Considerations for implementing and adjusting public health and social measures in the context of COVID-19

Interim guidance

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World Health Organization

Key points

- Public health and social measures (PHSM) have proven critical to limiting the transmission of SARS-CoV-2 and reducing hospitalizations and deaths due to COVID-19 disease.
- The key objectives of PHSM for COVID-19 are as follows.
    - Reduce transmission of SARS-CoV-2, cases of COVID-19 and post-COVID-19 condition and the risk of emergence of variants.
    - Reduce morbidity and mortality due to COVID-19.
    - Reduce impact on health systems.

  PHSM remain important interventions to be utilized by governments and communities to limit the spread of SARS-CoV-2, while keeping societies open. PHSM should be escalated when COVID-19 is causing a high impact on the health system or during any 'priority situation' – such as the initial circulation of a novel variant of concern – as a precautionary measure until its impact can be properly assessed.
- Core principles when adjusting PHSM include the following.
    - The decision to introduce, adapt or lift PHSM must also be considered in light of the effects these measures may have on the general welfare of society and individuals.
    - When PHSM are adjusted, communities should be fully consulted and engaged before changes are made.
    - Escalation of PHSM should always be proportionate and commensurate with the risks and consequences it may have on other determinants of social welfare.
    - In this interim guidance, dynamic indicators are provided to gauge SARS-CoV-2 transmissibility, COVID-19 impact on morbidity and mortality and the impact on health systems. Measures are indicative and need to be tailored to local contexts. Indicators should be assessed regularly, at least every two weeks, to provide up-to-date assessments of the situation and to allow for the adoption of the most appropriate measures for that particular time.
    - Co-circulating pathogens (particularly other respiratory viruses such as influenza and respiratory syncytial virus [RSV]) may contribute to higher levels of many indicators and thus raise the overall situational level; the PHSM recommended herein will aid in the control of these pathogens as well.

Introduction

Public health and social measures (PHSM) have been implemented across the world since the beginning of the pandemic to suppress SARS-CoV-2 transmission, reduce morbidity and mortality from COVID-19 and avoid overburdening health systems and other critical societal functions. Their primary mechanism of action is to reduce risk and scale of transmission, which in turn leads to reduction in morbidity and mortality and strain on the health system. A few PHSM, such as deferral of elective procedures, directly impact the health system.

PHSM include personal protective measures such as:

- physical distancing
- avoiding crowded and poorly ventilated settings
- hand hygiene
- respiratory etiquette (e.g., covering the mouth and nose with a bent elbow or a tissue when coughing or sneezing and disposing of the used tissue immediately into a closed bin and then washing hands)
- mask-wearing
- regulating social interactions (e.g., regulating the number and flow of people attending gatherings, maintaining distance in public or workplaces, domestic movement restrictions)
- modifying services (e.g., modifying school openings and non-essential businesses)
- environmental measures (e.g., cleaning, disinfection, ventilation)
- surveillance and response measures (e.g., testing, contact tracing, isolation, and quarantine, as well as genetic sequencing)
- international travel-related measures.

Medical countermeasures such as drug administration or vaccination are not included in this guidance. PHSM are complementary, act in concert, and in combination with other measures which are required to ensure adequate control of a circulating pathogen, such as SARS-CoV-2. Some personal PHSM, such as hand hygiene, respiratory etiquette and staying home when sick should be considered as basic measures that should be practiced and supported by governments and businesses at all times, irrespective of COVID-19.

Several important developments have occurred since the publication of *Considerations for implementing and adjusting public health* and *social measures in the context of COVID-19* in June 2021 (1). First, global population-level immunity against SARS-CoV-2 has increased dramatically due to infection and/or vaccination, which has significantly reduced severe disease and mortality. This, in addition to increased access and use of COVID-19 specific therapeutics, has led to a decoupling between infection and severe disease surveillance metrics trends, thus rendering the transmission level of SARS-CoV-2 a less useful metric to guide adjustment of PHSM. However, despite the global increase in immunity, substantial differences in population immunity and substantial inequity in access to diagnostics and therapeutics persist between countries and regions. Population immunity differences also differ the national or sub-national levels and within subgroups of populations (e.g., older people). The updated data published from January 2020 to June 2022 found a global seroprevalence of 89.8% (95% CI: 88.0-91.5%); as of April 2022, 60.4% (95% CI: 55.6-65.0%) of the population had antibodies attributable to infection, with higher proportions in low-income countries (LICs), where vaccination coverage is lower. The infection-derived seroprevalence also differed by age, with children aged 0-9 years and adults aged 60 years and over more likely to be seronegative compared to adults aged 20-29 years (2).

Second, the emergence and spread of the Omicron variant of concern (VOC) since December 2021 has had multiple impacts on considerations for adjusting PHSM. Its immune escape properties (3) of the emerging subvariants of Omicron have substantially reduced the ability of infection- or vaccine-derived immunity to reduce infection and transmission and additionally contributed to a rapid growth rate that would require a higher degree of PHSM to maintain control of transmission. The intense global surge of Omicron infections and waves of infection of subvariants of Omicron have caused essential services to be rapidly overwhelmed in many countries, including through illness or quarantine of

essential personnel; and the reduced severity of Omicron, compared to Delta, has changed the cost-benefit balance of implementing strict PHSM and further contributed to the decoupling between incidence and severe disease (4). In this context, more emphasis must be placed on the actual morbidity associated with infection and its impact on health systems as the key dimensions to be considered for adjusting PHSM.

Third, while SARS-CoV-2 may be moving towards becoming an endemic disease that can be managed through routine systems without significant ongoing PHSM, that time has not yet arrived. As long as there is widespread transmission, which there currently is, there is a high risk of the emergence of additional variants, which have the potential to be more severe and thus require the reintroduction of significant PHSM. Further, with every new case of SARS-CoV-2 infection, there is a potential for the person to develop post-COVID-19 condition (also known as 'long COVID'). WHO has recently published a series of seven policy briefs to provide the basis for an agile response as countries continue to confront the pandemic while consolidating the foundation for a stronger public health infrastructure and strengthening the global architecture for health emergency preparedness, response and resilience (5).

Finally, there remain situations in which even relatively less severe variants of SARS-CoV-2 may have a substantial impact, such as in populations with low prior immunity or settings with large numbers of individuals at high risk of severe COVID-19. The Omicron wave, because of its intense circulation globally, led to large spikes in reported deaths in numerous countries, despite increased global immunity and a potentially lower intrinsic virulence.

Implementation of strict PHSM needs to be balanced against their health and socio-economic impacts, especially in settings with limited or no social protection, where PHSM may increase vulnerability to economic hardship and social exclusion. Decisions to tighten, loosen or re-introduce PHSM to control COVID-19 must be weighed against the positive and negative impacts these measures have on societies and individuals. Considerations include impacts on health, mental health, and psychosocial wellbeing; continuity of other public health programmes; diagnosis, treatment, and management of medical conditions other than COVID-19; and other aspects such as livelihoods, the economy, security, human rights, food security, socioeconomic disparities, and gender-based violence. The costs of measures that may be required to mitigate these impacts should also be considered. Other important considerations include vaccine acceptance and uptake, confidence, trust, motivational elements to get vaccinated and public sentiment about and adherence to PHSM. The overall health and well-being of communities, now and in the future, should therefore be at the forefront of considerations when implementing and adjusting PHSM.

As the pandemic continues to evolve, PHSM should be regularly reviewed and adjusted according to the local epidemiology and their impact on the health system, the whole of society and the economy. This requires agile decision-making based on ongoing situational assessments at the lowest practical administrative level in a coherent and coordinated manner with neighbouring areas at sub-national and national levels. Such assessments should be based on available data and a risk/benefit approach considering the local epidemiology of SARS-CoV-2 and other co-circulating pathogens, the health system's capacity to respond and other contextual considerations (such as upcoming gatherings that may alter transmission or the health system's capacity). Choice of epidemiological indicators and their thresholds will depend on a country's data collection capacity and strategy, vaccination strategy and coverage and the overall COVID-19 response strategy. A list of potential indicators to guide Member States in monitoring and adjusting PHSM can be found in Annex 1 of this document.

Target audience and purpose

The purpose of this document is to provide the epidemiological methods to assess the current COVID-19 situation with respect to transmissibility, morbidity and mortality and impact on the health system to inform the evidence-based adjustment of public health and social measures (PHSM). It is intended for public health and health services decision-makers at all levels at which decisions about tailored PHSM are made and technical actors involved in relevant sectors (e.g., community engagement, education, social services) supporting or impacted by PHSM. Implementing many of the recommendations in this document will require the technical expertise of qualified epidemiologists. Decisions on PHSM should involve policy and technical consultations with other sectors likely to be affected relevant to benefits and costs. Considerations regarding the impact of PHSM beyond health – such as on equity, labour, education, trade, and finance –

should be incorporated into decision-making (see Sustaining lives and livelihoods: a decision framework for calibrating social and movement measures during the COVID-19 pandemic for additional guidance (6).

The document provides guidance to help Member States assess the severity of the COVID-19 situation (as characterized by "situational levels") at national and sub-national levels with respect to transmissibility, morbidity, and mortality and impact on the health system. It also provides appropriate recommendations about the implementation of PHSM at different situational levels. It should be read in conjunction with WHO interim guidance documents on specific PHSM such as infection prevention and control, gatherings, contact tracing and quarantine, international travel, and school related PHSM, which are referenced as relevant throughout the document.

While this document specifically addresses SARS-CoV-2, co-circulating pathogens, other respiratory viruses such as influenza and respiratory syncytial virus (RSV) may contribute to higher levels of many of the indicators specified in this document and thus raise the overall situational level. The PHSM recommended here will aid in the control of these pathogens as well.

