

Current Status of bovine TB/Zoonotic TB & Brucellosis In Bangladesh

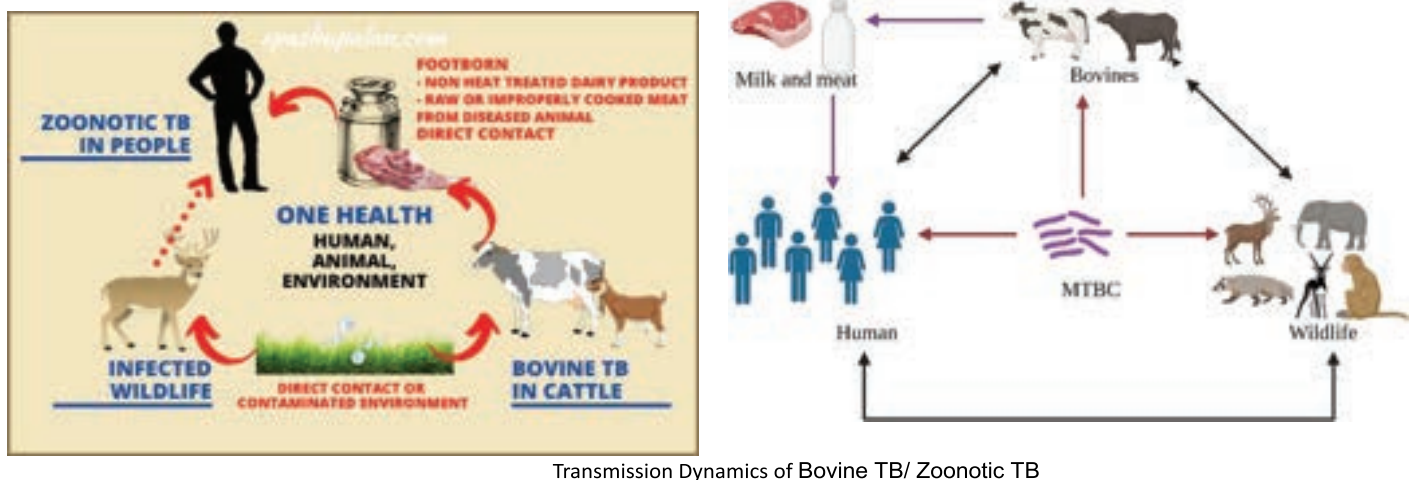
Regional Workshop on Zoonotic TB and Brucellosis in the Asia Pacific Region Qingao, 24-26 Septemver 2024

Dr. Manoranjon Dhar

Director Department of Livestock Services, Bangladesh

Current Situation

Bovine TB, caused by the pathogen Mycobacterium bovis, is an endemic disease in cattle across many countries and poses a significant global public health threat. (Pradeep et al., 2021). In 2021, the estimated TB incidence was 375,000, and an estimated 43,000 people died from TB. Bangladesh notified 306,701 incident TB cases (new and relapse) in 2021; 46 percent of total notified bacteriologically confirmed individuals with TB were tested for rifampicin resistance. A total of 1,601 individuals with drug-resistant TB (DR-TB) were diagnosed in 2021, of which 1,488 (93 percent) were enrolled on treatment.



Transmission Dynamics of Bovine TB/ Zoonotic TB

Diagnosis, Surveillance and Control

Diagnosis

Bovine TB/ Zoonotic TB in livestock is primarily identified through a combination of serological, molecular, and bacteriological tests. The most commonly used serological tests include the caudal fold tuberculin (CFT) test and comparative cervical tuberculin (CCT) test and ELISA (Hossain et al., 2012). The caudal fold tuberculin (CFT) test and comparative cervical tuberculin (CCT) test have been conducted in bTb suspected cattle for the screening of bovine tuberculosis.

