Proposal of Pan-Asian Trauma Outcome Study

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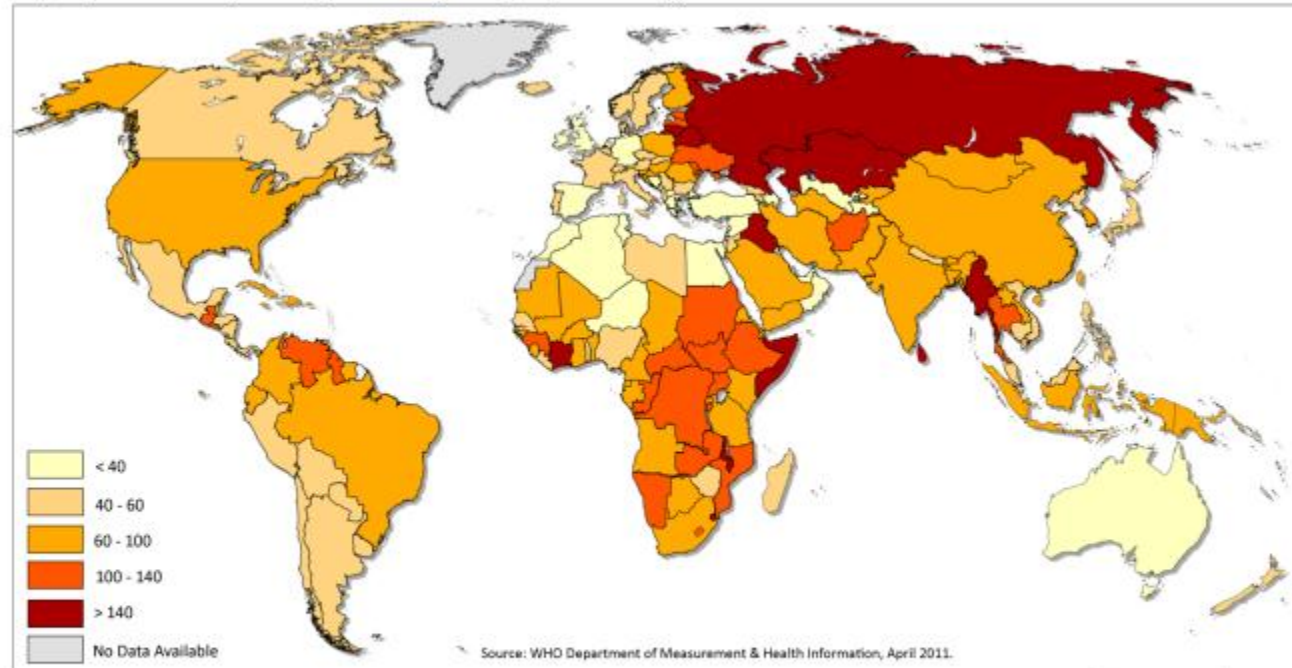
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Background
Trauma: Top Priority in Public Health

Global Burden of Injury

Injury mortality rate (per 100,000 population), 2008

Legend:
- < 40
- 40 - 60
- 60 - 100
- 100 - 140
- > 140
- No Data Available

Source: WHO Department of Measurement & Health Information, April 2011.

The University of Rhode Island / University of Toronto Department of Surgery
Global Health Research Collaborative - Epidemiology of Burns in Developing Countries
Researchers: Dr. Shahla Yekta, Dr. Donna Schwartz-Barcott, Patrick H. Warren, Renee S. Lemieux

