EAST AFRICAN SNAKEBITE SYMPOSIUM

5 June 2025

Response-Med
REMOTE MEDICAL SUPPORT

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EMERGENCY
MEDICINE KENYA FOUNDATION

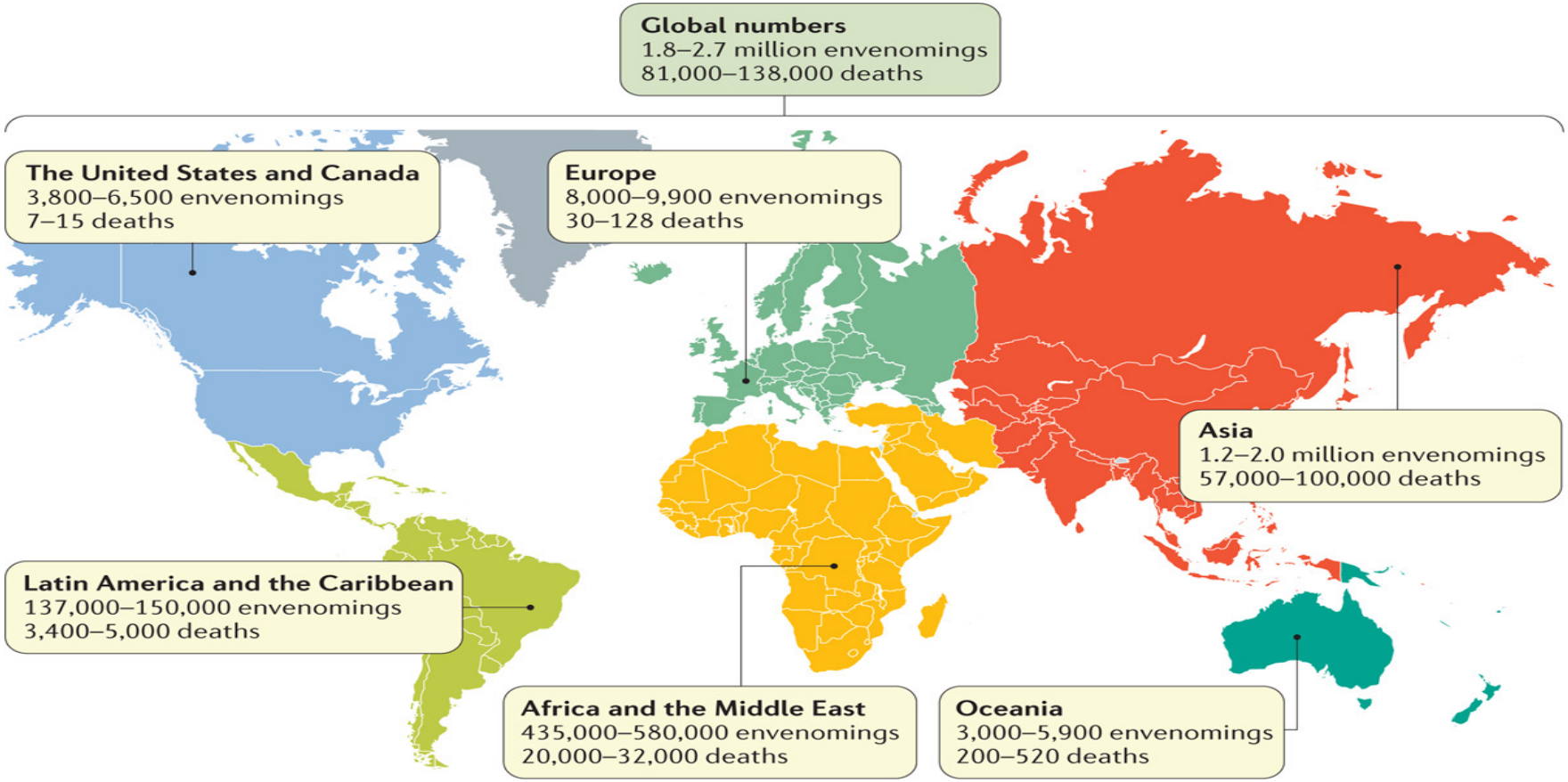
GSI GLOBAL SNAKEBITE INITIATIVE

Epidemiology of Snakebite

Dr Robert Rono MB ChB, MSc

Public Health Specialist

Geographical distribution of the estimated number of snakebite envenomings and deaths



WHO ROAD MAP

9th June 2017::
WHO formally Lists SBE as a Category A NTD

24th May 2018:
WHA resolution mandating WHO to step up efforts towards addressing the global burden of snakebite.