The guidance will be updated as knowledge evolves, in particular in relation to the impact of VOCs on infection- or vaccine-induced immunity, the impact of COVID-19 vaccines on transmission and disease and the susceptibility of emerging variants to existing PHSM.

Changes from earlier version

This updated guidance eliminates the use of transmission categories with numeric cut-offs as a metric for adjusting PHSM. The reason for this change is that surveillance/testing for SARS-CoV-2 cases is rapidly declining in many countries, and it is thus a challenge to rely on reported incidence as a valid indication of transmission rates (7). Instead, transmission is now assessed qualitatively using available indicators. The guidance further shifts the focus of situational assessment to the dimensions of COVID-19 morbidity/mortality and health system impact (with the latter retained from the previous version). Consequently, the situational level matrix and the wording of each situational level have been updated to take into account these changes. The use of three dimensions for assessment puts this framework in line with the Pandemic Influenza Severity Assessment (PISA) methodology (8) and partially adopts the terminology used in PISA for the three dimensions.[1] Guidance for determining locally relevant thresholds is provided, similar to the principles used for PISA.

Currently, SARS-CoV-2 variants with significant immune escape are circulating and leading to varying degrees of transmissibility, morbidity/mortality and/or impact on the health system despite high population immunity. Thus, in this guidance, the previous version's blanket exemption from public health measures based on a person's SARS-CoV-2 immunity status following COVID-19 vaccination or past infection has been removed. Note that this document does not supersede individualized recommendations for specific PHSM detailed in other guidance, such as the exemption from quarantine for individuals within 90 days of infection or vaccination(4).

This guidance adopts the framework for prioritizing high-risk individuals (i.e. those at highest risk for severe disease) for enhanced PHSM following the latest contact tracing and quarantine interim guidance (4).

The evidence base underpinning these recommendations has been updated (see the Methods section of this document).

[1] PISA uses three dimensions, called 'indicators': 'transmissibility', 'seriousness of disease', and 'impact'. The definitions of these terms as used in PISA are found at the end of this document. In the present framework, 'transmissibility' is used in the same way as in PISA. Seriousness of disease, which is an individual-level measure of severity of the virus, is not readily measured in real-time, and is thus not used in the present framework. Instead, the PISA term 'impact' is herein divided into two dimensions: impact on morbidity and mortality, and impact on the health system.

Adjusting public health and social measures

Key principles

Decisions on which PHSM measures to implement, lift or strengthen, and the order in which these measures should be implemented, should be based on the following guiding principles.

Measures with the highest level of acceptability and feasibility and proven effectiveness – and which minimize the negative consequences on health and well-being of all members of society and the economy – should be adopted, using the COVID-19 Global Risk Communication and Community Engagement Strategy (9). Acceptability and feasibility should be determined through participatory approaches rather than directives and one-way communications. Engaging with relevant affected communities for this assessment will help to maximize the likelihood of adherence. Effectiveness and potential negative effects of PHSM should be evaluated through an evidence-based assessment (e.g., literature review, WHO guidance, evaluations, etc.) and active monitoring of both the positive and unintended negative impacts of implemented PHSM.

Additional measures should be considered as soon as the situational level rises. Delays or non-implementation of measures will likely lead to increased transmission, morbidity and mortality and the need for more stringent measures to regain control (10-14).

When feasible, measures should be adjusted (implemented or lifted) in a systematic, stepwise manner to allow better understanding of the effects of each measure on the COVID-19 situation.

Any decision to apply PHSM must be weighed against the wider impact of the measures on health and well-being (lives lost in the short and long term compared to lives saved by applying PHSM). Any available information on the level of immunity in the general population – either infection- or vaccine-induced – must be taken into consideration when assessing the likely impact on COVID-19 morbidity of lifting PHSM.

The potential impact of lifting PHSM on public health and the health system's capacity to rapidly respond to any new increase in cases should be considered.

- Adequate health system capacities should be in place to manage additional cases and their contacts.
- The risk of outbreaks and/or severe disease in settings with high-risk individuals should be minimized. This requires identifying all major drivers of SARS-CoV-2 transmission (e.g., various types of closed settings such as health care facilities and care homes) in the local context and understanding the vaccination coverage and/or infection-induced immunity of priority populations in that context, with appropriate measures in place to maximize physical distancing and minimize the risk of outbreaks.
- Key drivers of transmission in the area under assessment must be well understood using local surveillance data, and measures should be rapidly re-implemented should the situational level increase. A particular focus should be on prevention and early detection of situations that have been locally identified as risks for super-spreading.

It is critical to safeguard vulnerable[2] and disadvantaged populations by implementing specific measures to support them, mobilizing resources and engaging all relevant sectors and communities to learn about their concerns and receive feedback. This includes ensuring access to health services (using community-based service delivery), which is especially challenging when transportation, clinics/hospitals and other government services are closed or have long waits. Other essential services include supplementary income, paid leave and/or remote work options; hygiene, communication, food, and water provision; safe places for survivors of and/or those at risk of violence, including gender-based violence; and

2 **Vulnerable population refers** to a population who by virtue of their socio-cultural, politico-economic, religious, or ethno-racial association are exposed and at risk of developing certain undesirable health outcomes. In the context of COVID-19 and this document, vulnerable populations are those who by the aforementioned factors are at risk of contracting COVID-19 disease. These include health workers, those with limited or no access to any COVID-19 vaccines and/or health facilities, those with limited or no knowledge about COVID-19 prevention measures, marginalized populations, etc.

improvement of infrastructure and safety of public transport (which is used most by workers in vulnerable populations and essential workers) to make it compatible with PHSM.

Community engagement and risk communication strategy

When PHSM are adjusted, communities should be fully and regularly informed, engaged and enabled through a variety of channels (e.g. media, social media, direct community engagement) before changes are made to allow them to take ownership of the selected PHSM (15). It is critical to build and foster trust, especially in contexts where there is normally little or no involvement of the local population in decision-making. Clear, concise and transparent risk communication, including an evidence-based rationale for adjusting measures, should be developed with communities targeted for PHSM (16).

A communication and community engagement strategy should be developed for adjustment of PHSM well in advance of any scale-up. The strategy should be developed in consultation with relevant stakeholders from government, civil society, faith-based organizations, and community groups. Plans should include, at a minimum, behavioural objectives, target audiences, priority channels and a mix of strategies and activities to inform and engage the community. Communication issues in explaining the technical basis (e.g. the selection of indicators and thresholds) for adjustment of PHSM should be anticipated and addressed in communication plans (17).

The key messages of such plans should cover information important to the community, such as the extent and estimated duration of the measures in place (including measures that are best practice at all times and should not be time-limited, such as respiratory hygiene) and should provide information about the breadth of potential public health measures (e.g. mask requirements, reduction of public gatherings) and personal protective measures (e.g. physical distancing, avoiding crowded spaces) available to individuals and/or implemented by authorities. Communication plans should not only tell people what to do but explain why PHSM is still needed or needed again.

Governments should regularly communicate epidemiological data to the public to further foster trust and increase acceptance and sustained adherence to PHSM.

Civil society organizations, faith organizations, volunteers and other community-based groups influence acceptance of the emergency response, provide support services (e.g., food, medicines, health care and social services) and mitigate the socio-economic impacts of emergency measures, particularly for the most high-risk and vulnerable (i.e., older people, people with underlying medical conditions and people who are isolated or quarantined). Enhanced community engagement can leverage local community-based networks to build capacity of local leaders to increase short- and long-term community resilience. This can identify community-led solutions that address fears and perceptions.

Situational assessment using COVID-19 transmissibility, impact on morbidity and mortality and impact on the health system

Step 1: Assess transmissibility, impact on morbidity and mortality, and impact on the health system

Transmissibility

Reducing transmission is an important end in itself to reduce cases of post COVID-19 condition and the risk of emergence of new variants. Thus, it is important to continue to monitor transmission intensity. In the context of increased self-testing with rapid diagnostic tests (Ag-RDTs) – the results of which are generally not reported within the surveillance system – and decreases in testing through the professional system (either using Ag-RDTs or lab-based PCR) by many national authorities, it has become more difficult to accurately gauge transmission intensity. Nevertheless, there remain useful indicators for measuring transmissibility, including incidence data from remaining laboratory-based and point-of-care test result reporting and ongoing sentinel systems (18). See Annex 1 for the full list of potential indicators. Countries are recommended to select a combination of those indicators for which the highest quality data are available at the lowest administrative level at which PHSM adjustments can practically be made.

Impact on morbidity and mortality

In the context of high global population immunity and variants that have tended to cause less severe disease, the impact on morbidity and mortality (e.g., new COVID-19 hospitalizations and intensive care admissions) is perhaps the most important dimension to track for the purposes of adjusting PHSM. If the morbidity and mortality associated with COVID-19 disease increases, this can be an indication of uncontrolled transmission (since even 'mild' variants will lead to some severe cases), an increase in severity of the circulating virus, substantially waning immunity against severe disease, or a combination of these factors. Interrupting transmission in any of these contexts is important.

In settings with limited surveillance and diagnostic capacities, COVID-19-specific morbidity and mortality may be difficult to quantify, and additional indicators – such as the severe acute respiratory infection (SARI) and influenza-like-illness (ILI) trends, all-cause hospitalization rates and all-cause excess mortality trends – can potentially estimate COVID-19 morbidity and mortality. Such estimation is possible if, after considering potential co-circulating pathogens (particularly influenza and respiratory syncytial virus), SARS-CoV-2 is thought to represent the dominant pathogen. Recommended indicators for assessing the impact on morbidity and mortality of COVID-19 are outlined in Annex 1 of this document.

