



THE NEXT DECADE OF VACCINES

**Addressing the challenges that remain
towards achieving vaccinations for all**



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EXECUTIVE SUMMARY

No child should die from diseases that can be prevented. Immunisation has proven the test of time as one of the most successful and cost-effective global health interventions of our time - averting an estimated 20 million deaths and 500 million cases of illness in the decade of vaccines, from 2011 to 2020. Vaccines not only save lives but are central to global health security and are a fundamental component for achieving several of the United Nations Sustainable Development Goals. The UK has been a world-leader in global immunisation efforts and without UK support these remarkable achievements in immunisation would not have been possible. UK funding has helped immunise 76 million children against vaccine-preventable diseases, saving 1.4 million lives globally.



Only 7% of children in the poorest 73 countries receive all 11 WHO-recommended vaccines

Despite the known value of vaccines and great advances in research and development, millions of children still miss out on basic vaccines and 1 in 10 children still receive no vaccines at all. In Africa alone, over 30 million children under the age of 5 suffer from vaccine preventable diseases every year and over half a million of these cases result in death. Further to this, in recent years global immunisation rates have stalled and in some places even decreased. Without addressing the reasons for low and stalling immunisation rates, hard won achievements in immunisation could be undone, and millions more children will continue to miss out on interventions that could be life changing.

Whilst we have progressed vastly on immunisation, data on how far we have come remains weak and at times, inaccurate. A changing aid landscape means that a large

proportion of under-immunised children now live in middle-income countries or fragile and conflict affected states. Locating and reaching those children missing out on vaccines must be a priority for the immunisation community moving forward. Across the world, including in Europe, vaccine hesitancy is also on the rise, leading to increased scepticism and lower uptake of key vaccines, subsequently leading to the spread of diseases. Greater collaboration between immunisation actors, with civil society at the centre, is vital in order to counter attacks on immunisation and reach those children most in need.

This report aims to highlight the reasons for low and stalling immunisation rates and what the UK and global immunisation stakeholders need to do to ensure that we reach every last child with all 11 WHO-recommended vaccines. The next 'decade of vaccines' presents an opportunity to tackle the challenges that remain and expand global vaccine coverage. Polio eradication efforts reflect the possibilities of what is achievable when ambitious targets are set and global political will and funding is coordinated.



Every \$1 invested in vaccines yields \$16-44 in return

Over time, sustainability of vaccination services can only be achieved through all global immunisation actors working together to strengthen essential immunisation systems in countries. Equal access to all vaccines and aiming for the 'fully-immunised child' must be central to this. Political leadership and prioritisation of vaccines is more vital than ever if we are to sustain the efforts and achievements of the previous decade, and the UK must remain a world leader in driving these efforts.

RECOMMENDATIONS

- 1. The UK must continue its leadership and prioritisation of essential immunisation systems in its development portfolio.** This must include continued financial support to Gavi, the Vaccine Alliance and the Global Polio Eradication Initiative. It is recommended that the UK increase its financial contribution from 2016 to 2020 in the next Gavi replenishment cycle from 2021-2025. The UK should continue to fund the GPEI until global polio eradication is certified.
- 2. The UK, Gavi, and all global immunisation stakeholders must raise their immunisation targets to encompass full access to all 11 WHO-recommended vaccines for all children everywhere.** The UK should use key political moments, such as the UN High-Level Meeting on Universal Health Coverage (UHC) and the G20, to champion ‘the fully immunised child’ and ensure that routine immunisation is recognised as a core service of UHC.
- 3. The UK should call for Gavi’s Eligibility and Transition Policy to be reviewed.** This review should consider additional indicators to inform transition that go beyond GNI per capita alone, and look at the sustainability of essential immunisation systems, immunisation coverage, and the fully immunised child. This review should be informed by a full analysis of the impact of Gavi transition in the 20 countries which transitioned between 2016 and 2020 and should be used to inform Gavi 5.0.
- 4. All global immunisation stakeholders, including the GPEI, Gavi and the WHO, should assess and prepare for polio transition as a matter of urgency.** In order to effectively transition polio assets into routine immunisation systems, the UK must call for a global governance mechanism to be set up to provide oversight and accountability for the polio transition process and the implementation of the post certification strategy.
- 5. The UK must increase its investment and support for the development of in-country health systems.** This should include increased support for country ownership of essential elements of the immunisation and health systems by encouraging country governments to prioritise immunisation, and increase health financing and investments in health workers. Health systems support should be focused on countries where the need is greatest, not on GNI per capita. In particular this should focus on fragile and conflict affected states.
- 6. The UK, Gavi, and all global immunisation stakeholders should recognise the contribution and potential of civil society in increasing access to, and uptake of, vaccines.** The UK should use its voice to promote support for the inclusion of civil society as a critical partner, recognising their crucial role in every area of immunisation, including in tackling vaccine hesitancy.
- 7. All global immunisation stakeholders should invest in robust and simple approaches to digital recording for families and local health workers, as well as, data systems for vaccine indicators and demographic data.** Data should be collected at a regional, national, and global level for every vaccine available, going beyond an assessment of just DTP3.



