - Automobile

Automobile amount (in million)

Yearly increment 10 million vehicles

2003

2013
Trauma in China

• Traumatic injury is the leading cause of death for persons age 1 to 44 years old.

• In 2010 alone, traffic injuries were responsible for over 100,000 deaths, among them 18,500 are children.

• The annual accidental injuries were responsible for 700,000 deaths and more than 62 million emergency department visits nationwide.

• Injury is one of China’s most expensive disease process, costing over $10 billion/year.
Trauma in China

• Trauma causes more than 5 million permanent disabilities annually
• An estimated 50,000 accidental injuries and deaths are children annually
• The death rate from unintentional injury is more than 50% higher in rural areas than in urban areas
Child Protection
‘It’s Everyone’s job’

“We all need to work together to ensure children are protected”

Audit Report 2002
Developing a Child Protection System

• Government recommendation
  – Education
  – Support: Promote extended hours childcare services
    • Pilot of Neighbourhood mutual help childcare
  – Legislation
    • Women and children's rights and interests protection law of the people's Republic of China (1992)
    • Shanghai child safety seat of local legislation (2014)
Trauma Care System in China

• Administrative Components
  - The Ministry of Health does not have a designated unit to deal with issues related to trauma
  - No central government agency to integrate policy-making, planning, financing, establishment of minimum standard for the performance of a trauma care system
Trauma Care System in China

- Elementary in nature, predominantly restricted to cities and semi-urban areas
- Health care is a provincial responsibility
- Each province funds and administers its own health services
- Nation-wide trauma care system are in various stages of development, implementation, and evaluation
- No integration of nation-wide system
Trauma Prevention

• China is a disaster-prone country with frequent floods, cyclones, landslides and earthquakes

• Traffic accidents and industrial mishaps are not uncommon
Trauma Prevention

- 14:28, 12/May/2008
  Wenchuan China, an earthquake of 8 magnitude attacked
  - 69,197 people dead
  - 374,176 people injured
  - 18,377 people missing
  - 90,000 people hospitalized
Trauma Prevention
Trauma Prevention

Several efforts are required for China

- Resource creation
- Education
- Legislation
- Upgrading pre-hospital and hospital-based care
- Public awareness
Pre-hospital Trauma Care in China

- In the absence of guidelines, the pre-hospital services across China vary enormously
- None-existent in most rural and semi-urban areas, particularly in west China
- Gross discrepancy exist between urban and rural settings
- ATLS paramedics concentrated in big cities
- Many cities have hybrid ATLS/BTLS services
Pre-hospital Trauma Care in China

• No national guidelines exist for triage, patient-delivery decision, pre-hospital management, and transfer protocols
• Decisions about evacuation and choice of the destination hospital are made on an individual basis
• Absence of minimal education and training standards for paramedics brings in unskilled labor to handle the most delicate of task
Pre-hospital Trauma Care in China

Education

1. The national medical and nursing councils control educational and licensing requirements for physicians and nurses.
2. Formal education and specialty training are not mandatory for personnel involved in trauma care.
3. No minimum stipulated educational standards for paramedic and ambulance personnel.
4. ITLS training is introduced to Shanghai in 2011 and is widely accepted now.
Introduction of ITLS in China (2011)
What We Learn from ITLS?

• Having a well organized trauma system
• Establishing trauma care standards
• Training components of EMS system
• Promoting professional education for pre-hospital trauma care
• Improving communications throughout the network
Trauma registry in China

• Manual and rudimentary in most places
• Have reliable data on trauma admission, few have data on the clinical outcome
• Lead to a negative impact to an effective public policy on trauma care
In-hospital Trauma Care in China

• 5-10% of all trauma patients require trauma center facility
• Less than 1% of the 19,712 hospitals have established department of trauma surgery
• No western-style trauma centers exist
• No database for trauma care at pre-hospital, hospital, provincial and national level
In-hospital Trauma Care in China

- Three types of emergencies available
  1. Primary or community hospitals: treat only minor injury
  2. Secondary hospitals: maybe able to treat single-system injuries and fulfill resuscitation requirements prior to referral to a tertiary hospital
  3. Tertiary hospitals: play the leading role for treating severely injured patients mostly located in big cities

- Emergency physicians are at high risk to face violence, disputes and heavy workloads

- Heavy workloads and low salaries make medical students refuse to become doctors
Rehabilitation

• Little attention is paid to rehabilitation for injured patients in China

• Now rehabilitation units were established for injured patients in some hospitals

• No strong links and transfer agreement between acute facilities and rehabilitation units
Trauma Research in China

- Studies of trauma epidemiology initiated in some universities

- No national trauma database available for the development and improvement of trauma-care system
Future - Improvement

- Monitor the national population-based occurrence of injury
- Assure integration and coordination of trauma system through effective partnerships
- Assure secure and adequate financing
- Monitor and track patient outcomes including death and disability as well as system performance
- Coordinate emergency and disaster preparedness with responsible state agencies