INTERIM GUIDANCE

Monitoring and evaluation framework for COVID-19 response activities in the EU/EEA and the UK

17 June 2020

Purpose

The purpose of this monitoring and evaluation framework is to support European Union (EU) and European Economic Area (EEA) countries and the United Kingdom (UK) in their efforts to monitor the implementation and effects of COVID-19 response activities. The framework presents indicators for a variety of key pillars of COVID-19 preparedness, prevention and control activities and provides guidance to countries on how to collect and analyse data for the suggested indicators. The strategic information provided by the indicators can assist decision makers at subnational, national and EU level to support preparedness and response planning, and in-action and after-action reviews. The framework will need to be adapted to local circumstances; the relevance of indicators depends on the specificities of the setting.

Objectives

The overall objective of this monitoring and evaluation framework is to provide a set of standardised indicators to guide subnational, national and EU level response to COVID-19 in the EU/EEA and the UK. The specific objectives for the COVID-19 monitoring and evaluation framework are to provide robust and timely information on the:

- epidemiological situation of COVID-19, including geographical spread, intensity in the general population and disease burden – overall and in specific geographic areas or demographic groups;
- non-pharmaceutical interventions and public health response measures to COVID-19, overall and in specific geographic areas or demographic groups;
- effects of relaxing or enhancing specific interventions on the epidemiology of COVID-19, overall and in specific geographic areas or demographic groups;
- early warning indicators for increased COVID-19 transmission in specific geographic areas or demographic groups necessitating enhanced prevention and control measures;
- key areas where preparedness, surveillance, prevention and control can be improved.

Target audience

Public health authorities in EU/EEA countries and the UK involved in planning response activities to the COVID-19 pandemic.

Background

Since the beginning of the COVID-19 pandemic, EU/EEA Member States and the UK have implemented measures to prevent and control COVID-19 and, at the same time, curb the negative effects of these measures. There is a need to assess the effects of these measures on the epidemiological situation of COVID-19 to track interventions and their effects and identify gaps in order to improve the response to COVID-19.

Suggested citation: European Centre for Disease Prevention and Control. Monitoring and evaluation framework for COVID-19 response activities in the EU/EEA and the UK – 17 June 2020. Stockholm: ECDC; 2020.

This monitoring and evaluation framework was developed to provide strategic information to authorities, policy makers, and implementers to assist them in decision-making. It also contains information on how to measure indicators. Monitoring and evaluation results should be used by decision makers to inform policies and monitor their impact.

Structure

The ECDC framework to monitor responses to the COVID-19 pandemic encompasses eight pillars related to surveillance and response. Seven of the pillars are aligned with the pillars of the WHO COVID-19 Strategic Preparedness and Response Monitoring and Evaluation Framework [1].

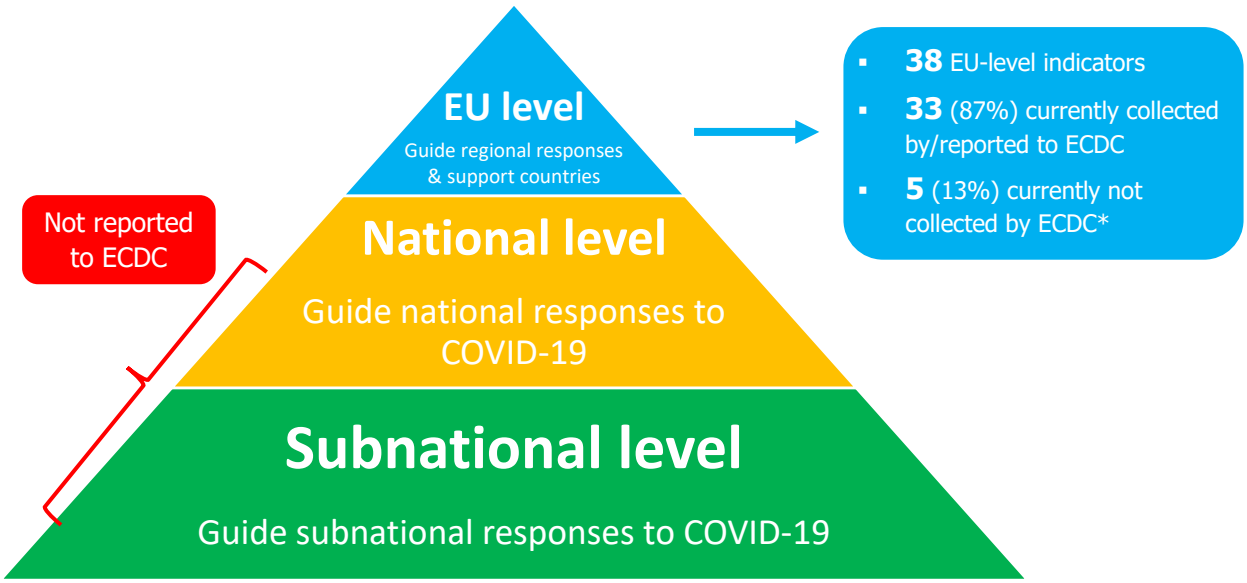
Pillar 1: Country-level coordination, planning, and monitoring
Pillar 2: Risk communication and community engagement
Pillar 3: Surveillance, rapid response teams and case investigation
Pillar 4: Vaccine monitoring (policy, coverage, safety, effectiveness and acceptance)
Pillar 5: Testing policy and practice (WHO pillar 'national laboratories')
Pillar 6: Infection prevention and control
Pillar 7: Case management
Pillar 8: Maintaining essential health services and systems

Data collection

The suggested indicators under each pillar are meant to be monitored at subnational, national or EU level (Figure 1). Indicators for subnational and national level should only be considered if helpful to guide and inform responses at those levels. Decisions on which indicators to collect at subnational and national levels rests solely with the public health authorities and decision makers at subnational and national level.

Data on the majority of indicators at EU level are currently being collected by, or reported to, the European Centre for Disease Prevention and Control (ECDC). For the five EU-level indicators currently not collected (see Figure 1, note at bottom), ECDC will consult with its network of COVID-19 experts on the feasibility and process of collecting these data.

Figure 1: COVID-19 indicator pyramid



** Indicators 3.3, 3.4, 3.13, 3.17 and 5.1.*

Contents

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1. Key pillars and suggested indicators
2. Indicator tables
3. Indicator descriptions

1. Key pillars and suggested indicators

Pillar 1: Country-level coordination, planning, and monitoring

1.1 Availability of a trigger for the activation and de-activation of a pandemic emergency response (and mechanism for updating)
1.2 Use of reviews (e.g. through in-action reviews) to strengthen the pandemic response
1.3 Cross-border communication and coordination - information exchange and sharing for cross-border events
1.4 Recommended isolation of confirmed and probable COVID-19 cases
1.5 Quarantine for contacts of cases
1.6 Quarantine of individuals arriving from countries considered high risk
1.7 Stay-at-home orders or recommendations
1.8 Recommended 2m physical distance between individuals in public spaces
1.9 Interventions in place on closing of public spaces
1.10 Interventions in place to restrict the use of public transport
1.11 Interventions in place on closing workplaces
1.12 Interventions in place on teleworking
1.13 Interventions in place on closing of educational institutions
1.14 Interventions in place for risk groups and vulnerable population
1.15 Interventions in place on public gatherings
1.16 Recommendation to use face masks in the community (e.g. in closed environments)
1.17 National movement restrictions or recommendations

Pillar 2: Risk communication and community engagement

2.1 COVID-19 risk communication and community engagement (RCCE) plan in place.
2.2 RCCE coordination mechanism is active in the country and formally implemented (e.g. multi-sectoral RCCE team, working group, task force).
2.3 Mechanisms in place to routinely capture community feedback and assess public perceptions, concerns and trust (e.g. community meetings, hotlines, health volunteer network, social media monitoring, surveys, etc.).
2.4 Mechanisms in place to address rumours, misinformation and disinformation (debunking tools, links to fact-checking features, work with social media platforms and social influencers, etc.).
2.5 Ongoing participation in EU mechanisms for rapid information exchange with other Member States concerning communication messages and strategies, with a view to coordinate risk and crisis communication (as per Decision 1082/2013/EU on serious cross-border threats to health [2], e.g. Health Security Committee Communicators Network).
2.6 Mechanisms in place to identify and segment specific populations/at risk groups in order to target them with culturally appropriate messages using relevant channels and community networks/influencers (e.g. travellers/tourists, elderly, workers in settings with elevated risk of exposure, educational settings, migrants, etc.).
2.7 Mechanisms in place to provide practical and logistical support to people living in socially vulnerable settings.

Pillar 3: Surveillance, rapid response teams and case investigation

3.1 Surveillance systems in place for comprehensive monitoring of COVID-19 epidemiology (aligned with the ECDC surveillance strategy [3]).
3.2 Monitoring of SARS-CoV-2 virus characteristics
3.3 Proportion of affected long-term care facilities reporting weekly surveillance data
3.4 Estimates of infection prevalence from PCR-based prevalence studies in the previous month
3.5 Estimates of seroprevalence at Subnational or national level in the previous month
3.6 Rate of new confirmed cases nationwide per 100 000 persons
3.7 Proportion of all tests performed nationwide positive for SARS-CoV-2.
3.8 Median delay from date of onset to date of notification per week
3.9 Rate of hospitalised COVID-19 cases per 100 000 population per week
3.10 Proportion of COVID-19 cases hospitalised out of all cases
3.11 Proportion of COVID-19 cases requiring ICU and/or respiratory support
3.12 Number and rate of new probable and confirmed deaths from COVID-19
3.13 Number of probable and confirmed deaths in long-term care facilities
3.14 Crude case fatality (CFR) rate among confirmed COVID-19 cases
3.15 All-cause excess mortality per week
3.16 Self-assessment at NUTS-2 level of transmission status
3.17 Effective reproductive number (Rt)
3.18 Use of specialised contact tracing software, e.g. Go.Data
3.19 Availability of mobile app(s) to complement manual contact tracing and proportion of population that has downloaded them
3.20 Proportion of cases where contact tracing is initiated (interview with case by public health authorities) within 24 hours of diagnosis
3.21 Proportion of contact persons reached (contacted and provided with information) within 24 hours from interview with case

3.22 Proportion of contacts who develop laboratory-confirmed COVID-19 (at initiation of tracing and over the 14 days follow-up period)
3.23 Proportion of contacts of COVID-19-positive contacts who develop laboratory-confirmed COVID-19
3.24 Proportion of all newly diagnosed cases that are part of known transmission chains (i.e. who have already been identified as a contact of a known case)

Pillar 4: Vaccine monitoring (policy, coverage, safety, effectiveness and acceptance)

ECDC will develop indicators for monitoring vaccine deployment in Member States, for when vaccination becomes a key area for the COVID-19 response. The key indicators will be developed in the following areas:

4.1 Robust surveillance systems
4.2 Post-marketing surveillance activities
4.3 Active and passive adverse events following immunisation (AEFI) monitoring
4.4 Robust and timely vaccination coverage data
4.5 Evidence-based decision-making
4.6 Legal and regulatory aspects, linked to vaccine deployment
4.7 Vaccine delivery and supply chain management
4.8 Behavioural research
4.9 Crisis communication plans
4.10 Ethical considerations and equal access to vaccination

Pillar 5: Testing policy and practice (WHO pillar 'national laboratories')

5.1 National testing policies per target population for:
- nucleic acid or antigen testing policy for infection detection for clinical care and case management;
- systematic virological surveillance;
- seroepidemiological surveys.

5.2 Laboratory capability and proficiency for COVID-19 viral RNA/antigen testing
5.3 Laboratory capability and proficiency for COVID-19 antibody testing
5.4 Testing capacity for case finding and management (not including surveys)

Pillar 6: Infection prevention and control

6.1 Percentage of healthcare facilities with a policy for face mask wearing by all healthcare workers providing care to all patients
6.2 Respiratory protection equipment consumption
6.3 Number of facilities without sufficient access to respiratory protection equipment, i.e. FFP2/3 respirator stock
6.4 Proportion of primary care practices that are closed because of COVID-19 (e.g. insufficient access to personal protective equipment)
6.5 Proportion of primary care providers that participated in training for COVID-19

Pillar 7: Case management

7.1 Median time from date of onset of COVID-19 symptoms to date of diagnosis
7.2 Median time from date of onset of symptoms to date of hospitalisation, for patients admitted to hospital
7.3 Percentage of possible cases that were tested for COVID-19
7.4 Percentage of hospitalised confirmed cases that were enrolled in a randomised control trial for COVID-19 treatment
7.5 Number of health workers trained in case management of COVID-19 cases (WHO)

Pillar 8: Maintaining essential health services and systems

8.1 Occupancy rate of total Intensive Care Unit (ICU) beds (overall and for COVID-19 patients)
8.2 Number of registered visits to primary care
8.3 Measles incidence and proportion of all cases among unvaccinated children whose first dose of MMR was due during the COVID-19 pandemic
8.4 Diphtheria-tetanus-pertussis (DTP)-3 vaccination coverage in children under 12 months of age

2. Indicator tables

Pillar 1: Country-level coordination, planning, and monitoring

Specific objective of pillar 1:

- To monitor public health response measures related to non-pharmaceutical interventions intended to prevent SARS-CoV-2 importation, transmission and spread in the population.

Indicators	Dis-aggregation	Monitoring level	Frequency of data collection	Currently collected by ECDC	Indicator from WHO framework	Rationale for collecting
1.1 Availability of a trigger for the activation and de-activation of a pandemic emergency response (and mechanism for updating)		• Subnational • National • EU level	• Subnational: Quarterly • National: Quarterly • EU level: Quarterly	Yes (partially)	No	The existence of a defined trigger (clear cut-off for when to trigger / release the action mode) indicates that a formal procedure is in place for responding to an outbreak, which in turn is indicative of there being a national and/or Regional (strategic and/or operational) response plan to COVID-19 that is initiated once the trigger is set. A defined and adaptable trigger indicates that the plan is can be adapted to the epidemiological situation.
1.2 Use of reviews (e.g. through in-action reviews) to strengthen the pandemic response		• Subnational • National • EU level	• Subnational: Quarterly • National: Quarterly • EU level: Quarterly	Yes (partially)	No	This indicator checks the number of reviews conducted. The fact that reviews/ assessments are conducted, indicates that a systematic approach to lessons learnt is in place and that improvements to future outbreak responses are evidence-based. Establishing a culture of evaluating an outbreak response is crucial for the improvement and strengthening of pandemic planning, highlighting the added value of this indicator.

Indicators	Dis-aggregation	Monitoring level	Frequency of data collection	Currently collected by ECDC	Indicator from WHO framework	Rationale for collecting
1.3 Cross-border communication and coordination - information exchange and sharing for cross-border events		• EU level	• Quarterly	Yes	No	This measures the extent of communication between EU Member States prior to and during the outbreak response, giving an indication of the level of cross-border collaboration and communication. Identifying that countries are exchanging information and practices through a common, secured platform indicates that cross-border collaboration is in place as required in the Decision 1082/2013/EU and International Health Regulations (IHR)-level regulations. The indicator allows Member States and the EU to understand how countries are managing to communicate and coordinate responses within the EU/EEA (and the United Kingdom) to the cross-border health threat. This indicator can also look at the extent of communication beyond the EU/EEA & United Kingdom (i.e. between EU/EEA and other countries) if of interest.
Isolation and quarantine:						
1.4 Recommended isolation of confirmed and probable COVID-19 cases	• Case classification	• National • EU level	• Weekly or every two weeks depending on epidemic levels	Yes	No	Early and effective isolation of cases of COVID-19 is an essential public health response measure to prevent importation, transmission and spread in a population. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
1.5 Quarantine for contacts of cases		• National • EU level	• Weekly or every two weeks depending on epidemic levels	Yes	No	Quarantine of contacts of cases following contact tracing is crucial to interrupt chain of transmission and prevent further transmission of COVID-19 in a population once a case has been identified. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.

Indicators	Dis-aggregation	Monitoring level	Frequency of data collection	Currently collected by ECDC	Indicator from WHO framework	Rationale for collecting
1.6 Quarantine of individuals arriving from countries considered high risk		• National • EU level	• Weekly or every two weeks depending on epidemic levels	Yes	No	Quarantine of individuals arriving from countries considered high risk for transmission of COVID-19 have been considered by some countries to prevent or reduce re-importation and further spread in the population. This can take place especially in countries where the transmission is reduced in order to prevent new chains of transmission after introduction. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
Physical distancing:						
1.7 Stay-at-home orders or recommendations	• Level of enforcement	• Subnational • National • EU level	• Weekly or every two weeks depending on epidemic levels	Yes	Partial	Stay-at-home orders or recommendations are physical distancing interventions aiming to strongly reduce the number of contact per individual and decrease transmission of SARS-CoV-2 in the general population. This measure has been used to reduce SARS-CoV-2 transmission during widespread community transmission and large outbreaks in order to decrease the pressure on the healthcare system and the impact of COVID-19 (morbidity and mortality). Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
1.8 Recommended 2m physical distance between individuals in public spaces	•	• National • EU level	• Weekly or every two weeks depending on epidemic levels	Yes	Partial	Encouraging individuals to keep 2-metre distance between them in public reduces the transmission of SARS-CoV-2 and further spread of COVID-19. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
1.9 Interventions in place on closing of public spaces	• Type of public space or sector associated with public space (e.g. non-essential shop, restaurants, entertainment venues)	• National • EU level	• Weekly or every two weeks depending on epidemic levels	Yes	Partial	Interventions mandating or recommending the closure of public spaces aim to reduce the level of contacts between individuals and reduce transmission and further spread of SARS-CoV-2. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.