“As attention now turns to strengthening immunisation post-2020, 2017’s outbreaks are a sobering reminder that no country can take its eye off the ball: effective national immunisation systems require ongoing nurturing, political commitment and public support. All countries need to see immunisation systems as core to their health systems, and all citizens need to see immunisation as a basic human right. In their absence, countries, regions and the world as a whole are less healthy, less safe and less prosperous. We become complacent at our own peril.”

Strategic Advisory Group of Experts on Immunisation, WHO

FOREWORD

Vaccination has led to a dramatic reduction in the suffering caused by serious infectious diseases that were once commonplace. Smallpox was completely eradicated in 1977 through a global vaccination programme and, through a similar approach, the world is now close to eradicating a second disease from the planet, Polio. Despite this proven success, vaccination rates are falling in Europe and the US due to a combination of anti-vaccine sentiment and complacency. On the one hand we face an American President who gives succour to those who still peddle disproven theories and on the other, vaccines have been so successful at diminishing the burden of death and disability associated with infections like Polio or Measles, that many adults consider them trivial childhood illnesses.

Globally, the progress of the Polio eradication programme demonstrates what can be achieved but basic vaccination rates in poorer countries are stagnant at 85% while less than 10% of children receive the full range of vaccines recommended by the World Health Organisation (WHO). Drawing attention to the issues of both immunisation access and uptake is what led me to establish the All-Party Parliamentary Group on 'Vaccinations for All' in 2017. Since then we have been working to raise awareness of the importance of vaccines amongst UK parliamentarians and the Government.

As a doctor, I have always been an advocate of the power of vaccines, but I believe a level of complacency is affecting our attitude to vaccines, with people assuming we have made such great strides that the job is effectively done. While the focus of this report is on the challenges of providing access to immunisation in developing countries, the complacency emerging in the US, Europe, and to some extent the UK, is in danger of undermining the commitment of energy and funds to the task. The job will not be done until every child has access to the essential vaccines that can save their lives and allow them to live prosperously and contribute to the progress of their own communities. Across numerous countries, cities and villages, many children still have no access to vaccines and the primary healthcare benefits associated with vaccine programmes.

Visiting Ethiopia in 2016, a country which has made dramatic progress in reducing its under-five child mortality rate, showed me the dramatic impact that vaccine interventions make – a medical benefit that we take for granted here in the UK. In Ethiopia, child deaths have been cut from 202 deaths per 1,000 live births in 1990 to 59 today¹. But there is still a long way to go, as one in ten children worldwide still receive no vaccines at all.

As the 'Decade of Vaccines' draws to an end, the next few years present a key opportunity to take stock of how far we have come and look to the future. Crucially, however, we must assess how far we have yet to go, and what we need to do to ensure that no one is left behind. The eradication of Polio will be a cause for great celebration, however, it is important that the intensive polio campaign is not then simply dismantled but replaced by a more systematic approach to ensure that all children receive the full vaccination programme recommended by the WHO.

This report illustrates some of the important challenges to achieving equal access to vaccinations for all and it is our hope that the recommendations will be heard and considered by the UK Government and other global donors as a matter of urgency. Preparing properly for a change of focus, as we approach the eradication of Polio, will be critical in ensuring that no one else is left behind from the most transformative public health initiative of our time.



A handwritten signature in blue ink that reads "Dr Philippa Whitford". The signature is fluid and cursive.

Dr Philippa Whitford MP
Chair of the APPG Vaccinations for All

1 Knoema: Ethiopia, under-5 mortality rate

ABBREVIATIONS

AMC	Advanced Market Commitment
AMR	Antimicrobial resistance
APPG	All-Party Parliamentary Group
cVDPV	Circulating vaccine derived polio virus
DFID	Department for International Development
DHSC	Department of Health and Social Care
DTP3	Diphtheria, tetanus and pertussis vaccine – third dose
Gavi	Gavi, the Vaccine Alliance
GNI	Gross national income
GPEI	Global Polio Eradication Initiative
GVAP	Global Vaccine Action Plan
LIC	Low-income country
MIC	Middle-income country
ODA	Oversees development assistance
PHE	Public Health England
SAGE	Strategic Advisory Group of Experts on Immunisation
SDG	Sustainable Development Goal
VPD	Vaccine preventable diseases
WHO	World Health Organisation

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INTRODUCTION

In 2018, no child should die from diseases that we can treat, or suffer from illnesses that we can prevent. Immunisation has proven the test of time as one of public health's most cost effective interventions, saving 2-3 million lives a year and saving millions of pounds in long term economic benefits. It is estimated that in the 'decade of vaccines' from 2011 to 2020, vaccines will avert an estimated 20 million deaths and 500 million cases of illness¹. Investment in immunisation programmes in developing countries has dramatically increased over the past two decades and the UK has been a world leader in driving forward immunisation efforts globally, particularly through its support for global partnerships such as Gavi, the Vaccine Alliance. Without historic and current UK support, the remarkable achievements the world has made in immunisation would not have been possible.