Data Source: World Health Organization
Map Production: Patrick H. Warren, MPH(c)
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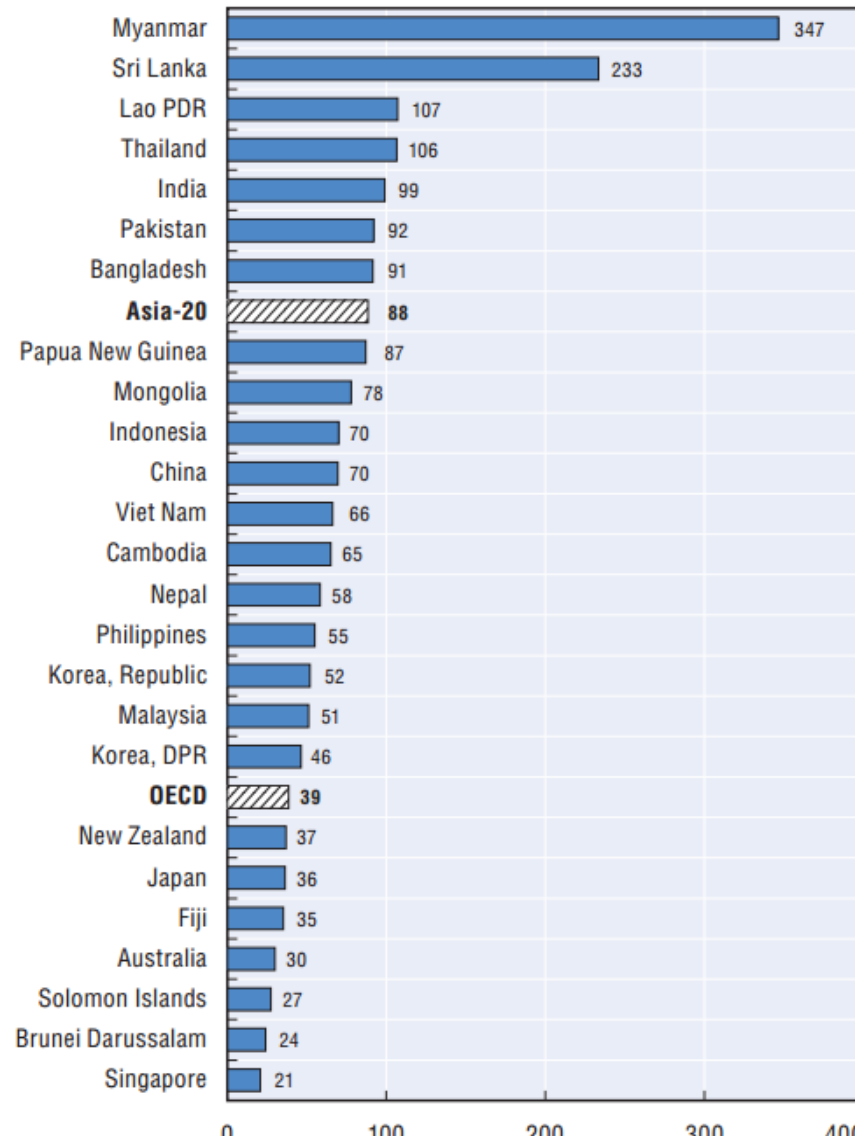
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Causes of Injury
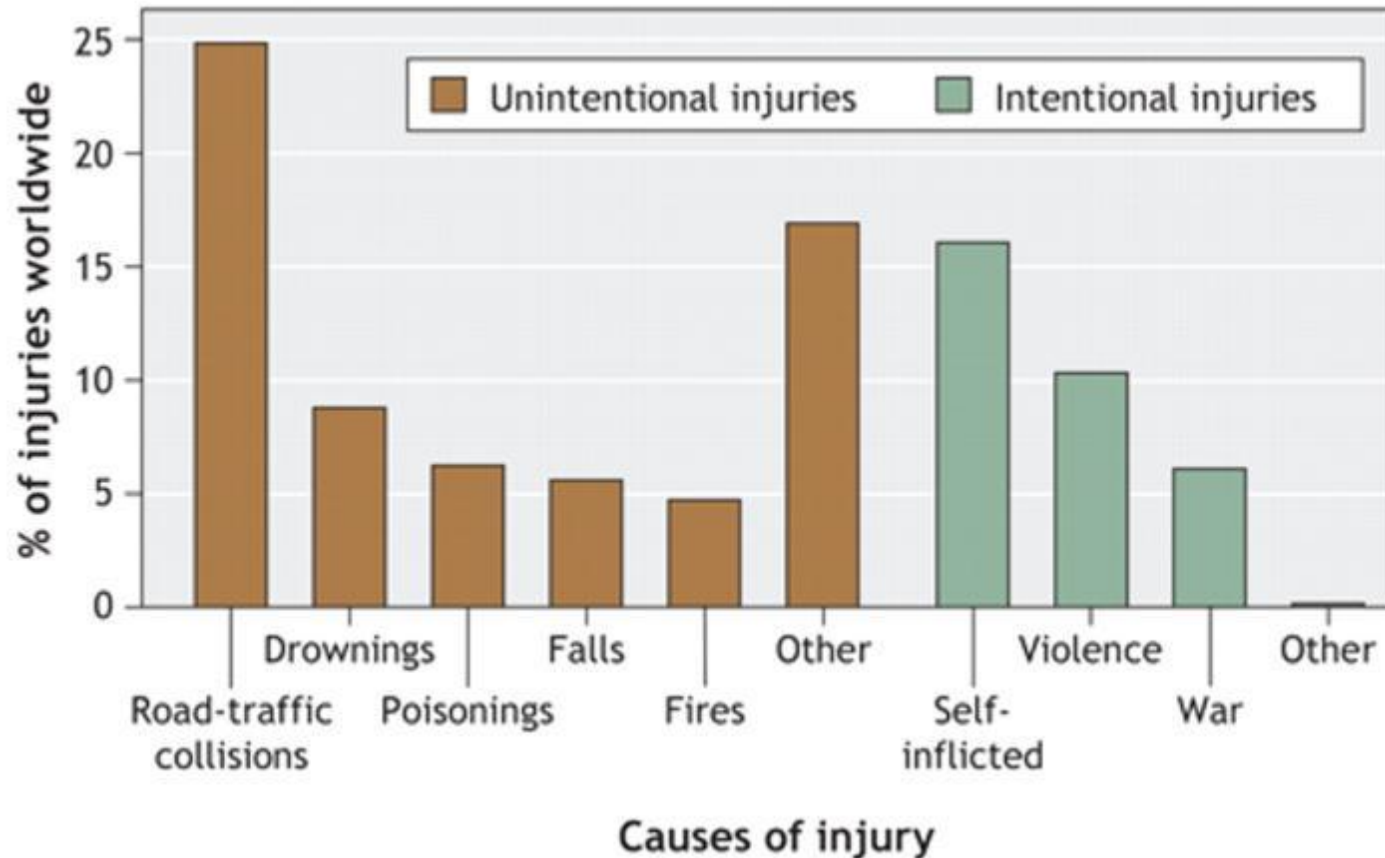
Source: World Health Organization. The Injury Chart Book: A
Graphical Overview of the Global Burden of Injuries. Geneva:
WHO; 2002. p. 19.

