

COVID-19 Sexual Transmissibility

Disclaimer:

This *Quick Response Report* was published on September 9, 2020. Given the rapidly changing nature of the coronavirus pandemic, some of the references included in this report may quickly become out-of-date. We further caution readers that researchers at the Newfoundland & Labrador Centre for Applied Health Research are not experts on infectious diseases and are relaying work produced by others. This report has been produced quickly and it is not exhaustive, nor have the included studies been critically appraised.

Original Request

Can COVID-19 be spread by sexual fluids?

Summary of Findings

- There appears to be a consensus that additional research and evidence is required to determine the transmissibility of SARS-CoV-2 through semen or vaginal fluids, as well as saliva and feces.
- The available evidence demonstrates that SARS-CoV-2 is present in saliva and feces, although it is not yet known if it is infectious.
- The preponderance of the available evidence indicates that SARS-CoV-2 is not present in semen or vaginal fluids. A small number of studies claim to have detected SARS-CoV-2 RNA in both semen and vaginal fluids but none of these studies has found infectious SARS-CoV-2 in either semen or vaginal fluids.
- The available evidence suggests COVID-19 cannot be spread by sexual fluids (i.e., semen or vaginal fluids), but is not sufficient to conclusively rule out the possibility.

Guidance from Health Authorities

Public Health Agency of Canada. **Statement from the Chief Public Health Officer of Canada on September 2, 2020.** September 2, 2020. [LINK](#)

- “Current evidence indicates there is a very low likelihood of contracting the novel coronavirus through semen or vaginal fluids. However, even if the people involved do not have symptoms, sexual activity with new partners does increase your risk of getting or passing COVID-19 through close contact, like kissing.”

Health Canada. **Risks of getting COVID-19.** Last updated August 26, 2020. [LINK](#)

- “More research is needed to determine if the virus that causes COVID-19 can be transmitted sexually.”

BC Centre for Disease Control. **COVID-19 and Sex**. Last updated August 17, 2020. [LINK](#)

- “The virus has been found in semen and feces (poop). It is not yet known if the virus is found in blood or internal genitalia/vaginal fluids. It is not yet clear if the virus can be transmitted through sex.”

Systematic Reviews

None found.

Other Reviews

Payne et al. **Twenty-First Century Viral Pandemics: A Literature Review of Sexual Transmission and Fertility Implications in Men**. July 24, 2020. [LINK](#)

- Given the recent and novel nature of the COVID-19 outbreak, data remain limited. Thus far, there are mixed findings regarding the presence of SARS-CoV-2 in semen... [summarizes 4 studies finding no virus in semen, testicular biopsy or urine]. In contrast, Li et al reported that 6 of 38 (15.8%) patients... had virus detected in their semen by RT-PCR... In providing analysis and commentary on these findings, Paoli et al nevertheless recommended that the small caseload and recency of infection in patients should give readers caution before drawing sharp, fatalistic conclusions. Further studies will be essential to confirm these findings... Although SARS-CoV-2 is not known to be present in semen, precluding the ability for sexual transmission, the intimate nature of physical sexual contact still dictates caution to prevent viral spread.”

Public Health Ontario. **COVID-19 Routes of Transmission – What We Know So Far**. July 16, 2020. [LINK](#)

- “While receptors for SARS-CoV-2 are present in reproductive organs, currently there is no evidence for sexual transmission of COVID-19, nor has live virus been detected in semen or vaginal secretions.”

Patel et al. **Transmission of SARS-CoV-2: an update of current literature**. July 7, 2020. [LINK](#)

- Summarizes several studies that have found prolonged viral shedding in fecal matter, indicating the possibility of fecal-oral transmission but calling it “questionable”.
- Summarizes studies of viral presence in semen, which are conflicting, and finds: “the need for safe sexual intercourse behavior may be heightened due to the fact that the virus has been detected in high concentrations in saliva and nasal mucosa and may have potential receptor binding in rectal and anal epithelial cells.”