After great progress in vaccine coverage, in recent years global immunisation rates have stalled and in some places even decreased. Disturbingly, millions of children still miss out on their basic vaccines, with one in ten children receiving no vaccines at all. The WHO recommends 11 essential vaccines² that all children should have, which protect against infectious diseases such as polio, rotavirus, pneumonia and measles. Today, only 7% of children in the poorest 73 countries receive all 11 of these vaccines³. The commonly used, and often highest vaccine indicator, DTP3 (diphtheria, tetanus, pertussis, third dose), has remained at ~85% since 2010⁴. This stalling in progress should not be underestimated. Hard won achievements in immunisation efforts will be lost if action is not taken to address this low or unequal coverage. We are already witnessing examples of efforts being undone, and progress digressing. In Europe, for example, pockets of low coverage of the measles vaccine – caused in part by vaccine hesitancy – has resulted in vast outbreaks, with 37 deaths in 2018 alone⁵. In other regions, we have seen outbreaks of diphtheria and circulating vaccine-derived poliovirus. Setbacks in progress reflect the need to strive harder to achieve the goal of leaving no child behind.

Vaccines make economic sense. The World Health Organisation (WHO) estimates that from 2001 - 2020 the economic benefits of vaccination could reach up to USD 820 billion⁶. Increasing immunisation rates and reaching every last child is also fundamental to the successful realisation of the Sustainable Development Goals, the ambitious targets laid down by all UN Member states in 2015. Vaccinations are particularly crucial for the successful realisation of SDG 3, which aims to ensure healthy living and promote wellbeing for all.



Close to
20 million
children were under-
immunised in 2017

1 WHO: Estimated economic impact of vaccinations in 73 low- and middle-income countries, 2001–2020
2 The WHO recommends 11 vaccines for all children, plus HPV for girls. A full list can be found in Appendix 1
3 Gavi: Facts and figures
4 WHO: 1 in 10 infants worldwide did not receive any vaccines in 2016
5 BMJ: Measles - Europe sees record number of cases and 37 deaths so far this year
6 WHO: Estimated economic impact of vaccinations in 73 low- and middle-income countries, 2001–2020

**Every year in Africa alone, over
30 million children
under the age of 5 suffer from
vaccine preventable diseases -
over half a
million children
die as a result**



Vaccines benefit everyone, but are especially important to the most vulnerable, those living in poverty and those facing the largest threats to their health. The benefit of vaccines is not limited to the immediate immunity against various diseases; strong immunisation systems also lead to strong primary and public healthcare systems. This is because immunisation systems require trained health staff, and infrastructure is strengthened through the development of cold supply chains and community outreach systems. Immunisation infrastructure also offers opportunities for communities to access a range of additional health services, from malaria prevention and nutritional supplements to neonatal and maternal health care. The benefits of immunisation programmes are not limited to development contexts as immunisation programmes are also among the first interventions to be implemented during humanitarian crises.

Rationale

Every year, more than 130 million new babies are born – each equally deserving of protection against vaccine-preventable diseases. As we approach the end of the decade of vaccines, it is important to take stock of the current immunisation

landscape and the role the UK can play to ensure more children receive vaccinations. The UK's Department for International Development (DFID) has made a commitment to tackle extreme poverty and help the world's most vulnerable. Immunisation is a core component to achieving this, as well as a target of Universal Health Coverage. If an end to extreme poverty is to be achieved, the UK and international community cannot be complacent when it comes to immunisation efforts. The All-Party Parliamentary Group (APPG) operates under the belief that the UK must continue its global political and policy leadership in immunisation in order for progress to continue and reach every last child.

The WHO recommends 11 vaccines (plus the cervical cancer vaccine for girls) that all children should receive and this recommendation has directed the execution of this inquiry. Focusing on the fully immunised child is an ambitious target. However, there still remains a disproportionate number of children who fail to receive basic vaccines that are proven to save lives, and are readily available in other parts of the world. This inquiry is based on the rationale that all children deserve healthcare in equal measure, no matter where they are born.

This inquiry and subsequent report aims to highlight the reasons for stalling immunisation rates and outline the next steps for the immunisation landscape if more children are to be reached with all 11 WHO-recommended vaccines. A question central to the inquiry is what needs to be done by the UK and other global immunisation stakeholders in order to ensure that hard won gains in immunisation are safeguarded and not lost.

Methodology

In February 2018 the APPG Vaccinations for All put out a call for written evidence (appendix 2) on aspects of coverage and global accessibility to routine immunisation. The APPG received submissions from 16 organisations and researchers directly working, advocating or researching in the field of immunisation. Information was also drawn from existing literature from the World Health Organisation, including the Strategic Advisory Group of Experts on Immunisation, the Independent Monitoring Board on polio, and the Global Vaccine Action Plan. The inquiry has not conducted in-depth research into particular countries, but includes a range of case studies and examples to illustrate the points covered.

Between July and September 2018, a number of key stakeholders were invited to give oral evidence, including the Department for International Development, Gavi, the Vaccine Alliance, the Bill & Melinda Gates Foundation, Save the Children UK, Amref Health Africa UK, RESULTS UK and the Royal College of Paediatrics and Child Health. The findings of the written and oral evidence have been compiled into this report.

“Of course from a humanitarian point of view, immunisation is the right thing to do - it saves lives and keeps people healthy. But also from a public health protection point of view, vaccines are critical to controlling diseases or they will move”

Dr Seth Berkley, oral evidence to the APPG Committee, 5 July 2018



CHAPTER 1

The immunisation landscape today

Global

Immunisation remains one of the most successful and far reaching public health interventions of all time. In 2017, 116 million infants received the recommended three doses of DTP3 worldwide, the most ever, reaching coverage rates of 85%¹. This demonstrates the feasibility of reaching a significant proportion of the global population, including many of the hardest-to-reach communities, with essential life-changing services. Largely thanks to vaccines, the world has reduced the number of child deaths by more than half, and in 1980, vaccines ensured the eradication of smallpox – the only human disease in history to be completely eradicated. Successful efforts in immunisation have been made achievable with the establishment of organisations such as Gavi, the Vaccine Alliance (Gavi) and the Global Polio Eradication Initiative (GPEI), as well as with essential support and partnerships with civil society and the private sector.