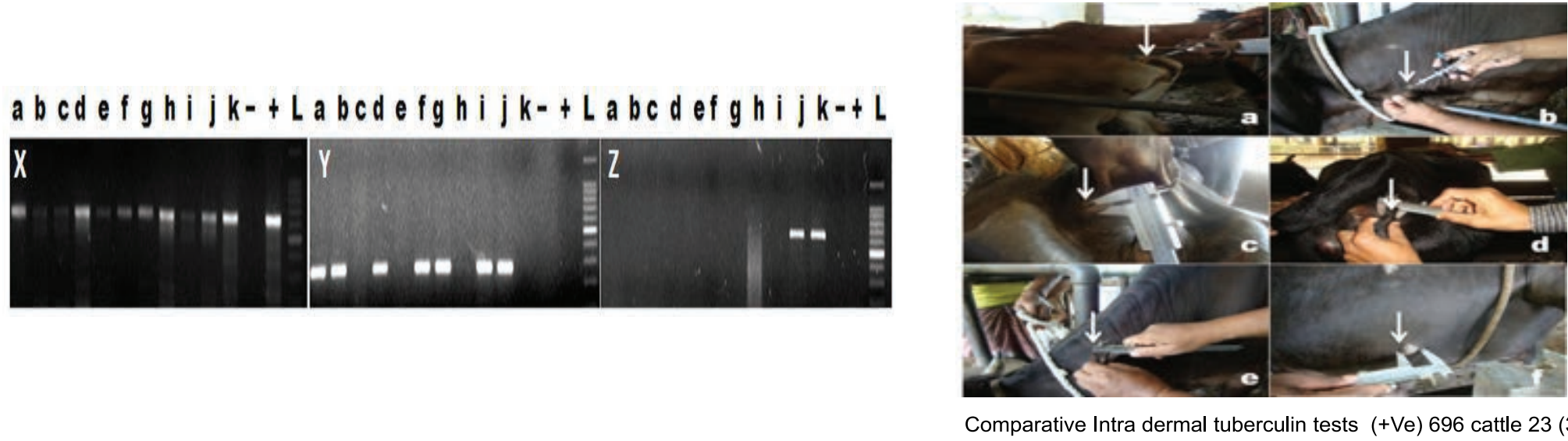
Surveillance and Control Strategies

In Bangladesh, efforts to control Bovine TB and Zoonotic TB in livestock have focused on prevention, surveillance, and public awareness. Although there is no nationwide eradication program, various strategies are in place to reduce the disease's spread and its impact on livestock and public health.

1. **Surveillance and Testing:** Diagnostic tests such as the caudal fold tuberculin (CFT) test, comparative cervical tuberculin (CCT) test, and PCR are used to detect Bovine TB and Zoonotic TB.

2. **Culling and Quarantine:** On farms where Bovine TB or Zoonotic TB is detected, infected animals may be culled to prevent the disease's spread.

3. **Collaboration with International Organizations:** Bangladesh partners with international organizations like the World Organization for Animal Health (WOAH) and the Food and Agriculture Organization (FAO) to enhance disease control and reporting.



One Health Approach

The One Health approach, which acknowledges the interconnected relationship between human, animal, and environmental health, has been increasingly adopted in Bangladesh to combat Bovine TB and Zoonotic TB. This multidisciplinary strategy fosters collaboration between the veterinary, medical, and environmental sectors to address the zoonotic nature of the disease. In Bangladesh, One Health initiatives prioritize enhancing the surveillance and diagnosis of Bovine TB and Zoonotic TB in both livestock and humans. Holistic approach seeks to lower the incidence of bovine TB/ zoonotic TB , protect livestock productivity, and safeguard human health, ultimately contributing to broader public health and economic growth in Bangladesh.

Challenges and Way Forward

Challenges in Controlling Bovine TB/ Zoonotic TB in Bangladesh

01. **Lack of Awareness and Knowledge:** Many farmers, livestock workers are unaware of Bovine TB and Zoonotic TB, their symptoms, and the risks they pose to both livestock and human health.

02. **Inadequate Diagnostic Facilities:** Rural areas often lack sufficient diagnostic lab oratories capable of testing for bovine TB/ zoonotic TB, hindering early detection.

03. **Limited Veterinary Infrastructure:** Bangladesh's veterinary infrastructure is insuf ficient to manage large-scale disease surveillance and control efforts.

04. **Cross-Contamination from Livestock to Humans:** Poor handling practices on farms, in slaughterhouses, and at markets increase the risk of human infection. Farmworkers, in particular, face high exposure risks due to inadequate protective measures.

05. **Insufficient Surveillance and Reporting Mechanisms:** The national surveillance system for zoonotic diseases like Bovine TB and Zoonotic TB is not so prominent.

