SMALL BITE BIG THREAT

Let’s prevent dengue through community participation

Dr. Tanzina Tamanna

Assistant Professor

Department of Community Medicine and Public Health

LEARNING OBJECTIVES

After this session, participants will be able to:

- Understand the burden of dengue and its epidemiological trends.
- Explain why dengue cases are increasing and becoming more severe.
- Apply key principles of dengue prevention and vector control.
- Appreciate the critical role of community engagement in dengue prevention.
- Advocate for sustainable community actions to reduce dengue transmission.

INTRODUCTION

- Dengue is a mosquito borne viral infection causing flu like illness but can occasionally develop a potentially lethal complication.

- The global incidence has grown dramatically in recent decades. About half of the worlds population is now at risk.

INTRODUCTION(CONT..)

- Dengue is mostly found in countries with tropical and subtropical climate, most prevalent in urban and semi-urban areas.

- Globally 390 million infections per year with Asia sharing 70% of global burden. About 96 million manifests with clinically severe form of disease.

INTRODUCTION (CONT..)

- A remarkable portion of complicated cases of dengue belongs to under 5 age group, requiring sophisticated health care. (WHO, 2018)

- Before 1970, only 9 countries faced Dengue epidemic but now the number has increased over 100 all over the world.

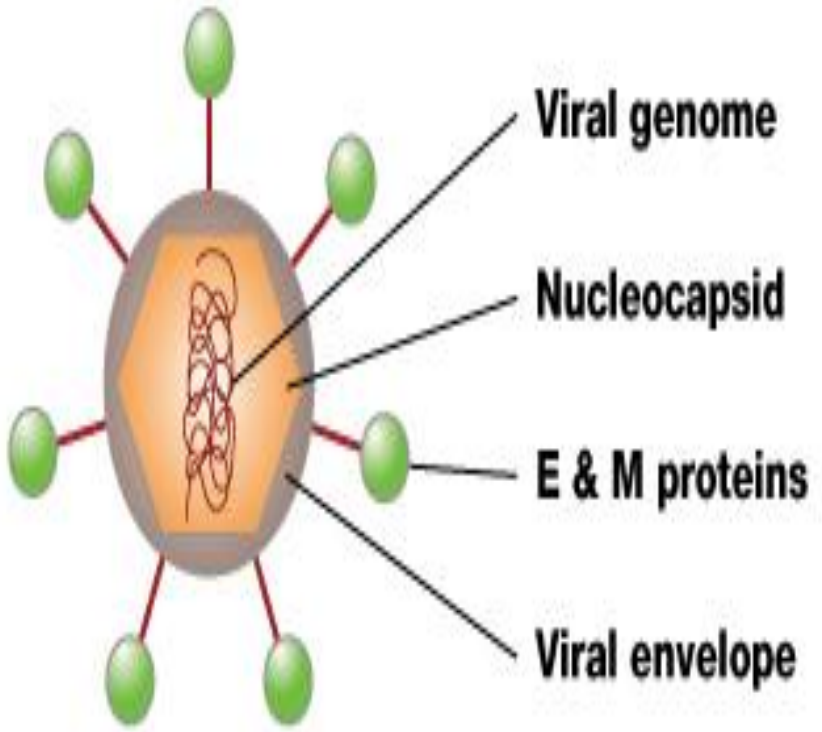
HISTORY OF DENGUE

- First reported in France, 1635.
- First recorded outbreak in Indian subcontinent, 1812.
- Dengue was first recorded in the 1960s in Bangladesh (then East Pakistan) and was known as “Dacca fever”.
- Dengue incidence was sporadically reported between 1964 and 1999 in Bangladesh until the first major outbreak occurred in 2000 when 5551 hospitalized cases and 93 deaths were recorded.

EPIDEMIOLOGY OF DENGUE VIRUS

Agent

- Dengue virus
- Single Strand RNA virus of Flavivirus family.
- 4 serotypes (DEN-1, DEN-2, DEN-3 & DEN-4.
- Enveloped virus with E and M protein.



EPIDEMIOLOGY(CONT..)