Despite the successes of vaccination efforts, there are still many children being left behind. Only 7% of children in the world's 73 poorest countries receive all 11 WHO-recommended vaccines and one in ten children in 2016 received no vaccines at all². Since 2010, global vaccination rates, as measured by rates of DTP3 uptake, have stagnated at around 85%. Whilst this number is high, it is still lower than the 90% aim of the Global Vaccine Action Plan, and it does not give a complete picture of how well the routine immunisation system is functioning; masking substantial disparities both between and within countries - for both DTP3 and across the full schedule of 11 WHO-recommended vaccines.

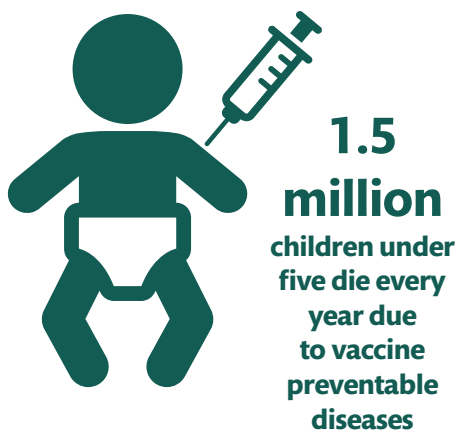
POLIO **in 2018**

29
cases of wild polio
virus in 2 countries

99
cases of circulating
vaccine derived polio
in 5 countries
(GPEI)

UK and Europe

The UK has a world class national immunisation programme that includes all of the 11 WHO-recommended vaccines, as well as a number of others as advised by the Joint Committee on Vaccination and Immunisation (JCVI). Under the NHS Constitution there is a right for patients and the public to receive the vaccinations that the JCVI recommends. There is an expectation that UK coverage for all routine childhood immunisations, evaluated up to five years of age, achieve 95%. In 2017-2018, vaccination coverage in England declined in nine of the 12 routine vaccinations measured at ages 12 months, 24 months or five years



1 SAGE: GVAP Assessment Report 2018
2 WHO: 9 in 10 infants worldwide received vaccinations in 2017

compared to the previous year³. In the same period, coverage rates of the booster course of DTP and polio was 85.6% at five years of age, a 3.3% decrease since the 2012-2013 peak. There is regional variation in coverage across England with levels of immunisation for all 13 routine childhood vaccinations available reported as highest in the North East and lowest in London. In 2017 in Scotland, 92.7% of children had completed the booster course of immunisation against DTP and polio, and 92.2% had received the second dose of MMR vaccine, by five years of age⁴.

MEASLES CASES IN ENGLAND



Between 2000 and 2017, measles vaccination prevented an estimated 21.1 million deaths globally⁵. Although the incidence of measles has more than halved since 2010, it has been on the increase again since 2017. Over 41,000 children and adults in the WHO European Region have been infected with measles in the first 6 months of 2018. The total number for this period far exceeds the 12-month totals reported for every other year this decade. Outbreaks in Europe emphasise that measles can easily spread even in countries with mature health systems.

Why we need greater vaccine coverage

“We recognise, as far as the UK is concerned, that vaccines are fundamental to health security and critical to poverty reduction. Vaccines enable children access to education and their chances of living a healthy life increase”

DFID Minister Alistair Burt, oral evidence to the APPG committee, 16 October 2018

Vaccinations save lives. There is no clearer reason for the need to reach more children with the existing vaccines we have access to. Pneumonia and diarrhoea remain the two biggest killers of children under the age of five, and both have vaccines that can protect children against the deadliest strains of the disease. Yet, coverage rates remain low, at 42% for the pneumococcal conjugate vaccine and just 25% for the rotavirus vaccine. For too long, the same children have been missed out on primary healthcare and have not received simple interventions that can give them healthier, longer and more prosperous lives. Tackling inequities in vaccine coverage is one of the most effective ways reduce child mortality, as well as being one of the most economic, practical and moral global interventions to do.

3 NHS Digital: Childhood vaccination coverage statistics 2017-18

4 National Statistics: Childhood immunisation statistics Scotland 2017

5 WHO: Measles

Global Health Security

Vaccines are a cornerstone of global health security. Stalled and falling immunisation rates are a very real risk to global health security in a world where international movement of people is frequent. Global travel amplifies the risk of pandemics as individuals may carry a virus and inadvertently cause outbreaks in other countries within hours. Without sustained access to vaccines, disease outbreaks are inevitable. Epidemics and pandemics impose high human and economic costs on countries and beyond borders, affecting national and global development trajectories. It is estimated that the annual global cost of moderately severe to severe pandemics is roughly USD 570 billion - approximately 0.7 per cent of global income⁶. This includes the effects on international trade if access to vaccinations is not improved, as restrictions on trade can be imposed as a result of disease outbreaks. With shifting populations, unprecedented refugee movement and vastly expanded international travel, the threat of disease outbreaks is ever present, as observed with Ebola and Zika. The Ebola outbreak in West Africa in 2014-15 killed almost 12,000 people and sickened many more, placing stress on already fragile health systems, crippling the health workforce and requiring a multi-billion dollar international response. The resultant MERCK VsV Ebola vaccine was eventually developed at the end of the outbreak, and is now being used in response to an Ebola outbreak in the Democratic Republic of Congo.

