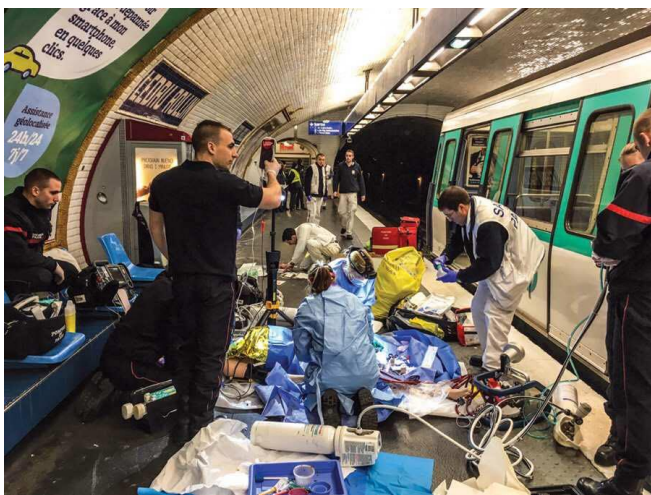


Webinar 25 May 2023 14:00 – 15:30

Prehospital Care EMS challenges

Stay and Play or Scoop and Run
EMS run to keep you staying alive !



Dr Eric Revue

Head of the ED and Prehospital EMS, SAMU of Paris
Lariboisière Hospital, APHP, Paris France)
Chair of Prehospital EMS section(EuSEM)



What is the objective of EMS ?



1. Maximize survival **Life-threatening injuries**
2. Minimize impairment **disabling injuries**
3. Minimize **pain and psychological** suffering



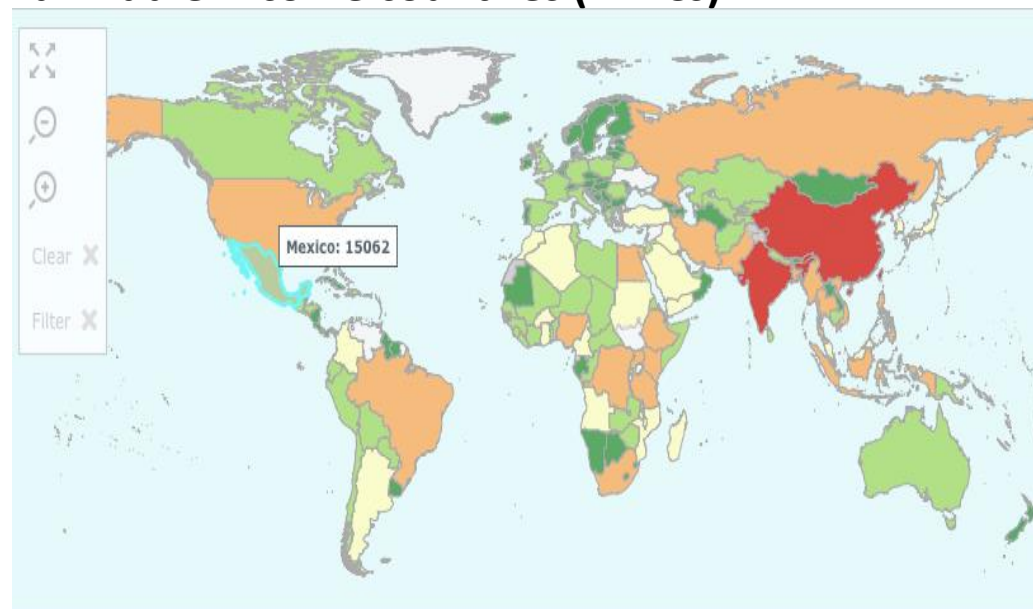
90%

Causes of deaths in the World

of 1,35 million worldwide deaths due to road traffic injuries (RTIs) occur in low and middle-income countries (LMICs)

Road traffic injuries are a global killer

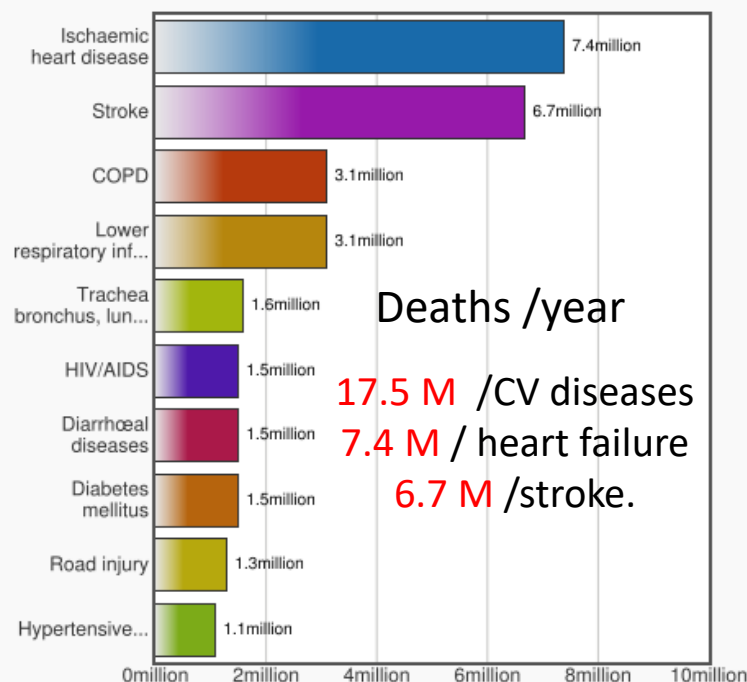
Road traffic injuries (RTIs) are the eighth-leading cause of death worldwide



