Status of Emergency and trauma care services in India: Need for Scientific and Cost effective approaches

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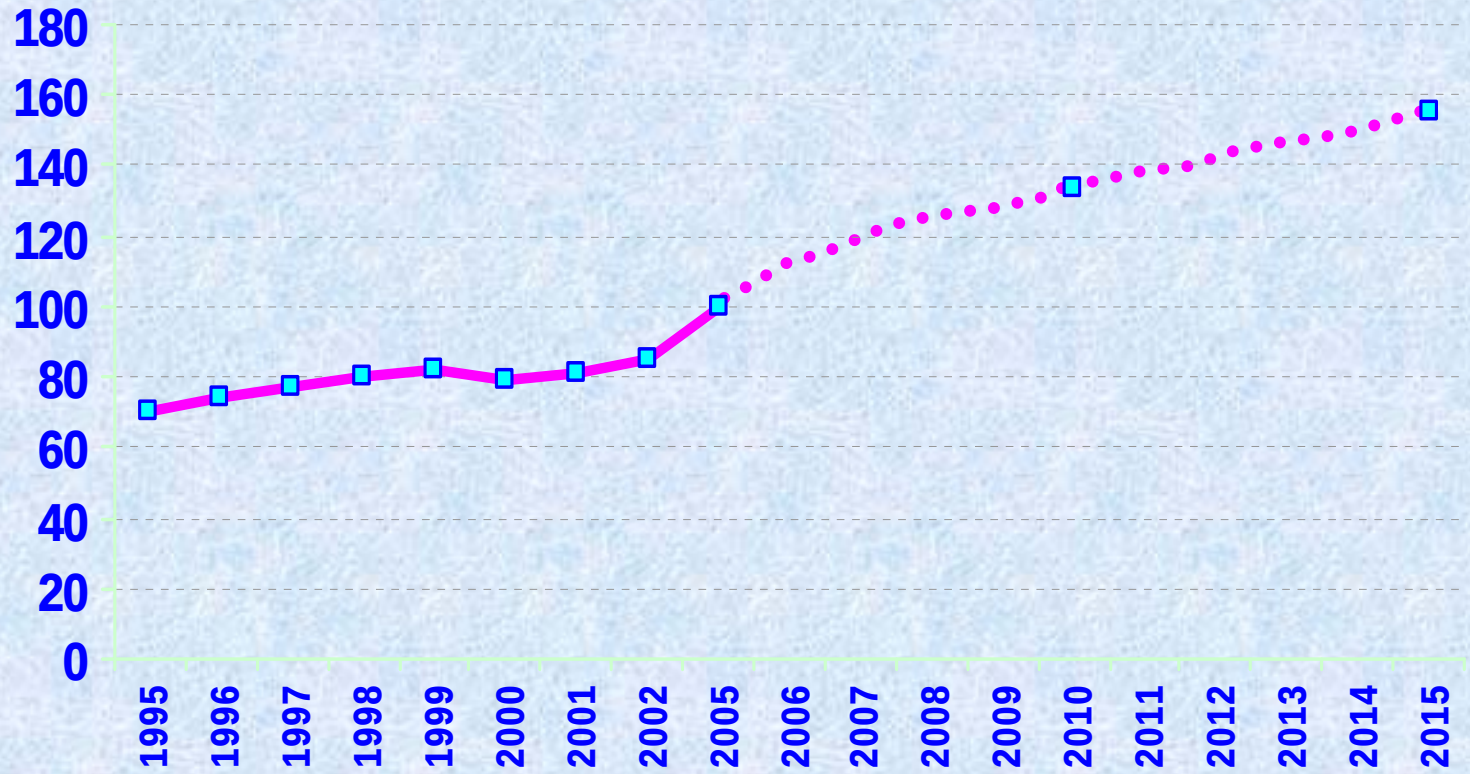
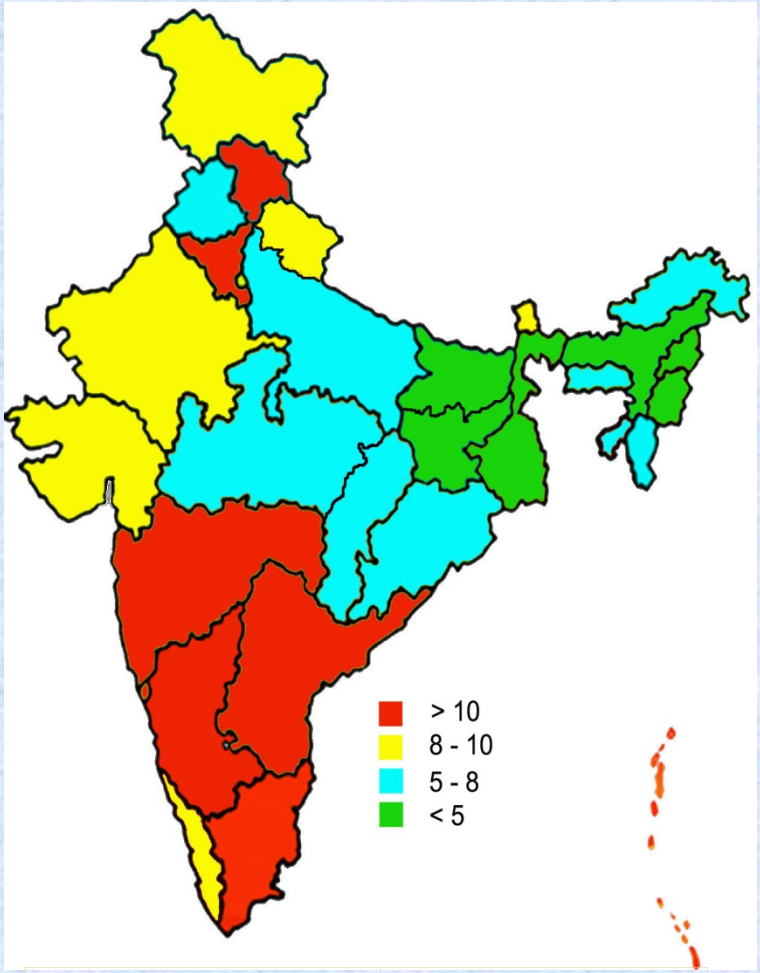
Trend of RTI deaths in India, 1995-2015 ('0