Indicators	Dis-aggregation	Monitoring level	Frequency of data collection	Currently collected by ECDC	Indicator from WHO framework	Rationale for collecting
1.10 Interventions in place to restrict the use of public transport		• National • EU level	• Weekly or every two weeks depending on epidemic levels	Yes	Partial	Interventions mandating or recommending the closure of public transport or a reduced capacity of passenger transport aim to reduce the level of contacts between individuals, especially in confined spaces such as train, bus and metro, and reduce transmission and further spread of SARS-CoV-2. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
1.11 Interventions in place on closing workplaces	-	• National • EU level	• Weekly or every two weeks depending on epidemic levels	Yes	Partial	The aim is to avoid transmission among medium to-large numbers of people in confined working spaces over extended periods. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
1.12 Interventions in place on teleworking	• Target group (general population, vulnerable worker groups)	• National • EU level	• Weekly or every two weeks depending on epidemic levels	Yes	Partial	Interventions recommending teleworking aim to reduce the level of contacts between individuals at the workplace and during journeys to and from the workplace to prevent spread of SARS-CoV-2. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
1.13 Interventions in place on closing of educational institutions	• School levels (day care, primary school, secondary school, higher education)	• National • EU level	• Weekly or every two weeks depending on epidemic levels	Yes	Partial	Preventing contact among children is a known prevention measure in influenza outbreaks and pandemics. Universities and other educational institutions are also areas where large numbers of people congregate in confined spaces. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.

Indicators	Dis-aggregation	Monitoring level	Frequency of data collection	Currently collected by ECDC	Indicator from WHO framework	Rationale for collecting
1.14 Interventions in place for risk groups and vulnerable populations	• Risk group/ population	• National • EU level	• Weekly or every two weeks depending on epidemic levels	Yes (partially)	No	Risk groups and vulnerable populations consist of persons at higher risk for severe disease and poor outcomes if they acquire the infection. Risk groups include vulnerable individuals living in the community and those resident in facilities such as long-term care facilities, psychiatric institutions, homeless shelters or prisons. Measures can include 'cocooning' for vulnerable persons in the community or measures taken to protect special populations in institutions such as visitor restrictions. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
Mass gatherings:						
1.15 Interventions in place on public gatherings	• Size of the gathering (small or medium public gatherings and mass gatherings)	• National • EU level	• Weekly or every two weeks depending on epidemic levels	Yes	Yes	To reduce transmission between people gathering in groups in confined or open spaces. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
Face masks:						
1.16 Recommen-dation to use face masks in the community (e.g. in closed environments)	• Level of enforcement	• National • EU level	• Weekly or every two weeks depending on epidemic levels	Yes	Yes	The use of face masks in public may serve as a complementary means of preventing human to human transmission and reducing the spread of the infection in the community. The face masks minimise the excretion of respiratory droplets from infected individuals (symptomatic, and who have not yet developed symptoms or who remain asymptomatic). The use of face masks in the community has been considered especially when visiting busy, closed spaces, such as grocery stores, shopping centres, or when using public transport. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.

Indicators	Dis-aggregation	Monitoring level	Frequency of data collection	Currently collected by ECDC	Indicator from WHO framework	Rationale for collecting
Limitations of internal movements:						
1.17 National movement restrictions or recommend-dations	• Level of enforcement	• Subnational • EU level	• Weekly or every two weeks depending on epidemic levels	Yes (partially)	No	National movement restrictions (within a country) or recommendations aim to reduce further transmission and spread of SARS-CoV-2 by limiting population mobility. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.

Not exhaustive list of sources of data on ECDC- JRC join monitoring: regular screening on national websites on COVID-19 responses, Health System Response Monitor (HSRM) COVID-19 outbreak supported by WHO Euro and European Commission, UN database (UNESCO monitoring COVID-19 on Educational Disruption and Response) research group and NGOs databases (ACAPS COVID-19 Government Measures Dataset, Oxford COVID-19 Government Response Tracker

Pillar 2: Risk communication and community engagement

Specific objectives of Pillar 2:

- To monitor the communication and community engagement actions that aim to facilitate trust and population adherence to public health measures.
- To monitor the coordination of communication between regions, countries and between different sectors of society.

Indicators	Disaggregation	Monitoring level (Subnational, national, EU level)	Frequency of data collection (might be different at national vs EU level)	Currently collected by ECDC (Yes/No)	Indicator from WHO framework (Yes/No)	Rationale for collecting
2.1 COVID-19 risk communication and community engagement (RCCE) plan in place		• National	One-off	No	Yes	As indicated by WHO: 'A RCCE plan establishes the rationale and strategy to ensure that communities are at the centre of the response, identifies key audiences, addresses audience perceptions of health (and humanitarian) response strategies, and provides accurate and actionable information' [1]. It also defines roles and responsibilities of the different partners involved.
2.2 RCCE coordination mechanism is active in the country and formally implemented		• Subnational • National	Monthly	No	Yes	As indicated by WHO [1], such mechanism 'better ensures that response organisations, governments, and partners synchronize strategy and plans to ensure that target audiences/communities are communicated with and engaged through trusted organisations, networks, or individuals. Coordination also better ensures that health recommendations and guidance are consistent and timely and can be adapted per realities and transmission scenario and needs of different populations'.
2.3 Mechanisms in place to routinely capture community feedback and assess public perceptions, concerns and trust		• Subnational • National	Monthly or more frequently depending on strategies and available resources.	No	Yes	Mechanisms or platforms for community feedback ensure that communities and individuals can access needed information, obtain answers to questions, and raise concerns or complaints as needed.
2.4 Mechanisms in place to address rumours, misinformation and disinformation		• Subnational • National	Monthly	No	No	The rapid and massive spread of misinformation, disinformation and rumours during the pandemic can affect the public health response. It also creates confusion and distrust among people. Mechanisms need to be in place to detect and address this, in order to raise awareness in the population about the issue and ensure that people can access accurate information from authoritative and trusted sources.

Indicators	Disaggregation	Monitoring level (Subnational, national, EU level)	Frequency of data collection (might be different at national vs EU level)	Currently collected by ECDC (Yes/No)	Indicator from WHO framework (Yes/No)	Rationale for collecting
2.5 Ongoing participation in EU mechanisms for rapid information exchange with other Member States concerning communication messages and strategies, with a view to coordinate risk and crisis communication (as per Decision 1082/2013/EU on serious cross-border threats to health)		• National	Monthly	No	No	It creates a forum to discuss about communication strategies and messaging, support Member States communication activities, and enhance coordination in communication activities.
2.6 Mechanisms in place to identify and segment specific populations/at risk groups in order to target them with culturally appropriate messages using relevant channels and community networks/influencers		• Subnational • National	Monthly	No	No	People who are medically or socially vulnerable need to receive specially tailored information about how to protect themselves from infection. It is also important to work towards creating a social environment through messaging for such groups so that public health measures are widely accepted and adhered to.
2.7 Mechanisms in place to provide practical and logistical support to people living in socially vulnerable settings		• Subnational • National	Monthly	No	No	People being part of socially vulnerable populations may find it difficult to adhere to the public health measures required during the COVID-19 pandemic, so support for them is necessary both for reasons of equity and human rights but also to reduce the spread of infection.

Pillar 3: Surveillance, rapid response teams and case investigation

Specific objectives of pillar 3:

Surveillance:

- Monitor the intensity, geographic spread and severity of COVID-19 in the population in order to estimate the burden of disease, assess the direction of recent time trends and inform appropriate mitigation measures.
- Monitor viral changes to inform drug and vaccine development, and to identify markers of severe infection.
- Monitor changes in which risk groups are most affected in order to better target prevention efforts.
- Monitor the epidemic's impact on the healthcare system to predict the trajectory of the epidemic curve and inform resource allocation and mobilisation of surge capacity as well as external emergency support.
- Monitor the impact of any mitigation measures to inform authorities so they can adjust the choice of measures, as well as their timing and intensity.

Contact tracing:

- To monitor whether contact-tracing operations are efficient and effective in terms of tracing contacts of all cases.
- To monitor whether contact-tracing operations are effective in reducing onward transmission.

Indicators	Disaggregation	Monitoring level	Frequency of data collection	Currently collected by ECDC	Indicator from WHO framework	Rationale for collecting
Surveillance indicators						
3.1 Surveillance systems in place for comprehensive monitoring of COVID-19 epidemiology	Key variables for case-based data include: • date of onset • date of notification • age • gender • place of residence • place of infection • pre-existing conditions • hospitalisation • admission to intensive care • respiratory support • outcome • healthcare worker status	• Subnational • National • EU level	Annual with updates in case of changes	Yes	Yes (partly)	Appropriate description of diagnosed cases allows for developing of targeted interventions as well as monitoring and evaluating of these interventions. In addition, such surveillance systems can provide key data on the evolution of the outbreak, use of healthcare resources and inform mathematical modelling activities among others. Monitoring acute respiratory infection (ARI) and influenza-like illness (ILI) rates provide an indication of the intensity of infection in countries, particularly when influenza and RSV are not co-circulating.
3.2 Monitoring of SARS-CoV-2 virus characteristics	• Age • Sex • Location • Severity • Setting (community, outpatient, hospital, intensive care units)	• Subnational • National • EU level	Weekly	Yes	No	Representative samples (age, sex, location, time of epidemic, severity) from different settings (population, outpatient, hospital, ICU) should be collected for genetic and antigenic analyses to monitor evolution of the virus (distribution of different clades), vaccine match and antiviral drug resistance (when vaccine(s) and antivirals become available). Sequencing of SARS-CoV-2 is essential for outbreak investigation and as part of surveillance activities. Antigenic analysis of subsets of viruses will be essential for monitoring the antigenicity of circulating strains.
3.3 Proportion of affected long-term care facilities reporting weekly surveillance data	• Type of facility	• Subnational • National • EU level	• Weekly (subnational and national) • Monthly (EU)	No	No	Long-term care facilities have been heavily affected by COVID-19 with a high proportion of facilities across some countries and residents in these affected settings causing high morbidity and mortality in this vulnerable group. Data on the proportion of affected long-term care facilities would provide a better understanding of the situation in the country and across countries.

Indicators	Disaggregation	Monitoring level	Frequency of data collection	Currently collected by ECDC	Indicator from WHO framework	Rationale for collecting
3.4 Estimates of infection prevalence from PCR-based prevalence studies in the previous month	• Sex • Age • Presence of symptoms	• Subnational • National • EU level	Monthly	No	No	Monitoring the disease occurrence in a geographical area at a given time point
3.5 Estimates of seroprevalence at subnational or national level in the previous month	• Sex • Age • Location	• Subnational • National • EU level	Monthly	Yes	No	Allows for better estimation of the real number of infected cases and potentially immunity against COVID-19 in the different phases of the pandemic. Provides key information on the evolution of the pandemic.
3.6 Rate of new confirmed cases nationwide per 100 000 persons	• Sex • Age (0-9, 10-19 years, etc.) • Region	• Subnational • National • EU level	Daily	Yes	Yes	Measurement of the incidence of notified cases in the community
3.7 Proportion of all tests performed nationwide positive for SARS-CoV-2	• Overall: • Sex • Age (0-9, 10-19 years, etc.) • Region • In sentinel outpatients clinics • Among patients with Severe Acute Respiratory Infections (SARI)	• Subnational • National • EU level	Weekly	Yes	Yes, partly	Overall positivity rates as well as positivity in sentinel outpatients and among patients with SARI provides complementary data to reported notification rates by taking into account the testing denominator. Allows for assessment of the intensity of the epidemic and level of transmission in the population over time (start, peak and end of a wave).
3.8 Median delay from date of onset to date of notification per week	• Sex • Age (0-9, 10-19 years, etc.) • Precondition • Severity (hospitalisation, ICU, death)	• Subnational • National • EU level	Monthly	Yes	No	Assesses how timely notification of COVID-19 cases is which is key for early response by public health services/authorities.
3.9 Rate of hospitalised COVID-19 cases per 100 000 population per week	• Sex • Age (0-9, 10-19 years, etc.) • Precondition • Severity (hospitalisation, ICU, death)	• Subnational • National • EU level	Weekly	Yes	Yes	Assuming that admission to hospital is a good proxy for severity, the rate of hospitalised COVID-19 cases is an indicative of the disease burden in the population.
3.10 Proportion of COVID-19 cases hospitalised out of all cases	• Sex • Age (0-9, 10-19 years, etc.) • Precondition	• Subnational • National • EU level	Weekly	Yes	No	Assuming that admission to hospital is a good proxy for severity and that criteria for testing do not change, the proportion of hospitalised cases is indicative of the disease burden and pressure on healthcare services.
3.11 Proportion of COVID-19 cases requiring ICU and/or respiratory support	• Sex • Age (0-9, 10-19 years, etc.) • Precondition •	• Subnational • National • EU level	Weekly	Yes	No	The proportion of COVID-19 cases requiring ICU and/or respiratory support is indicative of disease severity.
3.12 Number of new probable and confirmed deaths from COVID-19	• Sex • Age (0-9, 10-19, etc.) • Region • Precondition •	• Subnational • National • EU level	Weekly	Yes	Yes	Mortality is a key indicator of severity and a measure of effectiveness of control measures for COVID-19
3.13 Number of probable and confirmed deaths in long-term care facilities	• N/A	• Subnational • National • EU level	Weekly	No	No	A large proportion of COVID-19 deaths have occurred in long-term care facilities. Monitoring the number of deaths in such settings is essential to understand the effectiveness of control measures and to assess the burden of COVID-19.

Indicators	Disaggregation	Monitoring level	Frequency of data collection	Currently collected by ECDC	Indicator from WHO framework	Rationale for collecting
3.14 Crude case fatality rate (CFR) among confirmed COVID-19 cases	• Sex • Age (0-9, 10-19 years, etc.) • Place of residence and/or place of infection • Date of onset • Pre-existing conditions • Hospitalised • Admitted to intensive care or on respiratory support • Healthcare worker status	• Subnational • National • EU level	Monthly	Yes	Yes	To measure the disease severity during the course of the pandemic.
3.15 All-cause excess mortality per week	• Sex • Age (0-14, 15-44, 45-64, 65-74, 75-84, 85+ years)	• Subnational • National • EU level	Weekly	Yes (EuroMOMO[1]), but age groups are different to those shown here. Not currently available by sex	No	Enables monitoring of progression of pandemic by estimating real-time excess mortality above a baseline of deaths in countries.
3.16 Self-assessment at NUTS-2 level of transmission status	• Community transmission • Clusters • Sporadic transmission • No cases	• Subnational • National • EU level	Weekly	Yes	No, but required by WHO for weekly reporting	Comparison of COVID-19 transmission status between different regions/countries
3.17 Effective reproductive number (Rt)		• Subnational • National • EU level	Weekly	No	No	Allows for better understanding of the transmissibility of COVID-19 as well as effectiveness of interventions.
Contact tracing indicators						
3.18 Use of specialised contact tracing software e.g. Go.Data		• Subnational • National	Quarterly	No	No	Using contact management software facilitates the contact tracing process, coordination and follow-up in particular in scenarios with large number of daily cases.
3.19 Availability of mobile app(s) to complement manual contact tracing and proportion of population that has downloaded them	• Age	• National	Quarterly	No	No	Mobile apps to support contact tracing could help complement manual contact tracing and it is important to understand population coverage as it is related to effectiveness.
3.20 Proportion of cases where contact tracing is initiated (interview with case by public health authorities) within 24 hours of diagnosis	• Age	• Subnational • National	Monthly	No	No	To interrupt transmission contact tracing should be done for as many cases as possible as fast as possible.
3.21 Proportion of contact persons reached (contacted and provided with information) within 24 hours from interview with case	• Age	• Subnational • National	Monthly	No	No	To interrupt transmission as many contacts should be reached as fast as possible with information about quarantine and follow-up.

[1] https://www.euromomo.eu/

Indicators	Disaggregation	Monitoring level	Frequency of data collection	Currently collected by ECDC	Indicator from WHO framework	Rationale for collecting
3.22 Proportion of contacts who develop laboratory-confirmed COVID-19 (at initiation of tracing and over the 14 days follow-up period)	• Age • Also consider looking specifically at risk groups (e.g. healthcare workers and other workers that are at high risk of transmitting to other vulnerable groups).	• Subnational • National	Monthly	No	No	The total proportion of contacts who have symptoms of COVID-19 at initiation of tracing and are confirmed to have COVID-19 later is important to understand whether public health authorities need to speed up contact-tracing operations. The total proportion of contacts who develop symptoms during the follow-up period and are confirmed to have COVID-19 later is important to understand whether public health authorities need to adjust the definition of contact persons.
3.23 Proportion of contacts of COVID-19-positive contacts who develop laboratory-confirmed COVID-19	• Age	• Subnational • National	Monthly	No	No	If a high proportion of second-order contacts develop COVID-19 this indicates that contact-tracing operations are too slow and that contacts of confirmed cases are not reached and quarantined soon enough.
3.24 Proportion of all newly diagnosed cases that are part of known transmission chains (i.e. who have already been identified as a contact of a known case)	• Age	• Subnational • National	Monthly	No	No	If a high proportion of newly diagnosed cases are identified as a contact person to a confirmed COVID-19 case this indicates that contact operations have good coverage. A low proportion on the other hand indicates that there is a lot of transmission in the community that is outside the reach of current contact-tracing operations. Among the new cases who were known contacts, understanding what proportion were reached by conventional contact tracing, mobile apps or both will help the understanding of the additional contribution of mobile apps to the contact tracing effort, and also if there are any differences in the population reached by either method.