Number of deaths



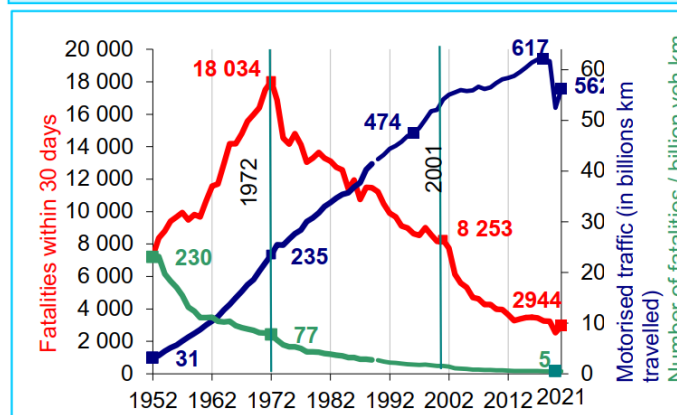
The 10 leading causes of death in the world 2012



Deaths /year

17.5 M /CV diseases
7.4 M / heart failure
6.7 M /stroke.

Comparative evolution of mortality and road traffic between 1952 and 2021*



The traffic data provided by SDES has been rebased in 2021 for the years 1990 to 2020
*2021: provisional data

Deaths / Road traffic injuries/year

China > 261,000
India 207,000
Nigeria 35,000
US 34,000
Russia 27,000
Mexico 15062
Turkey 6687



EMS

Prehospital Care

Varies from country to country

Transport

BLS : assure patient's vital functions

ALS : paramedics, nurses, physicians,

Emergency Department

If the prehospital EMS is poor,
the quality of ED needs to be high

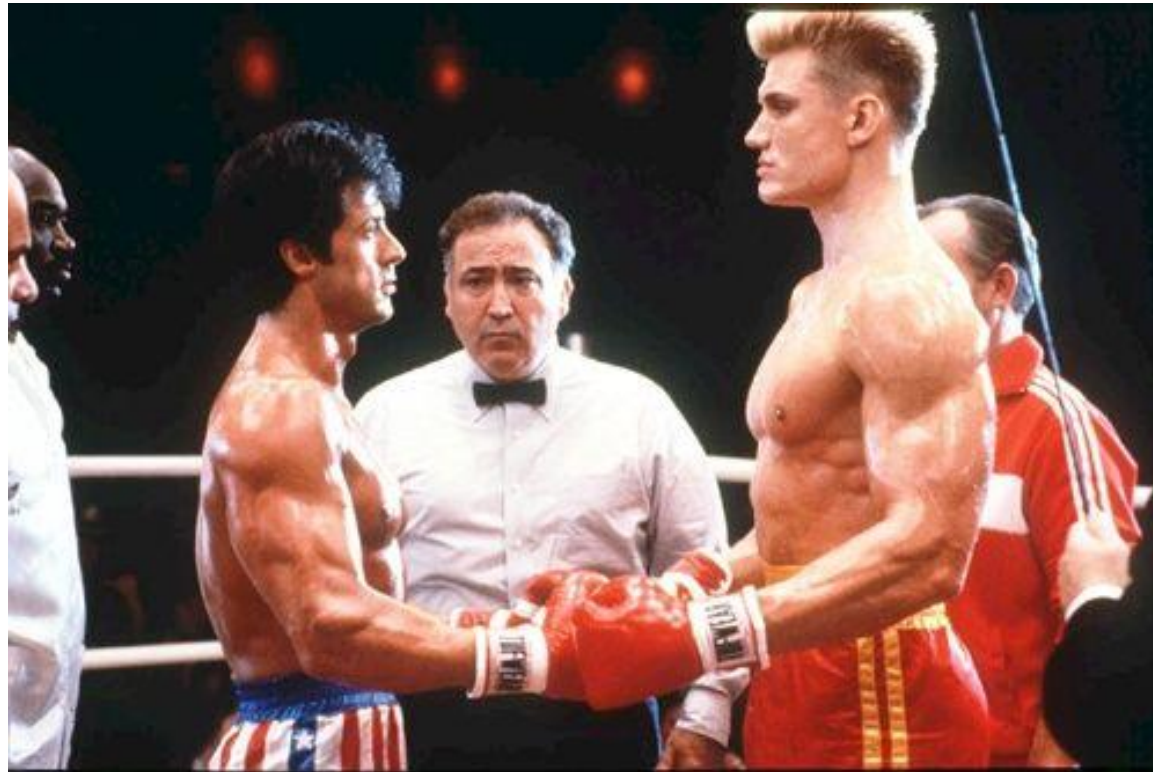


« Load and Go »

