

Reviewing workplace-acquired healthcare worker COVID-19 infections

Guide for using review tool & report template

Safer Care Victoria, in collaboration with WorkSafe Victoria, has developed a review tool to guide health services in reviewing workplace-acquired healthcare worker COVID-19 infections.

Background

Healthcare workers (HCW) are at the frontline of the COVID-19 outbreak response and as such are exposed to hazards that put them at risk of infection. Hazards may include pathogen exposure, long working hours, psychological distress, fatigue, occupational burnout, stigma, and physical and psychological violence.

Understanding how HCW exposure to COVID-19 translates into risk of infection is critical for informing infection prevention and control recommendations and evolving policies and procedures to keep our workforce and our communities safe.

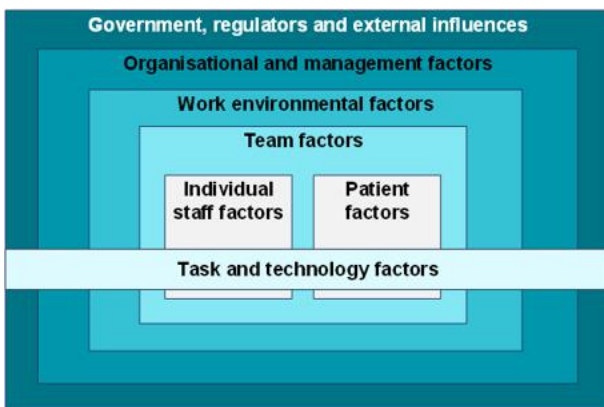
This review tool has been designed to help:

- understand why HCW COVID-19 infections occurred
- focus on the system in which HCW work rather than individual HCW
- review controls that were in place to prevent or minimise the outcome of a HCW COVID-19 infection
- identify opportunities to strengthen risk controls to prevent HCW COVID-19 infections and/or minimise the outcome in the future.

A systems thinking approach

The main principle of a systems perspective is that incidents are the result of several contributing factors across the sociotechnical system (**Figure 1. The health sociotechnical system**). This also applies to workplace acquired HCW COVID-19 infections.

Figure 1. The health sociotechnical system



Our learnings so far show that there are many interacting factors within the system that result in workplace acquired HCW COVID-19 infections, such as time pressure, staffing levels, availability and suitability of equipment, incompatible systems, and inadequate work environments for the task and circumstances.

There is a strong focus on preventing HCW COVID-19 infections including a 'target zero' approach. However, given the complexity of our health system it is unrealistic to think a HCW COVID-19 infection will never happen. There are always conditions that have the potential to create the right set of circumstances for an infection to occur.

A balanced focus on preventing infections and responding to infections that do occur is required. Figure 2 provides a map of how one might think about continuous improvement efforts for prevention (to reduce the likelihood that hazardous conditions lead to a HCW COVID-19 infection), and response (to minimise the severity of the outcome for staff patients, health services and the community when a HCW COVID-19 infection occurs).

Effective revisions of controls should focus on designing the systems to support and enhance people's performance and set people up for success based on an understanding of the system influences on their work.

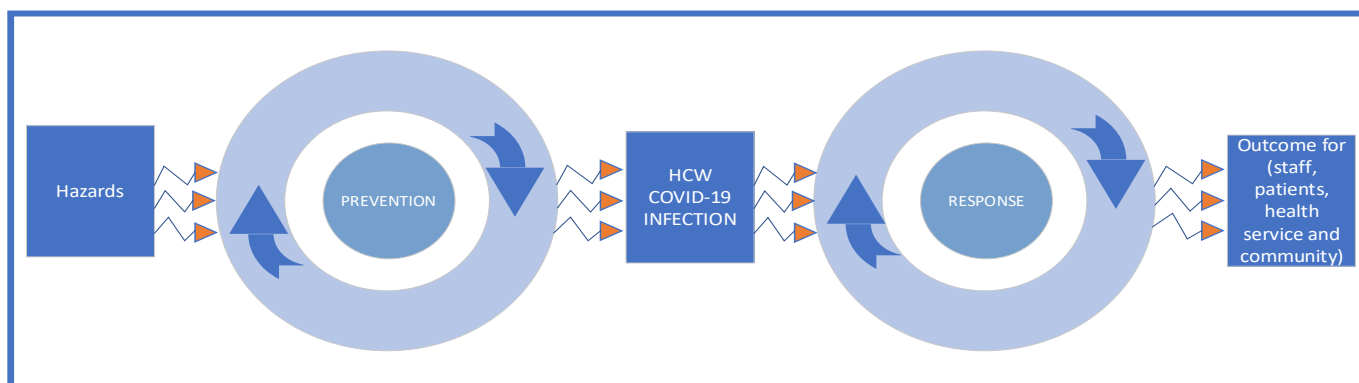


Figure 2 Prevention efforts to reduce the likelihood that a HCW COVID-19 infection occurs and response efforts to minimise the severity of the outcome for staff, patients, health service and the community.