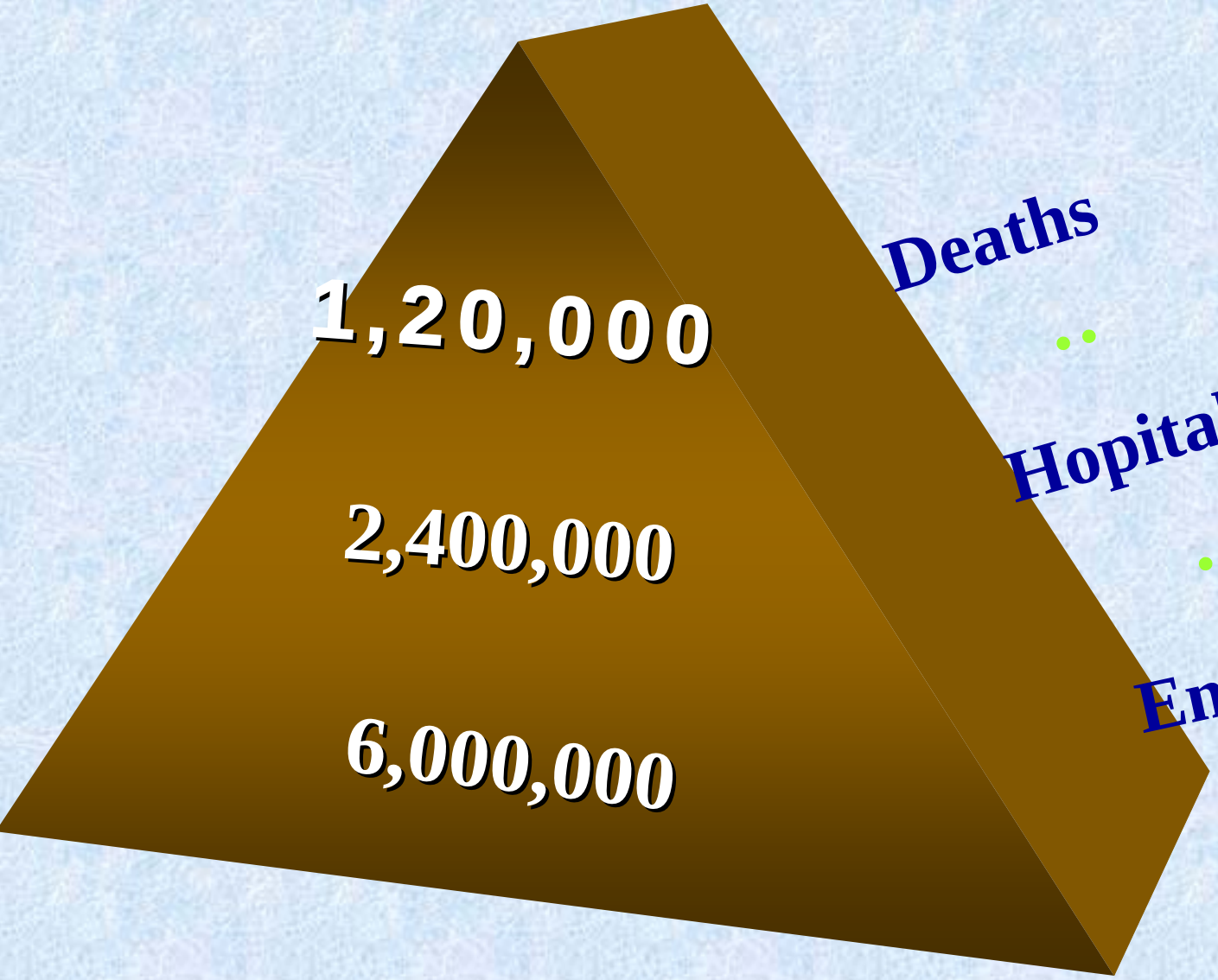




State	Rate / 100,000
West Bengal	4.94
Manipur	4.06
Nagaland	3.27
Assam	2.91
Bihar	2.73

State	Rate / 100,000
Goa	16.84
Tamil Nadu	15.34
Himachal Pradesh	12.55
Haryana	12.14
Andhra Pradesh	10.99
Karnataka	10.96
Maharashtra	10.76
Jammu & Kashmir	9.32
Uttaranchal	9.20
Rajasthan	9.18
Gujarat	8.82
Kerala	8.50
Sikkim	8.32
Mizoram	7.54
Madhya Pradesh	6.72
Chhattisgarh	6.43
Punjab	6.19
Meghalaya	5.95
Uttar Pradesh	5.53