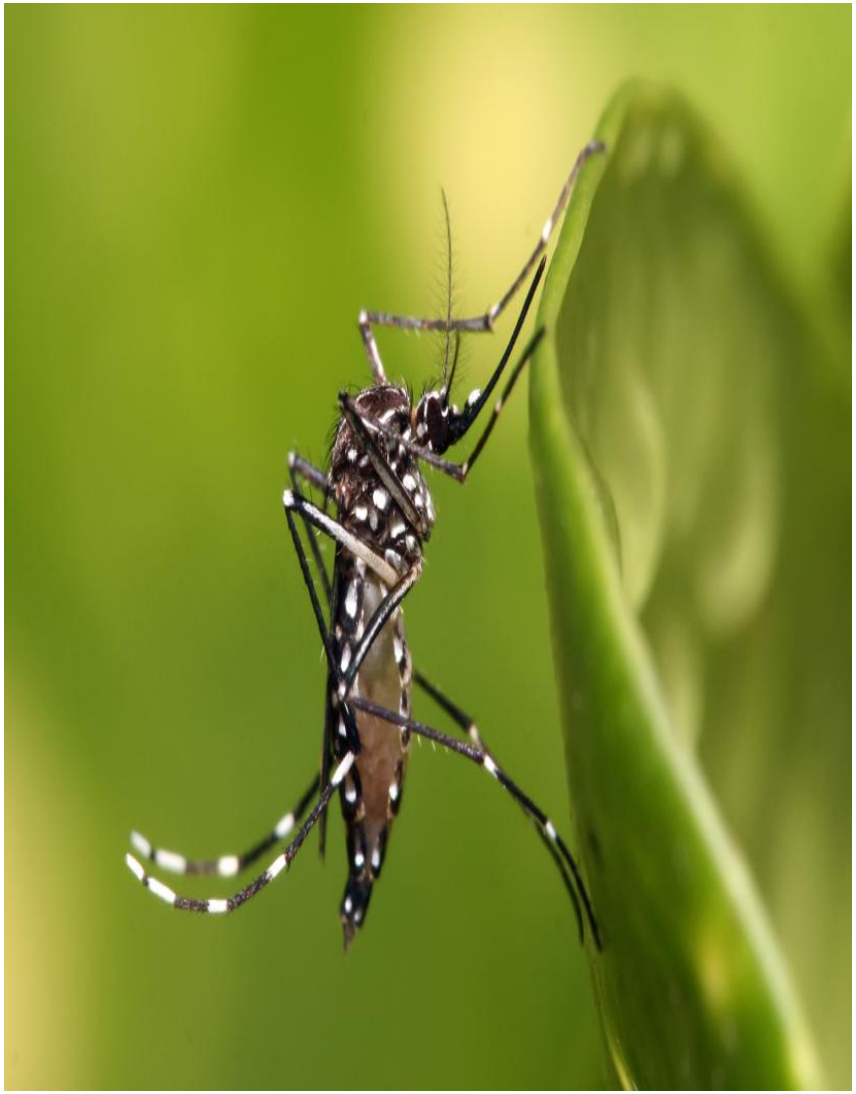
Vector

- Female Aedes mosquito

1.Aedes aegypti

2. Aedes albopictus

- It is a small black mosquito with white stripes and is approximately 5mm in size.



EPIDEMIOLOGY(CONT..)

Aedes aegypti

- Highly domesticated
- Strongly anthropophilic
- Needs more than one feed to complete one genotropic cycle.
- Predominant in urban area.
- Has narrower global distribution.

Epidemiology(cont..)

Aedes albopictus

- Aggressive feeder.
- Only one blood meal is enough to complete one genotropic cycle.
- Predominant in peri-urban and rural areas.
- Has wider global distribution.

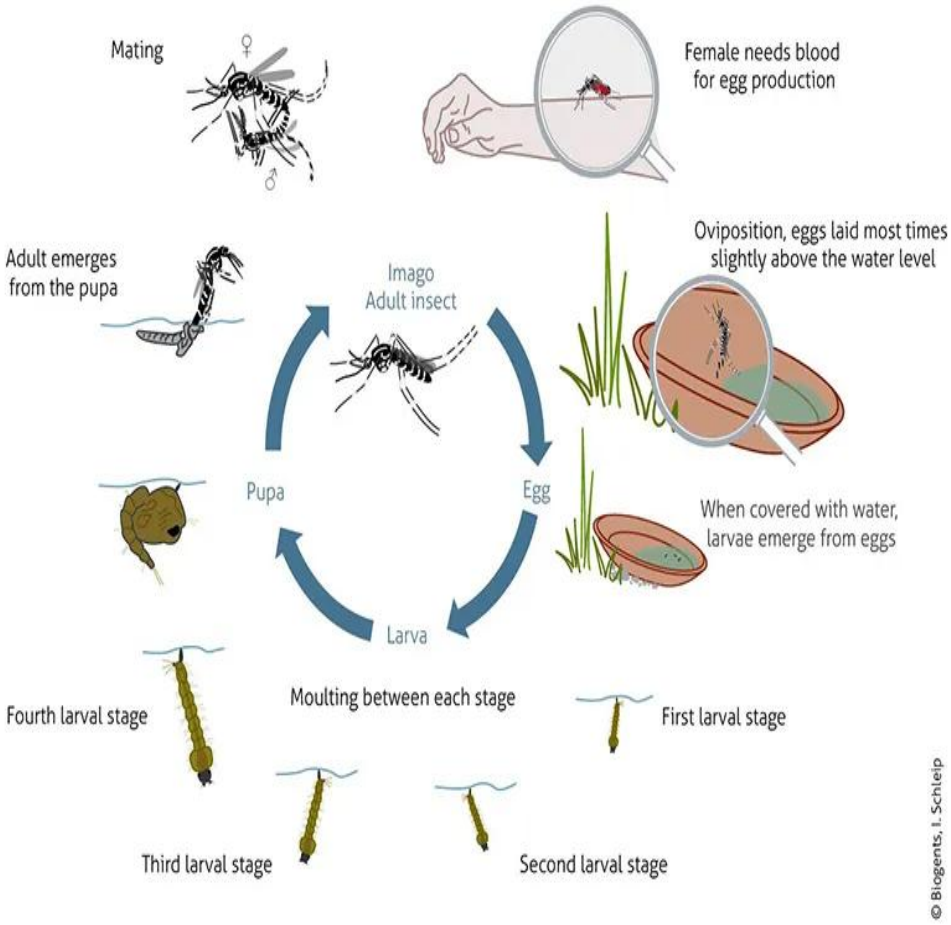
EPIDEMIOLOGY(CONT..)

Environment

- Temperature: 16 to 40 degree Celsius
- Relative humidity: 60-80 percent
- With 2 degree Celsius increase in temperature more infected mosquitoes are available for longer duration.
- Poor public health infrastructure raises the vector to breed at high level.

LIFE CYCLE

- Life Cycle comprises four stages:
- Egg: Oval shaped and laid in clusters.
- Larvae: Head downwards at an angle to water.
- Pupa: Siphon tube is long and narrow.
- Adults: Wings unspotted. When at rest, the body exhibits a hunch back.



