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What does 95% COVID-19 vaccine efficacy really mean?

It is imperative to dispel any ambiguity about how vaccine efficacy shown in trials translates into protecting individuals and populations. The mRNA-based Pfizer[1,2] and Moderna[3] vaccines were shown to have 94–95% efficacy in preventing symptomatic COVID-19, calculated as 100 × (1 minus the attack rate with vaccine divided by the attack rate with placebo). It means that in a population such as the one enrolled in the trials, with a cumulated COVID-19 attack rate over a period of 3 months of about 1% without a vaccine, we would expect roughly 0·05% of vaccinated people would get diseased. It does not mean that 95% of people are protected from disease with the vaccine—a general misconception of vaccine protection also found in a *Lancet Infectious Diseases* Editorial.[4] In the examples used in the Editorial, those protected are those who would have become diseased with COVID-19 had they not been vaccinated. This distinction is all the more important as, although we know the risk reduction achieved by these vaccines under trial conditions, we do not know whether and how it could vary if the vaccines were deployed on populations with different exposures, transmission levels, and attack rates.

Simple mathematics helps. If we vaccinated a population of 100 000 and protected 95% of them, that would leave 5000 individuals diseased over 3 months, which is almost the current overall COVID-19 case rate in the UK. Rather, a 95% vaccine efficacy means that instead of 1000 COVID-19 cases in a population of 100 000 without vaccine (from the placebo arm of the abovementioned trials, approximately 1% would be ill with COVID-19 and 99% would not) we would expect 50 cases (99·95% of the population is disease-free, at least for 3 months).

Accurate description of effects is not hair-splitting; it is much-needed exactness to avoid adding confusion to an extraordinarily complicated and tense scientific and societal debate around COVID-19 vaccines.

I declare no competing interests.

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Border screening is an essential component of COVID-19 testing strategies in Vanuatu

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In their Personal View, Belinda Hengel and colleagues[1] note that geographical dispersion of small populations across islands and other rural and remote settings presents a key barrier to COVID-19 testing access, and they present a decentralised COVID-19 point-of-care testing model based on in-community testing of suspected (symptomatic) cases. The model is based on point-of-care testing using a rapid, fully automated, self-contained, qualitative RT-PCR test for SARS-CoV-2 detection using single-use cartridges.[2] Hengel and colleagues note that several Pacific Island countries and territories already have GeneXpert platforms in use for tuberculosis management within provincial-level and national-level health services.[1] The proposed model is relevant to settings where there is widespread community transmission. However, it is less relevant in the absence of community transmission.

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The Pacific Island nation of Vanuatu (population 290 000, 83 islands), similar to many other Pacific Island countries and territories, has experienced border cases only—that is, cases identified in managed quarantine facilities—and has not experienced community transmission of SARS-CoV-2. COVID-19 testing via the GeneXpert platform became available in May, 2020.[3] Test procurement is through the regional Joint Incident Management Team (coordinated by the WHO Representative Office for the South Pacific), and test allocation to Vanuatu comprises approximately 3% of the population (8400 tests ordered).[4] Due to the limited number of tests available, and reflecting the epidemiological scenario of border cases only, Vanuatu has adopted a testing strategy that prioritises efficient and targeted resource use