**PRO
CON**



“Stay and Stabilize”





The 2 General Types of EMS Systems



"Anglo-American" system	"Franco-German" system
<i>"Scoop and Run" to "Load and Go"</i>	<i>"Stay and Play" to "Stay Stabilize"</i>
paramedics	physicians
BLS ambulances	MICU ambulances HEMS
Patients delivered to hospital-based	Patients delivered directly to inpatient services
<i>"Bring the patient to the doctor"</i>	<i>"Bring the doctor to the patient"</i>
May just transfer problems to the nearest hospital ?	May take more time on-the-scene ? Cost +++



The worse situation :
« *Stay and Pray* »



PRO

Scoop and Run

- Trauma blunt injuries
- early CPR + defibrillation
- ALS is **not** > BLS for injuries
- ALS treatment by a paramedic can be harmful



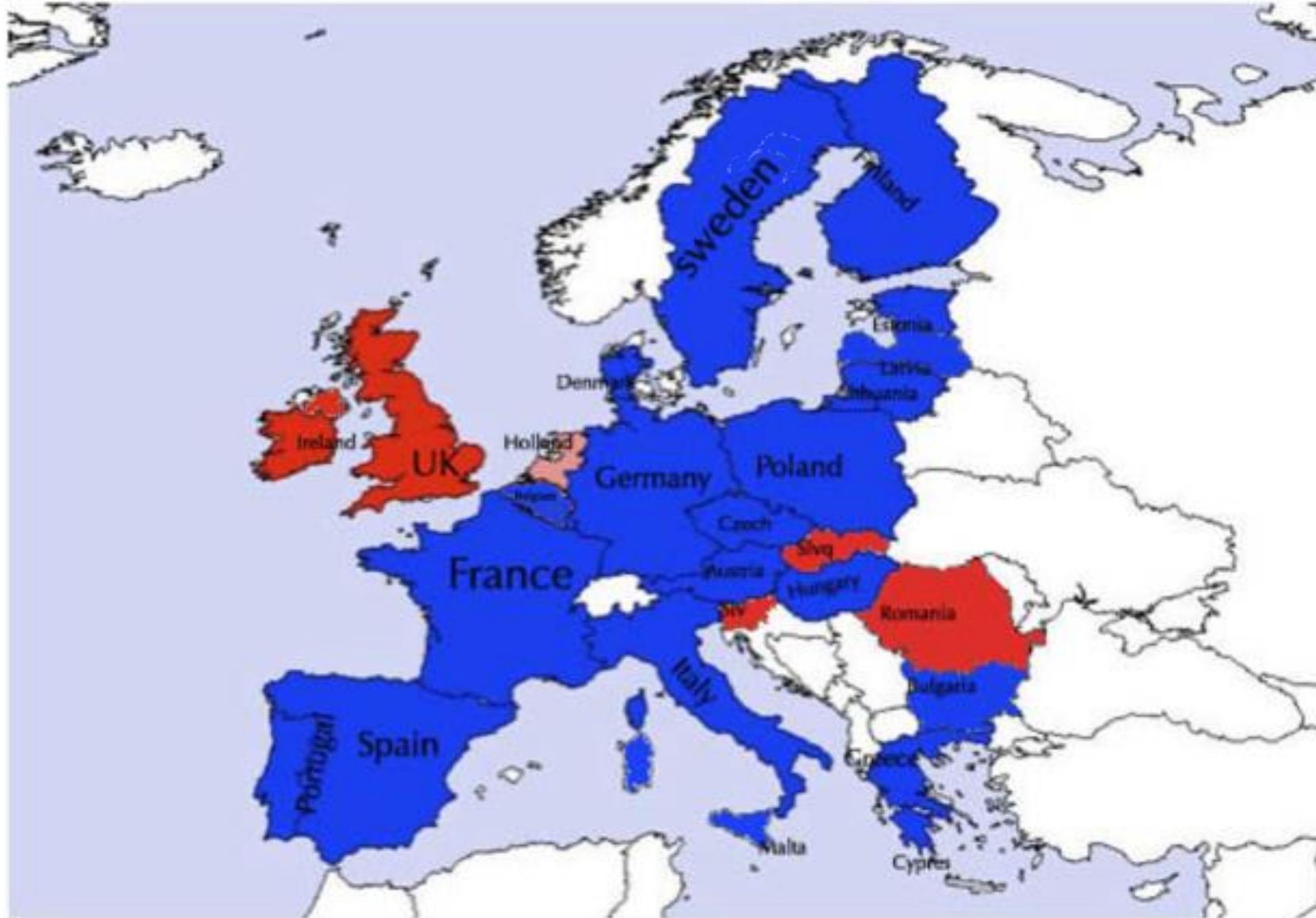
Review

Pro/con debate: Is the scoop and run approach the best approach to trauma services organization?

