



## Introducing Routine Varicella Vaccination? Not so Fast!

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to revise existing policies or to introduce new ones. Of course, whether variolation against COVID-19 is a feasible, safe enough, and ethical option depends on many empirical assumptions (about immunity against COVID-19, the effectiveness of variolation, the actual risks of the virus or other coronaviruses that might be used in variolation, and so on) and on an accurate risk assessment. But there seems to be a case at least for testing these assumptions and conduct this risk assessment.

If it turns out variolation is an effective and safe enough strategy, we should consider it among the strategies to speed up achievement of herd immunity against COVID-19. Other ethical considerations, beyond that of treating certain groups as (mere) means, would need to be addressed. Most notably, fairness and reciprocity might require some form of compensation for young people or family who take on the risks of coronavirus, and it would need to be established which incentives or disincentives to use in order to achieve the desired number of young people who get inoculated. This is probably a discussion we should be having right now.

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## OPEN PEER COMMENTARIES

## Introducing Routine Varicella Vaccination? Not so Fast!

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Malm and Navin (2020) argue against immunization policies that discourage routine childhood varicella vaccination on the ground that this vaccination would

lead to an increase in the incidence of shingles among older people. They argue that such policies based on the Exogenous Boosting Hypothesis (EBH) are

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unethical because they (1) harm children and (2) treat them as mere means for the benefit of “vulnerable elderly.” Even though I find the ethical argument as presented compelling, I want to question one of its factual assumptions, namely that the exogenous boosting hypothesis (EBH) played the pivotal role that the authors suggest in decisions not to include the varicella vaccination in many National Immunization Programs (NIPs).

In this short commentary I will show that, at least in one of the countries mentioned in the article, the Netherlands, the EBH was at best a side-consideration. The main consideration to argue against routine childhood varicella vaccination was that its contribution to children’s health is too small. In addition, I will argue that, at least in the Dutch context, introducing routine childhood varicella vaccination would do more harm than good to children’s health, which is the central concern in Malm and Navin’s paper.

There might be a myriad of reasons why governments decide not to include varicella vaccination in their NIP, but I am not convinced that the EBH is the most important one. For one thing, the authors do not provide solid proof for this claim. They cite the public NHS website, but from that quote it does not become clear that the EBH is the main argument, or even the sole argument why the varicella vaccination is not included in the UK vaccination scheme.

The harmful impact of some vaccine-preventable diseases is so much beyond dispute—measles, polio—that their vaccines are unquestionably included in all NIPs. Other vaccines are on the verge of the societal break-even-point between inclusion in the NIP and not being included. Varicella vaccination is one of them. In 2007 the Dutch Government, following advice from the Health Council of the Netherlands, decided that varicella vaccination did not meet the criteria that justifies including it into the NIP (Health Council of the Netherlands 2007, 151; van Lier, van der Maas, & de Melker 2019, 9).<sup>1</sup> The disease burden of varicella was considered to be too small, especially compared to other vaccine preventable diseases.<sup>2</sup> EBH-centered considerations were only of secondary concern. In its advice, the Health Council “also considers that it is not yet clear how varicella vaccination affects the dynamic balance between chicken pox and shingles. ... It is possible that vaccination against chickenpox will increase the

incidence of shingles.” But the most important consideration was “that vaccination against chickenpox does not currently serve an urgent public health interest in the Netherlands” (Health Council of the Netherlands 2007, 151).

This lack of urgency can be explained as follows. The epidemiology in the Netherlands—especially its temperate climate—is such that the disease is so prevalent that over 95% of children have contracted the disease before the age of five.<sup>3</sup> For most of these young children the infection occurs without complications. This has the positive side effect that infection later in life, which is often more severe, becomes very rare. We should recognize that these are not EBH-informed considerations but, instead, child-centered considerations not to include the varicella-vaccination in the NIP. The idea is that in the current constellation, by far most children encounter the disease at an age at which it is relatively harmless.

