WHO R&D Blueprint
COVID-19

WHO COVID-19 Social Science in Outbreak Response
Perceptions of Health workers regarding health facility infection prevention and control procedures for COVID-19: A Research Template

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Abbreviations

COVID-19  Coronavirus Disease 2019
HW  Health Worker
IPC  Infection prevention and control
PPE  Personal protective equipment
SARS-CoV-2  Severe Acute Respiratory Syndrome Coronavirus 2
TDR  Theoretical Domains Framework
WHO  World Health Organization
## Summary

| Study population | A) Health workers¹ providing direct clinical care to patients in community, hospital, and/or ambulance emergency response settings.  
B) Staff involved in running clinical services in community, hospital, and/or ambulance emergency response settings. Including, but not limited to senior managers, receptionists, other administrative roles, cleaners, porters, janitors and other non-clinical roles. |
| Study design | Cross-sectional survey |
| Implementation | This Research Template details an approach to rapid assessment of health worker views of health facility infection prevention and control (IPC) procedures for COVID-19. It is designed to be rapidly adapted at local, regional or national levels using a convenience sampling frame. Data will be collected using a standardized questionnaire administered online via KoBoToolBox. All regulatory and administrative approvals need to be obtained by the user, and data should be processed in line with national data protection regulations. We recommend that the data collection tool be refined and adapted where needed to ensure contextual appropriateness. |
| Potential outputs and analysis | The standard questionnaire captures demographics, epidemiological information, HW perception of individual and organizational preparedness to implement IPC, and HWS’ current self-reported mental wellbeing. Additional modules capturing stigma, social and behavioural aspects of vaccination, prolonged PPE use, return to work and SARS-COV-2 variants are available on KoBoToolBox under the Harvard Humanitarian Initiative (HHI) question library. |

¹ The WHO World Health Report 2006 [12] defines health workers as follows: “Health workers are all people engaged in actions whose primary intent is to enhance health”. These include health professionals (e.g., doctors, nurses, midwives, dentists, pharmacists) but also allied health professionals, technicians, community health workers, health care managers and support staff (e.g., cleaners, porters, etc), and long term care facility and social care workers. Occupational health and safety is of utmost concern during COVID-19, and the recommendations herein, thus, should be implemented based on task, role and context, interpreting health and social care worker broadly.
1. Background

1.1 Introduction

Health and care workers are workers employed in “human health and social work activities” who contribute towards improved health and well being. There are an estimated 135 million health and care workers worldwide. Health and care workers play a central role in providing quality healthcare for those affected by SARS-Cov-2, the virus that causes COVID-19. To prevent health workers becoming infected, and to prevent nosocomial spread of COVID-19, a wide range of healthcare services must ensure that effective infection prevention and control (IPC) measures are adhered to (1). There are significant pressures on health workers (HWs) providing care in emergency epidemic conditions. Recent reviews of the literature show that HWs are disproportionately affected by coronavirus outbreaks (2), are at an increased risk to be infected with SARS-CoV-2 (2,3), have reported high prevalence of depression, anxiety, psychological distress (4), and are at increased risk of being victim to violence related to stigma (5), further compounding the stress under which they perform their duties. Health workers face the likelihood of stigma due to perceptions that they have a high risk of spreading infection to both patients and colleagues, their community and families (6). Research conducted during the first SARS epidemic demonstrate the importance of organisational and social factors in protecting the physical and psychological health of health workers (7). Notably mentioned was health worker confidence in their own ability to effectively adhere to IPC measures are critical for increased protection against infection.

In 2020 the World Health Organisation (WHO) published updated COVID-19 specific IPC guidelines for health workers (8,9). This guidance highlights the recommended IPC measures needed to prevent infection in healthcare settings such as the correct use of personal protective equipment (PPE), which is critical to reduce risk of infection in health workers.

Growing evidence shows that adherence to PPE measures and exposure to infection control training are associated with lower risk of SARS-CoV-2 infection (2,3,9). A recent review on barriers and facilitators of health workers’ adherence to IPC guidelines for infectious respiratory disease illustrated that several factors contributed to health workers’ willingness and ability to follow IPC protocols. Some of these factors were effective communication of

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3 At the time of publication, the guidance briefs cited were the most current.
the [IPC] guidelines, support from management as well as access to and access to PPE (10). More research is needed to generate evidence focused on identifying barriers and facilitators to increasing health worker confidence and adherence to IPC measures.

This research template details a cross-sectional survey to evaluate perceptions of health workers' individual and organizational preparedness to follow IPC measures in their place of work. Survey methods have been selected as an approach to rapidly capture perceptions among a targeted group of people. It is advised that methods are reported following recommended reporting guidelines, including documentation of the limitations of the chosen survey methods, and the impact of potential bias (sampling, measurement, non-response bias) on research outcomes (11).

Paired with this research template is an implementation guide (Appendix E) for health workers and health facilities use the survey findings to select strategies that improve health worker adherence to infection prevention and control measures for COVID-19 in health facility settings.

This research template along with the adapted implementation guide will assist public health agencies, healthcare administrators, policy makers and other relevant decision makers to identify immediate areas of concern that need to be addressed to improve infection prevention and control in healthcare settings at local, regional and/or national levels.

1.2 Objectives

1.2.1 Primary Objective

To understand health worker perceptions of workplace preparedness to practice infection prevention and control measures implemented within their respective organisations to prevent COVID-19 transmission.

1.2.2 Secondary Objectives

1. To evaluate health worker perceptions of their individual preparedness to adhere to infection prevention and control measures to prevent transmission of COVID-19 in healthcare settings, and
2. To evaluate health workers’ collective level of trust in the ability of the healthcare organisation(s) in which they work to provide adequate IPC resources.
3. To consider how these factors vary
a. Across different epidemiological subgroups (i.e. age, ethnicity, gender, occupational group and occupational titles\(^4\));
b. Between those who have direct experience of treating COVID-19 patients and those who do not;
c. Between respondents whose healthcare facility is receiving suspected/confirmed COVID-19 patients and those whose healthcare facility is not (if applicable);
d. Between countries in different regions (if applicable).

4. To assess the current mental wellbeing of health workers during the COVID-19 pandemic.

5. To consider how current mental wellbeing varies:
   a. Across different epidemiological subgroups (i.e. age, gender, occupational title, other environmental and social factors (such as ethnic background), pre-existing MH conditions);
   b. Between those who have direct experience of treating suspected/confirmed COVID-19 patients and those who have not;
   c. Relative to working hours, access to rest periods and paid time off
   d. Between those who indicate different levels of infection prevention and control training.

2. Methods

2.1 Design and duration

Cross-sectional survey: for single or serial use.

2.2 Population

The WHO defines health workers as “all people engaged in actions with the primary intent of enhancing health including social care workers who often have roles in the provision of care in long-term care facilities and in community settings(12).”

For the purposes of this study, health workers are further described as follows:

Health workers providing direct clinical care to patients in community, hospital, and/ or ambulance emergency response settings. Including, but not limited to medical doctors,

\(^4\) Refer to WHO’s [Handbook on Monitoring and Evaluation of Human Resources for Health](https://www.who.int/hrh/documents/monitoring-evaluation-hr) for appropriate classifications of occupational roles and titles.
nurses, nursing assistants, allied health professionals, pharmacists, vaccinators, students and other roles with direct patient care.

All other staff involved in running or supporting clinical services in community, hospital, and/or ambulance emergency response settings, including in particular settings such as prisons. Populations of interest may include, but not be limited to senior managers, receptionists, other administrative roles, cleaners, porters, janitors and other non-clinical roles.

2.3 Recruitment

2.3.1 Sampling Design

Researchers should select participants using a convenience sampling frame of the populations of interest (See Appendix A for a comparison of convenience sampling against other common nonprobability and probability sampling methods). For the purposes of rapid operational decision-making, use of non-probability sampling methods are suitable. However, limitations regarding external validity and generalizability of these methods should be highlighted. More information on sampling and study design for social science focused surveys can be found in the Guidance for Health Care Worker Surveys in humanitarian contexts in LMICs(13).

2.4 Data collection

2.4.1 Survey Tool

This study is designed to provide information that will support actions that can be taken to better prepare or support health workers to follow infection prevention and control measures when managing COVID-19 patients. Data will be collected online through a standardized questionnaire facilitated by KoBoToolBox.

The data collection tool (See Appendix B) for this study was rapidly developed by experts in WHO’s Social Science in Outbreak Response and COVID-19 IPC working groups under WHO’s COVID-19 Research Roadmap. Factors including wellbeing, perceptions of trust in healthcare settings along with contextual aspects related to country preparedness and COVID-19 epidemiology will influence the experience of health workers and study findings.

Cross-sectional surveys provide a snapshot of health worker perceptions during the time that data are being collected. Together with dates and location of data collection, we recommend

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5 Researcher/research teams implementing the protocol are free to choose a more rigorous sampling design depending on their resources and circumstances. Broad considerations about sample selection are provided in Appendix A (31–33).
that implementing partners document key contextual indicators at each wave of data collection (See Appendix C). This will also facilitate cross-country comparison options for analysis. Despite expected variations in methods, results from researchers who use similar methods may be compared with each other in the future.