Barbara Haas and Avery B Nathens



Prehospital Care “Stay and Stabilize”



PRO

Pros ALS (*Stay and Play*)

- Life threatening injuries
- Clinical decisions
- Endotracheal intubation
- prehospital management STEMI
- Long transport time
- Damage control resuscitation



Review

Pro/con debate: Is the scoop and run approach the best approach to trauma services organization?

Barbara Haas and Avery B Nathens

Golden Hour

% deaths occur on the first hours

- **30%** at the scene of the crash **before help arrives**
- **30%** during transportation and within **1 h of arrival** to the ED
- **30%** in the **first 24 h** after the crash
- **10%** in **days to weeks** following the injury

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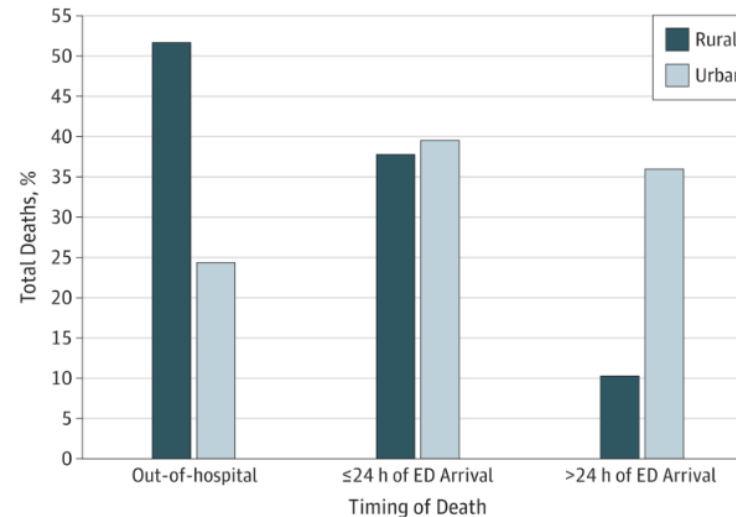
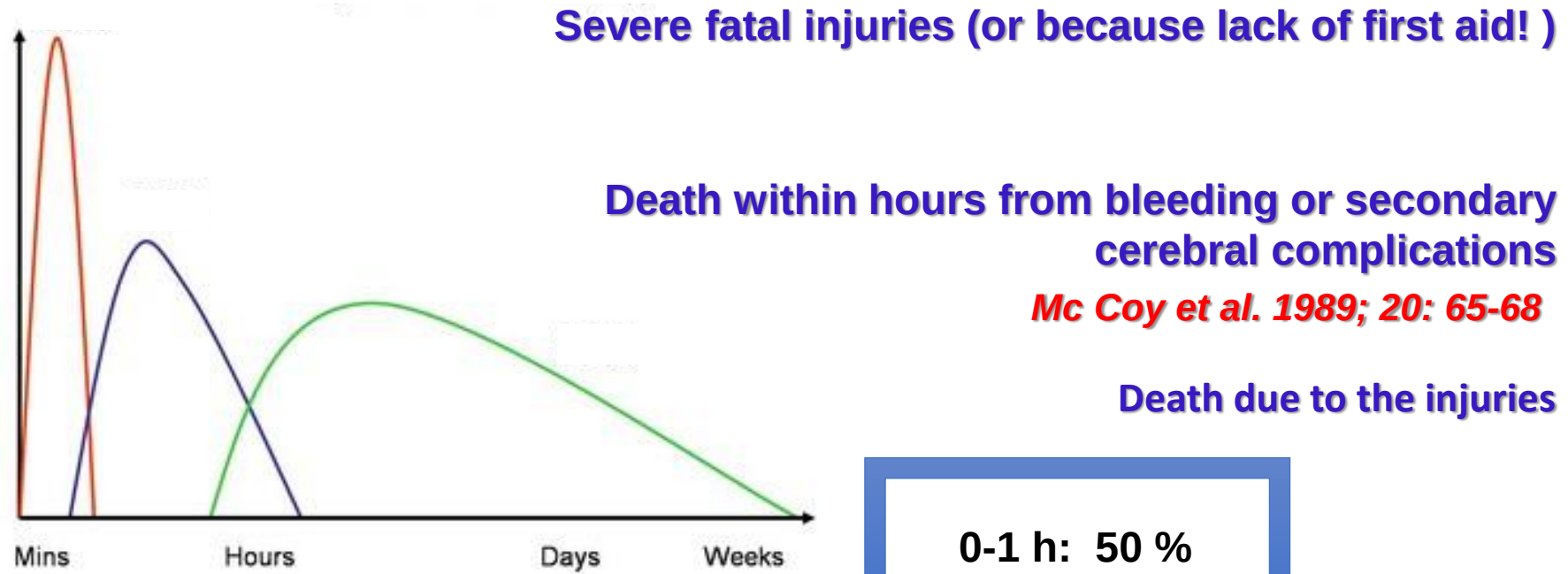