24th May 2019:
WHO launches a global strategy for prevention and control of SBE with a goal to reduce mortality and morbidity by 50% by the year 2030.

(Kenya) 15th August 2019:
Launch of National Guidelines on SBE at the National Health Summit

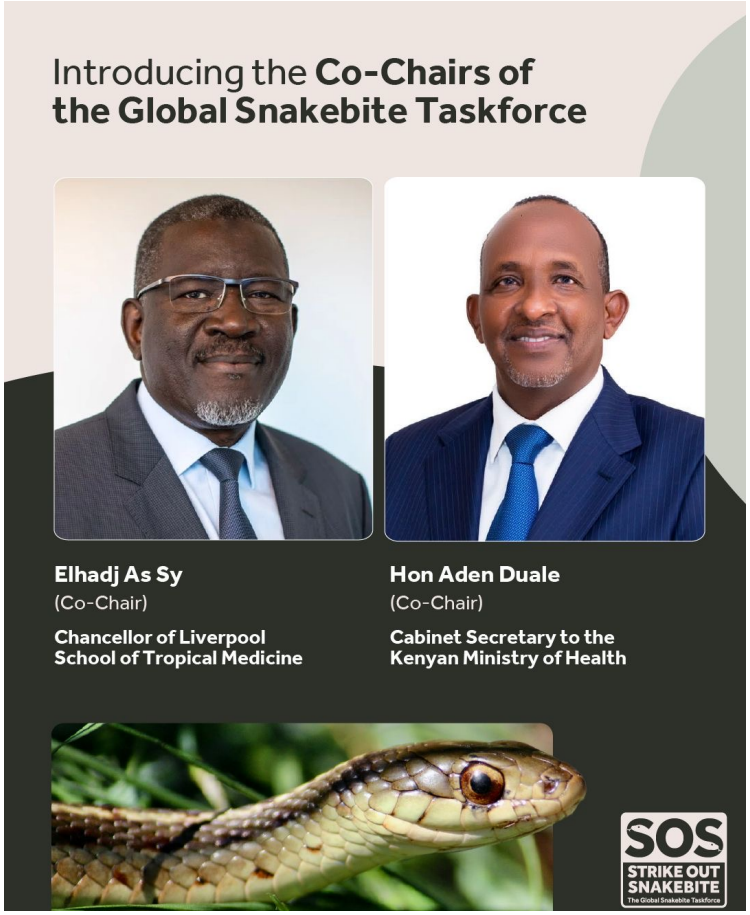
(Kenya)The compensation for snakebites was removed in 2019 following the amendment of The Wildlife Conservation and Management Act 2013

UNITED NATIONS

“The large majority of the victims of snakebite are politically voiceless: subsistence farmers and the rural poor, displaced populations, and children. It is up to the international community to be their voice.”

Kofi Annan Foundation,
February 2017

- Globally: 5.4 million annual snakebites
  - 2.7 million lead to envenoming
  - 400,000 permanent disabilities
  - 138,000 deaths
- In Sub Saharan Africa: 1 million bites
  - 25,000 deaths