Principles to apply when reviewing HCW COVID-19 infections

- 1. There are multiple interacting factors, never one root cause**
To understand why HCW COVID-19 infections occur and why risk controls were not effective enough, we need to identify the multiple, interacting systems factors that contributed to the HCW COVID-19 infection or made the outcome for staff and others more severe.
- 2. Consider the systems context in which HCWs work**
Consider interactions between people (with their physical and cognitive capabilities and limitations) and all other elements of the system within which they work (such as equipment, environmental conditions, pressures and demands) to help understand why HCW COVID-19 infections occur.
- 3. Controls are about both prevention and response**
The goal of reviewing these cases extends beyond understanding the mechanism of transmission of infection. This tool is designed to ensure health services consider controls that prevent HCW COVID-19 infection and minimise the impact on other staff, patients, the health service, and community when a HCW COVID-19 infection occurs.
- 4. The easiest way should be the safest way by design**
Design processes and systems in a way that the easiest way to do things is the safest way to do things, and conversely make it harder to do the wrong thing (e.g., by making dangerous equipment connections incompatible rather than training and reminding people not to connect certain equipment).
- 5. Systems improvements need to reflect systems complexity**
Reviews that only result in isolated changes to training, supervision or changes to equipment or procedures are usually not effective, if not combined with broader changes across system levels, in preventing future HCW COVID-19 infections.
- 6. Consultation with subject matter experts**
Consult with people and access data across the different levels of the sociotechnical system as part of reviewing HCW COVID-19 infection events, allowing for opportunities to identify controls and implement effective changes across system levels.

Just Culture

When reviewing HCW COVID-19 infections, it is critical to apply the principles of a Just Culture by focusing on systems rather than individuals. This is important to assure the review process is fair, objective and in line with contemporary safety science.

A Just Culture acknowledges that it is inevitable that adverse events occur in complex systems such as health. A Just Culture is a learning culture where adverse events are viewed as an opportunity to learn and to further improve systems safety. The foundation for this is a mutual trust between senior leadership and staff. On the one hand, senior leadership provides an environment of trust where staff feel safe and encouraged to report adverse events without fear of being blamed. On the other hand, senior leadership trust staff in reporting adverse events when they occur, and to come to work with good intentions.

A Just Culture opposes a 'name, shame, blame' mentality by shifting the focus from the actions of individuals to the broader organisation. It views safety and accountability as a balance between the design of the broader system, and the actions of the people working in the system. Underpinned by systems thinking, Just Culture principles are in line with contemporary safety science recognising that adverse events in complex system occur due to a combination of multiple interacting systems factors.

Process for reviewing HCW COVID-19 infections- Using the review tool & report

This guide outlines the below key process on how to undertake the review and document the review findings in the report template. The numerical points are reflected in the Review tool and report template.

Who should be involved in the review?

The review should be collaboratively conducted by the Infection Prevention, Occupational Health and Safety and, where relevant, Patient Safety teams.

1. Review Endorsement

The review should be overseen and managed to completion by an Executive Sponsor.

2. Clinical Governance.

You will need to detail who the results and action plan should be reported to the appropriate committee for monitoring of implementation.

3. What to consider as part of the review- *What happened?*

The right place to start is to capture what is already known about the HCW COVID-19 infection, and what has been done about it already. Several lines of enquiry should be followed to understand what happened:

- The HCW COVID-19 infection: Describe the flow of events on the day of the suspected transmission event and any relevant events leading up to the transmission/infection
- Immediate outcomes for staff: Injuries or harm to staff as a result of the HCW COVID-19 infection
- Immediate outcomes for the health service: Impact on operations, management, reputation as a result of the HCW COVID-19 infection
- Outcomes for the community: Impact on the community (close contacts, secondary infections)
- Notifications: Check that all reports and notifications have been completed why the HCW COVID-19 infection occurred, and why it resulted in the outcomes identified.