CMAJ·JAMC

Estimated Injury Mortality, Asia

1.7.1. Injuries, estimated mortality rates, 2008

Country	Rate
Myanmar	347
Sri Lanka	233
Lao PDR	107
Thailand	106
India	99
Pakistan	92
Bangladesh	91
Asia-20	**88**
Papua New Guinea	87
Mongolia	78
Indonesia	70
China	70
Viet Nam	66
Cambodia	65
Nepal	58
Philippines	55
Korea, Republic	52
Malaysia	51
Korea, DPR	46
OECD	**39**
New Zealand	37
Japan	36
Fiji	35
Australia	30
Solomon Islands	27
Brunei Darussalam	24
Singapore	21

Top five causes of mortality (Korea 2010)

Age	1st	2nd	3rd	4th	5th
0-4	**Injury**	Cancer	Stroke	Liver Disease	COPD
5-9	**Injury**	Cancer	Stroke	Liver Disease	IHD
10-14	**Injury**	Cancer	Stroke	IHD	Hypertension
15-19	**Injury**	Cancer	Stroke	IHD	Diabetes
20-24	**Injury**	Cancer	Stroke	IHD	Liver Disease
25-29	**Injury**	Cancer	Stroke	IHD	Liver Disease
30-34	**Injury**	Cancer	Stroke	Liver Disease	IHD
35-39	**Injury**	Cancer	Liver Disease	Stroke	IHD
40-44	**Injury**	Cancer	Liver Disease	Stroke	IHD
45-49	Cancer	**Injury**	Liver Disease	Stroke	IHD
50-54	Cancer	**Injury**	Liver Disease	Stroke	IHD
55-59	Cancer	**Injury**	Stroke	Liver Disease	IHD
60-64	Cancer	Stroke	**Injury**	Liver Disease	IHD
65-69	Cancer	Stroke	**Injury**	IHD	Diabetes
70-74	Cancer	Stroke	**Injury**	IHD	Diabetes
75-79	Cancer	Stroke	IHD	**Injury**	Diabetes
80세+	Stroke	Cancer	IHD	**Injury**	Hypertension
Total	Cancer	Stroke	**Injury**	IHD	Liver Disease

Variations in Trauma Mortality in Korea
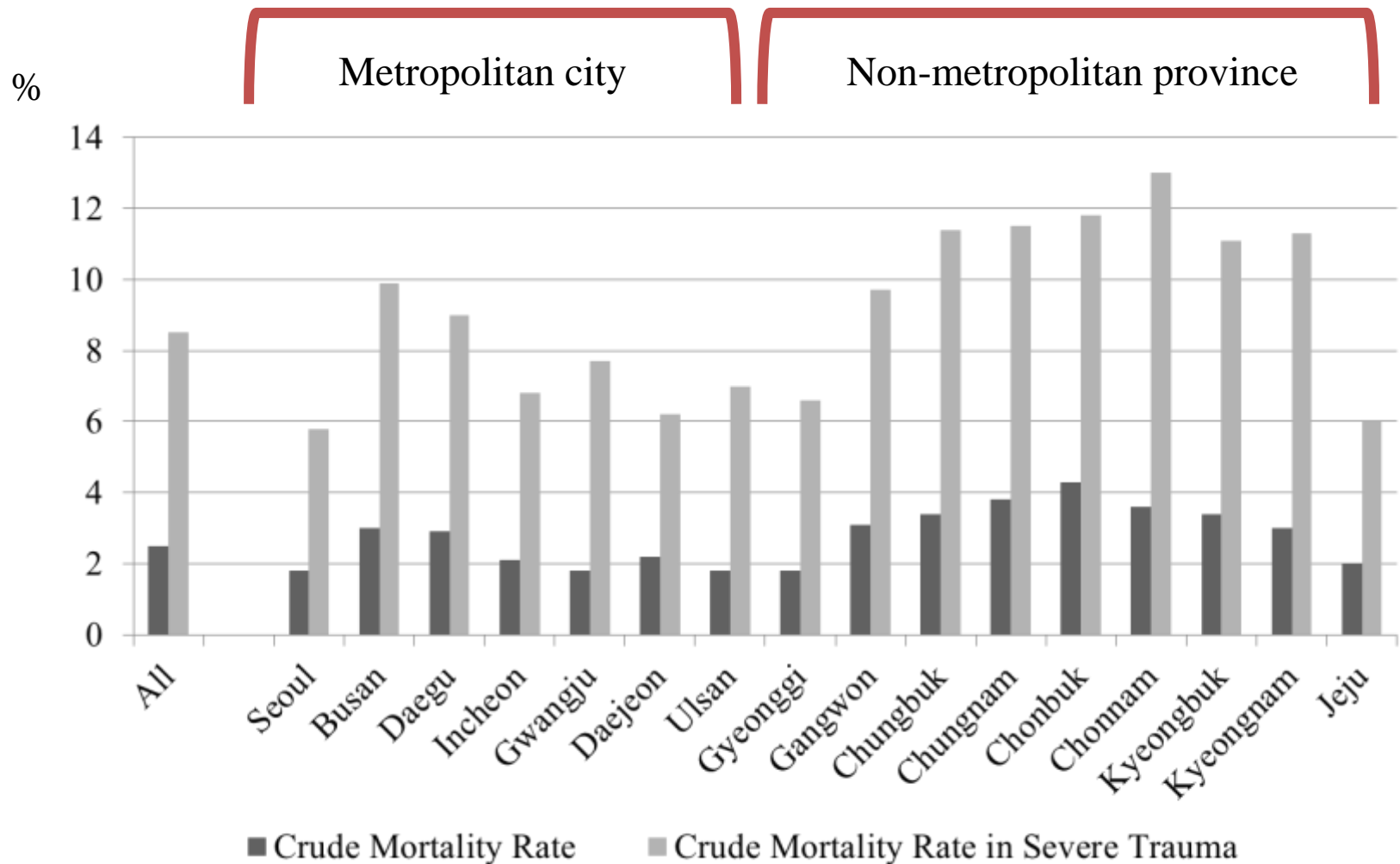
Trauma Care System

