**COVID-19** | RESOLVE TO SAVE LIVES ❖ Vital Strategies

**Annex 1:** How to create a COVID-19 alert-level system and supporting communication tools in resource-constrained settings
**This is version 1.0. We're making significant revisions and will release version 2.0 soon. Updated June 1, 2020.**

# Step 1: Use evidence-based indicators to develop thresholds tailored to local context for all categories of the alert system

Alert levels should be tailored to local context and agreed upon by a multi-stakeholder group. Before deciding on the thresholds for levels, you should ensure you are able to capture data regularly and be able to analyze and share it consistently. Complete the full checklist from the Alert-Level Guide.

**Below is an example of an alert-level system with indicators and thresholds for a resource-constrained setting**

## Example: COVID-19 Alert-Level Indicators, Triggers and Thresholds*

| Category | Key question | Indicator | Triggers to raise to a higher level (e.g., 2->3) | Triggers to lower level (e.g., 4->3) | Indicator threshold for each level | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Level 1 New normal | Level 2 Moderate Alert | Level 3 High Alert | Level 4 Very High Alert |
| Disease situation | What is the level of disease burden and how is it changing? | Daily case incidence* (new cases per 1 million people per day)** | Increasing to meet new threshold over a 7-day period | Decreasing to meet new threshold over a 14-day period | <10/1M/day | 10-19/1M/day | 20-39/1M/day | 40/1M/day or higher |
| | Are there early signs of a resurgence in cases? | Syndromic data (Influenza-like illness or COVID-19 like illness) | Increasing over a 5-day period | N/A | Near seasonal average | Near seasonal average | Near seasonal average or above seasonal average and declining | Above seasonal average or rising |
| Health care system capacity | Can we provide adequate care for COVID-19 cases?*** | Case fatality ratio | Meet specified threshold over a 7-day period | Meet specified threshold over a 14-day period | < 1% | 1.%-3% | 3%-5% | >6% |
| | Are we protecting healthcare workers? | Number of healthcare worker infections | Increasing over a 7-day period | Decreasing over a 7-day period | No health care worker infections | Decreasing | Decreasing | Increasing or unknown |
| | Are essential health services still functioning? | Vaccine coverage | Change in % of population which received measles-containing-vaccine first-dose (MCV1) | Increase % over reporting period | <5% decrease | 5-9% | 10-19% | >20% decrease |
| Disease control | Are we testing enough to detect cases? | Percentage of tests that are positive | Increasing over a 7-day period | Decreasing over a 7-day period | < 5% | 5-9% | 10-14% | 15% or higher |
| | | Total testing per 1,000 people per day | Meet threshold over a 7-day period | Meet threshold over a 7-day period | >7 | 3-7 | 1-3 | <1 per 1000 average per day |
| | Do we have robust contact tracing? | Percent of new cases from quarantined contacts | Meet specified threshold over a 7-day period | Meet specified threshold over a 7-day period | 50% or more | 30-49% | 10-29% | <10% |

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## Example – COVID–19 Alert-Level Indicators, Triggers and Thresholds*
### Context Indicators – Economic and Social**** (cont'd)

| Category | Key question | Indicator | Triggers to raise to a higher level (e.g., 2->3) | Triggers to lower level (e.g., 4->3) | Indicator threshold for each level | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | **Level 1 New normal** | **Level 2 Moderate Alert** | **Level 3 High Alert** | **Level 4 Very High Alert** |
| | | | | **Context Indicators****** | | | | |
| Economic | **Are public health and social measures impacting household economic security?** | Percentage of households with weekly income below pre-COVID-19 average OR proxied by number of new applications for social assistance or insurance benefits | Increasing % of households facing income shock | Decrease % of households facing income shock | <5% of HHs reporting COVID-related income loss or unemployment | 5-15% of HHs reporting COVID-related income loss or unemployment | 15-30% of HHs reporting COVID-related income loss or unemployment | >30% of HHs reporting COVID-related income loss or unemployment |
| | **Are households food secure?** | Percentage of households that are skipping meals/reducing portions | Increase of days HH skipping meals | % of households are not skipping meals | Stable for seasonality | > 20% of HHs skipping meals 1-4 days/week | > 20% of HHs Skipping meals 3-5 days/week | > 20% of HHs Skipping meals daily |
| Social | **Does the public support public health and social measures?** | Percentage of adults who support PHSM | Decrease in support for key PHSM measures | Support for PHSMs is stable or improving | Very High (e.g., >80%) | High (e.g., 79%-60%) | Moderate (e.g., 60%-40%) | Low (e.g., >40%) |
| | **Increase in violence or crime that is related to public health and social measures?** | Proportion of security incidents that can be directly linked to COVID–19 response | Stable or manageable social situation | Worsening social situation | Stable or similar to pre COVID rates | Increase in size or frequency of nonviolent protests | Increase in size or frequency of violent protests and security incidents | Regular violent protests and security incidents |