BITING/ FEEDING HABIT

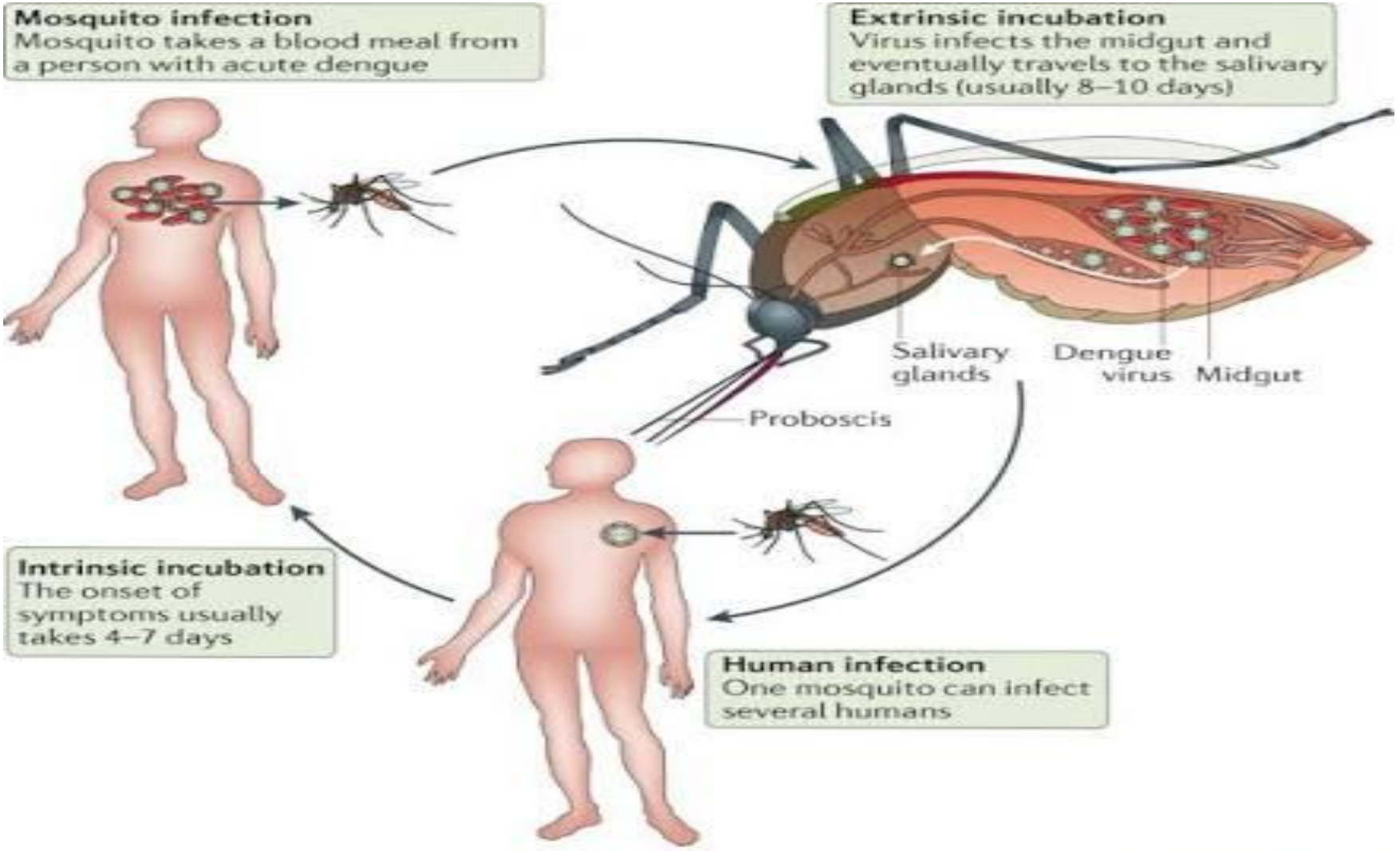
- A single bite can cause dengue.
- Bites primarily during day time.
- Artificial bright light at night also increases biting behavior.
- Can bite through tight feet clothing with loose fabric.
- Bites mainly on ankles and elbow which may be unnoticed.
- Bitten site is more itchy and reddish.

BREEDING HABIT

- Breeds mainly in artificial collection of water.
- It can also breed in polluted water.
- Egg can survive in dry environment for about one year and emerged within 24 hours after coming into contact with few drops of water.
- Aedes mosquito can’t fly more than few hundred meters from breeding place.

Household Aedes breeding sites

TRANSMISSION CYCLE



MAGNITUDE OF DISEASE (CONT..)

- According to reports from the (ECDC), global case numbers as of March 2026 were lower than those recorded in early 2025.
- Case Volume: Over **500,000 cases** and **100 deaths** were reported globally by late March 2026.
- Regional Decreases: In the Americas, suspected cases through mid-March showed a **63% decrease** compared to both the same period in 2025 and the five-year average.

MAGNITUDE OF DISEASE

- Number of dengue cases and mortality has increased alarmingly in recent years.

- In 2026, the magnitude of dengue fever varies significantly by region. While global trends in early 2026 showed an overall decrease compared to the same period in 2025, specific regions like Bangladesh are currently facing **high-risk** warnings and early seasonal surges.

