

Health systems impacts of SARS-CoV-2 variants of concern: Findings from a rapid scoping review

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Summary

Most studies in this topic area reported on hospitalization, ICU admissions and deaths. Trends suggest there is an increase in hospitalization due to B.1.1.7 but no difference in length of stay. There seems to be less agreement on the impact of B.1.1.7 on intensive care admissions, with two studies reporting increases in admission to ICU with B.1.1.7 compared to the wild type, and three studies finding no difference. While there are mixed findings on impact of VOC (B.1.1.7 and P.1) on death, six studies found an increased risk compared to three studies that reported no change. No studies reported on screening staff and visits, adjusting service provisions, or adjusting patient accommodations and shared spaces, which is a significant gap in the literature.

Guidance documents were often found in topic areas where published evidence had not yet been produced, whereas some topic areas with a more robust body of published research have not yet led to the production of guidance documents.

Implications

This review has identified the need for:

- Evidence to support adjusting patient accommodations and shared spaces in a hospital setting with the emergence of different strains;
- Standards for sharing surveillance data nationally to rapidly inform health policy and health system guidance documents; and
- A comprehensive jurisdictional scan to identify, compare, and contrast provincial strategies and guidelines.

What is the current situation?

Three SARS-CoV-2 variants of concern (VOC) were identified in late 2020: B.1.1.7 (UK variant), B.1.351 (South Africa variant), and P.1 (Brazil variant). VOC can potentially cause changes in transmissibility, clinical presentation, and severity, and they may have an impact on countermeasures.

What is the objective?

This rapid scoping review aimed to provide a synthesis of current evidence and guidance documents related to public health measures and health systems arrangements associated with VOC. This document provides an overview of findings related to **health systems arrangements**, specifically:

- Adjusting capacity planning to accommodate changes in the risk of re-infection and the risk of severe disease
- Adjusting personal protective equipment (PPE) procedures for health workers
- Adjusting restrictions to and screening staff and visitors
- Adjusting service provision
- Adjusting patient accommodations, shared spaces, and common spaces

How was the review conducted?

An information specialist designed a broad, comprehensive search to retrieve all published, preprint, and grey literature related to the VOC in MEDLINE, Embase, the Cochrane Library, Epistemonikos' L-OVE on COVID-19, medRxiv, and bioRxiv (up to Apr 7, 2021), Google, Twitter, and relevant websites (up to Apr 14, 2021). Title/abstracts and full text were screened independently by two reviewers. Data were double extracted using a standardized form which was co-developed with infectious disease experts. Studies were included if they reported on at least one of the VOC and public health or health system outcomes. Critical appraisal was conducted using the Newcastle-Ottawa Scale for case-control, cohort, and cross-sectional studies, and the AGREE II tool for guidance documents.

What did the review find?

- 17 studies and 10 guidance documents reported on health systems arrangements. Included studies used a wide range of designs and methods.
- The 13 studies that qualified for appraisal were mostly medium-to-high quality, with overall scores ranging 20-100%, and the majority were preprints. Guidance documents scored 17-83%, and rarely cited evidence.
- Evidence suggests there is an increase in hospitalization due to B.1.1.7 but no difference in length of stay or ICU admission. Six studies found an increased risk of death with B.1.1.7 compared non-B.1.1.7, but three studies reported no change. One study reported on the effectiveness of PPE in reducing VOC transmission in the hospital, but guidance remains relatively unchanged. Cohorting guidelines for VOC patients were uncommon, but one guideline recommended single rooms for B.1.351 and P.1 patients and did not advise cohorting of B.1.1.7 patients.

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