Challenges and Way Forward (Contd)

Way Forward to Control Bovine TB and Zoonotic TB in Bangladesh

01. Strengthening Awareness and Training Programs

02. Establishing National Diagnostic Networks

03. Improving Livestock Trade Regulations

04. Developing a Robust Surveillance and Reporting System

05. Promoting Good Farming Practices

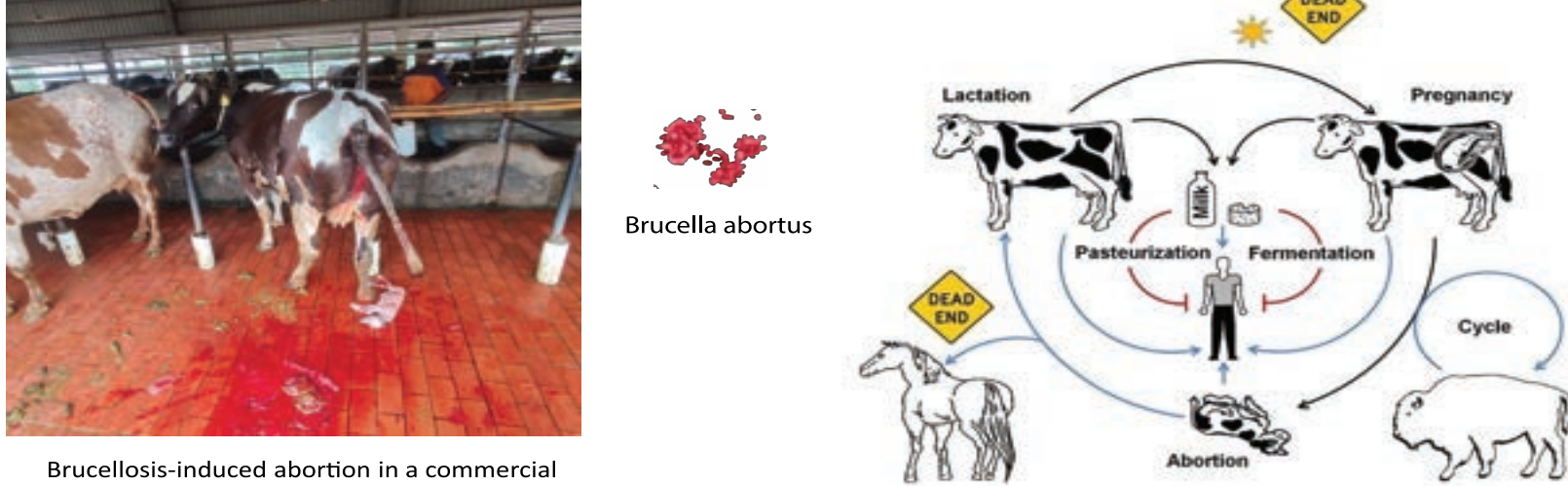
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Current Situation

Brucellosis is a zoonotic disease caused by bacteria from the genus Brucella. In Bangladesh, brucellosis-induced abortions in cattle are common. In this country, Brucella abortus has been identified in cattle, while no molecular detections of other species have been reported to date (Islam et al., 2019). Studies on small ruminants have shown varying seroprevalence rates, with one investigation reporting 9.53% in goats and 9.92% in sheep (Shafy et al., 2017). Prevalence rates in cattle have been observed to range between 7% and 25%, as reported by Islam et al. (2020) and Nath et al. (2023).



Brucellosis-induced abortion in a commercial farm in Mymensingh, Bangladesh

Transmission Dynamics of Brucellosis

Diagnosis, Surveillance and Control

Diagnosis

In Bangladesh, Brucellosis in livestock is primarily identified through a combination of serological, molecular, and bacteriological tests. The most commonly used serological tests include the Rose Bengal Test (RBT), Serum Agglutination Test (SAT), ELISA and also used PCR.

