INDICATORS AND THRESHOLDS FOR AN INTEGRATED MANAGEMENT TOOL
COVID-19 & RESPIRATORY VIRUSES

RAG – February 2023
Update March 2023

CONTEXT

In December 2021, the RAG provided an advice to update the management tool used to characterize the COVID-19 epidemiological situation at national and provincial levels. This tool is mainly based on indicators reflecting pressure on the healthcare system (number of hospital admissions, ICU occupancy and number of consultations at GP practices for suspicion of COVID-19), supported by other indicators (positivity rate for symptomatic patients, Rt and 14-day incidence of cases). The tool distinguishes three levels: Epidemiological situation under control (Level 1); Increasing viral circulation potentially leading to pressure on health care system (Level 2) and High viral circulation with possible health care system overload (Level 3).

In the context of co-circulation of SARS-CoV-2 and other respiratory viruses, the RAG was asked in January 2023 to provide a management tool that would consider not only SARS-CoV-2 but also other respiratory viruses. The updated tool, validated in February 2023, included a new indicator (GP consultations for flu-like symptoms) while the 14-day incidence of Covid-19 cases was removed. This tool could be used to guide the implementation of generic measures effective on most respiratory viruses, such as mask wearing in health care settings.

Since February 2023 the epidemiological situation has further evolved. The country has been in level 2 since the first implementation of the tool in 2021, with some provinces currently in level 3. Nevertheless, the pressure on the second and first line health care sector seems to be under control. It was therefore requested to the RAG to re-evaluate the management tool and the weekly evaluation of the management level, so that it would better reflect the reality experienced in the health care sector.

RECOMMENDATIONS

1. The objective of the management tool is twofold. First, and most importantly, it aims to **evaluate the pressure of COVID-19 and other respiratory infections on the health care system**. Second, it provides a framework for the evaluation of the epidemiological situation.
2. **The set of current indicators *(cfr table below)* will be maintained**. The management level will be assessed weekly by the group of RAG experts, based on the existing indicators as well

as other relevant elements when appropriate (for instance emergence of new SARS-CoV-2 variants of concern, ..). Until the incidence of hospitalizations for SARI is part of the management tool *(see below)*, the hospital incidence for both overall SARI and specific respiratory pathogens such as RSV will be monitored and included in the broader qualitative assessment.

Integrated management tool:

	7-d inc hospitalizations for COVID-19	ICU occupancy COVID-19	GP consultations for suspicion COVID-19	PR sympto (COVID-19)	Rt	GP consultations for ILI
Level 1	<4 (<65 nh/d)	<15 % (< 300 beds national)	< 50/100 000	0 – 9,9 %	0 - 1	<128/100 000
Level 2	4 – 9,9 (65 – 149 nh/d)	15 – 25 %	50 - 99/100 000	10 – 19,9 %	1 – 1,299	128-783/100 000
Level 3	> 10 (>150 nh/d)	> 25 %(> 500 beds national)	> 100/100 000	>= 20 %	>= 1,300	>783/100 000

3. **The weighing of indicators will be adapted** to evaluate the management levels: while until now the 7-day incidence of new hospitalizations was the main indicator used to define the management level, the relative weight of the ICU and GP consultations for influenza-like illness (ILI) indicators are now proposed to be increased. This should better reflect the current pressure on the hospitals:
   a. If ICU indicator **'and'** GP consultations for ILI indicator are in level 1 → Management level at national level at 1
   b. If ICU indicator **'and'** GP consultations for ILI indicator are in level 3 → Management level at national level at 3
   c. If any other level for ICU indicator **'or'** GP consultations for ILI indicator → Management level at national level at 2
4. It is important to **maintain the current thresholds/levels of the different indicators to allow comparison over time**. Indeed, this will allow to compare the pressure on the health care system throughout the pandemic and also in case of a new variant in the future.
5. Keep the number of weeks needed to increase the level (2 weeks) or decrease (3 weeks).
6. The **management tool will be evaluated** in the coming months to assess:
   o the relevance of the used indicators
   o the possibility of including additional indicators :
      o *The weekly incidence of hospital admissions for severe acute respiratory infections/100,000 population (from the sentinel hospitals network)*
      o *Data from the Infectieradar.be platform*
   o The long-term objective of the integrated management tool, and its relevance for the next winter-season

7. It is proposed to adjust the RAG epidemiology reporting at management level 1:
   • **Stop defining the management level at provincial level**, as there is no specific provincial management expected in level 1 and as (potential) new indicators such as GP

workload or SARI-surveillance are not monitored and reported by province. However, we will **keep reporting all indicators at provincial level** to ensure optimal trends surveillance for each of the provinces.

- **reduce the weekly reporting of the RAG-epidemiology, to a biweekly frequency**. This will allow a better stability in the management levels. The RAG and Sciensano will continue to monitor the epidemiological situation on a permanent basis.

DISCUSSION

To better reflect the current epidemiological situation, the management tool could be revised through (1) a further integration of non-Covid-19 indicators, (2) a revision of the thresholds for specific indicators or (3) an adaption of the weight of specific indicators in the qualitative evaluation.