4. Identify who and what needs to inform the review?

The review team will need to consider and agree on who to interview and what information they will require access to. The below examples are listed:

4a: Identify the staff that need to inform this review			
Frontline staff: <input type="checkbox"/> Nurses <input type="checkbox"/> Medical <input type="checkbox"/> Allied Health <input type="checkbox"/> Pharmacy <input type="checkbox"/> Non-clinical <input type="checkbox"/> Security <input type="checkbox"/> Other _____	Operations management <input type="checkbox"/> NUMs/ANUMs <input type="checkbox"/> Medical heads of units <input type="checkbox"/> Bed allocation group <input type="checkbox"/> Committees <input type="checkbox"/> Infection Prevention <input type="checkbox"/> OH&S Team <input type="checkbox"/> Patient Safety & Quality <input type="checkbox"/> Training <input type="checkbox"/> Equipment Manager <input type="checkbox"/> Facilities Manager <input type="checkbox"/> Procurement manager <input type="checkbox"/> IT support services <input type="checkbox"/> Human Resources <input type="checkbox"/> Other _____	Governance and administration <input type="checkbox"/> CEO <input type="checkbox"/> The Board of Directors <input type="checkbox"/> Executive Team <input type="checkbox"/> Chief Operating Officer <input type="checkbox"/> Governance Committees <input type="checkbox"/> Legal Officer <input type="checkbox"/> Capital and infrastructure <input type="checkbox"/> Other _____	External influences <input type="checkbox"/> Government <input type="checkbox"/> Regulators <input type="checkbox"/> Unions/Employer Associations <input type="checkbox"/> Equipment suppliers <input type="checkbox"/> Patient transfer <input type="checkbox"/> GPs <input type="checkbox"/> Pathology provider <input type="checkbox"/> Nursing home <input type="checkbox"/> _____ Other _____

4.b: Identify the systems that need to be accessed /activities that need to be observed during this review			
Patient systems <input type="checkbox"/> EMR <input type="checkbox"/> Physical records <input type="checkbox"/> Referral letters <input type="checkbox"/> Transfer information Patient activities <input type="checkbox"/> Entry/exit <input type="checkbox"/> Bedside engagement (incl behaviour) <input type="checkbox"/> Hygiene activities <input type="checkbox"/> Aerosol generating procedures or other high-risk activities <input type="checkbox"/> Other _____	Staff systems <input type="checkbox"/> Logbooks <input type="checkbox"/> Swipe access <input type="checkbox"/> EMR <input type="checkbox"/> Rosters <input type="checkbox"/> Other _____ Staff activities <input type="checkbox"/> Entry/exit <input type="checkbox"/> Clinical work <input type="checkbox"/> Non-clinical work <input type="checkbox"/> Breaks <input type="checkbox"/> Other _____	Governance and administration <input type="checkbox"/> Policies and procedures <input type="checkbox"/> Meeting minutes <input type="checkbox"/> Action plans <input type="checkbox"/> Other _____	External influences <input type="checkbox"/> Government policies and procedures <input type="checkbox"/> Regulators guidance and standards <input type="checkbox"/> Unions/Employer Associations guidance <input type="checkbox"/> Equipment suppliers, manuals, and information <input type="checkbox"/> Patient transfer information <input type="checkbox"/> Referral letters <input type="checkbox"/> Other _____

5.The review: *how and why the HCW COVID-19infection occurred*

The review team will be required to analyse the HCW COVID-19infection incident by identifying what factors contributed to the incident and what controls were in place to minimise the outcome for staff, patients, the health service and community and if these controls worked well, or not, and if there were any controls missing.

Appendix A, is the Accident Mapping (AcciMap) Table, from the [SCV Learning from health care worker COVID-19infections report](#). It lists and themes the contributing factors that were identified from the 137 investigation reports where 297 HCW COVID-19infections were reviewed against the AcciMap review framework. Additionally, Appendix B lists a detailed dictionary of all the contributing factors identified in the original review. Both diagrams can additionally assist the reviewing team in coding your incident review findings.