\*      In absence of reliable data on new cases, daily trends in new hospitalizations and/or deaths should be monitored. Trend data can be calculated in a variety of ways, including count comparisons, moving averages and modeling trajectories. Any method used should address how to handle reporting variations, incidence plateaus, and near-zero incidence.

\*\*     Consider the heterogeneity and population density of the setting when determining risk level. If an isolated confined outbreak or rural area (e.g. population ‹50 per square mile), this generally has lower transmission risk than if a distributed pattern throughout community or a dense area

\*\*\*    The true infection fatality rate is estimated at 0.1-1.3%, but many cases can go undetected (either because cases are mild, presymptomatic or asymptomatic; or due to inadequate lab testing) which makes it difficult know the true IFR. As the Case Fatality Ratio is based on the reported cases and deaths, a high CFR can be indicative of underreporting of confirmed cases.

\*\*\*\*   Context indicators, including economic and social data, allow decision-makers to understand the burden of public health and social measures (PHSMs) on the communities and their ability to adhere. Context indicators should be considered before changing alert levels – in particular, tightening the PHSMs to allow decision-makers to reduce the negative impact of PHSM and improve public adherence and public health impact of the PHSMs.

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# Step 2: Translate each level into clear actions for communities

Once categories and thresholds have been determined by the multi-stakeholder group, simplify the matrix to share with the public and non-technical specialists. Having a simplified, but comprehensive version of the thresholds will ensure accountability and understanding of the levels and the science and evidence behind decisions. Including the key criteria per level as well as clear actions for individuals and communities is important to support community engagement and action. Inform the community on who will decide when the levels will change and how often they will be reviewed. This will build trust in the system and improve understanding and adherence.

## Example: COVID-19 Alert-Level System for Accountability and Transparency

| Alert level | COVID-19 situation and Action | Key Guidance |
|---|---|---|
| **Level 4 Very High Risk** | Widespread uncontrolled outbreak that is growing with many undetected cases. **Take strong measures to limit all contact.** | • **All individuals** should shelter in place when possible. <br> • **All individuals** should wash hands, cover coughs, wear a mask in public, stay home if sick, maintain physical distancing, keep surfaces clean. <br> • **Mass gatherings** should be cancelled <br> • **Schools closed** (i.e. learning or radio) <br> • Only **essential services** should be open <br> • **Modified healthcare services** (e.g. telemedicine, essential care) <br> • **No visits** to congregate facilities (e.g. boarding houses or prisons) <br> • Recreation locally with safety measures* (e.g. walking) |
| **Level 3 High Risk** | Many cases, including spread in the community, with some undetected cases. Some control measures in place. **Limit everyday activities to increase safety.** | • **High-risk individuals**** should stay at home or shelter whenever possible. <br> • **All individuals** should wash hands, cover coughs, wear a mask in public, stay home if sick, maintain physical distancing, keep surfaces clean <br> • **Schools closed** (e-learning or radio) <br> • General public should **limit non-essential travel** and attend only small gatherings* <br> • Businesses open with safety measures (e.g. distancing)* <br> • **Modified healthcare services** (e.g. telemedicine, essential care)* <br> • **Essential visit** to congregate facilities only (e.g. boarding houses, prisons)* <br> • Recreation expanded with safety measures (e.g. low risk)* |
| **Level 2 Moderate Risk** | Moderate number of cases, with most cases from a known source and control measures in place. **Continue efforts to limit personal exposure.** | • **High-risk individuals**** should stay at home or shelter whenever possible. <br> • **All individuals** should wash hands, cover coughs, wear a mask in public, stay home if sick, maintain physical distancing, keep surfaces clean <br> • **General public** can travel outside home with safety measures <br> • **Schools open** with safety measures, no vulnerable staff or students* <br> • **General public** can travel outside of home and attended mid-size mass gatherings, with safety measures* <br> • **Businesses open** with safe measures (e.g. distancing)* <br> • **Healthcare services** with safety measures (e.g. elective procedures) <br> • **Essential visits** only to congregate facilities (e.g. boarding houses, prisons) <br> • Recreation with safe measures |
| **Level 1 New Normal** | Cases are rare and transmission controlled. **Take everyday precautions.** | • **Individuals** should continue to wash hands, cover coughs, stay home if sick, maintain physical distancing, keep surfaces clean and wear a mask if sick <br> • **Schools, businesses, healthcare services, mass gatherings and recreation** open with safety measures <br> • Minimal safe visits to **congregate facilities** (e.g. prisons) |