Figure 3. Decedent Analysis Comparing the Timing of Rural Deaths vs Urban Deaths Among Injured Patients Served by Emergency Medical Services (EMS)

Tri modal Distribution



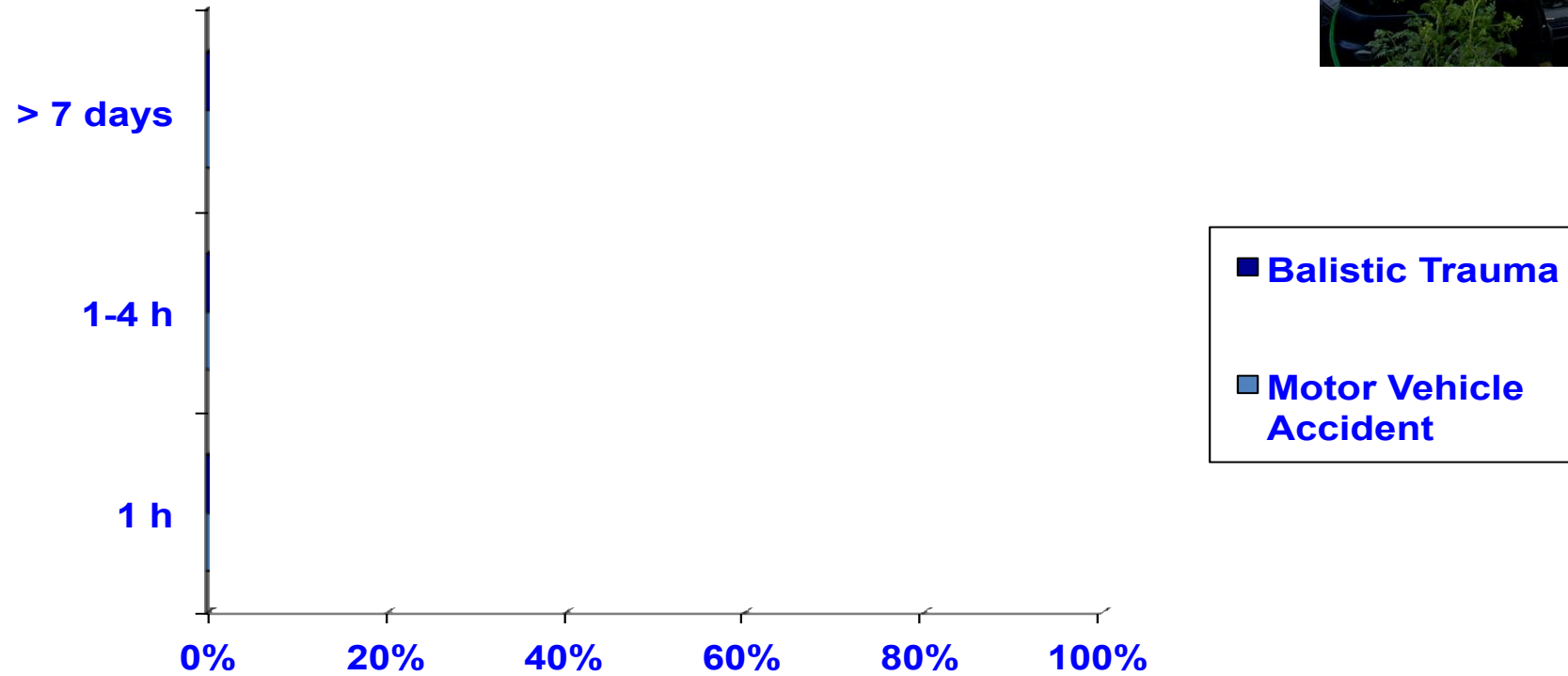
Bystanders

EMS
&
Doctors

Doctors

0-1 h: 50 %
1-24 h: 30 %
>24 h: 20 %

Time / Mortality



Scope A Injury 2001;32:1-3
Sauaia A J Trauma 1995;38:185-93

Decreasing preventable death rate

It's possible!

1. By ensuring the immediate survival
 - A. Airway
 - B. Breathing
 - C. C1. Circulation
C2. Cerebral
2. Shortening the transport time

