

## **Post-Infection in Human Semen Study Reveals Evidence of 22 Viruses**

A group of researchers systematically reviewed the persistence of viruses in human semen after acute infection and their impact on [health](#). They also identified research gaps to inform future studies.



### **Study**

This systematic review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and was registered on the International Prospective Register of [Systematic Reviews](#) (PROSPERO).

Searches were conducted across five databases- Public/Publisher MEDLINE ([PubMed](#)), Excerpta Medica Database (Embase), Web of Science, Scopus, and the Program for Monitoring Emerging Diseases (ProMED)- covering disciplines relevant to the research questions.

ProMED was included to capture grey literature, clinical reports, and [preprints](#), especially for emerging outbreaks. A pilot study in July 2022 refined the search strategy to optimize sensitivity and specificity.

Studies reporting primary or secondary data on viral detection in semen during or after acute infection, along with evidence of sexual transmission, were included. [Acute infections](#) were defined as those not typically causing lifelong infections in immunocompetent individuals.

Eligible study designs included [case reports](#), while reviews, opinion pieces, and commentaries were excluded. There were no restrictions on publication date, language, or population.

The review employed a two-stage search strategy: Stage one identified viruses detected in semen post-acute infection, while stage two explored evidence of sexual transmission. Titles, abstracts, and full texts were screened systematically using [Rayyan software](#), with conflicts resolved by consensus. Deduplication and reference screening ensured comprehensive inclusion.

Data extraction utilized a standardized spreadsheet to capture publication details, [virus](#) characteristics, study design, participant data, and detection methods. Outcomes included identifying viruses detected in semen, the duration of persistence, and replication competency.

Secondary outcomes focused on [sexual transmission](#) evidence and associations with immune status. Data analysis, performed in Microsoft Excel, calculated maximum detection durations and medians for viruses with sufficient data.

## **Results**

The systematic review included data from 24,258 studies screened in stage 1, of which 643 were retained for full-text review. This initial review identified 27 viruses associated with acute infections in [humans](#) that had evidence for the presence of semen or the male reproductive tract.

In stage 2, an additional 5,481 studies were identified, with 325 retained for full-text review. Through reference screening of review articles, 61 more [articles](#) were included. Ultimately, 373 studies met the eligibility criteria and were included in the analysis.

The majority of included studies were case reports (98 of 373) and case series (120 of 373). While earlier reviews focused on a limited number of [viruses](#), this systematic review, spanning studies published from 1962 to 2023, provided a broader scope.

Evidence was identified for 22 viruses (from 14 families) detected in semen during or after acute infection. Additionally, three viruses were found in other parts of the male reproductive tract, but not semen and two viruses had evidence of [sexual transmission](#) without detection in semen.

The analysis consisted of 208 studies with 8,387 participants. Detection methods varied, including [polymerase chain reaction](#) (PCR), antigen detection, whole-genome sequencing, and replication in cell or animal models. The persistence of viruses in semen showed significant variation between pathogens.

For instance, in studies with systematic testing of participants, detection rates varied widely: 5-73% for Ebola virus disease, 33-100% for Zika virus, and 0-16% for [coronavirus](#) disease 2019 (COVID-19).

Replication-competent viruses detected in semen included adenovirus, dengue virus, Ebola virus, and Zika virus, among others. Nine viruses also had evidence for sexual transmission, with molecular and epidemiological support for pathogens like Zika, [Ebola](#), and dengue viruses.

The longest documented persistence was for Ebola virus, detected up to 988 days after discharge from [treatment](#). However, the median persistence for most viruses was considerably shorter. For Zika virus, while the maximum persistence was 941 days, the median was only 57 days.

Variability in individual persistence and uncertainty in clearance timing was evident, as follow-up often ended prematurely or gaps existed between tests. [Immune status](#) data were limited, preventing accurate conclusions about its role in persistence.

## **Conclusion**

To summarize, this systematic review identified 22 viruses causing acute infections that can persist in human semen, significantly expanding the knowledge from previous reviews. Among these, [nine viruses](#) had evidence of sexual transmission.

Viral persistence varied widely, with maximum detection times ranging from 8 days for Kyasanur Forest disease virus to 988 days for the Ebola virus. Detection methods included PCR, antigen assays, and replication in cell or [animal models](#).

Immune privilege in the male reproductive tract likely contributes to prolonged viral shedding. This persistence has critical implications for [public health](#), including transmission dynamics, outbreak resurgence, male fertility, and therapeutic development.

**Source:**

<https://www.news-medical.net/news/20241216/Study-reveals-evidence-of-22-viruses-in-human-semen-post-infection.aspx>