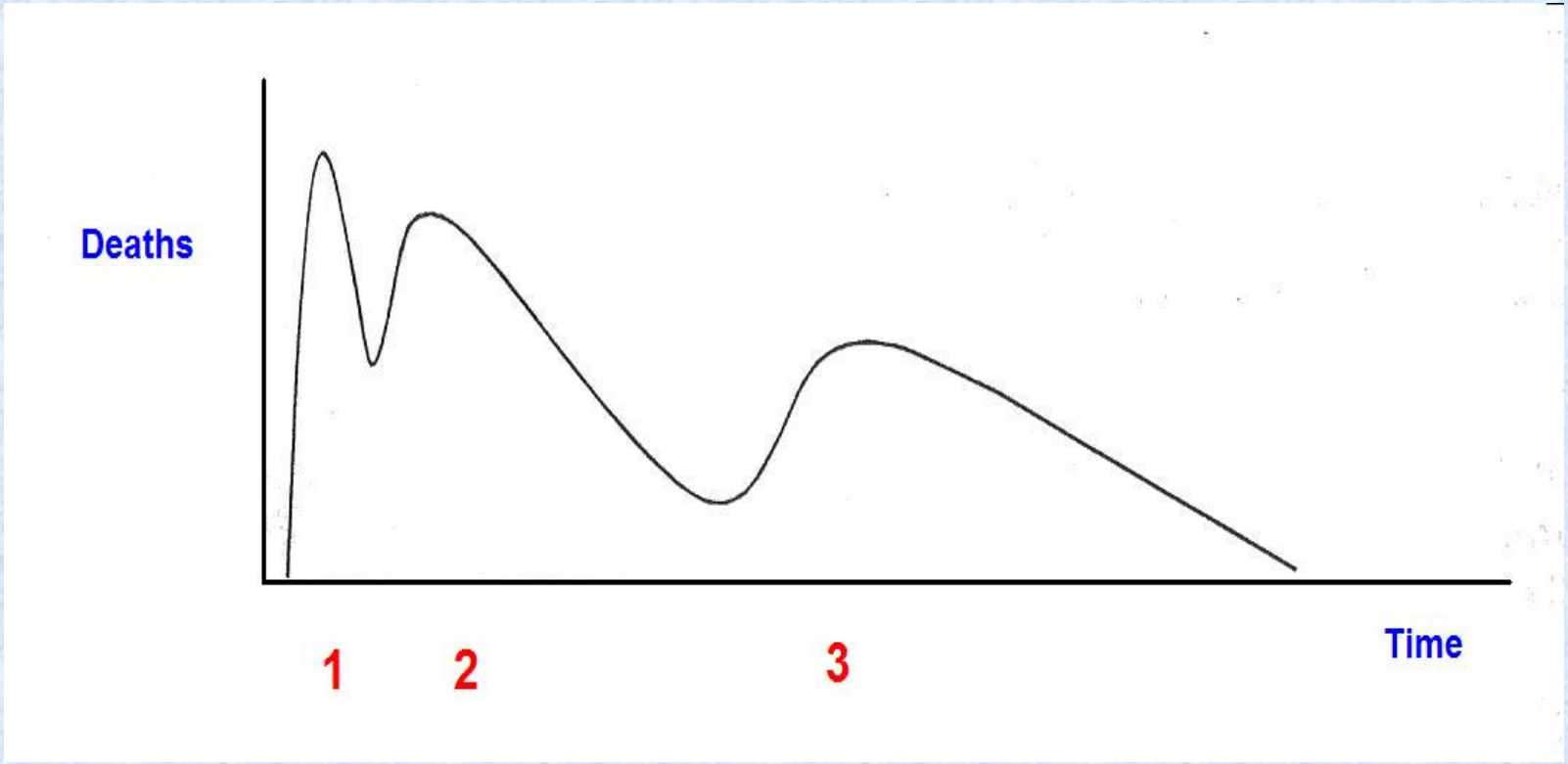
ROAD INJURY PYRAMID



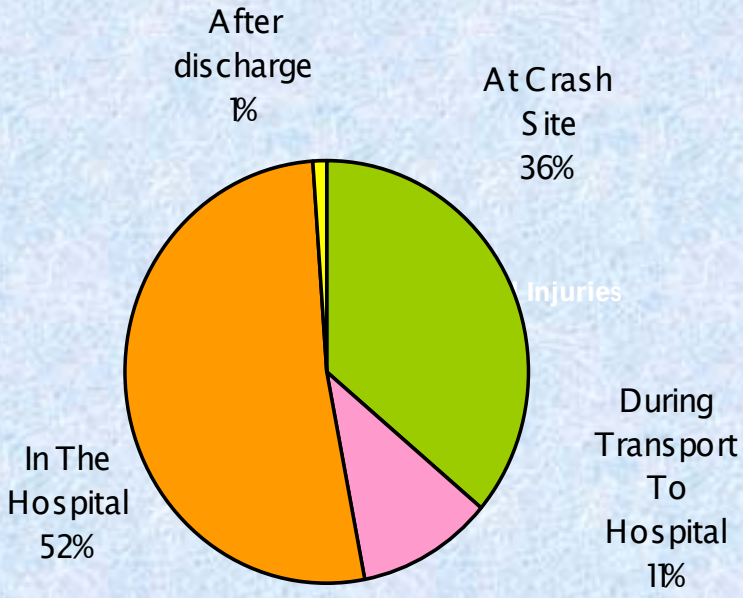
Injury deaths in Tumkur district , 2008 (population of 2.1 million)

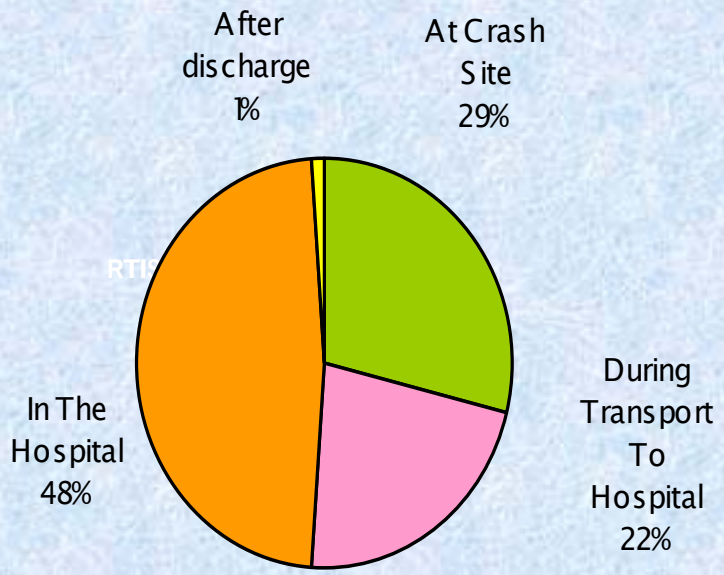
- 1672 Injury deaths
- 472 (29 %) Road deaths
- 50,000 estimated serious injuries requiring admission
- 15,000 estimated serious RTIs requiring admission
- 1,00,000 estimated minor injuries

India has 602 districts with population varying from 1.8 – 2.7 million.


Deaths
Time
1
2
3

Place of Death , data from Bangalore RTI surveillance Programme, 2008.
All injuries and RTIs