**Infection Prevention and Control**

IPC items in the survey questionnaire are adapted from WHO guidelines developed specifically for COVID-19. These include the *Infection prevention and control guidance for long-term care facilities in the context of COVID-19 Update (January 2021)* and the *Rational use of personal protective equipment for COVID-19 and considerations during severe shortages (December 2020)* (8,14). At the time this revision of the research template was published both of these guidance publications were current. We recommend that this list is adapted to the context of the researcher to ensure consistency with local recommended IPC guidelines and availability of PPE.

**Health worker trust in institution**

Based on a previously validated measure, health workers’ trust in the institution where they worked is assessed by capturing three dimensions of institutional trust (competence, honesty, act in best interests of staff) (15).

**Health worker current mental wellbeing**

To capture health workers’ current mental wellbeing, the World Health Organisation Well-Being 5 (WHO-5) score is included in the data collection tool. The WHO-5 is a validated wellbeing measure consisting of 5 different statements. Responses to these statements are combined to calculate a WHO-5 wellbeing score per respondent. The WHO-5 is available in different languages (see [https://www psykiatri regionh dk who 5 who 5 questionnaires Pages default aspx](https://www.psykiatri-regionh.dk/who-5/who-5-questionnaires/Pages/default.aspx)).

**Contextual Aspects**

Describing contextual aspects related to the researchers’ country’s preparedness, COVID-19 epidemiological profile at the time of data collection is critical to framing the results of the study. The data collection tool captures COVID-19 epidemiology using WHO categories for transmission classification (16).

**Theoretical Domain Framework**

The overarching framework of the tool is organized according to the Theoretical Domains Framework (TDF), a contemporary framework which has previously been applied to studying clinicians’ behaviour. The TDF has 14 domains which identify influences on behaviour that affect motivation, capability, and opportunity (17). These influences include aspects such as access to guidelines, materials to deliver effective preventative procedures, health worker...
perceptions of susceptibility to COVID-19, and trust in organisational readiness to manage spread of COVID-19.

**KoBoToolBox**

The data collection tool has been digitalized and pre-programmed into KoBoToolBox for rapid use. Optional modules are also available and can be added to the study tool via the KoBoToolBox ‘question bank.’

**Pilot Survey Tool**

Prior to data collection, the survey should be piloted with a small number of respondents for clarity. Language and wording should be checked.

### 2.4.2 Data Collection

Data will be collected via a standardized questionnaire administered as a pre-programmed online survey via KoBoToolBox. Optional additional modules can be added to the questionnaire via the question library in KoBoToolbox. Table 3 describes the strengths and limitations of the selected data collection strategy. While convenience sampling may be advantageous in settings with resource and time constraints, using a convenience sampling method increases the likelihood of selection bias. The strengths and limitations of convenience sampling methods should be considered in the reporting and interpretation of results (See Appendix A Tables 1 and 2 for general overview of sampling methods).

**Table 3: Data Collection Strategies**

<table>
<thead>
<tr>
<th>Data Collection Strategy</th>
<th>Strengths</th>
<th>Limitations</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-administered survey (Online)</td>
<td>Respondents can answer on their own time</td>
<td>Possible low response rate, easy to ignore invitation to complete</td>
<td>Connect with a gatekeeper/partner to prepare recipients for the email. This partnership may also aid the response rate</td>
</tr>
<tr>
<td></td>
<td>Less intrusive to a healthcare location/team</td>
<td>Will depend on internet, resources in location of interest</td>
<td>Add paper-based option in low-</td>
</tr>
<tr>
<td></td>
<td>Fewer staff needed on the research team</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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6 An online data collection and management tool is available through KoboToolbox at https://www.kobotoolbox.org/.

7 Implementing partners should specify the approach to data collection that is most suited to their context.
### Data Collection Strategy

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Limitations</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be done remotely: No need to send teams into areas with COVID-19 infection</td>
<td>bandwidth settings, with manual compilation?</td>
<td></td>
</tr>
<tr>
<td>Digital questionnaire can more easily prevent missing data by ensuring that “forced choice” answering is set</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impersonality helps people report negative events, feelings, or behaviours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easier and faster to implement indifferent locations in a standardized, replicable way</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digital questionnaire may be cheaper and easier than printing options</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 2.5 Ethical considerations

Selected study sites must be engaged early on in the planning process to ensure appropriate permissions are granted by local authorities. Ethical review or waiver procedures should take place in line with national guidelines. All study participants should be provided with information about the purpose of the survey (See Appendix D for recommended text), how their data will be used and their rights with regards to withdrawal from the study, and awareness that personal data will not figure in reporting. Participants who choose voluntarily to answer the survey will be invited to indicate in a text box that they consent to take part. Participants who do not consent will exit the survey. Personally identifiable data should not be collected, and all data should be held confidentially. All data will be handled in accordance with national data protection regulations. Power relationships between respondents and implementers should be taken into consideration as well as potential hesitancy from health workers to respond ‘unfavourably’ about practices that may or may not be implemented by their institutions.

#### 2.6 Informed Consent

Informed consent will be obtained from all study participants. Participants will be informed of the purpose of the study and that participation is voluntary, as well as that personally-identifiable information will neither be shared with the employer nor will figure in the reporting.
Participants are free to withdraw at any time, without reason and without any effect on their professional responsibilities. This study poses minimal risks to the participants. Participants will indirectly benefit from the data collected as this will lead to better understanding of barriers and facilitators to IPC adherence and therefore to improved infection prevention and control. The study will be conducted in compliance with this research template, the Declaration of Helsinki, good clinical practice and the applicable regulatory requirements. Ethical approval will be sought in accordance with national requirements.

2.7 Data handling and record keeping

Researchers will manage, process, analyse and store data according to their local or national processes and procedures. These procedures will be reviewed at local or national level to ensure they are sufficient to suitably protect respondent data. We recommend that personally identifiable data are not collected and that research teams work with management to avoid retaliation targeted at respondents for survey responses that may be viewed as critical of the facility. Data management plans should include information about how data will be stored, including levels of protection, who will have access to the data, and when it would be destroyed. In the event that data may need to be transferred, plans should specify how this will happen securely. In countries where data protection legislation exists, protocols should specify that data will be handled in accordance with those policies. For example, data management in the European Union must comply with the General Data Protection Regulation (GDPR).

2.8 Knowledge Management

2.8.1 Data Ownership

The data collected are owned by the participating researchers. The main priority of the Research Template is to assist researchers in generating evidence that is tailored to their specific context and locally meaningful. However, researchers are encouraged to share their researchers are encouraged to share adapted instruments, methods and translated questionnaires via KoBoToolBox’s ‘datashare’ feature for reference by future researchers.

2.8.2 Data sharing

Cross-site learning to inform dissemination and implementation plans can be facilitated by encouraging sites to share specific strategies and templates used to share findings (E.g., presentations to policy makers) or to implement strategies at the local level (e.g., leadership engagement strategies). Knowledge exchange is centralized through KoBoToolbox, which serves as a hub for both survey items and dissemination/implementation guidance and knowledge exchange for this work.
2.8.3 Developing an implementation plan

To facilitate the development of an implementation plan, the WHO has provided researchers with guidance on how to interpret findings from an implementation perspective and select appropriate and relevant implementation strategies (See Appendix E). Guidance is also provided for logistical considerations for implementation (e.g. forming an implementation team).

2.8.4 Report Writing

A report should be written following data analysis and shared at local, district, national and global levels. Peer reviewed publications, presentations to policy makers and other dissemination products are strongly encouraged. Researchers should work with their local WHO office prior to commencing the study to create a dissemination plan that will share results with key stakeholders, network(s) and/ or institution(s).

2.9 Prevention of infection in investigation personnel

All personnel involved in the study need to be trained in IPC procedures (standard, droplet, contact and airborne precautions, as determined by national or local guidelines). These procedures should include proper hand hygiene according to the WHO 5 Moments and the correct use of medical masks, to minimize the researcher’s risk of infection when in close contact with health workers who have had potential exposure to a COVID-19 patient, minimize the risk of spread among the health worker contacts of a COVID-19 patient and from the researcher to health worker contacts. Researchers will be expected to complete the WHO online training course on Infection Prevention and Control (IPC) for Novel Coronavirus (COVID-19) available at: https://openwho.org/courses/COVID-19-IPC-EN

3. Statistical Analysis

3.1 Sample size

The sample size will need to be determined by statistical methods according to the study design (cross sectional survey), study population and the specific objectives of the study. Sample sizes can be calculated using statistical formulas or tools available online (for example, at: http://www.openepi.com/Menu/OE_Menu.htm) or in standard statistical packages. It is important to note that a larger sample size would be required if study sites want to stratify by effect modifier or to adjust for confounding factors.
3.2 Statistical considerations

Descriptive analyses, comparative analyses, and regression analyses are all potential approaches to data analysis, depending on the data collected and refinements of the research question(s) being asked. Please note that all information below is meant as guidance, and that statistical analyses should follow from local predefined research questions, hypotheses, and local needs for information.

3.2.1 Data cleaning

**WHO Wellbeing 5 (Q32-36)**
The individual answers to the five WHO-5 statements are used to calculate a WHO-5 wellbeing score per respondent. A raw score is calculated by totalling the answers of the five answers, with “all of the time” coded 5 and “at no time” coded 0. To obtain a total score ranging from 0 to 100, the raw score is multiplied by 4. A total score of 0 represents worst possible, whereas a score of 100 represents best possible wellbeing (see [https://www.psykiatri-regionh.dk/who-5](https://www.psykiatri-regionh.dk/who-5)). This score can then be interpreted using different thresholds, e.g. thresholds used when screening for clinical depression (18).