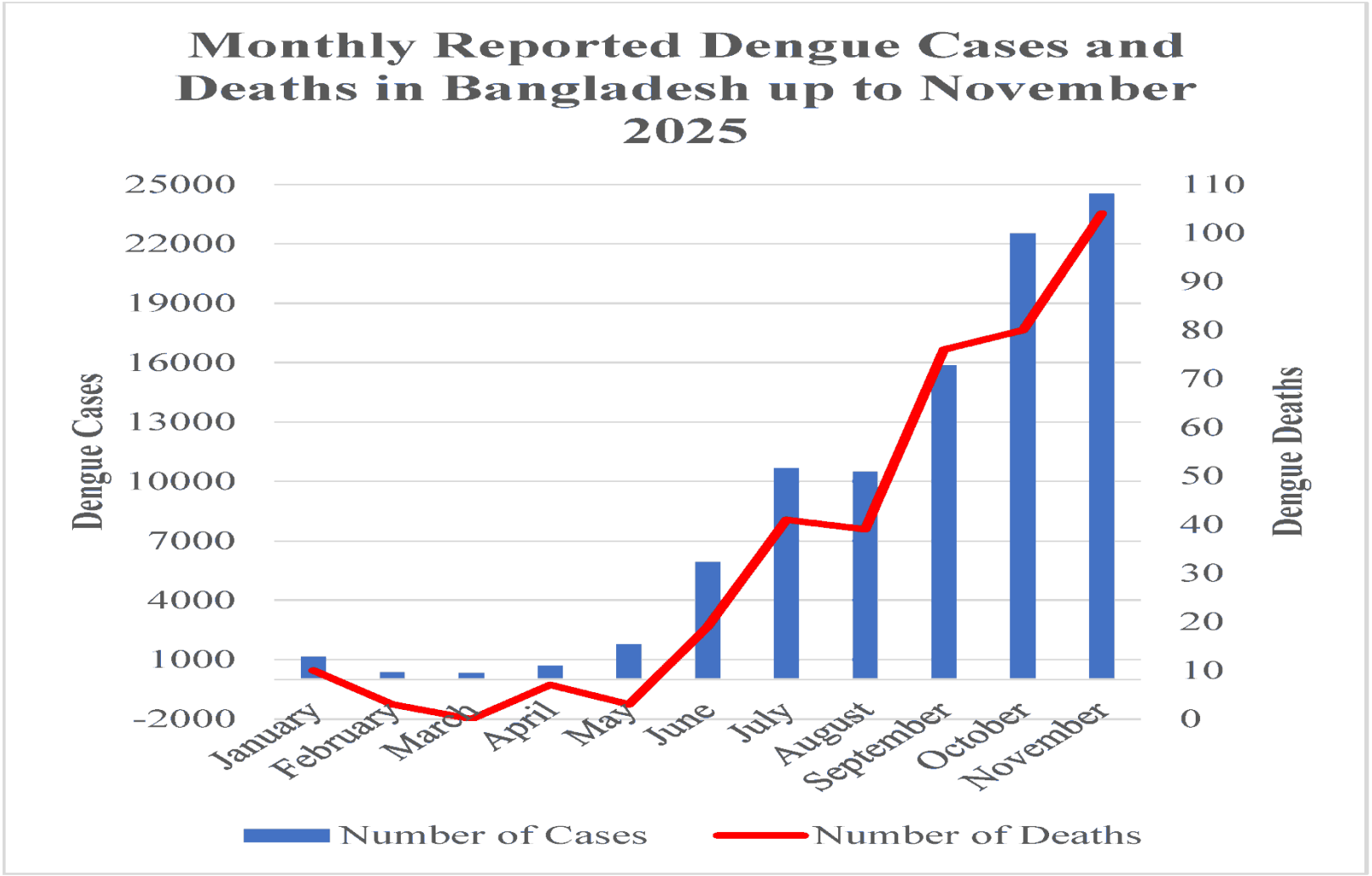
MAGNITUDE OF DISEASE (CONT..)

- In South-East Asia, the World Health Organization (WHO) identifies India, Indonesia, Myanmar, Sri Lanka, and Thailand as among the top 30 most highly endemic countries globally.

GLOBAL DENGUE INCIDENCE AND BURDEN (EARLY 2026 DATA)

Country / Region	Cumulative Cases (2026 YTD)	Incidence Rate (per 100k)	Notes / Status
Americas (Regional)	~250,525 (as of EW 6)	25.0	63% decrease from early 2025.
Brazil	Leading regional count	~1,359 (Historical Avg)	Remains the most severely affected.
Vietnam	27,365 (as of March)	High Regional Burden	Two-fold increase compared to 2025.
Cambodia	2,345 (as of Jan)	Rising Trend	Significant increase from Jan 2025.
Maldives	High (8.8-fold surge)	Increasing	Notable surge in early 2026.
Mali (Africa)	589 (as of March)Regional High	Regional High	Highest incidence in the African region.