Pillar 4: Vaccine monitoring (policy, safety, effectiveness and coverage)

Specific objectives of pillar 4:

- ECDC will develop indicators for monitoring vaccine deployment in Member States, for when vaccination becomes a key area for the COVID-19 response. The key indicators will be developed in the following areas:
  - **4.1** Robust surveillance systems
  - **4.2** Post-marketing surveillance activities
  - **4.3** Active and passive adverse events following immunisation (AEFI) monitoring
  - **4.4** Robust and timely vaccination coverage data
  - **4.5** Evidence-based decision-making
  - **4.6** Legal and regulatory aspects, linked to vaccine deployment
  - **4.7** Vaccine delivery and supply chain management
  - **4.8** Behavioural research
  - **4.9** Crisis communication plans
  - **4.10** Ethical considerations and equal access to vaccination

Pillar 5: Testing policy and practice (WHO pillar 'national laboratories')

Specific objectives of pillar 5:

- Monitor testing policies and implementation for appropriate patient care and disease control nationwide.
- Monitor testing policies and implementation for epidemiological surveillance of infection and immunity prevalence.
- Monitor laboratory testing service capability and quality.
- Monitor testing capacity for case finding and management including contact testing and isolation.

Indicators	Disaggregation	Monitoring level	Frequency of data collection	Currently collected by ECDC	Indicator from WHO framework	Rationale for collecting
5.1 National testing policies per target population for: i. Nucleic acid or antigen testing policy for infection detection for clinical care and case management; ii. Systematic virological surveillance iii. Seroepidemiological surveys	• Topic • Policy	• National • EU level	Monthly	No	No	To ensure 1) national system of extensive testing policy and practice is in place for allowing appropriate patient care and disease control nationwide; and 2 & 3) monitoring epidemiological situation on population prevalence of infection and immunity.
5.2 Laboratory capability and proficiency for COVID-19 viral RNA/antigen testing	• Laboratory-level	• National	Quarterly	No	Partially	To monitor laboratory capability and quality.
5.3 Laboratory capability and proficiency for COVID-19 antibody testing	• Laboratory-level	• National	Quarterly	No	No	To monitor laboratory capability and quality.
5.4 Testing capacity for case finding and management (not including surveys)	• Age group • Sex • Region • Test type • Care type	• National • EU level	Weekly	Yes (partially – aggregated data collected in TESSy)	Partially	To monitor testing capacity for case finding and management as key factor for effective control and interpretation of incidence data.

Pillar 6: Infection prevention and control

Specific objectives of pillar 6:

- Assess the policies for infection prevention and control (IPC) in healthcare facilities.
- Monitor the isolation capacity.
- Monitor the availability of equipment for respiratory protection for healthcare workers.

Indicators	Disaggregation	Monitoring level	Frequency of data collection	Currently collected by ECDC	Indicator from WHO framework	Rationale for collecting
Acute care hospitals and long-term care facilities						
6.1 Percentage of facilities with a policy for medical face mask wearing by all healthcare workers providing care to all patients	Type of facility • Acute care hospital • Long-term care facility	• Subnational • National	Monthly	No	No	In areas with community transmission of COVID-19, and given the importance of asymptomatic and pre-symptomatic transmission of COVID-19, all healthcare workers involved in clinical care should wear face masks for all routine activities as source control.
6.2 Respiratory protection equipment consumption	Type of facility • Acute care hospital • Long-term care facility Type of respiratory protection • Medical face masks • FFP2/3 respirators	• Subnational • National	Weekly	No	No	Respiratory protection equipment is vital IPC material for in COVID-19. This indicator can be used to: • identify, for risk managers, the Subnational regions that may require additional masks and respirators. • identify, for preparedness, the respiratory protection requirements of acute care hospitals and long-term care facilities, to help ensure sufficient PPE for any future upsurge. • identify healthcare facilities with no or very low use of respiratory protection and to investigate the reasons for their low use (e.g. no stock, no policy, low compliance, no cases) • monitor consumption as a measure of compliance with mask use recommendations (complement to indicator 6.1)
6.3 Number of facilities without access to sufficient stock of medical face masks and respirators (filtering face piece (FFP) category 2/3)	Type of facility • Acute care hospital • Long-term care facility Type of respiratory protection • Medical face masks • FFP2/3 respirators	• Subnational • National	Weekly	No	No	Respiratory protection equipment is vital IPC material for in COVID-19. Early in the pandemic there was insufficient stock for all healthcare facilities, in Europe and globally. This indicator will be used to identify PPE needs. This indicator complements indicator 6.2 (consumption of respiratory equipment), amongst others.

Indicators	Disaggregation	Monitoring level	Frequency of data collection	Currently collected by ECDC	Indicator from WHO framework	Rationale for collecting
Primary care						
6.4 Proportion of primary care practices that are closed because of COVID-19 (e.g. insufficient access to personal protective equipment)	-	• Subnational • National	Monthly	No	No	Continuity of the primary healthcare system is crucial in-and-of itself; also vital for COVID-19 case detection and contact tracing in this phase of the epidemic. This indicator will be used as a proxy indicator, combined with other indicators, to monitor the general return of the entire healthcare system to pre-pandemic functionality.
6.5 Proportion of primary care providers that participated in training for COVID-19	-	• Subnational • National	Monthly	No	No	IPC education and training should be a part of an overall health facility education strategy, including new employee orientation and the provision of continuous educational opportunities for existing staff, regardless of level and position (for example, senior administrative and housekeeping staff). This indicator monitors the provision of capacity building activities by WHO.

Pillar 7: Case management

Specific objective of pillar 7:

- Monitor the management of COVID-19 cases including diagnosis and treatment.

Indicators	Disaggregation	Monitoring level	Frequency of data collection	Currently collected by ECDC	Indicator from WHO framework	Rationale for collecting
7.1 Median time from date of onset of COVID-19 symptoms to date of diagnosis	• Sex • Age	• Subnational • National	Weekly	Yes	No	This is an indicator of delays in diagnosis that may be associated with increased transmission and unfavourable outcomes.
7.2 Median time from date of onset of symptoms to date of hospitalisation, for patients admitted to hospital	• Sex • Age	• Subnational • National	Weekly	Yes	No	Measuring the time from date of onset of COVID-19 symptoms to date of hospitalisation is an indicator of delays in hospitalisation that may be associated with increased transmission and unfavourable outcomes. This indicator is based on variables included in the WHO case-based reporting form [4], and currently collected in ECDC case-based data collection of COVID-19 in TESSy.
7.3 Percentage of possible cases that were tested for COVID-19	• Sex • Age	• Subnational • National	Monthly	No	No	Measuring the percentage of possible cases tested for COVID-19 is an indicator of the testing intensity and the extent of potential under-diagnosis that may also have consequences for control of transmission through contact tracing.
7.4 Percentage of hospitalised confirmed cases that were enrolled in a randomised control trial for COVID-19 treatment	• Sex • Age	• Subnational • National	Monthly	No	No	So far, there is no proven effective etiologic treatment for COVID-19. Some antiviral agents are administered in randomised clinical trials. Enrolment in such trials is needed to ensure use of novel antivirals under the best possible circumstances and with adequate monitoring that can also provide useful information for future use.
7.5 Number of health workers trained in case management of COVID-19 cases	• Sex • Age	• Subnational • National	Monthly	Yes	Yes	Training of health workers in the case management of COVID-19 is crucial to ensure the best possible management of COVID-19 patients and reduce mortality by COVID-19.

Pillar 8: Maintaining essential health services and systems

Specific objective of pillar 8:

- Monitor the impact of the COVID-19 pandemic on the provision of care in hospitals and the community.

Indicators	Disaggregation	Monitoring level	Frequency of data collection	Currently collected by ECDC	Indicator from WHO framework	Rationale for collecting
8.1 Occupancy rate of total ICU beds (overall and for COVID-19 patients)		• Subnational • National	Daily/weekly	No	No	Measuring the occupancy rate of ICUs is the main indicator of the remaining capacity of the healthcare system to provide care to critically ill COVID-19 patients.
8.2 Number of registered visits to primary care		• Subnational • National	Monthly	No	No	Measuring the number of registered visits to primary care is an indicator of the use of primary care services that can indicate high use in periods of epidemic exacerbation or underuse due to stay-at-home recommendations or fear of patients to use primary care services. Underuse may lead to delays in diagnosis and treatment of other treatable diseases.
8.3 Measles incidence and proportion of all cases among unvaccinated children whose first dose of MMR was due during the COVID-19 pandemic		• National • EU level	Quarterly	Yes	No	Once introduced into a population, measles is very effective at identifying existing immunity gaps and so measles outbreaks are a proxy for suboptimal vaccination coverage. Observing a stable incidence and stable proportion of measles cases among unvaccinated children whose routine first dose of MMR coincided with the COVID-19 pandemic, is an indication of the maintenance of vaccination programmes, despite COVID-19. This is indicative of the system's ability to maintain essential health programmes during the outbreak. Case-based data for measles submitted to ECDC are analysed and reported on a monthly basis, making this more a timely indicator than annually collected vaccination coverage data.
8.4 Diphtheria-tetanus-pertussis (DTP)-3 vaccination coverage in children under 12 months of age		• National • EU level	Quarterly	Yes[2]	Yes	Based on the countries' vaccination registry systems; some have possibility to check coverage on weekly basis (e.g. electronic systems).

[2] Collected by WHO and shared with ECDC.

3. Indicator descriptions

Pillar 1: Country-level coordination, planning, and monitoring

Indicator 1.1: Availability of a trigger for the activation and de-activation of a pandemic emergency response (and mechanism for updating)

What it measures:
The existence of a structure and criteria for activating and de-activating a response to a COVID-19 outbreak.

Rationale:
The existence of a defined trigger (clear cut-off for when to trigger / release the action mode) indicates that a formal procedure is in place for responding to an outbreak, which in turn is indicative of there being a national and/or regional (strategic and/or operational) response plan to COVID-19 that is initiated once the trigger is set. A defined and adaptable trigger indicates that the plan can be adapted to the epidemiological situation.

Numerator:
- Subnational: N/A
- National level: Number of regions with a defined trigger (for mapping regional-level trigger(s))
- National Level: N/A (for assessing existence of a national trigger)
- EU level: Number of EU/EEA and UK countries with a defined trigger

Denominator:
- Subnational: N/A
- National level: Number of regions responding (for mapping regional-level trigger(s))
- National Level: N/A (for assessing existence of a national trigger)
- EU level: Total number of EU/EEA and UK countries responding

Calculation:
N/A

Method of measurement:
- Subnational: Internal assessment on Yes/No
- National level: Survey with closed question (Yes/No) (for mapping regional-level trigger(s))
- National level: Internal assessment on Yes/No (for assessing existence of a national trigger)
- EU level: Survey with closed question (Yes/No) or reviewing national COVID-19/pandemic strategic or operational plans (e.g. screening national websites)

Frequency of data collection:
- Subnational: Quarterly
- National: Quarterly
- EU level: Quarterly

- Direction of change:
- Subnational: N/A
- National level: higher number = better
- EU level: higher number = better

Disaggregation:
N/A

Monitoring level:
- Subnational
- National level
- EU level

Source of data:
- Subnational: Regional strategic (COVID/pandemic) response plan or regional Standard Operating Procedure (SOP) for response to COVID-19
- National: survey replies or regional health authority websites (for mapping regional-level trigger(s))
- National: National strategic (COVID-19/pandemic) response plan or national Standard Operating Procedure (SOP) for response to COVID-19 (for assessing existence of a national trigger)
- EU level: Survey replies through e.g. EWRS or Ministry of Health/public health authority website(s)

Strengths and weaknesses:
Strength:
- This gives an indication that there is are clear criteria to activate (or de-activate) an outbreak response to COVID-19

Weakness:
- Reporting is not automatic – requires additional collection of data
- No indication of the suitability of the defined trigger and/or of the robustness of the actual response after activation

Measurement notes:
The question would be: Has a trigger been defined for (and mechanism for updating) the activation and de-and re-activation of pandemic emergency response as well as a mechanism for updating the trigger? Yes/no measure

Comments:
On national level a country can choose to use this indicator in two ways:
- To map the availability of triggers in the regions
- To assess the existence of a defined trigger on the national level (i.e. in the national pandemic response plan)

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Indicator 1.2: Use of reviews (e.g. through in-action reviews) to strengthen the pandemic response
What it measures: The indicator measures the existence and implementation of a review/assessment phase in the preparedness and response cycle
Rationale: This indicator checks the number of reviews conducted. The fact that reviews/assessments are conducted, indicates that a systematic approach to lessons learnt is in place and that improvements to future outbreak responses are evidence-based. Establishing a culture of evaluating an outbreak response is crucial for the improvement and strengthening of pandemic planning, highlighting the added value of this indicator.
Numerator: Executed number of reviews during and after the outbreak
Denominator: If applicable: Planned number of reviews during and after the outbreak
Calculation: N/A
Method of measurement: Survey or screening of published review reports
Frequency of data collection: Subnational: Quarterly National: Quarterly EU level: Quarterly
Direction of change: N/A
Disaggregation: N/A
Monitoring level: Subnational National level EU level
Source of data: Subnational and national level: survey replies or health authority websites (for identifying review reports) EU level: Survey replies through e.g. EWRS or Ministry of Health/public health authority website(s)
Strengths and weaknesses: Strength: • Indication that a systematic overview of actions has been taken and that there is an evidence-based approach to improving future outbreak responses Weakness: • The indicator does not assess whether improvements are actually incorporated in the existing (strategic or operational) response plan(s) • No indication on the quality of the reviews and whether all relevant stakeholders and partners have been involved
Measurement notes: The question would be: Since the start of the outbreak, how many reviews (e.g. through in-action reviews) have been conducted to strengthen the response?
Comments: Examples of reviews: in action reviews, after-action reviews [5].

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Indicator 1.3: Cross-border communication and coordination - information exchange and sharing for cross-border events

What it measures:
This measures the extent of communication between EU Member States prior to and during the outbreak response, giving an indication of the level of cross-border collaboration and communication

Rationale:
This measures the extent of communication between EU Member States prior to and during the outbreak response, giving an indication of the level of cross-border collaboration and communication.

Identifying that countries are exchanging information and practices through a common, secured platform indicates that cross-border collaboration is in place as required in the Decision 1082/2013/EU and International Health Regulations (IHR)-level regulations.

The indicator allows Member States and the EU to understand how countries are managing to communicate and coordinate responses within the EU/EEA (and the United Kingdom) to the cross-border health threat.

This indicator can also look at the extent of communication beyond the EU/EEA & United Kingdom (i.e. between EU/EEA and other countries) if of interest.

Numerator:
Number of EWRS message exchanges that involve more than 1 country

Denominator:
N/A

Calculation:
N/A

Method of measurement:
Quantitative: Number of messages in EWRS

Frequency of data collection:
Quarterly

Direction of change:
Higher = better

Disaggregation:
N/A

Monitoring level:
EU level

Source of data:
EWRS

Strengths and weaknesses:
Strengths:
- Indication for active exchange between EU countries on specific issues by using the common and secured platform
- Active use of EWRS allows for EU level understanding of cross-border collaboration and communication on the outbreak

Weakness:
- As use of EWRS for selective exchanges is voluntary, cross-border exchanges might be underestimated

Measurement notes:
The question would be: What is the frequency of EWRS updates/alerts and IHR notifications on outbreak response?

Comments:
This indicator can also look at the extent of communication beyond the EU/EEA & United Kingdom (i.e. between EU/EEA and other countries) if of interest.

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Indicator 1.4: Recommended isolation of confirmed and probable COVID-19 cases
What it measures: Recommendations in place for the isolation of confirmed and probable COVID-19 cases.
Rationale: Early and effective isolation of cases of COVID-19 is an essential public health response measure to prevent importation, transmission and spread in a population. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
Numerator: N/A
Denominator: N/A
Calculation: N/A
Method of measurement: Binary (yes/no)
Frequency of data collection: Weekly or every two weeks depending on epidemic levels
Direction of change: N/A
Disaggregation: Case classification (confirmed, probable)
Monitoring level: • National • EU level
Source of data: Ministry of health and national public health agency recommendations
Strengths and weaknesses: The effectiveness of recommendations for isolation of confirmed, and probable COVID-19 cases will depend on: the case definition used; the level of enforcement by national authorities; how effectively the recommendations are communicated to the general public. Increased testing and contact tracing will increase the number of confirmed and probable cases who can be placed in isolation in order to prevent further spread. This indicator does not measure the compliance with the intervention.
Measurement notes:
Comments: This intervention is being included in the coming joint non-pharmaceutical intervention database of ECDC and JRC.

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Indicator 1.5: Quarantine for contacts of cases
What it measures: Recommendations in place regarding the quarantine of contacts of confirmed SARS-CoV-2 cases. Separation of contacts of confirmed cases from other healthy persons to avoid transmission if disease develops, even during asymptomatic or pre-symptomatic phases of the disease.
Rationale: Quarantine of contacts of cases following contact tracing is crucial to interrupt chain of transmission and prevent further transmission of COVID-19 in a population once a case has been identified. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
Numerator: N/A
Denominator: N/A
Calculation: N/A
Method of measurement: Binary (yes/no)
Frequency of data collection: Weekly or every two weeks depending on epidemic levels
Direction of change: N/A
Disaggregation: N/A
Monitoring level: • National • EU level
Source of data: Ministry of health and national public health agency recommendations
Strengths and weaknesses: The effectiveness of recommendations on the quarantine for contacts of cases will depend both on the proportion of contacts who are identified (which in turn depends on levels of testing and contact tracing strategy in place) and on the extent to which quarantine recommendations are enforced. This indicator does not measure the compliance with the intervention.
Measurement notes:
Comments: This intervention is being included in the coming joint non-pharmaceutical intervention database of ECDC and JRC.