Lofti et al. **COVID-19: Transmission, prevention, and potential therapeutic opportunities**. May 29, 2020. [LINK](#)

- “It should be mentioned that a study of semen and testicular specimens of COVID-19 patients suggested that SARS-CoV-2 could not be transmitted through sexual contact.”

Fraietta et al. **SARS-COV-2 and Male Reproductive Health**. May 25, 2020. [LINK](#)

- “There is the theoretical possibility ... of sexual transmission, as SARS-CoV-2 has been identified in the semen of infected patients. However, the available data and study findings are recent, based on small sample sizes, and present conflicting information. Thus, until now, there is not enough evidence to support the need for asymptomatic couples to avoid sexual intercourse to protect against virus transmission.”

Jing et al. **Potential influence of COVID-19/ACE2 on the female reproductive system.** May 4, 2020. [LINK](#)

- “The available evidence suggests that ACE2 is widely expressed in the ovary, uterus, vagina and placenta. Therefore, we believe that apart from droplets and contact transmission, the possibility of mother-to-child and sexual transmission also exists... However, the confirmation of sexual transmission still needs extensive investigation.”

Yeo et al. **Enteric involvement of coronaviruses: is faecal–oral transmission of SARS-CoV-2 possible?** February 20, 2020. [LINK](#)

- “Considering the evidence of faecal excretion for both SARS-CoV and MERS-CoV, and their ability to remain viable in conditions that could facilitate faecal–oral transmission, it is possible that SARS-CoV-2 could also be transmitted via this route.”

Expert Opinion

Maretti et al. **COVID-19 pandemic and its implications on sexual life: Recommendations from the Italian Society of Andrology.** June 23, 2020. [LINK](#)

- “Although there are not many available data, it would appear that the virus is not detectable in the vaginal fluid of women affected by COVID19. There is no evidence to demonstrate the presence of the virus in the female and male reproductive system.”
- “According to the *New York Department of Health Guidelines*, it is reasonably safe to have sexual intercourse between cohabiting partners, unless one or both partner have professional risk of infection or they do present one or more COVID-19 symptoms. Condoms can reduce contact with saliva or feces, especially during oral or anal sex.”

Mayo Clinic. **Sex and coronavirus: Can you get COVID-19 from sexual activity?** June 16, 2020 [LINK](#)

- “Coming into contact with a person's spit through kissing or other sexual activities could expose you to the virus.”
- “...the COVID-19 virus can spread through contact with feces. It's possible that you could get the COVID-19 virus from sexual activities that expose you to fecal matter.”
- “There is currently no evidence that the COVID-19 virus is transmitted through semen or vaginal fluids, but the virus has been detected in the semen of people who have or are recovering from the virus. Further research is needed to determine if the COVID-19 virus could be transmitted sexually.”

Cipriano et al. **Sexual Behaviors during COVID-19: The Potential Risk of Transmission.** June 5, 2020. [LINK](#)

- Summarizes several studies that indicate possible transmission route through saliva, a lack of evidence for transmission through semen or vaginal fluids, and evidence for viral shedding in feces.

Perry et al. **It is currently unknown whether SARS-CoV-2 is viable in semen or whether COVID-19 damages spermatozoa.** May 29, 2020. [LINK](#)

- “These studies used small sample sizes and examined confirmed cases of COVID-19 during recovery; given the high numbers of asymptomatic and untested people who may have high viral loads, there is a possibility of SARS-CoV-2 presence in the semen of men who unknowingly have the virus. Community-based testing and semen analysis in symptomatic and asymptomatic men are necessary to determine the virus’ presence in semen for those of varying degrees of illness.”

Patrì et al. **Sexual transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2): A new possible route of infection?** April 9, 2020 [LINK](#)

- “To date, COVID-19 has not been reported to be sexually transmitted. However, a series of data raises the possibility that sexual intercourse could be an additional direct way of infection. This hypothesis mainly derives from the recent evidence of a likely fecal-oral transmission.”