Trauma Care System

- An organized, coordinated effort in a defined geographic area that delivers the full range of care to all injured patients and is integrated with the local public health system.

- Trauma systems are regionalized, making efficient use of health care resources.

- Trauma systems must emphasize Injury prevention, Quality prehospital care and hospital care, and appropriate rehabilitation

- Chain of trauma care

Injury Prevention → **Prehospital Care & Transport** → **Hospital Trauma Care** → **Rehabilitation**

The goals of a trauma care system are:

- To decrease the incidence and severity of trauma
- To ensure optimal, equitable, and accessible care for all persons sustaining trauma
- To prevent unnecessary deaths and disabilities from trauma
- To contain costs while enhancing efficiency
- To implement quality and performance improvement of trauma care throughout the system
- To ensure certain designated facilities have appropriate resources to meet the needs of the injured

Prevention
- primary/ secondary/ tertiary

Phase of Prevention	Human/Host	Vehicle/Agent	Environment	
			Physical	Social
Pre-Event	• Age • Driving experience • Alcohol or drug use • Speed	• Defects • Brakes • Tires • Collision Avoidance Warning System	• Visibility • Congestion • Surface/pavement • Road design	• Driving while intoxicated laws • Speed limits • Driver training and licensure
Event	• Seat belt use • Helmet use • Tolerance	• Airbags • Contact surfaces • Crash-worthiness of the vehicle	• Guardrails • Medians • Breakaway posts	• Road and environmental design policies
Post-Event	• Age • Pre-existing physical condition	• Fuel Integrity System • Fire	• EMS system • First responder • Bystander care • Proximity to medical care • Medical and rehabilitative services	• Financial, legal, and social resources

Public Health: THREE CORE FUNCTIONS

Assessment

Assessment is the regular and systematic collection and analysis of data from a variety of sources to determine the status and cause of a problem and to identify potential opportunities for interventions.