Impact on the health system

In addition to assessing the level of COVID-19 morbidity and mortality, it is also necessary to understand the overall impact on the health care system or the health system response capacity. Depending on whether there is adequate, moderate, or limited capacity, the same level of impact on morbidity and mortality can result in drastically different impacts on the health system and require a different degree of PHSM to preserve the remaining health system capacity. This dimension also accounts for the impact of other diseases on the health system capacity. For example, if there is already a concurrent high influenza burden, then a lesser level of SARS-CoV-2 transmissibility and COVID-19 morbidity will warrant escalating PHSM targeting SARS-CoV-2 transmission. Recommended indicators for assessing the impact on the health system are outlined in Annex 1 of this document.

Establishing local thresholds for each intensity level of transmissibility, impact on morbidity and mortality and impact on the health system

Locally relevant thresholds should be determined for each of the intensity levels ('none', 'low', 'moderate', 'high', 'extraordinary') for each indicator selected to contribute to the assessment of transmissibility, morbidity and mortality and impact on the health system. This can be done statistically using historical data if they are available. It should be noted, however, that there is a far shorter history of data for COVID-19/SARS-CoV-2 than for influenza; and that these data have been far more subject to changes in surveillance and response strategies than for other diseases and are also heavily influenced by multiple changes in the dominant SARS-CoV-2 variant). Alternatively, thresholds can be set empirically, i.e., looking back at when PHSM were escalated in the past and noting the levels of the indicator(s) at the time when those decisions to escalate PHSM were made. Suggested methods for determining thresholds are provided in Annex 2; experiences from PISA can also be used. Thresholds should be revisited periodically in light of changes in the local context (e.g., vaccination coverage, circulating variants, changes in capacity, changes in testing and hospitalization criteria). Countries are also encouraged to establish sub-groups (e.g., age- specific thresholds if data are available).

Table 1a: Recommended matrix for assessing COVID-19 transmissibility, impact on morbidity and mortality, and impact on the health system, with each dimension given equal weight

		Dimension		
		Transmissibility	**Impact on morbidity and mortality**	**Impact on the health system**
Intensity	None	0	0	0
	Low	1	1	1
	Moderate	2	2	2
	High	3	3	3
	Extraordinary	4	4	4

Step 2: Determine the situational level

Based on the concurrent assessment of the COVID-19 transmissibility, impact on morbidity and mortality and the impact on the health system – which will inform whether or how to adjust PHSM – a situational level should be assigned to a geographic area (see Table 1a for the recommended approach to combining the three dimensions of transmissibility, impact on morbidity and mortality and impact on the health system to arrive at a situational level, giving equal weight to each of the three dimensions). Alternative approaches can be found in Annex 2. The assessment should rigorously and comprehensively examine quantitative and qualitative information from multiple sources, which should be triangulated to provide an additional reality check on the assessed situational level. In some situations, this context assessment – which should take into account qualitative knowledge of local capacities and vulnerabilities – may result in an upward or downward adjustment of the calculated situational level. For the morbidity and mortality assessment, particular attention should be paid to sub-populations at highest risk of severe disease, rather than the general population. It is also useful to take into account the situational levels in nearby or linked areas.

Situational assessment should also take into account the impact on morbidity and mortality associated with, and the impact of, other co-circulating pathogens, particularly those that compete for the same healthcare resources, such as influenza and RSV. Many of the indicators recommended in this document will be influenced by multiple pathogens, resulting in a higher situational level than that derived from the contribution of SARS-CoV-2 alone. The ensuing PHSM will aid in control of these pathogens as well.

The resultant **situational levels should only be considered indicative because** they may not correspond well to the response required in a specific context and to the COVID-19 control objectives of the country. For example, in a small country with limited capacity or remote areas with limited access to health services, stringent PHSM may be warranted in the context of relatively low morbidity and mortality. Further, even where there is adequate healthcare capacity (i.e., low impact), governments have an obligation to take measures to reduce unnecessary suffering and mortality caused by SARS-CoV-2.

Table 1b: Resulting situational level, based on sum of scores from Table 1a using recommended method (see Annex)

Total Score	0	1-3	4-7	8-10	11-12
Situational level	0	1	2	3	4

Situational level 0 corresponds to a situation with no known transmission of SARS-CoV-2 in the preceding 28 days. The health system and public health authorities are ready to respond, but there are no restrictions needed on daily activities, and only basic PHSM (e.g., respiratory etiquette) are needed.

Situational level 1 is a situation with minimal transmission, morbidity, and health system impact of SARS-CoV-2, with only basic ongoing PHSM needed.

Situational level 2 represents a situation where there is moderate impact of COVID-19, although there may be higher impact in specific sub-populations. Additional measures may be required to reduce transmission; but disruptions to social and economic activities can still be limited, particularly if PHSM can be targeted strategically to seriously impacted settings.

Situational level 3 is a situation with significant impact on the health system and a risk of health services becoming overwhelmed or unacceptably high morbidity and mortality despite sufficient remaining health system capacity. A broader combination of PHSM may be needed to limit transmission, manage morbidity and avoid overwhelming the health system.

Situational Level 4 corresponds to an uncontrolled epidemic with very high morbidity/mortality and limited or no additional health system response capacity available, thus requiring extensive PHSM to avoid overwhelming of health services and substantial excess morbidity and mortality.

Step 3: Adjust PHSM based on situational assessment

Table 2 provides more detail on the types of local measures that may be implemented for each situational level. The measures at each level are only indicative because some measures may be more or less feasible or appropriate in specific contexts and locations. It may also be reasonable to implement only certain PHSM that directly affect a specific dimension, such as enforcing mask wearing in health facilities and deferring elective procedures when there is a high impact on the health system, even in the absence of an overall high situational level (see Annex 1 for further comments). Note that overall recommendations on international travel can be found in the interim guidance *Technical considerations for implementing a risk-based approach to international travel in the context of COVID-19* (19) because decision-making requires a coordinated approach and the conducting of risk assessments between two or more countries.

Measures should be time-bound and regularly re-assessed, at least every two weeks, along with the situational level. Interventions that are of shorter duration and are more targeted are expected to have higher adherence. PHSM adherence should be monitored through assessments such as mobility data and community surveys (20), and results should further inform future adjustment of PHSM and the risk communications and community engagement strategy.

At all situational levels, individuals should apply personal protective measures such as hand hygiene, respiratory etiquette, staying home if unwell and wearing a mask where appropriate; and environmental measures (e.g., cleaning, disinfection, ventilation). Clear information should be provided to the public about what to do if unwell and whom to contact for advice, testing and/or treatment.

In the event of a priority situation such as the emergence of a new VOC (4). for which transmissibility, virulence and impact are not fully characterized, it may be prudent to implement PHSM associated with a higher situational level than currently assessed, as a precautionary measure.

Table 2 : *Guidance on the implementation of PHSM for each situational level*

Situational level	Considerations for implementation of PHSM by situational level*
Situational Level 0: No known transmission of SARS-CoV-2 in the preceding 28 days. The health system and public health authorities are ready to respond, but there are no restrictions needed on daily activities, and only basic PHSM (e.g., respiratory etiquette) are needed	Surveillance should ensure that (re-)introduction can be detected and managed as early as possible, but there should be no restrictions on daily activities. Authorities may consider implementing the following measures: **Preparedness** • Continue strengthening emergency preparedness, readiness and response actions (21) ensuring adequate stockpiles of medicines and medical equipment and that sufficient staff have been recruited and trained to handle anticipated surges in cases. **Surveillance** • Implement or maintain robust surveillance to rapidly detect SARS-CoV-2 cases and clusters (7)– including ensuring a sufficient stock of testing reagents for a surge in cases – and ensure public health measures such as isolation and supported quarantine (4), if required, are undertaken to reduce onward spread if cases are confirmed and contacts are identified. **Individual PHSM** • PHSM recommendations and campaigns should continue to encourage personal responsibility of citizens and focus on basic PHSM measures individuals can take to protect themselves, such as continuing to stay home when sick, seeking medical advice if at risk of severe disease, respiratory etiquette, and hand hygiene (regularly and thoroughly cleaning hands with either an alcohol-based hand rub or soap and water). **Mass Gatherings** • Apply a risk-based approach based on the three steps of risk evaluation, risk mitigation and risk communication to inform the decision to restrict, modify, postpone, cancel or proceed with holding any gatherings, including medium and small events and side gatherings (noting that, at this situational level, the main risk would come from persons travelling to an event from areas at a higher situational level). For public gatherings, the risk assessment should be undertaken by local and national public health authorities and event organizers with input from all relevant stakeholders (emergency management, transport, safety and security). Please see the following for further guidance and tools on gatherings: *Holding gatherings during the COVID-19 pandemic* (22) *; Key planning recommendations for mass gatherings in the context of COVID-19* (23); *WHO mass gathering COVID-19 risk-assessment tool – generic events, version 2* (24)

Situational level	Considerations for implementation of PHSM by situational level*

