The when is less important than the what: an epidemic scale as an alternative to the WHO's Public Health Emergency of International Concern

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WHO declared the end of the Public Health Emergency of International Concern (PHEIC) for COVID-19 on May 5, 2023, and for mpox (formerly known as monkeypox) on May 11, 2023. Throughout its use, the meaning of the term PHEIC has been muddled. We call for a new, objective epidemic scale that better communicates the potential severity of an epidemic to member states and the public, and the necessity of activating proportional responses.

As per the International Health Regulations of 2005, the formal PHEIC definition is "an extraordinary event which is determined to constitute a public health risk to other States through the international spread of disease and to potentially require a coordinated international response". Member states are required to report potential PHEICs if at least two of four criteria are satisfied (panel). These subjectively measured criteria reported by member states are then reviewed by a WHO Emergency Committee, which in turn subjectively decides whether to declare a PHEIC.[1]

The existing protocol for reporting and declaring a PHEIC has several well-recognised deficiencies.[2] Countries potentially endure repercussions upon reporting a potential PHEIC, primarily due to subsequent economic fallout such as travel and trade restrictions, thus discouraging reporting.[3] Additionally, declaration of a PHEIC is politically contentious; this contention is in part because the members and deliberations of the Emergency Committee are not made public, and also because the Emergency Committee has applied the criteria for decision making inconsistently and obscurely.[1] Finally, the PHEIC only results in outbreaks being labelled as something to either ignore or panic over, rather than communicating tiered levels of risk requiring a proportional response.

National governments and experts have criticised WHO for the timing of the PHEIC declaration for COVID-19 and other past pandemics, yet we contend that when a PHEIC is declared is less salient than what is declared within it.[4,5] The PHEIC is a blunt instrument, presenting the world in binary terms—ie, if there is a PHEIC or not).[6] However, modes of transmission differ by pathogen (eg, Ebola, severe acute respiratory syndrome) and require distinct responses across space (eg, national, regional, or global response) and time (aligned with the epidemic curve). The general public, and arguably local public health practitioners, who are unacquainted with the distinctions of a declared PHEIC, could greatly benefit from a scale that could communicate such subtleties. A tiered scale could serve as a more nuanced trigger for different types of response.

Objective scales used by the hurricane and earthquake scientific communities serve as communication tools that deftly communicate such distinctions. For instance, the Saffir-Simpson scale categorises hurricanes into five categories using objective wind measurements, plus two additional categories of tropical storm and depression.[7] Similarly, the Richter Scale uses objective measurements to classify earthquakes on a 1–9 scale, recognising the higher frequency of lower magnitude events.[8] A hurricane's category can increase or decrease over time as more information is collected and can inform local preparedness plans. We argue that a scale using objective measurements fosters transparency, efficiently communicating to the public and to emergency organisations about levels of risk and proportional levels of response.

We propose that WHO construct a novel epidemic scale that effectively conveys the potential severity of pathogenic outbreaks, with three crucial considerations. First, such a scale should consider the transmission mode, which in turn affects the reproductive rate, speed of transmission, and consequently potential

Panel: **Criteria used by WHO and member states when considering whether to declare or report a Public Health Emergency of International Concern**

- Is the public health impact of the event serious?
- Is the event unusual or unexpected?
- Is there a substantial risk for international spread?
- Is there a substantial risk for international travel or trade restrictions?

international spread, as well as how these factors inform a timely, proportional response. The second consideration is that respiratory pathogens, whether airborne or droplet, and pathogens that spread asymptomatically, have an increased risk of spreading internationally. Finally, the uncertainty level about a disease, such as a suspected or confirmed mode of transmission, is also an important consideration. The new scale could further incorporate the terminology of variants of interest and variants of concern following the emergence of several variants of SARS-CoV-2.

Designing such a scale is a challenging yet achievable task. Although tiered systems are imperfect,[9] cases from earthquakes and hurricanes offer relevant lessons. Field epidemiologists rely on clinical reports and case investigations to study local outbreak spread and the potential for respiratory and asymptomatic spread. The evidentiary standards used in field epidemiology should be clarified to underpin the new epidemic scale.

WHO has an opportunity to pioneer this new epidemic scale, which can inform and serve as a much-needed trigger for activating different epidemic response financing instruments, as well as the declaration of national public health emergencies. If WHO cannot, then other nations can lead, just as the hurricane and earthquake scales were developed in the USA but adopted as global standards.

We declare no competing interests

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