What is simple is not always right

BUT

What is NOT simple is sometimes unrealizable

Blaise Pascal

The First 15 min

- Monitoring ECG
- HR
- BP
- SpO₂
- EtCO₂
- IV lines
- Secure Airways

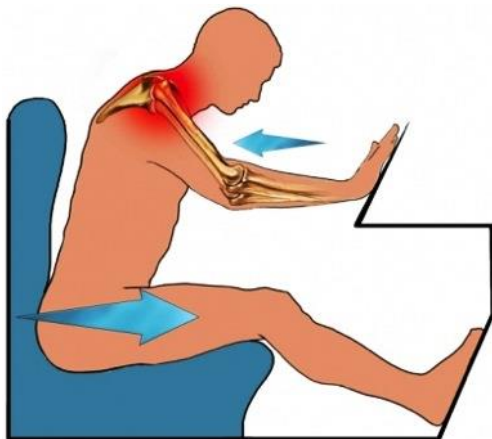
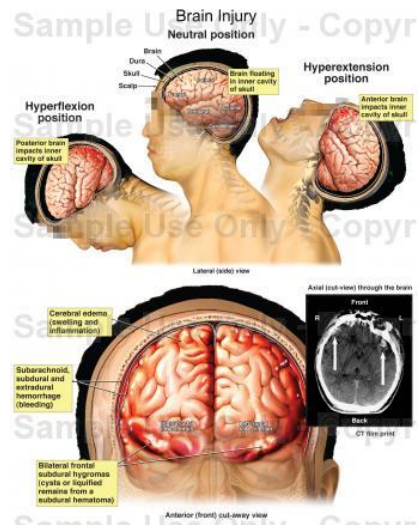


Trauma center

- Do not lose time
- The shorter times to the surgeon
- Trauma Team
- Expertise to manage the multiple trauma
- Collaboration surgeon , Anesthetics, Intensivists, EP , radiologists



Vittel Protocol for RTI Trauma



Contention sur ceinture pelvienne SAM Sling® (voir ID N°73)

Step 1 (Physiological signs)

GCS < 13 &/or
SAP < 90 &/or
SpO2 < 90%

no

Step 2 (Global assessment of speed and mechanism)

Ejection from vehicle
Death in same passenger compartment
Fall > 6m
Victim thrown or projected
Global assessment of speed and potential injuries :
Vehicle deformation, estimated vehicle speed, no helmet, no seat belt
Blast

no

Step 3 (Anatomical injuries)

Penetrating trauma of head, neck, thorax, abdomen, arms or legs)
Flail chest
Severe burn
Pelvic fracture
Suspicion of medullar injury
Amputation at or above wrist or ankle level
Acute limb ischemia

no

Step 4 (resuscitation)

Assisted ventilation
Volume load > 1000 mL colloids
Vasopressor
Shock trousers

no

Step 5 (medical history)

Age > 65 y/o
Cardiac insufficiency, respiratory failure, or ischemic heart disease
Pregnancy (2nd and 3rd trimester)
Coagulation problems

no

No trauma center



Trauma center



A better Trauma Care System ?

2 million lives can be saved through the implementation of modern trauma systems in LMICs

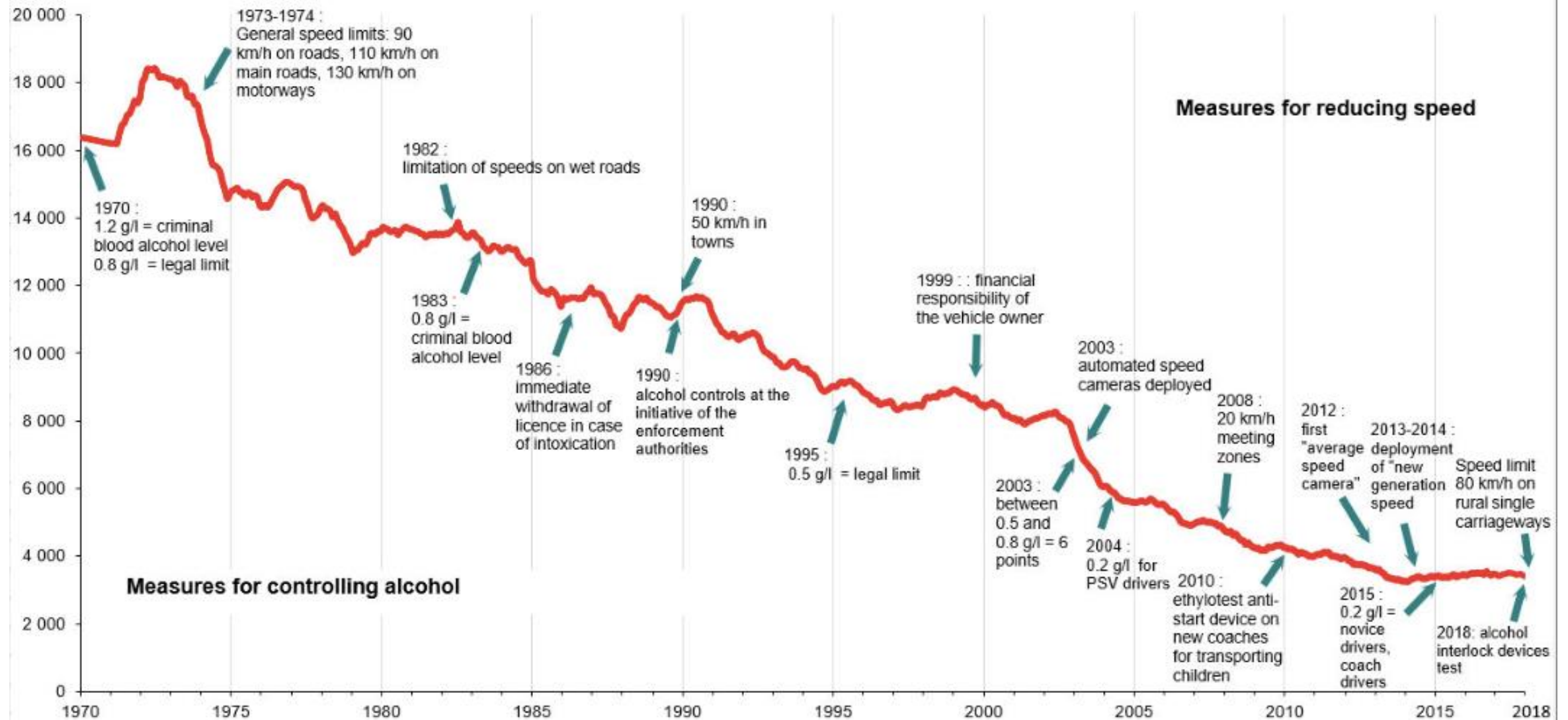
	Country	Minimum effect	Maximum effect
Trauma system interventions			
Trauma system	USA and Netherlands	0.88	0.64
Health system interventions			
Establishing a trauma team	Thailand	0.69	0.69
Pre-hospital care including training and ambulances	Nigeria and Iraq	1.86	0.18
Trauma centres	USA	0.75	0.44
Clinical interventions			
Pre-hospital tourniquet	USA	0.75	0.36
Pre-hospital blood	USA	0.96	0.91
Tranexamic acid for suspected bleeding (<3 h after injury)	Multiple countries	0.89	0.89
Tranexamic acid for traumatic brain injury	Multiple countries	0.94	0.94
Interventional radiology	USA and Japan	0.70	0.44
Hypotensive resuscitation or damage control resuscitation	Multiple countries	0.61	0.50

