Clinical toxicology care across the health system

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BSM Meeting: 7-9 Dec 2018, Dhaka

SDGs & Toxicology

3.4 .2 'suicide mortality rate',

3.5.1 coverage of treatment interventions for substance abuse disorders,

3.5.2 harmful use of alcohol,

3.9.3 mortality rate attributed to unintentional poisoning.

3.8 To achieve universal health coverage, including....., access to quality essential health-care services & ... access to... vaccines for all

SDG 3: health targets & linkages with toxicology

3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births	
3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births	
3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases	
3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being	Suicide mortality rate
3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol	3.5.1 coverage of treatment interventions for substance abuse disorders, 3.5.2 harmful use of alcohol
3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents	
3.7 By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes	
3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all	UHC coverage index
3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	
3.a Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate	
3.b Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all	AV & antidote coverage
3.c Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States	
3.d Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks	IHR capacity and emergency preparedness

Targets and indicators of SDG 3

3.4 By 2030, reduce by one-third the premature mortality from noncommunicable diseases through prevention and treatment and promote mental health and wellbeing	
	3.4.2 Suicide mortality rate
3.5 Strengthen the prevention and treatment of substance-abuse, including narcotic drug-abuse and harmful use of alcohol	**3.5.1 Coverage of treatment interventions (pharmacological, psychosocial and rehabilitation and aftercare services) for substance-abuse disorders**
	3.5.2 Harmful use of alcohol, defined according to the national context as alcohol per capita consumption (aged 15 years and older) within a calendar year in liters of pure alcohol

Source: Sustainable Development Goal targets, http://www.un.org/sustainabledevelopment/sustainable-development-goals/.

3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	3.9.1 Mortality rate attributed to household and ambient air pollution
	3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)
	3.9.3 Mortality rate attributed to unintentional poisoning

Source: Sustainable Development Goal targets, http://www.un.org/sustainabledevelopment/sustainable-development-goals/.

World Health Organization

SEVENTY-FIRST WORLD HEALTH ASSEMBLY
Provisional agenda item 12.1

A71/17
15 March 2018

Global snakebite burden

Report by the Director-General

1. In January 2018, the Executive Board at its 142nd session considered an earlier version of this report;[1] the Board then adopted resolution EB142.R4.

2. Snakebite envenoming is a potentially life-threatening disease that typically results from the injection of a mixture of different toxins ("venom") following the bite of a venomous snake. Envenoming can also be caused by venom being sprayed into a person's eyes by certain species of snakes that have the ability to spit venom as a defence measure. Not all snakebites result in envenoming: some snakes are non-venomous and venomous snakes do not always inject venom during a bite. About 50–55% of all snakebites result in envenoming. Snake venoms are complex mixtures of protein and peptide toxins, varying from one species to another, and even within species.

World Health Organization

EXECUTIVE BOARD
142nd session
Agenda item 4.1

EB142/CONF./1
22 January 2018

Addressing the burden of snakebite envenoming

Draft resolution proposed by Angola, Australia, Benin, Brazil, Burkina Faso, Colombia, Costa Rica, Ecuador, France, Gabon, Guatemala, Honduras, India, Jamaica, Kenya, Mexico, Netherlands, Nigeria, Pakistan, Panama, Peru, Philippines, Senegal, Thailand, Zambia

The Executive Board,

Having considered the report on global snakebite burden;[1]

Recommends to the Seventy-first World Health Assembly the adoption of the following resolution:

The Seventy-first World Health Assembly,

(PP1) Deeply concerned that snakebite envenoming[2] kills an estimated 81 000–138 000 men, women and children a year worldwide and causes physical and psychological disability in four or five times that figure;

OP1. URGES Member States:[3]

(1) to assess the burden of snakebite and, where necessary, establish and/or strengthen surveillance, prevention, treatment and rehabilitation programmes;

(2) to improve the availability, accessibility and affordability of antivenoms to populations at risk, and develop mechanisms to ensure that additional costs related to the treatment and rehabilitation after snakebite envenoming are affordable for all;

(3) to promote the transfer of knowledge and technology between Member States in order to improve the global availability of antivenoms and the effective management of cases;

(4) to integrate, where possible and appropriate, efforts to control snakebite envenoming with other relevant disease-control activities;

Road Map Priorities, Goal and Phases

Burden of Toxicology
Morbidity & Mortality of Poisoning in Bangladesh

Hospital Tier	Morbidity	Mortality
Govt. Medical College	7th (5.9%)	6th (2%)
District Hospital	7th (6.9%)	5th (3.3%)
Upazila Health Complex	7th (1.6%)	4th (4.9%)
Private Medical College	No data Management is an exception	
Private Hospital	No data Management is an exception	
Note: Poisoning is 'Police Case', 'Illegal'		

Amin R, Islam Q T (2018). Bangladesh J Medicine ; 29 : 49-50

Health Bulletin-2017

Substance used for acute poisoning and outcome 2008-09

	All		Survivors		Deaths		Mortality
Unknown	2061	(36%)	2050	(37%)	11	(7%)	1%
Benzodiazepine/other sedative	714	(12%)	710	(13%)	4	(3%)	1%
Organophosphate/Carbamate	**672**	**(12%)**	**567**	**(10%)**	**105**	**(70%)**	**16%**
Rat killer	382	(7%)	379	(7%)	3	(2%)	1%
Snake bite/puffer fish/insect bite/sting	370	(6%)	366	(7%)	4	(3%)	1%
Other medication	360	(6%)	360	(6%)	0	(0%)	0%
"Street/Stupefying agent	331	(6%)	330	(6%)	1	(1%)	0%
Household cleaning chemical	183	(3%)	183	(3%)	0	(0%)	0%
Kerosine	167	(3%)	166	(3%)	1	(1%)	1%
Other pesticide/insecticide	164	(3%)	162	(3%)	2	(1%)	1%
Other chemical/acid	97	(2%)	90	(2%)	7	(5%)	7%
Tricyclic/other antidepressant	76	(1%)	76	(1%)	0	(0%)	0%
Ethanol	52	(1%)	48	(1%)	4	(3%)	8%
Methanol	38	(1%)	34	(1%)	4	(3%)	11%
Paracetamol	32	(1%)	32	(1%)	0	(0%)	0%
Copper sulphate	23	(0%)	21	(0%)	2	(1%)	9%
Herbal medicine	12	(0%)	9	(0%)	3	(2%)	25%
Datura plant	12	(0%)	12	(0%)	0	(0%)	0%
Illicit drugs	7	(0%)	7	(0%)	0	(0%)	0%
Miscellaneous	179	(3%)	179	(3%)	0	(0%)	0%
Total	**5746**		**5595**		**151**		**3%**

তাড়াশে সাপের ছোবলে ছেলেসহ অন্তঃসত্ত্বা মায়ের মৃত্যু

আমাদের সময়

১০ অক্টোবর ২০১৮ তাড়াশ প্রতিনিধি

প্রথম আলো

News_15.11.18

পটকা মাছ খেয়ে প্রাণ গেল শিশুর, অসুস্থ ৬

নিজস্ব প্রতিবেদক, চট্টগ্রাম ও প্রতিনিধি, মীরসরাই

১৫ নভেম্বর ২০১৮, ২৩:২৯

আপডেট: ১৫ নভেম্বর ২০১৮, ২৩:৩১

চট্টগ্রামে বাজার থেকে পটকা মাছ কুড়িয়ে এনেছিলেন দাদি ফজিলা খাতুন। রান্নার পর সেই মাছ খেয়ে মারা গেছে তাঁর এক নাতনি। গুরুতর অসুস্থ হয়ে চট্টগ্রাম মেডিকেল কলেজ হাসপাতালে চিকিৎসাধীন তাঁর আরও চার নাতি-নাতনি ও পুত্রবধূ। ফজিলা খাতুন নিজেও অসুস্থ হয়ে পড়েছেন। বৃহস্পতিবার দুপুরে চট্টগ্রামের মীরসরাই উপজেলার জোরারগঞ্জ ইউনিয়নের উত্তর সোনাপাহাড় এলাকায় এই ঘটনা ঘটে।

মারা যাওয়া শিশুর নাম মরিয়ম বেগম (৪)। অসুস্থরা হলেন মরিয়মের মা বিলকিস আক্তার (৩৫), ভাই মো. রাব্বি (১২), মো. সাব্বির (১০) এবং বোন ঝর্না বেগম (৮) ও আছিয়া বেগম (২)। তারা সবাই হাসপাতালে চিকিৎসাধীন।