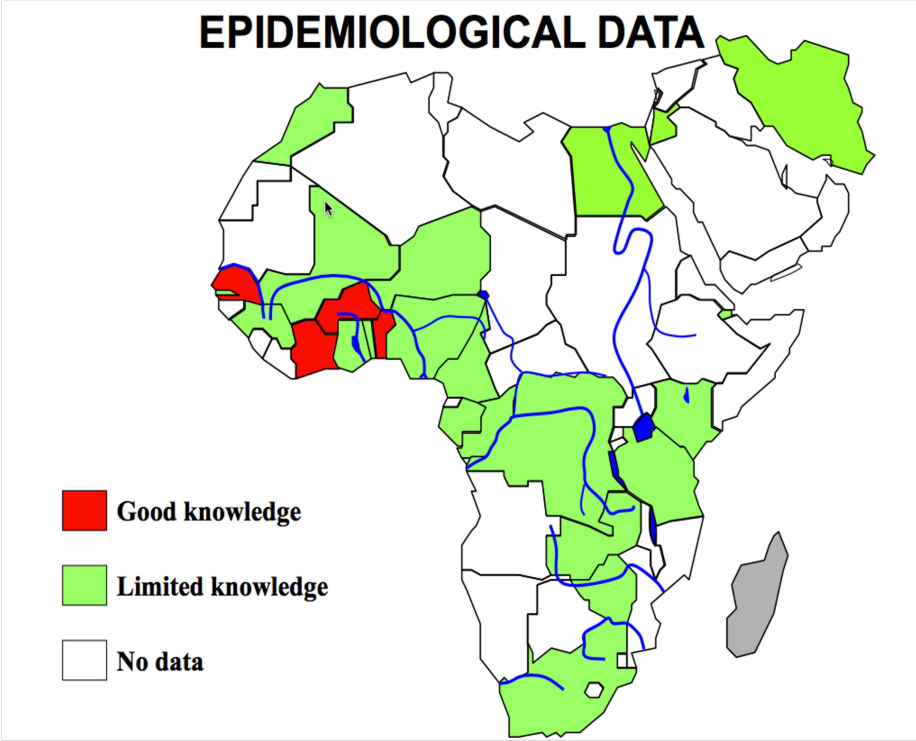


Incidence Rate in East Africa

- Kenya: 151/ 100000 persons per year; mortality of 6.7/100,000
- Uganda: 101/100000 person per year
- Tanzania: 105/ 100000 per year; mortality of 2.2 /100000
- Rwanda Incidence of 452/100000

- Variations in different regions of each countries
- Snakebite envenoming 44.8% of all human wildlife conflict in Kenya, resulting in 43.1% of all fatalities and 76.9% of all injuries.

- Gross under reporting, Inconsistent data collection
- Hospital data, 8-30% patients do not seek care in hospitals
  - Mozambique: 10X increase in bites and 30X increase in Deaths when community surveys done
  - Rwanda: a community based study reported 1217 cases in 2020 compared to only 182 from hospital records from 2017-2018



Snakebite Burden

- 1.03 Million DALYs in SSA Saharan Africa
- 268,741 cases, 12290 deaths, 14766 amputations and 55332 PTSD (22%) of SBE Survivors
- Hospitalization rate 173/100000 mortality rate 1.39/100000

SNAKEBITE vs Other NTDS

DISEASE	INCIDENCE	DEATHS
Snakebites	2,682,000	90,000
Leishmaniasis	1,691,000	51,000
Dengue Haem.fever	73,000	19,000
Schistosomiasis	5,733,000	15,000
Chaga's disease	217,000	14,000
Japanese Enceph	44,000	14,000
Cholera	178,000	4,000
Yellow fever	2,100	100

- Economic consequences for individuals, families, communities, countries
  - $7.4 million lost annually to cost of treatment and unemployment in Rwanda
  - $26 per treatment of snakebite in Kenya. Increases with long hospital stay
  - Anti-venom takes up to 70% of total treatment cost

In SSA 400 Snake Species, 90 Venomous, 30 Deadly

- In East Africa 158 species.