* Safety measures include appropriate measures to reduce transmission such as: Reducing occupancy, staggering shifts, working remotely, physical distancing, separating customers from employees, reducing public transportation use, screening employees, working in lower transmission geographic areas, reducing risk to vulnerable groups, keeping places clean with routine cleaning and disinfection, providing necessary supplies and equipment (e.g. sanitizer).
** 55 and older, those with underlying conditions or immunocompromised

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## Step 3: Develop communication tool and roll out plan so the community understands the system and the behaviors expected

To support clear and consistent communication, simplify the levels and key actions further.  This simplified version should be shared widely including on posters, pamphlets and on social media. It should be explained by trusted health authorities on mass media to explain the levels and what they mean for communities.

It can be useful to provide clear guidance for specific behaviors such as how to open business or clarity on when mask wearing by the community is expected.  South Africa example.

### Example: COVID-19 Alert-Level System Summary Communication Tool

### Suggested guidance for wearing face masks or face coverings

| If well and | Physical distancing possible | Level 1 | Level 2 | Level 3 | Level 4 |
|---|---|---|---|---|---|
| | | COVID-19 Alert Level | | | |
| Outdoors | Yes | No | No | No | Yes |
| Outdoors | No | No | Yes* | Yes | Yes |
| Indoors | Yes | No | No | Yes | Yes |
| Indoors | No | No | Yes | Yes | Yes |
| Home (if everyone well) | - | No | No | No | No |
| If sick | - | Yes | Yes | Yes | Yes |



**COVID-19 risk alert levels**

LOGO        ORGANIZATION LOGO

**Alert Level 4** — Very High Risk — Widespread outbreak that is growing with many undetected cases. **Take strong measures to limit all contact.**

**Alert Level 3** — High Risk — Many cases including community spread, with undetected cases likely. **Limit everyday activities to increase safety.**

**Alert Level 2** — Moderate Risk — Moderate number of cases with most cases from a known source. **Increase efforts to limit personal exposure.**

**Alert Level 1** — New normal — Cases are rare and contact tracing can be used to control the virus. **Take everyday precautions.**

EMERGENCY SUPPORT TEXT OR CALL
000 000 000
GOVERNMENT.COM

STAKEHOLDER LOGOS

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# Implementation - how to determine the current alert level

Daily monitoring of core indicators should occur on a dashboard by the Emergency Operations Center's incident management team as part of a daily briefing. If an indicator meets a trigger level, a review of the current threshold by the established authority should occur. Health indicators should be considered in the overall context of social and economic indicators before an alert level change is made.

## For overall system alert level changes, some general principles apply

a. Convene leadership and a multisectoral advisory group to discuss and agree on the anticipated change in levels.
b. Avoid making changes more than every two weeks, to allow for a proper communications and engagement strategy to be developed.
c. Start the appropriate response measures within two days of announcing a level change to ensure communities can prepare.
d. The review process and the reason for the change in level should be clearly communicated and available for the public to review.

