

Editorial

Anthrax Returns to the North: Renewed Threats and the Urgent Need for a Robust 'One Health' Approach in Bangladesh

Mohammad Ahmed Ahsan¹

The re-emergence of anthrax in the northern regions of Bangladesh- marked by confirmed outbreaks among humans and livestock in Rangpur and Gaibandha since mid-August 2025 represents a troubling reminder of the country's continued vulnerability to this endemic zoonotic disease. Once largely concentrated in the central-western districts, the recent spatial expansion of cases, including more than 17 laboratory

confirmed human infections and as many as 200 suspected cases across the upazilas of Pirgachha, Kaunia, and Mithapukur, highlights the urgent necessity to reassess existing national prevention and control measures.^{1,2,3} This editorial contends that breaking the recurring cycle of anthrax transmission will only be possible through a genuinely integrated, decentralized, and community-focused 'One Health' strategy supported by sustained political commitment.

The Zoonotic Interface: Transmission Pathways and Risk Determinants

Anthrax, caused by the sporeforming bacterium *Bacillus anthracis*, is primarily an animal disease that frequently spills over into human populations.⁴ The organism's resilient spores can survive in soil for decades, creating long-term environmental reservoirs and rendering complete eradication unrealistic. In Bangladesh, human infections are predominantly cutaneous, resulting from direct exposure to infected cattle or goats, or through handling contaminated animal products.^{2,5}

The Rangpur outbreak has once again exposed persistent socio-economic and structural drivers that facilitate disease transmission:

1. Slaughter of Diseased Animals: To reduce financial losses, farmers often slaughter moribund or visibly ill livestock, a practice that

places handlers, meat processors, and consumers at direct risk of exposure.^{1,5,6} Field investigations in Pirgachha linked human infections to the slaughter and consumption of infected cattle and goats, with *B. anthracis* detected in stored beef samples.^{1,4}

2. Weak Biosecurity Measures: Livestock markets in the region, where thousands of animals are slaughtered daily, frequently operate without adequate veterinary oversight or modern slaughterhouse facilities, creating ideal conditions for pathogen dissemination.⁴

3. Unsafe Disposal of Carcasses: Failure to properly dispose of infected animal remains such as deep burial with lime or incineration leads to widespread spore contamination of soil, particularly following flooding or heavy rainfall, thereby establishing new endemic foci.⁶

Structural Limitations in the Current Response

Although rapid response actions have been initiated by the Department of Livestock Services (DLS) and the Institute of Epidemiology, Disease Control and Research (IEDCR) including emergency livestock vaccination campaigns and public awareness initiatives several systemic shortcomings undermine sustainable control^{1,4,7}:

- **Limited Local Diagnostic Capacity:** Early detection depends largely on clinical suspicion, followed by laboratory confirmation at centralized facilities such as IEDCR. This centralized approach causes delays, as many upazila level health centers lack rapid diagnostic tools necessary for immediate action.

- **Inconsistent Vaccination Coverage:** Despite vaccine availability, routine immunization in high-risk areas remains insufficient and poorly timed, leaving large populations of susceptible

1. Brig Gen Mohammad Ahmed Ahsan, DAero Med, D Avn Med, MPH, Classified Specialist in Aerospace Medicine, Principal, Army Medical College Rangpur. Mobile: 01769-665653

animals and perpetuating transmission cycles⁶. Emergency vaccination drives, while essential, reflect gaps in preventive planning rather than long-term solutions.

- **Fragmented Surveillance Systems:** The emergence of Pargachha as a new hotspot outside previously recognized endemic zones points to weaknesses in integrated surveillance. Animal health monitoring must be sensitive enough to detect outbreaks before human cases emerge.^{1,3}

Advancing Genuine 'One Health' Institutionalization

Sustainable anthrax control in Bangladesh depends on the full operationalization of the 'One Health' concept, which acknowledges the interdependence of human, animal, and environmental health.^{3,6} This approach must extend beyond policy declarations and be embedded in routine, ground-level collaboration:

1. **Integrated Surveillance Systems:** A real-time, unified digital reporting platform should connect animal disease data from DLS with human health surveillance systems under IEDCR and DGHS. Active monitoring of unexplained livestock deaths and rapid geographic risk mapping are essential.³
2. **Strengthened Biosecurity and Vaccination Enforcement:** In addition to distributing the planned 3 million vaccine doses in northern districts, DLS must ensure compulsory annual vaccination in all high-risk zones. Local authorities should strictly enforce bans on slaughtering sick animals and establish permanent veterinary inspections at livestock markets and slaughter points, including rural upazilas such as Sundarganj in Gaibandha.^{4,7}
3. **Targeted Socio-Behavioral Interventions:** Communication strategies must address the root behaviors driving exposure. Sustained education campaigns delivered through trusted community platforms such as mosques, marketplaces, and local leadership should emphasize early recognition of anthrax in animals and the critical importance of safe carcass disposal.^{5,6}
4. **Decentralization of Resources:** Regional and upazila health facilities should be equipped with rapid diagnostic tools for anthrax, alongside sufficient antibiotic supplies to ensure prompt treatment and post-exposure prophylaxis for affected

individuals.¹

The 2025 anthrax outbreak in Rangpur reinforces a long-standing reality: neglect in veterinary or public health systems inevitably compromises the other. The core challenge lies not in insufficient knowledge, but in inconsistent and poorly coordinated implementation. To protect the health and livelihoods of its northern communities, Bangladesh must move decisively away from reactive emergency responses toward proactive, integrated, and sustained control strategies against this preventable zoonotic disease.

References:

1. Anthrax outbreak spreads in Rangpur. Dhaka Tribune. 2025 Oct 4.
2. Anthrax cases reach 17 in Rangpur. Prothom Alo English. 2025 Oct 2.
3. Anthrax outbreak in humans and livestock in Rangpur division, Bangladesh, with ongoing livestock vaccination and surveillance efforts - BEACON [Internet]. Global Outbreak Alert and Response Network; 2025 Oct 31 [cited 2025 Dec 1]. Available from: <https://beaconbio.org/en/report/?reportid=17a3a3d7-5fbb-481a-a963-68df0daf344d&eventid=ce4c9247-d789-48b5-b3e5-0c38f789892f>
4. Patients diagnosed with anthrax symptoms recovered in 3 Rangpur upazilas. Bangladesh Sangbad Sangstha (BSS). 2025 Oct 1.
5. Risk factors associated with cutaneous anthrax outbreaks in humans in Bangladesh. *Front Public Health*. 2024 Oct 15;12:1442937.
6. A One-Health lens for anthrax. *BMC Public Health*. 2020 Apr 1;20(1):418.
7. DLS launches emergency measures to prevent anthrax. Bangladesh Sangbad Sangstha (BSS). 2025 Oct 5.