

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

Interim guidance
4 November 2020



Key points

- Public health and social measures (PHSM) have proven critical to limiting transmission of COVID-19 and reducing deaths.
- The decision to introduce, adapt or lift PHSM should be based primarily on a situational assessment of the intensity of transmission and the capacity of the health system to respond, but must also be considered in light of the effects these measures may have on the general welfare of society and individuals.
- Indicators and suggested thresholds are provided to gauge both the intensity of transmission and the capacity of the health system to respond; taken together, these provide a basis for guiding the adjustment of PHSM. Measures are indicative and need to be tailored to local contexts.
- PHSM must be continuously adjusted to the intensity of transmission and capacity of the health system in a country and at sub-national levels.
- When PHSM are adjusted, communities should be fully consulted and engaged before changes are made.

Introduction

This document is an update to the interim guidance published on 16 April 2020 entitled “Considerations in adjusting public health and social measures in the context of COVID-19”.

Public health and social measures (PHSM) are being implemented across the globe to limit transmission and reduce mortality and morbidity from COVID-19. PHSM include non-pharmaceutical individual and societal interventions to control COVID-19.

As the pandemic unfolds, PHSM should be regularly reviewed and adapted and their effectiveness in controlling SARS-CoV-2 transmission evaluated. This requires agile decision-making based on ongoing situational assessments at the most local administrative level possible. Such assessments should be based on a risk/benefit approach considering the intensity of transmission, the health system’s capacity to respond, other contextual considerations (such as upcoming events which may alter transmission or capacity) and the overall strategic approach to responding to COVID-19 in each specific setting. Decisions to tighten, loosen, or introduce PHSM to control COVID-19

must be weighed against the impacts these measures have on societies and individuals. Considerations include impact on the economy, security, mental health and psychosocial well-being, human rights, food security, socioeconomic disparities, continuity of health and public health programmes, treatment and management of conditions other than COVID-19, gender-based violence, and public sentiment and adherence to PHSM. The overall health and wellbeing of communities should therefore be at the forefront of considerations when deciding on and implementing PHSM.

PHSM include personal protective measures (such as hand hygiene, respiratory etiquette, mask wearing); environmental measures (such as cleaning, disinfection, ventilation), surveillance and response measures (including contact tracing, isolation and quarantine); physical distancing measures (e.g. limiting the size of gatherings, maintaining distance in public or workplaces, domestic movement restrictions); and international travel-related measures.¹ PHSM act in concert, and a combination of measures is required to ensure adequate control. Measures should be tailored to the lowest administrative level for which situational assessment is possible and measures can be enacted practically.

Changes from the previous version

This document provides guidance to help Member States assess the situation at national and sub-national levels, as well as key recommendations about the implementation of PHSM. It should be read in conjunction with WHO interim guidance on Critical preparedness, readiness and response actions for COVID-19,² which addresses several other elements of preparedness, readiness and response for COVID-19 beyond PHSM.

The new guidance contains several important changes. First, it provides an updated transmission classification, subdividing ‘community transmission’ into four sub-categories, from low to very high incidence. The associated annex provides revised indicators and thresholds for determining the transmission classification, as well as the current health system capacity. The document then provides a situational assessment matrix, which takes into consideration the transmission classification and the health system response capacity to arrive at an overall Situational Level. Finally, the document provides guidance about the PHSM to implement or adjust at each Situational Level.

This guidance document is intended for public health and health services decision-makers at all operational levels (i.e., at any level 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.

Transmission scenarios

Assessing the level of transmission is key to assessing the overall COVID-19 situation in a given area and therefore guiding essential decisions on response activities and tailoring epidemic control measures.

WHO previously defined four transmission scenarios to describe the dynamic of the epidemic: no reported cases (including both zero transmission and the absence of detected and reported cases), sporadic cases, clusters of cases and community transmission.

With many countries now experiencing community transmission and seeking to adjust PHSM to various levels of intensity, an update of the transmission classification has been developed to provide more granularity. A range of indicators to capture transmission intensity, thereby aiding decision making, also has been developed.

The community transmission (CT) classification is now divided into four levels, from low incidence (CT1) to very high incidence (CT4). Consequently, there are now seven categories (the definitions below are abbreviated; details about the transmission classifications can be found in an Annex to this guidance entitled “Public health criteria to adjust public health and social measures in the context of COVID-19”).

