COVID-19 Critical Intelligence Unit: Current and emerging patient safety issues during COVID-19

In brief
Current and emerging patient safety issues during COVID-19

Question
What is the national and international evidence on indirect patient safety issues arising from the COVID-19 pandemic?

In Brief

• The COVID-19 pandemic, and the mitigation strategies that ensued, appears to have had a range of negative effects on healthcare systems and patients' health outcomes.1-4
• Retrospective cohort studies, cross-sectional studies and commentaries reported in the peer-reviewed and grey literature informed this evidence check.
• Patient safety concerns include preventable deaths and excess mortality rates,5-10 hospital-acquired infections or pressure sores; patients falls; medication errors; incorrect diagnoses and poorer health; mental health and quality of life outcomes; and increased numbers of safety incidents in mental health and ambulance services.2, 11-24
  o In countries which avoided large-scale COVID-19 outbreaks, however, lockdowns do not appear to have been associated with large (non-COVID) mortality rates.25
• These safety concerns have been attributed to:
  o reduced resources, staffing and safety protocol use4, 8, 11, 26
  o cancellations of routine healthcare services7, 26, 27
  o patients' reluctance to access healthcare.1, 28
• Apart from actual safety incidents, global declines in emergency presentations as well as new diagnosis and treatment rates have been observed for a range of conditions, including cardiovascular conditions, dementia, appendicitis and cancers.3, 27, 29-65
  o Modelling studies have projected increased health costs associated with such delays.18, 66-72
  o Delays to treatments and adverse outcomes may be more likely in young adults, elderly and other vulnerable populations.61, 73-77

Background

• Due to the threat of COVID-19 transmission and the subsequent consequences such as staffing and personal protective equipment (PPE) shortages, healthcare systems instigated significant changes to routine services. These included postponement of elective surgery, disease screening and routine appointments for chronic conditions.26, 78, 79
• Patients themselves have also deliberately avoided healthcare settings and help-seeking behaviours to reduce healthcare system burden and avoid potential SARS-CoV-2 infection.1, 28
• Delayed medical diagnoses and treatments could have significant flow-on effects on patient health and wellbeing, as well as financial costs.18, 80
Synthesised evidence

Peer-reviewed literature

- There are wide-ranging reports on the indirect health impacts of COVID-19 and associated mitigation strategies.\(^1\)\(^-\)\(^3\) These have been attributed to:
  - reduced staffing and resources, human error due to new or undertrained staff, and communication breakdowns during peak pandemic periods\(^8\),\(^11\),\(^26\)
  - cancellations of screening services, outpatient appointments or non-urgent surgeries\(^7\),\(^26\)
  - patients’ reluctance to access healthcare for management of acute and chronic conditions.\(^1\),\(^28\)

- International retrospective studies have highlighted pre- to during-pandemic increases in:
  - **preventable (non-COVID) deaths** related to lockdown isolation, delays in accessing medical care or failure to follow medical protocol \(^7\),\(^8\)
  - **hospital acquired infections**, particularly catheter-related infections and central line–associated bloodstream infections.\(^81\)-\(^92\) In one study, increased rates of infection were associated with increases in overtime hours and use of agency nursing staff (less familiar with the hospital).\(^86\)
  - **hospital-acquired pressure sores** and outcomes due to treatment delays\(^93\)-\(^96\)
  - **in-hospital patient falls**\(^2\),\(^11\),\(^19\),\(^97\)
  - **medication errors** and over-prescription of antibiotics\(^13\),\(^20\),\(^98\)
  - negative **mental health** outcomes associated with lockdowns or with delays to routine treatments such as electroconvulsive therapy\(^99\)-\(^104\)
  - **incorrect diagnoses** given due to over-suspicion of COVID-19, telehealth formats or changes in diagnostic providers\(^37\),\(^105\),\(^106\)
  - **poorer patient outcomes** for acute\(^24\),\(^35\),\(^38\),\(^39\),\(^99\),\(^107\) and chronic conditions,\(^16\),\(^42\),\(^45\),\(^108\) including in pregnancy\(^109\)-\(^112\) and surgical patients\(^17\),\(^22\),\(^105\),\(^113\)
  - **poorer quality of life** outcomes for patients waiting for treatment or self-managing chronic health conditions\(^16\),\(^46\),\(^114\),\(^115\)
  - **cancers** identified in later stages than they would usually be detected.\(^116\)-\(^119\)