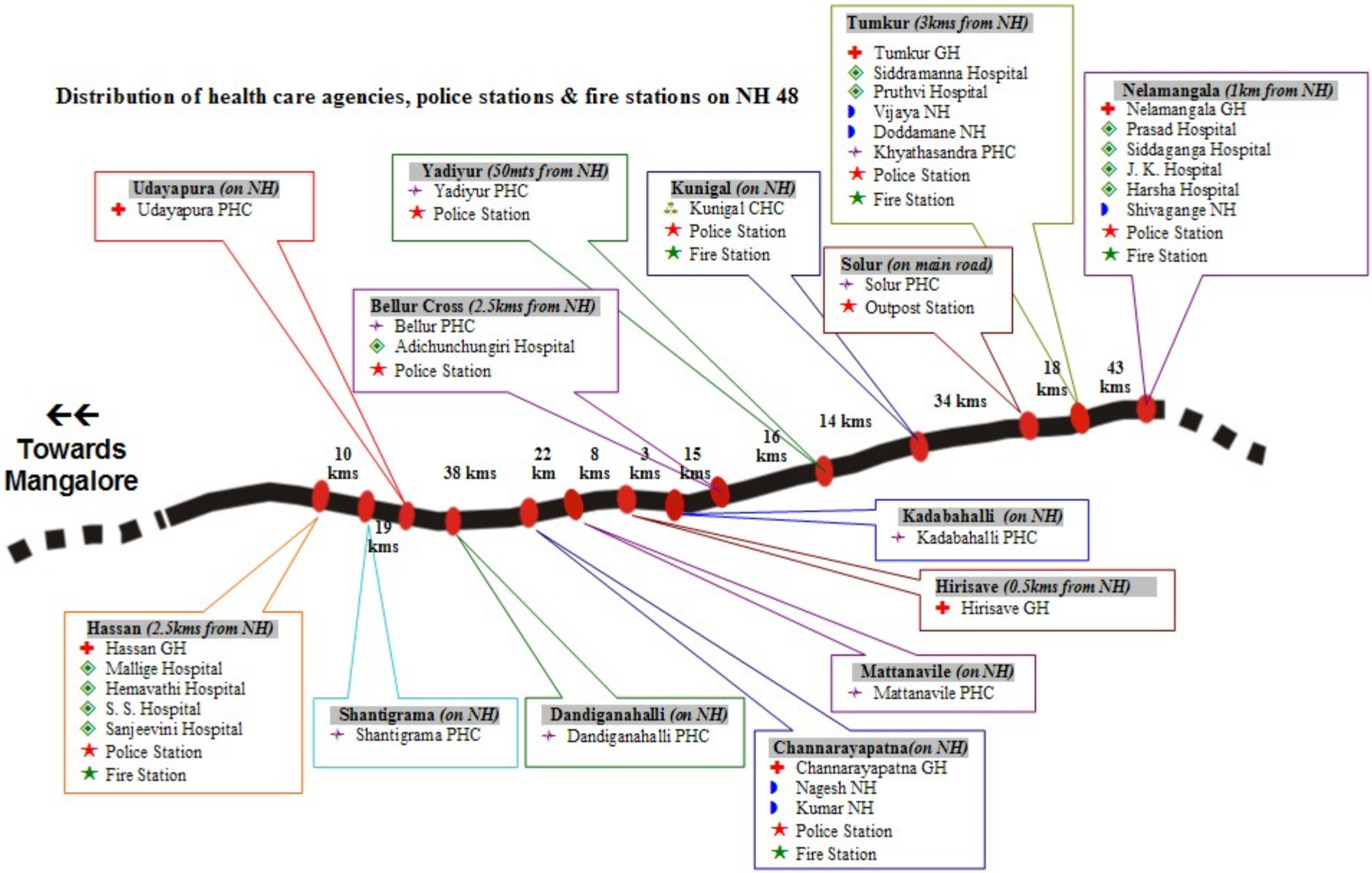


% of road deaths on Indian highways (36 – 53 % ; 40 %)

Source of Care

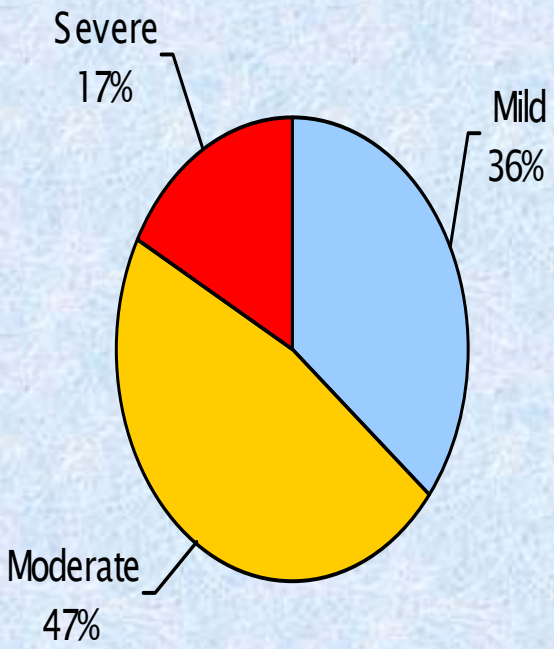
- City hospitals
- Medical college hospitals
- District hospitals
- New trauma care centers
- Local nursing homes
- Community health centers
- Primary health centers
- Local practitioners / traditional healers
- Home remedies

Public , private , Missionary and others

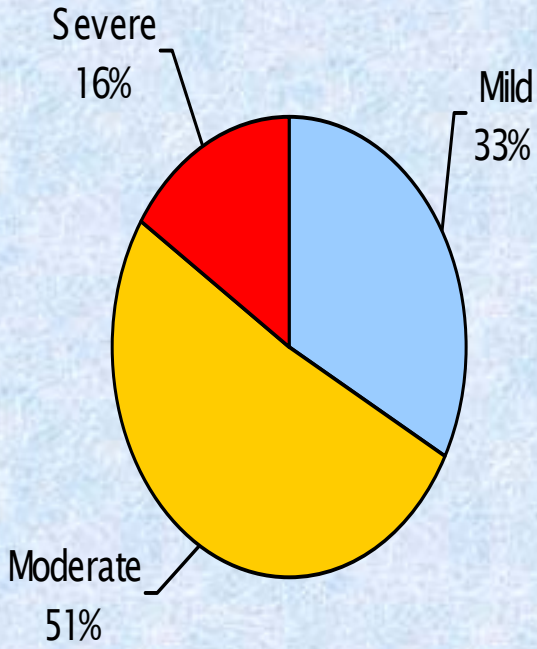

Distribution of health care agencies, police stations & fire stations on NH 48
Udayapura (on NH)
Udayapura PHC
Yadiyur (50mts from NH)
Yadiyur PHC
Police Station
Kunigal (on NH)
Kunigal CHC
Police Station
Fire Station
Tumkur (3kms from NH)
Tumkur GH
Siddramanna Hospital
Pruthvi Hospital
Vijaya NH
Doddamane NH
Khyathasandra PHC
Police Station
Fire Station
Nelamangala (1km from NH)
Nelamangala GH
Prasad Hospital
Siddaganga Hospital
J. K. Hospital
Harsha Hospital
Shivagange NH
Police Station
Fire Station
Solur (on main road)
Solur PHC
Outpost Station
Bellur Cross (2.5kms from NH)
Bellur PHC
Adichunchungiri Hospital
Police Station
Towards Mangalore
10 kms
19 kms
38 kms
22 km
8 kms
3 kms
15 kms
16 kms
14 kms
34 kms
18 kms
43 kms
Kadabahalli (on NH)
Kadabahalli PHC
Hirisave (0.5kms from NH)
Hirisave GH
Mattanavile (on NH)
Mattanavile PHC
Hassan (2.5kms from NH)
Hassan GH
Mallige Hospital
Hemavathi Hospital
S. S. Hospital
Sanjeevini Hospital
Police Station
Fire Station
Shantigrama (on NH)
Shantigrama PHC
Dandiganahalli (on NH)
Dandiganahalli PHC
Channarayapatna(on NH)
Channarayapatna GH
Nagesh NH
Kumar NH
Police Station
Fire Station

Injury Severity

All injuries



RTIs



First Response at a crash site

Crowd gathers

Some care

Stop the nearest vehicle - usually 3W

Pick up the patient

Shift to nearest hospital

Enquiry committee

Compensation given (!)