**Trust in health facility (Q37-39)**
To assess trust, the survey tool contains three statements that capture different dimensions of trust – perceptions of competence, honesty, and actions that are in employees’ best interests (15). For analyses, these are combined into a single “Trust Score”. For example, if answers are reported on a 7-point Likert scale, ranging from “Strongly disagree” (0) to “Strongly agree” (7), these individual scores are summed up per individual, and divided by three.

3.2.2 Descriptive analyses

For each of the below, tabular or figure summaries can be presented. These can be stratified by contextual factors and/or subgroups, if applicable. The number and percentage of responders in each category could summarize categorical data. Continuous variables could be summarized by descriptive statistics, including mean, standard deviation, median, minimum, maximum and first and third quantiles (depending on (non-)normal distribution, see example Table).

*Demographic information of study population*

Describe the demographic characteristics of your study population and if available, present the nonresponse bias assessment.
Infection prevention and control (IPC) procedures used and knowledge of recommended IPC

Describe whether the IPC measures that were used by respondents comply with local or national protocols and policies. Describe the knowledge of recommended IPC procedures.

Preparedness and perceptions on IPC procedures (i.e. TDF domains)

Informed by the Theoretical Domains Framework (TDF), the survey tool was designed to collect information on the preparedness and perceptions of health workers on IPC procedures during the COVID-19 pandemic. Perceptions and experiences of health workers have been reported to be important factors in IPC and prevention of nosocomial transmission by acting as barriers or facilitators for adherence to IPC measures (10). These factors could roughly be categorized into three subdomains: 1) Organizational factors, such as having support by management, and availability of training programmes; 2) Environmental resources, such as the health facilities’ physical environment, and availability of PPE materials; and 3) Individual factors, such as individual knowledge and beliefs about the use of PPE. Researchers could report findings of the survey by these subdomains. These descriptive results could then be used to inform recommendations for routine clinical practice, by providing an overview of where strategies to optimize IPC adherence could focus.

WHO-5 Well-Being index (Q26-30)

For the WHO-5 wellbeing index, consider presenting the prevalence of health workers who score <50 points on the WHO-5 wellbeing index. A score below 50 is a cut-off score that can be used to a screening diagnosis of clinical depression (18).

3.2.3 Bivariable analyses (Differences between groups)

Authors should assess whether responses to statements, perceptions, or WHO-5 wellbeing scores, are statistically significantly different between subgroups. Use appropriate statistical tests when making statistical comparisons. These will depend on the number of groups and the type of data (i.e. continuous or categorical, (non-)normality). A P value < .05 is generally considered statistically significant. Keep in mind the risk of type I error in case of multiple comparisons, i.e. finding a statistically significant result by chance and erroneously inferring conclusions. It is therefore important to predefine and limit the number of statistical comparisons.

We recommend investigating differences in gender and age-specific gender, particularly related to wellbeing (19,20), differences between occupations (19,21,22), differences between patient facing staff (those working with COVID-19 patients) and those working in health facilities but not working directly with COVID-19 patients (19,21,23). If relevant,
analyses to explore differences related to geographic region and past experience working in a respiratory epidemic and/or pandemic are also recommended.

3.2.4 Multivariable regression analyses

Multivariable analyses allow for more in-depth examination of the data and can for example be performed to explore independent associations between environmental context, behavioural and social factors, and current mental wellbeing, while adjusting for confounding factors. Depending on a continuous or binary outcome variable, linear or logistic regression models are used, respectively. All model assumptions should be checked. Outcome variables, variables of interest, and confounding variables should be predefined (24). The difference between causal and predictive modelling should be noted as well as the difference between confounding variables and effect modifiers. Authors are aware that (univariable or multivariable) association does not imply causation. For more information, please refer to online resources such as provided below.

3.2.5 Other considerations

Missing data

Determine upfront whether only surveys that are fully completed will be included in the analyses (i.e. complete case analysis), or whether records with incomplete survey completion will be included as well (and what % should be at least completed, for example 50%). In case of deciding to use records with missing data on multiple statements, assess whether the data is missing (completely) at random. If so, you can consider using multiple imputation techniques to impute missing values.

Nonresponse bias

It is important to investigate possible nonresponse bias. Nonresponse bias can arise if persons that decide to participate in the study are systematically different from those that do not respond, which is an important limitation of survey studies (25,26). If applicable to your study design, and if possible, collect denominator data on how many persons were invited to participate in the study and calculate a response rate from your sample (N responding/total N invited). Ideally, demographic information (e.g. age, gender, occupational role) of responders is compared to demographic information of non-responders or to the entire group of invited persons. Some approaches to sampling do not allow for evaluation of nonresponse

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8 For background information on the design and conduct of surveys among health workers, see the informative paper by Burns et al. (2008): “A guide for the design and conduct of self-administered surveys of clinicians”
bias, in which case this limitation should be considered when reporting and presenting findings.

**External validity**

Consider to what level the study population is representative of all health workers to which study results will be extrapolated. In other words: is it valid to assume that the conclusions derived from the study are applicable to health workers that were not invited, or that did not participate in the study. Note that convenience samples do not usually result in generalizable results and are difficult to base extrapolations on.

**Epidemiological situation**

Carefully describe the local epidemiological context regarding COVID-19 (i.e. case numbers, national restrictions) during each period when survey data collection was performed, for interpretation of results. Also report the WHO transmission category and response capacity (27) (See Appendix C).

**Reporting**

Follow reporting guidelines on survey research for reporting your results (11). For background information, you can also check the STROBE checklists and appropriate extension (i.e. cross-sectional) for more information on reporting of study results of observational studies (available via www.strobe-statement.org)(28). If relevant researchers should consult reporting guidelines for mixed methods studies (29,30).
3.2.6 Example tables and figures

Below are example tables and figures of how data could be presented. Please note that these are examples only; variables, categories, and subgroups can differ per implementing group and should fit local data collection. Definitions should be provided for each variables, categories, subgroups and groups.

Table 4. Demographic information of participating health workers (HW).

<table>
<thead>
<tr>
<th></th>
<th>All HW</th>
<th>Subgroup 1</th>
<th>Subgroup 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = XX</td>
<td>N = XX</td>
<td>N = XX</td>
</tr>
<tr>
<td></td>
<td>(%)</td>
<td>(%)</td>
<td>(%)</td>
</tr>
<tr>
<td>**Age, mean (±SD)**¹</td>
<td>xx (X)</td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>xx (X)</td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td><strong>Living situation</strong></td>
<td></td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td>Single</td>
<td>xx (X)</td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td>Living with partner</td>
<td>xx (X)</td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td><strong>Having caring responsibilities for other (adults, children, persons with disabilities)</strong>*</td>
<td>xx (X)</td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td><strong>Type of healthcare service</strong>*</td>
<td></td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td>Primary healthcare</td>
<td>xx (X)</td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td>Hospital</td>
<td>xx (X)</td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td><strong>Medical specialty</strong>*</td>
<td></td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td>Internal medicine</td>
<td>xx (X)</td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td>Acute care (anaesthesiology, ER, ICU)</td>
<td>xx (X)</td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td>Surgery</td>
<td>xx (X)</td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td>Other</td>
<td>xx (X)</td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td><strong>Occupational Title</strong></td>
<td></td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td>Senior medical doctor</td>
<td>xx (X)</td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td>Junior medical doctor</td>
<td>xx (X)</td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td>Nurse</td>
<td>xx (X)</td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td><strong>Full-time employment</strong></td>
<td></td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td>**Years of experience, median (Q1-Q3)**¹</td>
<td>xx (X-X)</td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td><strong>Daily patient contact</strong></td>
<td></td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
<tr>
<td><strong>Personally cared for COVID-19 patient</strong></td>
<td>xx (X)</td>
<td>xx (X)</td>
<td>xx (X)</td>
</tr>
</tbody>
</table>
Table 4. Demographic information of participating health workers (HW).

ER, emergency room; HW, health worker; ICU, intensive care unit; SD, standard deviation; Q1, first quartile; Q3, third quartile

1 Check normal distribution and present mean or median, accordingly.

* These are example variables. Variables, categories and subgroups can differ per implementing group. If applicable, provide definitions that were used.

Table 5. WHO 5-item wellbeing score per subgroup1.

<table>
<thead>
<tr>
<th>Mean WHO-5 (±SD)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All respondents (N=XX)1</td>
<td>XX.X (xx.x)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>XX.X (xx.x)</td>
</tr>
<tr>
<td>Female</td>
<td>XX.X (xx.x)</td>
</tr>
<tr>
<td>Occupational Title*</td>
<td></td>
</tr>
<tr>
<td>Nurse</td>
<td>XX.X (xx.x)</td>
</tr>
<tr>
<td>Medical doctor</td>
<td>XX.X (xx.x)</td>
</tr>
<tr>
<td>Other possible roles</td>
<td>XX.X (xx.x)</td>
</tr>
<tr>
<td>...</td>
<td>XX.X (xx.x)</td>
</tr>
<tr>
<td>COVID-19 patient care / health worker*</td>
<td></td>
</tr>
<tr>
<td>Patient facing with COVID-19 patient</td>
<td>XX.X (xx.x)</td>
</tr>
<tr>
<td>Not patient facing with COVID-19 patient</td>
<td>XX.X (xx.x)</td>
</tr>
<tr>
<td>Other subgroup1</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td>XX.X (xx.x)</td>
</tr>
<tr>
<td>...</td>
<td>XX.X (xx.x)</td>
</tr>
</tbody>
</table>

NA, not applicable; NS, not significant, WHO, World Health Organization

1 Predefine subgroups upfront.

* These are example variables. Variables, categories and subgroups can differ per implementing group. If applicable, provide definitions that were used.

