Best of times, worst of times

World Immunization Week highlighted not only some major vaccine success stories but also some of the serious challenges ahead.

There were plenty of good news stories to go around during the recent World Immunization Week, which is a public health information campaign spearheaded by the WHO that takes place in the last week of April every year.

Vaccines are now available for 25 different infectious diseases and, collectively, their use prevents an estimated 2 – 3 million deaths each year. Some of the information that was highlighted during the campaign included the fact that, at the end of March 2014, the WHO South East Asia region was officially declared polio-free, which is an amazing achievement and a major landmark for the Global Polio Eradication Initiative. Also noteworthy was the publication of the results of the first controlled-temperature trial (CTC; that is, vaccine storage outside the cold chain at temperatures of up to 40 °C for no more than 4 days) for MenAfriVac — a meningococcal A conjugate vaccine that was developed specifically for use in the meningitis belt in sub-Saharan Africa[1]. A total of 155,000 individuals were vaccinated during the 10 day trial, which took place in a rural district in Benin, West Africa, in October 2012. More than 100% coverage was achieved and acceptance among vaccinators and supervisors was very high; moreover, only nine of 15,000 vials used had to be discarded owing to exposure to temperatures higher than the recommended range. The additional flexibility that the CTC scheme provides should prove invaluable for achieving MenAfriVac coverage in that difficult last mile, where the cold chain is trickiest to maintain, and the success of this trial means that the CTC is being actively explored for other vaccines.

However, unfortunately, there was also plenty of bad news to go around. Regarding the polio eradication effort, although the progress in South East Asia is commendable, it is more than offset by challenging conditions in other regions. In fact, in recent days, concern over the international spread of wild poliovirus has led the WHO to declare polio a public health emergency of international concern (PHEIC); this is only the second such emergency to be declared in the history of the organization. The PHEIC calls for an internationally coordinated response before the high polio transmission season begins, and the WHO has asked the governments of the three countries from where the virus has already spread this year (Pakistan, Cameroon and Syria) to ensure that all residents or long-term visitors who wish to leave the country have received a dose of polio vaccine in the 12 months before they travel. Such measures have also been advised for seven additional countries, including Israel and Nigeria.

In addition to the science of vaccines, this year's World Immunization Week also brought some welcome attention to an often-overlooked but vital area — effective communication of the benefits of chidhood vaccination. A new report from the American Academy of Arts and Sciences[2,3] discusses the need to develop evidence-based strategies for effective communication to tackle the growing epidemic of 'vaccine hesitancy'. As scientists, it can be easy to be frustrated with parents who delay or, in extreme cases, refuse vaccination for their children but the fact remains that vaccine hesitancy is a major problem. How can we tackle it effectively? The report outlines the need for a research agenda aimed at understanding the reasons behind the 'vaccine confidence gap'. It calls for longitudinal studies to understand the parental decision-making process, including when and how attitudes to vaccination are established, as well as identifying which information sources are most important in that process. In addition, the report highlights the need for a separate evaluation of the communication strategies that are used by medical practioners.

In the UK, the impact of a loss of parental confidence in vaccination became all-too apparent a decade ago, when the fallout of the now-retracted Wakefield paper resulted in a catastrophic decline in the uptake rate for the measles, mumps and rubella (MMR) vaccine in England to <80% in 2003 – 2004. Analysis of the immunization statistics for England for 2012 – 2013 (REF. 4) shows that MMR coverage has now recovered to 92.3%. However, the 2012 – 2013 measles outbreak in Wales, in which more than 1,200 individuals were infected, was a reminder that low vaccine coverage rates in childhood can cast a long shadow. Vaccines save millions of lives, but they could save many more. Innovative approaches are required to address poor vaccine coverage globally — whether it is due to low access to vaccines or to low confidence in them.

> "A new report... discusses the need to develop evidence-based strategies for effective communication to tackle the growing epidemic of 'vaccine hesitancy'"

1. Zipursky, S. *et al. Vaccine* **32**, 1431–1435 (2014).
2. Bloom, B. *et al. Science* **344**, 339 (2014).
3. American Academy of Arts and Sciences [online], http://www.amacad.org/multimedia/pdfs/publications/researchpapersmonographs/publicTrustVaccines.pdf (2014)
4. Public Health England [online], https://catalogue.ic.nhs.uk/publications/public-health/immunisation/nhs-immu-stat-eng-2012-2013/nhs-immu-stat-eng-2012-13-rep.pdf (2013)