Dengue Deaths: Gaps in care pathway & avenues for Improvement

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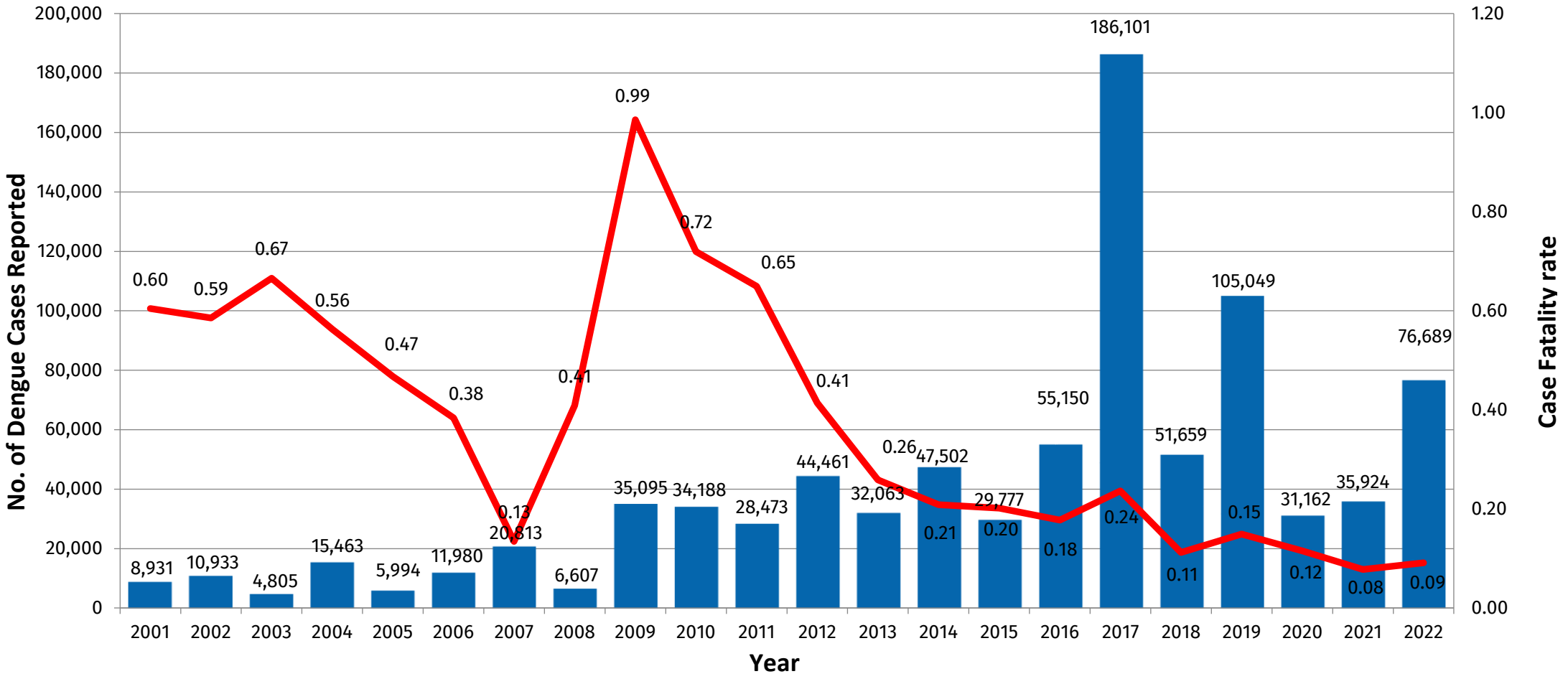
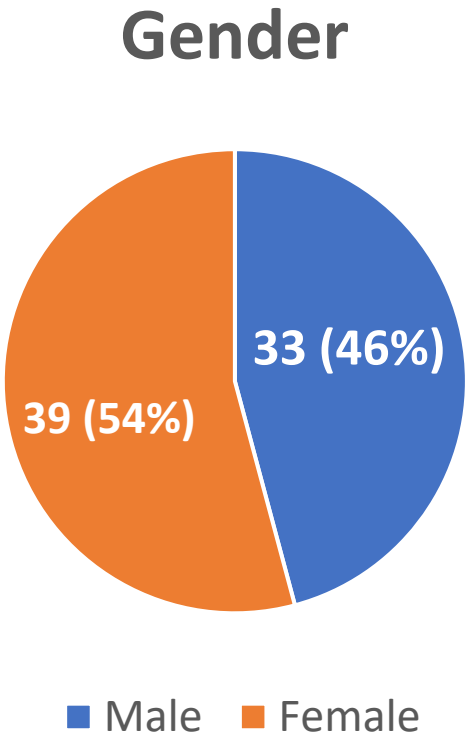
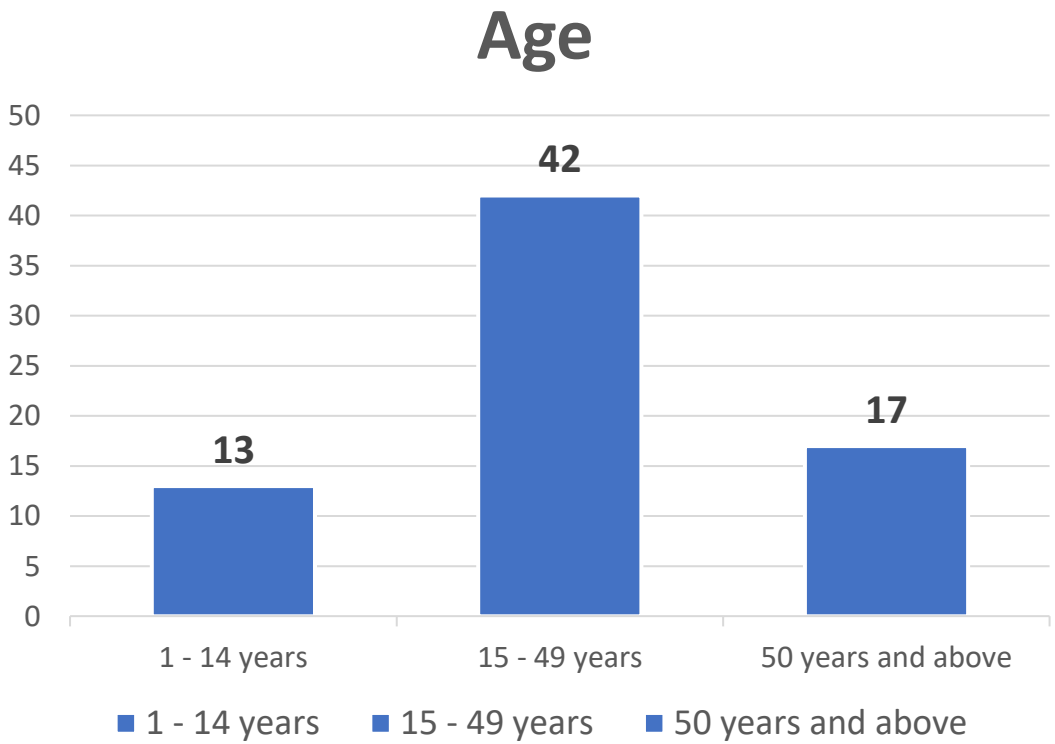
Trends of Dengue Patients and Case Fatality Rate: 2001-2022 In Sri Lanka



