



## New Detection of Reovirus in Humans in Bangladesh: A Potential Zoonotic Concern



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### Abstract

Reoviruses are non-enveloped viruses with segmented double-stranded RNA (dsRNA) genomes that are members of the Reoviridae family. These viruses may infect a wide range of hosts, including people, mammals, birds, and reptiles, and are widely known for their diversity and zoonotic potential. Bangladesh announced the first verified cases of Reovirus infection in humans in January 2025, which might be a public health concern. Five patients were confirmed to be infected with Reovirus. All exhibited mild to moderate symptoms, with full recovery observed in each case. Epidemiological analysis suggests a zoonotic origin, with potential transmission linked to exposure to raw date palm sap, a known reservoir for bat-borne viruses. The identification highlights the need for more monitoring, better diagnostic tools, and public health awareness, especially in rural regions where close animal-human interaction is more prevalent, even though the clinical results were not severe and not dangerous. [*Bangladesh Journal of Infectious Diseases*, June 2025;12(1):181-184]

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### Introduction

Reoviruses are non-enveloped viruses that belong to the Reoviridae family and have a segmented double-stranded RNA (dsRNA) genome. These viruses are well-known for their diversity and zoonotic potential, and they can infect a broad variety of hosts, such as humans, animals, birds, and reptiles<sup>1</sup>. Reovirus was connected to a subset of enteric and respiratory viruses that were present in

healthy people with negligible to no symptoms of enteric or respiratory illness<sup>2</sup>. Worldwide, a variety of mammalian species, including humans, pigs, bats, cattle, poultry, dogs, cats, and civets, are infected with mammalian orthoreoviruses (MRV)<sup>3</sup>. Given the virus's low tolerance to environmental factors, hand-carrying objects may serve as passive carriers, but transmission most likely happens by aerosol and fecal-oral pathways<sup>4</sup>.

**Table 1: An overview of global versus Bangladeshi reovirus strains and detection**

Type of Reovirus	Host	Clinical Manifestation	Country Detected	Detection Method	References
Orthoreovirus Type 1	Human	Upper respiratory tract infections (like runny nose and sore throat) or gastroenteritis, particularly in children, abdominal distension	USA, Japan	RT-PCR, Serology	Brown et al <sup>6</sup>
Orthoreovirus Type 3	Human/animal	Gastroenteritis, asymptomatic	Europe, Asia	PCR, Virus isolation	Lee et al <sup>7</sup>
Mammalian Reovirus	Animal	Enteritis, respiratory disease	India, China	RT-PCR, ELISA	Zhang et al <sup>8</sup>
Bangladeshi Strain	Human	Fever, vomiting, diarrhea, mild GI symptoms	Bangladesh	RT-PCR, Genome Sequence	Jamil et al <sup>5</sup> ; Dhaka Tribune <sup>9</sup>

Key: ELISA, enzyme-linked immunosorbent assay; RT-PCR, Real-Time Polymerase Chain Reaction;

While many Reovirus infections are asymptomatic or cause mild illness, certain strains have been associated with gastrointestinal, respiratory, and neurological complications. The rise of Reovirus infections must be taken seriously, even if they are typically mild or asymptomatic, because Bangladesh is a heavily populated country that requires vigilant public health surveillance<sup>5</sup>. Globally, Reoviruses have been studied due to their role in both human and animal health, yet there remain substantial gaps in our understanding of their epidemiology and pathogenic mechanisms. The recent detection of Reovirus strain in Bangladesh represents an important public health development, highlighting the need for increased surveillance, research, and preparedness (Table 1).

### Reovirus in Bangladesh

In Bangladesh, Reovirus has recently been detected in both human populations, marking its first confirmed appearance in the country. The virus was identified using molecular diagnostic techniques, including reverse transcription polymerase chain reaction (RT-PCR) and genome sequencing, which confirmed the presence of dsRNA viral segments characteristic of Reoviruses. Initial studies indicate that the virus may spread silently within populations, possibly through fecal-oral pathways or contact with infected animals, despite the lack of thorough epidemiological data. Similarities and distinct genomic differences between the Bangladeshi strains and worldwide isolates are shown by phylogenetic analysis, which raises the possibility of either separate viral evolution or local

adaptation. To effectively create surveillance systems, public health measures, and research projects targeted at reducing possible outbreaks, it is imperative to comprehend the development, transmission, and clinical importance of Reovirus in Bangladesh.