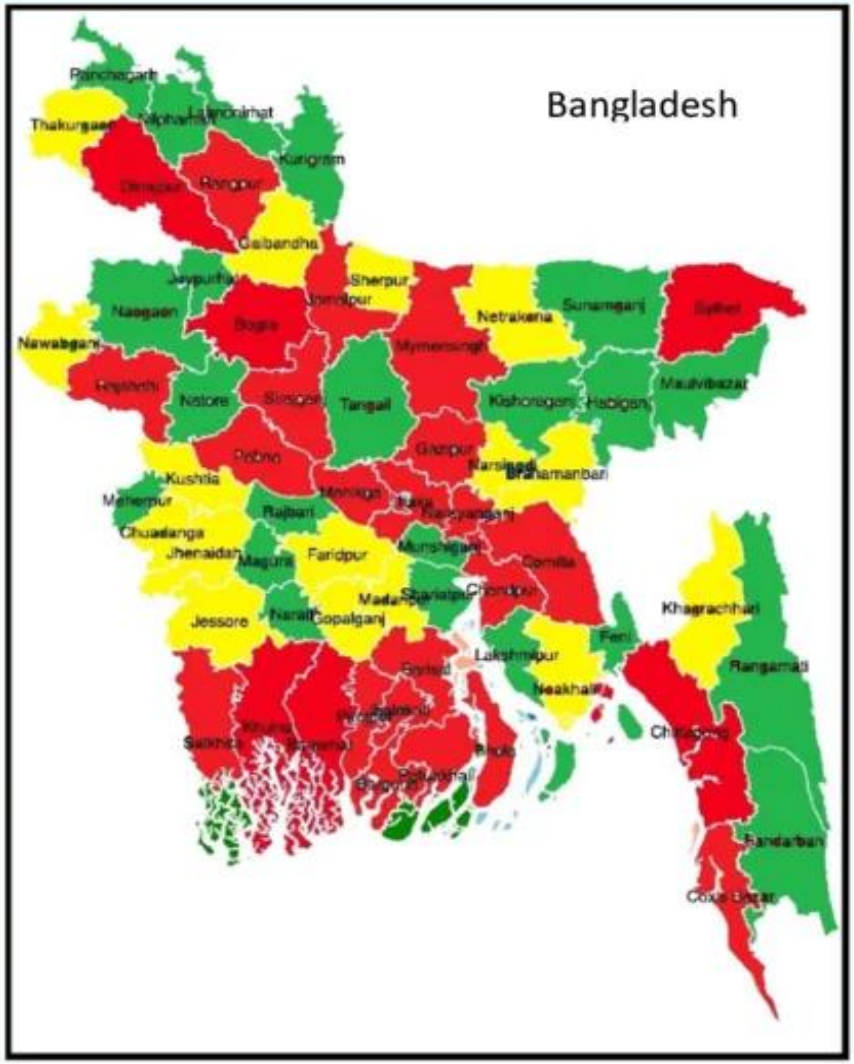
TREND IN BANGLADESH



DENGUE CASES IN BANGLADESH IN 2026

- **Highest Incidence Cities/Regions:** Barishal Division and DSCC have been reporting the heaviest burdens. For instance, by late June, Barishal district led with 1,550 recorded cases, followed by Chattogram with 1,088 and DSCC with notable spikes.
- **Lowest Incidence Cities/Regions:** The Sylhet and Rangpur divisions (and corresponding city hubs) continue to document the lowest infection rates and hospitalization numbers in the country.

High Risk Cities and Districts (Red)	Medium Risk Districts (Yellow)	Low Risk Districts (Green)
Dhaka (City Corp areas), Gazipur, Narayanganj, Manikganj	Faridpur, Gopalganj, Madaripur, Narsingdi	Tangail, Kishoreganj, Rajbari
Chattogram (City Corp), Cumilla, Chandpur, Cox's Bazar		Feni, Lakshmipur, Rangamati, Bandarban
Barishal (City Corp), Pirojpur, Patuakhali, Barguna, Jhalokati, Bhola	Brahmanbaria, Noakhali, Khagrachari	
Khulna (City Corp), Jashore, Bagerhat, Satkhira	Kushtia, Chuadanga, Jhinaidah	Meherpur, Narail, Magura
Rajshahi (City Corp), Bogura, Pabna, Sirajganj	Nawabganj	Joypurhat, Naogaon, Natore
Mymensingh (City), Jamalpur		Sherpur, Netrokona
Rangpur (City), Dinajpur	Thakurgaon, Gaibandha	Nilphamari, Panchagarh, Kurigram, Lalmonirhat
Sylhet (City)		Sunamganj, Maulvibazar, Habiganj



Geographical distribution of potential dengue upsurge, Bangladesh, 2025 (Red: High risk cities and districts, Yellow: Medium risk districts and cities, Green: Low risk district and cities)

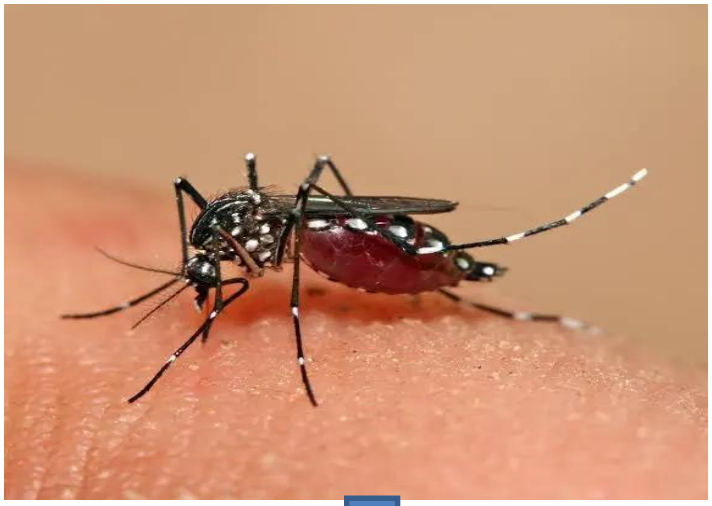
DENGUE IN JUNE, 2026

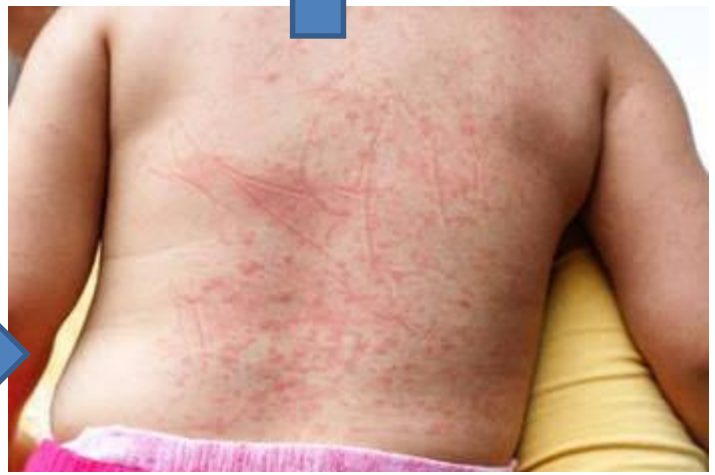
- According to DGHS Dengue Dashboard of Bangladesh, June 2026 shows:
- Trend: Cases increased more than **3 fold** from 1773 cases in May to 5951 cases in June, indicating the beginning of the seasonal surge.
- **Total dengue cases in 2026 (1 January-30 June): 6104**
- **Total dengue deaths in 2026: 18 on the dashboard's year -to -date summary.**

DENGUE IN 2026: TILL 7TH JULY

- Rising daily dengue admissions.
- **6,267+ cases and 19 deaths** by early July **271 new admissions** reported on 5 July.
- Dhaka remained the major hotspot; spread increasing nationwide Rainfall and humidity favored mosquito breeding.
- DGHS strengthened surveillance, hospital preparedness, and vector control.
- Experts warned of a **major surge during July–August**.