HRSA. 2006. http://www.ncdhhs.gov/dhsr/ems/trauma/pdf/hrsatraumamodel.pdf

Policy Development

Assurance

Assurance, agreed-on goals to improve the public's health, is achieved by providing services directly, by requiring services through regulation, or by encouraging the actions of others (public or private).
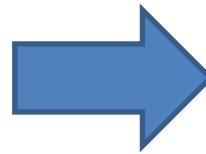
Policy development uses the results of the assessment in an organized manner to establish comprehensive policies intended to improve the public's health
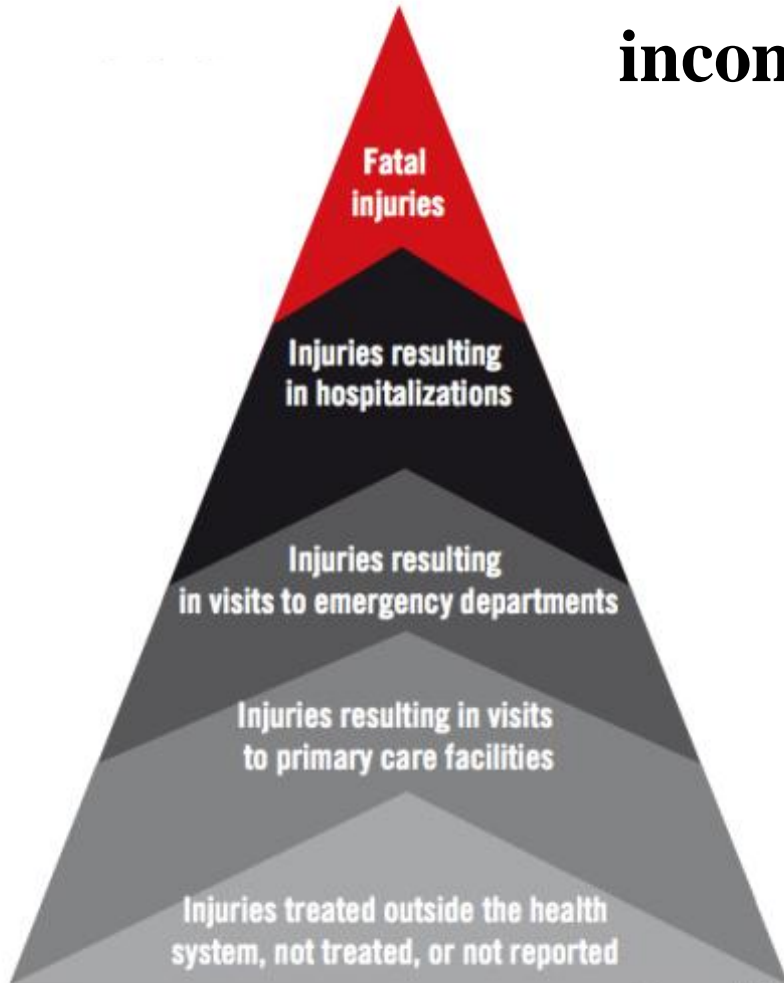
Source of monitoring

- Vital statistics
- Law enforcement: police
- Public health: surveillance
- Fire and Rescue

- Emergency medical service
- Hospital discharge
- Emergency department
- Rehabilitation facility

Injury Pyramid

Always incomplete!!

Ideal

Fatal injuries

Injuries resulting in hospitalizations

Injuries resulting in visits to emergency departments

Injuries resulting in visits to primary care facilities

Injuries treated outside the health system, not treated, or not reported

Source: WHO

Reality

Misclassified

Unknown

Unmeasured
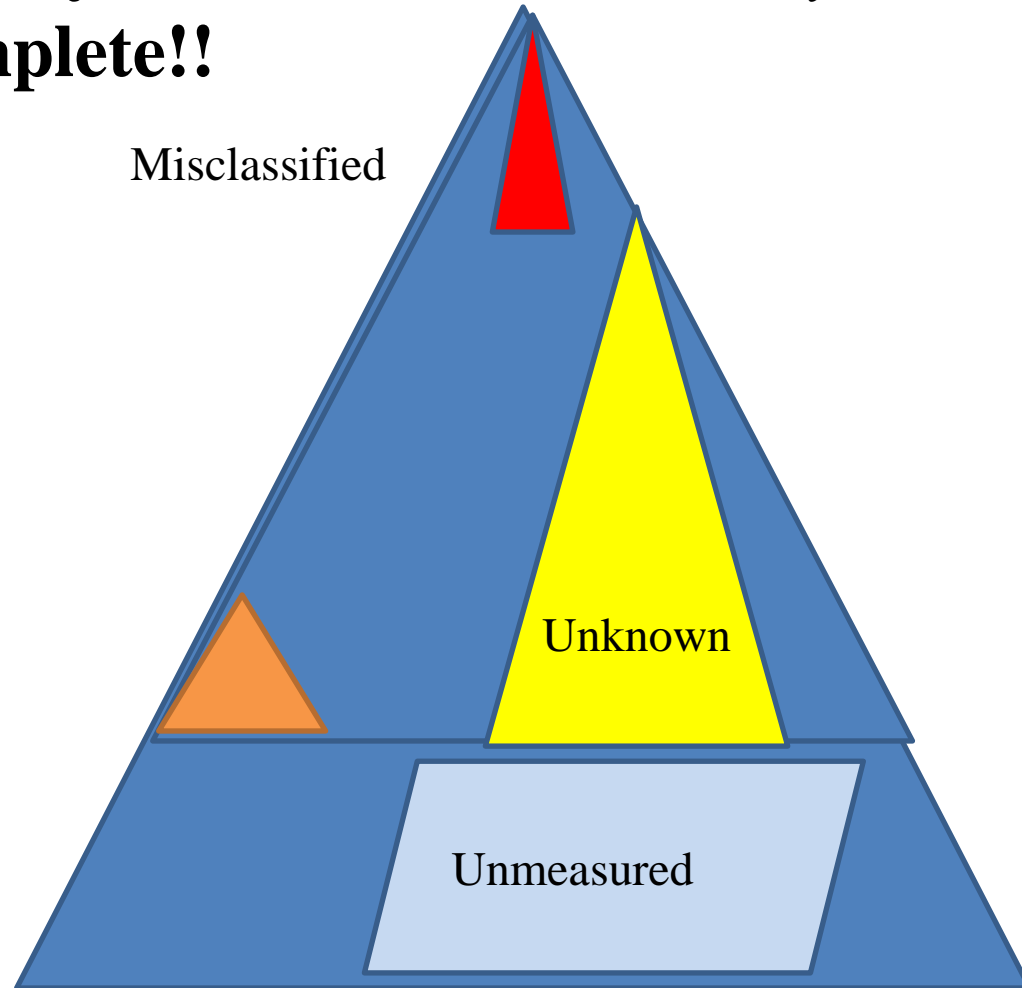
Trauma care system monitoring

Hospital-based versus EMS-based

What to monitor?