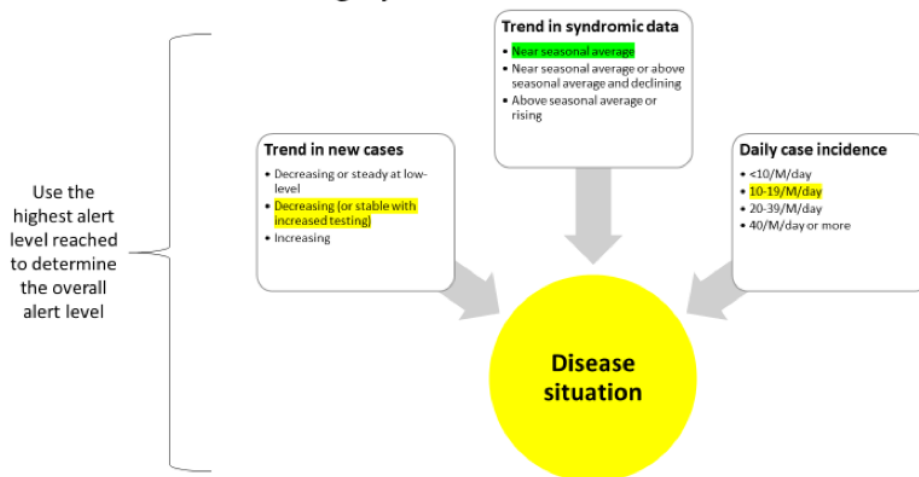## Daily Review of Dashboard indicators

1. **First, determine the alert level for each category:**
   a. If any indicator is red, then the category indicator is red.
   b. If none are red, then use the highest alert level to determine the overall level.
      i. For example, for the disease situation category:
         1. Trends in new cases are declining (yellow).
         2. Influenza like illness data is near seasonal average (green).
         3. The Level of disease burden is 14/M/day (yellow).
      ii. Then the category color is yellow since the highest value reached in any one indicator is yellow (see Figure).
   c. All indicators in a category must be green for the category level to be green.

2. **Your results should be alert levels for each category, for example:**



Disease situation | Healthcare system capacity | Disease control | | Economic situation | Social situation



Determinants of the category alert-level

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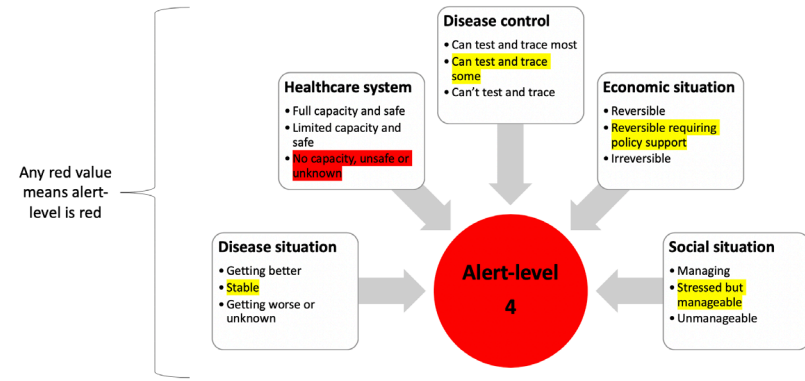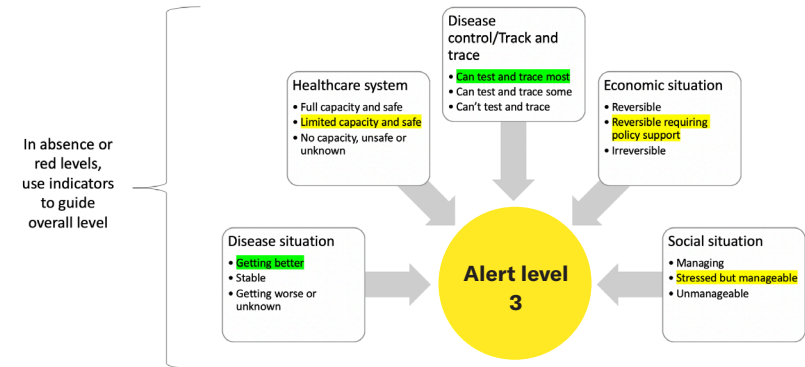
## 3. Next, determine the overall alert level:

a. Convene the leadership and multi stakeholder advisor group if any category has changed levels.