- No (active) cases
- Imported / Sporadic cases
- Clusters of cases
- CT1: Low incidence of locally acquired widely dispersed cases detected in the past 14 days
- CT2: Moderate incidence of locally acquired widely dispersed cases detected in the past 14 days
- CT3: High incidence of locally acquired widely dispersed cases in the past 14 days
- CT4: Very high incidence of locally acquired widely dispersed cases in the past 14 days

The transmission level classification for a geographic area will change (improve or worsen) over time, and different geographic areas within a country will likely experience different levels of transmission concurrently.

Community engagement strategies based on community perceptions, needs and feedback should be implemented to inform PHSM decision making with the objective that the community perceives that it owns the public health response.

The process for determining the transmission classification is outlined in the Annex below.

Response capacity

In addition to assessing the level of transmission, it is also necessary to understand the available health system response capacity—depending on whether there is adequate, moderate, or limited capacity, the same level of transmission can result in a drastically different situation and require a different degree of PHSM implementation. For the purposes of this document, ‘response capacity’ encompasses both clinical care and public health services, and is measured in terms of both the actual capacity (ability) to deliver services, and the performance of those services.

The Annex below provides the method for assessing the health system response capacity.

Situational assessment using transmission level and response capacity

The decision to introduce, adapt or lift PHSM, or to scale up health system capacity, should be based on an analysis of the level of transmission, the health system response capacity, and other contextual factors.

Based on the joint assessment of these factors, a Situational Level should be assigned to a geographic area that will inform whether and how to adjust PHSM (see Table 1). The assessment should be strengthened through examination of quantitative and qualitative information from multiples sources, which should be triangulated to provide an additional reality check on the assessed Situational Level. The resultant **Situational Levels should only be considered indicative** because they may not correspond well to the response required in a specific context. For example, in a small island developing state with limited capacity, stringent PHSM may be warranted at a relatively low level of transmission.

The indicators should be monitored regularly (e.g. biweekly) and the Situational Level assessed accordingly to inform the appropriateness and impact of the PHSM measures taken and to anticipate future changes.

Table 1: Situational Level assessment matrix using transmission level and response capacity indicators to guide adjustment of PHSM

	Response capacity		
Transmission level	Adequate	Moderate	Limited
No cases	0	0	1
Imported/Sporadic cases	0	1	1
Clusters of cases	1	1	2
Community - CT1	1	2	2
Community - CT2	2	2	3
Community - CT3	2	3	3
Community - CT4	3	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 should be no restrictions on daily activities.
- **Situational Level 1** is a situation where basic measures are in place to prevent transmission; or if cases are already present, the epidemic is being controlled through effective measures around the cases or clusters of cases, with limited and transient localized disruption to social and economic life.
- **Situational Level 2** represents a situation with low community incidence or a risk of community transmission beyond clusters. Additional measures may be required to control transmission; however,

disruptions to social and economic activities can still be limited.

- **Situational Level 3** is a situation of community transmission with limited additional capacity to respond and a risk of health services becoming overwhelmed. A larger combination of measures may need to be put in place to limit transmission, manage cases, and ensure epidemic control.
- **Situational Level 4** corresponds to an uncontrolled epidemic with limited or no additional health system response capacity available, thus requiring extensive measures to avoid overwhelming of health services and substantial excess morbidity and mortality.

Adjusting public health and social measures

Key principles

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

- Measures with the highest level of acceptability and feasibility, proven effectiveness—and which minimize the negative consequences on health and well-being of all members of society and the economy—should be considered first. Acceptability and feasibility should be determined through active discussion with community members in order to maximize the likelihood of compliance and adherence, while effectiveness and potential negative effects of PHSM should be evaluated through an evidence-based assessment (e.g. literature review, WHO guidance, etc) and active monitoring of the impact of implemented PHSM.
- Additional measures should be considered as soon as the situation deteriorates and the Situational Level increases. Delays in implementation of measures have been linked to increased mortality and the need for more stringent measures to regain control. In particular, every effort should be made to prevent an intensification in transmission from ‘clusters’ to ‘community transmission.’
- When feasible, measures should be adopted (or lifted) in a controlled, stepwise manner to allow better understanding of the effects of each measure on transmission dynamics.
- Public health surveillance data and case and cluster investigations may provide important information on conditions associated with transmission. Such information may help targeting application or intensification of certain PHSM without imposing the measures universally on all settings.
- Vulnerable communities and disadvantaged individuals may face immediate challenges in meeting their basic life needs, such as income, shelter and food, when stringent PHSM are imposed. It is crucial that those essential needs be addressed before measures are instituted to enable people to comply. It is critical to safeguard vulnerable 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.

