

across different risk groups will be needed in various settings.⁹⁻¹² It would be wise for the STH community to invest in learning from such situations now. By establishing appropriately ambitious STH targets in specific settings, we will mobilise resources, reveal what is possible, clarify strategies, and strengthen our resolve. To paraphrase Lao Tzu, by being far reaching, we return to the original point of the WHA vision for STH control.

David G Addiss

Children Without Worms, Task Force for Global Health,
Decatur, GA, USA
daddiss@taskforce.org

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Making mandatory vaccination truly compulsory: well intentioned but ill conceived

The USA, Australia, and about half of European countries have mandatory vaccination requirements.^{1,2} The experience of the USA and Australia has been well studied. In the USA, vaccine mandates are implemented through requirements for proof of vaccination or exemption at school entry. In Australia, many provinces have school entry requirements and nationally mandated vaccination has traditionally been implemented by denial of childcare benefits to those who refuse vaccines—unless they provide proof of exemptions. Both countries have historically offered non-medical exemptions to their compulsory laws to accommodate the minority of parents who object to vaccination. Studies³⁻⁵ have shown increased ease of granting non-medical exemptions to be associated with higher rates of refusal and pertussis. Therefore administrative requirements for exemptions might reduce rates of vaccine refusal.

Amid substantial media attention surrounding a measles outbreak that originated in Disneyland (Anaheim, CA, USA), well intentioned legislators in several states, have proposed legislation to get rid of non-medical

exemptions, which would make mandatory vaccination truly compulsory. California removed all non-medical exemptions on June 18, 2015. In Vermont in 2012, after a contentious debate about elimination of the philosophical exemption, individuals opposed to compulsory vaccination formed a well organised coalition. Rather than eliminate the philosophical exemption, restrictions were added to both religious and philosophical non-medical exemptions. In 2015, the debate resurfaced after legislation to eliminate the philosophical exemption was introduced. With strong support from the medical and public health community, Vermont abolished the philosophical exemption on May 28, 2015. Similarly, Australia eliminated a non-medical exemption to a vaccine requirement for childcare benefits. Australians now must either vaccinate their children or forgo substantial childcare and family tax benefits.⁶ This change introduces financial penalties for refusal, in a context in which many families cannot afford childcare without these benefits.⁷

These legislators are well intentioned. They see more parents worried about the safety of vaccines and that

more parents are delaying and refusing vaccines through non-medical exemptions. As legislators, they are looking for a direct legislative fix by proposing to eliminate non-medical exemptions altogether. Unfortunately, despite the good intentions, this approach is imprudent. The problem of vaccine hesitancy is far more complex than can be addressed with a simple ban on non-medical exemptions. Parents no longer fear diseases such as measles, which have been largely controlled through vaccination. Instead, parental fear has shifted from the diseases to the vaccines. Despite a remarkable safety record, vaccines are not perfect and many parental safety concerns have remained unaddressed. Effective methods to address vaccine hesitancy at the level of the provider, community, and nation are scarce. Trust in the pharmaceutical companies that make vaccines and the governments that purchase and promote them are at an all-time low. A more draconian approach could result in more harm than good, and might even backfire by driving hesitant parents to accept antivaccination arguments.

This lesson was learned in the UK more than 150 years ago when the government made smallpox vaccination compulsory, initially without non-medical exemptions. Antivaccination groups were joined by libertarians, and 20 000 demonstrators took to the streets of Leicester. Parents who refused vaccines became martyrs. Ultimately, the UK resorted to the introduction of a non-medical (conscientious) exemption.

Rather than repeating history, lessons need to be learned from it. In fact, the recent legislative efforts have resulted in substantial backlash. This backlash has been a factor in the defeat of proposed laws in Washington and Oregon, which proposed to restrict exemptions. There is

substantial value in making exemptions more stringent and including requirements for health education. However, getting rid of non-medical exemptions altogether and making mandatory vaccination truly compulsory risks substantial public backlash and could be counterproductive to the ultimate objective of reaching and sustaining high rates of immunisation coverage and disease control.

Daniel A Salmon, C Raina MacIntyre, Saad B Omer

Johns Hopkins School of Public Health, Baltimore, MD 21209, USA (DAS); School of Public Health and Community Medicine, University of New South Wales, Kensington, NSW, Australia (CRM); and Rollins School of Public Health, Emory University, Schools of Public Health & Medicine and Emory Vaccine Center, Atlanta, GA, USA (SBO) dsalmon1@jhu.edu

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Help from above: outer space and the fight against Ebola

The current outbreak of Ebola virus disease has caused 11 220 deaths, with 15 085 lab-confirmed cases in Guinea, Sierra Leone, and Liberia as of July 1, 2015.¹ These numbers include 509 deaths and 874 infections in health-care professionals (HCPs).¹

Stakeholders have recognised the benefits that outer space can provide in improving health of populations. Attendees at the third UN conference on the exploration and peaceful uses of outer space (UNISPACE III) in July,

1999, adopted a declaration that included recommendations to use space technology to help control infectious diseases.^{2,3}

Space can play a valuable part in tackling Ebola virus disease through many mechanisms. For instance, the space sector helped develop modern telemedicine, which is used daily by astronauts aboard the International Space Station (ISS). Telemedicine involves easy to use, often compact equipment that can



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