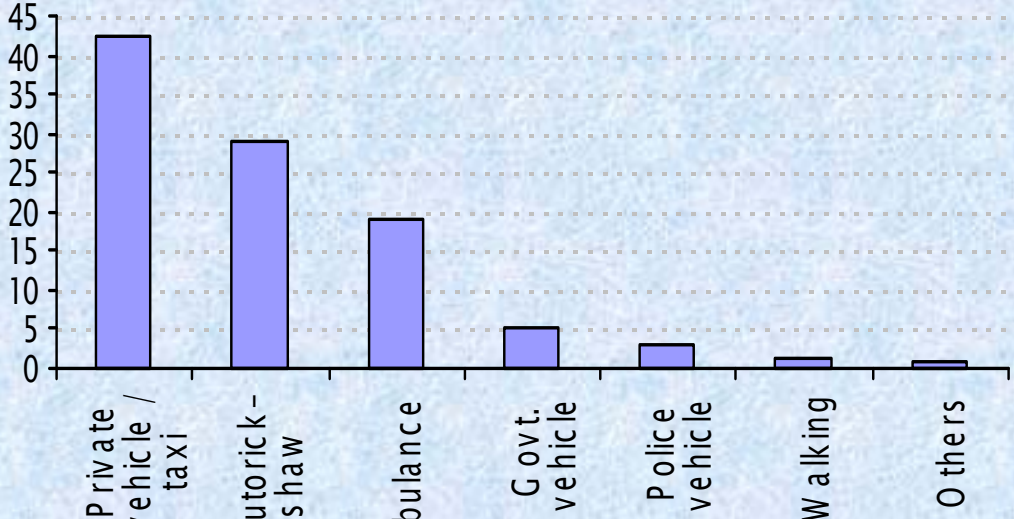
Damage to property

Newspaper / TV report

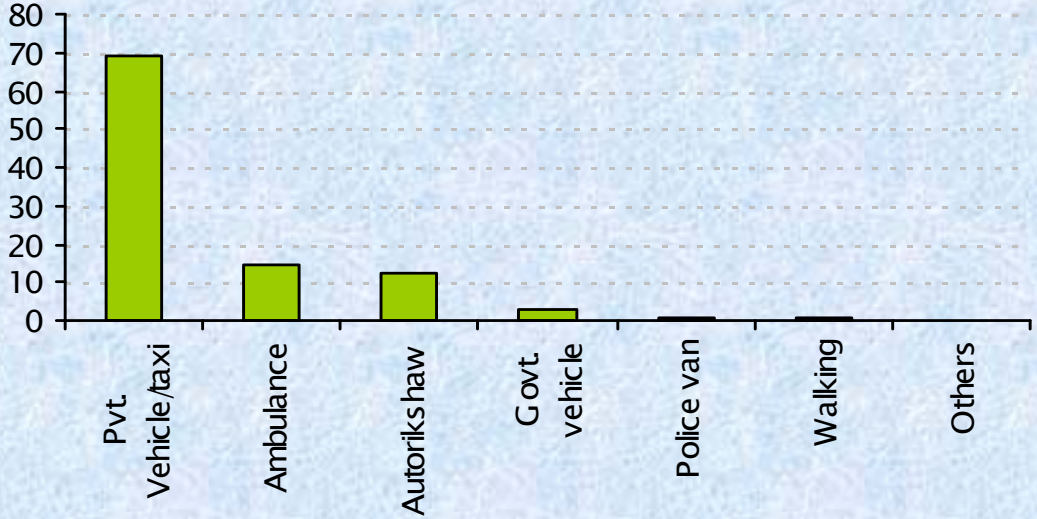
First aid care , BISP, 2008

- Only 1- 2 % of RTI received any first aid care at or near to crash.
- For < 30 % , nearest hospital , GP or health center was the first contact.
- For nearly 70 % of RTI patients, nearest hospital is the first contact.
- First aid was just wound care in majority.

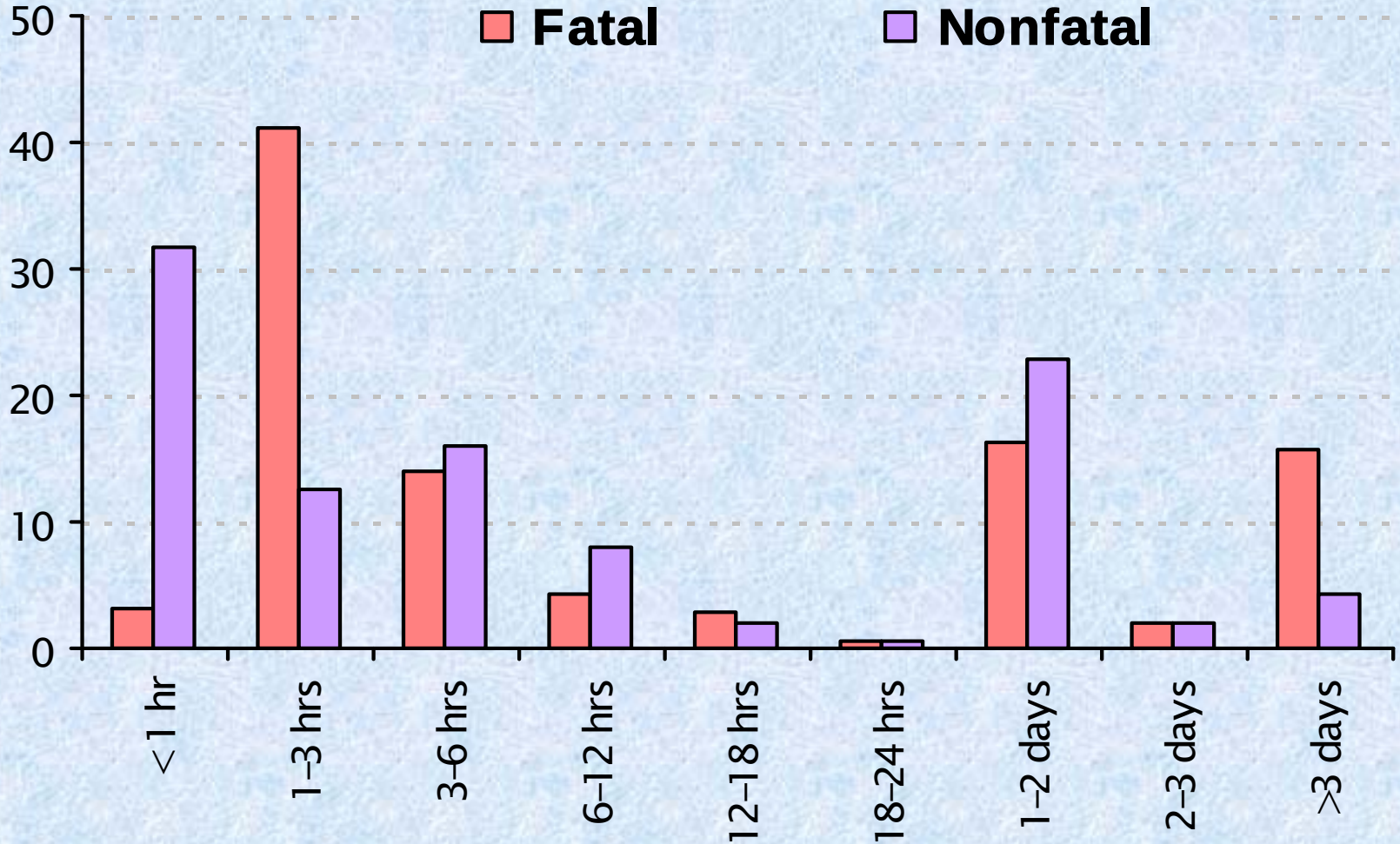
Mode of transportation in urban Bengaluru (%), BISP 2008