Figure 1. Example of how to present descriptive information on perceived skills and environmental context. (this figure was made with Likert function in R package “HH”)
4. References


2. Chou R, Dana T, Buckley DI, Selph S, Fu R, Totten AM. Epidemiology of and Risk Factors for Coronavirus Infection in Health Care Workers A Living Rapid Review. 2020;


5. By Insecurity Insight, the Researching the Impact of Attacks on Healthcare project (RIAH) and the Safeguarding Health in Conflict Coalition (SHCC).


13. (No Title).

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25


27. World Health Organisation. Considerations in adjusting public health and social


5. Appendix A: Overview of Sampling Frames

Table 1: Sample Selection Methods

<table>
<thead>
<tr>
<th>Sample selection method</th>
<th>Description and Reasoning</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Probability, Purposive Sampling (see Table 2 for more</td>
<td>Used when there are specific, predefined groups in mind to access</td>
<td>Can create a sample to meet the needs of the study</td>
<td>Not necessarily representative of population</td>
</tr>
<tr>
<td>detail on specific methods)</td>
<td>Used when there are clear eligibility/inclusion requirements for groups</td>
<td></td>
<td>Generalizability is typically not possible</td>
</tr>
<tr>
<td></td>
<td>Used for situations where researchers need to reach a targeted sample quickly</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Used when sampling for proportionality is not the primary concern</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probability Simple Random Sampling</td>
<td>The ideal form of sampling as it yields an unbiased sample that is representative of the</td>
<td>Yields representative and generalizable findings</td>
<td>This approach takes substantial amounts of time, money, resources, and staff</td>
</tr>
<tr>
<td></td>
<td>population of interest</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Creates a representative list of possible participants which all have equal opportunity</td>
<td>The systematic and randomization nature of the approach limits biases</td>
<td>An accurate and complete sampling frame is essential, if compiling one is not feasible this method will not work</td>
</tr>
<tr>
<td></td>
<td>to be recruited</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Requires all, or close to all, of the possible participants to be included in the</td>
<td>The simple random sampling method is the simplest form of this probability</td>
<td>It is imperative to adhere to a randomized sampling technique which may be less convenient than nonprobability sampling methods</td>
</tr>
<tr>
<td></td>
<td>sampling frame</td>
<td>approach</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Each person is selected independently and may be selected only one time</td>
<td></td>
<td>Focus is not on the sizes / proportions of groups therefore analysis among subgroups may be difficult</td>
</tr>
</tbody>
</table>


Table 2: Non-probability sampling approaches

<table>
<thead>
<tr>
<th>Sampling Approach</th>
<th>Reasoning</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quota sampling</td>
<td>Researchers divide the population into subgroups (e.g. by health worker role), which have already been outlined by this Research Template</td>
<td>Attention to sampling for comparison groups may aid and/ or strengthen analysis</td>
<td>It may be difficult to calculate or estimate accurate proportions</td>
</tr>
<tr>
<td></td>
<td>Researchers can obtain health facility human resources records to estimate the proportion of the population in each group</td>
<td></td>
<td>This approach may not be possible if the facilities do not have accurate or up to date human resource records</td>
</tr>
<tr>
<td>Convenience sampling</td>
<td>Ideal in a situation with unknown sampling feasibility or resources</td>
<td>May be the fastest and least labour-intensive option if it is anticipated that response will be low and recruitment will be difficult</td>
<td>This sampling method opens the study up to selection bias</td>
</tr>
<tr>
<td></td>
<td>Convenience sampling aims to recruit participants who are readily available</td>
<td>This approach is often less intrusive than other sampling methods</td>
<td>Not typically generalizable, although similarities can be deduced in sub-groups</td>
</tr>
<tr>
<td>Snowball sampling</td>
<td>May be useful since the population of interest is mostly comprised of colleagues</td>
<td>This approach is typically utilized when a full participant list is unavailable</td>
<td>This is a slower recruitment and sampling process. This approach relies on contacts within the network of recruited participants. Respondents may not be willing to recommend other colleagues to contact</td>
</tr>
<tr>
<td>Respondent Driven Sampling</td>
<td>May be useful to use networks to build off of convenience sample and create a sample with properties of a probability sample</td>
<td>Under a certain set of assumptions final sample may have high statistical validity and reduced bias</td>
<td>Requires strict adherence to rigorous implementation procedures in order to elevate statistical validity</td>
</tr>
</tbody>
</table>
6. Appendix B: Data Collection tool V2.0

Introductory text
This survey aims to understand how health workers feel regarding their preparedness to deliver infection prevention and control (IPC) procedures in healthcare settings during the COVID-19 pandemic.

The information we collect will help improve preparedness to prevent health workers becoming ill and to effectively prevent spread of COVID-19. In this survey, we refer to infection prevention and control procedures that should be adopted when managing patients with suspected or confirmed COVID-19. For reference, relevant [national/ regional/ local]* guidelines can be found here [ADD LINK] ⁹

All data will be stored and processed in accordance with national regulations. Approvals for this study have been obtained from [NAME]. Responses will be combined, and no personally identifiable information will be shared.

If you are willing to take part in this study, please confirm the following: yes/ no
• I understand that my participation is completely voluntary
• I would like to take part in this study

Demographic information

<table>
<thead>
<tr>
<th>Variable</th>
<th>Format options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Number</td>
</tr>
<tr>
<td>Gender</td>
<td>Standard formats</td>
</tr>
<tr>
<td>Role*</td>
<td>For example: Senior medical doctor, junior medical doctor, nurse, allied health professional, assistant, administrative, non-clinical, other</td>
</tr>
<tr>
<td>Type of healthcare service*</td>
<td>Primary Health Care / Hospital: Medical unit, surgical, intensive care, paediatric, emergency, infectious disease ward, maternity, other / Ambulance</td>
</tr>
<tr>
<td>Screening question: do you provide direct care to patients?</td>
<td>Yes/ no/ not sure</td>
</tr>
<tr>
<td></td>
<td>IF YES, how frequently do you provide direct patient care?</td>
</tr>
<tr>
<td></td>
<td>1) daily 2) more than one day per week, 3) less than one day per week, 4) rarely, 5) no patient contact, 6) don’t know]</td>
</tr>
<tr>
<td>Employment status*</td>
<td>Full time/ part time/ casual or locum staff/ retired/ student/ other*</td>
</tr>
<tr>
<td></td>
<td>Are you employed in more than one health setting?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>Format options</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is your current* living situation?</td>
<td>Living alone</td>
</tr>
<tr>
<td>*Please select the option that was best applicable during the majority of the time during the past 2 weeks</td>
<td>Living with others</td>
</tr>
<tr>
<td></td>
<td>Prefer not to say</td>
</tr>
<tr>
<td>Do you have caring responsibilities for any adults, including those with disabilities or those over the age of 70 years?</td>
<td>Yes/ no/ prefer not to say</td>
</tr>
<tr>
<td>Have you personally been diagnosed with COVID-19?</td>
<td>Yes/ no/ prefer not to say</td>
</tr>
<tr>
<td>If you have been diagnosed with COVID-19 was this laboratory and/or radiologically confirmed?</td>
<td>Yes/ no/ prefer not to say</td>
</tr>
</tbody>
</table>

*Adjust as needed to be country specific. Make sure definitions are provided to your respondents and in your reporting.

**Experience of COVID-19 or previous epidemic**
Response options: [yes/ no/ unsure]
1. In a clinical setting, have you previously worked during an acute respiratory epidemic or pandemic, for example, SARS (2002), MERS Co-V (2012), H1N1 (2009)?
2. In a clinical setting, did you personally care for patients with suspected or confirmed infection caused by a novel respiratory pathogen, for example, SARS (2002), MERS Co-V (2012), H1N1 (2009)?
3. Has a patient with suspected or confirmed COVID-19 attended the health facility in which you work?
4. Have you personally provided direct medical care to a patient with suspected or confirmed COVID-19 infection?

**IF YES to 4:**
5. What type of medical contact did you have with a suspected/confirmed COVID-19 case?
   A. Close contact: directly caring for a suspected/confirmed patient or being within a 1-2m radius of a suspected/confirmed patient
      i. IF A: Did this contact include an aerosol generating procedure? For example, tracheal intubation, non-invasive ventilation, bronchoscopy, cardiopulmonary resuscitation.
   B. Healthcare contact: no direct contact with suspected/confirmed COVID-19 case but was present on the ward when they were cared for.
   C. Unknown / unsure

6. What kind of infection prevention procedures did you use during your most recent medical contact with a suspected/confirmed COVID-19 patient?
Note: combine with the response given to Q5 (for example, did the health worker have a close contact with or without an aerosol-generating procedure) in order to infer adherence to infection prevention and control recommendations.