- Incidence
  - Severity-based
- Outcome
  - Mortality/ disability/ quality of life
  - Preventable death rate
- Risk factors
  - Individual (fixed/ modifiable)/ injury mechanism and characteristics/ time/ environmental
- Performance of trauma care
  - Community/ EMS/ hospital performance

Core databases for trauma system monitoring

- Death certificate
  - Long-term trend
  - Comparability

- Injury surveillance
  - In-depth risk factors
  - Mild injury

- EMS-registry
  - Emergency response
  - Severe trauma

- Trauma center registry
  - Performance of trauma care
  - Cost-effectiveness

➤ National Statistics Office

➤ CDC or Health authorities

➤ EMS agency

➤ Hospitals

Hospital-based Trauma Registry

- Advantage
  - Performance Improvement (PI) of definite care
  - Outcome and preventable death rate
  - Clinical research
- Limitation
  - In population-based information
  - In EMS-based information
  - In regionalized performance

Trauma Center Registry-US

- National Trauma Data Bank (NTBD)
  - By American College of Surgeons Committee of Trauma
  - 773,299 admission data from 744 TCs (2011) of US and Canada (average 986 per year per one TC)
    - 228 level 1
    - 251 level 2
    - 210 level 3-4
    - 31 pediatric level 1-2
  - Case fatality rate= 4.0%
  - ISS>15: 17.7%
  - ISS>9: 48.0%

Welcome to the NTDB Data Center

Home
Technical Information
Support
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The National Trauma Data Bank® (NTDB) is the largest aggregation of trauma registry data ever assembled. The goal of the NTDB is to inform the medical community, the public, and decision makers about a wide variety of issues that characterize the current state of care for injured persons. For more information, please visit the NTDB main page at http://www.facs.org/trauma/ntdb/index.html.

Get ready! The **2013 NTDB Call for Data** will be coming soon. Start preparing your file(s) now to be included in the *NTDB Annual Report* and

National Trauma Data Bank 2012
Annual Report

http://www.facs.org/trauma/ntdb/pdf/ntdb-annual-report-2012.pdf

Trauma Center Registry-Japan

- Japan Trauma Data Bank (JTBD)
  - By Japanese Association for the Surgery of Trauma and Japanese Association for Acute Medicine
  - 79,576 admission data from 196 CCs (2011) (average 406 per year per one CC)
    - 228 level 1
    - 251 level 2
    - 210 level 3-4
    - 31 pediatric level 1-2
  - Case fatality rate= 10.9%
  - ISS>15: 40.0%
  - ISS>9: 76.2%

日本外傷データバンク SINCE 2003

メイン
はじめに
参加申込
資料室
FAQ
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資料室

New ! 日本外傷データバンクレポート 2012(2007-2011)
レポートを読むにはAcrobat Readerが必要です。

New ! Japan Trauma Data Bank Annual Report 2012
(2007-2011) English Version

New ! ROOT Q for Trauma インストーラ

ROOT Q for Trauma インストールマニュアル(pdf)
ROOT Q for Trauma操作マニュアル(pdf)