6. What can be done about it (*recommendations*)?

Based on the review teams analysis of the findings the review team will need to identify and draft feasible and practicable actions to address the issues identified. This is where the review team summarises the findings (things they discovered did not work well or contributed to the HCW COVID-19infection). The team will be required to and make recommendations (improvements) against each framework contributing factor. Summarise all the recommendations and consider the earlier mentioned investigation principles on page 2 (1) multiple factors, not one root cause, (2) consider the system context in which HCW work, (3) it is about prevention and response, (4) the easiest way should be the safest way by design, (5) there is no silver bullet and (6) consultation.

7. Findings:

Is there anything else worth exploring further before feasible and practicable actions can be implemented and assigned? These might be issues that were raised that were not directly related to the incident but require exploring.

8. Learnings:

Are there any other related learnings that were identified but did not directly contribute to the HCW COVID-19 infection event?

Appendix A: Contributing Factors Table

Government, regulators and external influences	GOVERNMENT & REGULATORS					UNIONS & EMPLOYER ASSOCIATIONS	SUPPLIERS		EXTERNAL CARE PROVIDERS	OTHER					
	Legislation & regulations	State guidelines	Other COVID information for healthcare workers (excluding guidelines)	Multiple government agencies with COVID-19 responsibilities	Building codes and / or standards	Guidelines from peak bodies (non-government)	External PPE supply chain	Equipment standards	Diversion of patients from surrounding health services	Media					
	National guidelines	NEAT targets	Communication and feedback between health services and government	Infection prevention resources (including tools, response kits)		Information from unions	External pathology providers	Transfer of patients to/from health services and facilities (including patient information)	External influences and pressures						
Organisation and management	MANAGEMENT SYSTEMS		LEADERSHIP	SUPERVISORY & CROSS-DEPARTMENTAL SUPPORT		PATIENT MANAGEMENT	WORK & STAFF SUPPORT SYSTEMS	PLANNING & RESOURCES	WORK SCHEDULING		TRAINING				
	Local PPE policies, guidelines and procedures	Cleaning and decontamination procedures and schedules	Safety culture	Support from supervisor(s)		Bed management	Protected time for teaching/learning	Planning for service demand	Frontline staff roster	Clinical workload	PPE training				
	Surveillance systems	Asymptomatic / regular screening for staff and / or patients	Change management	Support from other departments		Patient transfer	Staff welfare check-ins and provision of support	Mobile or temporary staff	Non-frontline staff roster	Non-clinical workload	Quality of training				
	In-home clinical care procedures	Other policies and procedures	Support for health & wellbeing of staff			COVID patient load	Out of hours support	PPE internal supply chain	Staff movement between wards / locations / facilities	Lunch / break time scheduling	Training update frequency				
	Outbreak management plan	Patient transfer policies and procedures				Cohorting of patients		Material & equipment internal supply chain			Other training				
Work environment	ENVIRONMENT							EQUIPMENT PROVISION & MAINTENANCE							
	Shared facilities (patients)	Patient visibility	Space to maintain physical distancing in clinical work / office areas	Noise	Temperature	Donning & doffing areas	Facility / ward not fit for purpose	Physical barriers to separate staff and patients/visitors	Equipment suitability & design	Management of used disposable equipment	Availability of appropriate cleaning products	Labeling and packaging	Equipment cleaning & maintenance		
	Patient's own home	Layout	Space to maintain physical distancing in staff break areas	Lighting	Ventilation	Staff amenities	Availability of COVID-safe reminders	Equipment availability	Management of non-disposable equipment	Availability of appropriate PPE	Management of linen	Waste management			
Team	TEAM DESIGN						COMMUNICATION								
	Team roles	Staff sick leave / staff availability	Team leadership	Co-worker support	Task allocation	Remote supervision	PPE spotters	Communication between staff	Provision of information to staff	Collection of information from staff	Documentation	Clinical handover			
Task and Technology	WORK PROCESSES						WORK DESIGN								
	COVID-19 PCR testing (including asymptomatic testing)	COVID-19 PCR results	COVID-19 equipment protocols	Decision-making aids	COVID-19 status known / readily available	COVID screening checklist	Shared use of work tools and equipment including admin tools	Difficult task	Unfamiliar task	Monotonous task	Task switching (multi-tasking)	Task frequency	Task design	Task design (PPE donning & doffing)	Type of procedure
Staff	STAFF														
	Physical health	Fatigue	Distraction	Level of experience	Splash / puncture injury with contaminated material	Fear of infection	Familiarity with facility	Use of PPE	Compliance / adherence to infection control procedures	Contact with other staff who have been exposed to COVID positive patients	Asymptomatic COVID-19 infection (not suspected/ not diagnosed)				
	Mental health	Stress	Rushed	Respect for colleagues	Working in more than one role at health service or across health services	Trust in wider system	Trust of PPE	Donning and doffing of PPE	Compliance / adherence to other procedures	Contact with other HCW outside of work settings					
Patient	PATIENT/CONSUMERS														
	Language and communication	Patient use of surgical mask, hand hygiene, physical distancing and cough etiquette	Physical health co-morbidities (complexity and seriousness)	Social / mental health issues	Asymptomatic COVID infection (not suspected/ not diagnosed)	Family/close contact visits	Patient behaviour								