- Hand hygiene Yes/no/not sure
- N95 respirator (FFP2 or equivalent) Yes/no/not sure
- Other types of medical mask (if yes, which one) Yes/no/not sure
- Fluid-resistant long-sleeved gown Yes/no/not sure
- Disposable apron Yes/no/not sure
- Gloves Yes/no/not sure
- Full body suit Yes/no/not sure
- Eye protection (i.e. goggles or face shield) Yes/no/not sure
- Single use equipment Yes/no/not sure
- No specific equipment Yes/no/not sure
- Other…. Open text field

Questions regarding infection prevention and control procedures for management of patients with suspected or confirmed COVID-19

The following questions relate to your experience of managing patients in the healthcare setting where you work. Please think about your experience over the past week when responding to these questions.

Response options: 7 point Likert scale: strongly disagree, disagree, somewhat disagree, neither agree nor disagree, somewhat agree, agree, strongly agree.

Service demand
7. I am confident that the healthcare service where I work can manage current patient demand related to COVID-19
8. I am confident that the healthcare service where I work can continue to manage patient demand related to COVID-19 over the next 3 months.

Knowledge of recommended infection prevention and control procedures
9. When providing direct medical care to suspected or confirmed COVID-19 patients, excluding during aerosol-generating procedures, which of the following procedures are currently recommended in your country for preventing transmission?
   - Hand hygiene Yes/no/not sure
   - N95 respirator (FFP2 or equivalent) Yes/no/not sure
   - Other types of medical mask (if yes, which one) Yes/no/not sure
   - Fluid-resistant gown Yes/no/not sure
   - Disposable apron Yes/no/not sure
   - Gloves Yes/no/not sure
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- Full body suit: Yes/no/not sure
- Eye protection (i.e. goggles or face shield): Yes/no/not sure
- Single use equipment: Yes/no/not sure
- Other…. Open txt field

Skills
10. I feel I have received sufficient training in the infection prevention and control practices specifically for COVID-19
   10a. I participated in self-paced training online (e.g. facility, government, OpenWHO or WHO Academy-provided) and received a certificate after successful assessment question responses.
   10b. I participated in a classroom or virtual instructor-led training and received a certificate after successful assessment question responses.
   10c. I participated in a classroom or virtual instructor-led training and received a certificate of participation with no assessment.
   10d. I was provided with reading material or job aids.

11. I have received general training for infection prevention and control procedures for other communicable diseases

Beliefs about capabilities
12. I am confident that I am able to follow recommended procedures related to personal protective equipment (PPE) for COVID-19 e.g. appropriate use and disposal of gloves, apron and fluid resistant surgical mask

Social/professional role
13. I feel it is my professional responsibility to take all measures necessary to care for COVID-19 patients.

Beliefs about consequences
14. I consider that the protective procedures at work are sufficiently effective to prevent the spread of COVID-19 in the health facility where I work
15. Following the infection prevention and control recommendations will protect me from becoming ill with COVID-19
16. Following recommended infection, prevention and control procedures adds significant additional strain to my workload.

Intentions*
*If you are currently not providing direct care to COVID-19 patients, please think of a future possible situation where you would, when answering this question*

17. I intend to always use the recommended personal protective equipment (medical mask, eye protection, gown and gloves) when taking care of patients with suspected or confirmed COVID-19 when I have access to these.

Environmental context and resources
18. In the health facility where I work, I have access to clear policies and protocols for everyone to
follow related to infection prevention and control procedures for COVID-19

19. I can easily access personal protective equipment (PPE) in line with standard infection control precautions, for example, gloves, gown, eye protection and medical mask for COVID-19 in the hospital where I work

20. During my last clinical shift, I had adequate supplies of the following materials [YES/NO/NOT SURE/DID NOT NEED]:
   - Hand alcohol
   - Hand soap
   - Running water
   - N95 respirator (FFP2 or equivalent)
   - N95 respirator (FFP1 or equivalent)
   - Surgical mask
   - Fluid-resistant gown
   - Disposable apron
   - Gloves
   - Full body suit
   - Eye protection (i.e. goggles or face shield)

21. In the health facility where I work there are dedicated isolation facilities for patients with COVID-19

22. The health facility where I work receives good support from national/ regional/ local public health authorities, who provide guidance and training on how to manage COVID-19

Social Influences

23. Most of my colleagues regularly follow infection prevention and control measures (for example, regular hand washing, use of personal protective equipment, proper disposal of equipment)

24. It is expected that in my role as a healthcare professional that I will follow infection prevention and control measures.

25. I am encouraged and supported by senior medical/nurse staff to apply recommended infection prevention and control measures.

26. The local community where I currently live day-to-day are generally supportive of health workers.

Emotion

27. I am concerned about the risk to myself of becoming ill with COVID-19

28. I am concerned about the risk to my family related to COVID-19 as a result of my job role

29. I am afraid of looking after patients who are ill with COVID-19

30. I accept that the risk of getting COVID-19 is part of my job

31. Whether I get infected with COVID-19 is within my control

WHO Wellbeing 5: Over the last two weeks


Note (2): these 5 questions are combined in the analysis to create a single “wellbeing” score.
Response option for this question: all of the time; most of the time; more than half of the time; less than half of the time; some of the time; at no time):
32. I have felt cheerful and in good spirits
33. I have felt calm and relaxed
34. I have felt active and vigorous
35. I woke up feeling fresh and rested
36. My daily life has been filled with things that interest me

[ Please provide information to your respondents on local resources for mental and psychological support ]

Trust in health facility
Note: these 3 questions are combined in the analysis to create a single “trust” score
37. The health facility where I work is ready to manage COVID-19
38. The health facility where I work are being honest with staff when managing COVID-19
39. The health facility where I work would act in the best interests of its staff when managing COVID-19

Comment
7. Appendix C: Contextual data collected by study team at each round of data collection

The study team should collect the following information for each round of data collection. If the survey is conducted in multiple countries, these data should be captured for each country included in data collection.

Dates of data collection: __/__/__  to __/__/__

<table>
<thead>
<tr>
<th>Dates of data collection</th>
<th><strong>/</strong>/__  to <strong>/</strong>/__</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country Name:</td>
<td></td>
</tr>
<tr>
<td>WHO Transmission Category</td>
<td></td>
</tr>
<tr>
<td>WHO Response Capacity Situation Level</td>
<td></td>
</tr>
<tr>
<td>IHR SPAR Average Score (%)</td>
<td></td>
</tr>
</tbody>
</table>

**WHO Situational Assessment: Assessing level of COVID-19 transmission and response capacity**

WHO provides guidance for its member states to assess transmission of COVID-19 and capacity to respond to the COVID-19 pandemic at national and sub-national levels. The full guidance including the situational matrix is included in *Considerations for implementing and adjusting public health and social measures in the context of COVID-19*. Researchers should consult this guide to determine the transmission category and response capacity levels using the situational matrix.

**Country Level Preparedness – international Health Regulations (IHR)**

The revised International Health Regulations (IHR) are a set of legal instruments designed to ensure and improve the capacity of all signatories or States Parties to prevent, detect, assess, notify, and respond to public health risks and acute events. Under the IHR, States Parties are obliged to develop and maintain minimum core capacities for surveillance and response to any potential public health events of international concern.

The SPAR (State Party Self-Assessment Annual Reporting) tool consists of 24 indicators for the 13 IHR capacities needed to detect, assess, notify, report and respond to public health risk and acute events of domestic and international concern. For each of the 13 capacities, one to three indicators are used to measure the status of each capacity that is then converted to an overall percentage score. Each capacity

---

has a percentage score. Researchers are encouraged to visit the SPAR webtool\(^\text{11}\) and document the percentage scores for each of the 13 capacities (Table 2) for their respective countries.

<table>
<thead>
<tr>
<th>IHR SPAR</th>
<th>Capacity Score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Capacities (average)</td>
<td></td>
</tr>
<tr>
<td>C1 Legislation and Financing</td>
<td></td>
</tr>
<tr>
<td>C2 IHR Coordination and National IHR Focal Point Functions</td>
<td></td>
</tr>
<tr>
<td>C3 Zoonotic Events the Human-animal Interface</td>
<td></td>
</tr>
<tr>
<td>C4 Food Safety</td>
<td></td>
</tr>
<tr>
<td>C5 Laboratory</td>
<td></td>
</tr>
<tr>
<td>C6 Surveillance</td>
<td></td>
</tr>
<tr>
<td>C7 Human Resources</td>
<td></td>
</tr>
<tr>
<td>C8 National Health Emergency Framework</td>
<td></td>
</tr>
<tr>
<td>C9 Health Service Provision</td>
<td></td>
</tr>
<tr>
<td>C10 Risk Communication</td>
<td></td>
</tr>
<tr>
<td>C11 Points of Entry</td>
<td></td>
</tr>
<tr>
<td>C12 Chemical Events</td>
<td></td>
</tr>
<tr>
<td>C13 Radiation Emergencies</td>
<td></td>
</tr>
</tbody>
</table>

\(^{11}\) State Party Self-Assessment Annual Reporting tool (SPAR) Capacity Scores can be found at [https://extranet.who.int/e-spar/capacity-score](https://extranet.who.int/e-spar/capacity-score)
8. Appendix D: Participant invitation example

You have been invited to take part in this research survey. Participation is voluntarily. Before you decide to participate, please read the following information on why this research is being done and what will happen to your responses.

The survey will ask you about your opinions, past experience, and current practices regarding local infection prevention and control procedures for COVID-19.

As the COVID-19 pandemic progresses, there is increasing pressure on health workers to provide care in epidemic conditions, across different countries and clinical settings. To identify immediate areas of concern that need to be addressed, we need to understand how health workers view their preparedness to deliver effective infection prevention and control procedures in their place of work.

