

In brief

Current and emerging patient safety issues during COVID-19

17 June 2022

Question

What is the evidence on the current and emerging patient safety issues arising from the COVID-19 pandemic?

Summary

- There are wide-ranging reports on the indirect impacts of COVID-19 and associated mitigation strategies such as lockdowns and service shutdowns.¹⁻³
- Patient safety issues around medications included:
 - patients taking medications without consulting a physician⁴
 - physicians dispensing medication with incomplete instructions
 - providing incorrect doses or overdosing
 - incorrectly explaining the use of medication
 - prescribing a drug to the wrong patient⁵
 - overprescribing antibiotics.⁶
- In the United States, reduced staffing and resources, human error due to new or undertrained staff and communication breakdowns were identified as causes for patient safety concerns.⁷ In the United Kingdom, a review found an increase in the proportion of safety incidents reported in mental health and ambulance services in 2021.⁸
- Increased inpatient falls were noted in Canada,² although in the US, such safety events were reported less often than policy and procedure-related concerns.⁷
- Hospital-acquired infections were noted to increase in some settings, especially where staffing shortages occurred,⁹⁻¹² and are particularly likely in COVID-19 positive ventilated patients.¹³ However, hospital-acquired infections decreased in a number of other settings where increased infection control measures were effective.¹⁴⁻¹⁸
- The literature not only discusses conventional patient safety issues, but also issues around delayed access to healthcare and equity issues. Poor outcomes associated with non-COVID health care delays include:
 - poorer emergency and routine surgical outcomes, including increased mortality and decreased patient-reported quality of life¹⁹⁻²³
 - poor management and increased severity for chronic conditions such as diabetes or pain²⁴⁻²⁷
 - increased adverse pregnancy related outcomes²⁸⁻³¹
 - reported reduced rates of cancer diagnosis internationally for both adults and children.^{19, 32-48} with cancers identified in later stages than they would usually be detected.^{34, 39, 49, 50} Modelling studies reported on excess deaths, excess healthcare costs, loss of life-years and economic losses that could result from delays in diagnosis or treatment.^{33, 42, 48, 51-53}

Background

- Healthcare systems and organisations instigated significant changes to routine services due to the threat of COVID-19. These included postponement of scheduled care, such as elective surgery, and reconfiguration, such as a shift to virtual care.⁵⁴ Suspension of multidisciplinary team meetings, staff members quarantined or relocated to units dedicated COVID-19 care, and personal protective equipment shortages were all factors significantly associated with delays in patient care.⁴³
- Additionally, lockdowns, the threat of contagion and a reluctance to further burden health services, have all resulted in patients not presenting for non-urgent symptoms or routine screens.^{1, 55}

Synthesised literature

Peer-reviewed literature

Direct patient safety concerns

Infections

- Regarding hospital-acquired admissions, Singapore noted a decline in methicillin-resistant *Staphylococcus aureus* (MRSA) infections during COVID,¹⁷ and Romania noted a decrease in *Clostridium difficile*,¹⁸ suggesting that strict infection control measures were effective. One further Australian study noted that although hospital-acquired infections were more common in patients with prolonged length of stay during the pandemic, rates were much lower than noted in other countries.⁵⁶
- Studies from the United States, however, noted increases in hospital-acquired infections during periods of staff shortages,⁹⁻¹² particularly during peaks in COVID waves.¹² An institutional review from the United States found no difference in the rates of hospital-acquired *Clostridium difficile* infection between COVID-19 and non-COVID-19 periods.¹² Hospital-acquired infections, including MRSA, increased in China, while community acquired infections were noted to decrease.⁹
- A systematic review found that ventilator-associated pneumonia is more likely to occur in individuals with COVID-19 than individuals ventilated for non-COVID reasons (odds ratio: 3.24).¹³ The pooled estimated occurrence of ventilator-associated pneumonia was 45.4% in patients with COVID-19.¹³

Falls

- During Canada's first wave, there was an increase of falls on internal medicine and complex continuing care wards. This was potentially due to reduced supervision and increased personal protection equipment requirements.² However, in the United States, inpatient safety concerns not typically associated with COVID symptoms (such as falls, pressure injuries, perinatal events, venous thromboembolisms, surgery and anaesthesia events) were reported substantially less often than policy and procedure-related concerns.⁷ When these concerns were reported, they were often described as a patient safety event that occurred to a patient with COVID-19, rather than as an event that was caused or made worse by COVID-19.
- In the community, reductions in activity levels appear to have been associated with fewer falls,⁵⁷ although concern has been raised about the possibility of increased falls in the elderly longer-term due to reduced mobility.⁵⁸

Medications

- Increased rates of overprescribing of antibiotics as a consequence of not being able to see patients face-to-face.⁶
- Medication errors reported by healthcare providers included:
 - not checking for drug allergies
 - dispensing medication with incomplete instructions
 - providing incorrect doses or overdosing
 - incorrectly explaining the use of medication
 - prescribing a drug to the wrong patient.⁵

Incorrect diagnoses

- Increased use of virtual appointments in dermatology was associated with diagnostic uncertainty and subsequent diagnosis changes when patients were finally seen in person.⁵⁹