b. Review the categories – The highest alert level should determine the overall level.

   i. For example, if the disease situation is red, then the overall alert level is red.

   ii. If there are a mix of non-red category levels, then the highest level reached should determine the overall level.

   iii. If the level is to be increased then the context data of economic and social indicators should be considered. Additional mitigation measures should accompany any change in level upwards to limit impact on communities, especially vulnerable groups. Issues such as seasonality should be considered to ensure food security.

   iv. If mitigation measures cannot be increased, any change in level upwards should be considered to find the balance of consequences and impacts.

c. All category levels must be green for the overall system alert level to be green.
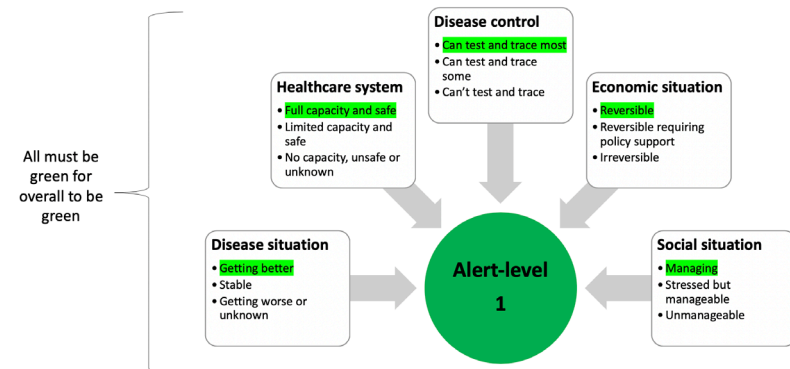
## EXAMPLES:

### Determinants of the alert-level: Red (Level 4)



Any red value means alert-level is red

**Disease control**
• Can test and trace most
• Can test and trace some
• Can't test and trace

**Healthcare system**
• Full capacity and safe
• Limited capacity and safe
• No capacity, unsafe or unknown

**Economic situation**
• Reversible
• Reversible requiring policy support
• Irreversible

**Disease situation**
• Getting better
• Stable
• Getting worse or unknown

**Alert-level 4**

**Social situation**
• Managing
• Stressed but manageable
• Unmanageable

### Determinants of the alert-level: Orange (Level 3)



In absence or red levels, use indicators to guide overall level

**Disease control/Track and trace**
• Can test and trace most
• Can test and trace some
• Can't test and trace

**Healthcare system**
• Full capacity and safe
• Limited capacity and safe
• No capacity, unsafe or unknown

**Economic situation**
• Reversible
• Reversible requiring policy support
• Irreversible

**Disease situation**
• Getting better
• Stable
• Getting worse or unknown

**Alert level 3**

**Social situation**
• Managing
• Stressed but manageable
• Unmanageable

### Determinants of the alert-level: Green (Level 1)



All must be green for overall to be green

**Disease control**
• Can test and trace most
• Can test and trace some
• Can't test and trace

**Healthcare system**
• Full capacity and safe
• Limited capacity and safe
• No capacity, unsafe or unknown

**Economic situation**
• Reversible
• Reversible requiring policy support
• Irreversible

**Disease situation**
• Getting better
• Stable
• Getting worse or unknown

**Alert-level 1**

**Social situation**
• Managing
• Stressed but manageable
• Unmanageable

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## How to set up daily dashboard reviews

1. **Ensure you can regularly collect the key indicators in the levels system.**
   a. Set up data flow to a central dashboard for the incident management team.
   b. Consider establishing an external public-facing dashboard with some indicators to improve community engagement and transparency. One example of the type of data you could share externally is here:
      https://www.covidexitstrategy.org/
      https://sl-dashboard.github.io/corona/

2. **After determining what level you are in, you need to monitor data to identify whether you have met any of the triggers for raising or lowering the level**
   a. Once a trigger is met and information verified, then the level for the indicator should be changed:
      i. For example, for positivity rate of lab tests.
         1. If currently the positivity rate has been an average of 13% over the last 7 days then your level is orange (level 3).
         2. Positivity rate in lab tests has been falling and in the last 7 days the average has been 9%, then your level is now yellow (level 2).
         3. You need to update the indicator level to level 2 as shown in the table below.