Incidence hospitalizations and ICU admissions

- The 7-day incidence of Covid-19 hospitalizations has been one of the key-indicators for the weekly evaluation of the management level because the number of new admissions gave an indication on the pressure on the second line care. However, recently the question was raised if this indicator still accurately estimates the current pressure on the health care system.
  - *As an example, the province of West Vlaanderen is currently in management level 3, the highest level indicating a possible health care system overload. This level is mainly based on the incidence of Covid-19 hospitalizations. However, the situation in the hospitals does not seem to confirm this evaluation.*
- Feedback from the field seems to indicate that the profile of hospitalized patients has changed: the clinical status is less severe (less need for ECMO for example) or the duration of stay shorter. This means that for the same level of incidence or the same number of patients admitted, the pressure on the hospital is experienced as less. This is also confirmed by the ratio of hospital/ICU admissions which has been decreasing in the last months.
- A comparison of the data over the last 3 months collected through the Clinical Hospital Survey (to be interpreted with caution because not fully representative) does not indicate important changes in the profile of admitted patients. The median age (81), the percentage of non-vaccinated patients (7,7%-11,4%), the number of comorbidities or the median length of stay (8-9 days) seem to remain stable.
- The choice of the thresholds for 7-day incidence of Covid-19 hospitalizations was initially performed in March 2021 based on modeling and expert opinion[1]. Given the evolution of the epidemiological situation (evolution of circulating variants, vaccination and natural immunity in the population, …), the system has been reevaluated several times but the thresholds were maintained constant [2]. Defining new thresholds might be challenging given the changing epidemiological situation, the changing profile of the hospitalized patients (to be confirmed)

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[1] 20210303_Advice_RAG_Seuils plan B et C_FR.pdf (sciensano.be)

[2] 20210708_Advice_RAG_Thresholds riskmanagement_FR.pdf (sciensano.be), 20211215_Advice_RAG_Thresholds riskmanagement_Update_FR.pdf (sciensano.be)
https://covid-19.sciensano.be/sites/default/files/Covid19/20220817_RAG_Seuils%20barom%C3%A8tre_FR.pdf

and the need to consider as well hospitalizations for other respiratory diseases. Moreover, maintaining the current thresholds enables to ensure optimal comparison throughout the pandemic, regardless of the circulating variant. It is planned to fully integrate the incidence SARI-hospitalizations as soon as the sentinel network of hospitals is extended *(see below),* which will then replace, eventually, the incidence of hospitalizations for COVID-19. Taking all this into account, it does not seem relevant to change the thresholds for this indicator.

- As indicated by the ICU-occupancy, less patients are admitted in intensive care which can be attributed in a large part to the acquired immunity (vaccination and natural immunity) as well as to the Omicron variants. The current level 1 of this indicator seems to reflect better the current pressure on the hospitals.

New possible indicators

Hospital admissions for severe acute respiratory infections

- The weekly incidence of hospital admissions for severe acute respiratory infections (SARI) is collected via the sentinel hospital network[3].

- The **weekly incidence of hospital admissions for severe acute respiratory infections (SARI)** would be an interesting indicator to include to the weekly epidemiological evaluation. As for the weekly incidence of the GPs consultation for flu-like-symptoms (ILI), it is also characterized by five distinct phases of activity, defined by specific thresholds. However, this indicator depends on the reporting of sentinel hospitals which is, at the moment, delayed and does not cover the entire country. Hence, the representativeness and timeliness of the incidence of hospitalizations for SARI is currently limited.

- Therefore, we recommend not to integrate this indicator until it becomes timely, stable and representative enough. The SARI network will be enhanced in 2023, including the recruitment of 4 extra hospitals and the provision of a study coordinator to each participating hospital, in order to increase the timeliness and quality of the data. The expanded SARI network is expected by the end of 2023.

- Some respiratory infections such as RSV are better reflected by the incidence of hospitalizations for SARI than by the incidence of consultations for ILI. Those could be missed in the proposed management tool (which includes an ILI indicator but not yet SARI). Until the incidence of hospitalization for SARI is part of the management tool, the hospital incidence for both overall SARI and specific respiratory pathogens such as RSV will be monitored separately and included in the broader qualitative assessment.

Data collected via the infectieradar.be platform

- Infectieradar.be[4] is active since 29 March 2021; it is part of Influenzanet, a European partnership between various universities and public authorities. The aim of Influenzanet is to map and monitor symptoms of infections, such as COVID-19 and influenza among European citizens. The participation of citizens is on a voluntary basis.

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[3] https://www.sciensano.be/en/health-topics/acute-respiratory-tract-infection/role#sentinel-hospitals-sari-network-

[4] https://survey.infectieradar.be/welcome

- Data from infectieradar.be could be included in the management tool in the future. As a first step, however, a comparison of data available through infectieradar.be will be performed with other available data.

Evidence from other countries

Country	How is the epidemiological situation is assessed?
Belgium	**Management tool** to define the management level (1-2-3), on a weekly basis – may influence implementation of measures.
France	**No decision tool** but daily update and weekly report on key-indicators
UK	**No decision tool** but daily update on key-indicators
Netherlands	**No decision tool** but weekly update on key-indicators
Germany	**No decision tool** but daily report on key-indicators
Italy	**No decision tool** but weekly report on key-indicators
Spain	Weekly epidemiological evaluation, based on different indicators. For each indicator, thresholds are established to determine whether the risk is low, medium, high or very high. Based on these indicators, alert levels are established that determine actions proportional to the level of risk of SARS-CoV-2 transmission and adaptable according to the situation and context of each territory.
Ireland	**No decision tool** but daily update and weekly report on key-indicators
Norway	**No decision tool** but bi-weekly report on COVID-19 and other respiratory infections
Sweden	**No decision tool** but dashboard and webpage with FAQ and useful information on COVID-19
Denmark	**No decision tool** but daily update

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