শিশুদের বাবা শফিকুল ইসলাম মীরসরাই পৌরসভায় ঝাড়ুদারের কাজ করেন। তিনি কান্নাজড়িত কণ্ঠে প্রথম আলোকে বলেন, বারইয়ারহাট বাজার থেকে তাঁর মা পটকা মাছ কুড়িয়ে নিয়ে আসেন। রান্না শেষে খাওয়ার একটু পরেই শিশুরা বমি করতে থাকে এবং একপর্যায়ে পড়ে যায়। ঘটনাস্থলেই মরিয়মের মৃত্যু হয়। পরে স্থানীয়দের সহায়তায় প্রথমে তাদের মিরসরাই উপজেলা স্বাস্থ্য কমপ্লেক্সে নেওয়া হয় এবং এরপর উন্নত চিকিৎসার জন্য চট্টগ্রাম মেডিকেল কলেজ হাসপাতালে পাঠানো হয়েছে। তাঁর মা ফজিলা খাতুন চিকিৎসা শেষে বাসায় ফিরেছেন। বাজার থেকে আনা মাছ যে বিষাক্ত পটকা এ বিষয়ে তাঁদের ধারণা ছিল না বলেও জানান শফিকুল।

পটকা মাছ খেয়েই তারা অসুস্থ হয়েছে বলে নিশ্চিত করেছেন মিরসরাই উপজেলা স্বাস্থ্য কমপ্লেক্সের কর্তব্যরত চিকিৎসক মো. শহীদুল ইসলাম। এ দিকে চট্টগ্রাম মেডিকেল কলেজ হাসপাতালের পুলিশ ফাঁড়ির ইনচার্জ পরিদর্শক জহিরুল ইসলাম বলেন, তাঁদের মধ্যে তিনজনের অবস্থা এখনো আশঙ্কাজনক।

হাসপাতালটির মেডিসিন বিভাগের সহকারী রেজিস্ট্রার মোহাম্মদ মামুন বলেন, হাসপাতালে আসা অসুস্থ পাঁচজন বর্তমানে পর্যবেক্ষণে রয়েছে।

বাংলাদেশ প্রতিদিন

১৭ নভেম্বর, ২০১৮

সত্য প্রকাশে সাহসী দৈনিক
বাংলাদেশ জার্নাল
The Bangladesh Journal

দশমীর রাতে মদ খেয়ে ৪ জনের মৃত্যু

প্রকাশ | ২০ অক্টোবর ২০১৮, ১৩:৩৩ | আপডেট: ২০ অক্টোবর ২০১৮, ১৩:৫৪

মলমপার্টির খপ্পরে ঢাবি ছাত্রের মৃত্যু

১৩ নভেম্বর, ২০১৮,

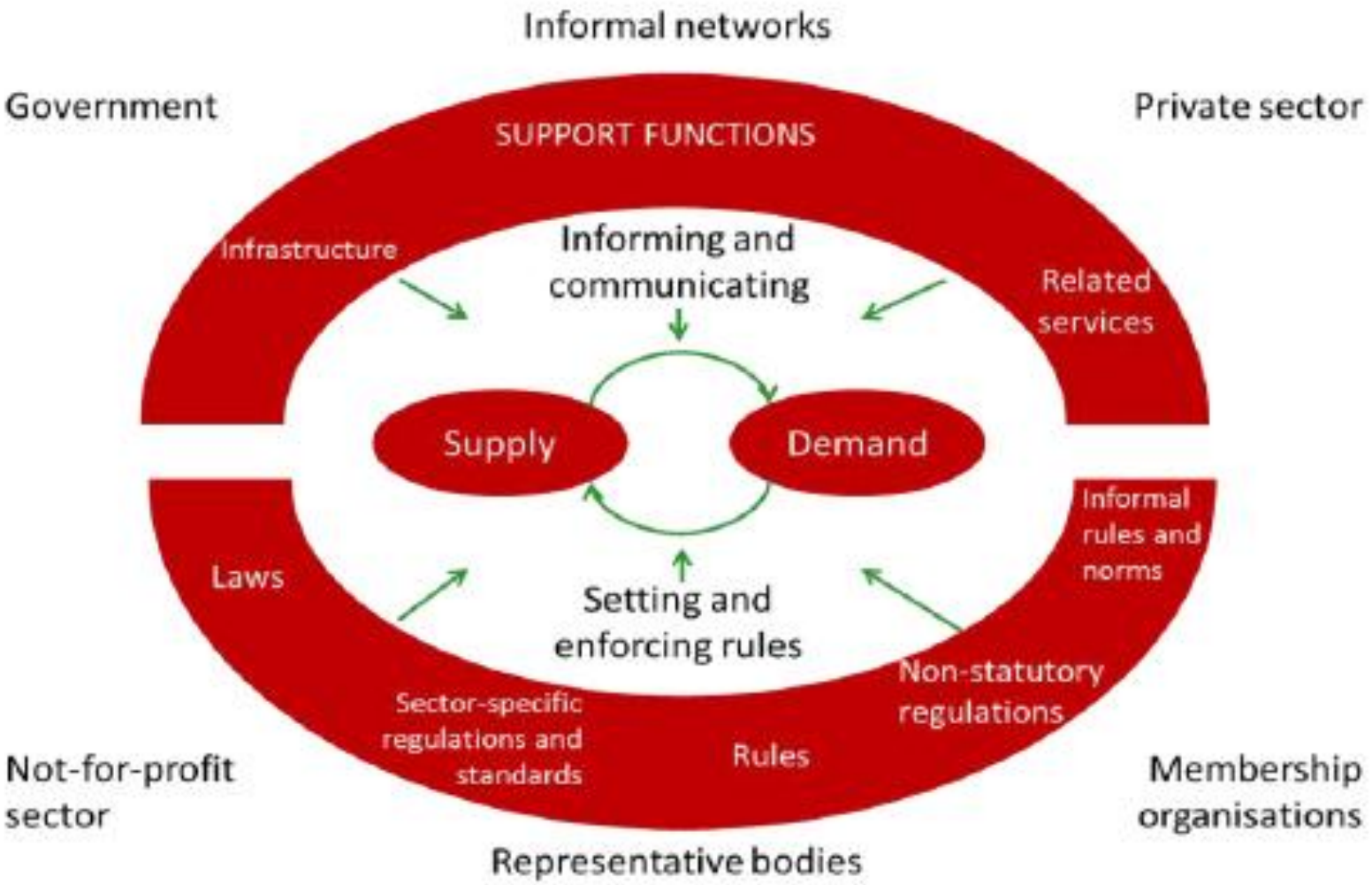
মলমপার্টির খপ্পরে পড়ে মশিউর রহমান তারেক (২৪) নামে ঢাকা বিশ্ববিদ্যালয়ের (ঢাবি) এক শিক্ষার্থীর মৃত্যু হয়েছে। গত ২৮ অক্টোবর রাতের ট্রেনে কমলাপুর থেকে চট্টগ্রাম যাওয়ার পথে মলমপার্টির খপ্পরে পড়েন এই ছাত্র। গতকাল দুপুরে রাজধানীর অ্যাপোলো হাসপাতালে চিকিৎসাধীন অবস্থায় তার মৃত্যু হয়।

তারেকের গ্রামের বাড়ি নরসিংদীতে। তিনি ঢাবির দুর্যোগ বিজ্ঞান ও ব্যবস্থাপনা বিষয়ের শেষ বর্ষের ছাত্র ছিলেন। তার বাবা বর্ডার গার্ড বাংলাদেশের (বিজিবি) অবসরপ্রাপ্ত কর্মকর্তা আবদুল কাদের। স্বজন ও সহপাঠীদের সূত্রে জানা গেছে, ২৮ অক্টোবর রাতে ট্রেনে করে কমলাপুর থেকে চট্টগ্রামের উদ্দেশ্যে রওয়ানা হয় তারেক। ভৈরব পর্যন্ত পরিবার ও স্বজনদের সঙ্গে তার যোগাযোগ ছিল। কিন্তু ভৈরব অতিক্রম করার পর তার মোবাইল ফোন বন্ধ পাওয়া যায়। তখন পরিবারের সদস্যরা তার খোঁজ শুরু করলেও কোথাও তার সন্ধান পায়নি।