Situational Level 1:
Minimal transmission, morbidity, and health system impact of SARS-CoV-2, with only basic ongoing PHSM needed
	In addition to the measures listed under Situational Level 0, authorities may consider implementing the following measures:
	Surveillance
	• Emphasis should be placed on tracking variants through genomic sequencing and surveillance to assess impact on morbidity and mortality in priority groups and settings.
	Individual PHSM
	The use of a mask for the prevention of SARS-CoV-2 transmission in the community is recommended:
	• when people are in crowded, enclosed, or poorly ventilated spaces
	• following a known recent exposure to SARS-CoV-2 when sharing a space with others
	• when sharing a space with a person with symptoms of COVID-19 or who is SARS-CoV-2- positive
	• for individuals at high risk of severe complications from COVID-19 (25)
	Contact tracing and supported quarantine
	• Rather than tracing all contacts of COVID-19 cases, WHO recommends that contact tracing and supported quarantine be undertaken in priority groups, priority situations and priority settings.
	• All individuals who become aware of an exposure should ideally be tested (PCR or rapid test) to know whether they have been infected and decrease the prospect of further spreading the virus. Further details on definition of high-risk persons and settings, duration of quarantine for high-risk contacts and use of testing is found in reference (4).
	School settings
	• Educational institutions should remain open with adequate precautionary measures in place, such as:
	  • adequate ventilation practices (e.g., opening windows, enhancing mechanical ventilation*) and promoting standard hygiene practices.
	  • regular environmental cleaning of working spaces and classrooms.
	• If cluster investigation and tracing of close contacts of children in school settings are conducted, they should be organized in a way that enables continuity of learning.
	• Early detection and testing should be prioritized for symptomatic children with acute respiratory infection of any severity (see Schooling during COVID-19: Recommendations from the European Technical Advisory Group for schooling during COVID-19 (26).
	Businesses
	• Daily activities and services, such as businesses (27) and leisure/tourism can remain open with precautionary measures in place, such as the following:
	  • Promote regular and thorough hand hygiene for all persons at the workplace and facilitate this practice.
	  • Conduct regular environmental cleaning of common areas and high-touch surfaces at the workplace.
	  • Apply adequate ventilation practices (e.g., opening windows, enhancing mechanical ventilation*).
	  • Workers should be encouraged not to come to work if sick or work from home if appropriate.
	Domestic movement
	• Encourage regular environmental cleaning of high touch surfaces, adequate ventilation, and hand hygiene in the local transport sector, where appropriate.
	Priority groups and settings
	• Implement enhanced PHSM (strict adherence to mask use, hand hygiene; enforcing physical distancing / room capacity limits; improved ventilation; enhanced cleaning) in acute and long-term care settings (28) and among people with immunocompromising conditions.
	Healthcare
	• Ensure support for institutional or home-based isolation of infected individuals.
	• Health service infrastructure, bed capacity, and patient flow to be assessed for anticipated limitations and contingency measures to continue essential operations in the event of an unanticipated surge, including care of patients in isolation (see *Infection prevention and control in health-care facilities in the event of a surge or resurgence in cases of COVID-19* (26)
	• Health services to screen staff, patients, and visitors for signs and symptoms of respiratory infection
	* As improving ventilation is a long process, it is recommended to assess the current ventilation rate and begin to institute measures as soon as possible.

Situational level	Considerations for implementation of PHSM by situational level*

Situational level 2:
Moderate impact of COVID-19, although there may be higher impact in specific sub-populations. Additional PHSM may be required to reduce transmission. However, disruptions to social and economic activities can still be limited, particularly if PHSM can be targeted strategically to more impacted settings.
	<u>In addition to the measures listed under lower situational levels</u>, authorities may consider implementing the following measures:
	Individual PHSM
	• In addition to the measures above, individuals should use a risk-based approach to mask-wearing, considering the following factors:
	  • COVID-19 epidemiological trends at the community level
	  • COVID-19 vaccination coverage
	  • population immunity to SARS-CoV-2
	  • degree of crowding, indoor ventilation, and individual risk factors
	  • values and preferences regarding the prevention of COVID-19 versus burdens and/or harms of masking.
	• Individuals should be encouraged to keep physical distance of at least one meter from others and to avoid crowds.
	Contact tracing and supported quarantine
	• If contact tracing systems are overwhelmed, consider further prioritization of contact tracing. Individuals exposed to SARS-CoV-2 should ideally be tested but quarantine and follow-up of all contacts is not warranted, with the exceptions of priority situations, such as the emergence of a new VOC, priority settings, such as long-term care facilities or if contacts are considered at high risk for a severe infection (priority persons).
	School settings
	• Education settings remain open with additional precautions:
	  • enhanced natural or mechanical ventilation and/or air cleaning
	  • encouraging adequate distance between students' desks
	  • more frequent environmental cleaning.
	Businesses
	• Businesses should remain open, with precautionary measures in place.
	  • Minimize the need for physical meetings, e.g., by using teleconferencing facilities and ensuring teleworking options are available for workers with high-risk workplaces.
	  • Defer or suspend workplace events that involve close and prolonged contact among participants, including social gatherings.
	  • In addition to the above measures, workplaces and jobs in different sectors may be assessed to be at different risk. Please see *Considerations for public health and social measures in the workplace in the context of COVID-19* (27) and *Preventing and mitigating COVID-19 at work: policy brief* (28)
	Domestic movement
	• Improve local transport infrastructure to comply with PHSM (improve availability, frequency, extension of schedules, etc. to reduce crowding).
	Priority groups and settings
	• If required, place further emphasis on protecting the most clinically high-risk through strict application of infection prevention and control measures, heightened surveillance and managing visits in long-term care and other residential facilities.
	Health care
	• Implement universal use of medical masks for all staff, patients and visitors.
	• Continue to assess for capacity and contingency measures to continue care operations in the event of an unanticipated surge, including care of patients in isolation.
	• Institute surveillance and monitoring for clusters and outbreaks of health care-associated infections that may result in amplification of community transmission

Situational level	Considerations for implementation of PHSM by situational level*

Situational Level 3:
Significant impact on the health system and a risk of health services becoming over-whelmed, or unacceptably high morbidity and mortality despite sufficient remaining health system capacity. A larger combination of PHSM may need to be put in place to limit transmission, manage morbidity and avoid overwhelming the health system.
	<u>In addition to the measures listed under lower situational levels</u>, authorities may consider implementing the following measures:
	Individual PHSM
	• Individuals should be required to keep physical distance of at least one meter from others and to avoid crowds.
	• Public health messaging addressing respiratory etiquette should be enhanced.
	• Hand hygiene stations should be accessible to allow individuals to regularly and thoroughly clean their hands with either an alcohol-based hand rub or soap and water.
	School settings
	• Childcare services and primary and secondary schools should remain open with adequate safety and surveillance measures in place as long as the local context allows. See *Schooling during COVID-19: Recommendations from the European Technical Advisory Group for schooling during COVID-19* (26). Continuity of education for children for their overall well-being, health and safety should be at the forefront of all relevant considerations and decisions.
	  • Introduce hybrid learning method, where possible (where students attend school in person some days and online other days).
	  • Consider cohorting/bubbling (keeping students and teachers in small groups that do not mix).
	  • Stagger the start of school, breaks, bathroom, meal and dismissal times.
	  • Implement measures to increase the distance between desks.
	  • Ensure adequate ventilation practices (e.g., opening windows, enhancing mechanical ventilation) and the promotion of standard hygiene practices are in place.
	  • Parents should be encouraged to keep children home from school if they are symptomatic
	• Consider limiting in-person university teaching and institute e-learning.
	Businesses
	• Adapt the functioning of businesses to minimize COVID-19 risk, including through remote working, modified service provision or closure where necessary.
	• Mandate workplaces to implement contact tracing and encourage remote working for close contacts.
	• Hand hygiene stations should be accessible throughout the workplace for individuals to clean their hands regularly and thoroughly with either an alcohol-based hand rub or soap and water.
	• Regular environmental cleaning of common areas and high-touch surfaces should take place in workplace.
	• Implement physical distancing measure within workplaces.
	Domestic movement
	• Limit capacity in public transport vehicles.
	Priority groups and settings
	• Quantify the needs in advance and provide the necessary socio-economic support for low-income individuals and households and those at risk of falling into poverty. Socioeconomic recovery for these vulnerable groups and the general population should also be prepared for in advance and resources secured to the extent possible.
	Health care
	• Recommend home isolation and care for all non-severe cases in non-high-risk groups.
	• Recommend postponement/cancellation of elective healthcare procedures.
	• Establish temporary or repurposed infrastructure supporting health service capacity to manage surges in cases while maintaining essential health services may be required. Please see *Severe acute respiratory infections treatment centre* (29) *and* *Operational considerations for case management of COVID-19 in health facility and community* (30)

Situational level	Considerations for implementation of PHSM by situational level*
Situational level 4: An uncontrolled epidemic with very high morbidity/ mortality and limited or no additional health system response capacity available, thus requiring extensive PHSM to avoid overwhelming health services and substantial excess morbidity and mortality.	Reducing transmission in the community will be challenging, and stringent movement restrictions and related measures will need to be put in place to significantly reduce the number of in-person encounters. Such measures should be geographically limited to where they are needed and be time-bound and aimed to be as short as is reasonably possible. **In addition to the measures listed under lower situational levels, authorities may consider implementing the following measures:** **Individual PHSM** • All individuals other than essential workers should stay at home and limit physical contact with people outside the household, except for critical reasons (such as for health care, family emergencies, provisioning). **Contact tracing and supported quarantine** • Consider shortening quarantine periods for health workers/other essential workers in situations where the case load is very high and health care services are stretched. • Contact tracing and quarantine should be focused on priority groups, priority situations and priority settings. **School settings** • Consider all options for continuity of in-person learning. If not possible, limit in-person contact. Options may include in-person or blended learning strategies that strictly limit the number of people physically on site (exceptions would include children of essential workers and their teachers) and remote learning. The closure of educational facilities should only be considered when there are no other alternatives. • Where possible, provide the option of distance learning when children cannot be present in classrooms. **Businesses** • Close non-essential businesses, and institute remote working for workers for whom it is possible. • Essential workers will need to continue activities, with maximum support and safety measures in place. • Encourage close contacts to work from home if possible. **Gatherings** • Postpone all public and private events and gatherings of any size and type. **Domestic movement** • Improve local transport infrastructure to maximally support essential workers (improve availability, frequency and extension of schedules and add private transport to public transport infrastructure). **Priority groups and settings** • All long-term care and other residential facilities should consider strict measures to limit the risk of infection, up to and including temporary suspension of in-person visits.