- Any decision to apply stringent PHSM must weigh in equal measure the impact of the measures (lives lost in the short and long term compared to lives saved by applying PHSM).
- Protection of vulnerable populations (including those clinically at risk for severe disease [aged >60 years and/or with comorbidities that increase risk of serious COVID-19 disease], and disadvantaged groups such as marginalized populations, migrants and refugees, and those in high density/low resource settings and lower income groups) should be central in the decision to implement, maintain or lift a measure.
- Policies restricting travel between areas should be based on an assessment of their respective transmission levels and health system capacities, with the objectives of avoiding re-seeding of lower-transmission areas and of minimizing further burden on stretched health systems. In all cases, essential workers should be permitted to travel as needed to support continuation of essential services.
- When lifting PHSM, the potential impact of lifting those measures on the capacity of the system to rapidly respond to any new increase in cases should be considered.
 - Adequate health system capacities should be in place to detect, test and manage new cases.
 - The risk of outbreaks in settings with vulnerable individuals should be minimized. This requires identifying all major drivers of COVID-19 transmission (e.g. various types of closed settings) in the local context, with appropriate measures in place to maximize physical distancing and minimize the risk of new outbreaks. Measures must be in place to reduce the risk of nosocomial transmission and outbreaks in settings such as care homes.
 - Key drivers of transmission in the local area under assessment must be well understood using local surveillance data, and measures should rapidly be re-implemented should incidence increase. A particular focus should be on prevention and earlier detection of potential superspreading events.

When PHSM are adjusted, communities should be fully consulted and engaged before changes are made.³ Clear, concise and transparent communication, including an evidence-based rationale for changing measures, should be developed with communities targeted for PHSM.

In particular:

- Communities should be given recognized roles to provide input on when and how PHSM will be implemented or lifted.
- Communities will be critical to implementing population-wide PHSM and contributing to the mitigation of the social and economic impact of certain measures (e.g. disrupting availability of food and other needed supplies).
- Feedback mechanisms should be established to ensure that any societal impact of changes to PHSM are quickly identified and reported for action. Communities should lead solutions to ensure adoption of measures that best meet local needs (for example by

considering local cultural practices) and increase likelihood of adherence.

- Local community level networks should be leveraged for sustained efforts, building capacity through training of local leaders.
- The infodemic⁴ that has emerged from a COVID-19 information and disinformation overload should be managed at all stages of the response by providing the right information at the right time to the right people through trusted channels (e.g. community and faith leaders, family doctors and other influential members of society).
- A communication and community engagement strategy should be developed before any changes to PHSM are implemented.³ The strategy should be developed in consultation with relevant stakeholders from government, civil society 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 public. Key information such as the extent and estimated duration of the measures in place should be part of the priority messaging of developed plans. Community engagement is essential not only for compliance and support for public health measures but also for the development of adaptive social measures and to inform PHSM decision making.

PHSM implementation based on situational assessment

Table 2 provides more detail on what types of measures may be implemented for each Situational Level. The measures at each level are indicative, since some measures may be more or less feasible or appropriate in specific contexts and locations. Note that recommendations on international travel can be found in a separate document.⁵

Measures should be time-bound and regularly re-assessed, at least every two weeks, along with the Situational Level.