সহপাঠীরা বলেন, নিখোঁজের পরের দিন অচেতন অবস্থায় তাকে কুমিল্লা মেডিক্যাল কলেজ হাসপাতালে চিকিৎসাধীন অবস্থায় পাওয়া যায়। সেখান থেকে উন্নত চিকিৎসার জন্য পরিবারের সদস্যরা তাকে ঢাকায় এনে বেসরকারি অ্যাপোলো হাসপাতালে ভর্তি করে। সাইফুল নামে এক সহপাঠী বলেন, গতকাল দুপুরে চিকিৎসাধীন অবস্থায় তার মৃত্যু হয়। মেডিক্যাল প্রতিবেদনে 'বিষ প্রয়োগে' মৃত্যু হয়েছে বলে উল্লেখ রয়েছে। আইনি প্রক্রিয়া শেষে লাশ গ্রহন করা হবে বলে তিনি জানান।

দৈনিক ইনকিলাব
THE DAILY INQILAB

Conceptualizing a Pluralistic Health System



AMR; STEPS Working Paper 84 ;ISBN: 978-1-78118-228-4

Source: Adapted from Elliot *et al. (2008)*

Toxicology teaching in MBBS course

- **Medicine: Poisoning and drug overdose Lecture 6 hrs**
- **Paediatrics: Accidental poisoning and drowning 2 hrs**
- **Forensic Medicine: Toxicology 20 hrs**
- **No Clinical placement**
- **Assessment on Clinical Toxicology- very little**

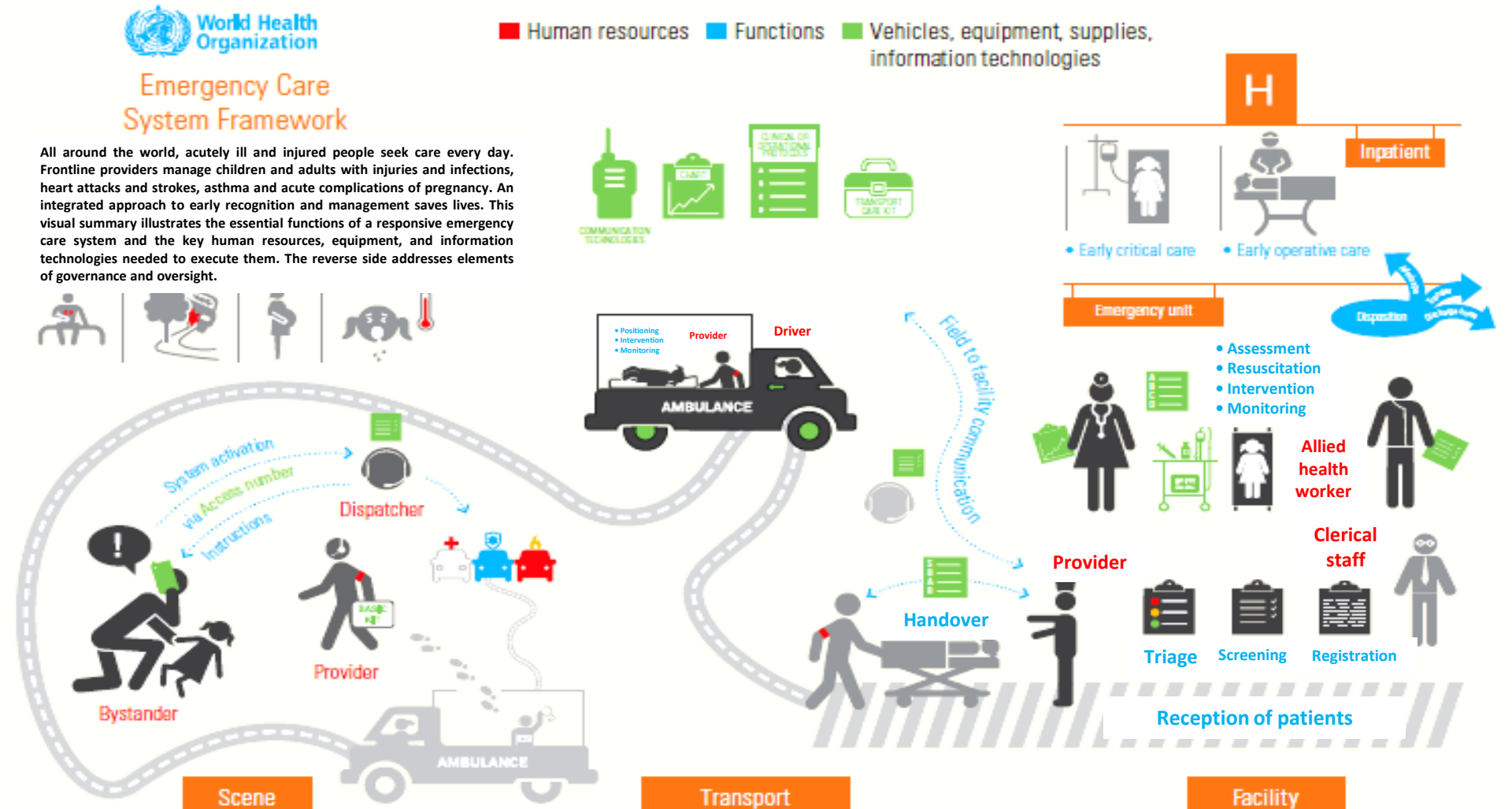
Toxicology Care

- In teaching hospitals (Government medical college hospitals) Clinical care is being provided by Internist/Paediatrician, no dedicated ward/corner. Exception, '24/7 Snakebite Clinic', CMCH.
- DH and UZHC: usual health service. Good number of physicians trained at Private MCH having no/little exposure to poisoning and envenomation.
- Poisoning management guideline is old (2007)
- No regular training course dedicated to poisoning, some arranged by TSB (16=410), few arranged by DGHS on snakebite
- Management of poisoning and envenomation: discretion of individual care provider.
- Logistics for diagnosis and management inadequate.

Emergency care

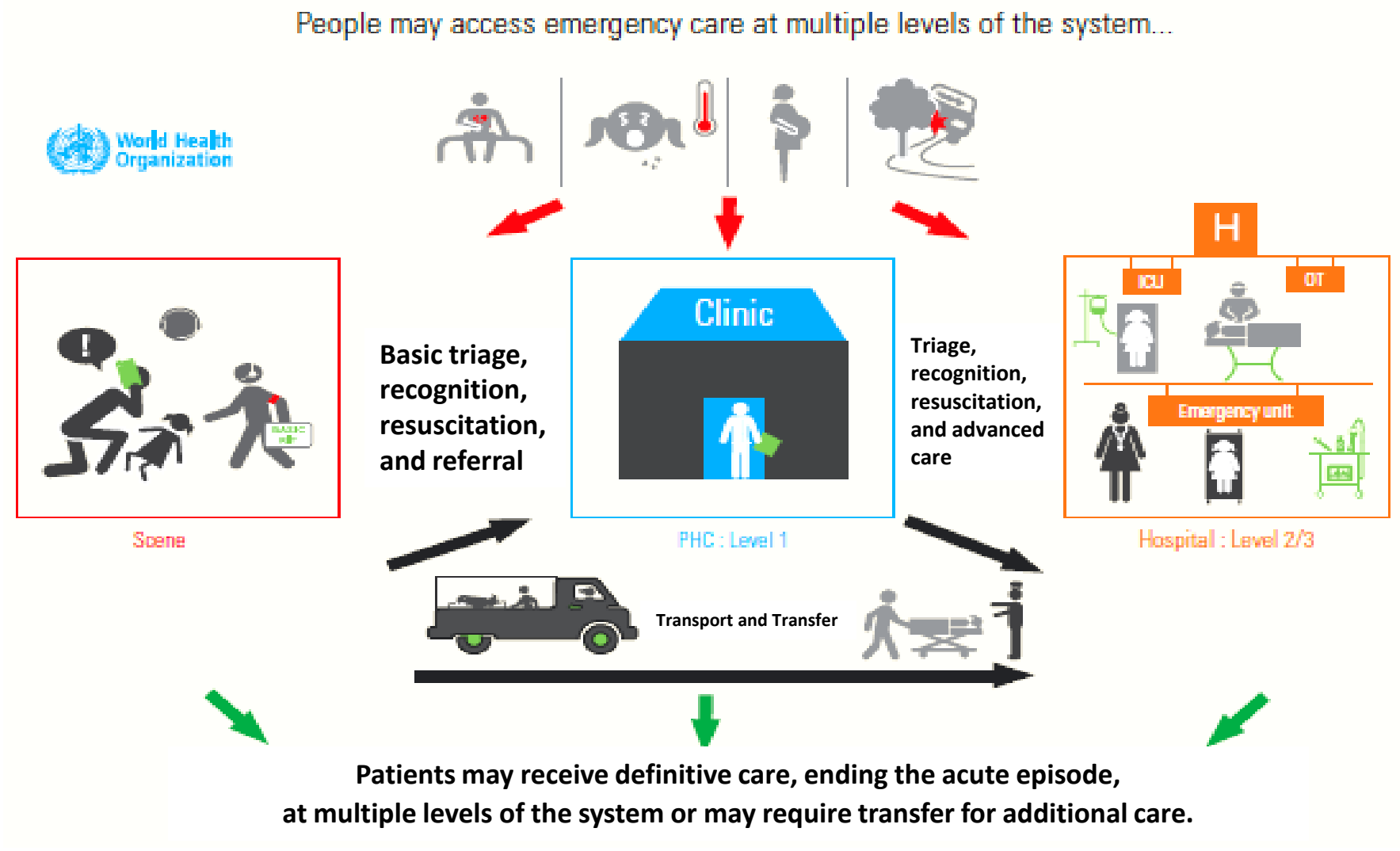
- **‘Emergency care is an essential component of universal health coverage (SDG 3.8)- a critical mechanism for ensuring accessible, affordable, high-quality care- and for many people around the world, it is the primary point of access to the health system’.**