- CFR is currently less than 0.1%, compared to nearly 1% in 2009 with over 50000 cases
- Major achievement attributed Clinical guidelines, clinical staff capacity building, improved hospital infrastructure, Death review process, streamlined from 2009 onwards

Dengue Deaths 2022: Total Deaths - 72





Key Observations in Dengue Deaths

Dengue death analysis: objectives

- Delay in admission?
- Delay in identifying leaking?
- Delay in identifying shock?
- Delay in resuscitation within 2 hours of being unstable?
- Delay in identifying concealed bleeding
- Delay in blood transfusion
- Death due to fluid overload

Community-level management

- Common outpatient avenues include
  - GPs (mainly),
  - Govt hospital OPD
  - Consultants

- Majority has not gone for any outpatient treatment

- Making a clinical diagnosis of DF/DHF or high index of suspicion

- Drugs prescribed (NSAID, Steroids, Anti-platelet – commencement and omission of drugs) – very few

- Warning signs – informed / not inofmred the patient

- Re- evaluation/follow up communication by the physician

- Requested FBC, Dengue Antigen test or not

Hospital admission

- Over 90% self-admitted
  - In self-admitted, cannot rule out informal/ unofficial advice received from a medical practitioner/ health staff.
- Few referred from outpatient management
- Admitted patients
  - Febrile
  - Leaking
  - Shock
  - Unrelated