Surveillance and Control Strategies

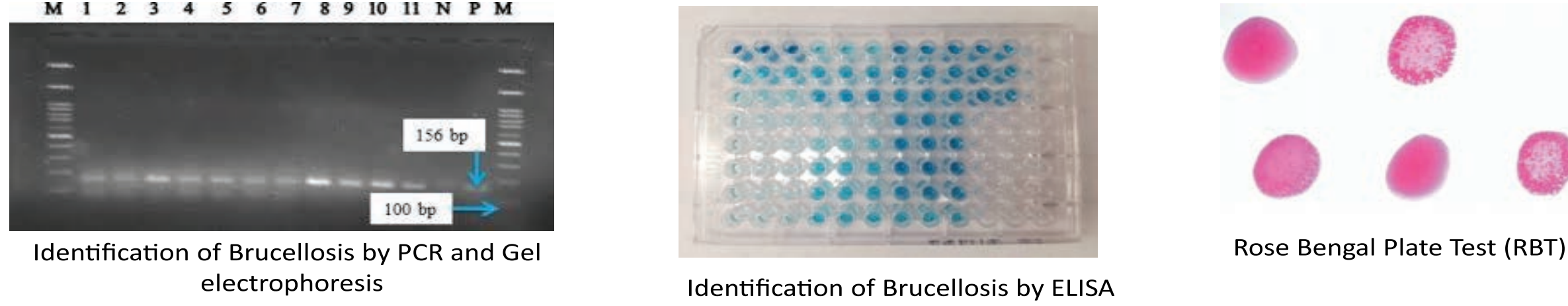
In Bangladesh, efforts to control brucellosis have focused on a combination of prevention, surveillance, and public awareness measures. Although there is no nationwide brucellosis eradication program, certain strategies have been implemented to mitigate its spread and impact on livestock and public health.

01. **Vaccination:** In Bangladesh, the use of vaccines remains limited due to a lack of comprehensive vaccination programs and the absence of regular vaccine production and distribution.

02. **Surveillance and Testing:** To detect and control brucellosis, the Rose Bengal Test (RBT), ELISA, and PCR are employed.

03. **Culling and Quarantine:** In farms where brucellosis is detected, infected animals may be culled to prevent further spread of the disease. In some cases, quarantine measures are implemented to isolate infected animals from healthy ones.

04. **Collaboration with International Organizations:** Bangladesh collaborates with international bodies like the World Organization for Animal Health (WOAH) and FAO to improve disease control and reporting mechanisms.



One Health Approach

The One Health approach, which recognizes the interconnectedness of human, animal, and environmental health, has been gradually adopted in Bangladesh to control brucellosis. This multidisciplinary strategy involves collaboration between the veterinary, medical, and environmental sectors to address the zoonotic nature of the disease. In Bangladesh, One Health initiatives focus on improving surveillance and diagnosis of brucellosis in both livestock and humans. Joint efforts between public health officials, veterinarians, and environmental scientists have been made to identify disease hotspots and monitor the transmission of brucellosis from animals to humans, particularly in rural areas where livestock farming is prevalent. Educational campaigns have also been launched to raise awareness among farmers and healthcare providers about the zoonotic risks of brucellosis, encouraging practices like the safe handling of animals and the consumption of pasteurized milk.

Challenges and Way Forward

Challenges in Controlling Bovine TB/ Zoonotic TB in Bangladesh

01. **Lack of Awareness and Knowledge:** Lack of knowledge leads to underreporting and delays in diagnosis and treatment.

02. **Inadequate Diagnostic Facilities:** Many regions of Bangladesh, particularly rural areas, lack sufficient diagnostic laboratories equipped to test for brucellosis.

03. **Limited Veterinary Infrastructure:** The country's veterinary infrastructure is often inadequate to manage large-scale disease surveillance and control programs.

04. **Absence of a Nationwide Vaccination Program:** The absence of routine vaccinations increases the risk of brucellosis spreading through livestock populations.

05. **Cross-Contamination from Livestock to Humans:** Brucellosis is a zoonotic disease, meaning it can spread from animals to humans.

06. **Insufficient Surveillance and Reporting Mechanisms:** The national surveillance system for zoonotic diseases like brucellosis is not robust, leading to incomplete data on the prevalence of the disease.

Challenges and Way Forward (Contd)

01. Strengthening Awareness and Training Programs

02. Developing a Robust Surveillance and Reporting System

03. Establishing National Diagnostic Networks

04. Introducing a National Vaccination Program

05. Improving Livestock Trade and Marketing

06. Promoting Good Farming Practices

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