Appendix B: Contributing Factors Dictionary

Contributing factors	Description
Government, regulators & external influences	
<u>Government & Regulators</u>	
Legislation and regulations	National / state legislation and regulations are inadequate or hindering COVID response efforts.
National guidelines	National / Federal guidelines around COVID preparedness and response are unclear, unavailable, conflicting and/or frequently changing, leading to confusion amongst the sector.
State guidelines	State guidelines around COVID preparedness and response are unclear, unavailable, conflicting and/or frequently changing, leading to confusion amongst the sector.
NEAT targets	Time pressure to comply with National Emergency Access Target (NEAT).
Other COVID information for healthcare (excluding guidelines)	Other types of COVID information (not covered in the other categories) available to healthcare workers are not adequate or clear.
Communication and data transfer between health services and government	Miscommunication, conflicting, high volume and / or unsuitable communication and / or data requests between health services and government. For example, duplication of data, reformatting of data, no direct contact information so health services look around to find the right person, communication late on Friday, not leaving contact details when leaving voice mail, different messages to healthcare workers.
Multiple government agencies with COVID-19 responsibilities	Multiple agencies dealing with COVID data and their processes are duplicated and / or not integrated. For example, multiple notification processes.
Infection prevention resources (including tools, response kits)	Infection prevention resources (including tools, response kits) are not readily / widely available to healthcare workers.
Building codes and / or standards	Building codes and / or standards for design of health services are inadequate to accommodate for COVID response.
<u>Unions & Employer Associations</u>	
Guidelines from peak bodies (non-government)	Guidelines from non-government peak bodies around COVID-related issues are unclear and/or frequently changing, leading to confusion amongst the sector.
Information from unions	Information provided by unions around COVID-related issues are unclear and/or conflicting to other sources.
<u>Suppliers</u>	
External PPE supply chain	Shortage of PPE supply chain from external sources affecting availability and quality of PPE provided. Brand uncertainty leading to anxiety of staff.
External pathology providers	External pathology provider determining distribution of pathology resources, courier runs and turnaround time of results.
Equipment standards	Lack of, inadequate and / or outdated standards for equipment, deeming them unsuitable for use due to COVID.
<u>External Care Providers</u>	
Diversion of patients from surrounding health services	Health services in the area are diverting patients resulting in more patients presenting.
Transfer of patients to/from health services and facilities (including patient information)	Health services or aged care facilities transferring patients to another health service because they do not have capacity or the patient's condition exceeds their capability to look after the patient. May include issues because of COVID status of patient and/or presence of an outbreak in referring health service/facility unknown.
<u>Other</u>	
Media	Media attention and / or reports affecting healthcare / aged care services processes and staff stress.
External influences and pressures	Influencing from colleges and other healthcare groups communicating in the media or releasing statements or communication with members