*The specific measures implemented at each level will need to be carefully considered based on the guiding principles outlined earlier in the document. The measures at each level are only indicative since some measures may be more or less feasible or appropriate in specific contexts and locations.

Methods for development of this guidance

This update was developed by surveillance and PHSM staff of WHO at Headquarters and Regional Office levels, relying heavily on experiences from the development of the related documents *Contact tracing in the context of COVID-19* (4) and *Public health surveillance for COVID-19* (7). Both documents have recently been updated. The former involved the Contact Tracing and Quarantine Guideline Development Group (CT GDG), and the latter involved extensive consultations with Member States. The strategic direction of the present guidance (e.g., the shift to three dimensions aligned with PISA) was also discussed with the Epidemiology Technical Advisory Group, the CT GDG and during several meetings of WHO global COVID-19 Incident Managers. The final draft was shared with the CT GDG, WHO global Incident Managers and the COVID-19 Technical Lead for final review prior to clearance.

A rapid literature review was conducted by WHO staff to identify studies pertaining to epidemiological parameters that can be used to guide the adjustment of PHSM, particularly in the current epidemiological context, as described in the introduction. Effectiveness of PHSM was not evaluated. The WHO scientific database search engine GIFT (https://fc7jk4ac4t.search.serialssolutions.com/), which allows a search of 20 relevant databases including the Cochrane Library, Web of Science and Embase; and a separate search of PubMed (https://pubmed.ncbi.nlm.nih.gov/); were used to search for “PHSM” OR "public health and social measures" OR "NPI" or "non-pharmaceutical interventions" or "non pharmaceutical interventions" AND COVID-19 AND (adjust* OR calibr*)” with a publication date in 2022. This yielded 28 results in GIFT and 45 in PubMed, which were individually reviewed for relevance to the search objective. Only one article was directly relevant, and its findings are captured in this guidance. Given the overlap between indicators for surveillance and those for adjusting PHSM, a second search was conducted on GIFT and PubMed to identify other potentially useful indicators for adjusting PHSM, using the term “(SARS-CoV-2 OR COVID-19) AND surveillance AND indicator*” with a publication date in 2022. This yielded a further 193 results in GIFT and 784 in PubMed. Of these, 13 were relevant to this guidance and have been incorporated.

Definitions

Priority groups, settings and situations

Priority groups:

Persons at high risk of severe or fatal COVID-19 disease (31)

- Older people (above 60 years and risk increasing with age).
- Those with underlying comorbidity OR immunosuppression AND/ OR other conditions:
  - Diabetes, hypertension, cardiac disease, chronic lung disease, cerebrovascular disease, dementia, mental disorders, chronic kidney disease, immunosuppression, HIV, obesity, and cancer have been associated with higher mortality.
  - Other risk factors include pregnancy, increasing maternal age, high BMI, non-white ethnicity (in specific settings), chronic conditions and pregnancy-specific conditions such as gestational diabetes and pre-eclampsia.
- Unvaccinated or under-vaccinated adults/ children with no known prior SARS-CoV-2 infection.

Persons whose infection puts at risk other high-risk individuals or critical services

- Health and care workers
- Other essential workers.

Priority settings are environments where there is a higher chance that people belonging to the priority groups might stay for extended periods of time in proximity with each other and therefore have a higher chance of becoming infected and developing severe disease. Examples of high-priority settings are health care facilities including nursing homes and long-term care facilities. Priority settings may also include communities of disadvantaged groups such as refugees, internally

displaced people, migrants, and other marginalized communities; those in high density/low resource settings (such as camps, informal settlements, slums and places of detention) and lower-income groups.

Priority situations are circumstances such as the emergence of a new variant for which characteristics of immune escape and disease severity are unknown or any other circumstances determined by public health authorities as priority.

Transmissibility, seriousness of disease and impact as used in PISA and in this interim guidance

Transmissibility

The WHO PISA Framework defines transmissibility as "the ease of movement [of the virus] between individuals and communities. Thus, a virus with high transmissibility will spread rapidly from one person to another. Several factors affect transmissibility: the ability of the virus to spread from person to person, the dynamics of the spread and the susceptibility of the exposed population. Transmissibility will be influenced by social and climatic factors."

In the context of COVID-19, this dimension reflects the current level of circulation of the SARS-CoV-2 virus.

Seriousness of disease

According to PISA, "The seriousness of disease (also referred to as "severity of infection") indicator describes the extent to which individual people get sick when infected with [the virus]. It describes the frequency of clinical symptoms, complications [of illness] and outcomes following [infection]. The seriousness of disease depends on the virus; for example, [a virus] with a high level of clinical severity can result in a disproportionate number of people with serious illnesses, some of whom will be hospitalized and some of whom will die. Seriousness of disease also depends on the host; for example, the presence of underlying medical conditions that predispose individuals to develop severe illness, a history of vaccinations that may be protective […], the person's age and the availability of health care. An infection is likely to be much more severe for some segments of a population than for others". In the present interim guidance, this dimension is not explicitly used, although several of its indicators have been incorporated into the 'morbidity and mortality' dimension.

Impact

According to PISA, Impact "generally describes how the [pandemic] affects society. It represents the impact on the health-care sector; for example, the impact on health-care use (hospitalization and ICU admissions), on the health workforce and on society (including excess mortality). The impact will be affected by the implementation of public health measures, public concern and the behaviour of the affected population." If there is high impact on the health sector, there may be stress on health-care resources. The public health impact may also result in societal and economic consequences, such as absenteeism from workplaces and schools, loss of critical infrastructure and decreases in trade and tourism.

In the context of adjusting PHSM for COVID-19, this dimension is split into the direct impact on morbidity and mortality; and the impact on the health system which, depending on the context, may or may not be stretched in situations of low or high morbidity/mortality.

Annex 1: Suggested Indicators for assessing transmissibility, impact on morbidity and mortality and impact on the health system

The indicators in this annex are grouped into the three dimensions that should be evaluated to address the overall gravity of the COVID-19 situation, as characterized by the resulting situational level: 1) transmissibility, 2) impact on morbidity and mortality due to COVID-19 and 3) impact on the health system.

These three dimensions should further be considered in the context of the national COVID-19 response strategy. Thresholds for action may depend on the country's overall strategy and whether it is pursuing an elimination or control strategy.

The criteria are not prescriptive, and it may not be feasible to assess some of them – for example because of a lack of data. Countries should focus on the criteria most relevant for them to inform decision making. It is recommended to systematically assess these criteria at least biweekly at the lowest practical administrative level to inform tailored local responses where possible rather than implementing blanket national adjustments.

In addition to assessing the current intensity of each of the three dimensions, it is also important as part of the contextual assessment to understand the direction of the trends and the speed of change of contributing indicators (stable, decreasing or increasing, measured, for example, as growth rate or percent weekly change in cases) over several weeks. This can assist in determining whether measures implemented are improving the epidemiological situation in the area and for planning future changes or putting in place anticipatory changes to public health measures based on a likely upcoming change in the situational level (including the fact that changes in current incidence indicators anticipate future changes in indicators for hospitalization, subsequent ICU admission, and health system strain (32).

Some of the indicators below appear in more than one dimension. For example, hospitalization is a delayed indicator of transmissibility but a timely measure of morbidity. Some of the indicators may also appear in different dimensions than recommended to inform in the PISA framework; countries familiar with using PISA are encouraged to reflect on the best placement of the indicators below in their own context.

1. Assessing Transmissibility

1.1. Primary indicators for assessing transmissibility

Five primary indicators to determine transmissibility are proposed in Annex 1 Table 1. They are based on data that should be routinely collected. The relative importance of each available indicator will vary according to the local context (e.g., the reliability of the data for each indicator); and described limitations to interpreting each indicator should be taken into account. Indicators should be measured at the lowest practical administrative level.

These indicators should be used alongside other epidemiologic information available either routinely or through special studies or modelling estimates, as well as non-epidemiologic data and other considerations, for informing strategic and operational decisions.

It is recommended that these indicators be assessed biweekly, adopting the epidemiological week definition used in the country.

After all available indicators are assessed, if the intensities assessed based on each indicator are different, a qualitative review should be undertaken to determine the final transmissibility level (none, low, moderate, high, or extraordinary). It is recommended that if data are not available (or reliable) for all indicators, more subjective weight should be given to the indicators considered more reliable in the local context. In many cases, indicators listed first in Annex 1 Table 1 may be more reliable than those towards the end of the table.

It is helpful to monitor the testing rate as a measure of the coverage of surveillance. A minimum recommended rate is at least one person tested per 1000 population per week. Testing should not be limited to specific populations (e.g., only those in urban settings with high access to testing or travellers). Denominator data must be available at the level of disaggregation being assessed (e.g., district, province). Authorities may choose to specifically track these indicators among groups of individuals at greatest risk for severe disease and death.

Caution should be exercised when interpreting changes in indicators that occur in the context of changes to the surveillance system (e.g., a change in testing rate or a change in the population under surveillance). Despite overall global reductions in testing, trends in reported incidence within the context of a stable surveillance system can still be used to understand overall transmissibility.