- There have been globally reported decreases in emergency presentations and diagnosis rates as well as delays in commencing treatments across a variety of medical conditions. These include, but are not limited to, cardiovascular conditions, dementia, hip fracture, appendicitis, diabetes and (non-COVID) respiratory conditions such as tuberculosis.\(^3\),\(^29\)-\(^54\)
  - For cancer, there have been internationally reported decreases in screening, patient presentations and diagnosis rates, including for head and neck, breast, skin, cervical and colon cancers as well as solid tumours in adolescents.\(^55\)-\(^60\)
  - Of the 45,000 middle-aged to older participants in an Australian cross-sectional study, 42.2% reported missing or delayed access to healthcare due to COVID-19, mainly for dental services (26.1%), visits to a general practitioner (16.3%) and specialists (12.6%). Missed or delayed visits were more likely among females and participants from non–English-speaking backgrounds, with disability/illness, living in outer regional/remote areas or with chronic health conditions.\(^61\)
Modelling studies from Australia, England, Italy, Spain and Canada have projected that excess deaths and significant increases in healthcare costs will occur as a result of diagnostic delays.66-72

Small studies have suggested that delays to treatments and adverse outcomes may have been more likely in young, elderly and other vulnerable populations.73-76

- In an Australian study, people with a disability or with high/very high psychological distress were twice as likely to report worse health as a result of missed/delayed care.51

- There are also a handful of studies which describe clinics or populations where poorer than usual outcomes have not been identified, suggesting that worse patient outcomes were not an inevitability across all contexts globally.120-131

- In countries such as Australia and New Zealand, which avoided large-scale COVID-19 outbreaks, lockdowns do not appear to have been associated with large, avoidable (non-COVID) mortality rates.25

Grey literature

The majority of grey literature identified highlights decreases in health service availability and reductions in patient presentations. However, there are little data on patient outcomes associated with these changes, except studies related to increases in mental health concerns.

- A 2022 World Health Organization report noted several emerging trends during the early pandemic waves.4
  - Hospitals sometimes kept patient infusion pumps outside patient rooms by using extended tubing to reduce staff exposure to COVID-19. This increased the risk of incorrect medication and patient identification errors.
  - The pandemic resulted in substantial changes in infection prevention and control practices to enable the care of increasing numbers of patients amid limited PPE, medical supplies and staffing.
  - Substantial deterioration in multiple patient safety metrics has been observed since the beginning of the pandemic, with increases in central line-associated bloodstream infections, catheter-associated urinary tract infections, ventilator-associated events, pressure ulcers and patient falls causing major injury.

Australia

- A 2021 report from the Australian Institute of Health and Welfare found:62
  - Some community services had considerable reductions at the height of the initial restrictions; e.g. optometry had an 8.1% fall in the number of services provided.
  - There was a steady rise in the number of mental health services subsidised by Medicare between mid-March and mid-December 2020, which likely reflects increased need for and availability of these services during this period.
  - From January to June 2020 there were 145,000 fewer mammograms performed through BreastScreen Australia compared with the same period in 2018. From July to September 2020 there were 12,000 more, suggesting that only a subset of the patients who did not attend in the first half of the year, caught up on their appointments.
• A report from the Murdoch Children Research Institute highlighted that in 2020, there was no decrease in immunisation rates; however, there were 52% fewer dental services provided to children than in 2019, and there were decreased visits to emergency departments.63

United States

• In the three months from March to June 2020, 35,000 non-COVID, unexplained deaths occurred. A survey in June 2020 found that 40% of patients reported cancelling upcoming appointments (e.g. routine check-ups, treatment for chronic conditions) and an additional 12% reported that they needed care but had not scheduled or received it. These figures created concerns that health conditions might go undiagnosed or that patients might experience exacerbations of chronic conditions more often.18

• An independent report in 2020 noted that cancelled or delayed treatments can exacerbate health conditions and result in increased costs to the health system. For example, delays to treatment for chronic obstructive pulmonary disease could increase the costs associated with treating the condition by 9%.18

• Data from the National Healthcare Safety Network showed significantly higher incidence in central line–associated bloodstream infections, catheter-associated urinary tract infections, ventilator-associated events and methicillin-resistant Staphylococcus aureus in 2021 compared to 2019.15

• 2021 data from the Centers for Disease Control and Prevention highlighted that changes to hospital practices, longer patient length of stay, additional patient comorbidities and acuity levels, and longer, more frequent use of devices likely contributed to an overall increased potential for device-associated infections.15

• A 2021 review highlighted cases where reduced staffing or resources were the cause of patient safety concerns, including pressure ulcers. These could be related to lack of time to reposition patients, human error due to new or undertained staff, or communication breakdowns.11

• Delays in care have been noted to disproportionally affect certain groups, including unpaid caregivers, people with two or more underlying medical conditions, those with health insurance, adults aged 18-24 years, people with disabilities and those who are black or Hispanic.77