Antimicrobial Resistance

In addition to outbreaks, resilient health systems with strong immunisation systems can also withstand other emerging threats to global health security. Antimicrobial resistance (AMR) is an urgent global health threat and if current trends hold 10 million people worldwide will die from drug-resistant infections by 2050. One of the most effective ways to combat drug- and multidrug-resistant infections is to prevent the spread of pathogens by vaccinating against disease. A 2016 review on AMR, chaired by Lord O'Neil, highlighted the fundamental need for vaccines in tackling AMR, yet despite the known benefits of vaccines, budgets and discourse are still heavily focused on reactive, rather than preventative, measures⁷. The UK can support the future vaccine agenda by ensuring that all public health strategies incorporate and recognise the benefits afforded by vaccines.



6 The World Bank: Pandemic preparedness and health systems strengthening
7 Review on Antimicrobial Resistance: Tackling drug-resistant infections globally: Final report and recommendations

EXTENSIVELY-DRUG RESISTANT TYPHOID

There is a rapid shortfall in antibiotics ability to treat drug- and multidrug-resistant strains of different bacteria, such as typhoid. There is currently an outbreak of extensively drug-resistant (XDR) typhoid in Pakistan which has a high transmission potential. At least 850 cases have been identified in Pakistan and one travel-related case has been identified in the UK. It is the first XDR outbreak of typhoid recorded globally and the strain is resistant to five types of antibiotics. Researchers also expect this strain to develop resistance to the one remaining antibiotic it is susceptible too, which would make typhoid entirely untreatable. Fortunately, there is an effective typhoid vaccine that, if deployed equitably, and made accessible to those at high-risk, could prevent typhoid infections and play a role in slowing the spread of XDR typhoid. The typhoid conjugate vaccine is not one of the WHO's core recommended vaccines, but it is recommended for babies in high-risk areas, reducing the likelihood of infection and the need for antibiotics. Since the outbreak of XDR typhoid, Gavi has introduced the typhoid conjugate vaccine to its portfolio.

Key Immunisation Actors

Gavi, the Vaccine Alliance

Gavi has transformed immunisation efforts. Since its establishment in 2000, Gavi has contributed to the immunisation of over 690 million children and has helped prevent almost 10 million deaths from illnesses such as hepatitis, pneumonia, measles, meningitis, diarrhoea, yellow fever, and cervical cancer. In purchasing vaccines for 60% of the world's birth cohort, Gavi has a unique ability to influence the vaccine market, allowing it to reduce vaccine prices globally, creating healthier vaccine markets and helping to ensure secure vaccine supplies. Gavi uses a co-financing model in order to support country ownership, whilst also providing health systems and immunisation strengthening support and targeted country assistance, to contribute to sustainable improvements in equity in immunisation coverage.

The Global Polio Eradication Initiative

The power of vaccines is particularly potent when looking at the example of polio, where cases of the disease have reduced 99.9% since 1988 thanks to the GPEI. GPEI is a public-private partnership formed of five core partners: the WHO, Rotary International, the US Centers for Disease Control and Prevention (CDC), UNICEF, and the Bill & Melinda Gates Foundation. Polio eradication efforts have used innovation to drive equitable access to vaccines in some of the hardest to reach communities. Whilst labour intensive and costly, these efforts have established an entry point for other essential vaccines and broader health interventions. The remaining cases of wild polio have proven to be the most challenging to eradicate. There have been more cases of polio in 2018 than 2017, reflecting the challenges that remain for the partnership and showing that much more needs to be done before the world can be declared polio-free.

Civil society

Civil society has a major role to play in the representation, promotion and implementation of immunisation programmes at a local, country, and global level. Civil society organisations (CSOs) are vital in reaching children in remote communities or marginalised groups, who constitute a large proportion of all unvaccinated children. Civil society is best placed to understand the barriers to equitable access in each community, create demand and knowledge of services, and to work with authorities to address these barriers. It is then able to use this unique knowledge and insight in order to shape policy, driving down inequities. Civil society is also influential in the formulation of national health policy and in shaping policy debates. Platforms such as the Gavi Civil Society Steering Committee provide a collective voice on immunisation, allowing for independent accountability on vaccines commitments.

Local CSOs work collaboratively with health workers to identify children who have missed out on vaccines and to encourage families to take their children for vaccination. In many cases, without CSOs, children would not be vaccinated. For example, The Churches Health Association of Zambia (CHAZ) works closely with the Zambian Government to respond to outbreaks and introduce new vaccines to the community⁸. As a trusted community organisation, CHAZ is able to work deep in communities, with families, schools and churches to install confidence in vaccines, and increase the uptake of new vaccines.