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Indicator 1.6: Quarantine of individuals arriving from countries considered high risk

What it measures:
Recommendations in place for the quarantine of individuals arriving from countries considered high risk

Rationale:
Quarantine of individuals arriving from countries considered high risk for transmission of COVID-19 have been considered by some countries to prevent or reduce re-importation and further spread in the population. This can take place especially in countries where the transmission is reduced in order to prevent new chains of transmission after introduction. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.

Numerator:
N/A

Denominator:
N/A

Calculation:
N/A

Method of measurement:
Binary (yes/no)

Frequency of data collection:
Weekly or every two weeks depending on epidemic levels

Direction of change:
N/A

Disaggregation:
N/A

Monitoring level:
- National
- EU level

Source of data:
Ministry of health and national public health agency recommendations; recommendations and SOPs to identify specific groups to be directed to quarantine at arrival.

Strengths and weaknesses:
The effectiveness of recommendations on the quarantine for specific groups will depend both on the extent to which these groups are identified and informed of the quarantine requirements and on the extent to which quarantine recommendations are followed or enforced. The effectiveness of this intervention will also depend on the level of ongoing community transmission in the destination country as the quarantine of specific groups is likely to have limited impact if there is already sustained ongoing community transmission. This indicator does not measure the compliance with the intervention.

Measurement notes:

Comments:
This intervention is being included in the coming joint non-pharmaceutical intervention database of ECDC and JRC.

Pillar 1: Country-level coordination, planning, and monitoring

Indicator 1.7: Stay-at-home orders or recommendations
What it measures: Interventions in place ordering or recommending that the general public stay at home
Rationale: Stay-at-home orders or recommendations are physical distancing interventions aiming to strongly reduce the number of contact per individual and decrease transmission of SARS-CoV-2 in the general population. This measure has been used to reduce SARS-CoV-2 transmission during widespread community transmission and large outbreaks in order to decrease the pressure on the healthcare system and the impact of COVID-19 (morbidity and mortality). Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries
Numerator: N/A
Denominator: N/A
Calculation: N/A
Method of measurement: Fully/partially/not implemented
Frequency of data collection: Weekly or every two weeks depending on epidemic levels
Direction of change: N/A
Disaggregation: Level of enforcement (mandatory or voluntary)
Monitoring level: • Subnational • National • EU level
Source of data: Ministry of health and national public health agency recommendations
Strengths and weaknesses: The effectiveness of stay-at-home orders and recommendations in reducing transmission of SARS-CoV-2 will vary between countries depending on the level of enforcement and the specific rules and exceptions to the intervention. This indicator does not measure the compliance with the intervention.
Measurement notes:
Comments: This intervention is being included in the coming joint non-pharmaceutical intervention database of ECDC and JRC.

Pillar 1: Country-level coordination, planning, and monitoring

Indicator 1.8: Recommended 2 metres physical distance between individuals in public spaces
What it measures: Recommendation in place recommending 2m physical distance is kept between individuals in public spaces
Rationale: Encouraging individuals to keep 2-metre distance between them in public reduces the transmission of SARS-CoV-2 and further spread of COVID-19. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
Numerator: N/A
Denominator: N/A
Calculation: N/A
Method of measurement: Binary (yes/no)
Frequency of data collection: Weekly or every two weeks depending on epidemic levels
Direction of change: N/A
Disaggregation: N/A
Monitoring level: • National • EU level
Source of data: Ministry of health and national public health agency recommendations
Strengths and weaknesses: The effectiveness of this recommendation will depend on the extent to which it is followed by the general population, and on what other response measures are in place, for instance, whether there are also recommendations or obligations to wear face masks in confined public spaces. This indicator does not measure the compliance with the intervention.
Measurement notes:
Comments: This intervention is being included in the coming joint non-pharmaceutical intervention database of ECDC and JRC.

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Indicator 1.9: Interventions in place on closing of public spaces
What it measures: Interventions in place regarding the closing of public spaces including non-essential shops, restaurants, entertainment venues, etc.
Rationale: Interventions mandating or recommending the closure of public spaces aim to reduce the level of contacts between individuals and reduce transmission and further spread of SARS-CoV-2. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
Numerator: N/A
Denominator: N/A
Calculation: N/A
Method of measurement: Fully/partially/not implemented
Frequency of data collection: Weekly or every two weeks depending on epidemic levels
Direction of change: N/A
Disaggregation: Type of public space or sector associated with public space
Monitoring level: • National • EU level
Source of data: Ministry of health and national public health agency recommendations; recommendations by relevant industry bodies
Strengths and weaknesses: There is limited evidence on the effectiveness of individual physical distancing measures as many of them were introduced 'en bloc' in countries in the EU/EEA and the UK. However, in combination with other physical distancing measures, large-scale closures of public spaces are likely to have a substantial effect on population mobility and contacts between individuals. This indicator does not measure the compliance with the intervention.
Measurement notes:
Comments: This intervention is being included in the coming joint non-pharmaceutical intervention database of ECDC and JRC. The current subcategories are: • Entertainment venues • Gyms or sports centres • Non-essential shops • Hotels and other accommodation facilities • Restaurants and cafes • Places of worship • Other

Pillar 1: Country-level coordination, planning, and monitoring

Indicator 1.10: Interventions in place to restrict the use of public transport
What it measures: Interventions in place regarding the restriction on the use of public transport
Rationale: Interventions mandating or recommending the closure of public transport or a reduced capacity of passenger transport aim to reduce the level of contacts between individuals, especially in confined spaces such as train, bus and metro, and reduce transmission and further spread of SARS-CoV-2. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
Numerator: N/A
Denominator: N/A
Calculation: N/A
Method of measurement: Fully/partially/not implemented
Frequency of data collection: Weekly or every two weeks depending on epidemic levels
Direction of change: N/A
Disaggregation: N/A
Monitoring level: • National • EU level
Source of data: Ministry of health and national public health agency recommendations; recommendations by industry body responsible for public transportation network
Strengths and weaknesses: There is limited evidence on the effectiveness of individual physical distancing measures as many of them were introduced 'en bloc' in countries in the EU/EEA and the UK. However, in combination with other physical distancing measures, closures or limitations of public transport can have an effect on population mobility and contacts between individuals within confined spaces. This indicator does not measure the compliance with the intervention.
Measurement notes:
Comments: This intervention is being included in the coming joint non-pharmaceutical intervention database of ECDC and JRC.

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Indicator 1.11: Interventions in place on closing workplaces
What it measures: Interventions in place regarding the closing of workplaces
Rationale: The aim is to avoid transmission among medium to-large numbers of people in confined working spaces over extended periods. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
Numerator: N/A
Denominator: N/A
Calculation: N/A
Method of measurement: Fully/partially/not implemented
Frequency of data collection: Weekly or every two weeks depending on epidemic levels
Direction of change: N/A
Disaggregation: N/A
Monitoring level: • National • EU level
Source of data: Ministry of health and national public health agency recommendations; recommendations by different industry bodies or private companies regarding workplace closures
Strengths and weaknesses: Depending on the proximity of people working in different workplace settings as well as the rate and nature of their interactions, different individuals and groups can be at higher risk of infection than others, and thus workplace closures could be more effective when targeted according to occupational contact profile (i.e. confined spaces over extended periods). Specific interventions for high-risk working places might need separate monitoring on national level (for example in slaughterhouses or mines). This indicator does not measure the compliance with the intervention.
Measurement notes:
Comments: This intervention is being included in the coming joint non-pharmaceutical intervention database of ECDC and JRC.

Pillar 1: Country-level coordination, planning, and monitoring

Indicator 1.12: Interventions in place on teleworking
What it measures: What interventions or recommendations are in place regarding teleworking
Rationale: Interventions recommending teleworking aim to reduce the level of contacts between individuals at the workplace and during journeys to and from the workplace to prevent spread of SARS-CoV-2. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
Numerator: N/A
Denominator: N/A
Calculation: N/A
Method of measurement: Fully/partially/not implemented
Frequency of data collection: Weekly or every two weeks depending on epidemic levels
Direction of change: N/A
Disaggregation: Target group (general population, vulnerable worker groups)
Monitoring level: • National • EU level
Source of data: Ministry of health and national public health agency recommendations; recommendations by different industry bodies or private companies regarding teleworking.
Strengths and weaknesses: Depending on the proximity of people working in different workplace settings as well as the rate and nature of their interactions, different individuals and groups can be at higher risk of infection than others, and thus teleworking recommendations could be effective especially for certain occupations. This indicator does not measure the compliance with the intervention.
Measurement notes:
Comments: This intervention is being included in the coming joint non-pharmaceutical intervention database of ECDC and JRC.

Pillar 1: Country-level coordination, planning, and monitoring

Indicator 1.13: Interventions in place on closing educational institutions

What it measures:
What interventions are in place regarding closing of schools including day care, primary school, secondary school and higher education.

Rationale:
Preventing contact among children is a known prevention measure in influenza outbreaks and pandemics. Universities and other educational institutions are also areas where large numbers of people congregate in confined spaces. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.

Numerator:
N/A

Denominator:
N/A

Calculation:
N/A

Method of measurement:
Fully/partially/not implemented

Frequency of data collection:
Weekly or every two weeks depending on epidemic levels

Direction of change:
N/A

Disaggregation:
School levels:
- day care,
- primary school
- secondary school
- higher education

Monitoring level:
- National
- EU level

Source of data:
Ministry of health and national public health agency recommendations; recommendations by administrative/industry body representing educational institutions

Strengths and weaknesses:
The role of contact between children in driving the transmission of SARS-CoV-2 remains under evaluation. The impact of partial closing/opening schools can be affected by any mitigating measures introduced, such as adaptations to schools and classrooms to increase physical distancing between students.

Measurement notes:

Comments:
This intervention is being included in the coming joint non-pharmaceutical intervention database of ECDC and JRC. It is important to note that the summer holiday period that has already started at the time of writing of this document, or is approaching will have an impact on the recommendations or closures in place in countries in the EU/EEA and the UK.

Pillar 1: Country-level coordination, planning, and monitoring

Indicator 1.14: Interventions in place for risk groups and vulnerable population
What it measures: What interventions are in place for risk groups and vulnerable populations
Rationale: Risk groups and vulnerable populations consist of persons at higher risk for severe disease and poor outcomes if they acquire the infection. Risk groups include vulnerable individuals living in the community and those resident in facilities such as long-term care facilities, psychiatric institutions, homeless shelters or prisons. Measures can include 'cocooning' for vulnerable persons in the community or measures taken to protect special populations in institutions such as visitor restrictions. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
Numerator: N/A
Denominator: N/A
Calculation: N/A
Method of measurement: Binary (yes/no)
Frequency of data collection: Weekly or every two weeks depending on epidemic levels
Direction of change: N/A
Disaggregation: Risk group/population
Monitoring level: • National • EU level
Source of data: Ministry of health and national public health agency recommendations; recommendations by bodies representing facilities for vulnerable populations
Strengths and weaknesses: The recommendations for risk groups and vulnerable persons residing in the community may be different to those for individuals residing in facilities such as long-term care facilities. Additionally, several interventions may be required for individuals in the community to be effectively 'cocooned', for instance, stay-at-home recommendations for risk groups in combination with protected hours in supermarkets, pharmacies and other shops. As the definitions of risk groups may vary between countries, interventions for specific risk groups might need further monitoring on national level. This indicator does not measure the compliance with the intervention.
Measurement notes:
Comments: This intervention is being included in the coming joint non-pharmaceutical intervention database of ECDC and JRC.

Pillar 1: Country-level coordination, planning, and monitoring

Indicator 1.15: Interventions in place on public gatherings
What it measures: What interventions are in place to limit public gatherings (small, medium and mass gatherings)
Rationale: To reduce transmission between people gathering in groups in confined or open spaces. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
Numerator: N/A
Denominator: N/A
Calculation: N/A
Method of measurement: Binary (yes/no)
Frequency of data collection: Weekly or every two weeks depending on epidemic levels
Direction of change: N/A
Disaggregation: Size of the gathering
Monitoring level: • National • EU level
Source of data: Ministry of health and national public health agency recommendations
Strengths and weaknesses: The effectiveness of interventions limiting public gatherings will depend on the level of enforcement and the extent to which the public follows voluntary recommendations on public gatherings. This indicator does not measure the compliance with the intervention.
Measurement notes: The size of the gatherings for which the limitations apply should be recorded as numerical value.
Comments: This intervention is being included in the coming joint non-pharmaceutical intervention database of ECDC and JRC.

Pillar 1: Country-level coordination, planning, and monitoring

Indicator 1.16: Recommendation to use face masks in the community
What it measures: Whether there is a recommendation in place for the use of face masks in the community (for instance in all public spaces or in certain specific confined public spaces).
Rationale: The use of face masks in public may serve as a complementary means of preventing human to human transmission and reducing the spread of the infection in the community. The face masks minimise the excretion of respiratory droplets from infected individuals (symptomatic, and who have not yet developed symptoms or who remain asymptomatic). The use of face masks in the community has been considered especially when visiting busy, closed spaces, such as grocery stores, shopping centres, or when using public transport. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
Numerator: N/A
Denominator: N/A
Calculation: N/A
Method of measurement: Binary (yes/no)
Frequency of data collection: Weekly or every two weeks depending on epidemic levels
Direction of change: N/A
Disaggregation: Level of enforcement (mandatory or voluntary)
Monitoring level: • National • EU level
Source of data: Ministry of health and national public health agency recommendations
Strengths and weaknesses: There is limited evidence on the effectiveness on the use of face masks in the community in decreasing transmission of COVID-19, and it cannot fully replace other physical distancing measures. The effectiveness of mask use for pauci-symptomatic and asymptomatic individuals is still under evaluation, and can be impacted by the level of enforcement (voluntary/mandatory), public compliance with recommendations and whether face masks are used correctly by the general public, and what type of masks can be available to the public. This indicator does not measure the compliance with the intervention.
Measurement notes:
Comments: This intervention is being included in the coming joint non-pharmaceutical intervention database of ECDC and JRC.

Pillar 1: Country-level coordination, planning, and monitoring

Indicator 1.17: National movement restrictions or recommendations
What it measures: Whether there are national movement restrictions or recommendations in place (e.g. 'cordon sanitaire'). National movement restrictions are defined as limitation or cancellation of internal movements within a country, or into and out of certain areas in a country.
Rationale: National movement restrictions (within a country) or recommendations aim to reduce further transmission and spread of SARS-CoV-2 by limiting population mobility. Monitoring of non-pharmaceutical interventions allows estimation of their effectiveness and is crucial to interpret incidence and the evolution of the epidemic in countries.
Numerator: N/A
Denominator: N/A
Calculation: N/A
Method of measurement: Binary (yes/no)
Frequency of data collection: Weekly or every two weeks depending on epidemic levels
Direction of change: N/A
Disaggregation: Level of enforcement (mandatory or voluntary)
Monitoring level: • Subnational • EU level
Source of data: Government, Ministry of Health and national public health agency recommendations
Strengths and weaknesses: The effectiveness of national movement restrictions or recommendations depends on the extent to which they are enforced and on public compliance with the restrictions or recommendations. Additionally, national movement restrictions are likely to have little impact if there is already sustained community transmission throughout all areas. This indicator does not measure the compliance with the intervention.
Measurement notes:
Comments: This intervention is being included in the coming joint non-pharmaceutical intervention database of ECDC and JRC. If available, population mobility data are another useful indicator to assess the effectiveness of movement restrictions or recommendations.

Pillar 2: Risk communication and community engagement

Indicator 2.1: COVID-19 risk communication and community engagement (RCCE) plan in place
What it measures: Countries have a risk communication and community engagement (RCCE) in place (see comment on joint plan or two separate plans per area)
Rationale: As indicated by WHO: 'A RCCE plan establishes the rationale and strategy to ensure that communities are at the centre of the response, identifies key audiences, addresses audience perceptions of health (and humanitarian) response strategies, and provides accurate and actionable information' [1]. It also defines roles and responsibilities of the different partners involved.
Numerator: One plan (if joint RCCE) or two if separated by area
Denominator: N/A
Calculation: N/A
Method of measurement: Documentation and reporting from the public health authority
Frequency of data collection: One off – with regular reviews of implementation as per national strategies and eventual updates following evaluations
Direction of change: N/A
Disaggregation: National plan that jointly covers RC and CE or 2 separate plans for each area
Monitoring level: National
Source of data: National public health authorities
Strengths and weaknesses: The plan provides the rationale and strategy for effective communication, clarifies roles and responsibilities and the coordination mechanisms in place. But different factors related to resources, organisational issues, etc. may hamper implementation and follow-up.
Measurement notes:
Comments: As indicated in WHO's Monitoring and Evaluation Framework [1]: Risk communication and community engagement are two different but interlinked subjects that are managed differently across countries. Some countries have one joint plan, others have two separate plans. Countries with disjoint RCCE plans are requested to respond to this indicator as one. In some countries, plans only relate to community engagement in the title, but also include risk communication elements. In this case, it can be reported as 'yes.'