WHO Emergency Care System Infographic



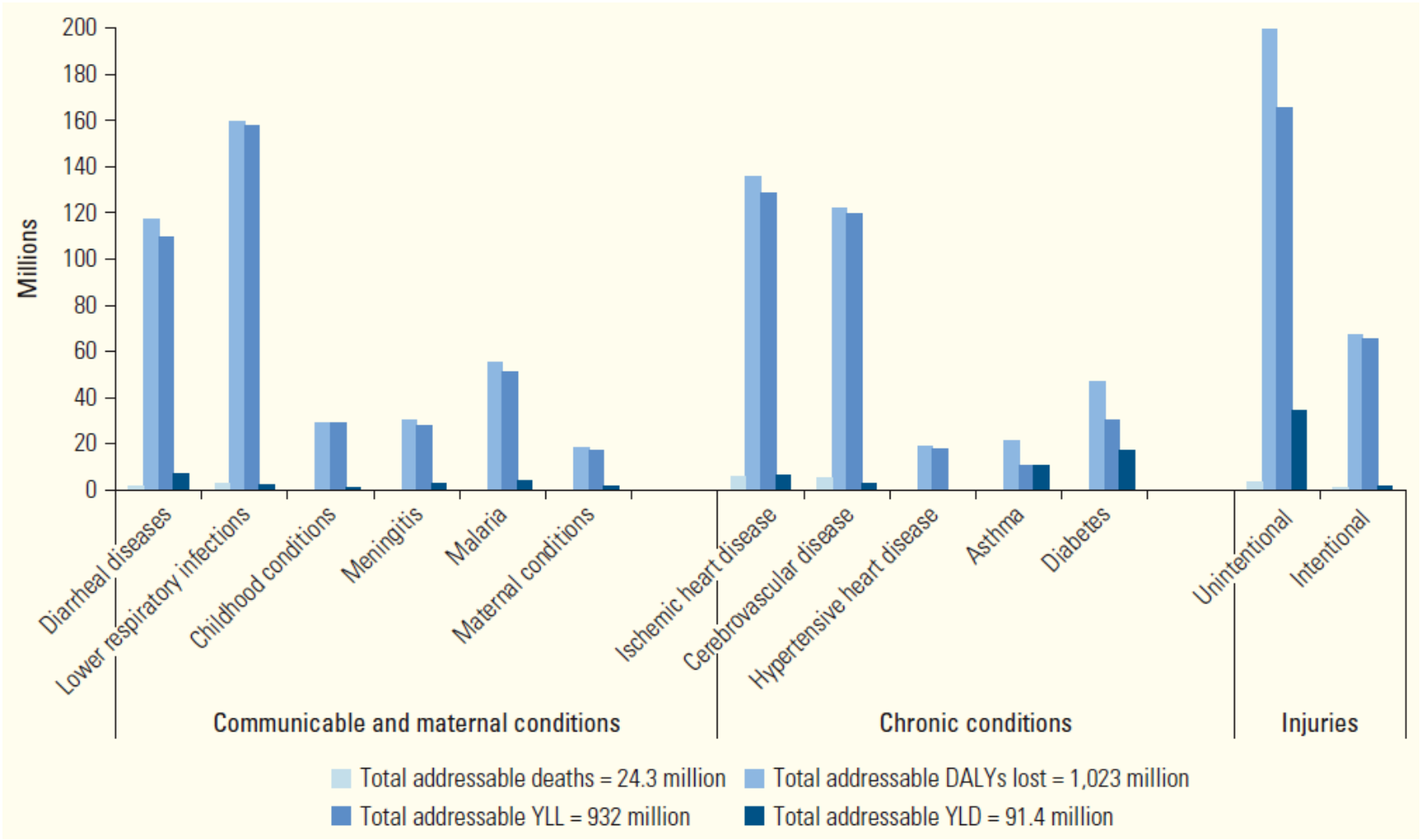
Source: WHO, http://www.who.int/emergencycare/emergencycare_infographic/en/.
Note: H = hospital; WHO = World Health Organization.

Access to Emergency Care



Source: World Health Organization, http://www.who.int/emergencycare.
Note: H = hospital; ICU = intensive care unit; OT = operating theatre; PHC = primary health clinic.

Burden of Disease That Can Potentially Be Addressed by Prehospital and facility-based Emergency Care in LMIC Countries



Source: Thind and others 2015 (data from WHO 2013).

Note: DALYs = disability-adjusted life years; LMICs = low- and middle-income countries; YLD = years lived with disability; YLL = years of life lost.

Victim of an envenoming bite by an unidentified snake on admission at a tertiary referral hospital in Chittagong, Bangladesh

Note multiple tight ligatures applied to the arm

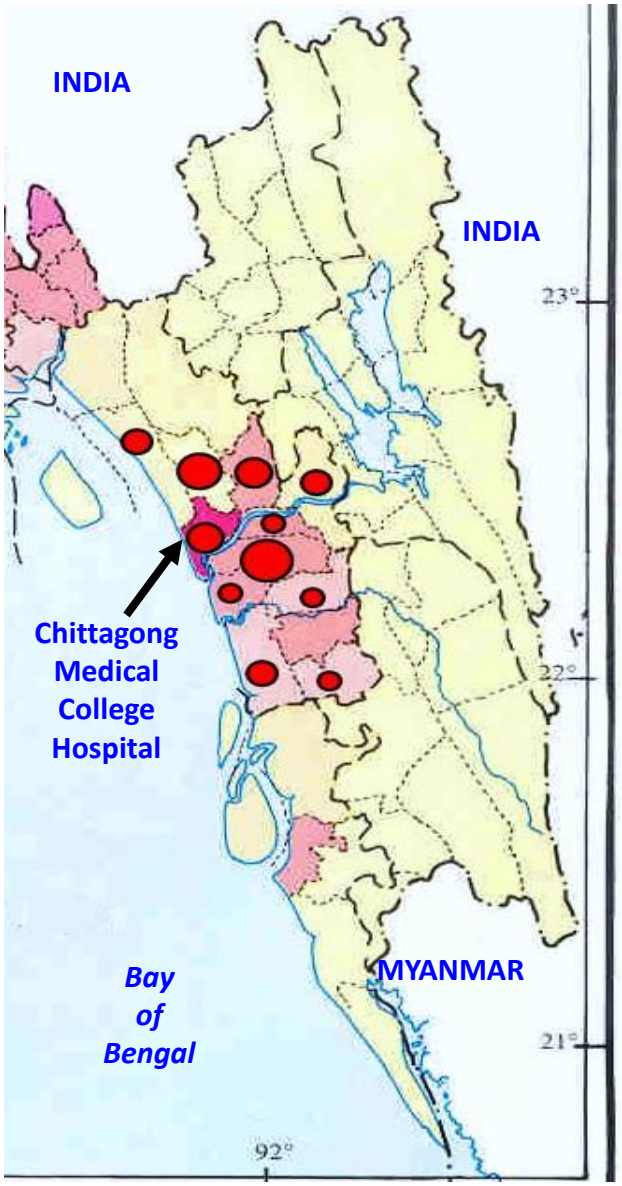
Harris J B, et al. Toxins ***2013, 5, 2533-2571; doi:10.3390/toxins5122533***