	increases pressure on healthcare / aged care services and stress on healthcare workers either directly or indirectly through friends and family
Organisation and management	
<u>Management Systems</u>	
Local PPE policies, guidelines, and procedures	Lack of, or underdeveloped, organisational policies, guidelines and procedures on selection, use, maintenance, and disposal of PPE.
Cleaning and decontamination procedures and schedules	Lack of, or underdeveloped, procedures and schedules on cleaning and decontamination of facility and equipment that adequately address COVID-19 risk, including (but not limited to) frequencies per area / equipment, materials and associated MSDS requirements, and waste handling.
Surveillance systems	Lack of, or inadequate, surveillance (e.g. staff attestations) and / or contact tracing systems to investigate and communicate individual infection cases and close contacts, as well as manage any consequent outbreaks.
In-home clinical care procedures	Lack of, or underdeveloped, procedures and guidelines on in-home clinical care of patients.
Outbreak management plan	Lack of, or underdeveloped, plans for management of outbreaks at facility.
Patient transfer policies and procedures	Lack of, or underdeveloped, policies, guidelines, and procedures on transfer of patients between wards and / or other facilities.
Asymptomatic / regular screening for staff and / or patients	Lack of, or inadequate, asymptomatic COVID screening for staff and / or patients at facility.
Other policies and procedures	Lack of, or underdeveloped, other organisational policies, guidelines and / or procedures related to aspects not mentioned in the previous CFs.
<u>Leadership</u>	
Safety culture	Poor workplace safety culture resulting in inability of staff to speak up about safety issues or concerns, inadequate reporting and investigation of incidents, or lack of learning from previous incidents that may result in similar incidents recurring.
Change management	Change management in health services, including recognising and managing of culture shift required during pandemic.
Support for health and wellbeing of staff	Poor support for staff health and wellbeing by leadership team, that may be evident by lack of support or clear messaging around staff work attendance despite being fatigued or having symptoms or fearing return to work following infection.
<u>Supervisory and Cross-Departmental Support</u>	
Support from other departments	Lack of, or inadequate, support from other departments within the same health service. This includes making resources available, and support for carrying out tasks where needed.
Support from supervisor(s)	Lack of, or inadequate, support from supervisor(s). This includes making resources available, buy in and support of initiatives and recognition of hard work.
<u>Patient Management</u>	
Bed management	Poor bed management and / or practices that are contributory to COVID-19 exposure.
Patient transfer	Poor patient transfer processes for transferring patients within or between wards and / or to other facilities that may contribute to COVID exposure.
COVID patient load	High number of COVID patients in isolation on the ward at the time created a heightened risk of COVID exposure.
Cohorting of patients	Difficulties in avoiding mixing of COVID, suspected COVID and non-COVID patients in ward / facility.
<u>Work & Staff Support Systems</u>	
Out of hours support	Lack of, or inadequate, support for staff after working hours.
Protected time for teaching/learning	Lack of protected time for staff to use for teaching or learning.
Staff welfare check-ins and provision of support	lack of or inadequate staff welfare check-ins and support provision (organising, care, checks)

Planning & Resources	
Planning for service demand	Poor planning for expected demand on health service that may lead to inadequate levels of staffing and other key resources.
Mobile or temporary staff	Use of casual, temporary, or mobile staff that may create cross-contamination between healthcare services / facilities.
PPE internal supply chain	Shortage of PPE supply chain from internal sources (i.e., procurement department) affecting availability and quality of PPE provided (despite no shortage of PPE on the market).
Material and equipment internal supply chain	Shortage of material and equipment supply chain from internal sources (i.e., procurement department) affecting availability and quality of material and equipment provided.
Work Scheduling	
Frontline staff roster	Frontline staff rostering is inadequate, leading to issues such as understaffing, or cross-contamination between teams.
Clinical workload	Increased clinical workload placing a higher than normal cognitive or physical demand on the HCW as a result of work scheduling.
Non-clinical workload	Increased non-clinical workload (e.g., cleaning, hygiene compliance, paperwork) placing a higher than normal cognitive or physical demand on staff as a result of work scheduling.
Lunch / break time scheduling	Lunch / break times for staff not staggered, leading to increased congestion in break / tea rooms and areas.
Non-frontline staff roster	Non-frontline staff rostering (e.g., administrative or infection prevention staff) is inadequate, leading to issues such as understaffing and not appropriately managing ward processes.
Staff movement between wards / locations / facilities	Staff movement across different wards, facilities or locations which may contribute to cross-contamination.
Training	
PPE training	Lack of, or inadequate, training on PPE usage and requirements.
Training update frequency	Infrequent updates to training leading to outdated information being used in training.
Quality of training	Poor quality of training.
Other training	Lack of, or inadequate, training on other aspects of the work other than PPE.
Work Environment	
Environment	
Shared facilities (patients)	Patients confirmed, suspected or undiagnosed COVID-19 sharing space / facilities (e.g. bathroom) with non-COVID patients
Patient's own home	Working at patient's home where appropriate facilities and decontamination are not available.
Patient visibility	Lack of patient visibility (i.e., patients not readily identifiable) leading to increased risk of exposure
Layout	Poor or inflexible layout of wards/workspaces that may contribute to cross-contamination between COVID and non-COVID areas.
Space to maintain physical distance in clinical work/office areas	Lack of adequate space in staff areas, wards, corridors, and lifts (excluding break / tea rooms) to accommodate staff and patients while maintaining 1.5m social distancing or 4m ² occupancy rule.
Space to maintain physical distance in staff break areas	Lack of adequate space in break / tea rooms to accommodate staff while maintaining 1.5m social distancing or 4m ² occupancy rule.
Noise	Noise in working areas contributing to HCW / patients wellbeing and infection rate.
Lighting	Poor or excessive lighting in working areas contributing to HCW / patients wellbeing and infection rate.
Temperature	Temperature in working areas contributing to HCW / patients wellbeing and infection rate.
Availability of COVID-safe reminders	Lack of availability of reminders (e.g., signs and posters) on COVID-safe behaviours (e.g., social distancing, PPE requirements) in relevant areas.