The private sector

The private sector has a major role to play in creation and innovation of vaccinations. The private sector is also vital for local, country, and global, advocacy to ensure vaccines and immunisation are recognised as an essential right for all children. Further to this, it can support the diversification of funding sources for immunisation programmes that improve equitable access to the 11 WHO-recommended vaccines. The private sector also has a key role to play, including through investing in innovative financing mechanisms such as the Advanced Market Commitment (AMC), and in the development of new and improved vaccines. For example, in 2009, Pfizer, the pharmaceutical company, became one of the first companies to participate in the AMC and has pledged to supply up to 740 million doses of its vaccines in Gavi-eligible countries by 2025⁹.

8 Churches Health Association of Zambia: About us

9 Gavi: AMC supply guarantees

CHAPTER 2

How the UK has helped immunise millions

The UK is a leader in global health and immunisation. Since 2000, the UK has predominantly supported global immunisation efforts through its financial support to Gavi. UK funding has helped immunise 76 million children against vaccine-preventable diseases, saving 1.4 million lives. Over the period 2016 – 2020, the UK provided £1.44 billion in funding to Gavi and its innovative funding mechanisms, an amount that constituted 25% of Gavi’s total budget¹. DFID’s investment through Gavi enables significant reach across 73 countries, which could not be achieved through direct bilateral support alone.



The UK’s support for Gavi is fully aligned with DFID’s goal to help the world’s most vulnerable, and the UK’s broader commitment to the 2030 Agenda for Sustainable Development. Gavi consistently scores A’s in its annual DFID reviews and scored highly in the Multilateral

Development Review, ultimately assessed as strong value for money. The UK is highly influential in setting the direction of Gavi policy through its seat on Gavi’s Board, as well as in several decision-making committees. This influence over funding mechanisms and policy means that there is greater transparency and accountability for UK taxpayer’s money. Gavi has, with support from the UK, fostered collaboration with other donors and the private sector to leverage economies of scale and market dynamics to lower vaccine prices. By doing

In 2017, nine countries started to fully self-finance all the vaccines introduced with Gavi support

¹ DFID: UK investment in Gavi, the Vaccine Alliance annual review 2016

so, Gavi successfully positions countries to gradually share more responsibility for vaccine financing, ensuring they can take over their immunisation programmes at an affordable cost. A fundamental requirement of UK funding for Gavi is this ability to support countries in ownership and financing of their immunisation systems, so that countries are able to effectively transition away from aid.

The UK, through DFID, has also been instrumental in the fight against polio. Since the GPEI started, the UK has contributed a total of £1.3 billion, making it the second largest sovereign donor. Most recently, DFID contributed £400 million to polio eradication over 2013 to 2020, vaccinating around 45 million children against polio and saving more than 65,000 children from lifelong paralysis every single year². The UK also supports The Global Fund to fight AIDS, Tuberculosis and Malaria, most recently with £1.1 billion over 2016-2019, which works with Gavi to implement the BCG vaccine and research and development for malaria vaccines.

“As well as concentrating on particular outbreaks, we don’t want to move away from recognising that it’s the overall strength of a health system and the rate of immunisation that will make a significant difference to a population”

DFID Minister Alistair Burt, oral evidence to the APPG committee, 16 October 2018

Health Systems Strengthening (HSS)

Through its investment in Gavi, the UK plays a critical role in supporting countries with the tools and resources they need to invest in strengthening their own health systems. DFID also supports the strengthening of health systems in countries through bilateral support and centrally managed health programmes. DFID’s bilateral and HSS funding has a complimentary impact with its support for Gavi. These funding streams strengthen health systems both individually, as well as naturally complimenting each other.

Research and development

DFID supports vaccine research and development (R&D), which focuses on the development of new vaccines, such as for meningitis and diarrhoeal diseases, that can impact on the lives of those living in poverty in the short to medium term. The Department of Health and Social Care (DHSC), through the UK Vaccine Network, is investing £110m of official development assistance (ODA) funding over five years to support the development of new vaccines against diseases with epidemic potential, such as Ebola and Zika. The UK also supports R&D through the Ross Fund and the UK Government’s Global AMR Innovation Fund (GAMRIF).

ADVANCED MARKET COMMITMENT FOR THE PNEUMOCOCCAL CONJUGATE VACCINE

Gavi has made significant contributions to increasing equitable access to vaccines in low-income countries. The Advance Market Commitment (AMC) is an innovative financing mechanism spearheaded by Gavi, designed to incentivise vaccine manufacturers to make vaccines affordable and therefore increase accessibility to them. In 2008, no lower-income country (LIC) had introduced the pneumococcal vaccine. Today, however, the Pneumococcal AMC has enabled 57 countries to introduce the pneumococcal conjugate vaccine (PCV) and 149 million children have been vaccinated and protected against pneumonia. Rates of coverage of PCV are 77% in LICs compared to 88% in high income countries, reflecting the power of Gavi in implementing vaccines in LICs at a similar rate to high-income countries. This unique financing mechanism has also been explored for other health commodities and in other sectors such as education.

Summary

The UK is an important leader in improving coverage of vaccinations globally and has been instrumental in saving millions of lives through investments in immunisation, particularly through its role as a major donor to Gavi and GPEI, as well as through its investments into R&D for new vaccines. The most effective way for the UK to safeguard gains made in immunisation is by continuing to fund key multilaterals which have transformed the immunisation landscape and saved millions of lives. In order to ensure that the UK maintains its influence in setting the vaccine agenda and driving progress forward, it should remain a leading donor and maintain its seat on the Gavi Board.