Causes of Death after Snake-bites in Bangladesh

- **Neurotoxic envenoming**
  - **Cobras (*Naja kaouthia*, *Naja naja*)**
  - **Kraits (*Bungarus* species)**
- **Many die on the way to hospital**

→ 27 bite victims admitted dead (red dots) at CMCH

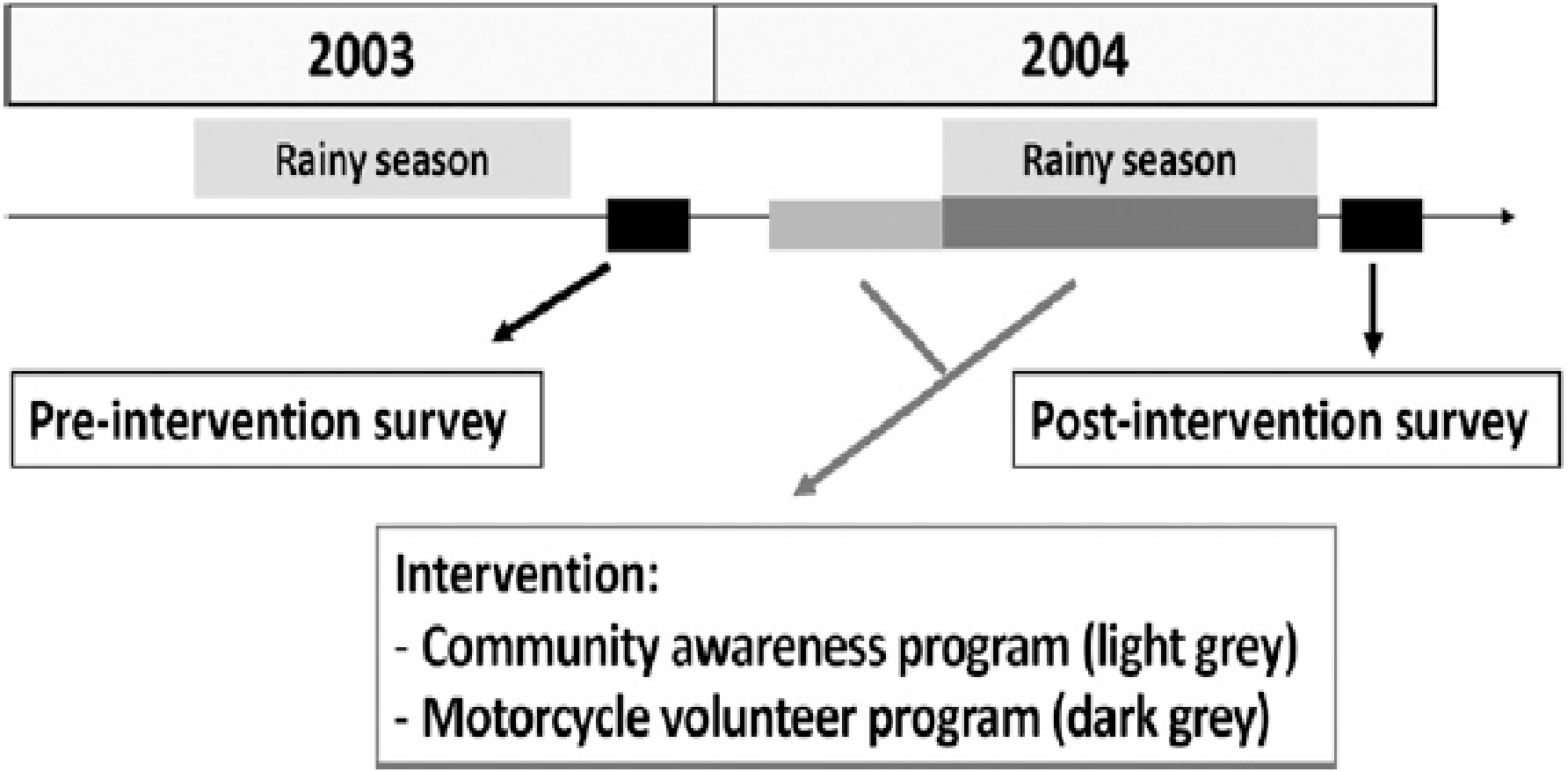
Population density shaded (highest = violet)



পল্লী অ্যাম্বুল্যান্স

কালের কণ্ঠ
১২ নভেম্বর ২০১৮

Schematic diagram of the intervention, southeastern Nepal



Sharma S K et al. (2013). Am. J. Trop. Med. Hyg., 89(1): 145–150

Snake bite victim held firm on the motorcycle, southeastern Nepal

Sharma S K et al. (2013). Am. J. Trop. Med. Hyg., 89(1): 145–150

Reported no. and incidence of snake bites and deaths before and during intervention programs in 4 village development committees, SE Nepal*

Characteristic	Pre-intervention period (April-October 2003)	Intervention period (April-October 2004)	RRR (95% CI)
No. snake bites	305	187	
Incidence of snake bites	502/100,000	315/100,000	0.373 (0.245–0.48)
No. deaths†	32	1	
Incidence of deaths†	53/100,000	2/100,000	0.968 (0.809–0.999)
Case-fatality rate	10.5%	0.5%	0.949 (0.695–0.999)

*RRR = relative risk reduction; CI = confidence interval. †Deaths caused by snake bites only.

- **Organizing low-cost pre-hospital systems was associated with a dramatic decrease in snakebite mortality in Nepal.**

Sharma S K et al. (2013). Am. J. Trop. Med. Hyg., 89(1): 145–150

১. সর্পদংশনের জরুরী প্রয়োজনীয় চিকিৎসা

২. প্রাথমিক চিকিৎসা:

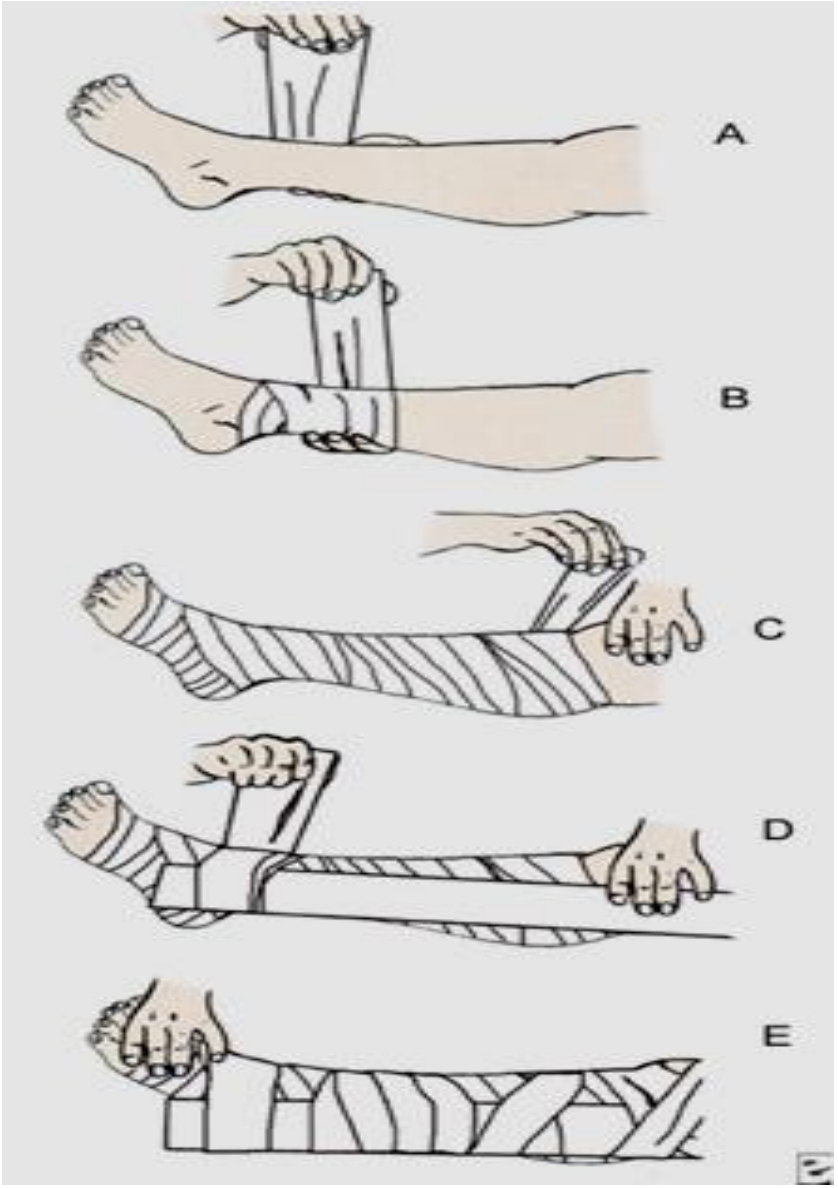
- প্রাথমিক চিকিৎসার উদ্দেশ্য
- প্রাথমিক পরিচর্যা সম্বন্ধে সুপারিশ সমূহ (কিছু সাধারণ নিয়মাবলী)