**Japan Trauma Data Bank Report 2012
(2007-2011)**
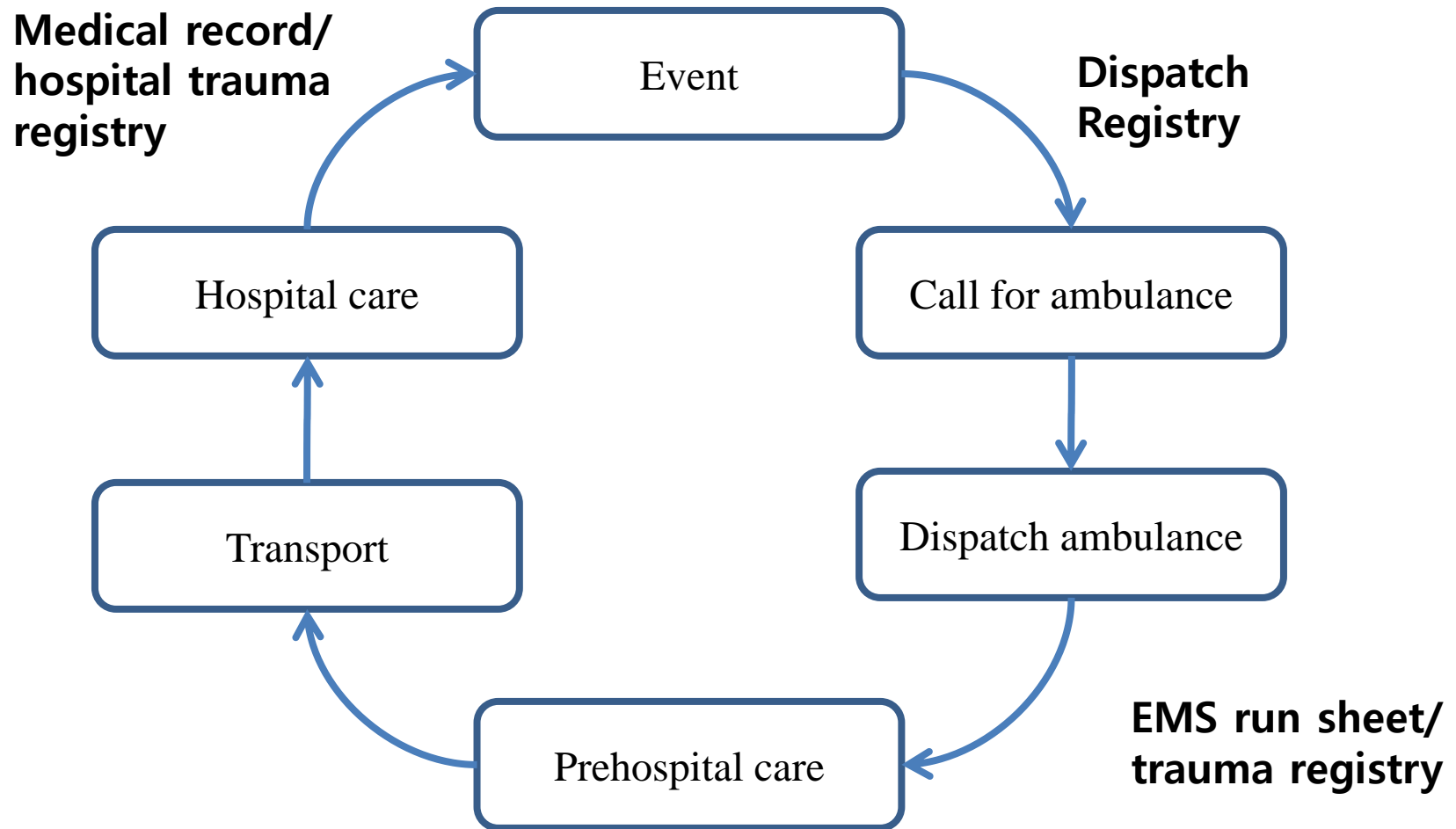
Japan Trauma Care and Research

The Japanese Association for the Surgery of Trauma
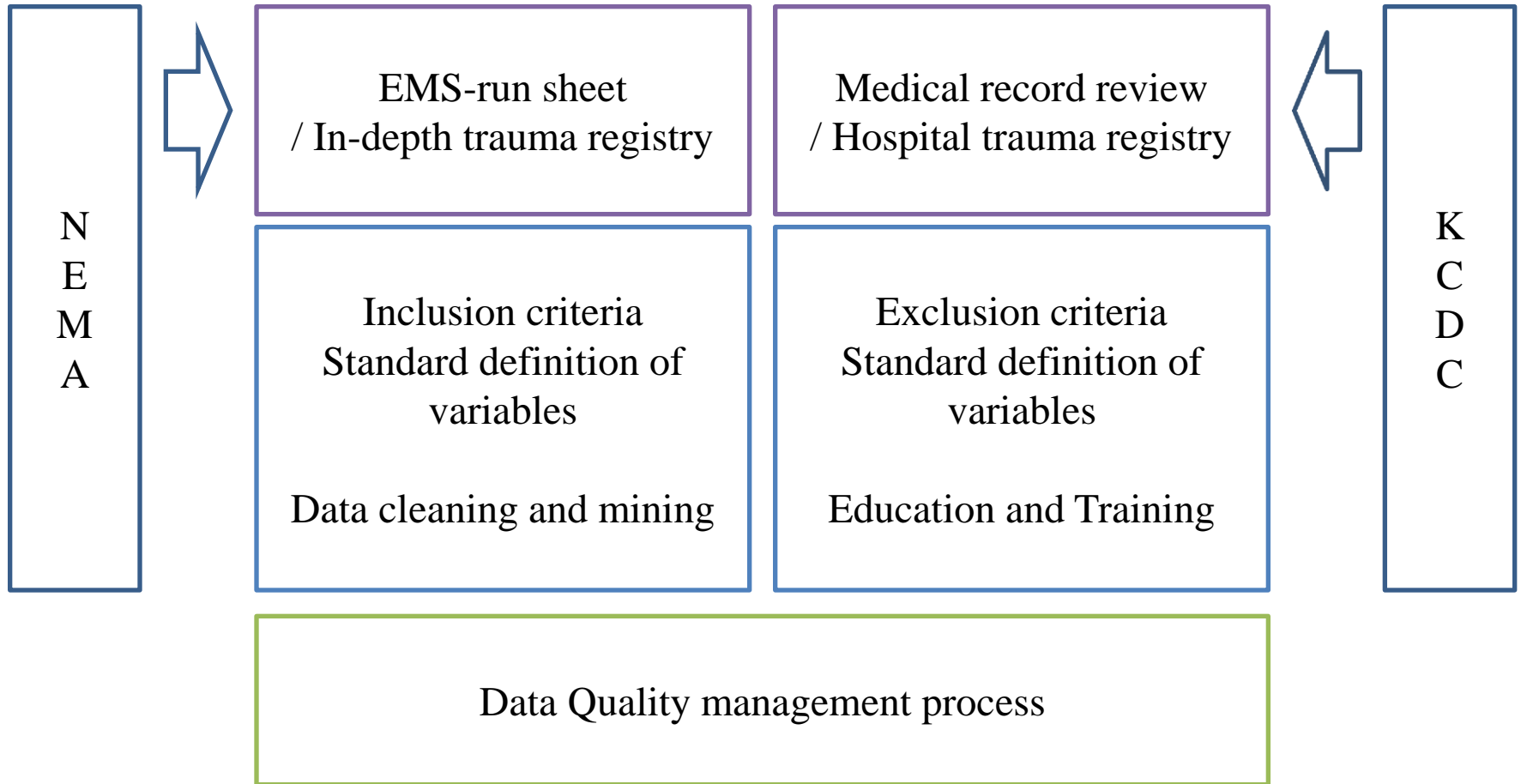(Trauma Registry Committee)
The Japanese Association for Acute Medicine
(Committee for Clinical Care Evaluation)