Table 2: Population attributable fraction for trauma care interventions for road traffic injuries



Mock C, Joshipura M, ArreolaRisa C, Quansah R. An estimate of the number of lives that could be saved through improvements in trauma care globally. *World J Surg* 2012; **36**: 959–63.

Mock CN, Jurkovich GJ, AmonKotei D, ArreolaRisa C, Maier RV. Trauma mortality patterns in three nations at different economic levels: implications for global trauma system development. *J Trauma* 1998; **44**: 804–12, discussion 812–14.



Improvement in trauma care for RTI effect on mortality in low /middle-income countries

200 000 lives per year can be saved with a complete Trauma System

	Lives saved per year at 100% coverage	Lives saved per year at 75% coverage	Lives saved per year at 50% coverage
Low-income countries			
Trauma system	28 756 (18 898 to 38 601)	21 532 (14 182 to 28 877)	14 374 (9 466 to 19 298)
Establishing a trauma team	16 169 (15 993 to 16 344)	12 126 (11 994 to 12 258)	8 084 (7 997 to 8 172)
Availability of ambulances	-1106 (-30 588 to 28 362)	-786 (-22 867 to 21 271)	-551 (-15 312 to 14 223)
Trauma centres	20 799 (15 362 to 26 225)	15 592 (11 528 to 19 677)	10 389 (7 669 to 13 101)
Middle-income countries			
Trauma system	177 691 (117 214 to 238 533)	133 053 (87 521 to 178 730)	88 827 (58 554 to 119 190)
Establishing a trauma team	99 916 (98 830 to 100 995)	74 938 (74 121 to 75 751)	49 958 (49 416 to 50 501)
Availability of ambulances	-5870 (-188 178 to 175 583)	-4559 (-140 912 to 131 573)	-3291 (-94 361 to 87 862)
Trauma centres	128 465 (94 897 to 161 880)	96 449 (71 338 to 121 544)	64 255 (47 508 to 81 041)
Low-income and middle-income countries			
Trauma system	206 422 (135 561 to 276 971)	154 602 (101 598 to 207 770)	103 204 (67 974 to 138 467)
Establishing a trauma team	116 086 (114 825 to 117 345)	87 064 (86 122 to 88 009)	58 042 (57 411 to 58 674)
Availability of ambulances	-7060 (-218 811 to 203 633)	-5661 (-164 901 to 152 781)	-3638 (-109 512 to 102 102)
Trauma centres	149 329 (110 435 to 188 360)	112 031 (82 741 to 141 318)	74 626 (55 077 to 94 168)

Data are mean (95% CI).