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

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 should be no restrictions on daily activities	<p>At this level, surveillance should ensure that any new case can be detected and managed as early as possible, but there should be no restrictions on daily activities.</p> <p>Authorities may consider implementing the following measures:</p> <ul style="list-style-type: none"> • Continue strengthening emergency preparedness and response, ensuring adequate stockpiles of medicines and medical equipment and that sufficient staff have been recruited and trained to handle anticipated surges in workload. • Individuals should apply basic individual precautionary measures and behaviours such as hand hygiene,⁶ cough etiquette, staying home / wearing a mask⁷ if unwell and voluntary physical distancing. • Robust surveillance⁸ should be in place to rapidly detect and investigate suspected cases and clusters⁹ and ensure public health measures such as isolation and quarantine¹⁰ are undertaken to reduce onward spread if cases are confirmed and contacts are traced, respectively. • Travel outside the area should be permitted as per national policy; attention should be paid to the risk of introduction of the virus into the area by travellers from higher incidence areas. • Clear information should be provided to the public about what to do if unwell and whom to contact for advice, testing and/or treatment.
Situational Level 1: Basic measures are in place to prevent transmission; or if cases are already present, the epidemic is being controlled through effective measures around the cases or clusters of cases, with limited and transient localized disruption to social and economic life.	<p>At this level, specific measures should be taken around cases and/or clusters, and individual measures should be strengthened, with limited impact on social and economic activities.</p> <p>In addition to measures on emergency preparedness and response and surveillance, individual precautionary measures and risk communications, authorities may consider implementing the following measures:</p> <ul style="list-style-type: none"> • Emphasis should be placed on case and cluster detection, investigation, tracking and tracing of contacts. • Individual should apply individual precautionary measures and behaviours such as hand hygiene, cough etiquette, staying home if unwell, wearing a mask where appropriate, and physical distancing. • Promote avoidance of the '3 Cs' – closed spaces, crowded places and close-contact settings. • Daily activities and services, such as educational settings,¹¹ businesses¹² and leisure/tourism can remain open with safety measures in place to limit the risk of spread. • Measures should be in place to protect the most vulnerable, particularly ensuring that there are appropriate measures in place in long-term care¹³ and other residential facilities.

Situational Level	Considerations for implementation of PHSM by Situational Level*
<p>Situational Level 2: Low community incidence or a risk of community transmission beyond clusters. Additional measures may be required to control transmission; however, disruptions to social and economic activities can still be limited</p>	<p>At this level, measures should be applied to limit the number of social encounters in the community while ensuring services can remain open with safety measures in place. A wider range of PHSM may be required to control transmission.</p> <p>In addition to measures on emergency preparedness and response and surveillance, individual precautionary measures and risk communications, authorities may consider implementing the following measures:</p> <ul style="list-style-type: none"> • Education settings remain open with infection prevention and control (IPC) measures in place. • Businesses remain open, with safety measures in place, with teleworking encouraged as much as possible. • Individual should apply individual precautionary measures and behaviours such as hand hygiene, cough etiquette, staying home if unwell, wearing a mask where appropriate, physical distancing and avoiding the '3C's' – closed spaces, crowded places and close-contact settings. • Limit the size of social and other mass gatherings.¹⁴ • If required, further emphasis may be needed on protecting the most clinically vulnerable, through strict application of PPE and IPC measures, heightened surveillance and managing visits in long term care and other residential facilities.
<p>Situational Level 3: Community transmission with limited additional capacity to respond and a risk of health services becoming overwhelmed. A larger combination of measures may need to be put in place to limit transmission, manage cases, and ensure epidemic control.</p>	<p>At this level, a strengthening of all PHSM is needed to avoid more stringent restrictions on movement and other related measures applied under level 4. All individuals should reduce their social contacts, and some activities may need to close while allowing for essential services and in particular schools to remain open.</p> <p>In addition to measures on emergency preparedness and response and surveillance, individual precautionary measures and risk communications, authorities may consider implementing the following measures:</p> <ul style="list-style-type: none"> • Closure of non-essential businesses or remote working as much as possible. • Individual should apply individual precautionary measures and behaviours such as hand hygiene, cough etiquette, staying home if unwell, wearing a mask where appropriate, physical distancing and avoiding the '3C's' – closed spaces, crowded places and close-contact settings. • Consider limiting in-person university teaching, and institute e-learning. • 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. Continuity of education for children for their overall well-being, health and safety should be at the forefront of all relevant considerations and decisions. • Evaluate holding sporting and similar events, using a risk based approach; if held, they should be held under strict safety rules, e.g. without spectators. Other mass gatherings should be suspended, and the size of all social gatherings should be decreased.
<p>Situational Level 4: An uncontrolled epidemic with limited or no additional health system response capacity available, thus requiring extensive measures to avoid overwhelming of health services and substantial excess morbidity and mortality.</p>	<p>At this level, reducing transmission in the community will be challenging, and more stringent movement restrictions and related measures may need to be put in place to significantly reduce the number of in-person encounters. Such measures should geographically limited to where needed, be time-bound and aimed to be as short as reasonably possible.</p> <p>In addition to measures on emergency preparedness and response and surveillance, individual precautionary measures and risk communications, authorities may consider implementing the following measures:</p> <ul style="list-style-type: none"> • Individuals should stay at home and limit social contact with people outside the household. • Essential workers will need to continue activities, with maximum support and safety measures in place. • Closure of non-essential businesses or remote working. • Consider all options for continuity of in-person learning. If not possible, limit in-person contact. This may include in person teaching, blended or remote learning strategies that strictly limit the number of people physically on site (exceptions would include children of essential workers and their teachers). The closure of educational facilities should only be considered when there are no other alternatives. • All long-term care and other residential facilities should consider strict measures to limit the risk of infection, such as prohibiting in-person visitors.