Annex 1 Table 1: Primary epidemiological indicators to assess transmissibility

Indicator	Description/Rationale	Major limitations
New confirmed cases per 100 000 population per week*	Direct measure of incidence. Reporting delays can be accounted for to improve identification of projected surges (33). Monitoring the percent weekly change in new cases is particularly important to anticipate surges in transmission.	Heavily influenced by surveillance system performance, testing policy and laboratory capacity and reporting policies. At low levels and in small geographical regions, can be sensitive to minor fluctuations in case counts, particularly due to batch reporting. Most countries have now drastically reduced testing and reporting of incident cases, but sentinel surveillance may still provide robust estimates of transmission trends (34). Percent changes may be unstable in situations where there are very few cases.
Test positivity rate per week*	Allows understanding of transmission intensity even in the absence of universal testing/reporting. It may capture a typical case better than syndromic surveillance. Particularly useful for monitoring trends. This indicator can be monitored at sentinel sites or from any facility.	Heavily influenced by testing strategy (i.e., who gets tested) and capacity and changes therein. May be artificially reduced during co-circulation of other pathogens with overlapping symptoms (35)
New COVID- 19 hospitalizations per 100 000 population per week*	A predictable (in the absence of shifts in circulating variants) subset of all incident cases requiring hospitalization. Thus, this is an indirect indicator of incidence. Unlikely to be subject to surveillance policy changes/differences.	May be influenced by hospitalization policy, e.g., if even mild cases are hospitalized for isolation purposes. Delayed measure of incidence. May be influenced by changes in severity of variants, even in setting of stable transmission intensity.
New ILI or ARI cases (per 100 000 population or per fixed sentinel site catchment) per week*	May be helpful where COVID-19-specific surveillance is not robust. Allows comparison with historical ILI/ARI baseline data. Ideally a subset or all should be tested for SARS-CoV-2 and other pathogens to understand what is driving the ILI or ARI rates.	Indirect measure of COVID-19 incidence; need to understand relative levels of other respiratory pathogens (e.g., influenza, RSV).
Product of weekly ILI or ARI rates and weekly percentage positivity for SARS-CoV-2*	Yields estimate of actual COVID-19 incidence. May be helpful where COVID-19-specific surveillance is not robust	Indirect measure of COVID-19 incidence. Requires ILI/ARI rates and SARS-CoV-2 positivity to come from same catchment population.

*Consider averaging over a two-week period to minimize the effect of random fluctuations.

1.2.Additional indicators for assessing transmissibility

Additional indicators that can provide further evidence to help classify the transmissibility are listed in Annex 1 Table 2. These indicators may not be readily available at the lowest administrative level of operations, however. They are therefore considered secondary to the primary five indicators listed in Annex 1 Table 1. Furthermore, they may not directly reflect transmission or force of infection of SARS-CoV-2 or may be more difficult to interpret and compare than those listed in Annex 1, Table 2. Novel indicators with relatively little history of use, such as search engine or social media activity for COVID-19, syndromic surveillance for non-specific indicators such as number of patients placed in droplet isolation, environmental correlates such as air temperature and complex modelling approaches to estimating transmission are not included here.

As a last resort, where no indicator values are available, subjective assessment can be used, but this should be done over several weeks to avoid influences from transient or anecdotal observations.

Annex 1 Table 2: Additional epidemiological indicators to assess the level of COVID-19 transmissibility*

Indicator	**Description/Limitations**
New COVID- 19 ICU admissions† per 100 000 population per week‡	A predictable (in the absence of shifts in circulating variants) subset of all incident cases requiring intensive care; thus, this is an indirect indicator of incidence. Unlikely to be subject to surveillance policy changes/differences. Significantly delayed measure of incidence. May be influenced by changes in virulence of variants, even in settings of stable transmission intensity.
Number of COVID- 19-attributed deaths per 100 000 population per week‡	A predictable (in the absence of shifts in circulating variants) subset of all incident cases are fatal, and thus this is an indirect indicator of incidence. Minimally influenced by surveillance policy if testing of fatal cases is comprehensive. Delayed measure of incidence. At low levels and in small geographical regions, can be sensitive to minor fluctuations (e.g., one versus two deaths). May be influenced by changes in virulence of variants, even in settings of stable transmission intensity.
Intensive care unit (ICU) proportional occupancy	The proportion of new ICU admissions attributed to COVID- 19 out of all ICU admissions for the same period (alternatively, proportion of current ICU beds occupied by patients with COVID-19 out of all occupied ICU beds). Assuming stable severity, changes in the proportion of COVID-19 cases in ICUs can be a useful (albeit quite delayed) measure of transmission intensity, particularly when population denominators are not available.
Increase in all-cause respiratory hospitalization	Indirect measure of COVID-19 incidence and may be helpful where COVID-19-specific surveillance is not robust. Delayed measure of changes in incidence. May be influenced by changes in virulence of variants, even in settings of stable transmission intensity.
Instantaneous reproduction number (Rt)	The instantaneous reproduction number is the average number of secondary cases each current case would produce if conditions remained the same. Rt should be estimated over successive weekly time windows and should be considered in combination with the number of cases at a given time. When there is a large volume of cases at a given time, Rt near 1.0 would sustain a high number of cases. While this is a widely used indicator of transmissibility, it requires familiarity with the various methods for calculation and sufficiently reliable and timely data on incidence. It also assumes a known serial interval distribution, which should be reassessed periodically as it changes with existing non-pharmaceutical interventions and dominant VOCs, and which must consider differences in epidemiology among different sub-populations (36).
Daily growth rate	The daily growth rate measures the epidemic growth or decline of an epidemic. It is approximately the percent of increase/decrease in daily case incidence. Acceleration in growth rate may be useful to anticipate surges (37).
Doubling time	The number of days required for the daily incidence to double. This is directly determined by the daily growth rate *r* and linked to Rt and the serial interval distribution. All else being equal, higher Rt will lead to shorter doubling times.
Proportionate morbidity due to COVID-19	In outpatient settings (including emergency rooms) and particularly where the denominator (catchment information) is unreliable, the proportion of COVID-19 cases out of all encounters can be a good measure of transmission intensity. This indicator may be particularly useful in humanitarian contexts.

Indicator	Description/Limitations
Workplace, school or healthcare workforce absenteeism	This is not specific or directly indicative of COVID-19 cases, but when taken in the context of other possible reasons for increased absenteeism, it can be a useful proxy for intense SARS-CoV-2 circulation.
Levels of SARS-CoV-2 RNA in wastewater	Wastewater (i.e., sewage) monitoring of SARS-CoV-2 RNA can identify trends in SARS-CoV-2 circulation despite changes/reductions in clinical testing and has been shown to provide a significant lead-time over rises in clinical cases – see for additional information *WHO Environmental surveillance for SARS-COV-2 to complement public health surveillance* (38).
Point prevalence of SARS-CoV-2 infection	A representative sample of the population can be regularly tested for infection regardless of symptoms to obtain a true measure of transmission intensity (39). Difficult to maintain participation over time.

*This list should not be considered exhaustive.

† Given the wide range of health systems and case management worldwide, ICU admission can include, beyond strictly counting admissions to intensive care units, patients with COVID-19 placed on advanced respiratory support measures such as mechanical ventilation or extracorporeal membrane oxygenation (ECMO) in other parts of the hospital.

‡ Consider averaging over a two-week period to minimize the effect of random fluctuations.

2. Assessing impact on morbidity and mortality

2.1. Primary indicators for assessing impact on morbidity and mortality

The following primary indicators are recommended for assessing the impact of COVID-19 on morbidity and mortality. The same general principles apply as described above for transmissibility assessment. Some indicators overlap with those used in assessing transmissibility.

Annex 1 Table 3: Primary epidemiological indicators to assess COVID-19 impact on morbidity and mortality

Indicator	Description/Rationale	Major limitations
New COVID- 19 hospitalizations per 100 000 population per week*	Primary indicator of morbidity. Useful to assess specifically among high-risk populations (e.g., hospitalization by age group or by vaccination status) where possible.	May be influenced by hospitalization policy, e.g. if even mild cases are hospitalized for isolation purposes (34). May be artificially elevated during periods of intense circulation, where inpatients admitted for other conditions are routinely tested for SARS-CoV-2 infection (incidental COVID-19 hospitalizations).
COVID-19 hospital bed proportional admissions/ occupancy	The proportion of new hospitalizations attributed to COVID- 19, out of all hospital admissions for the same period (alternatively, proportion of current hospital beds occupied by patients with COVID-19, out of all occupied hospital beds). Useful in settings where denominator data (catchment population) are not available, e.g., when assessing in high-risk subgroups or in humanitarian settings.	May be influenced by hospitalization policy, e.g., if even mild cases are hospitalized for isolation purposes. May be artificially elevated during periods of intense circulation, where inpatients admitted for other conditions are routinely tested for SARS-CoV-2 infection (i.e., 'incidental COVID-19 hospitalizations')(40).
COVID-19 death: hospitalization ratio	Case fatality proportion among hospitalized cases. Useful when denominators are not available for calculating rates (e.g., for high-risk sub-populations). Can be done on a very local (as low as single facility) level.	Subject to changes in hospitalization strategy. Can fluctuate considerably if numbers are small; best if measured over a longer period than weekly.

Indicator	Description/Rationale	Major limitations
COVID-19 ICU:hospitalization ratio	ICU admission proportion among hospitalized cases. Useful when denominators are not available for calculating rates (e.g., for high-risk sub-populations). Can be done on a very local (as low as single facility) level.	Subject to changes in hospitalization strategy. Can fluctuate considerably if numbers are small; best if measured over a longer period than weekly.
New COVID- 19 ICU admissions per 100 000 population per week*	Indicator of burden of severe disease. Less susceptible to influence of incidental SARS-CoV-2 infection. Useful to assess specifically among high-risk populations (e.g., ICU admissions by age group and/or by vaccination status) where possible.	Potential for "incidental COVID-19 ICU admissions" during periods of intense circulation, where some patients admitted to the ICU test positive for SARS-CoV-2 and could be counted as COVID-19 ICU admissions.
Number of COVID- 19-attributed deaths per 100 000 population per week*	Indicator of burden of severe disease. Less susceptible to influence of incidental SARS-CoV-2 infection. Useful to assess specifically among high-risk populations (e.g., deaths by age group and/or by vaccination status) where possible.	Potential for "incidental COVID-19 deaths" during periods of intense circulation, where some fatal cases testing positive for SARS-CoV-2 could be counted as COVID-19 deaths. At low levels and in small geographical regions, can be sensitive to minor fluctuations (e.g., one versus two deaths).