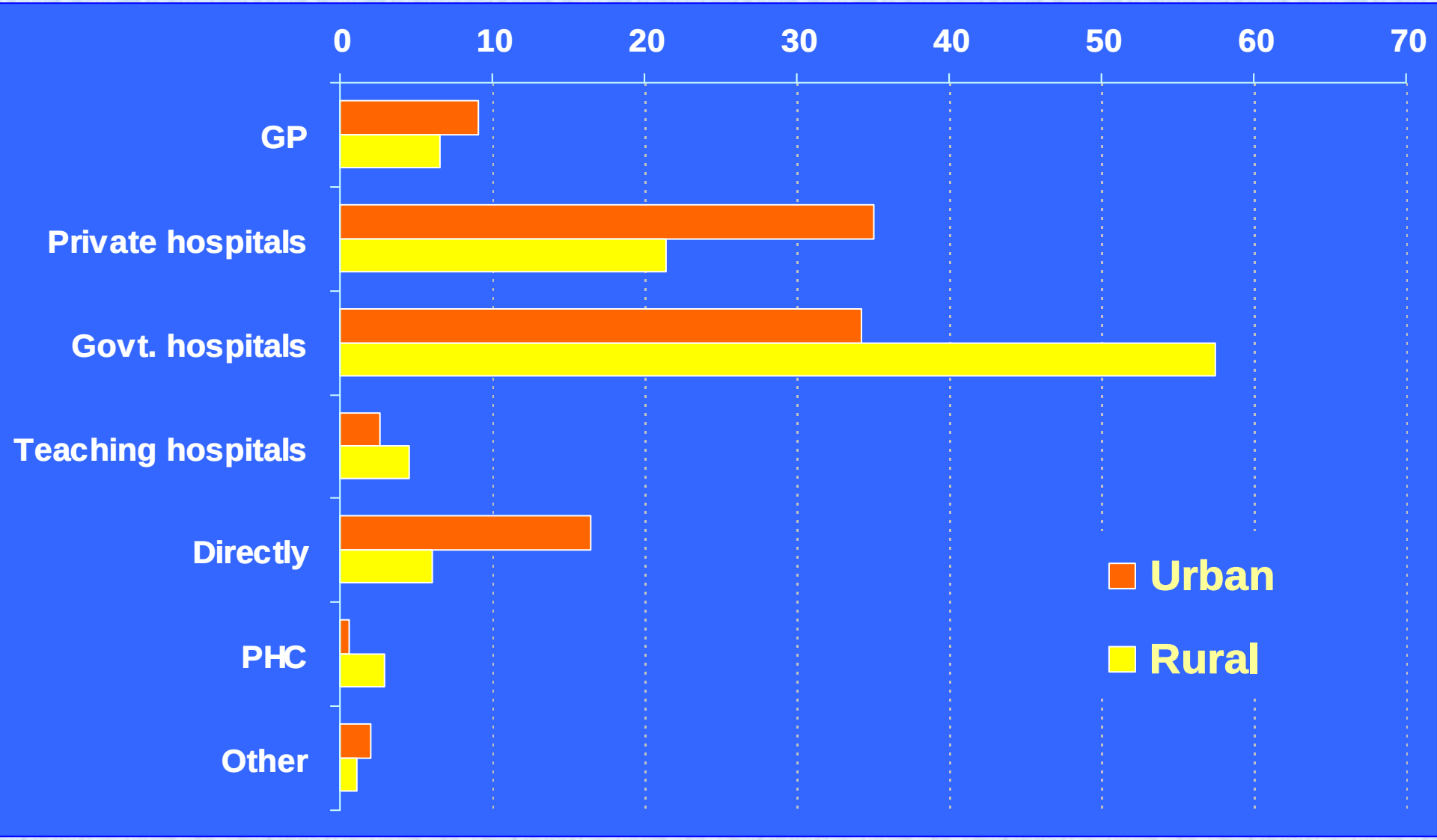
Mode of transportation in rural Bengaluru (%), BISP 2008



Time interval between time of injury and registration, Fatal & Non-fatal, RTIs , BISP 2008



Source of referral (%), BISP 2008



Existing systems – some examples

- CATS (Centralised Accident and Trauma Services – 1991 – revamped recently based on Delhi HC order)
- Highway traffic Aid Centre – Haryana – 36 centers
- Highway trauma centers – basic – advanced – Tamil nadu
- Highway ambulance programme – Karnataka and other states
- Lifeline foundation – Gujarat ,Maha., WB, Kerala , Uttarakhand and Raja.
- AMAR – 2003
- Pune Heart brigade
- Mumbai Ambulance Access For All – off. agency for EMS Mumbai
- Comprehensive trauma consortium, Bangalore
- Apollo Hospitals emergency care services
- Kerala – AAA
- EMRI, Hyderabad
- CTC – Bangalore, Vellore and Coimbatore
- Arogya kavatcha – Karnataka
- Disaster management Authority
- Air ambulances