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

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Annex: Public health criteria to adjust public health and social measures in the context of COVID-19

Introduction

In response to the COVID-19 pandemic, countries around the globe have implemented public health and social measures (PHSM) for epidemic control. As the local epidemiology of the disease changes, countries adjust (loosen/reinstate) these measures accordingly.

This annex updates the annex published on 12 May 2020 and outlines a process for decision-making on adapting PHSM to the epidemiological situation and the health system's capacity for response. It should be read in conjunction with the main body of this document and the interim guidance on Critical preparedness, readiness and response actions for COVID-19.¹

This annex is intended for the public health divisions of national and sub-national authorities in locations that have introduced PHSM and are considering adjusting them. Its guidance is restricted to the public health domain. Other documents published by WHO address different considerations that should enter into decision-making about introducing or loosening PHSM, including the well-being and welfare of a population.

How to use the guidance in this annex

The public health criteria in this annex are grouped into two domains that should be evaluated to address two main questions:

1. **Epidemiological situation/Transmission classification** - Is the epidemic controlled?
2. **Health system and public health services capacity and performance** - Is the health system able to detect and cope with COVID-19 cases while maintaining other essential health services?

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. The thresholds are indicative and may need to be revisited as further information about the epidemiology of COVID-19 and the impact of measures become available. It is recommended to systematically assess these criteria at least biweekly at the **lowest operational subnational administrative level** that is practical to inform tailored local responses.

1. Epidemiological situation/Transmission classification

Transmission classification categories can be used to determine the extent to which the epidemic can be considered controlled within each country/area and at sub-national levels. The transmission categories in one country are also useful to others when considering changed policies on trade and travel.

Defining Transmission Classification

WHO previously defined four transmission scenarios to describe the dynamic of the epidemic: no reported cases (including both zero transmission and the absence of detected and reported cases), sporadic cases, clusters of cases and community transmission. The community transmission (CT) classification is now divided into four levels, from low incidence (CT1) to very high incidence (CT4). Consequently, there are now seven categories.

Table 1: Definition of the categories for transmission classification

Category name	Definition
	<i>Countries/territories/areas with:</i>
No (active) cases	No new cases detected for at least 28 days (two times the maximum incubation period), in the presence of a robust* surveillance system. This implies a near-zero risk of infection for the general population.
Imported / Sporadic cases	Cases detected in the past 14 days are all imported, sporadic (e.g. laboratory acquired or zoonotic) or are all linked to imported/sporadic cases, and there are no clear signals of further locally acquired transmission. This implies minimal risk of infection for the general population.
Clusters of cases	Cases detected in the past 14 days are predominantly limited to well-defined clusters that are not directly linked to imported cases, but which are all linked by time, geographic location and common exposures. It is assumed that there are a number of unidentified cases in the area. This implies a low risk of infection to others in the wider community if exposure to these clusters is avoided.

Category name	Definition
	<i>Countries/territories/areas with:</i>
Community transmission – level 1 (CT1)	Low incidence of locally acquired, widely dispersed cases detected in the past 14 days, with many of the cases not linked to specific clusters; transmission may be focused in certain population sub-groups. Low risk of infection for the general population.
Community transmission – level 2 (CT2)	Moderate incidence of locally acquired, widely dispersed cases detected in the past 14 days; transmission less focused in certain population sub-groups. Moderate risk of infection for the general population.
Community transmission – level 3 (CT3)	High incidence of locally acquired, widely dispersed cases in the past 14 days; transmission widespread and not focused in population sub-groups. High risk of infection for the general population.
Community transmission – level 4 (CT4)	Very high incidence of locally acquired, widely dispersed cases in the past 14 days. Very high risk of infection for the general population.

* Note that in situations where COVID-19 surveillance is not robust, a lack of identified cases should not be interpreted as an absence of transmission; alternate indicators (see Table 5) should be examined to assess the possibility of undetected COVID-19 cases.

