

Pathogen Type:

HHV-5B, often referred to as simply '5B', is a unique strain of human cytomegalovirus, also known as Human betaherpesvirus 5 (HHV-5).

Origin & Emergence Details:

The 5B strain emerged somewhere in South America, where the prevalence of its precursor is nearly 100% in many countries. Natural variation during the replication of this extremely prevalent virus led to the evolution of a variant that was both more transmissible and more virulent. The virus is believed to have spread primarily through bodily fluids, such as saliva and urine.

It has been suggested that the ubiquitous nature of human cytomegalovirus was one of the most influential factors in the course of this outbreak. In the United States, human cytomegalovirus testing of newborns was rarely performed; more accurate prevalence estimates were only determined after targeted testing was performed on infants who failed their hearing screening. By the time the increase in clinical manifestations was noted, 5B had already established itself in the Americas.

Pathogen Characteristics:

After infection, 5B typically remains latent within the body, though reactivated infections have been linked with the development of conditions such as retinitis, colitis, and liver failure. The majority of cases are asymptomatic; however, unlike its less virulent precursor, mild clinical manifestations of 5B infection are observed in 5-10% of immunocompetent adults. The virus is potentially life-threatening for immunocompromised individuals, leading to a great deal of concern regarding nosocomial infections spread by droplets or contact with saliva, urine, and blood. The long term health effects of latent infection are still unknown and are hotly debated.

The primary population of concern are people who are pregnant, as the virus has also been observed to be passed from mother to child. Moreover, there is a high risk of 5B related complications among infants born to people who were infected with 5B for the first time during their pregnancy. Preliminary analyses indicate that an estimated 40% of infants with signs of congenital infection will experience long-term health effects, including developmental disabilities, vision loss, and significant hearing loss. 5B is on track to become the leading infectious cause of hearing loss in children, superseding its viral precursor. One year after the first clinically recognized case of 5B, it is estimated that 20% of adults in the United States are infected with 5B, with that prevalence expected to increase based on current patterns of transmission. If current trends continue, models suggest that 1 in 200 children will be born with 5B within 5 years.

Other Impacting Factors:

Time is not on the side of those responding to this outbreak. By the time the true prevalence of the outbreak became apparent, the HHV-5B strain had already spread to a significant proportion of the population. No vaccine is available and preliminary vaccine candidates have indicated low efficacy. Government officials and experts have lost control of the narrative concerning the

outbreak. Community mitigation strategies implemented at the onset of the outbreak such as encouraging protected sex and limitations on sexual partners led to incorrect assumptions among the public regarding the transmission of the virus. The virus has ample opportunity to spread through childcare facilities such as daycare, thereby spreading to young children and their households. Social media has popularized a 'doomer' attitude toward the outbreak, with many facetious posts regarding the end of the world. While the reality is not quite so bleak, confidence in public health officials and government entities is at an all time low due to their failure to control the outbreak and implement protective measures before it reached pandemic proportions.

Current response efforts are hindered by this public distrust as well as misinformation in regard to the severity of the virus. The relatively innocuous nature of the infection among immunocompetent adults may be responsible for the low level of concern displayed by many individuals. Furthermore, there are several cultural factors that have made public outreach efforts challenging.

First, early communications efforts stressed the 'great deal of harm' done by the disease in causing sensorineural hearing loss among infants with congenital infection. While revisions were made to government websites and press releases, this narrative was disseminated widely through news platforms and social media. Organizations and individuals who identify as part of the Deaf community were angered and disappointed to see children who are deaf or hard-of-hearing portrayed as 'sick' or 'victims'.

In addition, the nature of congenital infections quickly became an incredibly controversial discussion, as abortion rights advocates capitalized on the media attention of this outbreak to draw further attention to the state of reproductive justice and family planning in the wake of *Dobbs v. Jackson Women's Health Organization*. Pro-choice advocates argue that the intersectionality of restrictions on accessible abortion, the outbreak of HHV-5B, and worsening economic divides are putting marginalized communities at greater risk than ever before. On the other hand, pro-life advocates have argued that abortion is not 'a magic bullet to end a pandemic' and have accused their ideological opponents of encouraging eugenics. This atmosphere has led to a demand for widespread testing for 5B and for services associated with congenital infection. Audiologists and developmental-behavioral pediatricians are in high demand and their clients experience significant delays in receiving care.

Finally, the long-term implications of the outbreak also present a significant challenge. While the mild clinical manifestations observed in immunocompetent individuals are unlikely to overwhelm healthcare resources, infants with congenital infections will require significant support and, in a minority of cases, require lifelong treatment and care. Marginalized communities are vulnerable to emergencies and disasters that test their resilience, and this outbreak is no exception.