Primary Research

Chen et al. **Detection of 2019-nCoV in Saliva and Characterization of Oral Symptoms in COVID-19 Patients.** March 31, 2020. [LINK](#)

- “In our study, we found 4 [out of 13] cases with positive detection of 2019-nCoV nucleic acid in saliva. This result thus confirmed the possibility of 2019-nCoV being present in saliva. Hence, the potential transmission risk of salivary fluids should not be ignored.”

Xu et al. **Characteristics of pediatric SARS-CoV-2 infection and potential evidence for persistent fecal viral shedding.** March 13, 2020. [LINK](#)

- “We also observed positive real-time RT-PCR results in rectal swabs in eight out of ten pediatric patients, which remained detectable well after nasopharyngeal swabs turned negative, suggesting that the gastrointestinal tract may shed virus and fecal-oral transmission may be possible. Indeed, fecal-oral transmission does exist with other respiratory viruses... However, we do not have evidence of replication-competent virus in fecal swabs, which is required to confirm the potential for fecal-oral transmission.”

Holtmann et al. **Assessment of SARS-CoV-2 in human semen—a cohort study.** August, 2020. [LINK](#)

- “SARS-CoV-2 RNA could not be detected in semen of recovered and acute COVID-19-positive men. This suggests no viral transmission during sexual contact and assisted reproductive techniques, although further data need to be obtained.”

Kayaaslan et al. **Investigation of SARS-CoV-2 in Semen of Patients in the Acute Stage of COVID-19 Infection.** August 11, 2020. [LINK](#)

- “Although all semen samples were obtained in acute stage of the infection when the nasopharyngeal swab test was positive, we did not detect SARS-CoV-2 in semen. The results of our study support the thought that sexual transmission via semen does not have an important role in the person-to-person transmission of SARS-CoV-2.”

Qiu et al. **SARS-CoV-2 Is Not Detectable in the Vaginal Fluid of Women With Severe COVID-19 Infection.** August 1, 2020. [LINK](#)

- “In our study, 10 postmenopausal women in the ICU with severe COVID-19 were tested for SARS-CoV-2 in vaginal fluid with RT-PCR assay, and all samples were negative for the virus.”

Guo et al. **Absence of SARS-CoV-2 in Semen of a COVID-19 Patient Cohort.** June 29, 2020. [LINK](#)

- “All patients [n=23] tested negative for SARS-CoV-2 RNA in semen specimens. Among them, the virus had been cleared in 11 patients, as they tested negative. The remaining 12 patients tested negative for SARS-CoV-2 RNA in semen samples, but were positive in sputum and fecal specimen. In this cohort of patients with a recent infection or recovering from COVID-19, there was no SARS-CoV-2 RNA detected in semen samples, which indicates the unlikely possibility of sexual transmission through semen at about 1 month after first detection”.

Zhang et al. **The absence of coronavirus in expressed prostatic secretion in COVID-19 patients in Wuhan city.** June 10, 2020. [LINK](#)

- "... our data showed for the first time that none of the COVID-19 patients had positive SARS-CoV-2 RNA in [expressed prostatic secretion]. To this end, this study found the negativity of SARS-CoV-2 in EPS and possibly exclude the sexual transmission of COVID-19."

Pan et al. **No evidence of severe acute respiratory syndrome-coronavirus 2 in semen of males recovering from coronavirus disease 2019.** April 17, 2020. [LINK](#)

- "Severe acute respiratory syndrome-CoV-2 was not detected in the semen of patients recovering from COVID-19 1 month after COVID-19 diagnosis. Angiotensin-converting enzyme 2-mediated viral entry of SARS-CoV-2 into target host cells is unlikely to occur within the human testicle based on ACE2 and TMPRSS2 expression."

Li et al. **Clinical Characteristics and Results of Semen Tests Among Men With Coronavirus Disease 2019.** May 7, 2020. [LINK](#)

- Researchers found evidence of SARS-CoV-2, the virus that causes COVID-19, in a small sample of men (n=38), but were not able to determine if this finding meant the virus was transmissible.