৩. সর্পদংশনের পর যা করা যাবে না

৪. বিষ অবরোধক একাধিক গিঁট প্রয়োগে সৃষ্ট জটিলতা

৫. সর্পদংশন কিভাবে এড়ানো যায়?

৬. সাপ দেখলে আপনি কি করবেন?

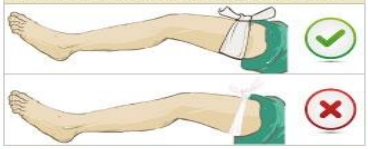


সর্প দংশনে ভয় না পেয়ে, চিকিৎসা নিই সঠিক সময়ে

১ প্রাথমিক চিকিৎসা

পায়ে দংশন করলে না হেঁটে বরং বসে পড়ুন, হাতে দংশন করলে হাত নাড়া-চাড়া করবেন না। হাড় ভেঙে গেলে যেভাবে কাঠ-ব্যান্ডেজ দিয়ে স্প্লিন্ট করে, ওভাবে ব্যবস্থা নিন

পায়ে দংশনে উরুতে, হাতে দংশনে বাহুতে চওড়া কিছু দিয়ে জোরে পিট দিন। প্রতি আধ ঘন্টা অন্তর আধ মিনিটের জন্য পিট খুলে দিন



দংশিত স্থান মুছে নিন ও ব্যান্ডজ দিয়ে আবৃত করে রাখুন

আপনাকে দ্রুত হাসপাতালে নেওয়ার জন্য অন্য কারও সাহায্য নিন

দংশন করা সাপটিকে কেউ মেরে থাকলে সনাক্তকরণের জন্য তা রোগীর সাথে হাসপাতালে নিয়ে যাবেন

২ কী কী বিষয় থেকে বিরত থাকবেন?

অযথা ভয় পাবেন না। বেশিরভাগ সাপ অবিষধর বিধায় সর্প দংশনে খুব কম রোগীর বিষের প্রতিক্রিয়া হয়

দংশিত স্থানে কাটবেন না, সুই ফুটাবেন না, কিংবা কোন রকম প্রলেপ লাগাবেন না

দংশনের পর কথা বলতে অসুবিধা হলে, নাকে কথা বললে কিংবা মুখে লালা ঝড়লে রোগীকে কিছু খেতে দিবেন না

ওঝা-র চিকিৎসা কিংবা ঝাড়-ফুক করে সময় ক্ষেপণ করবেন না

সাপকে মারার চেষ্টা করবেন না

৩ রোগীকে যত দ্রুত সম্ভব উপজেলা হাসপাতালে নিয়ে যান

সোস্যাল এডভোকেসি এন্ড নলেজ ডিসেমিনেশন ইউনিট
SOCIAL ADVOCACY AND KNOWLEDGE DISSEMINATION

পল্লী কর্ম-সহায়ক ফাউন্ডেশন (পিকেএসএফ)

অবলম্বনেঃ সর্প-দংশন ও এর চিকিৎসা

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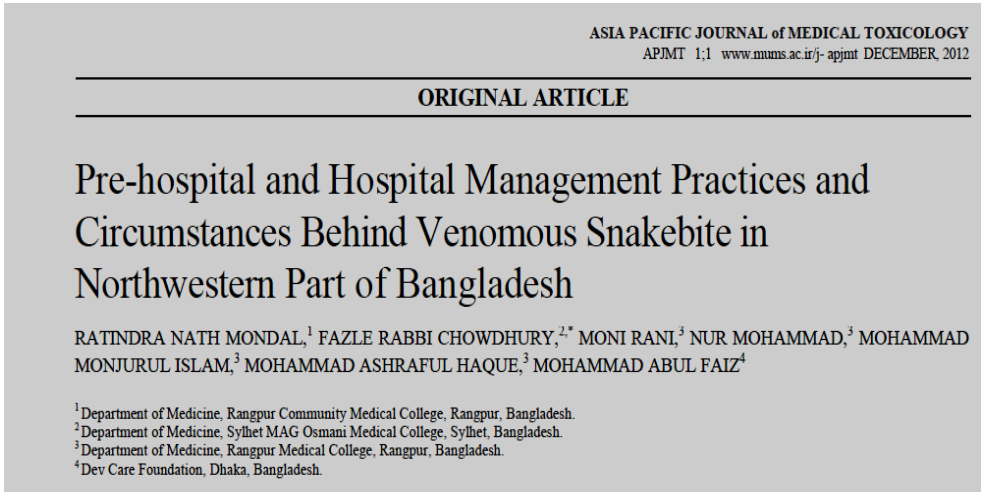

ASIA PACIFIC JOURNAL of MEDICAL TOXICOLOGY
APJMT 1;1 www.mums.ac.ir/j- apjmt DECEMBER, 2012

ORIGINAL ARTICLE

Pre-hospital and Hospital Management Practices and Circumstances Behind Venomous Snakebite in Northwestern Part of Bangladesh

RATINDRA NATH MONDAL,[1] FAZLE RABBI CHOWDHURY,[2,*] MONI RANI,[3] NUR MOHAMMAD,[3] MOHAMMAD MONJURUL ISLAM,[3] MOHAMMAD ASHRAFUL HAQUE,[3] MOHAMMAD ABUL FAIZ[4]

[1]Department of Medicine, Rangpur Community Medical College, Rangpur, Bangladesh.
[2]Department of Medicine, Sylhet MAG Osmani Medical College, Sylhet, Bangladesh.
[3]Department of Medicine, Rangpur Medical College, Rangpur, Bangladesh.
[4]Dev Care Foundation, Dhaka, Bangladesh.

International Journal of Medical Toxicology and Forensic Medicine. 2012;2(3):88-96.

Pattern of Pre-Hospital Treatment Received by Cases of Pesticide Poisoning

Shadequl-Islam AHM[1*], Basher A[2], Rashid M[1], Islam M[2], Arif SM[2], Abul Faiz M[3]

[1] Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh
[2] Department of Medicine, Dhaka Medical College and Hospital, Dhaka, Bangladesh
[3] Directorate General of Health Services, Mohakhali, Dhaka, Bangladesh

- **Pre-hospital treatment of poisoning and envenomation- not standardized and harmonized**
- **Protocols for management of common prevalent poisoning (OP, methanol, puffer fish for example) not equally followed**
- **AV use varies widely (in different dose)**
- **Assisted respiratory, renal and other critical care support and ancillary treatment are not equally available and followed**
- **Poison information service is not available.**

Dc‡Rjv nvmcvZv‡ji AšÍ:wefv‡M fwZ© †ivMxi MwZ wbY©qK QK (Patient Flow Chart)

Riæix wefvM

AšÍ:wefv‡M †ivMxi AvMgb

ewn: wefvM

‡iwR‡÷ªkb

dvBj ‰Zix

khv ‰Zix

‡iv‡Mi BwZnvm †bqv I kvixwiK cixÿv Kiv

cÖv_wgK †ivM wbY©q m¤úb

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n¨ u

jÿe/G·· ‡i/BwmwR/Avëªvm‡bvMÖvg/Abv b¨cixÿv

wPwKrmv cÖ`vb I AMÖMwZ dh©‡eÿY

A‡¯¿vcPvi cÖ‡qvRb

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A‡¯¿vcPvi/cÖm~wZ K‡ÿ †cÖiY

bv

QzwU/ d‡jv-Avc

my¯‘

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b

Iqv‡W© ...Ö...