You have been invited to take part in this survey because you are a health professional providing direct clinical care to patients, or a staff member involved in running clinical services, in community, hospital, and/ or ambulance emergency response settings.

It is up to you to decide whether or not to take part. If you do take part, we will ask you to provide consent. You can withdraw your participation and/ or information at any time, without giving a reason.

All information will be confidential and securely stored.

Information collected in this survey may be shared in an anonymised form to allow reuse within the research team and other third parties for COVID-19 health service related research only.

For questions, concerns or complaints about any aspect of this study, please contact [DETAILS HERE].
Purpose of this toolkit

Who is this toolkit for?

This toolkit was designed for people who administered the *Perceptions of health workers regarding health facility infection prevention and control for COVID-19* survey (WHO HW survey on IPC measures for COVID-19) and analyzed the results. This includes clinicians, researchers or administrators who were involved in survey administration.

If you are unfamiliar with this survey, you can access information about the WHO HW survey on IPC measures for COVID-19 and the survey question bank [here](#).

You administered the *Perceptions of health workers regarding health facility infection prevention and control for COVID-19* survey - now what?

Many people wonder about how to make the results actionable in order to improve conditions in their health facilities. The purpose of this toolkit is to help health workers and health facilities use their survey findings to select strategies that improve health worker adherence to infection prevention and control measures for COVID-19 in their place of work.

This toolkit is divided into five parts:

1. The science behind connecting survey results to actionable strategies
2. Who should be involved?
3. How should we prioritize areas of focus?
4. Selecting recommended strategies
5. Enacting strategies and planning for adaptations and sustainability

This toolkit takes approximately 15-20 minutes to read. It includes exercises you can complete with your colleagues to facilitate implementation planning.
Part 1: The science behind connecting survey results to actionable strategies

This document is informed by implementation science. Implementation science is the study of identifying the best ways to incorporate research evidence into practice. It draws from multiple fields to address the complexity of change. To learn more about the principles of implementation science, you can access The Center for Implementation’s free mini-course.

1.1 The steps required to make a change

The steps or stages required to implement changes in health facilities are guided by process models for implementation such as the Knowledge to Action model and Implementation Mapping. Common steps include:

1) Identifying the problem (i.e., determining which outcomes need to be improved)

2) Determining gaps between research and practice (i.e., understand why outcomes aren't ideal – what specific actions, behaviours, practices etc. are or are not being done that contribute to the problem?)

3) Selecting appropriate evidence (i.e., selecting which recommendations/guidelines/programs rooted in evidence address these gaps)

4) Understanding barriers and facilitators to change (i.e., exploring why individuals/organizations/systems may or may not use the evidence you have selected)

5) Selecting implementation strategies that facilitate change (i.e., selecting strategies that help individuals/organizations/systems overcome barriers and leverage facilitators, so that the evidence can be more easily adopted)

6) Implementation (i.e., implementing the evidence and the associated change strategies)

7) Evaluation (i.e., monitoring implementation and measuring outcomes)

8) Sustainability (i.e., continuing implementation if an improvement in outcomes is demonstrated)
1.2 Defining our intervention: what do we want to change?

Changing outcomes often requires a change in behaviour or actions, whether at the individual, organizational, or system levels (or some combination of these).

For example, to decrease transmission of a virus, we require that individuals adhere to IPC measures, and that health facilities and health systems take on actions to support individuals to perform these IPC measures. These behaviours and/or actions are more simply called the WHAT – in other words, WHAT individuals/ facilities/ systems need to do differently to improve outcomes.

To make it easier to be able to do the WHAT, we need to include strategies that facilitate change. A simple and common example is that education or training is often provided to get individuals to adhere to IPC measures. These strategies are HOW we make change, and are the second component of an intervention. The HOW describes how people will be supported to change their behavior. It is important that the WHAT and the HOW are based in evidence and linked through theory.

Figure 1: The WHAT and the HOW linked through
1.3 The “theory” of change

Even when we have identified WHAT individuals need to do differently, it can be difficult for them to make these changes because they face barriers to making that change. Conversely, it may be easy for them to make those changes because they face certain facilitators to doing the WHAT. The HOW (change strategies) exists to enable people to overcome barriers and leverage facilitators to making a change.

Here is a simple example of selecting the HOW based on barriers and facilitators to doing the WHAT. Training is a very common change strategy. We tend to offer training because we believe that the barriers individuals face in doing something differently (the WHAT) is that they lack knowledge and skills. Therefore, training is a HOW we use to overcome individuals’ barriers to doing the WHAT.

This example demonstrates a clear link between the WHAT and the HOW. Essentially, the HOW makes it easier for people to do the WHAT. It is critical that the WHAT and the HOW be linked through theory because the way we plan to make a change is based on what we think the mechanisms (or levers, or pressure points) of change are.

A typical pitfall in implementation is that we default to strategies we are comfortable with (e.g., education and training) even when they don’t address barriers. For example, if a health worker is not following IPC procedures because their peers are not following them, the underlying barrier is social influence. If an education strategy is delivered to try to change behaviour in this context, it will not work, as education targets barriers related to knowledge. Linking barriers to a theory of change can help us overcome this pitfall.

The WHAT, the HOW and theory of change for following IPC measures in health facilities.

In the context of the WHO HW survey on IPC measures for COVID-19, the targeted behaviour change (the WHAT) is health worker adherence to IPC procedures for COVID-19.

The survey enables the identification of barriers and facilitators to this behaviour change, mostly at the individual and organizational levels.

The survey items can be linked with implementation science theories and frameworks. Because of this, we can use the survey items to select the HOW.

In this toolkit, you will be using the results of your survey to understand barriers and facilitators to following COVID-19 IPC measures, and will be working with your team to select change strategies that you can use to overcome your identified barriers.

What if we did not complete the WHO HW survey on IPC measures for COVID-19?

If you did not complete the WHO HW survey on IPC measures for COVID-19, you can administer the survey in your organization by accessing the survey question bank here.
Part 2: Who should be included

2.1 Defining Roles

In Part 1 of this toolkit, we defined the steps required to implement change. The responsibility of completing those steps in health facilities often falls on key people/roles.

It is helpful to define roles and to ensure that everyone is aware of these roles in advance so that it is easier to make the progress you wish to make.

Common roles in implementation include:

**Advocate(s)** – someone who is a “cheerleader” for change. This person will help engage leadership and staff, secure buy-in and resources, and will be an important part of the change strategies.

**Leader(s)** – senior leaders as well as clinical leaders and informal leaders in health facilities who buy-in to making the change and will do the necessary actions for this work (e.g., motivating staff, providing necessary funds and permissions, etc.)

**Implementation team** – this may include your advocate and leaders, but also includes people who can actually plan for and deliver the change strategies. The roles and responsibilities of the implementation team are described in greater detail in the next section.

Overall, to create individual/organizational change based on the survey results, someone will need to lead implementation, there will need to be a group of people supporting this person, and you will need leadership buy-in.

2.2 Implementation Team

Implementation teams generally consist of a group of 3-5 people who ideally have dedicated time to devote to implementation. They are not an advisory board or committee. The team is responsible for active implementation as part of their roles and responsibilities.

Not every person on the implementation team has to have the same set of skills and qualifications. In fact, a skill mix is important – some people may have content expertise (e.g., in IPC), others may have expertise in implementation or quality improvement, some may be experts at gaining buy-in and fostering relationships across the facility, etc.

For implementation teams to fulfill their many functions, the relationships between
members of the implementation team need to have certain qualities. Team members must trust each other and foster respectful interaction; they must be open and engaged with one another and have big picture awareness; and the team should consist of people with different viewpoints and different communication skills.

**Role of the implementation team in this work**

The WHO HW survey on IPC measures for COVID-19 allows for the identification of barriers and facilitators to health worker adherence to IPC procedures. The implementation team will:

- assess which barriers and facilitators are most important to address;
- identify and implement change strategies that will be used to support health worker adherence to IPC measures.

2.3 What about leadership?

As noted, support from leadership is critical in all implementation projects. However, leaders may have limited time to be on implementation teams but want to be involved in some way. Some suggestions on how to involve leaders:

- Tell them exactly what you need from them (e.g., to talk to others, to model behaviours, to advocate change). Leaders often want to hear from the implementation team about how they can help.
- Ask them how they want to be involved, and the time commitment involved in each of these modes of involvement. Options may include:
  - Only communication about progress (i.e., sending them updates on how the implementation team is doing, successes/challenges the team has faced), OR;
  - An advisory role, where they are asked to come to some meetings, review documents and plans, and to help with decision making but are not expected to do the implementation planning and work, OR;
  - A spot on the implementation team to be more involved in planning and implementation if they choose to be involved in this way.
Part 3: How should we prioritize areas of focus?

When exploring how to implement change, there may be barriers that need to be addressed. Two common questions are: 1) how do we know which factors are barriers? and 2) what if there are too many barriers to address? This section assumes that you have finished administering the WHO HW survey on IPC measures for COVID-19 and are ready to start interpreting the results.