Table 3: Effect of health system interventions for trauma on road traffic injury mortality in low-income and middle-income countries by coverage level



Nice



Bordeaux

RTI : Risk factors and Mortality



X4

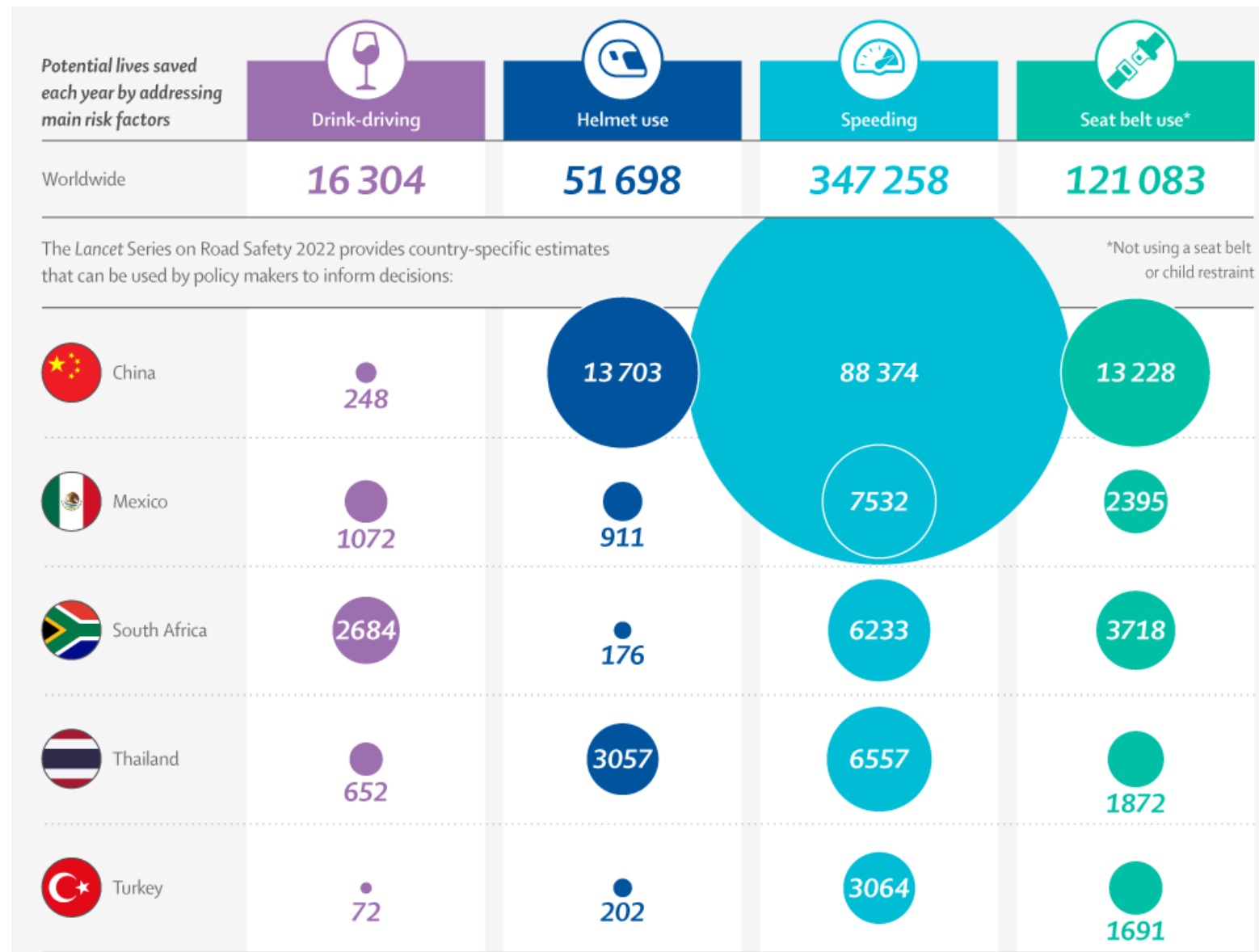
X5

X5

50 %

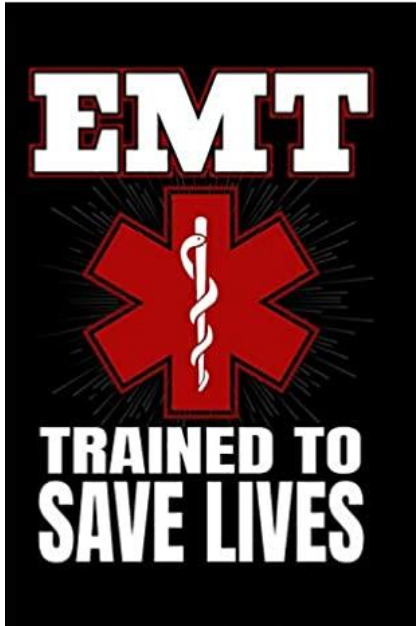
X4

EMS can save lives... But with YOUR help !



“Scoop and Run” vs *“Stay and Play”* for Road Traffic Injuries ?
It's not the problem...

EMS/prehospital care can save lives



- Needs to be organized
 - To deliver a SYSTEM of emergency care
- No place for improvisation
- Strategies to evolve the management of trauma in Low income countries
- Better Trauma system : EMS + reduce transport time + Trauma center
- Need education+ prevention