RxweZ

b v

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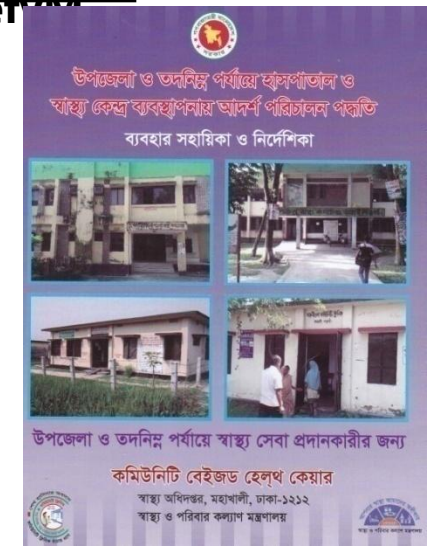
Ab¨ nvmcvZv‡j †idvi Kiv

n¨ u v



Toxidrome: Cholinergic

A Tokyo commuter overcome by the deadly 1995 sarin gas attack (CNN/file)

Key Diagnoses Associated with Critical Syndromes

Difficulty breathing	Shock	Altered mental status
Airway injury and inflammation	Sepsis	Coma
Foreign body	Gastroenteritis and diarrhea	Delirium
Pneumohemothorax	**Bradycardia**	Hypo- and hyperglycemia
Pneumonia	Hemorrhage	Hypoxia
Pleural effusion	Cardiac valvular disease	Hypo- and hyperthermia
Asthma	**Abnormal cardiac rhythm or cardiac failure**	Electrolyte or thyroid abnormality
Chronic obstructive pulmonary disease	Gastrointestinal bleeding	Liver disease
Anemia	Tension pneumothorax	Kidney disease
Myocardial ischemia	**Anaphylaxis**	**Poisoning and envenomation**
Cardiac failure	Spinal cord injury	Psychosis
Pericardial effusion		Seizure
Pulmonary embolism		Stroke
Drug overdose		Tumor
Chest wall injury		Traumatic brain injury
Paralysis		Central nervous system infections, including HIV-related

Note: HIV = human immunodefi ciency virus.

Reynolds T A et al. (2018). Strengthening Health Systems to Provide Emergency Care. In: Diseases Control Priorities: Improving Health and Reducing Poverty. (Edited. Jamison DT et. al.), *3rd Edition, Vol.: 9, Int. Bank for Reconstruction and Development/The World Bank*.

Fundamentals of organized emergency care

- **Basic pre-hospital care and transport**
- **A dedicated area and standards for hospital-based emergency care**
- **A core of nonrotating providers trained in the care of emergencies and assigned to the emergency unit.**

Lacking in many low- and middle-income countries (LMICs)

Essential Package of Emergency Care

Protocols with Training and Capacity to Perform			Crosscutting policy interventions
Primary health center	**First-level hospital**	**Referral and specialized hospitals**	
Recognition of danger signs in children and adults	Acuity-based triage of children and adults		• Ensure that the National Ministry of Health has a directorate dedicated to emergency care (not limited to disaster response).
Vital signs measurement			• Conduct a standardized national assessment of the emergency care system (using the WHO ECSA or a similar tool) to identify gaps and inform system development.
BLS	ALS		• Ensure that emergency care is explicitly incorporated into the National Health Plan.
Neonatal resuscitation (including kangaroo care and thermal care for preterm newborns)	Full supportive care for preterm newborns		• Establish national legislation ensuring access to emergency care without regard to ability to pay.
Basic approach to difficulty in breathing, shock, altered mental status, trauma	Advanced approach to difficulty in breathing, shock, altered Mental status, trauma	Advanced condition specific algorithms for life threatening Conditions	• Ensure that hospitals at all levels include dedicated emergency units—areas dedicated to the provision of emergency care and staffed with at least a core of nonrotating personnel who are specifically trained in the care of emergency conditions. • Disseminate dedicated training for emergency care across cadres, including training in basic emergency care for all prehospital providers, basic emergency care training for all cadres of facility-based providers who treat patients with emergency conditions, dedicated emergency care training integrated into undergraduate medical and nursing curricula, and residency or specialist training programs in emergency medicine.

Reynolds T A et al. (2018). Strengthening Health Systems to Provide Emergency Care. In: Diseases Control Priorities: Improving Health and Reducing Poverty. (Edited. Jamison DT et. al.), *3rd Edition, Vol.: 9, Int. Bank for Reconstruction and Development/The World Bank*.

Essential Package of Emergency Care contd….

Emergency Unit Procedures		
Primary health center	**First-level hospital**	**Referral and specialized hospitals**
	Endotracheal intubation	
Oral and nasal airway placement		
Bedside swallow evaluation		
	BVM ventillation	**Mechanical Ventilation Noninvasive positive pressure ventilation**
	Oxygen administration	
	IV fluid infusion (peripheral) for neonates, children, adults	**IV infusion (central)**
		Pericardiocentesis
	Defibrillation	**Pacing**
		Cardioversion (including synchronized)
Safe physical restraint		
	NGT placement	

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Essential Package of Emergency Care contd….

Emergency Unit Procedures		
Primary health center	**First-level hospital**	**Referral and specialized hospitals**
	Passive rewarming techniques	**Active invasive rewarming techniques**

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Essential Package of Emergency Care contd….

Laboratory Services		
Primary health center	**First-level hospital**	**Referral and specialized hospitals**
Point of care testing: glucose	**Point of care HIV testing. Laboratory complete blood counts, simple coagulation studies, urea, and electrolytes.**	**Comprehensive laboratory services for emergency diagnoses, including troponin and cardiac markers, blood gas, thyroid studies, therapeutic drug levels**

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Medications		
ABCDEs		
Primary health center	**First-level hospital**	**Referral and specialized hospitals**
Oral steroids	**IV steroids (for airway, CNS**	
Inhaled bronchodilator	**Nebulized bronchodilator**	
IM adrenaline	**IV adrenaline**	
	IV fluids for rehydration	
	Transfusion (whole blood, FFP, packed red blood cells)	

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Essential Package of Emergency Care contd….

Antidotes		
Primary health center	**First-level hospital**	**Referral and specialized hospitals**
Activated charcoal	**Naloxone**	**Antithyroid agents**
	Bicarbonate infusion **Atropine** **Antivenin** **Pyridoxine**	
Oral Vitamin K	**IV Vitamin K**	

Reynolds T A et al. (2018). Strengthening Health Systems to Provide Emergency Care. In: Diseases Control Priorities: Improving Health and Reducing Poverty. (Edited. Jamison DT et. al.), *3rd Edition, Vol.: 9, Int. Bank for Reconstruction and Development/The World Bank*.

Essential Package of Emergency Care contd….

CNS		
Primary health center	**First-level hospital**	**Referral and specialized hospitals**
Oral antipsychotic	**IM & IV antipsychotic**	
Oral and rectal benzodiazepine	**IM & IV benzodiazepine**	
	IV analgesia	

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Priorities for action: Toxicology Care 1

- Ensure that the national ministry of health has a **directorate dedicated to Emergency Care** (not limited to disaster response).
- **Conduct a standardized national assessment of the ECS** (using the WHO ECSA or a similar tool) to identify gaps and inform system development.
- Ensure that **Emergency Care is explicitly incorporated into the national health plan.**
- Establish national **legislation ensuring access to Emergency Care** without regard to ability to pay.
- Ensure that hospitals at all levels include **dedicated emergency units**—areas dedicated to the provision of emergency care and staffed with at least a core of nonrotating personnel who are specifically trained in the care of emergency conditions.
- Disseminate **dedicated training for Emergency Care across cadres**, including training in basic emergency care for all pre-hospital providers, basic emergency care training for all cadres of facility-based providers who treat patients with emergency conditions, dedicated emergency care training integrated into undergraduate medical and nursing curricula, and residency or specialist training programs in emergency medicine.