Lab (+ve) 13% → Lab (+ve) 9%

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## Sample Alert Level – Orange Level 3

The following is an example of how to progress from deciding on a level to communicating recommendations with the public.

### State Data

| Category | Key question | Indicator | Triggers to raise to a higher level (e.g., 2->3) | Triggers to lower level (e.g. 4->3) | Level 1 New normal | Level 2 Moderate Alert | Level 3 High Alert | Level 4 Very High Alert |
|---|---|---|---|---|---|---|---|---|
| Disease situation | What is the level of disease burden and how is it changing? | Daily case incidence* (new cases per 1 million people per day)** | Increasing to meet new threshold over a 7-day period | Decreasing to meet new threshold over a 14-day period | <10/1M/day | 10-19/1M/day | 20-39/1M/day | 40/1M/day or higher |
| | Are there early signs of a resurgence in cases? | Syndromic data (Influenza-like illness or COVID-19 like illness) | Increasing over a 5-day period | N/A | Near seasonal average | Near seasonal average | Near seasonal average or above seasonal average and declining | Above seasonal average or rising |
| | Can we provide adequate care for COVID-19 cases?*** | Case fatality Ratio | Meet specified threshold over a 7-day period | Meet specified threshold over a 14-day period | < 1% | 1.%-3% | 3%-5% | >6% |

*Indicator threshold for each level* header spans the four Level columns.

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## State Data (cont'd)

| Category | Key question | Indicator | Triggers to raise to a higher level (e.g., 2->3) | Triggers to lower level (e.g., 4->3) | Level 1 New normal | Level 2 Moderate Alert | Level 3 High Alert | Level 4 Very High Alert |
|---|---|---|---|---|---|---|---|---|
| Health care system capacity | **Are we protecting healthcare workers?** | Number of healthcare worker infections | Increasing over a 7-day period | Decreasing over a 7-day period | No health care worker infections | Decreasing | Decreasing | Increasing or unknown |
| | **Are essential health services still functioning?** | Vaccine coverage | Change in % of population which received measles-containing-vaccine first-dose (MCV1) | Increase % over reporting period | <5% decrease | 5-9% | 10-19% | >20% decrease |
| Disease control | **Are we testing enough to detect cases?** | Percent of tests that are positive | Increasing over a 7-day period | Decreasing over a 7-day period | < 5% | 5-9% | 10-14% | 15% or higher |
| | | Total testing per 1,000 people per day | Meet threshold over a 7-day period | Meet threshold over a 7-day period | >7 | 3-7 | 1-3 | <1 per 1000 average per day |
| | **Do we have robust contact tracing?** | Percentage of new cases from quarantined contacts | Meet specified threshold over a 7-day period | Meet specified threshold over a 7-day period | 50% or more | 30-49% | 10-29% | <10% |
| | **Are we protecting the vulnerable?** | Proportion of cases from vulnerable groups** | Meet specified threshold over a 7-day period | Meet specified threshold over a 7-day period | >90% | 75-89% | 50-74% | Less than 50% |

Indicator threshold for each level

\* In absence of reliable data on new cases, daily trends in new hospitalizations and/or deaths should be monitored. Trend data can be calculated in a variety of ways, including count comparisons, moving averages and modeling trajectories. Any method used should address how to handle reporting variations, incidence plateaus, and near-zero incidence.   \*\* Consider the heterogeneity and population density of the setting when determining risk level. If an isolated confined outbreak or rural area (e.g. population <50 per square mile), this generally has lower transmission risk than if a distributed pattern throughout community or a dense area.   \*\*\* The true infection fatality rate is estimated at 0.1-1.3%, but many cases can go undetected (either because cases are mild, presymptomatic or asymptomatic; or due to inadequate lab testing) which makes it difficult know the true IFR. As the Case Fatality Ratio is based on the reported cases and deaths, a high CFR can be indicative of underreporting of confirmed cases.