Pillar 2: Risk communication and community engagement

Indicator 2.2: RCCE coordination mechanism is active in the country and formally implemented
What it measures: The existence and implementation of a national mechanism for the coordination of risk communication and community engagement (RCCE). A COVID-19 RCCE coordination mechanism is a national working group or task force with Subnational coordination. The RCCE coordination mechanism is led or co-led by governmental response entities, and includes representatives from government, multi-sectoral entities and civil society, and/or NGO and local associations with direct responsibility and accountability for risk communications and community engagement functions.
Rationale: As indicated by WHO [1], such mechanism 'better ensures that response organisations, governments, and partners synchronize strategy and plans to ensure that target audiences/communities are communicated with and engaged through trusted organisations, networks, or individuals. Coordination also better ensures that health recommendations and guidance are consistent and timely and can be adapted per realities and transmission scenario and needs of different populations'.
Numerator: Coordination mechanism established.
Denominator: N/A
Calculation: N/A
Method of measurement: Documentation and reporting from the public health authority
Frequency of data collection: Monthly
Direction of change: N/A
Disaggregation: Multi sectoral RCCE team, working group, task force
Monitoring level: • Subnational • National
Source of data: National public health authorities
Strengths and weaknesses: Strength: The mechanism facilitates coordination among different actors.
Measurement notes:
Comments: Community representatives should be engaged in the coordination mechanisms Data collection should take place at country level

Pillar 2: Risk communication and community engagement

Indicator 2.3: Mechanisms in place to routinely capture community feedback and assess public perceptions, concerns and trust
What it measures: The existence of mechanisms that routinely capture community feedback and assess public perceptions, concerns and trust regarding the COVID-19 pandemic.
Rationale: Mechanisms or platforms for community feedback ensure that communities and individuals can access needed information, obtain answers to questions, and raise concerns or complaints as needed.
Numerator: Number and types of data collection methods in place
Denominator: N/A
Calculation: N/A
Method of measurement: Documentation and reporting from the public health authorities
Frequency of data collection: Monthly (or more frequently depending on strategies and available resources)
Direction of change: Higher number of tools for capturing community feedback, etc. = better
Disaggregation: Established two-way community feedback mechanisms or platforms can include one or more of the following channels: hotlines, information centres, WhatsApp chats, social media channels, radio shows, face-to-face interactions when the context permits, participation in qualitative assessments, interactive messaging platforms, Q&A forums, digital engagement platforms, social network platforms, etc.
Monitoring level: • Subnational • National
Source of data: National and regional health authorities
Strengths and weaknesses: Collection of data relating to community perceptions and concerns can facilitate a rapid response in risk communication messaging in the event of an upsurge in concerns about the pandemic or about the response to the pandemic. However, depending on the data collection methods, data can be biased by people or groups who are disproportionately 'noisy' on, for example, social media.
Measurement notes:
Comments: Effectiveness of the tools and how these have identified community concerns could be evaluated at a later stage, in order to assess lessons learned and optimise the process for the future.

Pillar 2: Risk communication and community engagement

Indicator 2.4: Mechanisms in place to address rumours, misinformation and disinformation

What it measures:
Existence of communication tools and initiatives to detect and counter the spread of rumours, misinformation and disinformation regarding the COVID-19 pandemic.

Rationale:
The rapid and massive spread of misinformation, disinformation and rumours during the pandemic can affect the public health response. It also creates confusion and distrust among people. Mechanisms need to be in place to detect and address this, in order to raise awareness in the population about the issue and ensure that people can access accurate information from authoritative and trusted sources.

Numerator:
Number and types of tools in place

Denominator:
N/A

Calculation:
N/A

Method of measurement:
Documentation and reporting from the public health authorities

Frequency of data collection:
Monthly

Direction of change:
Higher number of tools = better

Disaggregation:
- Debunking tools (e.g. facts to dispel myths, chatbots)
- Links to fact-checking features
- Work with social media platforms and social influencers
- Other tools as appropriate

Monitoring level:
- Subnational
- National

Source of data:
National and regional health authorities

Strengths and weaknesses:
Recognised as a key strategic area in communication, but overabundance of information and misinformation related to the pandemic can make it difficult to cope with the fast and massive spread of false or inaccurate information. Also, initiatives to counter this issue rely on the collaboration of other entities (e.g. social media platforms).

Measurement notes:

Comments:
Effectiveness of the tools and how they inform changes in communication approaches could be further evaluated at a later stage in order to assess lessons learned and define best practices for the future.

Pillar 2: Risk communication and community engagement

Indicator 2.5: Ongoing participation in EU mechanisms for rapid information exchange with other Member States concerning communication messages and strategies, with a view to coordinate risk and crisis communication (as per Decision 1082/2013/EU on serious cross-border threats to health)

What it measures:
Participation to EU mechanisms created by the EU legislation (Decision 1082/2013/EU on serious cross-border threats to health [2]) to allow rapid information exchange among EU member States and coordinate risk and crisis communication.

Rationale:
It creates a forum to discuss about communication strategies and messaging, support Member States communication activities, and enhance coordination in communication activities.

Numerator:
Number of meetings and information exchange

Denominator:
N/A

Calculation:
N/A

Method of measurement:
Participation in Health Security Committee Communicators Network, according to minutes produced by EC

Frequency of data collection:
Monthly

Direction of change:
Higher participation = better

Disaggregation:
- Health Security Committee Communicators Network
- bilateral and/or regional communications

Monitoring level:
National

Source of data:
European Commission (DG SANTE)

Strengths and weaknesses:
Strengths: improved coordination and sharing of tools and best practices. Weakness: no platform e.g. like EWRS used for the exchanges.

Measurement notes:

Comments:
Participation in the HSC Communicators Network's meetings is recorded by the Commission, and exchange of information is documented as part of the minutes of these meetings.

Pillar 2: Risk communication and community engagement

Indicator 2.6: Mechanisms in place to identify and segment specific populations/at risk groups in order to target them with culturally appropriate messages using relevant channels and community networks/influencers

What it measures:
The existence of mechanisms that identify and segment specific populations/at risk groups in order to target them with culturally appropriate messages using relevant channels and community networks/influencers.

Rationale:
People who are medically or socially vulnerable need to receive specially tailored information about how to protect themselves from infection. It is also important to work towards creating a social environment through messaging for such groups so that public health measures are widely accepted and adhered to.

Numerator:
Number and types of data collection methods in place

Denominator:
N/A

Calculation:
N/A

Method of measurement:
Documentation and reporting from the public health authorities

Frequency of data collection:
Monthly

Direction of change:
Higher number of identified target groups and associated targeted messaging = better

Disaggregation:
Potential at-risk groups to be focused on could include:

- Medically vulnerable people, who may be more likely to develop severe disease if infected, such as the elderly and people with underlying health conditions;
- Socially vulnerable people, whose situation may be exacerbated by lockdown and other measures. These include people with mental or physical disabilities, people with mental health problems, people with learning disabilities, homeless people, people living in abusive household settings, ethnic minorities, people from the LGBTI community, people in prisons, and undocumented migrants.

Monitoring level:

- Subnational
- National

Source of data:
National and regional health authorities

Strengths and weaknesses:
All the vulnerable populations identified would likely benefit from carefully targeted messaging, with potentially reduced levels of infection and adverse socio-economic impact. However, targeting this number of different groups in an effective way will be challenging.

Measurement notes:

Comments:

Pillar 2: Risk communication and community engagement

Indicator 2.7: Mechanisms in place to provide practical and logistical support to people living in socially vulnerable settings

What it measures:
The existence of mechanisms that provide practical and logistical support to people living in socially vulnerable settings.

Rationale:
People being part of socially vulnerable populations may find it difficult to adhere to the public health measures required during the COVID-19 pandemic, so support for them is necessary both for reasons of equity and human rights but also to reduce the spread of infection.

Numerator:
Number and types of support mechanisms in place

Denominator:
N/A

Calculation:
N/A

Method of measurement:
Documentation and reporting from the public health authorities

Frequency of data collection:
Monthly

Direction of change:
Higher number of support mechanisms = better

Disaggregation:
Provision of support should ideally be focused on at least the following groups: people with mental or physical disabilities, people with mental health problems, people with learning disabilities, homeless people, people living in abusive household settings, ethnic minorities, people from the LGBTI community, people in prisons, and undocumented migrants.

Monitoring level:
- Subnational
- National

Source of data:
National and regional health authorities

Strengths and weaknesses:
Collection of data on the provision of support can provide details of its cost as well as its impact, which is essential for assessing its cost effectiveness. However, measurement of impact may be challenging, and it may be necessary to collect process data instead.

Measurement notes:

Comments:
Evaluation of the provision mechanisms should be conducted, with the results fed back into the system to optimise the support provided.

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.1: Surveillance systems in place for comprehensive monitoring of COVID-19 epidemiology
What it measures: Presence of a surveillance system in place which allows for collection of detailed case-based data on diagnosed cases to be able to describe cases in terms of time, place and person.
Rationale: Appropriate description of diagnosed cases allows for developing of targeted interventions as well as monitoring and evaluating of these interventions. In addition, such surveillance systems can provide key data on the evolution of the outbreak, use of healthcare resources and inform mathematical modelling activities among others. Monitoring ARI and ILI rates provide an indication of the intensity of infection in countries, particularly when influenza and RSV are not co-circulating.
Numerator: N/A
Denominator: N/A
Calculation: N/A
Method of measurement: Population-based COVID-19 surveillance system in place, collecting case-based data on key variables: *Yes for all cases; Yes for hospitalised cases only; Yes for cases in intensive care only; No surveillance system in place* Presence of surveillance system which measures rates of acute respiratory infections (ARI) and/or influenza like illness (ILI) in outpatient settings: *Yes: monitoring ARI; Yes: monitoring ILI; Yes: monitoring both ARI and ILI; No: there is no sentinel outpatient syndromic surveillance system in place* Surveillance system for severe acute respiratory infections (SARI) in place. *Yes: comprehensive SARI surveillance system in place; Yes: sentinel SARI surveillance system in place; No: there is no surveillance system for SARI in place* Surveillance system for long-term care facilities in place: *Yes: surveillance system in place (please specify percentage of long-term care facilities covered); No: no surveillance system in place* Other surveillance systems in place for specific populations, settings or risk groups (e.g. healthcare workers, migrants, prisons, etc.) *Please specify* Surveillance system in place to monitor excess mortality *Yes: through EuroMOMO; Yes: national system; no system in place* Monitoring system in place which allows for assessing epidemiological situation in other countries and current and emerging threats to human health [this sub-indicator is not intended for reporting at EU level] *Yes, at national level; Yes, through ECDC; no* COVID-19 surveillance case definition: *EU case definition; national case-definition (please specify)* Surveillance system captures deaths among cases occurring in all settings (hospitals, long-term care facilities, etc.) *Yes: surveillance system captures deaths among cases occurring in all settings; no: surveillance system does not capture deaths among cases occurring in all settings (please specify)* Surveillance system captures deaths among probable cases *Yes: surveillance system captures deaths among probable cases; no: surveillance system does not capture deaths among probable cases (please specify)*
Frequency of data collection: Annual with updates in case of changes
Direction of change: N/A
Disaggregation: Key variables for case-based data include: date of onset, date of notification, age, gender, place of residence, place of infection, pre-existing conditions, hospitalisation, admission to intensive care, respiratory support, outcome and healthcare worker status
Monitoring level: • Subnational • National • EU level
Source of data: Assessment of data reported to TESSy
Strengths and weaknesses: The indicator does not include information on comprehensiveness of surveillance systems and data quality. These are key aspects to ensure that surveillance systems are functioning appropriately. Specificity of such surveillance systems might not be optimal when other respiratory viruses are circulating.
Measurement notes: If some of the key variables are not reported, this should be noted.
Comments:

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.2: Monitoring of SARS-CoV-2 virus characteristics

What it measures:
Virological surveillance systems incorporate monitoring of SARS-CoV-2 virus characteristics.

Rationale:
Representative samples (age, sex, location, time of epidemic, severity) from different settings (population, outpatient, hospital, ICU) should be collected for genetic and antigenic analyses to monitor evolution of the virus (distribution of different clades), vaccine match and antiviral drug resistance (when vaccine and antivirals become available). Sequencing of SARS-CoV-2 is essential for outbreak investigation and as part of surveillance activities. Antigenic analysis of subsets of viruses will be essential for monitoring the antigenicity of circulating strains.

Numerator:
Number of sequences uploaded (genetic sequences submitted to GISAID/TESSy).

Denominator:
N/A

Calculation:
Number of genetic sequences submitted to GISAID/TESSy.

Method of measurement:
GISAID submitted sequences by country/region.

Frequency of data collection:
Weekly

Direction of change:
N/A

Disaggregation:
- Age
- Sex
- Severity
- Setting (community, outpatient, hospital, intensive care units)

Monitoring level:
- Subnational
- National
- EU level

Source of data:
GISAID/TESSy for genetic sequence data

Strengths and weaknesses:

Measurement notes:
A representative sample needs to be collected for virological surveillance, to ensure comparability and stability.

Comments:

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.3: Proportion of affected long-term care facilities reporting weekly surveillance data
What it measures: Proportion of long-term care facilities reporting probable, possible or confirmed COVID-19 cases or related fatalities
Rationale: Long-term care facilities have been heavily affected by COVID-19 with a high proportion of facilities across some countries and residents in these affected settings causing high morbidity and mortality in this vulnerable group. Data on the proportion of affected long-term care facilities would provide a better understanding of the situation in the country and across countries.
Numerator: Number of long-term care facilities reporting possible, probable, or confirmed COVID-19 cases or related fatalities
Denominator: Number of all facilities or all reporting facilities (if nil reporting is required)
Calculation: Proportion expressed as %
Method of measurement: Reporting from facilities to local/regional/national/EU health authorities
Frequency of data collection: Weekly (subnational and national) and monthly (EU)
Direction of change: N/A
Disaggregation: By type of facility
Monitoring level: • Subnational • National • EU level
Source of data: Local/regional/national health authorities
Strengths and weaknesses:
Measurement notes:
Comments: Allows for better understanding of the situation in these settings and disease-related mortality as well as comparability between regions and countries.

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.4: Estimates of infection prevalence from PCR-based prevalence studies in the previous month
What it measures: Rate of prevalent infections of SARS-CoV-2 in the community which are less biased by testing and reporting strategies.
Rationale: Monitoring the disease occurrence in a geographical area at a given time point
Numerator: Number of PCR tests positive for SARS-CoV-2 within a population-based study
Denominator: Number of PCR tests performed for SARS-CoV-2 within a population-based study
Calculation: Numerator/denominator*100
Method of measurement: Prevalence estimates from any population-based studies conducted and the geographic region and/or population in which the study was conducted.
Frequency of data collection: Monthly
Direction of change: N/A
Disaggregation: • Sex • Age • Presence of symptoms
Monitoring level: • Subnational • National • EU level
Source of data: TESSy, Event and Threat Management Solution (ETMS)
Strengths and weaknesses:
Measurement notes:
Comments: Allows for better comparability and understanding of reported surveillance data including mortality.

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.5: Estimates of seroprevalence at Subnational or national level in the previous month
What it measures: Proportion of the population seropositive for SARS-CoV-2
Rationale: Allows for better estimation of the real number of infected cases and potentially immunity against COVID-19 in the different phases of the pandemic. Provides key information on the evolution of the pandemic.
Numerator: Number of individuals with positive serology in a specific population
Denominator: Number of individuals tested serologically in a specific population
Calculation: Numerator/denominator * 100
Method of measurement: Seroprevalence estimates for any studies conducted and the geographic region and/or population in which the study was conducted.
Frequency of data collection: Monthly
Direction of change: N/A
Disaggregation: If available: by sex and age and location
Monitoring level: • Subnational • National • EU
Source of data: ETMS
Strengths and weaknesses: Population-based seroprevalence studies provide a comprehensive estimate of the cumulative proportion of the population which has been infected with SARS-CoV-2. The sensitivity and specificity of the used serological tests can affect results and should be taken into account. Studies which are not population based can also provide useful information but generalisability to the whole population may not be possible. The delay in individuals seroconverting after infection also needs to be taken into account.
Measurement notes:
Comments:

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.6: Rate of new confirmed cases nationwide per 100 000 persons
What it measures: Rate per 100 000 of new confirmed cases nationwide over previous week, disaggregated by key variables
Rationale: Measurement of the incidence of notified cases in the community
Numerator: Number of cases in a geographical area during the previous week
Denominator: Country population
Calculation: Numerator/Denominator * 100 000
Method of measurement: Reported through mandatory notification system
Frequency of data collection: Daily
Direction of change: Decrease or zero
Disaggregation: • Sex • Age (0-9, 10-19 years, etc.) • Region
Monitoring level: • Subnational • National • EU level
Source of data: TESSy
Strengths and weaknesses: Strength: • Allows for monitoring disease occurrence and trends. Weakness: • Potentially biased by varying testing strategy and intensity between geographical regions and over time.
Measurement notes:
Comments:

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.7: Proportion of all tests performed nationwide positive for SARS-CoV-2

What it measures:
The positivity rate for SARS-CoV-2 among persons tested, overall, in sentinel outpatients clinics and among patients with SARI.

Rationale:
Overall positivity rates as well as positivity in sentinel outpatients and among patients with SARI provides complementary data to reported notification rates by taking into account the testing denominator. Allows for assessment of the intensity of the epidemic and level of transmission in the population over time (start, peak and end of a wave).

Numerator:
- Number of positive SARS-CoV-2 tests overall
- Number of positive SARS-CoV-2 tests from sentinel outpatients clinics
- Number of positive SARS-CoV-2 tests among patients with SARI

Denominator:
- Total number of SARS-CoV-2 tests performed overall
- Total number of SARS-CoV-2 tests performed among sentinel outpatients clinics
- Total number of SARS-CoV-2 tests performed among patients with SARI

Calculation:
Numerator/Denominator * 100

Method of measurement:
- From national notification systems
- From sentinel outpatients surveillance systems
- From sentinel or comprehensive SARI surveillance systems

Frequency of data collection:
Weekly

Direction of change:
Aim for decreasing proportions (or stable if already at low level)

Disaggregation:
- Sex
- Age (0-9, 10-19 years, etc.)
- Region

Monitoring level:
- Subnational
- National
- EU level

Source of data:
TESSy

Strengths and weaknesses:
Strength:
- Better understanding of reported COVID-19 cases.

Weakness:
- The total number of COVID-19 tests may differ across countries due to differences in the data collection and testing strategy.
- Data submitted to TESSy from different surveillance systems: sentinel surveillance, comprehensive testing strategy, hospital-based surveillance.