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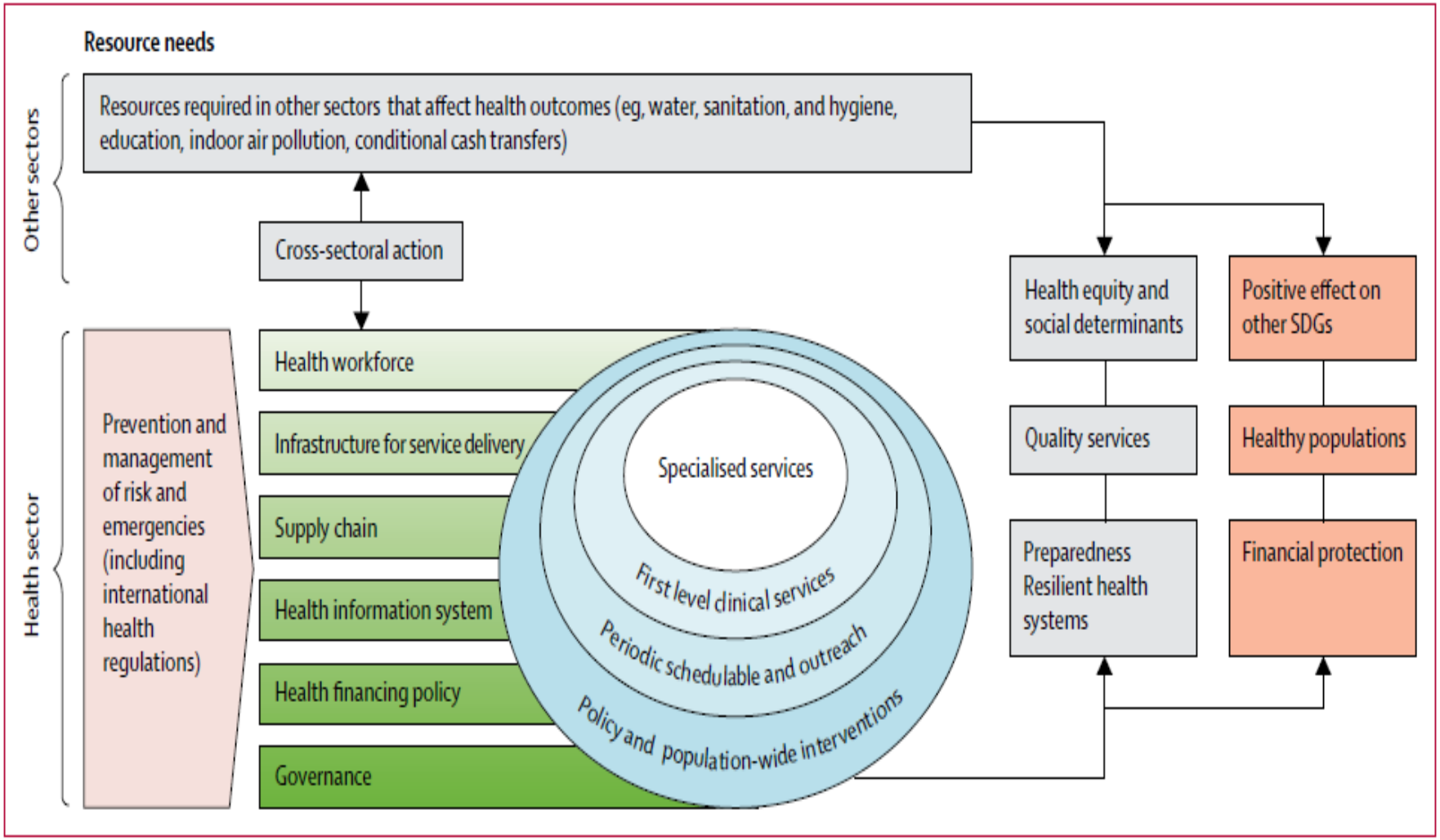
Priorities for action: Toxicology Care 2

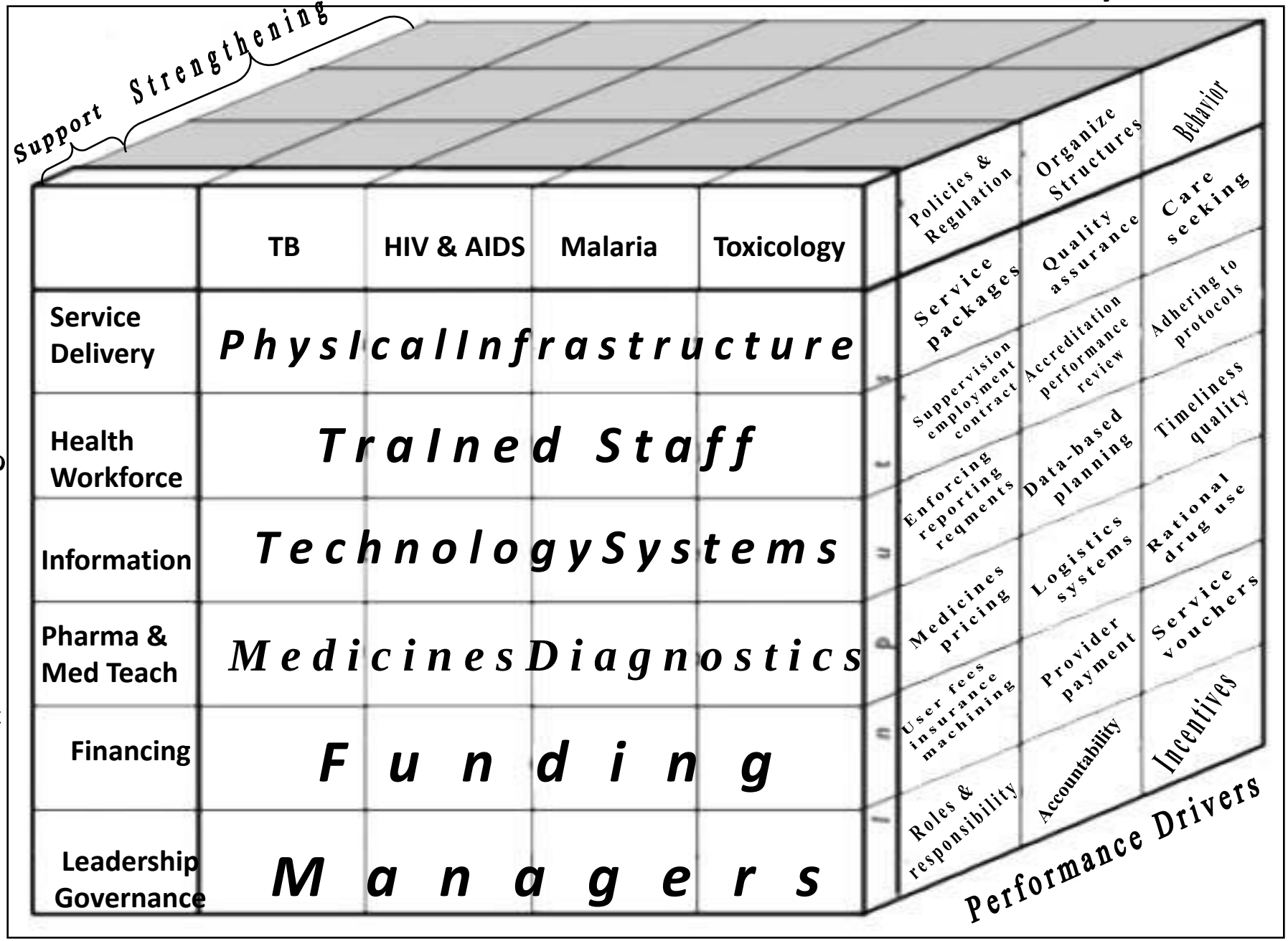
- Establish **acuity-based triage systems** at all facilities that regularly receive acutely ill and injured patients.
- Establish **pre-hospital care systems** based on WHO or other international standards, including a dedicated certification pathway for pre-hospital care providers and a **toll-free, universal access number** for emergency care.
- Develop critical process and **clinical protocols** as identified in the WHO ECS framework (including **transport and referral protocols, pre-hospital and facility-based clinical treatment protocols**, and disaster and mass casualty protocols.
- Implement standardized clinical charts and registries incorporating essential data points, such as those based on WHO standards, to facilitate **quality improvement efforts**.

Conceptual framework for transforming health systems towards SDG 3 targets



Stenberg et al. (2017). *Lancet Glob Health;* 5: e875–87

The health system cube



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- Dr. Ratindra Mondal

Thank You

DCP3 Approaches to Improving Quality of Care Framework