*Consider averaging over a two-week period to minimize the effect of random fluctuations.

2.2. Additional indicators for assessing impact on morbidity and mortality

Annex 1 Table 4: Additional epidemiological indicators to assess COVID-19 impact on morbidity and mortality*

Indicator	Description/Limitations
Proportion of intensive care unit (ICU) COVID-19 admissions/occupancy	The proportion of new ICU admissions attributed to COVID- 19, out of all ICU admissions for the same period (alternatively, proportion of current ICU beds occupied by patients with COVID-19, out of all occupied ICU beds).
Severe acute respiratory infection (SARI) trends	This is not directly indicative of COVID-19 morbidity because of the co-circulation of other respiratory viruses, but sentinel surveillance for SARI will also capture a proportion of COVID-19 cases, and thus this is useful for monitoring *trends* for COVID-19 morbidity. This measure may be helpful where COVID- 19-specific surveillance is not robust. Allows comparison with historical SARI baseline data.
Product of weekly† SARI rates and weekly percentage positivity for SARS-CoV-2	Improves on the indicator above by estimating proportion of SARI that is attributable to COVID-19. May be artificially reduced during co-circulation of other pathogens with overlapping symptoms (40). Requires SARI rates and SARS-CoV-2 positivity to come from the same catchment population.
All-cause hospitalization rate trends	This is not specific or directly indicative of COVID-19 hospitalizations but, where COVID-19 cases make up a substantial proportion of hospitalizations, this can be useful for identifying trends in COVID-19 morbidity. These rates may decline due to restricted service provision and other public health measures. Trends must be analysed in the context of other potential causes of changes in hospitalization rates (e.g., concurrent influenza circulation). These trends may be helpful where COVID-19-specific surveillance is not robust. Allows comparison with historical hospitalization baseline data.
SARI: ILI or SARI: ARI ratios	Although primarily a measure of individual-level severity, this indicator can also suggest high morbidity on a population level when denominators are not available for calculating rates (e.g., for high-risk sub-populations, or in fragile contexts such as humanitarian emergencies). Allows comparison with historical baseline data. Can be done on a very local (as low as a single facility) level. May be influenced by the co-circulation of other respiratory pathogens (e.g., influenza, RSV). Alternative formulations of the same principle include infection: hospitalization ratio or case: hospitalization ratio (41).

Indicator	Description/Limitations
All-cause (excess) mortality trends	This measure is not directly indicative of COVID-19 cases/deaths, but where COVID-19 deaths make up a substantial proportion of overall deaths, this can be useful for identifying trends in COVID-19 mortality. Trends must be analysed in the context of other potential causes of changes in mortality rates (e.g., concurrent influenza circulation) and ideally compared with baseline data on mortality to identify excess above expected (e.g., seasonal) fluctuations. While this is a widely used indicator of disease burden, it requires careful consideration of the inherent biases in mortality estimation methods(42). This may also be a delayed indicator, depending on death and vital records system processes. These trends may be helpful where COVID-19-specific surveillance is not robust.

*This list should not be considered exhaustive.

†Consider averaging over a two-week period to minimize the effect of random fluctuations.

3. Assessing impact on the health system by COVID-19

3.1. Primary indicators

To assess the impact of COVID-19 on the health system, authorities should use the same approach as outlined for transmissibility and impact on morbidity and mortality.

Annex 1 Table 5: Primary indicators and proposed ranges to assess the level of COVID-19 impact on the health system

Indicator	Description	Major limitations
Proportion of occupied hospital beds	Increased morbidity and mortality will occur if there is insufficient capacity to hospitalize cases. Should count all hospitalizations, not only those for COVID-19. In settings where it may be difficult to get timely data on bed occupancy, an alternative approach involves dividing the number of reported (or estimated) new cases or new hospitalizations by the total number of hospital beds in a jurisdiction; when done using incident cases, this can anticipate the burden on hospital beds (43).	May be influenced by hospitalization policy (e.g., if all cases are isolated in hospital), which does not indicate true saturation of hospital capacity. A significantly low hospital occupancy rate may also indicate barriers to access to hospital care, requiring investigation into the causes and remedial actions to be taken. In situations of intense transmission, low hospital utilization may indicate large numbers of community deaths, which would potentially not be captured in facility-based mortality reports. It should be noted that high occupancy will not always lead to unavailability of additional beds, since many health systems are able to surge by adding beds if close to
Proportion of occupied ICU beds	High morbidity and mortality will occur if there is insufficient capacity to admit severe cases to ICU. Should count all causes of ICU occupancy, not only COVID-19. Less subject to isolation-related occupancy or occupancy for mild cases than regular hospital beds.	In some health systems, ICU beds are opportunistically filled with moderately ill ward patients, but high occupancy will not always lead to unavailability of additional beds because these patients can be moved back to the wards if necessary. May not be useful in countries with very few ICU beds (in these situations, can be substituted with proportion of occupied hospital beds with oxygen capacity). High occupancy will not always lead to an unavailability of additional beds, as many health systems are able to surge by adding beds if
Number of patients currently in hospital for COVID-19 (or rate per unit population)	Even if health system is not saturated, a large number of patients hospitalized for COVID-19 places a burden on the health system and diverts resources from other health priorities. Where SARS-CoV-2 testing is limited, admissions for SARI can be used as proxies.	May be influenced by hospitalization policy, e.g., if even mild cases are hospitalized for isolation purposes. May be artificially elevated during periods of intense circulation, where inpatients admitted for other conditions are routinely tested for SARS-CoV-2 infection (“incidental COVID-19 hospitalizations”).

Indicator	Description	Major limitations
Number of patients currently in the ICU for COVID-19 (or rate per unit population)	Even if the health system is not saturated, a large number of patients in the ICU for COVID-19 places a burden on the health system and diverts resources from other health priorities. Where SARS-CoV-2 testing is limited, admissions for SARI can be used as proxies.	May be artificially elevated during periods of intense circulation, where inpatients admitted for other conditions are routinely tested for SARS-CoV-2 infection ("incidental COVID-19 ICU admissions").

*Consider averaging over a two-week period to minimize the effect of random fluctuations

3.2. Additional indicators for assessing impact on the health system

*Annex 1 Table 6: Additional indicators to assess the level of COVID-19 impact on the health system**

Indicator	Description/Limitations
New COVID- 19 hospitalizations per 100 000 population per week†	In the absence of reliable data on bed occupancy or total hospitalized patients, new hospitalization is a useful proxy. May be influenced by hospitalization policy, e.g., if even mild cases are hospitalized for isolation purposes. May be artificially elevated during periods of intense circulation, where inpatients admitted for other conditions are routinely tested for SARS-CoV-2 infection ("incidental COVID-19 hospitalizations").
Product of weekly† SARI rates and weekly percentage positivity for SARS-CoV- 2	Where SARS-CoV-2 testing is low, this indicator can serve as a proxy for new COVID-19 hospitalizations. May be artificially reduced during co-circulation of other pathogens with overlapping symptoms (30). Requires SARI rates and SARS-CoV-2 positivity to come from same catchment population.
New COVID- 19 ICU admissions per 100 000 population per week†	In the absence of reliable data on ICU bed occupancy or total ICU patients, new ICU admissions is a useful proxy. Useful to assess specifically among high-risk populations (e.g., ICU admissions by age group and/or by vaccination status) where possible. Less susceptible to "incidental COVID-19 ICU admissions" but may still occur during periods of intense circulation, where some ICU patients admitted who positive for SARS-CoV-2 could be counted as COVID-19 ICU admissions.
Proportion of occupied beds with access to oxygen supply or mechanical ventilators	Oxygen is an important treatment for COVID-19, and sufficient capacity to provide oxygen can be useful even in the absence of ICU capacity. This indicator may be difficult to measure and may not be useful in countries with very low capacity.
Crude case fatality rate of COVID- 19 (number of deaths divided by number of incident cases)	Assuming stable severity, increased case fatality is an indicator of deteriorating health system capacity. Must be analysed by risk groups (e.g., elderly, unvaccinated). Highly dependent on age and various biases. Must take into account any changes in case detection or testing strategy. Unreliable during rapid changes in incidence, as there is a lag between incident cases and deaths. This can be countered by dividing number of deaths at present by number of incident cases at an appropriately earlier time (typical duration from incidence to death).
Number of COVID- 19-attributed deaths per 100 000 population per week†	As with CFR, a high number of deaths may be indicative of health system strain or of patients unwilling or unable to go to the hospital. Less susceptible to influence of incidental SARS-CoV-2 infection. Useful to assess specifically among high-risk populations (e.g., deaths by age group and/or by vaccination status) where possible. Potential for "incidental COVID-19 deaths" during periods of intense circulation, where some fatal cases testing positive for SARS-CoV-2 could be counted as COVID-19 deaths. At low levels and in small geographical regions, can be sensitive to minor fluctuations (e.g., one versus two deaths).
Proportion of samples sequenced	In the absence of a deliberate change in strategy to reduce sequencing, a reduced proportion of positive cases that are sequenced can indicate a saturation of sequencing capacity.

*This list should not be considered exhaustive.

†Consider averaging over a two-week period to minimize the effect of random fluctuations

Annex 2: Options for thresholds calculations

Where possible, it is important to have thresholds for priority groups and settings as well as for the general population.