Measurement notes:

Comments:

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.8: Median delay from date of onset to date of notification per week
What it measures: Timeliness of notification systems.
Rationale: Assesses how timely notification of COVID-19 cases is which is key for early response by public health services/authorities.
Numerator: N/A
Denominator: N/A
Calculation: • Delay = date of notification (YYYY-MM-DD) – date of onset (YYYY-MM-DD) • Median time delay per week (in days)
Method of measurement: Quantitative Expressed in number of days
Frequency of data collection: Monthly
Direction of change: As short as possible
Disaggregation: • Sex • Age (0-9, 10-19 years, etc.) • Precondition • Severity (hospitalisation, ICU, death)
Monitoring level: • EU level • National • Subnational
Source of data: TESSy
Strengths and weaknesses: Provides understanding about how fast the case is notified to the surveillance system
Measurement notes:
Comments:

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.9: Rate of hospitalised COVID-19 cases per 100 000 population per week

What it measures:
This indicator describes the severity of reported cases.

Rationale:
Assuming that admission to hospital is a good proxy for severity, the rate of hospitalised COVID-19 cases is an indicator of the disease burden in the population.

Numerator:
Number of confirmed cases reported with the variable 'Hospitalisation' = Yes

Denominator:
Country population

Calculation:
Numerator/Denominator * 100 000

Method of measurement:

Frequency of data collection:
Weekly

Direction of change:
Decrease or zero

Disaggregation:
- Sex
- Age (0-9, 10-19, etc.)
- Precondition
- Severity (death)

Monitoring level:
- Subnational
- National
- EU level

Source of data:
TESSy

Strengths and weaknesses:
Strengths:
- This indicator allows monitoring excess of hospitalisation and indicates when hospitals might get overburdened.

Weakness:
- COVID-19 cases may be admitted for isolation rather than clinical need in regions with low incidence.
- Hospitalisation criteria may differ across countries and within countries (regions, subnational levels)

Measurement notes:

Comments:
Allows for better comparability and understanding of reported surveillance data including mortality.

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.10: Proportion of COVID-19 cases hospitalised out of all cases

What it measures:
This indicator describes the severity of reported cases.

Rationale:
Assuming that admission to hospital is a good proxy for severity and that criteria for testing do not change, the proportion of hospitalised cases is indicative of the disease burden.

Numerator:
Number of cases reported with the variable 'Hospitalisation' = Yes

Denominator:
Number of cases reported with the variable 'Hospitalisation' = Yes/No

Calculation:
Numerator * 100 / Denominator

Method of measurement:
N/A

Frequency of data collection:
Weekly

Direction of change:
Decrease

Disaggregation:
- Sex
- Age (0-9, 10-19 years, etc.)
- Precondition

Monitoring level:
- Subnational
- National
- EU level

Source of data:
TESSy

Strengths and weaknesses:
Strengths:
- This indicator is easy to understand, and the variable usually has good completeness.

Weaknesses:
- The proportion of COVID-19 cases hospitalised depends highly on the testing strategy in use (particularly on whether there is extensive testing of milder cases).
- For some specific populations, such as extreme age groups or people with preconditions (e.g. cancer), admission to hospital may not be a good proxy for severity. Admission to hospital may be for observation, monitoring or isolation and not necessarily because of severe condition.
- The likelihood of hospital admission for COVID-19 is likely to vary across countries and possibly even within countries.

Measurement notes:

Comments:

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.11: Proportion of COVID-19 cases requiring ICU and/or respiratory support

What it measures:
This indicator describes the severity of reported cases.

Rationale:
The proportion of COVID-19 cases requiring ICU and/or respiratory support is indicative of disease severity.

Numerator:
Number of cases admitted to Intensive Care Units or requiring respiratory support (extracorporeal membrane oxygenation, oxygen therapy or ventilation, including non-invasive positive pressure ventilation)

Denominator:
Number of cases with data on ICU admission and respiratory support.

Calculation:
Numerator * 100 / Denominator

Method of measurement:
N/A

Frequency of data collection:
Weekly

Direction of change:
Decrease or zero

Disaggregation:
- Sex
- Age (0-9, 10-19 years, etc.)
- Precondition

Monitoring level:
- Subnational
- National
- EU level

Source of data:
TESSy

Strengths and weaknesses:
Strengths:
- Both admission to ICU and requiring respiratory support are good proxies for severity.
- Criteria for ICU admission or respiratory support are likely to be relatively homogeneous across countries.

Weaknesses:
- The proportion of COVID-19 cases admitted to ICU highly depends on the testing strategy. If severe cases are more likely to be tested than cases with mild symptoms, then the proportion of cases in ICU will be high, regardless of the real proportion of severe cases.
- Both ICU beds capacity and technicity level (e.g. ECMO) may differ across countries/regions.

Measurement notes:

Comments:

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.12: Number of new probable and confirmed deaths from COVID-19

What it measures:
The mortality rate due to COVID-19.

Rationale:
Mortality is a key indicator of severity and a measure of effectiveness of control measures for COVID-19.

Numerator:
Number of probable and confirmed deaths due to COVID-19 in the previous week

Denominator:
Entire population

Calculation:
Numerator/Denominator * 1 000 000

Method of measurement:
Notification data

Frequency of data collection:
Weekly

Direction of change:
Decrease or zero

Disaggregation:
- Sex
- Age (0-9, 10-19 years, etc.)
- Region
- Preconditions

Monitoring level:
- Subnational
- National
- EU level

Source of data:
TESSy, epidemic intelligence data

Strengths and weaknesses:
The mortality rate depends on the intensity of testing of cases in hospitals as well as other settings which can have high mortality rates such as long-term care facilities. Inclusion of probable cases makes this indicator more comprehensive, however not all EU/EEA countries currently include reporting of probable cases. The case classification strategy may limit comparability between countries.

Measurement notes:

Comments:

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.13: Number of probable and confirmed deaths in long-term care facilities
What it measures: The number of deaths reported in long-term care facilities.
Rationale: A large proportion of COVID-19 deaths have occurred in long-term care facilities. Monitoring the number of deaths in such settings is essential to understand the effectiveness of control measures and to assess the burden of COVID-19.
Numerator: Number of deaths among probable and confirmed COVID-19 cases occurring in long-term care facilities during the previous week.
Denominator: N/A
Calculation: N/A
Method of measurement: Through surveillance of long-term care facilities or general national notifications systems
Frequency of data collection: Weekly
Direction of change: Decreasing or zero
Disaggregation: Not applicable
Monitoring level: • Subnational • National • EU level
Source of data: TESSy
Strengths and weaknesses: The case definitions for surveillance of deaths vary at national level, particularly on the inclusion of probable cases.
Measurement notes:
Comments: There is a lack of data at EU level on the impact of COVID-19 in long-term care facilities.

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.14: Crude case fatality rate (CFR) among confirmed COVID-19 cases

What it measures:
- The frequency of death among all diagnosed COVID-19 cases
- The frequency of death among hospitalised COVID-19 cases

Rationale:
To measure the disease severity during the course of the pandemic

Numerator:
- Deaths occurring from COVID-19 during the previous week
- Deaths occurring from COVID-19 among hospitalised cases during the previous week

Denominator:
- Total number of people diagnosed with COVID-19 during the previous week
- Total number of people admitted to hospital with COVID-19 during the previous week

Calculation:
Numerator/Denominator * 100

Method of measurement:
For the numerator: The number of people dying from COVID-19 can be obtained using a variety of measures, including through a vital registration system adjusted for misreporting, or as part of a facility- or population-based survey. Modelling tools using prevalence from surveys and surveillance and assumptions around known survival patterns can help estimate the mortality.
For the denominator: The total number of COVID-19 cases can be obtained through routine testing (for all cases and for hospitalised cases) or through seroprevalence studies (for all cases).

Frequency of data collection:
Monthly

Direction of change:
Lower=better

Disaggregation:
- Sex
- Age (0-9, 10-19 years, etc.)
- Place of residence
- Place of infection
- Date of onset
- Date of notification
- Pre-existing conditions
- Hospitalisation
- Admission to intensive care
- Respiratory support
- Outcome
- Healthcare worker status

Monitoring level:
- Subnational
- National
- EU level

Source of data:
- Hospitals
- Long-term care facilities
- ICU registries
- Vital registries
- Seroprevalence studies
- TESSy

Strengths and weaknesses:
- Testing may only occur in the very ill patients at the hospital, which does not capture milder cases, and therefore, the CFR appears higher than it may be in reality.
- Lack of widespread, systematic testing can lead to inaccurate figures across a population.
- Methods in recording deaths from COVID-19 may vary greatly and also lead to an inaccurate CFR.
- The case fatality rate among hospitalised cases may be less biased by testing practices although criteria for hospitalisation might vary.

Measurement notes:

Comments:
Allows for better comparability and understanding of reported surveillance data as well as mortality.

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.15: All-cause excess mortality per week
What it measures: Deviation in mortality from expected levels
Rationale: Enables monitoring of progression of pandemic by estimating real-time excess mortality above a baseline of deaths in countries
Numerator: Observed number of deaths during a specific week, adjusted for reporting delay
Denominator: Not applicable
Calculation: See https://www.euromomo.eu/how-it-works/methods/
Method of measurement: Mortality monitoring systems
Frequency of data collection: Weekly
Direction of change: Lower = better
Disaggregation: • Age (0-14, 15-44, 45-64, 65-74, 75-84, 85+ years)
Monitoring level: • Subnational • National • EU level
Source of data: EuroMOMO
Strengths and weaknesses: Not COVID-19 specific as includes all-cause mortality. Allows for better comparability of reported mortality in countries and not biased by testing and case classification strategies.
Measurement notes:
Comments:

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.16: Self-assessment at NUTS-2 level of transmission status
What it measures: Self-assessed transmission status of the population at NUTS-2 level
Rationale: Comparison of COVID-19 transmission status between different regions/countries
Numerator: N/A
Denominator: N/A
Calculation: N/A
Method of measurement: Self-assessment of transmission status reported to TESSy (TransmissionClassification)
Frequency of data collection: Weekly
Direction of change: Lower/ no cases = better
Disaggregation: • Community transmission • Clusters • Sporadic transmission • No cases
Monitoring level: • Subnational • National • EU level
Source of data: TESSy
Strengths and weaknesses: Strength • It provides a picture of the COVID-19 transmission status within a country on Subnational level. Weakness • Member States may use more detailed criteria, e.g. from contact tracing and outbreak investigations. • The fact that the criteria are not the same may make international comparison more difficult.
Measurement notes:
Comments: Allows for better understanding of reported surveillance data and transmission status.

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.17: Effective reproductive number (Rt)
What it measures: Average number of secondary cases caused by a single infected individual
Rationale: Provides information on the course of the pandemic and effectiveness of control measures
Numerator: N/A
Denominator: N/A
Calculation: N/A
Method of measurement: Modelling approaches
Frequency of data collection: Weekly
Direction of change: Lower Rt = better
Disaggregation:
Monitoring level: • Subnational • National • EU level
Source of data: TESSy
Strengths and weaknesses: Allows adjustment for the population susceptible to infection. Allows for better comparability and understanding of the transmissibility of COVID-19 as well as effectiveness of interventions.
Measurement notes:
Comments:

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.18: Use of specialised contact tracing software e.g. Go.Data

What it measures:
Whether specialised contact tracing software is used

Rationale:
Using contact management software facilitates the contact tracing process, coordination and follow-up in particular in scenarios with large number of daily cases.

Numerator:
N/A

Denominator:
N/A

Calculation:
Yes/No. If Yes: name of the software.

Method of measurement:
N/A

Frequency of data collection:
Quarterly

Direction of change:
N/A

Disaggregation:
N/A

Monitoring level:
- Subnational
- National

Source of data:
Public health authorities

Strengths and weaknesses:
Strength:
- Easy to measure

Weakness:
- Does not give indication on the extent to which the software is being used and how useful the software is to local contact tracing processes.

Measurement notes:

Comments:

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.19: Availability of mobile app(s) to complement manual contact tracing and proportion of population that has downloaded them

What it measures:
The proportion of the population that has downloaded the app to support contact tracing use.

Rationale:
Mobile apps to support contact tracing could help complement manual contact tracing and it is important to understand population coverage as it is related to effectiveness.

Numerator:
Number of people who have installed the app(s)

Denominator:
Total population

Calculation:
Number of people who have downloaded the app/total population

Method of measurement:
Data will be obtained from the app controller

Frequency of data collection:
Quarterly

Direction of change:
Higher proportion is better

Disaggregation:
Age

Monitoring level:
National

Source of data:
App controller (likely public health authority)

Strengths and weaknesses:
Strength:
- Easy to measure

Weakness:
- Does not give indication on how effective the mobile apps are in terms of identifying contacts and reducing transmission. ECDC guidance on mobile apps [6] gives more detailed recommendations on how to calibrate apps, and indicator 3.24 (*Proportion of all newly diagnosed cases that are part of known transmission chains)* can help evaluate their contribution to contact tracing.

Measurement notes:
Not applicable of countries that do not use mobile tracing apps

Comments:
Disaggregation may not be possible due to anonymity and privacy of apps. If possible, looking at this indicator by age could help and understand which age groups have less coverage of the app and where manual contact tracing would be particularly important.

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.20: Proportion of cases where contact tracing is initiated (interview with case by public health authorities) within 24 hours of diagnosis

What it measures:
This indicator measures the coverage and timeliness of contact tracing by looking at the proportion of cases for whom contact tracing is initiated in a timely way. It is a measurement of efficiency of operations as well as staff capacity.

Rationale:
To interrupt transmission contact tracing should be done for as many cases as possible as fast as possible.

Numerator:
Number of newly diagnosed cases for whom contact tracing was initiated within 24 hours.

Denominator: Number of newly diagnosed cases

Calculation:
Number of newly diagnosed cases interviewed within 24 hours/#newly diagnosed cases interviewed

Method of measurement:

Frequency of data collection:
Monthly

Direction of change:
Higher proportion is better

Disaggregation:
Age

Monitoring level:
- Subnational
- National

Source of data:
Public health authorities, laboratories.

Strengths and weaknesses:
Strength:
- A good measure to understand coverage and operational efficiency of the first part of contact tracing [7].

Weakness:
- If the proportion of cases for whom contact tracing is initiated in a timely manner is low further work is needed to understand why this is as it could be due to staff capacity, communication delays or other issues.

Measurement notes:

Comments:

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.21: Proportion of contact persons reached (contacted and provided with information) within 24 hours from interview with case

What it measures:
This indicator measures the coverage of contact tracing by looking at the proportion of contacts reached and how quickly they are reached. It is a measurement of efficiency of operations as well as whether staff capacity is adequate.

Rationale:
To interrupt transmission as many contacts should be reached as fast as possible with information about quarantine and follow-up.

Numerator:
Number of contact persons reached by public health authorities within 24h.

Denominator:
Number of contact persons identified for follow-up by public health authorities.

Calculation:
Number of contact persons reached within 24 hours/#contact persons identified for follow-up

Method of measurement:
Contact tracing database

Frequency of data collection:
Monthly

Direction of change:
Higher proportion is better

Disaggregation:
Age

Monitoring level:
- Subnational
- National

Source of data:
Public health authorities

Strengths and weaknesses:
Strength:
- A good measure to understand coverage and operational efficiency of the second part of contact tracing.

Weakness:
- If a low proportion of contacts are reached on time further work is needed to understand why this is as it could be due to staff capacity, communication delays or other issues.

Measurement notes:

Comments:

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.22: Proportion of contacts who develop laboratory-confirmed COVID-19 (at initiation of tracing and over the 14 days follow-up period)

What it measures:
This indicator measures the proportion of contacts identified who develop laboratory-confirmed COVID-19. This included the proportion of contacts who had symptoms already when they were reached by the contact tracing staff as well as the proportion who develop laboratory-confirmed COVID-19 during the follow-up period. The indicator measures the speed and efficacy of contact-tracing operations.

Rationale:
- The total proportion of contacts who have symptoms of COVID-19 at initiation of tracing and are confirmed to have COVID-19 later is important to understand whether public health authorities need to **speed up contact-tracing operations**.
- The total proportion of contacts who develop symptoms during the follow-up period and are confirmed to have COVID-19 later is important to understand whether public health authorities need to **adjust the definition of contact persons**.

Numerator:
A: Number of contact persons who had symptoms of COVID-19 when they were reached by the contact tracing staff and who were later confirmed to have COVID-19
B: Number of contact persons who develop laboratory-confirmed COVID-19 during the follow-up period (i.e. from the day they are contacted up to 14 days after the last exposure to the case).

Denominator:
A and B: Number of contact persons identified for follow-up by public health authorities.

Calculation:
A: Number of contact persons with symptoms (and confirmed to have COVID-19 later) at initiation of tracing/Number of contact persons identified for follow-up
B: Number of contact persons with symptoms (and confirmed to have COVID-19 later) during follow-up period/Number of contact persons identified for follow-up

Method of measurement:
Contact tracing database.
Some of this information can also come from mobile apps if used for contact tracing, depending on whether enough people consent to transmit this data to public health authorities.

Frequency of data collection:
Monthly

Direction of change:
A: Number of contact persons who had symptoms of COVID-19 when they were reached by the contact tracing staff: lower is better
B: Number of contact persons who develop laboratory-confirmed COVID-19 during the follow-up period: no direction preferred

Disaggregation:
- Age
- Also, consider looking specifically at risk groups, e.g. healthcare workers and other workers that are at high risk of transmitting to vulnerable groups.