Indicators to determine community transmission

Four primary indicators to determine community transmission are proposed in Table 2. They are based on data that should be routinely collected during the pandemic. 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 administrative level of operations possible to inform targeted public health interventions. To develop transmission classification at a higher administrative level, a separate analysis should be conducted using indicators for the higher administrative level, rather than attempting to aggregate lower-level transmission classifications.

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.

Assessing the level of community transmission

Ranges for the four indicators (in Table 2), were developed through a review of existing data. They can be used to guide the application of the transmission classification at sub-national levels. These ranges are indicative and may require adjustment to local contexts and based on the performance (e.g. sensitivity, representativeness) of the local surveillance system and testing strategy, and should be revisited periodically. Caution should be exercised when interpreting changes in indicators that occur in the context of changes to the surveillance system (e.g. an increase in testing rate or a change in the population under surveillance). Note that some indicators (e.g. overall incidence) may be higher in the presence of very large clusters, such as mass gathering outbreaks, than during community transmission.

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). Denominator data must be available at the level of disaggregation being assessed (e.g. district, province). Some authorities may choose to track these indicators among individuals at greatest risk for severe disease and death.

After all available indicators are calculated, if the levels calculated based on each indicator are different, a qualitative review should be undertaken to determine the final transmission classification. It is recommended that if data are not available (or reliable) for all indicators, more weight should be given to the indicators considered more reliable in the local context. In many cases, indicators listed higher in Table 2 may be more reliable than those lower in the table.

In places where indicator values are not reliable, but the system is stable, trends can be used as an alternative assessment. One example would be a situation in which there is a very low testing rate, and many cases are likely missed, but the testing strategy is not changed.

Additional indicators that can provide further evidence to help classify the level of transmission are listed in Table 3. These indicators may not be readily available at the lowest administrative level of operations, however. They are therefore considered secondary to the primary four indicators listed in Table 2. 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 Table 2. Thresholds are not presented for the secondary indicators, due to a lack of available data, high local variability, or both.

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.

Table 2: Primary Epidemiological Indicators and Proposed Ranges to Assess the Level of COVID-19 Community Transmission

Domain	Indicator	Description/Rationale	Major limitations	Level of community transmission			
				CT 1	CT 2	CT 3	CT 4
Hospitalization Rate	New COVID-19 hospitalizations per 100 000 population per week averaged over a two-week period	A subset of all incident cases require 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.	<5	5 - <10	10 - <30	30+
Mortality	Number of COVID-19 attributed deaths per 100 000 population per week averaged over a two-week period	A subset of all incident cases are fatal, and thus this is an indirect indicator of incidence. Minimally influenced by surveillance policy if testing 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).	<1	1-<2	2-<5	5+
Case Incidence	New confirmed cases per 100 000 population per week averaged over a two-week period	Direct measure of incidence	Heavily influenced by surveillance system performance, testing policy and laboratory capacity. At low levels and in small geographical regions, can be sensitive to minor fluctuations in case counts, particularly due to batch reporting.	<20	20 - <50	50 - <150	150+
Testing	Test positivity proportion from sentinel sites averaged over a two-week period.	Not influenced by surveillance capacity or strategy. Minimally influenced by testing strategy or capacity.	May not be representative of the general population if there are only limited sentinel sites. May miss mild or atypical cases if testing criteria require influenza-like presentation.	< 2%	2% - < 5%	5% - <20%	20%+

Note: the thresholds in this table may be updated as additional data become available.

Trends in Transmission

In addition to calculating the category of transmission classification, it is also important to understand the direction of the trends of contributing indicators (stable, decreasing or increasing) 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 change in the transmission classification.

Table 3: Additional epidemiological indicators to assess level of COVID-19 Community Transmission*

Indicator	Description/Limitations
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)
Effective reproductive number (Rt)	The effective reproductive number during the previous one or more epidemiological weeks. While this is a widely used indicator of transmission, it requires familiarity with the various methods for calculation and sufficiently reliable and timely data on incidence. ²
Doubling time	The number of days required to double the total cumulative number of cases. This is linked to Rt.
Proportion of unlinked cases amongst new cases	This is defined as the proportion of cases not previously listed as contacts (alternatively, the proportion not linked to known clusters/transmission chains). It is a measure of the spread in the community beyond known clusters. It is heavily influenced by case investigation and contact tracing capacity.
Overall (non-sentinel) test positivity	This may be useful if there are limited sentinel sites. It may capture atypical cases better than sentinel surveillance. This is heavily influenced by testing strategy and capacity.
Influenza-like-illness (ILI) or Severe Acute Respiratory Infection (SARI) trends	This is not directly indicative of COVID-19 cases, but sentinel surveillance for ILI and SARI can also capture a proportion of COVID-19 cases, and thus this is useful for monitoring trends for COVID-19. This measure may be helpful where COVID-19-specific surveillance is not robust.
All-cause hospitalization rate trends	This is not 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 cases. These rates may decline due to restricted service provision and other public health measures. Trends must be analyzed 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.
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 cases. Trends must be analyzed 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 transmission, it requires careful consideration of the inherent biases in mortality estimation methods. ³ These trends may be helpful where COVID-19-specific surveillance is not robust.

