Declaring vaccine hesitancy one of the ten biggest health threats in 2019 is unhelpful

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Credit: AI-generated image (disclaimer)

The World Health Organization (WHO) recently declared vaccine hesitancy one of the ten biggest threats to global health in 2019, along with air pollution and climate change. The declaration followed several measles outbreaks in Europe and the US, but most cases were in a country where the health system had broken down: Ukraine.

Nothing suggests that these outbreaks were caused by the few who declined a measles vaccine. A substantial proportion of cases occurred in people who had been vaccinated—so the outbreaks were mainly the result of broken healthcare systems and vaccine failure rather than vaccine hesitancy.

But the WHO declaration provides extra motivation for the health authorities in many countries that now mandate or consider mandating vaccines. The rhetoric is well known: vaccines work, the science is settled, vaccine-hesitant parents are uninformed or misguided victims of the social media platforms where crooks spread fake science.

It is taken as a given that vaccines are similarly and uniformly beneficial—aside from rare side effects—and no sane person would question that. But are vaccines similarly and uniformly beneficial?

There is no doubt that vaccines can induce immunological "memory" against their target disease. And, at the population level, this reduces the risk of getting the target disease, at least for a period.

With smallpox, the vaccine actually led to the eradication of a devastating disease that killed around 30% of those infected.. We are close to eradicating two other serious infections: polio and measles.

Up to 50 years ago, polio infected almost everybody. And although only a small proportion developed clinical disease, it was still a major cause of paralysis. Measles infection, although seldom dangerous in wealthy areas, can be deadly in crowded, poor areas. These two infections are now close to extinct thanks to vaccines.

Overall health effects

But we don't have a lot of evidence about the overall health effects of

vaccines. Everybody has been so sure that vaccines only protected against the target infection, nothing else, and so nobody studied the overall health effects. They were simply assumed to be proportionally beneficial. For instance, if a measles vaccine is 90% effective and measles represents 10% of all deaths, then introducing the measles vaccine will reduce overall mortality by 9%. If the DTP vaccine protects against diphtheria, tetanus and pertussis—three potentially deadly diseases—then it will reduce overall mortality correspondingly.

None of the currently used vaccines were tested in randomised trials to document that they were overall beneficial before being introduced. And once a vaccine is recommended, it is almost impossible to study it in randomised trials because most ethical committees would not allow researchers to deprive a child of a recommended vaccine.

There is now increasing evidence that vaccines may have non-specific effects. They alter the immune system more broadly and so may affect the risk of other infections. Sometimes, for live vaccines such as the measles vaccine and oral polio vaccine, this seems to enhance the capability of fighting off other infections. Unfortunately, inactivated vaccines, such as the DTP vaccine, seem to increase the risk of other infections, particularly for females.

We do not have the evidence for all vaccines to tell vaccine-hesitant parents that it is overall beneficial for their child to receive each one of them. Rather, we have to acknowledge that there are things about vaccines that have not been investigated very well.

Read more: Anti-vaxxers: admitting that vaccinology is an imperfect science may be a better way to defeat skeptics

Most vaccine-hesitant parents that I have come across are concerned that vaccines have not been investigated for their overall health effects.

Telling them that the science is settled and stigmatizing them for their hesitance and mandating vaccines is inadequate and will only increase the popular opposition and hesitancy.

New conversation

A good starting point for the new conversation we need to have with vaccine-hesitant parents is to stop talking about vaccines in plural, but discuss them individually. They are, after all, as different as drugs. And just as it would not make sense to say that "drugs work" it makes little sense to state that "vaccines work."

There is considerable evidence that live vaccines, such as the measles vaccine, have beneficial effects on overall health—reducing the risk of measles and other infections, thereby the risk of dying. But we must admit that we do not have the same kind of evidence for other vaccines.

As health professionals, we can give people advice along the lines of "If it was my child, I would…"—but given the lack of evidence, we should not judge parents who choose not to vaccinate. And we should not mandate vaccines.

It would be wonderful to eradicate measles, but that can be achieved with a vaccination coverage of 95% – the point at which herd immunity is achieved. And it is still only a small percentage of the population that does not want to vaccinate—so if we vaccinate those who want to vaccinate, then eradication is within reach, without shaming or forcing vaccine-hesitant parents. If we manage to eradicate measles, we may want to continue the vaccination for its beneficial non-specific effects.

Regarding other vaccines, where evidence for overall benefit is missing, we need randomized trials of their effect on overall health to provide the safety evidence that parents rightly request. Rather than making vaccine

hesitancy a top-ten threat, the WHO should make it a top-ten priority to follow-up on its decision from 2014 to further investigate the overall health effects of vaccines.

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