wide range of ambulance services

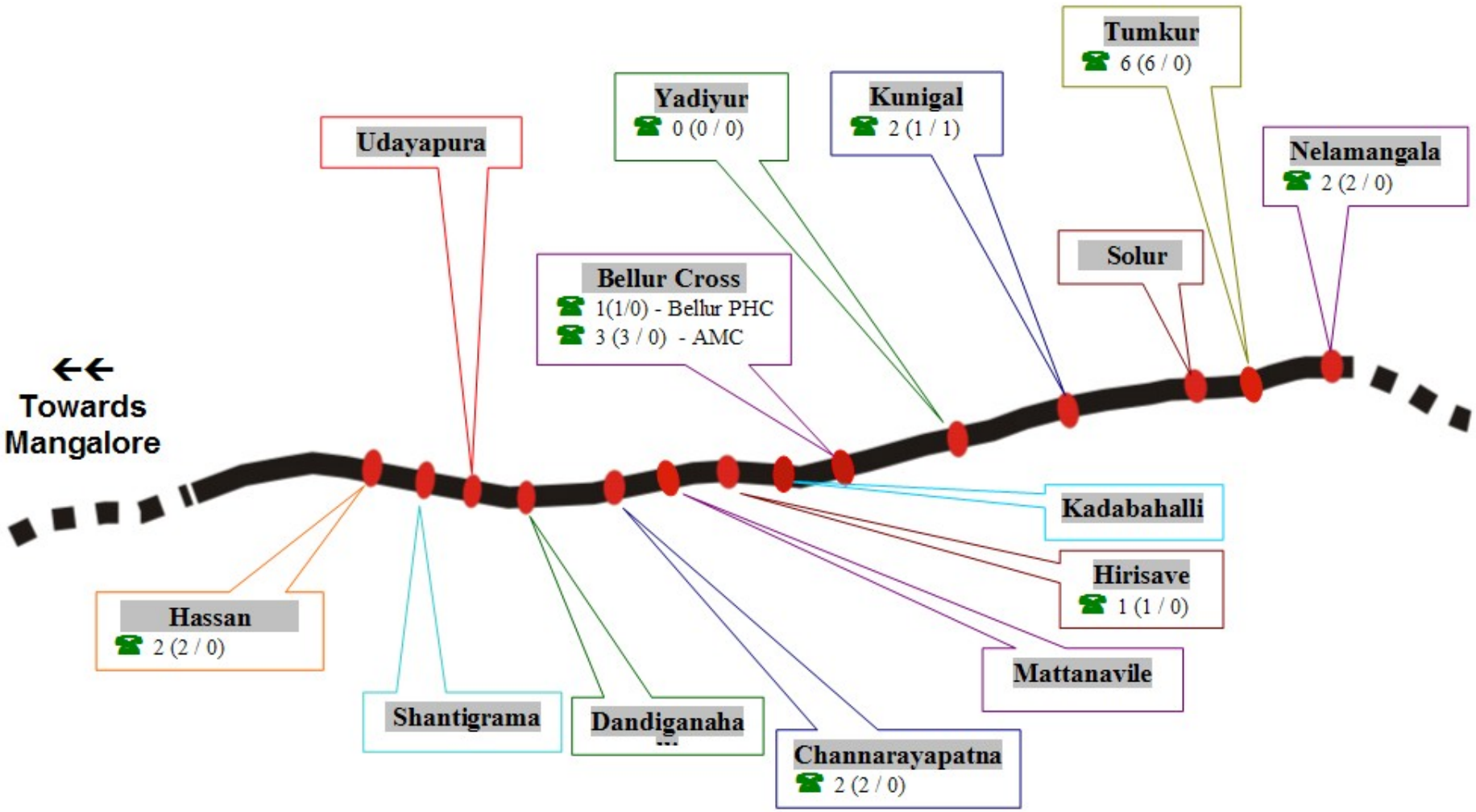
- State owned public sector hospital systems
- Police vehicles
- Private Ambulance services
- NGO Ambulance services
- Integrated Ambulance services

- Hi-tech services
- Container services

- High cost
- No cost
- With paramedics
- Just the driver

· Number depending on my choice

Number of Ambulances on NH 48



(total - 19, working - 18, total distance – 183 kms, driver for ambulances available only during day time, an equal number of ambulances are available in private hospitals and nursing homes, which have not been included in this analysis)

Legislative efforts

- National health Act
- Gujarat State – Emergency Medical Services Legislative Bill
- Legislation for Delhi Paramedical Council Act – Draft prepared
- National disaster management Authority
- No national defined policy on EMS

Manpower development

- Emergency medical service
- Internal medicine
- First aid training programmes
- ATLS and BTLS courses
- Specialty post graduate courses
- Emergency medical technicians courses
- National Academy of Traumatology
- Included in medical and nursing curriculum – NO

Government of India Initiatives

- **Rao Committee (1967)**
- **Sidhu Committee (1968)**
- **Balushankaran Committee (1993)**
- **Viswakarma Committee (1996)**
- **National Human Rights Commission (2002)**
- 11th Five year plan
  - Integrated trauma centers
  - Upgrading facilities
  - Improving communications
  - Nationwide number
  - Augmenting manpower
  - Development of EMS

Health is a state subject in India and individual states decide their policies and programmes, hence wide variations with no uniformity


CALL 108
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FORCE

Study of Emergency response Model – EMRI Model – 2009 – MOHFW , GOI Phase 1 report

- 2005 – 1 state – 11 states – 1300 ambulances
- 108 – Toll free number
- Free transportation
- Annual MOU value of Rs.1500 crores by 2010
- 95 % by GOI and 5 % by EMRI
- EMS to be included under National health Bill
- $ 40,000 for ALS and $ 30,000 for BLS ambulance
- Operating costs of Rs.565 per trip
- Review of the programme in 3 states (AP. Gujarat and Rajasthan)

- Popular
- Increasing utilization
- Pattern of utilization – injury second cause
- Quality – 20 min.in urban & 40 min. in rural
- Hospital linkages

- Coverage – rural ?
- How many ambulances ?
- How many trips per day ? – 8
- Andhra Pradesh – Rs. 380,000,000 . Yr – ?
- Inter hospital Referrals – ?
- Quality of care in hospitals – ?
- Cost for patients and families – ?
- Poor patients – ?

- Governance and transparency
- Business model or public health model ?

Issues

- Require nearly 10,000 ambulances to cover the entire country
- Rs.1700 crores annualy
- 1 ambulance per 1,00,000 population (to be increased to 2 later)
- Reach within 20 minutes will increase costs exponentially
- Tie ups with all hospitals (to provide initial care and stabilise before referral)

Monitoring and evaluation – ?

- We saved “ X “ lives!

OR

- Did we transfer “ X “ patients
- Could they have survived without an ambulance based on severity ?
- Outcome ?
- Management ?
- Cost ?