*This list should not be considered exhaustive.

2. Health system and public health services capacity and performance

The capacity to respond to the extant epidemiologic situation of COVID-19 (i.e. the transmission classification) is a key consideration in the decision to adapt PHSM. Clinical care and public health services are two key domains that reflect the ability of a country to adapt and respond to the requirements of both the COVID-19 caseload and the burden of disease more generally. Sufficient clinical care capacity is required to treat both inpatient and ambulatory cases of COVID-19 while ensuring that the health system is not overwhelmed and can continue to treat the regular caseload of patients, particularly during seasonal peaks, such as the influenza season, and at times of rapid or large increases in COVID-19 transmission. The public health response relies on the capacity of the surveillance system to detect and respond to changes in COVID-19 transmission and focuses on key activities including case detection, diagnostic testing and contact tracing. Each of the two domains (health services and public health) is divided into two principal sub-domains, namely capacity (output indicators) and performance (outcome and impact indicators).

While this section is not aimed to be overly prescriptive, it provides quantitative thresholds (Table 4) to categorize response capacity and performance into three categories: adequate, moderate and limited. It is important to note that capacity needs to be assessed in the context of the current transmission classification. Response capacity that has been considered adequate may, under a higher incidence scenario, be reduced to moderate or limited response capacity.

Assessing overall level of health system and public health services capacity and performance

To assess the overall capacity and performance of the health system and public health services, authorities should use the same approach as outlined for transmission classification. This includes prioritizing those indicators that are available and reliable and adjusting thresholds to local contexts and reliability of the data; interpreting changes to indicators in the context of changes to data collection mechanisms; undertaking a qualitative review to determine the final health system capacity level if the levels calculated based on each indicator are different; using trends instead of quantitative thresholds where data are not reliable but denominators are stable; using subjective assessment as a last resort if no data are available; and observing trends in indicators to anticipate future changes to the health system and public health services capacity and performance level. Additional indicators that can be used for triangulation are provided in Table 5. Assessments should be updated biweekly.

Table 4: Primary Epidemiological Indicators and Proposed Ranges to Assess Level of COVID-19 Health system and public health services capacity and performance

Domain	Indicator	Description/ Rationale	Major limitations	Capacity to respond		
				Adequate	Moderate	Limited
Clinical care capacity	Proportion of occupied hospital beds	High morbidity and mortality will occur if there is insufficient capacity to hospitalize severe cases. Should count all hospitalizations, not only COVID-19.	May be influenced by hospitalization policy (e.g. if all cases are isolated in hospital), which does not indicate true saturation of hospital capacity.	<75% [†]	75-<90% [†]	90%+ [†]
Clinical care performance	Case fatality rate of resolved (i.e., outcome known) hospitalized cases	Overall impact indicator of adequate COVID-19 care.	Highly dependent on age and various biases. ³ Must take into account any changes in case detection or testing strategy.	Decreasing trend	Stable trend	Increasing trend
Public health response capacity	Number of persons tested per 1000 population per week, averaged over a two-week period	Without sufficient testing, it is difficult to appropriately isolate and treat cases.	Not all laboratories are able to report individuals tested; if possible, can count number of new rather than repeat tests; otherwise can count number of tests but this may be misleading due to repeat testing. Laboratories not reporting location of cases may mask disparities in testing (e.g. among non-urban populations). If using rapid diagnostic tests, these should be used according to guidance, and thresholds may need to be raised.	2+	1 - < 2	<1
Public health response performance	Proportion of cases for which an investigation has been conducted within 24 hours of identification	This indicates that the capacity to identify transmission risks and exposed contacts. Where investigation is not recorded directly, can be measured by proxy indicator - proportion of cases with contacts listed.	May be difficult to obtain timely data.	80%+	60-<80%	<60%

Domain	Indicator	Description/ Rationale	Major limitations	Capacity to respond		
				Adequate	Moderate	Limited
Public health response performance	Support for / Adherence to PHSM	Qualitative assessment based on observation, media monitoring, perception or behaviour surveys, hotlines, focus groups, etc. Predictor of effectiveness of PHSM put in place; it is important to identify not only the current status but any barriers or enablers to improvement.	May be highly variable between sub-groups and across individual PHSM. Difficult to assess objectively.	High (nearly universal adherence to most PHSM).	Moderate (modest adherence to most PHSM, or variable adherence across individual PHSM).	Low (minimal adherence to most PHSM).