## Disease situation
- 136 new cases per day on average in a state with 4 million people
  - 34 new cases per day per million over the past 7 days
- ILI and CLI syndromic data are at seasonal average
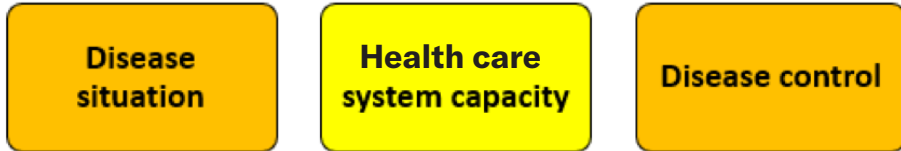- CFR is at 2.8%

## Health care system
- Vaccine coverage of measles-containing-vaccine first-dose (MCV1) has reduced by 8% in the last month
- 12 reported health care worker infections over past 7 days which is less than 22 in the prior 7-day period
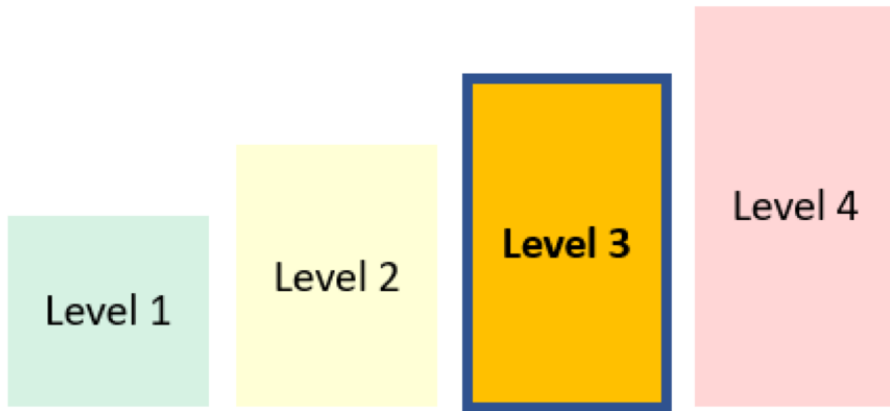
## Disease control
- Percentage positive among those tested rate was 9% over the past 7 days
- Average total tests per day in the past 7 days was 6,400. The population is 4 million in the state
  - Total testing per 1,000 people per day was 1.6
- Twelve percent of new cases in past 7 days have come from known contacts
- 68% of all positive cases are over the age of 55 or have another vulnerability

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## Category Scores

| Disease situation | Health care system capacity | Disease control |
|---|---|---|

## Overall Alert Level = Orange



## Communication for change in level should be provided with at least two days' notice when feasible

| Level 3 Moderate Risk | Many cases, including spread in the community, with some undetected cases. Some control measures in place. <br><br> **Curtail everyday activities to increase safety.** | • **General public** should limit non-essential travel and attend only small gatherings. <br> • **Businesses can open** with safety measures*** <br> • **High-risk individuals** should stay at home or shelter whenever possible* |
|---|---|---|

## Additional guidance for wearing face masks/coverings

| If well and | Physical distancing possible | COVID-19 Alert Level | | | |
|---|---|---|---|---|---|
| | | **Level 1** | **Level 2** | **Level 3** | **Level 4** |
| **Outdoors** | Yes | No | No | No | Yes |
| **Outdoors** | No | No | Yes* | Yes | Yes |
| **Indoors** | Yes | No | No | Yes | Yes |
| **Indoors** | No | No | Yes | Yes | Yes |
| **Home (if everyone well)** | - | No | No | No | No |
| **If sick** | gathering of people with potentially close contact (<6 feet) | Yes | Yes | Yes | Yes |