Donning & doffing areas	Insufficient space or clean areas for donning & doffing of PPE.
Staff amenities	Use of shared amenities by staff (e.g., toilets, PPE changing rooms) where there is a risk of cross-contamination.
Facility / ward not fit for purpose	The healthcare facility, or a specific ward, are not suitable to accommodate COVID patients.
Ventilation	Poor ventilation or air refreshing; no negative pressure or isolation of air.
Physical barriers to separate staff and patients/visitors	Lack of availability of physical screens or barriers to separate staff and patients and / or visitors.
Equipment Provision & Maintenance	
Equipment suitability and design	Equipment used is not suitable, not appropriately designed, not fit for purpose and / or malfunctioning.
Equipment cleaning and maintenance	Lack of, or inadequate, cleaning and / or maintenance of equipment.
Management of used disposable equipment	Poor management of used disposable equipment.
Management of non-disposable equipment	Poor management of non-disposable equipment.
Availability of appropriate cleaning products	Lack of availability of appropriate cleaning products to clean / decontaminate against COVID-19.
Availability of appropriate PPE	Lack of availability of appropriate PPE in line with relevant requirements.
Labelling and packaging	Inadequate labelling and packaging of material / equipment.
Management of linen	Poor management of linen leading to lack of availability of linen and / or inadequate linen disposal / washing practices.
Equipment availability	Lack of availability of equipment (e.g., patient handling / transfer equipment, thermometers, etc.)
Waste management	Infrequent, or inadequate, waste management processes, including waste handling and disposal.
Team	
Team Design	
Team roles	Lack of clarity on team roles and responsibilities.
Staff sick leave / staff availability	Staff availability and / or sickness affecting team rostering.
Team leadership	Leadership amongst teams is not effective.
Co-worker support	Lack of support from co-workers.
Remote supervision	Lack of direct supervision.
Task allocation	Inadequate task allocation or delegation process leading to confusion.
PPE spotters	Lack of PPE spotters within teams to ensure proper donning and doffing process.
Communication	
Communication between staff	Lack of, or inadequate, communication between staff leading to confusion.
Documentation	Inadequate documentation in clinical records to provide sufficient details on patient's conditions and care administered.
Clinical handover	Lack of a clear and thorough communication on clinical handover amongst HCWs between shifts.
Provision of information to staff	Inadequate provision of important information related to covid-19 and any changes in guidelines to staff.
Collection of information from staff	Inadequate collection of information from staff, or lack of consultation with staff to obtain feedback, or where provided, feedback is not considered.
Task and Technology	
Work Processes	
COVID-19 PCR testing (including asymptomatic testing)	Lack of availability, or frequency, of COVID-19 PCR testing to adequately test staff and / or patients presenting with or without symptoms.

