

INTRODUCTION

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) continues to drive the COVID-19 pandemic. It was observed early that, in addition to the main respiratory symptoms, the gastrointestinal (GI) system is often involved. GI symptoms may persist long after the infection has resolved, and some people may develop GI illness post-COVID.

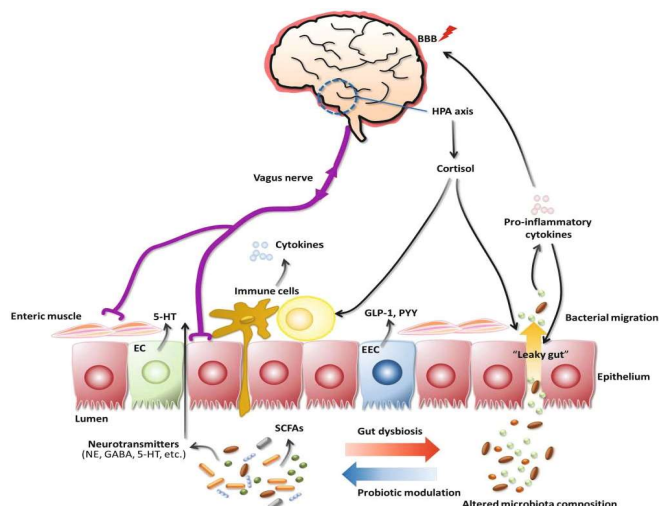


Figure 1. Schematic visualisation of the gut-brain axis. Kim, Namhee, Misun Yun, Young Joon Oh and Hak-Jong Choi. "Mind-altering with the gut: Modulation of the gut-brain axis with probiotics." *Journal of Microbiology* 56 (2018): 172-182.

BACKGROUND

Several biological mechanisms have been indicated in GI system involvement during SARS-CoV-2 infection:

ACE-2 receptor binding

The ACE-2 receptor is crucial for SARS-CoV-2 host binding, and is highly expressed in the small intestine, colon and duodenum.

Gut-brain axis activation

A less diverse gut microbiota in COVID-19 patients may negatively influence the immune system. COVID-19 patients have also shown an increased proportion of opportunistic GI pathogens.

Intestinal inflammation.

Inflammation is mediated by the infiltration of neutrophils, macrophages and T cells, resulting in intestinal inflammation on tissue histology.

Fibrin micro-clots & coagulopathy

The development and deposition of amyloid-type micro-clots has been identified as a potential pathology in individuals with post-acute sequelae of COVID-19.

RESEARCH QUESTIONS

- What is the incidence of gastrointestinal illness following SARS-CoV-2 infection?
- Does COVID-19 vaccination prevent the gastrointestinal symptoms associated with COVID-19?
- Does COVID-19 vaccination protect against gastrointestinal illness once acute COVID-19 infection has resolved?
- Is there an increased incidence in gastrointestinal illness following COVID-19 infection in unvaccinated individuals?

SYSTEMATIC REVIEW

The objective is to provide a review of the prevalence of gastrointestinal symptoms or illness following COVID-19 infection, once the acute infection has resolved.

Population – humans, any age.

Exposure – Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)

Comparator – none

Outcome – we anticipate an increase in the incidence of GI symptoms and illness in people exposed to SARS-CoV-2, following resolution of acute infection (with or without COVID-19 illness).

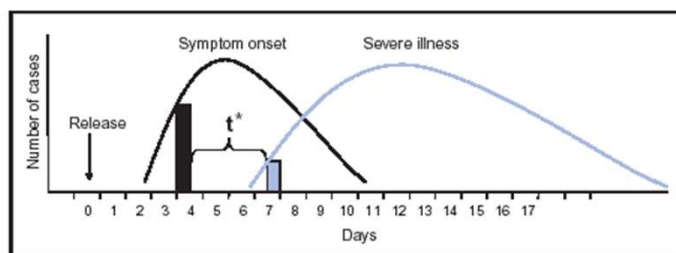
Studies with a longitudinal, observational study design, and published between Dec 2019 and Feb 2022.

Records identified from:
OVID MEDLINE (n = 591)
SCOPUS (n = 638)
EPMC (n = 127)
medRxiv (n = 79)



Records screened
(n = 1121)

SYNDROMIC SURVEILLANCE OF GI INFECTIONS



* t = time between detection by syndromic (prediagnostic) surveillance and detection by traditional (diagnosis-based) surveillance.

Figure 2. Rationale for early detection of infectious disease. CDC, Overview of syndromic surveillance, 2004

In the UK, infectious intestinal disease activity is monitored by the UK Health Security Agency via Real-time Syndromic Surveillance. Routinely collected health data is analysed to allow the early detection of infectious disease. This health data relates to a 'syndrome' or disease symptom rather than laboratory diagnosis, allowing a rapid public health response.

Data is sourced from primary care, emergency departments and NHS 111. Understanding and quantifying the burden of post-COVID gastrointestinal illness is important, as this data may currently be detected as signals of infectious intestinal disease by the UK HSA.