Statistical methods

Parametric: Assuming five levels of intensity, the values of each indicator can be averaged over the period of available data (with any adjustments for aberrations such as large batches of reporting), and intensity levels can be set as the number of standard deviations and could be adjusted according to risk tolerance. This method is more appropriate for normally distributed data.

None: None (or mean-1SD)
Low: Below mean
Moderate: Mean to mean+1SD
High: Mean+1SD to mean+3SD
Extraordinary: > Mean+3SD

Non-parametric: Assuming five levels of intensity, levels can be set as the following (the percentiles could be adjusted according to risk tolerance). This method is more appropriate for non-normally distributed data.

None: None (or below 25th percentile)
Low: Below 50th percentile
Moderate: 50th<75th percentile
High: 75th<90th percentile
Extraordinary: 90th+ percentile

Some countries have applied thresholds for COVID-19 based on historical influenza data used in their PISA thresholds, but the lack of historical COVID-19 data is a limitation (45). The decision on what timeframe of data (e.g., whether from the beginning of the pandemic or the past year) for each indicator will be country dependent. Using all available data since the start of the pandemic may make it easier to understand the relative severity of the situation compared to "when things were at their worst". However, given the many changes in testing policies and capacities, population-level immunity, data quality and other factors, certain thresholds may be better set using more recent data.

More sophisticated statistical methods, such as cyclical regression models or correlation analysis[3], are beyond the scope of this guidance but may be used where capacity exists.

Empirical methods

Countries may wish, in addition to using the preceding statistical methods, to experiment with setting empirical thresholds, which might be more suited to situations with little historical data. Empirical thresholds may be particularly suitable for parameters that look at impact/capacity. These would also be more applicable for data not affected by changes in policies and strategies. There are several considerations when setting empirical thresholds: What is the maximum parameter value previously observed? For example, can hospitalization rate be compared to the highest previous peak? What was the context for this (e.g., how high was activity for other parameters)? What PHSM were needed at that time? Or, defining a maximum level where the system is overwhelmed and setting thresholds leading up to this level (e.g., at 40%, 60%, 80% of maximum capacity). What level of indicator values may trigger decisions to introduce stringent measures in the future?

[3] An example can be found here: https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/indicators-monitoring-community-levels.html

Methods for determining situational level

Option 1 (Recommended): Linear sum of scores across categories

Annex 2 Table 1: Recommended assessment matrix to determine situational level using COVID-19 transmissibility, impact on morbidity and mortality and impact on health system, with each dimension given equal weight

		Dimension		
		Transmissibility	**Impact on morbidity and mortality**	**Impact on the health system**
Intensity	None	0	0	0
	Low	1	1	1
	Moderate	2	2	2
	High	3	3	3
	Extraordinary	4	4	4

Total Score	0	1-3	4-7	8-10	11-12
Situational Level	**0**	**1**	**2**	**3**	**4**

Example 1: intense circulation of low-virulence variant.

Dimension	**Assessment**	**Score**
Transmissibility (0,1,2,3,4)	Extraordinary	4
Impact on morbidity and mortality (0,1,2,3,4)	Low	1
Impact on the health system (0,1,2,3,4)	Low	1
Total Score		6
Resulting Situational Level		**2**

Example 2: low-level circulation of new high-virulence variant, substantially increased case fatality ratio, but health system not yet close to being overwhelmed.

Dimension	Assessment	Score
Transmissibility (0,1,2,3,4)	Low	1
Impact on morbidity and mortality (0,1,2,3,4)	Extraordinary	4
Impact on the health system (0,1,2,3,4)	Moderate	2
Total Score		7
Resulting Situational Level		**2**

As seen in the example above, this would result in no escalation of PHSM in the early days of an extremely virulent variant.

Advantages: Simple; recognizes that a grave situation in multiple categories is worse than a grave situation in only one category.

Disadvantages: Gives equal weight to each of the three dimensions; may fail to result in sufficient action in specific situations. For example, if the health system is maximally strained due to non-COVID-19 health issues, and there is a minor increase in SARS-CoV-2 transmissibility and impact on morbidity and mortality, the total score would be low, despite the fact that PHSM should be increased to protect the health system; or, as has happened in some high-capacity countries, the mortality could be very high, but they have sufficient health care capacity and consequently, PHSM are not re-implemented, thus resulting in avoidable deaths. As long as the quantitative assessment is followed by a qualitative contextual assessment ('reality check'), however, inappropriate scores can be adjusted to better suit the context. Further, it may be reasonable to implement only certain PHSM that directly address a specific dimension, such as enforcing mask wearing in health facilities and deferring elective procedures when there is a high impact on the health system, without raising the overall situational level.

Option 2: Driven by highest single category

Annex 2 Table 2: Assessment matrix to determine situational level using SAR-CoV-2 transmissibility, impact on morbidity and mortality and impact on the health system indicators, with highest score in any dimension determining overall situational level

Intensity		Dimension		
		Transmissibility	**Impact on morbidity and mortality**	**Impact on the health system**
	None	0	0	0
	Low	1	1	1
	Moderate	2	2	2
	High	3	3	3
	Extraordinary	4	4	4

Highest Score	0	1	2	3	4
Situational Level	**0**	**1**	**2**	**3**	**4**

Example:

Dimension	**Assessment**	**Score**
Transmissibility (0,1,2,3,4)	Extraordinary	4
Impact on morbidity and mortality (0,1,2,3,4)	Low	1
Impact on the health system (0,1,2,3,4)	Low	1
Resulting Situational Level		**4**

Here, the maximum score is 4, and there is direct correspondence between the score and the situational level.

Advantages: Simple; recognizes that an escalation in any category warrants some increases in PHSM.

Disadvantages: Gives equal weight to each of the three dimensions, for which there is no scientific basis; disregards the fact that an escalation in more than one dimension is actually worse than an escalation in only one dimension (e.g., any time transmissibility is high, this would automatically lead to the most stringent PHSM, even in the face of a very low-virulence variant). However, as long as the quantitative assessment is followed by a qualitative contextual assessment – 'reality check', – inappropriate scores can be adjusted to better suit the context).

Option 3a: Sum of scores, but with different weights for different dimensions, according to countries' strategic priorities

Annex 2 Table 3: Assessment matrix to determine situational level using SARS-CoV-2 transmissibility, impact on morbidity and mortality and impact on the health system indicators, with different weight given to different dimensions (example of impact on morbidity and mortality given higher weight)

		Dimension		
		Transmissibility (weight = 1)	**Impact on morbidity and mortality (weight = 2)**	**Impact on the health system (weight = 1)**
Intensity	None	0	0	0
	Low	1	2	1
	Moderate	2	4	2
	High	3	6	3
	Extraordinary	4	8	4

Total Score	0	1-5	6-10	11-14	15-16
Situational Level	**0**	**1**	**2**	**3**	**4**

Example: low-level circulation of new high-virulence variant, massive case fatality rate (CFR), but health system not yet close to being overwhelmed.

Dimension	**Assessment**	**Score**
Transmissibility (weight=1)	Low	1
Impact on morbidity and mortality (weight=2)	Extraordinary	8
Impact on the health system (weight=1)	Moderate	2
Total Score (maximum 16)		11
Resulting Situational Level		**3**

Option 3b: Sum of scores, but with different numbers of intensity levels in each dimension

Annex 2 Table 4: Assessment matrix to determine situational level using SARS-CoV-2 transmissibility, impact on morbidity and mortality and impact indicators, with different numbers of intensity levels in different dimensions (example of three levels of transmissibility and impact, and five levels of impact on morbidity and mortality)

Intensity		Dimension				
	Transmissibility	Score	**Impact on morbidity and mortality**	Score	**Impact on the health system**	Score
	None-Low	0	None	0	None-Low	0
			Low	1		
	Moderate	1	Moderate	2	Moderate	1
	High-Extraordinary	2	High	3	High-Extraordinary	2
			Extraordinary	4		

Total Score	0	1-2	3-4	5-6	7-8
Situational Level	0	1	2	3	4

Example: low-level circulation of new high-virulence variant, massive CFR, but health system not yet close to being overwhelmed.

Dimension	**Assessment**	**Score**
Transmissibility (0,1,2)	Low (0)	0
Impact on morbidity and mortality (0,1,2,3,4)	Extraordinary (4)	4
Impact on the health system (0,1,2)	Moderate (1)	1
Total Score (maximum 8)		5
Resulting Situational Level		**3**

Advantages: Allows customization according to countries' priorities; may be suitable for countries with poor data in some dimensions, thus giving greater weight to dimensions with better data; may be easier to use if there are fewer categories in some dimensions, e.g., it may be difficult to assign five distinct levels to impact on the health system.

Disadvantages: Slightly more complex to calculate; more complex to communicate to the public. May be biased by greater influence of data with higher availability.

Option 4: Qualitative evaluation of each dimension, with consensus-based determination of resulting situational level

Example: low-level circulation of new high-virulence variant, significantly elevated CFR, but health system not yet close to being overwhelmed.

Dimension	**Qualitative Assessment**
Transmissibility	Low
Impact on morbidity and mortality	Extraordinary
Impact on the health system	Moderate
Qualitative result of discussions	*High*
Resulting Situational Level	**3**

Advantages: Not prescriptive, can accommodate unforeseen future scenarios; allows for holistic assessment of all available information.

Disadvantages: lower predictability and transparency, difficult to communicate to the public; may result in slower PHSM adjustment because it requires consultations for each adjustment.

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WHO continues to monitor the situation closely for any changes that may affect this interim guidance. Should any factors change, WHO will issue a further update. Otherwise, this interim guidance document will expire two years after the date of publication.

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