Adding a vaccine to the NIP is an immense logistic and financial endeavor and governments have to make a cost-benefit analysis. Of course, adding this specific vaccine will always be beneficial to some children, but the question is whether that justifies the enormous additional logistic and financial investment. This cost-benefit analysis has gained an additional urgency in the current era of vaccine skepticism. In the Netherlands and similar countries, children who follow the regular program receive quite some vaccines before their fourth birthday and the current wave of vaccine hesitancy might be an indication that some parents think it is too much, which would undermine the support for the vaccine program as a whole.

NIPs cannot be expanded indefinitely; there is a finite limit to the number of vaccines included after which the legitimacy of the program as a whole is undermined, which would also undercut the vaccination rate of genuinely important vaccines. A recent survey has shown little support for including the varicella vaccination into the NIP. Only 21% of Dutch public health professionals have a positive attitude toward its inclusion and only 28% of parents with young children would choose the varicella vaccination if it were offered in the NIP (van Lier et al. 2016, 2019, 47). This is the *first all-things-considered* child-centered argument why varicella vaccination should not be included in the (Dutch) NIP.

<sup>1</sup>Varicella vaccination is indicated only for specific medical high-risk groups (van Lier et al. 2019, 49). The Health Council of the Netherlands is currently reconsidering its 2007 recommendation. A new report on varicella vaccination is expected in September 2020.

<sup>2</sup>For an elaboration these criteria see Health Council of the Netherlands (2007, 119).

<sup>3</sup>It should be noted that the situation in the Caribbean Netherlands is different, because in its tropical climate the age of infection is considerably higher (van Lier et al. 2019, 20). This would justify different policies for European Netherlands and Caribbean Netherlands. It should also be noted that the epidemiological situation in European Netherlands could change as a result of physical distancing due to Covid-19.

There is a second argument why the *introduction* of varicella vaccination in NIPs might not be in the interest of children in general. Malm and Navin are correct in stating that “*widespread* varicella vaccination against VZV would provide ample benefits to children” and that “the implementation of *universal childhood varicella vaccination* program would ultimately lead to a decrease in both shingles and chickenpox” (Malm and Navin 2020, 47; my emphasis). But these statements presuppose something that should not be taken for granted: that introducing varicella vaccination in NIPs automatically leads to widespread vaccination. However, given the emerging vaccine hesitancy a massive uptake by parents should not simply be assumed. This is important because the WHO advises that for a successful implementation of varicella vaccination it is necessary to reach a sustained vaccination coverage of at least 80%. Moderate vaccination coverage levels (30–70%) over the long term may increase varicella-related morbidity and mortality (Hill et al. 2018; van Lier et al. 2019, 50). It is estimated that for the Netherlands a vaccination coverage of at least 94.1% is required to achieve herd immunity and to prevent the formation of an unvaccinated population at risk of delayed infection (van Lier et al. 2019, 50). Achieving such a high vaccination rate for varicella is very unlikely because it is higher than any vaccination rate currently achieved in the Netherlands (the highest vaccination rate over 2019 was 93,6% for MMR), while, as presented above, the varicella vaccination is neither recognized by public health professionals nor by parents as very important.

The most important danger of sub-optimal vaccination rates is that it might generate an upward age shift in the peak incidence of varicella. This is a risk because, as discussed above, the disease is more severe and therefore much more dangerous for older children. So yes, including the varicella vaccination in the

Dutch NIP will protect children of parents who vaccinate against the mild form of the disease, but children of non-vaccinating parents will run extra risks when varicella vaccination is introduced without generating the optimum vaccination rate. Thus, there are good reasons not to introduce the varicella vaccination, not only to protect the “vulnerable elderly” (Malm and Navin 2020, 47), but also to protect vulnerable youth.

## DISCLOSURE STATEMENT

No potential conflict of interest was reported by the author(s).

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