3.1 Determining barriers

The survey items from the WHO HW survey on IPC measures for COVID-19 are rated on a 7-point Likert scale. Depending on the nature of the question/how it is worded, a higher score may indicate a barrier, but it may also be the case that a lower score may indicate a barrier. For example, if you find that many health workers have rated “I feel confident that I am able to follow recommended procedures related to personal protective equipment for COVID-19” as a 1 or 2 (i.e., strongly disagree/disagree), then this can be considered a barrier. On the other hand, if you find that many health workers have rated “following recommended IPC procedures adds significant additional strain to my workload” as a 6 or 7 (i.e., agree/strongly agree), then this would be considered a barrier. With your implementation team, make a list of survey items that scored high/low (depending on the nature of the question). It helps to do this in a shared document (e.g., Google docs) or in a meeting. These will be your barriers to adhering to IPC measures for COVID-19.

3.2 Prioritizing barriers

If you find that your list of barriers is long, a good way to approach addressing these barriers is by prioritizing them. With your implementation team, devise decision criteria for how you will decide importance of barriers. For example:

1. Does the barrier identified by health workers pose huge challenges in the health facility (i.e., one barrier may be connected to many other barriers, and can resolve many other challenges if resolved)? This is a qualitative assessment and may require your implementation team to discuss and vote on options.
2. Which items did survey respondents rate highly based on average scores? You may choose to rank items according to these average scores and tackle the ones with higher scores first.

Note that prioritizing barriers doesn’t mean that you will not address most barriers. You may choose to address certain barriers first and other barriers at a later date.
Part 4: Selecting recommended strategies

There are different strategies that can be used at multiple levels.

4.1 Instructions

All survey items from the WHO HW survey on IPC measures for COVID-19 are listed on the following pages, categorized by health facility, team, individual, and system levels. Within each level, survey items that can be targeted by similar strategies are grouped together by color (white or light grey/blue). Remember, survey items directly reflect barriers and facilitators to health worker adherence to IPC measures.

We recommend you select your strategies with your implementation team in a meeting (1 – 2 hours) or common/shared document (e.g., Google docs).

To select strategies:

1. Indicate which barriers you prioritized by circling them in the tables on the following pages.
2. For the barriers you prioritized in the previous step, select corresponding strategies. To select strategies, think about the fit of the strategy into your health facility context, culture and workflow. **You do NOT need to select all strategies listed.**

   It may help to think about appropriateness, practicality, resources required, acceptability, sustainability and effectiveness of each strategy as selection criteria. Use the checkbox to indicate which strategies fit your selection criteria.

3. Note that multiple barriers may tap into the same strategies. This is very common and is quite helpful since it will allow you to address multiple barriers using one strategy. You can streamline your implementation plan by noting where there may be overlap in suggested strategies (e.g., trust building strategies can alleviate barriers related to confidence in the health facility and can also be used to address concerns of risk due to COVID-19).

   The strategies listed beside each group of barriers and facilitators were suggested based on their linkages to implementation science theories and frameworks. However, how the strategies are actually carried out in practice will vary depending on your context. Some strategies are straightforward, though some will require you to explore what it means to “do” the strategy within your health facility. This is covered in greater detail in Part 5 of this document.
4.2 Change strategies at the health facility level

These strategies truly need leadership to support, plan and advocate them. The main types of strategies at this level involve building trust, providing resources, and disseminating information.

4.2.1 Building Trust

Table 1. Suggested improvement strategies for building trust

<table>
<thead>
<tr>
<th>If survey results identify these areas as needing improvement</th>
<th>...select these improvement strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am confident that the healthcare service where I work can manage current patient demand related to COVID-19</td>
<td>Be transparent about decision making. Don’t just communicate decisions; communicate how you arrived at the decision.</td>
</tr>
<tr>
<td>I am confident that the healthcare service where I work can continue to manage patient demand related to COVID-19 over the next 3 months</td>
<td>Create opportunities for staff to weigh in on decisions related to COVID-19 (e.g., townhall) and ensure that their contributions to the final decisions are highlighted</td>
</tr>
<tr>
<td>I believe that the protective procedures at work are sufficiently effective to prevent the spread of COVID-19 in the health facility where I work</td>
<td>Embed honest communication related to HF capacity and patient demand into regular processes (e.g., having vulnerable conversations about hopes, fears, expectations, capacities more frequently in group settings).</td>
</tr>
</tbody>
</table>
| The health facility where I work is ready to manage COVID-19 | |)
| The health facility where I work is being honest with staff when managing COVID-19 | Foster trusting and supportive team dynamics (e.g., model empathy statements that can be expressed to one another; encourage authenticity in interactions without fear of institutional reprisal) |
| The health facility where I work would act in the best interests of its staff when managing COVID-19 | |)
4.2.2 Providing resources, information and restructuring environment

Table 2. Suggested improvement strategies for providing resources, information and restructuring environment

<table>
<thead>
<tr>
<th>If survey results identify these areas as needing improvement</th>
<th>...select these improvement strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the health facility where I work, I have access to clear policies and protocols for everyone to follow related to infection prevention and control procedures for COVID-19</td>
<td>Place protocol reminders at every point of care (e.g., proper handwashing technique at all handwashing stations, printouts for lanyards on proper donning and doffing)</td>
</tr>
</tbody>
</table>

| | Facilitate access by changing format (e.g., electronic, embedded in records) and/or location of policies and protocols (e.g., in central system, board at nursing station, etc.) |
| | Ensure these policies are available to ALL staff (e.g., including cleaning staff) |
| I can easily access personal protective equipment (PPE) in line with standard infection control precautions, for example, gloves, gown, eye protection and medical mask for COVID-19 in the hospital where I work | Ensure that staff know where PPE is located and what PPE they are supposed to be accessing |
| During my last clinical shift, I had adequate supplies of the following materials: • Hand alcohol • Hand soap • Running water • N95 respirator (FFP2 or equivalent) • N95 respirator (FFP1 or equivalent) • Surgical mask • Fluid-resistant gown • Disposable apron • Gloves • Full body suit • Eye protection (i.e., goggles or face shield) | Have leaders keep staff up to date on PPE supply level and what is being done to procure more |

| In the health facility where I work there are dedicated isolation facilities for patients with suspected COVID-19 | Ensure that staff know about available isolation facilities and procedures |
4.3 Change strategies at the team level

Strategies at the team level relate to setting social norms around adherence to IPC measures. These strategies include advocates, supervision, education and audit and feedback.

Table 3. Suggested improvement strategies at the team level

<table>
<thead>
<tr>
<th>If survey results identify these areas as needing improvement</th>
<th></th>
<th>...select these improvement strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most of my colleagues regularly follow infection, prevention and control measures (for example, regular hand washing, use of personal protective equipment, proper disposal of equipment)</td>
<td></td>
<td>Identify advocates across professions who can help encourage others to follow IPC measures (i.e., talk openly about it, model IPC behaviours).</td>
</tr>
<tr>
<td>I am encouraged and supported by senior medical/nurse staff to apply recommended infection prevention and control measures.</td>
<td></td>
<td>Have advocates work with staff to build a collective vision and identity around how they see IPC measures being performed, e.g., a slogan contest (we’re all in this together) to convey the collective mission.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Set up a buddy system to have staff mentor/teach other staff.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Develop a peer-to-peer audit process.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Encourage frequent communication between staff.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Include modelling of IPC measures in regular supervision duties.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provide recognition for staff when they are doing a good job of adhering to IPC measures.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Avoid blame if IPC measures are not being adhered to; instead, foster dialogue and understanding about why IPC measures aren’t being followed and what support needs are required.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Have leaders on the floor more often to work with staff and to visibly model IPC measures.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Include 5-10 min huddles at the beginning of every shift (if not already in place); have leadership/advocates involved in huddles.</td>
</tr>
</tbody>
</table>
4.4 Change strategies at the health worker level

Strategies at the health worker level are diverse and include education/training, supervision, modelling, action planning, social support, among others. Advocates/opinions leaders and leaders are mentioned throughout to help enact these strategies.

4.4.1 Providing and reinforcing training

Table 4. Suggested improvement strategies to provide and reinforce training

<table>
<thead>
<tr>
<th>If survey results identify these areas as needing improvement ...</th>
<th>...select these improvement strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Following recommended infection, prevention and control procedures adds significant additional strain to my workload</td>
<td>Review and adapt IPC measures to accommodate local resources/constraints e.g., if we don’t have the best thing, what is the next best thing?</td>
</tr>
<tr>
<td>I feel I have received sufficient training in the infection prevention and control practices specifically for COVID-19</td>
<td>Co-create solutions to see how IPC measures can be better embedded into workflow (e.g., auditing where the most time is taken to follow IPC measures and come up with solutions like task shifting or different placement of PPE and IPC requirements to streamline this)</td>
</tr>
<tr>
<td>I have received general training for infection, prevention and control procedures for other communicable diseases</td>
<td>Provide and reinforce refresher training on IPC guidelines and protocols</td>
</tr>
<tr>
<td>I am confident in my ability to correctly don and doff personal protective equipment to prevent transmission of COVID-19 to others and myself</td>
<td>Conduct pulse checks after training to determine how HWs feel about their training and their ability to follow guidelines and protocols. If barriers persist, explore adaptations to training</td>
</tr>
<tr>
<td>Have advocates/leadership team get involved with education/training to model IPC measures</td>
<td>Reinforce training through:</td>
</tr>
<tr>
<td>- Staff teaching staff</td>
<td></td>
</tr>
<tr>
<td>- Peer-to-peer audit</td>
<td></td>
</tr>
<tr>
<td>- Mentor and buddy system</td>
<td></td>
</tr>
</tbody>
</table>
| - 5–10-minute huddles at beginning of...
I am confident that I am able to follow recommended procedures related to personal protective equipment (PPE) for COVID-19 e.g. appropriate use and disposal of gloves, apron and fluid resistant surgical mask
every shift
- Simulation training embedded in supervisory activities

