

## **POLICY** Throwing out old dogma: time for introduction of universal VZV vaccination in the UK

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### ABSTRACT

**There has been a reticence to introduce universal varicella zoster virus (VZV) vaccines in the UK because of a theoretical concern of increased herpes zoster infections. However, this has not been borne out in real-world data. Here, I argue that, in reality, many parents are vaccinating their children privately and, thus, we do not know the degree of inequity that this creates. The fairest option going forward is to introduce universal VZV vaccination in the UK.**

**KEYWORDS:** varicella zoster, universal vaccination, health inequality

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As a scientific community, Coronavirus 2019 (COVID-19) has overwhelmed our energies, not only in the treatment of individuals, but also from a public health perspective. So many conversations, so many of our thoughts and so much of our mental load has become focussed on tackling the pandemic that our focus on vaccinations has wandered away from the amelioration of other infections.

The Joint Committee on Vaccination and Immunisation (JCVI) (in the UK), although proactive with COVID immunisations, has delayed their approval varicella zoster virus (VZV).<sup>1</sup> In November 2023, however, they finally recognised the benefits of universal VZV vaccination, and that the theoretical concerns are theoretical at best.<sup>2</sup>

### The rationale for not implementing universal VZV vaccination

The Hope–Simpson hypothesis dictates much of the fear around the VZV vaccine.<sup>3,4</sup> VZV reactivation (and subsequent herpes zoster (HZ) infection) depends on immune control of VZV. Endogenous boosting (ie the reactivation of latent VZV without development of HZ), and exogenous boosting (ie exposure to children who have varicella) were both hypothesised to be important for determining the likelihood of future infection. Thus, it was argued that reducing exogenous boosting via an immunisation program for varicella would lead to an increase in HZ infections. This concern results from the greater morbidity

from HZ infections, which preferentially affects older people. An early modelling study in the UK appeared to support this fear.<sup>5</sup>

A model is only as good as its assumptions. Although exogenous boosting might exist, the degree of its impact remains in doubt.<sup>6</sup> Real-world data from multiple countries, including the USA, where a universal VZV immunisation program has existed since 1996, show that the concern around increased HZ infections has not been borne out. In fact, there is a trend toward increasing HZ infections in countries without VZV immunisation, likely because of ageing populations. In the UK, vaccination for HZ (shingles) for over 70s has somewhat ameliorated the concern over increasing infections.

One consideration in the UK that modellers have not been able to take into account is the multilayered healthcare system that exists, in which parents will pay privately for their children to be vaccinated against VZV, outside of any national programme. Thus, although from a public health perspective there might be an intent to mitigate HZ infections by increased exogenous boosting with VZV exposure, it might fail in reality. Simply put, even if epidemiologists would like to avoid VZV vaccinations, parents demur.

### Private vaccinations circumventing epidemiological concerns

Although anecdotal, many parents I know or have treated in the UK have chosen this private vaccination option. The financial impact of having children staying home from school with chickenpox is significant enough to make the cost of the vaccine worthwhile.<sup>7</sup>

I wondered whether the UKHSA or Department for Health and Social Care (DHSC) were counting these private vaccinations or whether they were aware how many immunosuppressed individuals receive the vaccine from the NHS. Without these data, it appears unlikely that they could make a full assessment of the extent of exogenous boosting. Multiple freedom-of-information requests I submitted to the UKHSA and DHSC suggest they do not collect the data. Moreover, chickenpox is not a notifiable disease in the UK, giving us an incomplete picture of current disease burden.

Another related concern is that, with universal VZV vaccination, age of infection could increase, potentially leading to worse morbidity and mortality outcomes. However, this has not been borne out by data in multiple countries.<sup>7</sup>

In August 2022, the JCVI had suggested that in the future, the vaccine programme could be redrawn so that the multivalent Hib vaccine would be given at 18 months, freeing up space for

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the VZV vaccination.<sup>8</sup> Yet this is purely hypothetical, because it requires acceptance that the Hope–Simpson hypothesis does not carry significant weight. Up until November 2023, the UK was isolated in this regard, with most developed countries, including much of the EU<sup>7</sup> and USA,<sup>9</sup> now having universal childhood VZV vaccination. The alternative (targeting high-risk individuals, and allowing individual parents to choose) is no longer a reasonable one. As a result, the JCVI has finally advised that the measles, mumps and rubella (MMR) vaccines be given with the varicella vaccine at 12 and 18 months.

Some concerns remain. There is a risk of febrile seizures when combined with the MMR vaccine, though it is deemed low. Additionally, combining the varicella vaccine with MMR risks some of the historically reduced uptake of the MMR vaccine (and surrounding misinformation) being transposed onto varicella vaccinations as well. Governmental funding concerns around cost of vaccination are also valid, but the indirect economic impact of lost days of work is far more significant. Vaccination for VZV would also reduce vertical transmission, as well as potentially protect immunosuppressed individuals.<sup>7</sup> Post-exposure prophylaxis is far less effective than vaccination.

Our healthcare systems are prone to the inverse care law, but by reducing time off from work for parents, universal VZV vaccination has the potential to have the greatest impact on those who earn the least, and no doubt improve economic growth in the process. ■

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