Monitoring level:
- Subnational
- National

Source of data:
Public health authorities

Strengths and weaknesses:

Measurement notes:

Comments:

Pillar 3: Surveillance, rapid response teams and case investigation

Indicator 3.23: Proportion of contacts of COVID-19-positive contacts who develop laboratory-confirmed COVID-19
What it measures: This indicator measures the proportion of second-order contacts, i.e. contacts of the identified contacts with laboratory-confirmed COVID-19, who develop laboratory-confirmed COVID-19.
Rationale: If a high proportion of second-order contacts develop COVID-19 this indicates that contact-tracing operations are too slow and that contacts of confirmed cases are not reached and quarantined soon enough.
Numerator: Number of persons who are contacts of COVID-19-positive contacts (secondary contacts) and who are confirmed to have COVID-19
Denominator: Number of contact persons of contacts with laboratory-confirmed COVID-19.
Calculation: Number of second-order contacts who develop laboratory-confirmed COVID-19/Number of contact persons of contacts with laboratory-confirmed COVID-19
Method of measurement: Contact tracing database
Frequency of data collection: Monthly
Direction of change: Lower is better
Disaggregation: None
Monitoring level: • Subnational • National
Source of data: Public health authorities
Strengths and weaknesses: Strength: • Important way to measure actual outcome of contact tracing in terms of onward transmission. Weakness: • Might be hard to measure.
Measurement notes:
Comments:

Pillar 3: Surveillance, rapid response teams and case investigation

3.24: Proportion of all newly diagnosed cases that are part of known transmission chains (i.e. who have already been identified as a contact of a known case)

What it measures:
This indicator measures the proportion of newly diagnosed cases who had already been identified as a contact person to a confirmed COVID-19 case.
Public health authorities can also consider evaluating what proportion of people were identified as contacts by public health staff, by a mobile contact tracing app or both. This would measure the efficacy of the mobile apps in identifying additional contacts that were not reached by conventional contact tracing.

Rationale:
If a high proportion of newly diagnosed cases are identified as a contact person to a confirmed COVID-19 case this indicates that contact operations have good coverage. A low proportion on the other hand indicates that there is a lot of transmission in the community that is outside the reach of current contact-tracing operations.
Among the new cases who were known contacts, understanding what proportion were reached by conventional contact tracing, mobile apps or both will help the understanding of the additional contribution of mobile apps to the contact tracing effort, and also if there are any differences in the population reached by either method.

Numerator:
Number of newly diagnosed cases of COVID-19 who have already been identified as a contact to a confirmed case, whether by conventional contact tracing, mobile app or both.

Denominator:
Number of newly diagnosed cases of COVID-19

Calculation:
Number ofnewly diagnosed cases who are contact of a case/Number ofnewly diagnosed cases

Method of measurement:
Cross-check contact tracing database with database of newly diagnosed people. Note that this may not capture people who were traced and notified only by a mobile contact tracing app.
Survey a sample of newly diagnosed cases to ask if they had 1) been contacted by PH staff and informed they were a contact and/or 2) been alerted by their mobile app.

Frequency of data collection:
Monthly

Direction of change:
Higher is better

Disaggregation:
N/A

Monitoring level:
- Subnational
- National

Source of data:
Public health authorities

Strengths and weaknesses:

Measurement notes:

Comments:

Pillar 4: Vaccine monitoring (policy, coverage, safety, effectiveness and acceptance)

A future objective is to have a framework for monitoring vaccine deployment in Member States, for when vaccination becomes a key area for the COVID-19 response. The key indicators within this framework will continue to be developed in the following areas:

4.1 Robust surveillance systems

4.2 Post-marketing surveillance activities

4.3 Active and passive adverse events following immunisation (AEFI) monitoring

4.4 Robust and timely vaccination coverage data

4.5 Evidence-based decision-making

4.6 Legal and regulatory aspects, linked to vaccine deployment

4.7 Vaccine delivery and supply chain management

4.8 Behavioural research

4.9 Crisis communication plans

4.10 Ethical considerations and equal access to vaccination

Pillar 5: Testing policy and practice (WHO pillar 'national laboratories')

Indicator 5.1: National testing policies for: i) nucleic acid or antigen testing policy for infection detection for clinical care and case management; ii) systematic virological surveillance; iii) seroepidemiological surveys

What it measures:
Measures implementation of national testing policies for COVID-19/SARS-CoV-2 detection for clinical care and management, for systematic virological surveillance and for seroepidemiological surveys.

Rationale:
To ensure 1) national system of extensive testing policy and practice is in place for allowing appropriate patient care and disease control nationwide; and 2 & 3) monitoring epidemiological situation on population prevalence of infection and immunity

Numerator:
N/A

Denominator:
N/A

Calculation:
N/A

Method of measurement:
Self-reported status of availability of policies, their publication and implementation. Reference to published policies.

Frequency of data collection:
Monthly

Direction of change:
Increase indicates increased availability, publishing or use of testing policies

Disaggregation:
By topic/policy

Monitoring level:
- National
- EU

Source of data:
Subnational and national public health authorities

Strengths and weaknesses:
Strengths:
- Simple indicator giving an indication of testing policies in place; when links to existing policies are provided, then content review possible

Weaknesses:
- Does not describe the content of the policies without provided links
- Self-reported indicator, e.g. for practical implementation, is subjective.

Measurement notes:
Suggested scale: (0=not available; 1=published; 2=in use)

Comments:

Pillar 5: Testing policy and practice (WHO pillar 'national laboratories')

Indicator 5.2: Laboratory capability and proficiency for COVID-19 viral RNA/antigen testing

What it measures:
Gives an indication of quality assessment of the detection methods in use nationally

Rationale:
To monitor laboratory capability and quality

Numerator:
Number of laboratories participating in EQAs

Denominator:
Number of laboratories testing for SARS-CoV-2

Calculation:
- Number of laboratories participating in EQAs/ Number of laboratories testing for SARS-CoV-2 *100%
- Result in % is categorised into three levels of performance: no laboratory, some laboratories, all laboratories participated/ quarter

Method of measurement:
Reporting of laboratories quarterly participating in national or international EQAs for SARS-CoV-2 detection to national public health authorities

Frequency of data collection:
Quarterly

Direction of change:
Increase indicates increased participation in EQAs

Disaggregation:
Laboratory-level

Monitoring level:
National

Source of data:
Local and regional laboratories

Strengths and weaknesses:
Strengths:
- Number of laboratories participating in EQA easy to collect; participation is a good proxy measure of testing proficiency as medical laboratories accredit their testing services in accordance with ISO 17025/ISO 15189 or equivalent, which requires corrective measures for non-conformity of EQA test results

Weaknesses:
- Participation in EQA does not prove testing proficiency of the laboratory
- Indicator collection does not require proof of participation

Measurement notes:
Suggested scale: 0=none of laboratories participating in EQA; 1=some laboratories participating in EQA; 2=all laboratories participating in EQA

Comments:
For quality assurance, the rolling out of RT-PCR testing for SARS-CoV-2 infection to non-specialist laboratories beyond the licensed and accredited clinical laboratories may require extension of the national EQA programme coverage.

Pillar 5: Testing policy and practice (WHO pillar 'national laboratories')

Indicator 5.3: Laboratory capability and proficiency for COVID-19 antibody testing
What it measures: Gives an indication of quality assessment of the SARS-CoV-2 antibody detection methods in use nationally
Rationale: To monitor laboratory capability and quality
Denominator: Number of laboratories testing for SARS-CoV-2 antibodies
Calculation: • Number of laboratories participating in EQAs/ Number of laboratories testing for SARS-CoV-2 antibodies *100% • Result in % is categorised into three levels of performance: no laboratory, some laboratories, all laboratories participated/ quarter
Method of measurement: Reporting of laboratories participating in national or international EQAs for SARS-CoV-2 antibody detection to national public health authorities
Frequency of data collection: Quarterly
Direction of change: Increase indicates increased participation in EQAs
Disaggregation: Laboratory-level
Monitoring level: National
Source of data: Local and regional laboratories
Strengths and weaknesses: Strengths: • Number of laboratories participating in EQA easy to collect; participation is a good proxy measure of testing proficiency as medical laboratories accredit their testing services in accordance with ISO 17025/ISO 15189 or equivalent, which requires corrective measures for non-conformity of EQA test results Weaknesses: • Participation in EQA does not prove testing proficiency of the laboratory- indicator collection does not require proof of participation
Measurement notes: Suggested scale: 0=none of laboratories participating in EQA; 1=some laboratories participating in EQA; 2=all laboratories participating in EQA
Denominator: Number of laboratories testing for COVID-19
Comments: For quality assurance, the rolling out of antibody testing for SARS-CoV-2 infection to non-specialist laboratories beyond the licensed and accredited clinical laboratories may require extension of the national EQA programme coverage.

Pillar 5: Testing policy and practice (WHO pillar 'national laboratories')

Indicator 5.4: Testing capacity for case finding and management (not including surveys)

What it measures:
Detection/testing capacity

Rationale:
To monitor testing capacity for case finding and management as key factor for effective control and interpretation of incidence data.

Numerator:
Number of persons tested for SARS-CoV-2 viral RNA or antigen, per week

Denominator:
Not applicable.

Calculation:
Weekly cumulative Number of persons newly tested for SARS-CoV-2 viral RNA or antigen

Method of measurement:
Number of persons tested (number of PCR or antigen tests performed, de-duplicated for multiple testing by individual person)

Frequency of data collection:
Weekly

Direction of change:
Increase indicates increased testing volume or capacity

Disaggregation:
- by age group
- by sex
- by region
- by test type (place of test performance: laboratory, point-of-care or self-test)
- by care sector (primary care, hospital care, long-term care, community)

Monitoring level:
- Subnational
- National
- EU

Source of data:
Local, regional and national laboratories

Strengths and weaknesses:
Strengths:
- Number of tested persons per week gives an indication of national testing capacity on a weekly basis for public health managers. The ratio of weekly Number of tested persons per number of detected cases gives an indirect monitoring value of the adequacy of diagnostic capacity and intensity of case ascertainment.

Weaknesses:
- Disaggregation by age, sex, region, test and care type may be difficult to collect.

Measurement notes:
The quality of reporting this indicator can be scored with the following suggested scale: 0=weekly number of persons not reported to the national system; 1=weekly number of specimens tested reported at aggregated level to the national system; 2=weekly number of persons tested reported at aggregated level to the national system; 3=weekly number of persons tested reported disaggregated to the national system.

Comments:
It can also be expressed as testing rate per 100 000 or 1 million population: number of tested persons per week divided by total target population.

Pillar 6: Infection prevention and control

Indicator 6.1: Percentage of healthcare facilities with a policy for face mask wearing by all healthcare workers providing care to all patients

What it measures:
The percentage of healthcare facilities with a policy for all healthcare workers that provide care to patients/residents to wear medical masks, for both hospitals and long-term care facilities

Rationale:
In areas with community transmission of COVID-19, and given the importance of asymptomatic and pre-symptomatic transmission of COVID-19, all healthcare workers involved in clinical care should wear face masks for all routine activities as source control

Numerator:
Number of [(a) acute care hospitals; (b) long-term care facilities] with a policy for face mask wearing by all healthcare workers providing care to all [(a) patients; (b) residents]

Denominator:
Number of [(a) acute care hospitals; (b) long-term care facilities]

Calculation:
[Number of acute care hospitals (or long-term care facilities) with policy / total number of acute care hospitals (or long-term care facilities)] x 100

Method of measurement:
Hospital / LTCF monthly survey or surveillance of structure and process indicators

Frequency of data collection:
Monthly

Direction of change:
Higher = better.

Disaggregation:
Type of facility (Acute care hospital; Long-term care facility)

Monitoring level:
- Subnational (e.g. if hospital or LTCF coordination is regional competence; or only in areas with ongoing transmission of COVID-19)
- National
- EU (optional)

Source of data:
Repeated surveys / surveillance of structure and process indicators in hospitals and long-term care facilities.

Strengths and weaknesses:
Although this measures the dissemination of a best practice policy, it does not measure policy implementation (Yes/No answer at facility level). Numeric data at national/regional level, which can vary over time, permit granular comparison of Subnational regions or countries. However, this requires facility-level data collection.

Measurement notes:
At facility level, the response is Yes/No/Unknown, with aggregation of data and calculation of indicator at Subnational or national level.
In the numerator, the face masks can be of any type.

Comments:
Measures policy of generalised use of face masks for healthcare workers involved in clinical care in areas with community transmission, fundamental to prevent infection of HCWs and healthcare-associated spread of COVID-19, and especially crucial in long-term care facilities to prevent introduction of the virus, prevent further spread if introduced and prevent deaths. This is in line with ECDC IPC guidance[8] and WHO guidance on mask in the context of COVID-19 [9]. Countries/regions/facilities may consider to lift this practice in areas without community transmission for a prolonged period of time, under the condition that all patients with (mild) symptoms of acute respiratory infections are tested for COVID-19 by the community healthcare services (e.g. zero new cases for at least 14 days in the community).

Pillar 6: Infection prevention and control

Indicator 6.2: Respiratory protection equipment consumption

What it measures:
The quantity of respiratory protection (medical masks and FFP2/3 respirators) used by acute care hospitals and long-term care facilities per 1000 patient/resident-days

Rationale:
Respiratory protection equipment is vital IPC material for in COVID-19. This indicator can be used to
- identify, for risk managers, the Subnational regions that may require additional masks and respirators.
- identify, for preparedness, the respiratory protection requirements of acute care hospitals and long-term care facilities, to help ensure sufficient PPE for any future upsurge.
- identify healthcare facilities with no or very low use of respiratory protection and to investigate the reasons for their low use (e.g. no stock, no policy, low compliance, no cases)
- monitor consumption as a measure of compliance with mask use recommendations (complement to indicator 6.1)

Numerator:
Number of individual [(a) medical masks; or (b) FFP2/3 respirators] used or purchased within the past month

Denominator:
(a) Acute care hospitals: Patient-days, otherwise bed-days, otherwise patient admissions within the past month
(b) Long-term care facilities: resident-days within the past month

Calculation:
Numerator / denominator

Method of measurement:
Repeated surveys or surveillance of structure and process indicators in hospitals and LTCFs.

Frequency of data collection:
Weekly or monthly

Direction of change:
Context dependent. For monitoring of compliance with mask use recommendation (indicator 6.1), higher=better

Disaggregation:
- Type of facility (acute care hospital; long-term care facility)
- Type of respiratory protection (medical face masks; FFP2/3 respirators)

Monitoring level:
- Subnational
- National

Source of data:
Hospitals, LTCFs, regional/national authorities.
Consumption data can reflect different things. The recommended data sources for measurement at facility level are, in decreasing order of precision:
- number of masks/respirators actually used by healthcare workers during the time period
- number of masks/respirators delivered to wards by the central point in the hospital/LTCF (e.g. pharmacy) during the time period
- quantity ordered by the facility for a period of one month (or the monthly average)

Otherwise, measurement at (sub-)national level is possible if masks/respirators are procured at (sub-)national level and distributed to healthcare facilities. This may result in delayed reporting of denominator (bed-days) data, as it is not readily available at national level in all European countries.

Strengths and weaknesses:
This indicator will help ensure that healthcare workers have sufficient access to this vital pillar of IPC for COVID-19, both now and also in advance of any future surge in cases. However, the data are unlikely to identify thresholds for 'sufficient' use immediately, as this will require context-specific data.
Identifies, for risk managers, the Subnational regions that may require additional masks and respirators.
Identifies, for preparedness, the respiratory protection requirements of acute care hospitals and long-term care facilities, to help ensure sufficient PPE for any future upsurge.
Identifies healthcare facilities with no or very low use of respiratory protection and to investigate the reasons for their low use (e.g. no stock, no policy, low compliance, no cases)
Monitors consumption as measure of compliance with mask use recommendations (complement to indicator 6.1)

Measurement notes:
The accuracy of 'Number of individual [(a) medical masks; or (b) FFP2/3 respirators] used or purchased' can be at the level of box or package.
For example, if, in the last month, a facility has distributed or opened 10 boxes that contain 100 masks, the numerator would be '1 000/month'. This will be the same no matter whether 3 or 10 of those 10 boxes had been emptied. If no data are available on use, then report the number purchased. For example, if 20 boxes of 100 masks were bought in the last two months, the numerator would also be '1 000/month'.

Comments:

Pillar 6: Infection prevention and control

Indicator 6.3: Number of facilities without sufficient access to respiratory protection equipment, i.e. FFP2/3 respirator stock

What it measures:
The number of facilities (acute care hospitals and long-term care facilities) without sufficient access to respiratory protection equipment, i.e. stock of FFP2/3 respirators and medical masks.

Rationale:
Respiratory protection equipment is vital IPC material for in COVID-19. Early in the pandemic there was insufficient stock for all healthcare facilities, in Europe and globally.
This indicator will be used to identify PPE needs. This indicator complements indicator 6.2 (consumption of respiratory equipment), amongst others.

Numerator:
The number of [(a) acute care hospitals; and (b) long-term care facilities] with access to stocks [(a) FFP2/3 respirators; and (b) medical masks] sufficient to cover all current needs according to locally applicable guidelines.

Denominator:
N/A

Calculation:
Number of facilities.
Percentages/proportions of facilities can be calculated using the denominators acquired through other indicators, for example total number of (a) acute care hospitals; and (b) long-term care facilities

Method of measurement:
Hospital surveillance

Frequency of data collection:
Weekly

Direction of change:
Up = requires action to remedy the situation.

Disaggregation:
- Type of facility (Acute care hospital; Long-term care facility)
- Type of respiratory protection (Medical face masks; FFP2/3 respirators)

Monitoring level:
- Subnational
- National

Source of data:
Hospitals, regional/national authorities

Strengths and weaknesses:

Measurement notes:
'Current needs' should be defined according to locally-applicable guidelines.