United Kingdom

• A 2021 review of patient safety incidents in the UK found that from April 2020, the proportion of safety incidents reported in mental health and ambulance services increased.23

• A 2020 review of indirect COVID-19 effects highlighted that the pandemic had both disrupted and changed the delivery of NHS and social care services. Concerns have been raised about significant drops in emergency use and the healthcare needs of people with long-term conditions. The review summarises the key impacts of COVID-19 on access to health and social care services.64

• Reviews from the UK’s Healthcare Safety Investigation Branch have highlighted:
  o an increase in the number of intrapartum stillbirths referred for investigation during the UK’s first lockdown compared with those in the previous year10
  o maternal deaths during the first wave of the COVID-19 pandemic in England, which may have been associated with behaviour changes relating to patient and staff appreciation of COVID-19 risk; changes in patient pathways and access to services; obstacles to care caused by additional safety precautions such as PPE; and reduced availability of staff9

In brief documents are not an exhaustive list of publications but aim to provide an overview of what is already known about a specific topic. This brief has not been peer-reviewed and should not be a substitute for individual clinical judgement, nor is it an endorsed position of NSW Health.
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- A reduction in oxygen flow around a hospital, due to high demand, which may have been associated with the desaturation events of two critically unwell patients.\(^\text{132}\)
- A 2022 report assessing the impacts of Omicron found that:\(^\text{27}\)
  - In primary care, there were increases in missed appointments and referrals as well as a reduction in the diagnosis of new conditions throughout the pandemic. These patients may end up with worse health states than they would have in a pre-pandemic year.
  - In secondary care, supply constraints during Omicron led to longer waits for elective and emergency patients. Elective activity remained below the levels delivered before the pandemic. This may mean that patients have worse health outcomes while they await appointments or worse surgical outcomes.
  - The number of referrals and people in touch with mental health services were above pre-pandemic levels throughout Omicron, and children’s mental health needs have continued to grow in 2022.

Canada

- During Canada’s first COVID-19 wave, patients with mental health difficulties appeared to avoid presenting to the emergency department. However, presentations to emergency for opioid overdose increased in 2020.\(^\text{133}\)
- In Toronto specifically, in 2020, patients with mental health difficulties appeared to avoid presenting to the emergency department and instead the number of patients seeking help through outpatient providers increased. Children and their parents in Toronto self-reported increased negative emotions and experiences during the first wave.\(^\text{65}\)

Method

To inform this brief, PubMed and Google searches were conducted using terms related to patient safety and diagnosis delays on 21 November 2022, to update a previously conducted evidence check.

PubMed search terms

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\text{(("patient safety"[MeSH Terms] OR "patient harm"[Title/Abstract] OR "patient safety"[Title/Abstract])) AND }\
\text{"medical error*"[MeSH Terms] OR "medical error*"[Title/Abstract] OR "medication errors"[MeSH Terms] OR }\
\text{"medication error*"[Title/Abstract] OR "malpractice"[MeSH Terms] OR "delayed diagnosis"[MeSH Terms] OR }\
\text{delayed transfer[Text Word] OR delayed access[Text Word] OR "patient harm"[Title/Abstract] OR "missed }\
\text{diagnosis"[MeSH Terms] OR "pressure ulcer"[MeSH Terms] OR "pressure sore"[Title/Abstract] OR "pressure }\
\text{ulcer*"[Title/Abstract] OR "pressure injur*"[Title/Abstract] OR "mucosal injur*"[Title/Abstract] OR "Cross }\
\text{Infection/epidemiology"[MAJR] OR "hospital acquired infection" [Title/Abstract] AND }\
\text{"Severe Acute Respiratory Syndrome Coronavirus 2*[Title/Abstract] OR "2019 NCOV*[Title/Abstract] OR }\
\text{"Covid19*[Title/Abstract] OR "COVID-19*[Title/Abstract] OR "sars cov 2*[Title/Abstract] OR "Severe Acute }\
\text{Respiratory Syndrome Coronavirus 2*[Supplementary Concept]})}
\]

1,172 hits since 2019.

References

   DOI: 10.1080/13814788.2021.1945029


COVID-19 Pandemic on Use of Emergency Departments for Acute Life-Threatening Conditions: A Systematic Review


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89. Perez S, Innes GK, Walters MS, et al. Increase in Hospital-Acquired Carbapenem-Resistant Acinetobacter baumannii Infection and Colonization in an Acute Care Hospital During a Surge


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125. Walby FA-O, Myhre MØ A-O, Mehlum L. Suicide among users of mental health and addiction services in the first 10 months of the COVID-19 pandemic: observational study using national registry data. (2056-4724 (Print)).