CHAPTER 3

Not a done deal: Why have immunisation rates stalled in recent years?

As the world becomes a healthier, more prosperous place to live, as infant mortality decreases and we come closer to the brink of eradicating diseases, there is a risk in presuming that immunisation is a 'done deal', and political and financial investments could be put towards other uses. However, complacency could be incredibly detrimental and risks putting millions of lives at risk. Understanding the reasons behind stalling immunisation rates allows for action in the future to ensure that hard-won immunisation efforts are not lost and the next steps of immunisation can be planned for and achieved. The reasons for stalling or declining immunisation rates are complex. A lack of investment in health, vast competition within health budgets, and other competing priorities contribute to weak immunisation systems. In a changing aid landscape, a key challenge that remains is locating those missing children. These children are no longer those located in physically difficult to reach areas, but those in urban slums, middle-income countries, conflict affected areas, and those on the move.

"It would be easy to reach the fifth child if they were standing next to the other four - but they are not"

Dr Chris Elias, oral evidence to the APPG committee, 5 July 2018

Children in middle income countries (MICs)

MICs now collectively account for a large proportion of the world's population, including 73% of the world's poorest people. Special focus is needed on MICs with large populations where the majority of under vaccinated children live. Despite an increased economic status, as indicated by the Gross National Income (GNI) of a country, many health inequities remain within countries. As a country grows economically, and as national budgets increase, there is no guarantee that health budgets will increase accordingly, leading to a risk that children will remain under – immunised. Of the 19.9 million children not reached with routine immunisation services, 60% live in just ten countries: Afghanistan, Angola, the Democratic Republic of Congo, Ethiopia, India, Indonesia, Iraq, Nigeria, Pakistan and South Africa¹.

Transition away from health financing

As countries gain 'middle-income' status, financing from donors often changes and reduces in a process referred to as transition. This change is largely based on a specific GNI threshold, only sometimes with added criteria assessing health outcomes. Once Gavi-supported countries achieve a 3-year rolling average GNI per capita income of USD 1,580, they begin a 5-year process of transition away from Gavi support, to become fully self-financing for vaccines. Fully self-financing countries can benefit from a further five years of vaccine purchases at Gavi prices through UNICEF, an additional five to ten years of reduced prices on the purchase of specific vaccines from manufacturers, and technical support from Gavi partners. By 2020 the number of countries eligible for Gavi support will have reduced from 73 to 53.

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WHO: Immunisation coverage

Despite Gavi's gradual transition process, immunisation rates in some MICs are stalling or even falling. Gavi support and affordable vaccine prices are also unavailable to countries who have never been of LIC status. This means that on current trajectories, more than half of under-immunised children will live in middle-income countries that will not be eligible for Gavi support based on the current criteria by 2025. Falling immunisation rates in MICs as they transition away from Gavi support demonstrates how quickly investments can be lost if transition arrangements are not adequately accounted for. By not reaching the millions of children in MICs, more and more children become at risk of vaccine-preventable, fatal diseases.

The pneumococcal conjugate vaccine (PCV) is one of the most expensive vaccines in Gavi's portfolio, however, the price of this is still affordable with Gavi thanks to the AMC. Today there are comparatively high levels of PCV coverage in LICs, compared with MICs. Yet, the three highest pneumonia-burden countries, India, Nigeria and Pakistan, are all MICs. For non-Gavi eligible countries, the PCV can be up to five times higher than in LICs, sometimes up to USD 50 per vaccine. Rising prices after transition can make vaccines unsustainable in the long-term.

THE TRIPLE BURDEN OF TRANSITION

GNI as an indicator for changes in health-financing presents a challenge as increases do not necessarily represent increases in a health budget or functioning of a health system. When donor financing changes, countries face a triple burden of increasing costs which can affect their ability to tackle inequitable coverage: decreasing financial support for immunisation, increasing vaccine prices for new and existing vaccines, and the financial requirements to tackle immunisation inequities and increasing birth cohorts. Transition often happens at the same time as other donors are also withdrawing aid from the health sector, which can lead to increased competition within a limited health budget. The WHO has acknowledged the issue of large numbers of unvaccinated children residing in MICs in its MIC strategy, but results are still to be seen from the recommendations made.

Essential elements at risk

Funding and support from GPEI is also changing in many countries due to shifting priorities and the process towards the eventual wind down of the GPEI partnership when polio is eradicated. Currently 95% of polio funding is spent in 16 priority countries. It is assumed that the bulk of polio funds in the new strategic period, from 2020 to 2023, will be reserved for these priority countries and key at-risk countries, including those suffering from outbreaks of circulating vaccine derived polio such as Niger and Papua New Guinea.

The impact of polio funding has extended far beyond polio activities and has also supported key elements of routine immunisation systems, including 70% of global surveillance systems. There is a significant risk that wider surveillance activities and routine immunisation programmes could

be compromised during polio transition, especially in the eight countries that simultaneously face a reduction in funding from the GPEI and Gavi. As countries transition away from donor funding, other public health functions that are currently funded by polio money will need to be sustained and financing gaps will need to be filled. It is also imperative that polio functions are able to be absorbed by the primary healthcare system, however, there is a risk that routine immunisation systems will be unable to mainstream polio essential functions. This absorption would require national support and prioritisation of routine immunisation, yet in the 16 polio-priority countries² the average government expenditure on routine immunisation within immunisation budgets is just 31%.