Comments:
These data can be used in conjunction with data on consumption of respiratory PPE (indicator 6.2). If indicator 6.2 is not included in national/Subnational data collection, this indicator can be used as the minimal indicator to identify respiratory PPE requirements.

Pillar 6: Infection prevention and control

Indicator 6.4: Proportion of primary care practices that are closed because of COVID-19 (e.g. insufficient access to personal protective equipment)
What it measures: Proportion of primary care practices that are closed because of COVID-19, for reasons including insufficient access to personal protective equipment, insufficient staff with training in use of PPE, staff absenteeism.
Rationale: Continuity of the primary healthcare system is crucial in-and-of itself, and vital for COVID-19 case detection and contact tracing in this phase of the epidemic. This indicator will be used as a proxy indicator, combined with other indicators, to monitor the general return of the entire healthcare system to pre-pandemic functionality.
Numerator: Number of general practices/clinics closed for at least a week due to COVID-19
Denominator: Total number of primary care practices/clinics
Calculation: [Numerator/denominator] x 100
Method of measurement: Survey
Frequency of data collection: Monthly
Direction of change: Less=better
Disaggregation: N/A
Monitoring level: • Subnational • National Level depends on administrative level which has coordination of primary care as competence.
Source of data: Repeated survey in primary care
Strengths and weaknesses: Insufficient access PPE is a specific issue that can be remedied through intervention. Clearly, the national mechanisms for primary care facilities to report this impactful scenario should be faster than monthly. Monthly reporting allows countries to plot trends, including the rate of change.
Measurement notes: The indicator measures closure of 'at least one week' rather than a shorter period to aid feasibility of data collection.
Comments:

Pillar 6: Infection prevention and control

Indicator 6.5: Proportion of primary care providers that participated in training for COVID-19

What it measures:
Number of healthcare workers in primary care (i.e. general practices/clinics, dentist practices/clinics, community nurses) who have been confirmed to have participated in training for COVID-19.

Rationale:
IPC education and training should be a part of an overall health facility education strategy, including new employee orientation and the provision of continuous educational opportunities for existing staff, regardless of level and position (for example, senior administrative and housekeeping staff). This indicator monitors the provision of capacity building activities by WHO.

Numerator:
Number of healthcare practitioners in primary care who attended training in COVID-19 within the timescale of the current survey

Denominator:
Number of HCWs working in primary care

Calculation:
Numerator/Denominator

Method of measurement:

Frequency of data collection:
Monthly

Direction of change:
higher = better

Disaggregation:
N/A

Monitoring level:
- Subnational
- National

Source of data:

Strengths and weaknesses:
Strength:
- This indicator aims to give an indication of the dissemination of current IPC for COVID-19 to those who will enact it.
- Acquiring data on how many healthcare workers are trained in appropriate IPC for COVID-19 will indicate how many still require training.

Weakness:
- There will be difficulties in validating that quality of training and training materials; acquiring data on participation in training; and measuring the degree that learning objectives were assimilated by participants.

Measurement notes:
WHO definition: 'Training can be either in person or online (given the increasing reliance on remote/home working). If online, it should be part of a training programme/strategy developed by relevant actors, such as national government, national and international partners, individually or in collaboration. A list of invited participants should be available for online trainings, and a mechanism to confirm their participation to the training should exist. Open and publicly available webinars are not included. Health workers include both facility-based staff and community health workers.'
Primary care includes GPs, dentists, pharmacists, and non-facility care, including community and home care. For the purposes of this monitoring framework, long-term care is classified as healthcare.

Comments:

Pillar 7: Case management

Indicator 7.1: Median time from date of onset of COVID-19 symptoms to date of diagnosis
What it measures: Median number of days from date of onset of COVID-19 symptoms to date of laboratory confirmation of COVID-19
Rationale: This is an indicator of delays in diagnosis that may be associated with increased transmission and unfavourable outcomes.
Numerator: N/A
Denominator: N/A
Calculation: Median (date of diagnosis – date of symptom onset)
Method of measurement: Surveillance
Frequency of data collection: Weekly
Direction of change: Lower = better
Disaggregation: • Sex • Age (0-9, 10-19 years, etc.)
Monitoring level: • Subnational • National • EU level
Source of data: Surveillance
Strengths and weaknesses: Data on date of symptom onset may be difficult to collect and/or missing.
Measurement notes: In some countries, characteristic findings on a chest CT-scan may be considered diagnostic of COVID-19, without the need for laboratory confirmation. If date of onset is not available, surrogates can be the date of first contact with healthcare services (including telemedicine), the date of start of treatment, or the date of specimen collection; whichever comes first.
Comments:

Pillar 7: Case management

Indicator 7.2: Median time from date of onset of symptoms to date of hospitalisation, for patients admitted to hospital

What it measures:
Median number of days from date of onset of COVID-19 symptoms to date of hospitalisation, for patients admitted to hospital.

Rationale:
Measuring the time from date of onset of COVID-19 symptoms to date of hospitalisation is an indicator of delays in hospitalisation that may be associated with increased transmission and unfavourable outcomes.
This indicator is based on variables included in the WHO case-based reporting form (REF), and currently collected in ECDC case-based data collection of COVID-19 in TESSy.

Numerator:
Date of diagnosis – date of symptom onset

Denominator:
N/A

Calculation:
Median (date of diagnosis – date of symptom onset)

Method of measurement:
Hospital surveillance

Frequency of data collection:
Weekly

Direction of change:
Lower = better

Disaggregation:
- Sex
- Age (0-9, 10-19 years, etc.)

Monitoring level:
- Subnational
- National
- EU level

Source of data:
Surveillance, hospitals

Strengths and weaknesses:
Data on date of symptom onset may be difficult to collect and/or missing.

Measurement notes:
If date of onset is not available, surrogates can be the date of first contact with healthcare services (including telemedicine), the date of start of treatment, or the date of specimen collection; whichever comes first.

Comments:

Pillar 7: Case management

Indicator 7.3: Percentage of possible cases that were tested for COVID-19

What it measures:
Percentage of possible cases that were tested for COVID-19

Rationale:
Measuring the percentage of possible cases tested for COVID-19 is an indicator of the testing intensity and the extent of potential under-diagnosis that may also have consequences for control of transmission through contact tracing.

Numerator:
Number of possible cases that were tested for COVID-19

Denominator:
Total number of possible cases

Calculation:
Number of possible COVID-19 cases that were tested for COVID-19 x 100 / total number of possible COVID-19 cases

Method of measurement:
Different methods can be applied depending on the setting and the organisation of first-line testing at national – subnational level and data collection, storage and management.

- Repeated surveys among a representative sample of primary care providers and/or COVID-19 testing facilities to measure:
  - For the denominator, the number of possible cases including cases advised to stay at home through telemedicine without being tested and
  - For the numerator, the number of possible cases that were tested for COVID-19 excluding persons that were tested without fulfilling the criteria for a possible case (e.g. prevalence surveys or drop-in testing without requirement of symptoms or epidemiological link)
- Laboratory or testing centre registries, where they can capture patients with symptoms that were not offered testing

Frequency of data collection:
Monthly

Direction of change:
higher = better

Disaggregation:
N/A

Monitoring level:

- Subnational
- National

Source of data:
Survey in a representative sample of primary care providers and/or testing centres, laboratory registries, testing centre registries

Strengths and weaknesses:
Strength:

- Intensive testing allows early detection of COVID-19 cases with benefits for earlier treatment and containment of spread through contact tracing.
- The information is also very valuable for the interpretation of reported incidence of COVID-19.

Weakness:

- The total number of possible cases may be difficult to collect and not available. The availability of data depends on whether information on possible cases is registered. Organising special surveys may be necessary to collect the information.

Measurement notes: See above in method of measurement

Comments: This indicator is also important for pillar 5 (testing policy)

Pillar 7: Case management

Indicator 7.4: Percentage of hospitalised confirmed cases that were enrolled in a randomised control trial for COVID-19 treatment

What it measures:
Percentage of hospitalised confirmed cases that were enrolled in a randomised control trial for COVID-19 treatment

Rationale:
So far, there is no proven effective etiologic treatment for COVID-19. Some antiviral agents are administered in randomised clinical trials. Enrolment in such trials is needed to ensure use of novel antivirals under the best possible circumstances and with adequate monitoring that can also provide useful information for future use.

Numerator:
Number of hospitalised confirmed cases that were enrolled in a randomised control trial for COVID-19 treatment

Denominator:
Total number of hospitalised confirmed cases

Calculation:
Number of hospitalised confirmed cases that were enrolled in a randomised control trial for COVID-19 treatment x 100 / total number of hospitalised confirmed cases

Method of measurement:
Hospital surveys

Frequency of data collection:
Monthly

Direction of change:
Higher = better

Disaggregation:
N/A

Monitoring level:
- Subnational
- National

Source of data:
Hospitals, clinical trial registries

Strengths and weaknesses:
Enrolment in clinical trials is needed to ensure use of novel antivirals under the best possible circumstances and with adequate monitoring that can also provide useful information for future use.
Access to randomised clinical trials may not be uniform across Europe or across various regions in a country.

Measurement notes:
Can be combined with other indicators collected through hospital surveys

Comments:
N/A

Pillar 7: Case management

Indicator 7.5: Number of health workers trained in case management of COVID-19 cases (WHO)
What it measures: Number of health workers trained in case management of COVID-19 cases (WHO) per 1 000 health workers
Rationale: Training of health workers in the case management of COVID-19 is crucial to ensure the best possible management of COVID-19 patients and reduce mortality by COVID-19.
Numerator: Number of health workers (nursing professionals and doctors) trained in case management of COVID-19
Denominator: Total number of health workers (nursing professionals and doctors)
Calculation: Number of health workers (nursing professionals and doctors) trained in case management of COVID-19 x 1 000 / total number of health workers (nursing professionals and doctors)
Method of measurement: Training can be either in person or online (given the increasing reliance on remote/home working). If online, it should be part of a training programme/strategy developed by relevant actors such as national government, national and international partners, individually or in collaboration. A list of invited participants should be available for online trainings, and a mechanism to confirm their participation to the training should exist. Open and publicly available webinars are not included [1].
Frequency of data collection: Monthly
Direction of change: Higher = better
Disaggregation: N/A
Monitoring level: • Subnational • National
Source of data: Hospitals, community care administration
Strengths and weaknesses: Training modalities, content and duration may differ significantly and cannot be assessed by this indicator
Measurement notes: N/A
Comments: This indicator is among the indicators proposed in the monitoring and evaluation framework of WHO. We propose measurement on a monthly basis instead of on a weekly basis as proposed in the WHO framework.

Pillar 8: Maintaining essential health services and systems

Indicator 8.1: Occupancy rate of total Intensive Care Unit (ICU) beds (overall and for COVID-19 patients)
What it measures: Percent occupancy rate of ICU beds
Rationale: Measuring the occupancy rate of ICUs is the main indicator of the remaining capacity of the healthcare system to provide care to critically ill COVID-19 patients.
Numerator: Number of occupied ICU beds (number of patients currently in the ICU)
Denominator: Total number of operational ICU beds, including ICU beds that were deployed for surge capacity
Calculation: (Number of occupied ICU beds at a specific time point in the week (e.g. at 00:01 AM on Wednesday) x 100)/total number of ICU beds) OR (Number of occupied ICU bed days during the last 7 days x 100 /(total number of ICU beds x 7)
Method of measurement: Reporting by hospitals
Frequency of data collection: Weekly to EU level, recommended daily at national and subnational level
Direction of change: Lower = better
Disaggregation: N/A
Monitoring level: • Subnational • National • EU level
Source of data: Hospitals
Strengths and weaknesses: Principal indicator of the health system capacity for treatment of severely ill COVID-19 patients providing the remaining capacity for intensive care The denominator (total number of available ICU beds) expressed by 100 000 population is also an indicator of the baseline ICU capacity of the healthcare system.
Measurement notes: ICU beds that cannot be operated (e.g. due to missing staff or equipment) should only be included in the denominator if staff and equipment capacity can be increased when needed. The indicator should be measured daily at the national and subnational levels
Comments: Reporting ICU occupancy rates and capacity at the EU level may be sensitive but is crucial to follow-up the most critical element of healthcare system capacity The percentage of ICUs with 100% occupancy rate may be used as a more feasible surrogate indicator.

Pillar 8: Maintaining essential health services and systems

Indicator 8.2: Number of registered visits to primary care

What it measures:
Number of registered visits to primary care per 100 000 population

Rationale:
Measuring the number of registered visits to primary care is an indicator of the use of primary care services that can indicate high use in periods of epidemic exacerbation or underuse due to stay-at-home recommendations or fear of patients to use primary care services. Underuse may lead to delays in diagnosis and treatment of other treatable diseases.

Numerator:
Number of registered visits to primary care

Denominator:
Total population

Calculation:
Number of registered visits to primary care x 100 000 / total population

Method of measurement:
Depends on data source

Frequency of data collection:
Monthly

Direction of change:
Depends on baseline

Disaggregation:
N/A

Monitoring level:
- Subnational
- National

Source of data:
Health insurance providers, health registries, electronic prescription systems, electronic general practice databases, representative surveys in primary care services if needed

Strengths and weaknesses:
Strength:
- Continuity of services is crucial during the COVID-19 pandemic. Visits in primary care are a strong indicator of the continuity of services. Monitoring the number of primary care visits can provide insights into the impact of COVID-19 on health system capacity to provide routine services.

Weakness:
- Not all primary care visits may be registered. Data may not be available or easy to collect. There is no gold standard.

Measurement notes:

Comments: Comparisons with baseline would be most informative. Data from electronic prescription systems can be used as a surrogate of primary care visits. Collection of data is facilitated by the availability of digital registries.

Pillar 8: Maintaining essential health services and systems

Indicator 8.3: Measles incidence and proportion of all cases among unvaccinated children whose first dose of MMR was due during the COVID-19 pandemic

What it measures:
Ability of health system to secure and maintain other essential preventive health programmes during the outbreak

Rationale:
Once introduced into a population, measles is very effective at identifying existing immunity gaps and so measles outbreaks are a proxy for suboptimal vaccination coverage. Observing a stable incidence and stable proportion of measles cases among unvaccinated children whose routine first dose of MMR coincided with the COVID-19 pandemic, is an indication of the maintenance of vaccination programmes, despite COVID-19. This is indicative of the system's ability to maintain essential health programmes during the outbreak. Case-based data for measles submitted to ECDC are analysed and reported on a monthly basis, making this more a timely indicator than annually-collected vaccination coverage data

Numerator:
Number of measles cases among children who were at the age eligible for the first dose of MMR (between 9-18 months, depending on the country) during the COVID-19 pandemic

Denominator:
Number of children born 9-18 months (depending on the country) prior to the COVID-19 pandemic. The 2019 birth cohort could be used to approximate this if granular denominator information is unavailable.

Calculation:
N/A

Method of measurement:
Quantitative

Frequency of data collection:
Quarterly
Annual adjustment of data

Direction of change:
Lower = better

Disaggregation:
N/A

Monitoring level:
- National
- EU level

Source of data:
National Level: national measles surveillance system
EU level: ECDC TESSy

Strengths and weaknesses:
Strength:
- Measles surveillance systems are well established and robust, so there will be no additional data collection burden and minimal additional workload for analyses of the data.

Weakness:
- Indicator relies on timely reporting of measles cases, which might be a challenge if resources are limited due to re-direction of resources to respond to the COVID-outbreak.
- This indicator may lack sensitivity, as the likelihood of exposure to measles by un- or under-vaccinated cohorts depends on the level of immunity in the rest of the population and the risk of introduction into an area where it is not currently circulating.
- Population immunity is likely to be relatively high among many EU/EEA countries that may been declared to have eliminated measles and have achieved sustained high vaccination coverage, so children who have missed vaccination will enjoy greater indirect protection than in those where measles remains endemic.
- Reduced travel may lower the risk of importation of measles from areas where the measles virus is circulating.
- The level of background circulation in the EU/EEA appears be lower in 2020 than in previous years; this is expected given the cyclical nature of measles outbreaks (large numbers of cases were reported between 2016 and 2019), although it is likely that measles reporting has been affected by the COVID-19 epidemic.
- Qualitative additional information on the groups affected by outbreaks may be needed to assist interpretation, for example, where low incidence countries experience outbreaks in communities historically averse to vaccination.
- Measles has a seasonal pattern which would need to be taken into account in the analysis.

Measurement notes:

Comments:

Pillar 8: Maintaining essential health services and systems

Indicator 8.4: Diphtheria-tetanus-pertussis (DTP)-3 vaccination coverage in children under 12 months of age
What it measures: Ability of health system to secure and maintain other essential preventive health programmes during the outbreak
Rationale: A high vaccination coverage indicates that the system was responsive and able to provide essential health programmes (particularly for children) during the outbreak.
Numerator: Number of children under the age of 12 months who received the third dose of DTP vaccine during the month
Denominator: Estimated population under the age of 12 months in the areas from which the numerator is provided (* the number of months in the numerator/12)
Calculation: N/A
Method of measurement: Quantitative
Frequency of data collection: Quarterly Quarterly
Direction of change: Higher = better
Disaggregation: N/A
Monitoring level: • National
Source of data: National vaccination coverage data
Strengths and weaknesses: Strengths: • Allows for identifying partial birth cohorts that might have been affected / missed vaccination due to challenges in the provision health system services Weakness: • Indicator relies on regular reporting/collection of vaccination coverage
Measurement notes: DTP3 is the third dose of the DTP vaccine given to children under 12 months of age.
Comments: Based on the countries vaccination registry systems, some have possibility to check coverage on weekly basis (e.g. electronic systems). This is a WHO Framework indicator [1].

Consulted experts

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