Basic concepts and resources of EMS-STR in Korea

Medical record/ hospital trauma registry

Event

Dispatch Registry

Hospital care

Call for ambulance

Transport

Dispatch ambulance

Prehospital care

EMS run sheet/ trauma registry

EMS-STR data process

Results: EMS-STR

Patients	FY 2011		
		N	%
EMS transport		1,454,376	
Injury/ trauma		700,620	100
Extracted cases with severe trauma from EMS run sheet		73,185	10.4
Medical Record Review (in Seoul and Gangwon province)/ pilot trial		5782	100
Unavailable medical record,		493	8.5
Excluded due to simple alcohol/ drug intoxication		820	14.2
Confirmed Cases with severe trauma		4469	77.3

Finally, 77.3% was confirmed cases with severe trauma in EMS-STR

Outcomes of EMS-STR

Outcomes		FY 2011	
		N	%
Total		4,469	34.4
Severity	EMR-ISS>=15	3,050	68.5
	ISS>=9	1,499	41.5
	NISS>=9	1,559	43.2
	Admission/ transfer-out/ hospital death	2,208	49.4
Operation	Total	399	8.9
Death	Total	**689**	**15.4**
	ED	488	10.9
	Ward	201	4.5
Disability*	Total	**1,205**	**27.0**
	Death	689	15.4
	Vegetative	33	0.7
	Severe	167	3.7
	Moderate	316	7.1

* Glasgow Outcome Scale

EMS-based versus hospital-based

- Eligible EMS-STR: 73,185 from EMS run sheet
  - Confirmed EMR-STR by medical record review: 77.3%
- Total number of patients per year
  - Korea 56,572 (USA NTDB 773,299 Japan JTBD 79,576)
- Case fatality rate
  - Korea 15.4% (USA NTDB 4.0% Japan JTBD 10.9%)
- Severe Trauma with ISS>9
  - Korea 41.5% (USA NTDB 40.8%, Japan JTDB 76.2%)

Pan-Asian Trauma Outcome Study

Proposal

Asian EMS Council

- Three Core Missions
- We are working and collaborating for
  - Advocacy of EMS
  - Education and training of providers
  - Research on important public health problems like cardiac arrest

Pan-Asian Resuscitation Outcome Study

PAROS clinical research network since 2009
- ❖ Korea, Japan, Singapore, Thailand, Taiwan, Malaysia, UAE (2010-)
- ❖ Observer: Indonesia, China, India, Philippine, Bangladesh, Pakistan (2012)

Where We Are

- High incidence of severe trauma but underdeveloped Trauma Care System

- No measurement of EMS trauma care except hospital-based trauma database

- Few researched for EMS protocols related with trauma care and extrapolated evidences from hospital-based studies

How to start

- Let's organize a working group under the Asian EMS Council
  - Developing Pan-Asian Trauma Outcome Study (PATOS) steering committee
  - Share and exchange ideas
  - Benchmark well-designed trauma research projects
  - Develop PATOS clinical research network in late 2014

PATOS steering committee

- Committee
  - Volunteer-based experts group like PAROS
  - Recommend one or two experts by participating country
  - Chair/ co-chair/ secretary
- Action plan
  - 4 consensus meetings in 2013 and 2014
  - Aug. 2013 Seoul (1st)
  - Oct. 2013 Tokyo (2nd)
  - ……..(3rd)
  - ……..(4th)

PATOS steering committee

- Mission
  - To understand current trauma care systems
  - To invite champions in trauma research
  - To benchmark advanced trauma care systems
  - To develop a EMS-based trauma registry
  - To constitute PATOS leadership
  - To model a good clinical research network like PAROS.
- Fund

Goals of PATOS

1. Understand trauma as a serious disease in Asia

2. Describe current pre-hospital trauma care systems in the Asian Region

3. Provide international benchmarking and study of best practices

4. Impact community awareness and change attitudes towards severe trauma

5. Improve trauma survival by system and community level interventions