† Hospital occupancy routinely varies considerably between countries, and so baseline occupancy must be taken into consideration.

Table 5: Additional Epidemiological Indicators to Assess Level of COVID-19 Health system and public health services capacity and performance*

Indicator	Description/Limitations
Number of trained ICU staff per 10 000 population	This indicates sufficient clinical capacity to respond to cases most likely to lead to mortality. This indicator may be more relevant when measured against population of clinically vulnerable ⁱ persons, if data are available. This indicator is difficult to measure. It is a necessary but insufficient measure of ability to provide intensive care.
Number of ICU beds per 10 000 clinically vulnerable population ⁱ	Mortality from COVID-19 will be highest if capacity for intensive care is exceeded. Strictly counting the number of ICU beds does not guarantee successful care if there is inadequate staffing, equipment or supplies.
Proportion of occupied ICU beds	This indicator assesses sufficient clinical capacity to respond to cases most likely to lead to mortality. It may not be useful in countries with very few ICU beds (can be substituted with proportion of occupied hospital beds +/- oxygen in these situations); if this indicator is very low, overall health system capacity should be considered limited, regardless of adequate levels of other capacity indicators
Proportion of occupied beds with access to oxygen supply	As 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	This is an overall impact indicator of adequate COVID-19 care. It is highly dependent on age and other risk factors, and various reporting biases. ³ Analysis of trends should consider any changes in case detection or testing strategy. Countries are advised to collect additional information on age, as this measure will be heavily affected by the age structure of the population.
Number of contact tracers per 100 000 population [alternatively per number of new cases in a week]	This indicates capacity to conduct sufficient contact tracing to interrupt transmission. It is an input indicator which may not correlate well with actual contact tracing outcomes. There is minimal evidence base for determining thresholds. This may be difficult to accurately measure where contact tracing is done by persons other than formally designated “contact tracers”.
Number of points of entry surveillance officers per 100 000 daily travellers	This is a measure of the ability to successfully mitigate the risk of importation. It is a poor indicator of actual internal domestic capacity; is minimally relevant during widespread community transmission; and may be achieved when human resources are inappropriately diverted from internal domestic use.

Indicator	Description/Limitations
Proportion of newly confirmed or probable cases interviewed for contact elicitation within 24 hours of identification	This indicator measures the timeliness of contact listing, which shortens exposure to potentially infected persons. A better metric of contact listing timeliness is the actual proportion of contacts identified and traced/quarantined within 48 hours.
Proportion of contacts of new cases who are monitored for 14 days (or locally specified period)	This indicates that contacts are monitored until no longer at risk for becoming secondary cases (linked to a particular source case). This indicator may be particularly important for assessment of public health system performance in the 'imported/sporadic' and 'clusters' transmission scenarios. It can be spuriously inflated by poor contact listing.
Proportion of identified cases isolated within 24 hours of positive test result (or determination as a probable case)	This indicates that investigation and isolation of new cases is sufficiently rapid to minimize the generation of secondary cases. This indicator may be particularly important for assessment of public health system performance in the Imported/Sporadic and Clusters transmission scenarios.
Time from symptom onset to case confirmation	This measures the ability of the surveillance system to promptly detect, test and confirm symptomatic cases. Individual components (i.e., time from symptom onset to detection, detection to testing and test turnaround time can also be measured independently.
Proportion of cases arising from contact lists	This describes the extent to which new cases are already captured by and known to the surveillance system through adequate case investigation. When this is low, it suggests widespread existence of "hidden" chains of transmission and/or poor-quality case investigation.

*This list should not be considered exhaustive.

ⁱ 'Clinically vulnerable' in this context refers to individuals aged >60 years and/or with comorbidities that increase risk of serious COVID-19 disease, including heart disease, asthma and diabetes.

References

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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 2 years after the date of publication.