Delays to accessing care

- Many studies reported a decrease in new diagnoses and delays in treatment across a variety of conditions. These included:
 - cardiovascular conditions⁵⁹⁻⁶⁵
 - dementia⁶⁰
 - hip fracture⁶¹
 - appendicitis^{20, 21, 66, 67}
 - diabetes^{24, 25, 47, 60, 68}
 - macular degeneration⁶⁹
 - coeliac disease⁷⁰
 - hepato-pancreato-biliary surgery⁷¹
 - urology referrals⁷²
 - tuberculosis⁷³
 - hip dysplasia follow-up.⁷⁴
- Adverse or poorer outcomes resulting from such delays included:
 - poorer emergency surgery outcomes (morbidity, need for blood and transfusions and 30-day mortality risk)¹⁹
 - surgical complications or death following late admission³⁸
 - mortality while waiting for cardiac surgery being significantly higher during the pandemic period compared with the pre-pandemic period²²
 - increased severity and complications of appendicitis^{20, 21}
 - higher patient reattendance rates following appendicitis treatment, potentially related to a decrease in surgical (and increase in conservative) management of appendicitis since COVID⁷⁵
 - decreased patient-reported quality of life due to delays to elective surgery²³
 - increased severity in diabetes^{24, 25}
 - worsening of pain and perceived decline in treatment quality²⁷

- greater visual impairment in macular degeneration following delays between appointments⁶⁹
 - ectopic pregnancies progressing to ruptures and increased blood loss^{28, 29}
 - increased incidence of molar pregnancies³⁰
 - patients with hip fractures developing deep vein thrombosis⁷⁶
 - increased stillbirth rate³¹
 - stroke severity, including functional and independence outcomes⁶⁴
 - more severe presentations of paediatric diabetic ketoacidosis.²⁶
- A year-long review of diagnosis data from Spain, pertaining to all ICD-10 diagnoses, revealed a marked decrease (31.1%) in overall diagnoses following COVID. This suggested a large number of untreated and undetected cases across conditions.³ Post-mortem data in the UK identified a significant increase in cases where delays in accessing medical care potentially contributed to death. Lockdown was a contributing factor in a proportion of suicides (24%) and drug and alcohol-related deaths (12%).⁷⁷
 - A systematic review and meta-analysis found that worldwide screening for breast, cervical and colon cancers experienced a significant decline during the pandemic.⁷⁸ The pooled incidence rate ratios compared to pre-COVID period were 0.63, 0.11. and 0.10 for breast, cervical, and colon cancer screening, respectively.⁷⁸

Equity

- Delays in presentation or care have been noted to disproportionately affect some groups including: children under five,⁷⁹ the elderly,^{45, 80} those who are more severely ill,⁷⁹ men,⁸⁰ and patients of races other than White.⁸¹

Patient and clinician reported outcomes

- Patients responding to surveys have also reported issues potentially leading to harm included refusal to access scheduled services due to: fear of COVID, avoiding healthcare settings even if having an acute onset issue, and taking medications without consulting a physician.⁴
- Surveys of paediatricians,^{47, 82} diabetes services⁶⁸ or cancer centres,^{36, 47, 82, 83} reported that delays in care have contributed to delayed diagnoses, other harm or even deaths.

Modelling consequences of delays

- In Australia, 88 excess deaths and \$12 million excess healthcare costs were predicted over five years for all patients diagnosed with four major cancers in 2020.³³ In England, delays in cancer diagnosis for four major cancers during the first COVID wave were predicted to lead to 3,620 avoidable deaths, translating to economic losses of £103.8 million.⁵¹
- For colorectal cancer, more advanced cancer stage and death were predicted outcomes of delays to colonoscopies in Italy.⁴² Delays to the referral pathway in the UK had the potential to cause significant mortality and loss of life years.⁵²
- In Spain, delays for skin cancer surgery were estimated to result in increased size, thickness in tumours and reduced survival rates.⁴⁸
- In Ontario, Canada, excess waiting times for cancer surgery translated to 0.01–0.07 life-years lost per patient.⁵³

Grey literature

- A review of [patient safety concerns](#) in the US during the pandemic, found cases where the cause of the safety concern was related to reduced staffing or resources during COVID. Examples included: pressure ulcers caused by busy environment and lack of time to reposition patients, human error due to new or undertrained staff, or communication breakdowns at shift changes. ⁷
- A 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, consistent with changes in services related to COVID. The number of reported incidents where patients died increased by 47.7%, however this figure would have included all patients with and without COVID-19. ⁸
- According to data from the Centers for Disease Control and Prevention (CDC), delays in care have been noted to disproportionately 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. ⁸⁴

Method

To inform this brief, PubMed and Google searches were conducted using terms related to patient safety and diagnosis delays on 10 May 2022.

PubMed Search terms

((("patient safety"[MeSH Terms] OR "patient harm"[Title/Abstract] OR "patient safety"[Title/Abstract]) AND "medical error*"[MeSH Terms]) OR "medical error*"[Title/Abstract] OR "medication errors"[MeSH Terms] OR "medication error*"[Title/Abstract] OR "malpractice"[MeSH Terms] OR "delayed diagnosis"[MeSH Terms] OR delayed transfer[Text Word] OR delayed access[Text Word] OR "patient harm"[Title/Abstract] OR "missed diagnosis"[MeSH Terms]) AND ("COVID-19"[Title/Abstract] OR "COVID-19"[MeSH Terms] OR "sars cov 2"[Title/Abstract] OR "sars cov 2"[MeSH Terms] OR "Severe Acute Respiratory Syndrome Coronavirus 2"[Title/Abstract] OR "2019 NCOV"[Title/Abstract] OR "Covid19"[Title/Abstract] OR "COVID-19"[Title/Abstract] OR "sars cov 2"[Title/Abstract] OR "Severe Acute Respiratory Syndrome Coronavirus 2"[Supplementary Concept])

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