4.4.2 Clarifying and supporting the health worker role

Table 5. Suggested improvement strategies to clarify and support the health worker role

<table>
<thead>
<tr>
<th>If survey results identify these areas as needing improvement</th>
<th>...select these improvement strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Following the infection prevention and control recommendations will protect me from becoming ill with COVID-19</td>
<td>Address misconceptions surrounding IPC measures and PPE in training</td>
</tr>
<tr>
<td>Whether I get infected with COVID-19 is within my control</td>
<td>Audit nosocomial infection rates and feed this back to staff so they can see the benefits of their efforts.</td>
</tr>
<tr>
<td>I feel it is my professional responsibility to take all measures necessary to care for COVID19 patients</td>
<td>Use opinion leaders and/or advocates: - to deliver key messages about professional roles, duties to patients and adherence to IPC measures - model desired behaviour</td>
</tr>
<tr>
<td>It is expected that in my role as a healthcare professional that I will follow infection prevention and control measures</td>
<td>Have advocates work with staff to build a collective vision and identity around how they see IPC measures being performed, e.g., a slogan contest (we’re all in this together) to convey the collective mission</td>
</tr>
<tr>
<td>I intend to always use the recommended personal protective equipment (medical mask, eye protection, gown and gloves) when taking care of patients with suspected or confirmed COVID-19 when I have access to these</td>
<td>Action planning as individuals and within teams: - Individuals: encourage HWs to action plan for following IPC measures and sharing their action plans with leaders - Develop team action plans for adherence to IPC measures, and touch base about the action plan at huddles at the beginning of every shift</td>
</tr>
<tr>
<td>I am concerned about the risk to myself of becoming ill with COVID-19</td>
<td>Engage in risk planning: - Provide HWs with clear guidance about what to do outside of work to minimize their risk (of both</td>
</tr>
</tbody>
</table>

52
<table>
<thead>
<tr>
<th>Concern</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am concerned about the risk to my family related to COVID-19 as a result of my job role</td>
<td>- Transmitting and contracting COVID-19&lt;br&gt;- Be explicit about how staff will be protected&lt;br&gt;- Provide guidelines HWs can convey to their families about what their families can do to minimize their risk of exposure&lt;br&gt;- Provide clear guidelines for staff to follow if they are exposed to or infected with COVID-19&lt;br&gt;- Create space and opportunities where staff can safely voice their concerns as escalate these to leaders without fear of blame or reprisal</td>
</tr>
<tr>
<td>I am afraid of looking after patients who are ill with COVID-19</td>
<td></td>
</tr>
<tr>
<td>I accept that the risk of getting COVID-19 is part of my job</td>
<td></td>
</tr>
</tbody>
</table>
4.4.3 Tackling burnout and providing social support

Table 6. Suggested improvement strategies to tackle burnout and provide social support

<table>
<thead>
<tr>
<th>If survey results identify these areas as needing improvement ...</th>
<th>...select these improvement strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over the last two weeks, I have felt cheerful and in good spirits</td>
<td>Ensure staff have a voice in change as much as possible</td>
</tr>
<tr>
<td></td>
<td>Leverage opportunities to incorporate joy into work</td>
</tr>
<tr>
<td></td>
<td>Support individuals’ goals related to COVID-19 (e.g., understand their concerns and how they want them to be addressed)</td>
</tr>
<tr>
<td></td>
<td>Provide safe environment for staff to raise fears and vent frustration</td>
</tr>
<tr>
<td>Over the last two weeks, I have felt calmed and relaxed</td>
<td>Ensure staff have time and a way to provide feedback</td>
</tr>
<tr>
<td></td>
<td>Celebrate success, even small successes</td>
</tr>
<tr>
<td>Over the last two weeks, I have felt active and vigorous</td>
<td>Ensure staff are aware of and know how to access psychological supports if available; ensure these opportunities are listed in both a physical location and online</td>
</tr>
<tr>
<td></td>
<td>Consider creative staff scheduling if possible</td>
</tr>
<tr>
<td></td>
<td>Explicitly tie in individual and organizational values into discussions about work</td>
</tr>
<tr>
<td>Over the last two weeks, I woke up feeling fresh and rested</td>
<td>Encourage staff to use breaks to do activities that &quot;recharge&quot; them (noting that these activities will vary by individual)</td>
</tr>
<tr>
<td></td>
<td>Prioritize staff and organizational goals so that all staff know what they are working towards</td>
</tr>
</tbody>
</table>
Over the last two weeks, my daily life has been filled with things that interest me and what success looks like (because burnout can feel like you are working hard but making no progress)
Reset expectations - when staff are burning out, be clear about the activities that can be deferred or delayed

### 4.5 Change strategies at the health system level

Strategies at the health system level relates to fostering supportive environments for health facilities. The strategies presented are from the point of view/locus of control of people who work in health facilities.

Table 7. Suggested improvement strategies for change at the health system level

<table>
<thead>
<tr>
<th>If survey results identify these areas as needing improvement ...</th>
<th>...select these improvement strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>The health facility where I work receives good support from national/ regional/ local public health authorities, who provide guidance and training on how to manage COVID-19</td>
<td>Disseminate survey results back up to the higher levels in an attempt to advocate for better supports</td>
</tr>
<tr>
<td>The local community where I currently live day-to-day are generally supportive of healthcare workers</td>
<td>Ensure that internal supports are in place at the HF so thatHWs feel that they have a place to turn to when the wider community is unsupportive (individuals need at least some source of support to stay motivated in times of difficulty). Building up leadership and team support is vital in these times.</td>
</tr>
<tr>
<td>Consider community outreach initiatives to understand community barriers to supporting HWs.</td>
<td></td>
</tr>
</tbody>
</table>

The local community where I currently live day-to-day are generally supportive of healthcare workers
Part 5: Enacting strategies and planning for adaptations and sustainability

5.1 Enacting strategies

Once you have selected strategies, the next step is to enact them. This means planning out what it looks like to “do” the strategy within your setting. For example, if you selected a strategy related to delivering training, you need to determine: who will deliver the training?; how often will training be provided?; how long will training sessions be?; how will you measure the success of training?; and after how much time will you reassess health workers’ perceptions of the training and their confidence in their skills?

To help health workers enact these strategies, think about the details of the strategies across the following dimensions:

1. The actor – defining the stakeholder who actually delivers the strategies.
2. The action – defining how the strategy is executed.
3. Action target – defining who the strategy is targeted to.
4. Dose – defining how much or how often the strategy is delivered, how much time needs to be spent doing the strategy (i.e., intensity of the strategy), etc. These details should be decided on when planning for the delivery of strategies.

Remember, you do not need to select every potential strategy that is listed in the tables. We typically recommend enacting 3-5 change strategies at a time. As you enact strategies, it is important to pay attention to what is happening on the ground and how the targeted stakeholders are responding to the strategies. Is there evidence of health worker behaviour change? Do health workers feel more confident in their skills and safe in their place of work? Depending on what you are trying to affect, you may need to set up some type of data collection procedure. This would be the case if, for example, you decided to audit nosocomial infection rates and feed this data back to staff so they can see the benefits of their efforts. But data on the success of strategies can also be collected informally, through conversations with the health workers being targeted by the strategies.
5.2 Planning for adaptations

Adaptations are an inevitable part of implementation. It is helpful to proactively think about them as you implement your strategies.

Sometimes change strategies you select and enact do not support behaviour change the way they were intended to. This is the reality of implementation, and demonstrates the flexibility required to implement well. Adaptations to strategies might be required if: 1) the change strategy itself could be designed better, or is not appropriate for the setting or audience or; 2) if barriers and facilitators have changed over time, requiring the use of new strategies.

We recommend:

- Having conversations with your teams about challenges you may encounter as they relate to each strategy and how the strategy can be adapted if those challenges arise and get in the way of the strategy. If you are only adapting the strategy but not selecting a new one, try to ensure that the underlying function of the strategy remains the same. For example, if a strategy you selected is meant to build trust, you can make adaptations so long as the strategy continues to involve building trust, even after adaptations have been made.

- Readministering the WHO HW survey on IPC measures for COVID-19 intermittently to revisit barriers and facilitators, in case new ones arise that require the selection of new strategies.

5.3 Planning for sustainability

Planning for sustainability from the start of implementation is just as critical as planning for actual implementation. Often, implementation projects are treated as if they have a defined start and end rather than as something that is going to continue, which undermines sustainability. The ultimate goal of sustainability and sustaining what it is we are implementing is to maintain the outcomes that are produced.

When planning for sustainability, the most important thing to ask yourself is “what changes have we made that we want to continue to do over time and why?”

5.4 Additional resources

Overall, the purpose of administering/taking the WHO HW survey on IPC measures for COVID-19 is to understand barriers and facilitators to adhering to IPC recommendations for COVID-19 as a research exercise, but also a practical
implementation exercise. This toolkit provides a very high-level set of steps on how you can implement change using the results of this survey.

For more information on how to use implementation science to create change in health facilities, you can access The Center for Implementation's free-mini course.

As well, there are additional WHO resources that may help health workers and health facilities address adherence to IPC measures for COVID-19 in your health facility.

We wish you all the best in facilitating adherence to the IPC recommendations for COVID-19.