SMALL BITE, BIG THREAT





SEVERITY OF DISEASE ACCORDING TO SEROTYPE

- All the serotypes are able to produce DHF.
- DENV-1/ DENV-2 sequence of infection associated with a 500 fold risk of DHF.
- DENV-3/DENV-2 sequence the risk 150 fold.
- DENV-4/ DENV-2 sequence 50 fold risk of DHF.

WHY DENGUE RISES?

- Population growth and high population density.
- Unplanned rapid urbanization and increased human mobility.
- Increased density of Aedes mosquito and close proximity of mosquito breeding sites to human habitation.
- Previous infection with dengue; increases the risk of the individual developing severe dengue.
- Unusual change in traditional seasons (excessive & untimely rainfall), excess humidity and wind flow.

SPREADING OF DENGUE: URBAN TO RURAL

- Increased human mobility; infected travelers to rural areas.
- Increased construction works in rural areas; increased breeding places for Aedes mosquitoes.
- Changing water storage practices.
- Improper waste disposal.
- Less intense vector control activities in rural areas.
- Lack of awareness and treatment seeking behavior for dengue.

PREVENTION AND CONTROL

There are two recommended prevention:

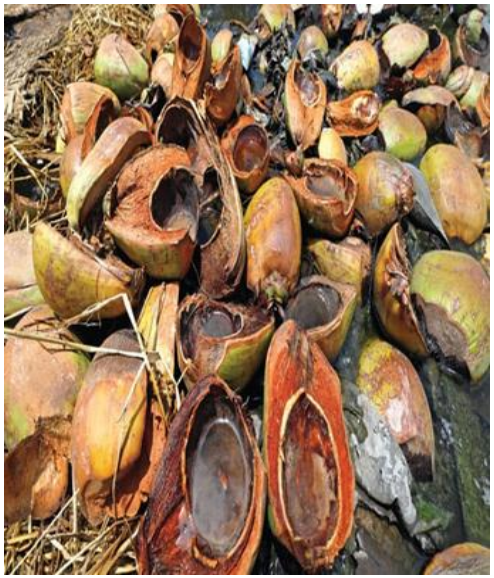
- Primary prevention
- Secondary prevention

PRIMARY PREVENTION

- As of 2022, there are two commercially available **vaccine:**
  - Dengvaxia
  - Qdenga.

- **Personal protection (Prevention of mosquito bite)**

- **Elimination of mosquito breeding sites**



- **Vector control methods**
  - **Biological control**
    Place fish (gambusia) in the containers to eat larvae
  - **Environmental control**
    Elimination of larval habitat

- **Chemical Control :**

Ultra-low volume fumigation against adult mosquitoes

SECONDARY PREVENTION

- Early diagnosis/case detection
- Prompt treatment
- Strengthening capacity of health sector & facilities
- Enhancing clinical management

INITIATIVES OF BANGLADESH GOVERNMENT

- 3-month nationwide cleanliness & awareness campaign.
- Regular mobile courts and legal action against mosquito breeding.
- Free NS1 dengue testing at all government hospitals.
- Strengthened hospital preparedness and clinical management.

INITIATIVES OF BANGLADESH GOVERNMENT

- Intensified mosquito control and source reduction.
- Community awareness through mass media and rallies.
- Daily DGHS surveillance and dengue dashboard.
- Multi-sector coordination among health and local government agencies.

সচেতন হউন, ডেঙ্গু প্রতিরোধ করুন

এডিস মশার উৎপত্তি স্থান

ডেঙ্গু প্রতিরোধে করণীয়

1. বাড়ির আশেপাশের ঝোঁপঝাড় পরিষ্কার রাখুন
2. তিন দিনের বেশি জমে থাকা পানি ফেলে দিন
3. অব্যবহৃত পানির পাত্র উল্টে রাখুন যাতে পানি না জমতে পারে
4. ঘুমানোর পূর্বে মশারী ভালভাবে টানিয়ে নিন
5. প্রয়োজনে শরীরের অনাবৃত স্থানে মশা প্রতিরোধী ক্রিম ব্যবহার করুন
6. যে কোন ধরনের জ্বরে ডাক্তারের পরামর্শ নিন

ডেঙ্গু ও চিকুনগুনিয়ায় আক্রান্ত হলে করণীয়

কখন হাসপাতালে ভর্তি হবেন?

নিম্নোক্ত যে কোন একটি বিপদ চিহ্ন থাকলে –

- প্রচণ্ড পেট ব্যথা ও অস্বাভাবিক পানি পিপাসা থাকলে
- ঘন ঘন বমি বা বমি বন্ধ না হলে
- রক্তবমি বা কালো পায়খানা হলে
- শরীরের মাড়ি বা নাক থেকে রক্তপাত হলে
- ৬ ঘন্টার বেশি সময় ধরে প্রস্রাব না হলে
- প্রচণ্ড শ্বাসকষ্ট হলে
- অস্থিরতা হলে ও অস্বাভাবিক শারীরিক দুর্বলতা অনুভব করলে
- গর্ভবতী মা, নবজাতক শিশু, বয়স্ক রোগী, ডায়াবেটিস ও কিডনী রোগ থাকলে
- শরীরের তাপমাত্রা অস্বাভাবিক কমে গেলে (শরীর অস্বাভাবিক ঠান্ডা হয়ে গেলে)

কখন এবং কিভাবে বাড়িতে চিকিৎসা নিবেন?