Areas of Concern

- Delay in seeking care
- Delay in reaching definitive hospital
- Medico legal issues
- Lack of uniform protocols
- Lack of facilities in health care institutions
- Lack of adequate information to public
- Refusal to treat by hospitals
- Costs of health care and affordability
- Lack of uniform protocols
- Referral - Referral - Referral
- Absence of research - policies to be driven by research
- Lack of trauma audits

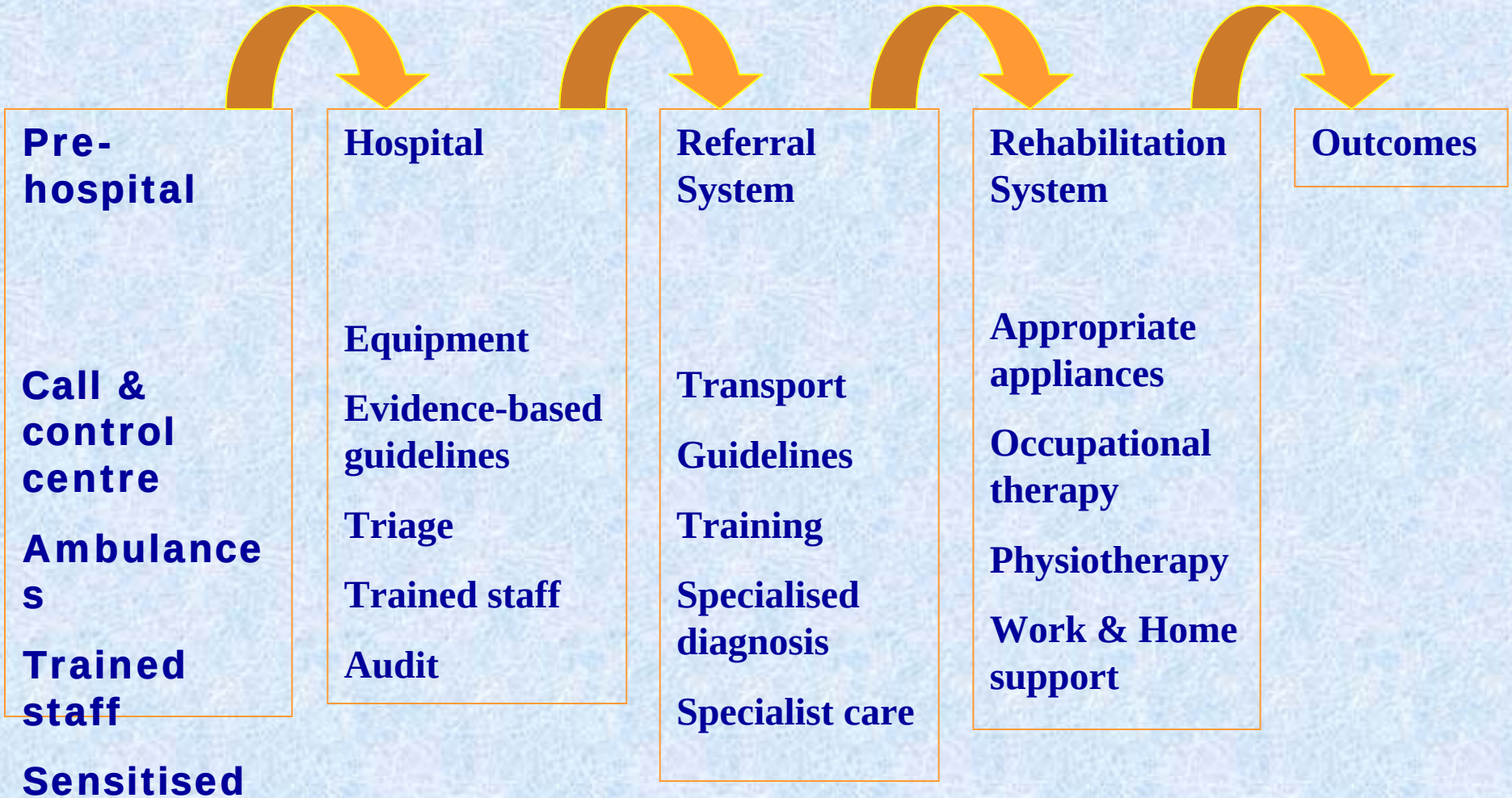
The judgement of the Supreme Court in the case of Pt. Parmanand Katara v. Union of India and others reported in 1989 ACJ 1000: AIR 1989 SC 2039: 1989 (3) SCR 997: 1989 (4) SCC 286. The following excerpts from the said judgement are relevant: -

"The petitioner who claims himself to be a 'small human right activist and fighting for the good causes for the general public interest' filed this application under Article 32 of the Constitution asking for a treatment should instantaneously be given medical aid to preserve life and thereafter the procedural criminal law should be allowed to operate in order to avoid negligent death and in the event of breach of such direction, apart from any action that may be taken for negligence, appropriate compensation should be admissible. He appended to the writ petition report entitled 'Law helps the injured to die, published in the Hindustan Times. In the said publication it was alleged that a scooterist was knocked down by a speeding car. Seeing the profusely bleeding scooterist, a person who was on the road picked up the injured and took him to the nearest hospital. The doctors refused to attend on the injured and told the man that he should take the patient to named different hospitals located some 20 kilometers away authorized to handle medico-legal cases. The Samaritan carried the victim, lost no time to approach the other hospital but before he could reach, the victim succumbed to his injuries.

Components of emergency care are

- Proper first-aid measures
- Provision and training of personnel
- Communication
- Transportation
- Transfer of patients
- Critical care
- Appropriate referral (based on triage)
- Availability, accessibility and utilizations of health care facilities
- Use of public safety agencies
- Consumer information, education and participation
- Record keeping

Elements of Effective Trauma Care System



Trauma care – Good practices

- Early first aid
- Training of police, doctors/ health workers, all drivers and teachers
- Immediate transportation
- Stabilization of injured
- Assessment of injury
- Referral based on triage
- Preparedness of hospitals

International Scenario

- First and second world wars
- 30-40% deaths are preventable
- 20-30% decline in trauma mortality (improved health care interventions and establishment of trauma care systems)
- 30% decline in trauma deaths in UK during 1989-1998 (trained staff and good emergency care)
- 35% decline in USA due to regional trauma systems

WHO Guidelines

- Lack of evidence about benefits of advanced technology
- Some can even be harmful
- Basic uniform services need of the hour
- Bystanders can provide sustainable care
- Need for integration of this with health care systems

Improvements in prehospital care have less impact , if quality of hospital care not improved STOCHETTI N et al JT 36(3) 1994

Organisation and delivery of integrated , sustainable and cost effective prehospital and hospital trauma care services in India and other LMICs is both a challenge and an opportunity.

Need a public health approach, guidelines, minimum standards of care and protocols.