Related:

- Massarotti et al. **SARS-CoV-2 in the semen: Where does it come from?** June 13, 2020. [LINK](#)
 - "There are still a lot of open questions on the effects of SARS-CoV-2 infection on the male reproductive tract. The presence of receptors is not a proof that the testis provides a site for viral infection and it is still unknown if SARS-CoV-2 is capable to pass the blood-testis barrier. The possibility of a prostate involvement has not been investigated yet: we have no data, but theoretically it cannot be excluded. Moreover, the RNA detected in semen could have been just a residual of urinary shedding."
- The Conversation. **Coronavirus found in semen of young men with COVID-19.** May 7, 2020. [LINK](#)
 - "We don't know what the implications of the latest findings are yet. The presence of viral RNA in the patients' semen does not necessarily indicate the presence of infectious virus. So it will be critical to show whether infectious virus can also be isolated from the semen of SARS-CoV-2 patients and survivors."

The following articles are preprints and have not been peer-reviewed. They report new medical research that has yet to be evaluated and so should not be used to guide clinical practice.

- Song et al. **Absence of 2019 Novel Coronavirus in Semen and Testes of COVID-19 Patients.** April 16, 2020. [LINK](#)
 - "Our data suggest that the 2019-nCov is absent from the semen and testes in men infected by COVID-19 at both acute and recovery phases. Thus, it is highly unlikely that the 2019-nCov can be sexually transmitted by men. This is the first report showing that the 2019-nCov is absent from both the semen and testis specimens of COVID-19 patients. Given the relatively small sample size, more patients are needed to confirm our findings. Multiple rounds of 2019-nCov RNA testing on semen samples would be ideal during the course of disease."

Related:

- Song et al. **Detection of 2019 novel coronavirus in semen and testicular biopsy specimen of COVID-19 patients.** April 10, 2020. [LINK](#)

- “Absence of viral RNA in testicular biopsy tissue further indicated that the virus would not directly infect the testes or male genital tract even in the acute phase. No evidence showed that 2019-nCov could be sexually transmitted from males.”
- Cui et al. **Clinical features and sexual transmission potential of SARS-CoV-2 infected female patients: a descriptive study in Wuhan, China.** March 3, 2020. [LINK](#)
 - “No positive RT-PCR result was found in the vaginal environment perhaps due to the lack of ACE2 expression, which is the receptor of SARS-CoV-2, in the vagina and cervix tissues (human protein atlas). The results from this study show no evidence of transmission of SARS-CoV-2 through vaginal sex from female to her partner. However, the risk of infection of non-vaginal sex and other intimate contacts during vaginal sex should not be ignored.”

News Articles

None found.

Methodology

Newfoundland and Labrador Centre for Applied Health Research (NLCAHR) COVID-19 *Quick Response Reports* are initiated by, and shared with, our partners in the provincial health system, including the four Regional Health Authorities, the Departments of Health and Community Services and Children, Seniors and Social Development, and public health officials.

NLCAHR staff work with topic submitters to clarify the research question. We then search for related systematic reviews, meta-analyses, other reviews, interim and other guidance statements, primary research, expert opinion and health and science reporting.

Our researchers carried out individual internet searches (Google and Google Scholar) and searched, the following databases:

- [Alberta Health Services](#)
- [CADTH](#)
- [Canadian Pharmacists Association](#)
- [Campbell Collaboration](#)
- [Cochrane Collaboration](#)
- [Centre for Disease Control](#)
- [Centre for Evidence Based Medicine](#)
- [Evidence for Policy and Practice Information and Co-ordinating Centre](#)
- [European Centre for Disease Prevention and Control](#)
- [Health Canada](#)
- [HIQA \(Ireland\)](#)
- [Joanna Briggs Institute](#)
- [MedRxiv](#)
- [National Collaborating Centres on Methods and Tools \(NCCMT\)](#)
- [National Institutes of Health](#)
- [National Institute of Allergy and Infectious Diseases](#)
- [National Library of Medicine](#)
- [Public Health Agency of Canada](#)
- [Trip Database](#)
- [World Health Organization](#)

This report was prepared by Pablo Navarro. For more information, contact pnavarro@mun.ca.