রোগীর কোন বিপদ চিহ্ন না থাকলে –

- মুখে পর্যাপ্ত তরল খাবার খেতে পারলে
- প্রতি ৬ ঘন্টায় অন্ততঃ ১ বার প্রস্রাব হলে
- বাড়িতে করণীয়:
  - এ সময় পূর্ণ বিশ্রামে থাকুন।
  - স্বাভাবিক খাবারের সাথে পর্যাপ্ত পরিমাণে লবন যুক্ত তরল খাবার যেমনঃ খাবার স্যালাইন, ডাবের পানি, ফলের রস, সুপ ইত্যাদি খেতে থাকুন।
  - ডেঙ্গু জ্বরে প্যারাসিটামল ব্যতীত অন্য কোন ব্যথার ওষুধ সেবন করবেন না। (পূর্ণবয়স্কদের: জ্বর/ব্যথাজনিত কারনে সর্বোচ্চ দৈনিক ৩ গ্রাম বা ৫০০ মি.গ্রা. এর ৬ টি ট্যাবলেট; বাচ্চাদের : চিকিৎসকের পরামর্শ অনুযায়ী)
  - জ্বর কমাতে কুসুম গরম পানি দিয়ে সারা শরীর মুছে ফেলুন।

- ফুলের টব সহ বাসার ভিতরে ও চারপাশে জমে থাকা পানি অবশ্যই ৩ দিনের মধ্যে ফেলে দিন এবং ৩ দিনের বেশি সময়ের জন্য বাড়ির বাইরে গেলে কলোজ ও পানি ফেকে রাখুন, পানির পাত্র উল্টিয়ে রাখুন
- দিনে ও রাতে ঘুমানোর সময় অবশ্যই মশারি ব্যবহার করুন
- মশার কামড় থেকে বাঁচতে ফুল হাতা কাপড় পরিধান করুন
- বর্তমান কোভিড-১৯ পরিস্থিতিতে জ্বর থাকলে কোভিড-১৯ টেস্ট-এর পাশাপাশি ডেঙ্গু জ্বরের পরীক্ষা (NS1 টেস্ট) করান
- ডেঙ্গু জ্বরের পরীক্ষার জন্য দেশের সকল জেলার সিভিল সার্জন কার্যালয় NS1 কীট সরবরাহ করা হয়েছে। তাই জ্বরের রোগী হাসপাতালে আসলেই চিকিৎসকের পরামর্শক্রমে তাকে NS1 পরীক্ষা করান এবং কোন রোগীর ডেঙ্গু সনাক্ত হলে সেই তথ্য স্বাস্থ্য অধিদপ্তরের রোগ তথ্য ইমারজেন্সী অপারেশন সেন্টার ও কন্ট্রোল রুম-এ পাঠান
- জ্বরের পরীক্ষা ও চিকিৎসার আগে **অবশ্যই চিকিৎসকের পরামর্শ নিন** ও প্রয়োজনে হটলাইন **১৬২৬৩**-তে ফোন করুন
- ডেঙ্গু সংক্রান্ত যে কোন তথ্যের জন্য **প্রয়োজনে যোগাযোগ করুন- ফোন : ০২-২২২২৮৫৭৪৪, ই-মেইল: mpdc_dghs@yahoo.com**

জাতীয় ম্যালেরিয়া নির্মূল ও এডিস বাহিত রোগ নিয়ন্ত্রণ কর্মসূচী, রোগ নিয়ন্ত্রণ শাখা,
স্বাস্থ্য অধিদপ্তর, মহাখালী, ঢাকা।

We belief -

Instead of all these initiatives, rising dengue needs **strengthening of community participation**

ROLE OF COMMUNITY PARTICIPATION

Active participation of community members is essential for dengue prevention-

- By identifying potential breeding sites & eliminating them.
- By taking steps in reduction of the number of mosquito bites.

COMMUNITY PARTICIPATION IN PRIMARY PREVENTION

- By adopting routine healthy measures.
- Reducing breeding spaces by keeping their surroundings clean.
- Emptying and cleaning water containers.
- Avoiding mosquito bites by using mosquito repellent and wearing long-sleeved loose clothes.

