



Vaccination and immunity: Potential harms of erroneous, imprecise and overly-simplistic use of terminology in public health messaging during COVID-19

The global response to the COVID-19 pandemic has brought terms such as vaccine and vaccination, immunity and immunisation, into common parlance. While at least a rudimentary public understanding of these terms is likely to increase trust in public health officials, thereby promoting vaccine uptake in the initial stages of vaccination programmes, their erroneous, imprecise and oversimplified use in political and public health messaging may unintentionally serve to reduce societal willingness to comply with further public health interventions at later stages in the pandemic.

With regard to terminology, a vaccine is simply a (complex) pharmaceutical product, with no intrinsic reference to its physical location (within a glass vial or biological system) or immunological effects (inert within glass vials, immunogenic within biological systems). Vaccination, however, is a physical event during which a vaccine is administered into a biological system (a human or domesticated, farmed or wild non-human animal) via intramuscular, subcutaneous or intradermal injection, oral or intranasal routes. An individual is rendered 'vaccinated' the moment the vaccine enters their person, meaning once they are vaccinated against a specific pathogen, they will always remain so (reflecting this now-historical event). No reference to the immunological implications of this event is inferred, however, which may be zero (such as immediately following the vaccination or after its immunological effects have decayed), maximal (once the immunological effects have been fully realised), or lie anywhere on the continuum between these extremes. Immunity, therefore, is a dynamic status reflecting the extent to which an individual is protected against a specific pathogen [1].

As such, immunity, rather than vaccination, is the relevant factor with regard to communicable disease control, such as the COVID-19 pandemic response. But what does it mean to be 'immune to' or 'immunised against' an infective agent? When used without qualifiers, these terms harbour intrinsic connotations of complete and sustained protection against the pathogen in question. Without the relevant context and additional caveats, these connotations may harmfully mislead an under-informed public. For example, despite being vaccinated, an individual may have no, some or maximal immunity, depending on when the vaccination took place, the immunogenicity of the administered vaccine, and the individual's potential to mount an immune response to it. However, vaccines are rarely able to generate 100% protection against their target pathogen, meaning maximal immunity is usually less than complete, while any immunity generated will decay, at varying rates, over time. Given the definitions above, the notion of a 'vaccine passport' makes no meaningful sense, while an 'immunity passport' may capture the relevant feature of clinical and epidemiological interest – the individual's current immunity status – and broaden the concept to include alternative means by which the desired status may be achieved (immunity due to natural infection [2]).

As such, by focusing on vaccination status rather than immunity status in public health messaging, a vaccinated individual may mistakenly believe himself to be fully and enduringly protected from the moment of vaccination, which may reduce his understanding of, and therefore willingness to comply with, on-going strategies to control transmission that appear to contradict this belief.

Erroneous, imprecise and overly-simplistic language used by politicians and public health officials relating to vaccination and immunity during COVID-19 include statements describing vaccines as the pandemic exit strategy [3], recommendations to get a vaccine to protect individuals and their families, and calls for vaccine passports [4], which all failed to identify immunity as the clinical and epidemiological factor of relevance. The consequence is a society that orients around the inadequate idea of vaccination status rather than the empowering concept of immunity status. Such a society is thereby rendered ill-prepared to meaningfully understand and appropriately respond to the introduction of subsequent public health concepts such as booster vaccines ("but I've already been vaccinated"), new variants with enhanced pathogenicity ("but I've already been vaccinated against COVID-19"), and further restrictions ("but almost everyone has been vaccinated"). Such a scenario may diminish trust in public health officials, and therefore reduce willingness to comply with further recommendations aimed at controlling viral transmission.

While clear public health messaging is required to effectively persuade and positively influence behaviour during COVID-19, the use of erroneous, imprecise and overly-simplistic language may be ultimately harmful to public health objectives. The public should instead be entrusted with the relevant context, qualifiers and caveats when communicating public health concepts, which should focus on immunity status rather than vaccination status, while balancing the inevitable trade-offs in clarity and brevity. Such an approach is likely to increase transparency, trust and therefore societal willingness to comply with on-going and subsequent public health interventions.

Transparency declarations

I declare no competing interests.

Funding declarations

RA receives no funding.

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<https://doi.org/10.1016/j.puhip.2022.100235>

Received 7 January 2022; Accepted 21 January 2022

Available online 29 January 2022

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