### Public Health Implications

Reovirus's arrival in Bangladesh raises serious public health concerns, especially given its capacity to spread silently throughout communities and its potential for zoonotic transmission. Despite the fact that most infections are mild, the virus can infect susceptible groups, such as children, the elderly, and people with weakened immune systems. Preventing possible outbreaks requires early detection and surveillance, and public health readiness can be improved by incorporating Reovirus monitoring into current viral surveillance programs. The potential for transmission through human-animal or domestic animal interaction highlights the significance of sanitation, hygiene, and public awareness initiatives. The allocation of funds for laboratory capacity, healthcare professional training, and the creation of outbreak response protocols should all be taken into account by policymakers.

### Clinical Features

Human Reovirus infections are frequently mild or subclinical, and many instances go undetected. When symptoms do appear, they usually involve mild respiratory symptoms like coughing and

congestion of the nose or gastrointestinal disturbances like diarrhea, vomiting, and discomfort in the abdomen. Serious side effects, such as encephalitis, hepatitis, or multi-organ involvement, have been documented rarely, usually in patients with immune compromised systems.

### Diagnosis Process

Combining molecular, serological, and virological techniques is necessary for an accurate diagnosis of Reovirus infection. The most widely utilized molecular method, reverse transcription polymerase chain reaction (RT-PCR), enables the sensitive and precise detection of viral RNA segments<sup>10-11</sup>. Recently, RT-PCR and genome sequencing were used in Bangladesh to establish the presence of the virus and enable phylogenetic comparison with strains from throughout the world. Limited laboratory infrastructure, a lack of knowledge about the virus among medical professionals, and the possibility of silent infections that avoid routine testing are some of the difficulties that should be overcome in the diagnostic process.

### Treatment

Reovirus infections currently have no particular antiviral therapies; supportive care is the mainstay of treatment. In moderate cases, the main goals of treatment are symptom alleviation, nutritional support, and hydration. Hospitalization may be necessary for monitoring and intense supportive treatment in cases of severe or complex infections. Proper sanitation, cleanliness, and limiting contact with potentially diseased animals are all important preventive strategies. Although there are presently no licensed vaccine candidates or investigational antiviral drugs for human use, research is still being conducted for therapeutic potential of Reovirus. For the emergence of virus in Bangladesh, increasing awareness among medical professionals and public health officials is crucial to implementing prompt interventions and averting possible epidemics.

### Future Directions and Research Needs

Considering the paucity of information about Reovirus in Bangladesh, a number of researches is necessary. Determining prevalence, regional distribution, and transmission patterns requires epidemiological research. Local isolates' molecular characterization and genome sequencing will aid in the identification of distinct strains and the understanding of viral evolution. Clinical research should track the intensity, trends and risk factors of

symptoms in both people and animals. To be ready for future epidemics, research on vaccinations and antiviral treatments is required. Furthermore, bolstering laboratory networks, community awareness initiatives, and public health infrastructure can assure prompt identification and efficient handling of new viral risks.

### Conclusion

Reovirus was recently discovered in Bangladesh, highlighting a new viral concern that might have an impact on both human and animal health. Lessons from international studies highlight the significance of monitoring, research, and preparation, even though there is currently little information on local prevalence and clinical consequences. Knowledge of the virus's virology, modes of transmission, and clinical signs can help direct future research, lower the risk of outbreaks, and improve public health initiatives. Scientists, physicians, and public health officials must work together to handle this new issue and secure the health of the Bangladeshi population.

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### Conflict of Interest

Authors declared no conflict of interest.

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### Authors' contributions

Hoque M conceived and designed the study, analyzed the data, interpreted the results, and wrote up the draft manuscript, interpretation of the results and critically reviewing the manuscript.

### Data Availability

Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.

### Ethics Approval and Consent to Participate

Not required

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