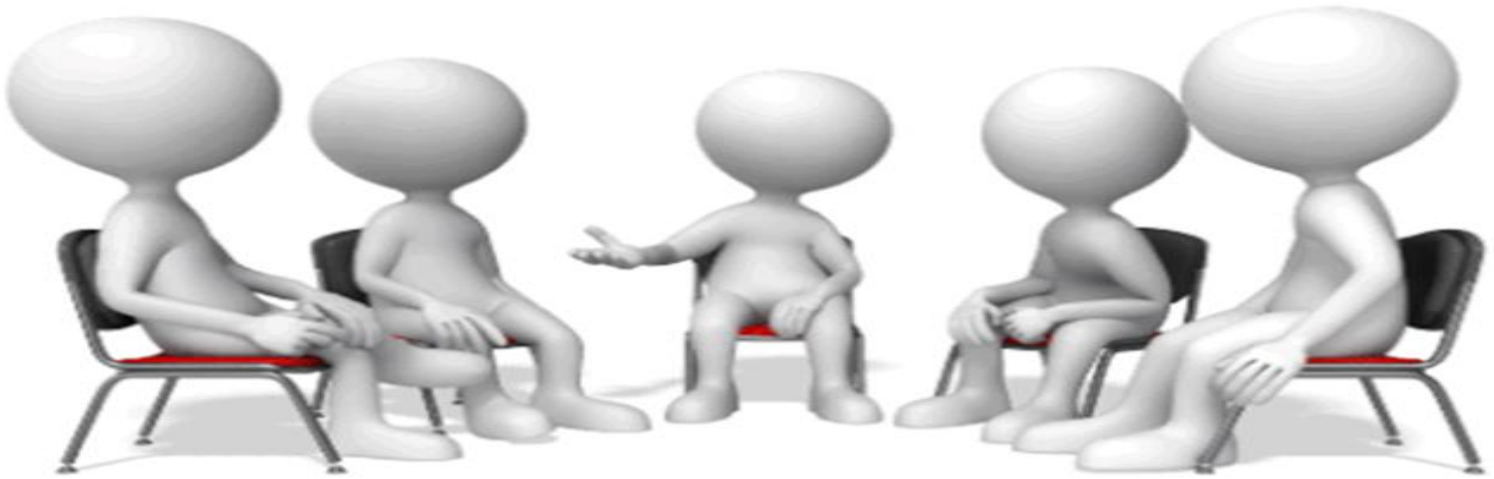

1
DO'S & DON' TS
OF
DENGUE
Remove water from coolers and other small containers at least once in a week
2
Use aerosol during day time to prevent the bites of mosquitoes
3
Do not wear clothes that expose arms and legs
4
Use mosquito nets or mosquito repellents while sleeping during day time

COMMUNITY PARTICIPATION IN SECONDARY PREVENTION

- Recognition of early symptoms of dengue.
- Timely treatment seeking behavior.
- Following the treatment protocol.

COMMUNITY PARTICIPATION IN OTHER DIVERSE MEASURES

- Integration between different members of the community, from householders to political leaders is essential to raise awareness of dengue by working together in planning, implementation, delivery of resources and services and monitoring of community actions.



COMMUNITY PARTICIPATION IN OTHER MEASURES

INFORMATION, COMMUNICATION & MASS MEDIA

- Health education program.
- Create Community awareness by health campaigns.
- Increase sense of control over own health.
- Extensive publicity via posters, pamphlets & mass media.

LOCAL AUTHORITIES & INSTITUTIONS

- Arrangement of piped water supply.
- Participation of municipal sanitation services should be promoted.
- Emphasize school based programs targeting children & parents to eliminate vector breeding at home & school.

Collaboration between Government & Non-government organizations.

CO-ORDINATION WITH HOSPITALS & MEDICAL SUPPLIES

- Training of health workers to improve their technical capability.
- Diagnose and manage dengue cases promptly and provide necessary medical care to patients.
- Educate patients on symptoms and prevention measures to help minimize the spread of the disease.

CO-ORDINATION WITH HOSPITALS & MEDICAL SUPPLIES

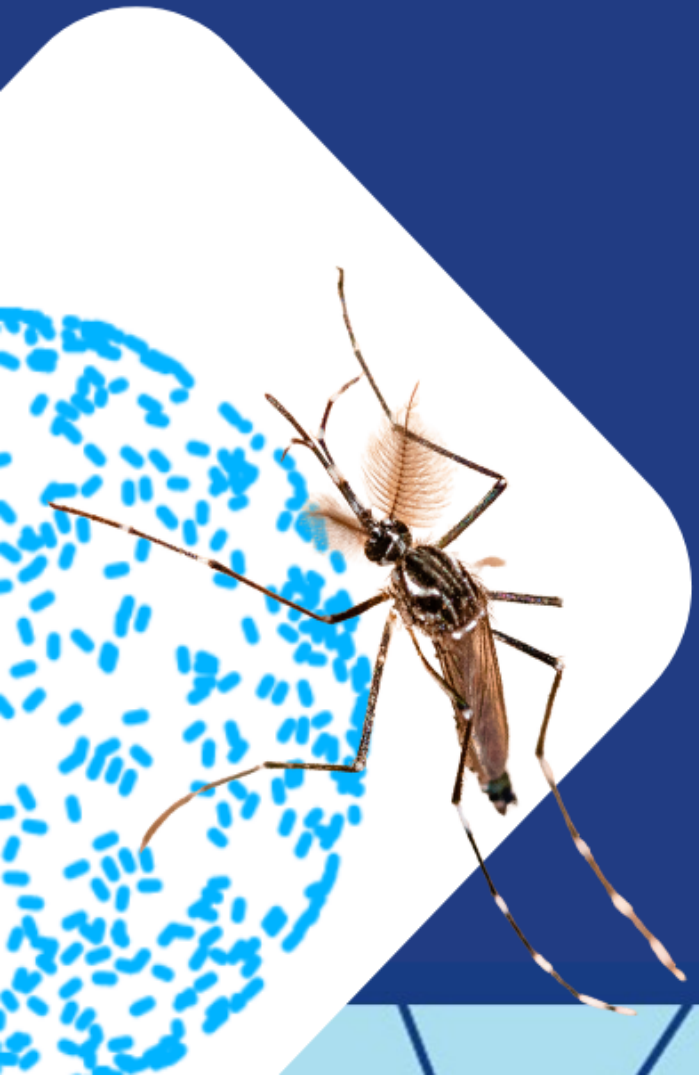
- Report cases of dengue to relevant health authorities to help in monitoring the prevalence of the disease.
- Conduct research to better understand the transmission and symptoms of dengue so that prevention strategies can be improved

ASEAN

DENGUE DAY

June 15, 2026

PASTEUR NETWORK



Together against DENGUE

Advancing Research, Surveillance and Public Health actions

pasteur-network.org

CONCLUSION

- Dengue is a rampant outbreak in Bangladesh.
- Disruption of vector control measures, thriving patient burden, failure of secondary prevention all lead to a great challenge.
- However, there is a scope to halt the rising burden of dengue through community participation and raising public awareness.
- Integrating community participation at all levels of prevention, decision making and policy implementation can mitigate the rising burden of dengue.


thank you