Adviesaanvraag

Vraagsteller	Vice-eersteminister en Minister van Sociale Zaken en Volksgezondheid Frank Vandenbroucke
Datum van adviesaanvraag	13/04/2021
Onderwerp	Thresholds - OCC 14/04/2021
Vraag	

Adviesverstrekking t.a.v. het Overlegcomité

Datum van adviesverstrekking	13/04/2021
Dit advies werd opgesteld en goedgekeurd door	De volgende leden van de expertgroep beheerstrategie: Isabelle Aujoulat, Philippe Beutels, Steven Callens, Bénédicte Delaere, Mathias Dewatripont, Lode Godderis, Niel Hens, Yves Kreins, Tinne Lernout, Romain Mahieu, Christelle Meuris, Geert Molenberghs, Karine Moykens, Céline Nieuwenhuys, Michel Thieren, Pierre Van Damme, Steven Van Gucht, Yves Van Laethem, Marc Van Ranst, Dimitri Van der Linden, Maarten Vansteenkiste, Erika Vlieghe, Dirk Wildemeersch
Key takeaways	

Use of thresholds for COVID-19 pandemic management

1. **From a health care response point of view**

- Thresholds are primarily focused on ensuring the healthcare system does not get overwhelmed with novel COVID-19 cases, and guarantee that non-COVID-19 care can still be provided with the high quality standard the Belgian healthcare system is known for. An nation-wide occupancy exceeding 50% of recognized ICU beds forces hospitals to reduce health care provision that relies on ICU availability.
- The impact of COVID-19 goes beyond the mere ICU-bed occupancy rates at peak moments; mid-long term downstream effects on the entire care system and long-term burden on the healthcare system of post-COVID morbidity need to be taken into account as well.
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- The formerly proposed threshold of 75 new hospitalisations was set to preserve the total healthcare capacity (GEMS_012_20210223_Relaxations_DRAFT). According to the RAG and the GEMS, this threshold is still valid. Yet, because this end goal is situated far away in time and therefore unattainable in the short run, it is critical to set a limited number of attainable, intermediate goals to optimally motivate the population.
- ICU overflow was independently associated with in-hospital mortality of COVID19 patients, next to the risk factors that drive mortality. (https://www.thelancet.com/pdfs/journals/lanepe/PIIS2666-7762(20)30019-3.pdf)
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- Health care personnel resilience: The severity of cases and the rapidly overwhelming caseload during the COVID-19 pandemic spread has made ICUs worldwide suffer from physical, material and emotional exhaustion (https://link.springer.com/article/10.1007/s00134-020-06092-5).

2. **From a psychological and motivational point of view**

The use of thresholds as a basis for a relaxation strategy comes with a number of motivational and psychological benefits:

- (a) Shared risk awareness: Because the different thresholds delineate the transition to different risk levels, the population, opinion makers, and political leaders can gain a shared and realistic insight in the risky nature of a given situation in the pandemic, resulting in a more streamlined rather than divided perspective. Also, because measures are aligned with the risk level, they are more likely to be perceived as necessary and proportional.
- (b) Enhanced clarity and predictability: By specifying thresholds and the expected relaxations and behavior associated with each risk level, the population experiences a greater sense of control over the situation instead of being subjected to ad-hoc decisions.
- (c) Goal-directed focus: Thresholds are presented as targets that the population can collectively strive for, with different intermediate goals forming a logical sequence and serving as critical virological and psychological milestones that the population can achieve. By providing estimates about the timing to reach (intermediate) goals as a function of varying adherence and the role of vaccination, the population can take more responsibility for themselves and those around them to adhere to the measures instead of passively waiting till a promised date of relaxation is achieved. When attainable, targets have the potential to incentivize action, with a relaxation being perceived as a reward in exchange for one's persistence.

- (d) Socially mobilizing impact: These targets can foster a sense of community in the population and have a socially mobilizing impact. Their attainment can be celebrated as a collective success that fosters people's confidence to persist till the end goal is attained.
- (e) Streamlined and diverse communication: Given the dominant verbal nature of the current communication, the use of thresholds has the potential to make use of more diverse means and contents of communication. Clear infographics, a visualized phased system, if-then scenarios, and the use of metaphors (e.g., marathon) are more powerful messages that can be more easily spread and repeated.

To actualize the psychological and motivational potential of targets, a sequence of attainable and psychologically salient intermediate goals need to be determined and a systematic communication pattern around the striving and attainment of these goals needs to be developed.

3. From a modelling point of view

The timeline to achieve predetermined thresholds as a function of different levels of adherence and different speed levels in vaccination can be modelled and systematically communicated to the population. Moreover, through if-then scenarios, it can be indicated to the population how reduced adherence may lead to the delay in the attainment of critical thresholds.

4. Pros and cons of various metrics and their thresholds.

There is intuitive logic to basing public health intervention thresholds on demand for healthcare utilization (e.g., ICU beds), as opposed to more indirect measures such as the number of new cases per 100,000 in the community. Although none of the identified approaches are strongly supported by evidence or are clearly superior to one another, as mentioned above, a clear and concise threshold is a valuable communication tool.

Early metrics include pressure on the GP system (testing, number of consultations for suspicion of COVID or ILI), confirmed cases and positivity rates. However, the number of confirmed cases is influenced by the number of tests performed. The number of tests fluctuates with both the epidemic itself as well as policy decisions regarding testing and willingness of the population to get tested (eg less testing in holiday periods). This makes the number of confirmed cases harder to read; it requires careful expert qualification. While the positivity rate is part of this system, as it is the ratio of positive tests over all tests, it has shown its use over the last year as a clear indication of an expanding versus a shrinking epidemic, in Belgium and internationally. For example, when there is rapidly increasing community transmission, the positivity will typically swiftly increase, at the level of a province, a town, or a few test centers. For both confirmed cases and positivity, one can consider both the raw values as well as the evolution (increase/decrease; growth). One should keep in mind that not all cases in the population are confirmed by a test; many remain undiscovered (likely only about 25% were confirmed by testing in 2020 in Belgium).

One could therefore decide to make positivity an indicator to follow and for which a threshold (5% or 3%) is set; or consider it a secondary indicator that is followed by specialists and bodies such as RAG Epidemiology.

The reproduction number Rt, is a measure for the increase or decrease of the epidemic, with a very clear cutoff: when Rt=1, the epidemic is in steady state; above 1 it expands; below 1 it shrinks. It can be

calculated for hospitalizations as well as for cases. In terms of cases, it has a clear definition: the number of secondary cases infected on average by a primary case.

The mid-term metrics, hospitalizations, hospital load, and ICU load, are key metrics because they unequivocally capture the stress on the health care system, and capture distress caused by the virus in the population.

By the **late metric** we refer to mortality. While crucial from a societal and scientific perspective, it is largely unsuitable as an early monitoring tool. It is vital, though, to gauge the impact of vaccination.

Given that certain variants of concern are: (a) more transmissible; (b) more rapidly lead to hospitalization, and even more so to ICU; and (c) has increased risk of death, there is all the more reason to **make ICU occupancy by COVID patients the central metric,** to which to attach a threshold.