COVID-19 PCR results	Long turnaround time for availability of COVID-19 PCR test results, or poor accuracy of results leading to false negative or positive results.
Decision-making aids	Lack of availability, or inadequate, decision-making aids.
COVID-19 status known/readily available	Lack of information on COVID-19 status in the EMR.
Shared use of work tools and equipment including admin tools	Shared use of work tools and / or equipment (including admin tools) that may lead to cross-contamination.
COVID screening checklist	Lack of availability, or inadequate, COVID screening checklist.
COVID-19 equipment protocols	Lack of availability, or inadequate, COVID equipment protocols.
Work Design	
Difficult task	Complexity of task leading to potential exposure to COVID-19.
Unfamiliar task	Unfamiliarity with task leading to inadvertent exposure to COVID-19.
Task switching (multi-tasking)	Performing multiple tasks at the same time which may lead to inadvertent mistakes or errors.
Task frequency	High frequency of task which may lead to poor habits or practices to save time (e.g., frequent donning and doffing of PPE).
Task design	The nature of the task does not allow for physical distancing to be maintained (e.g., patient handling).
Task design (PPE donning & doffing)	Issues related complexity or impracticality of the PPE donning and doffing task which may inadvertently create exposure to COVID-19.
Hand hygiene	Unable to perform hand hygiene in between tasks.
Type of procedure	Performing a high-risk procedure on a patient (e.g., aerosolising) which may lead to inadvertent exposure to COVID-19.
Monotonous task	Performing a monotonous task that may lead to inadvertent errors due to lack of concentration.
Staff	
Staff	
Physical health	Physical health of staff as a contributing factor that may have led to complacency or lowered alertness around potential sources of exposure to COVID.
Mental health	Mental health of staff as a contributing factor that may have led to complacency or lowered alertness around potential sources of exposure to COVID.
Working in more than one role at health service or across health services	Staff working in multiple health services leading to potential cross-contamination across services.
Fatigue	Fatigue as a contributing factor that may have led to complacency or lowered alertness around potential sources of exposure to COVID.
Stress	Stress as a contributing factor that may have led to complacency or lowered alertness around potential sources of exposure to COVID.
Distraction	Distraction as a contributing factor that may have led to complacency or lowered alertness around potential sources of exposure to COVID.
Level of experience	Lack of experience for staff (e.g., students or trainees) that may lead to mistakes or errors that may lead to inadvertent exposure to COVID-19.
Rushed	Working under time pressure as a contributing factor that may have led to complacency or lowered alertness around potential sources of exposure to COVID.
Splash/puncture injury with contaminated material	Exposure to COVID through splashes or puncture injuries with contaminated surfaces.
Respect for colleagues	Mutual respect between staff to ensure adherence to processes in place.
Asymptomatic COVID-19 infection (not suspected/not diagnosed)	Asymptomatic staff with COVID-19 infection presenting to work because they have not been diagnosed with COVID-19 and are not suspected to have COVID-19 due to lack of symptoms.
Contact with other staff who have been exposed to COVID positive patients	Contact with other staff who have been exposed to COVID positive patients may lead to staff exposure.
Contact with other HCW outside of work settings	Potential for out-of-work COVID transmission between staff and other healthcare workers due to common social circles.

Fear of infection	Fear of staff from becoming infected at work (fear for themselves and their close contacts) increases stress and anxiety at home and at work.
Compliance / adherence to infection control procedures	Lack of compliance with infection control procedures, such as eating and drinking on ward, using phone, etc.
Trust in wider system	Lack of trust by staff in the wider healthcare management system leads to stress and anxiety at work and fear they may become infected as what they thought was safe last week has now changed. Leads to disengagement with advice
Familiarity with facility	Staff not familiar with the facility.
Trust of PPE	Lack of trust in PPE to protect from exposure to COVID.
Use of PPE (excl. donning & doffing)	Lack of, or improper, use of PPE (excluding donning & doffing) to adequately protect from exposure to COVID.
Donning and doffing of PPE	Inadequate capability and / or execution of donning and doffing of PPE task.
Compliance / adherence with other procedures	Lack of compliance with, or adherence to, procedures other than infection control, which may contribute to HCW infection (e.g., material handling, decontamination, etc.).
Patient	
<u>Patient/Consumers</u>	
Language and communication	Language and communication as barriers to communicating with patients to ensure they understand the requirements.
Patient use of surgical mask, hand hygiene, physical distancing, and cough etiquette	Patients not adhering to surgical mask use, hand hygiene, physical distancing, and cough etiquette.
Physical health co-morbidities (complexity and seriousness)	Patients with complex or serious physical health comorbidities that are more difficult to manage or require higher level of care.
Social / mental health issues	Patients with complex or serious social or mental health issues that are more difficult to manage or require higher level of care.
Asymptomatic COVID-19 infection (not suspected/not diagnosed)	Asymptomatic patients with COVID-19 being present in the facility leading to staff / patient exposure.
Family/close contact visits	Family or close contact visitors potentially presenting with COVID infection.
Patient behaviour	Patients displaying inappropriate behaviours (e.g., spitting, coughing, yelling, etc) that may lead to staff exposure to COVID-19.