Venomous Snakes in Sub Saharan Africa **Classifications** (not all)

- **Elapids**
  - Neurotoxic
    - Mambas (*Dendroaspis*)
      - Black mamba
      - Green mamba
      - Jameson's mamba
    - Non-spitting cobras (*Naja*)
      - Forest cobra
      - Egyptian cobra
  - Cytotoxic
    - Spitting cobras (*Naja*)
      - Red spitting cobra
      - Black necked spitting cobra
      - Large brown spitting cobra

- **Viperids**
  - Cytotoxic and haemotoxic
    - Large adders (*Bitis*)
      - Puff adder
      - Rhinoceros viper
      - Gabon viper
    - Carpet vipers (*Echis*)
      - Saw scaled carpet viper
- **Colubrids**
  - Haemotoxic
  - Venom is slow acting
    - Boomslang

Snakebite profile

- Age group 20 – 40 yrs. (>70%)
- Affect young people mostly men (52-63%)
  - Occupation being farmers, herders

- Most bites occur on the lower limb (60 – 70%): Leg, foot and ankle
- Circumstances. Walking in rural roads, performing agricultural activities
- Most snakebites occur at early mornings, evenings and at night

Signs and Symptoms

- Swelling – 32%
- Pain at bite site – 19%
- Vomiting- 17%
- Cellulitis- 13%
- Loss of consciousness-11%
- Scarring-13%
- Permanent physical debilitation- 11%

Social, psychological & emotional consequences for victims & their families

- Major depression (25- 54%
- Post traumatic stress disorder (43%)
- Overall poor quality of life

Snake ecology

- Snake bites occur during the rainy season, other parts during dry season
- Seasonal variation, associated with agricultural activities: such planting seasons and harvesting seasons
- Weather patterns affects prey availability, snake activities and distribution
- Temperature variation and precipitation variation

Healthcare Seeking behaviour

- 50- 80 % seek care from traditional healers before hospitals
  - Delay care seeking and reporting
- Only 20-50% - Seek care in health care facilities
- Most have a mix of formal and traditional healers >50%
  - In some communities snakebite considered a spiritual matter and doctors are ill-equipped to handle
- Poor road networks and long distances from formal health facilities

- Harmful snakebite treatment practices e.g.
  - Blackstone – (40- 80%)
  - Herbs- >50%
  - Cutting bite site and sucking out venom >50%
  - Tourniquet

Health System readiness

- Most healthcare workers have poor knowledge in management of snakebite
  - 85-90% health care worker had **NOT** received training on a snakebite management
- Availability of anti-venom in HFs:
  - Kenya – 27%, Rwanda - 4%, Uganda-2% Zambia-7%
- Stock out of essential commodities common in public facilities-37% in Kenya
- In Private and faith based institutions
  - treatment and anti-venom is unaffordable

RISK FACTORS

- Agricultural work, especially at dusk or night.
- Insufficient protective clothing or footwear.
- Poor housing/ coexistence with livestock.
- Limited access to healthcare and anti-venom.
- Environmental factors: tall grass, water bodies

Recommendations

- Community Engagement
  - Train community members, community health workers and traditional healers
    - prevention, first-aid ,case management and referral pathways for snakebite
  - Community education and mitigation of human-snakebite conflict
  - Interventions such as wearing shoes and use of mosquito nets

Recommendations

- Health care system strengthening
  - Health care worker training: Evidence-based snakebite clinical management
  - Case reporting, disease surveillance- Data for decision making
    - Make snakebite Reportable and Notifiable (Especially Mortality)
    - National snakebite registries
    - Effective health information systems to accurately assess incidence and type of snake envenoming

- Anti-venom supply- Commodity security
  - Efficacious to prevalent snake species
  - Right quantities depending on burden
  - Consider anti-venom production in-country/continent

- Establish Snakebite National Action Plans to support Snakebite control programmes

- Multi-stakeholder engagement
  - Communities, Wildlife authorities e.g. Kenya Wildlife Service, Herpetologists, conservationists, Schools,
  - Conservancy groups and NGOs etc

- Increased research funding to snakebite.
  - Community house-hold surveys to provide better estimates of morbidity and mortality
  - Pre-clinical and clinical efficacy studies among other

CONCLUSION

- Snakebite remains a major health burden in East Africa.
- Improving surveillance, awareness, and healthcare access is crucial.
- Trainings like this one are vital to empower Community and Hospital Healthcare Workers in their approach to snakebite.
- Focused prevention can reduce morbidity and mortality.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YUSPAGARTAM
NADEEJA
MAYTEKA
HUI
THANK
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Contacts

- Email: Ronolangat@gmail.com
- Whatsapp : +254723347985