Transfer of deceased patients

- Hospital categories:
  - Tendency seen to transfer DHF patients from smaller government hospitals and private hospitals to larger hospitals
- Reason for transfers
  - Opinion of a consultant
  - Needing ICU care
- Not stabilizing before the transfers
- Not having running IV fluid during the transfers
- Transferers were not accompanied by a Medical Officer
- Incomplete transfer documents and information

Importance of understanding co-morbidities

- Co-morbidities may contribute to the death.
- Majority of deaths did not have co-morbidities.
- Co-morbidities will make clinical monitoring of dengue parameters difficult.
- Interpreting vitals in dengue management when co-morbidities are present is challenging
- Need to interpret vitals
- stabilize in relation to co-morbidities
- Any patient can have dengue complications and death irrespective of co-morbidities.

Total duration The deceased patients were treated as in-ward patients at the time of death

- Approximately 40% of patients died within 48 hours of admission to the hospital.
- Another 40% died within 3 – 5 days of admission to the hospital
- A total of 15% had stayed over 5 days at the hospital at the time of death
- It reflects the delay in admission as well as hospital management

Monitoring of patients

- Delays observed in initiating ‘critical phase monitoring chart’

- Evidence of leaking observed include
  - Platelet count of less than 100,000
  - Ultrasound evidence of leaking
  - Low urine output
  - Low pulse volume detected
  - Cold and clammy extremities detected
  - Capillary Re Filling Time (CRFT)> 2 seconds
  - Clinical signs of effusion and ascites

- Delay in identifying leaking and shock – seen in majority

Condition of the patient at the time of admission DF/DHF

- Febrile or Ignored defervesce
- Leaking no shock
- Shock – compensated
- Shock – uncompensated
- Unrelated

Completeness of ‘Critical Phase Monitoring Chart – Evidence of leaking / Shock

- Physical signs
- Bed side vitals
- Bed side tests
  - Inward PCV
  - USS
- Laboratory tests

Fluid management in DHF patients

- Crystalloids
  - Escalation of fluid rates
  - Fluid quota
  - Not matching (giving too little or too much)
  - Place of frusemide
- Colloids including Dextran
  - Not given at the right time
  - Full dose vs half dose
  - Monitoring for PCV drop
- Delay and/or inadequate resuscitation of unstable patients (within two hours of leaking)
- Failure to look for ‘ABCSF’

Categorization of dengue deaths

- DF vs DHF
- Death due to other causes
- DF
  - Unusual bleeding
  - Expanded dengue syndrome
- DHF
  - Hypovolaemia and Shock
  - Bleeding and shock
  - Sepsis / septicaemia / septic shock
  - Multi organ failure
  - Complications
  - Expanded dengue syndrome

Poor identification of warning factors of concealed bleeding & blood transfusion

- Risk factors for bleeding
  - Tranexamic acid

- Early identification of bleeding
  - De arranged clotting profile
  - Chart interpretation
  - Monitoring with PCV

- Early blood transfusion
  - Not given / delayed
  - Cross match blood vs O-negative blood
  - Activation of MTP

- Delay in identifying and managing bleeding in DHF patients

Postmortem examination and findings and interpretation of PM

PM findings need to be interpreted with clinical scenario

Dengue Death Review
Key areas

Review of dengue deaths

Possible Processes

- Notification of Dengue deaths (all suspected)
- Institutional death investigation
- Field-level death investigation
- Institutional Death review

Areas to assess

- Community-level management and ambulatory care, delays in treatment seeking.
- Clinical features, transfer process, monitoring, treatment details
- Cause of death
- Review the dengue death and make observations and recommendations

Human factors

- Poor history taking
- Poor clinical examination & bed side tests
- Poor interpretation of chart reviews
- Poor documentation
- Poor decision making proactively
- Failure to review
- Situational awareness
- Escalation of care
- Not seeking help
- Leadership and communication and teamwork

Conclusion

- The disease burden, trends and CFR will give an idea of clinical management, as even if deaths are less, analyzing each death will give deficiencies.
- It is important to assess randomly the treatment of DF/DHF patients
- Important to identify and investigate recovered patients with complications
- Need a sustainable systematic death review system that can assess and give observations and recommendations

Thank You