Fragile and conflict affected countries and areas

The number of children living in fragile and conflict affected countries remains high and it remains common for these children to miss out on vaccinations. Today, two-thirds of under-immunised children live in fragile areas. Children caught up in conflict are more vulnerable to disease outbreaks, making it imperative for them to have access to vaccines. There has been a distinct difference in progress on vaccination coverage between non-fragile LICs, where coverage levels have improved steadily over the past 18 years, and fragile LICs where progress has been static or decreasing. Out of 11 countries that were prioritised by the WHO emergency programme, only the Democratic Republic of the Congo and Ethiopia have made significant progress since the decade of vaccines started³.

CASE STUDY: NIGERIA

Despite its middle-income status, Nigeria has the highest number of unimmunised children in the world – 4.3 million. Some districts have immunisation rates of 3%, and whilst it has not had a case of wild polio virus in two years, it has yet to achieve post-certification status (achieved after three years free from wild polio) and has had outbreaks of cVDPV. This is largely due to vast areas in the north that are inaccessible and have large numbers of the population who are unable to access health services.

Nigeria is facing a reduction in financial resources as it simultaneously transitions away from Gavi and GPEI support. Recently Gavi approved lengthening Nigeria's transition process and adding extra support for the Government of Nigeria as the country could not take full ownership of its immunisation system. This exceptional support aims to increase the vaccination coverage from 33% to an ambitious 84%. This highlights that donor withdrawal based on GNI alone is not a sustainable means of measurement.

² excluding Somalia

³ SAGE: GVAP Assessment Report 2017

In 2017, there were 68.5 million people displaced globally, presenting a huge challenge for reliable and consistent access to immunisation services⁴. Large numbers of people on the move can increase the risk of pandemics and also interfere with children receiving consistent access to healthcare providers needed for vaccinations. Official refugee camps usually have high immunisation rates as a result of temporary humanitarian health systems. However, these figures do not take factor in the remaining 80% of displaced people who live outside of official camps. International support in humanitarian situations is imperative and effective, but also exposes

45% of under-immunised children live in **18 fragile states** - amounting to **15.5 million** under-immunised children

weaknesses in, and the need for, robust immunisation systems. For example, in Cox's Bazaar, Bangladesh, a major outbreak of cholera was avoided due to swift international action and the WHO distributing 900,000 doses of the cholera vaccine. However, a diphtheria outbreak was not caught as quickly, and 44 people have died as a result of the rapid spread of the disease.⁵

Vaccine hesitancy

Vaccine hesitancy, known as a delay in acceptance or refusal of vaccines despite the availability of vaccination services, is increasingly a factor in low and stalling immunisation rates. Since 2014, the number of countries reporting hesitancy has steadily increased, and in 2017 only 14 countries out of 194 reported no vaccine hesitancy⁶. The reasons for increasing hesitancy are complex, with myths, misperceptions and misinformation accounting for a proportion of this response. For example, movements in the US and Western Europe challenging fact based evidence with inaccurate supposition are on the rise. The recent outbreak of measles in the UK and across Europe is largely down to vaccine hesitancy from misinformation about the MMR vaccine in a scandal occurring 20 years ago. Globally, there are multiple examples, such as objections to vaccines in some areas of Yemen, leading to stalled cholera-vaccine programmes, and violence against polio vaccinators in Pakistan, partly due to their association with the West.

Poor access and utilisation of vaccines has been linked to language, gender, and geography. A lack of education about vaccines, including knowledge that they, and services to access them, exist at all also contributes. Furthermore, vaccines are a victim of their own success, as with the absence of diseases, there are growing numbers of people who perceive that threats are not substantial enough to warrant the use of vaccines. Improving education, especially of women, can help improve access to vaccination coverage as awareness of the benefits of vaccinations and demand for immunisation by communities would improve. Civil society organisations support citizen engagement and activism in immunisation programmes that are critical for addressing hesitancy.

4 UNHCR: Figures at a glance
5 Relief Web: Bangladesh - Diphtheria Outbreak - Dec 2017
6 Lane et al.: Vaccine hesitancy around the globe

Bad data

Limitations of data and indicators present a challenge in understanding vaccine coverage and accelerating access to all 11 WHO-recommended vaccines, whilst also presenting economic implications. There is a need to collect robust and rigorous data that enables communities and civil society to hold vaccination service providers accountable. Data on immunisation, especially for vaccines beyond DTP3, remains weak, inaccurate, and conflicting depending on the source. The majority of the Global Vaccine Action Plan (GVAP) indicators are based on DTP3 coverage, which masks inequities due to its relatively high delivery rate compared to other vaccines. It also masks inequities within countries and districts where there are large gaps in vaccine coverage of all the recommended vaccines.

The use of a wider range of vaccines as indicators, including those with lower coverage rates, would provide a more accurate reflection of access to vaccines and may drive progress in the roll-out of vaccines where coverage is lagging.

Improved data quality, and the use of a wider range of indicators, would allow for more accurate assessment and benchmarking of immunisation systems and therefore improve

ment in immunisation operations. Immunisation data quality could be improved through initiatives such as electronic immunisation registration systems that are efficient and allow for instant information on a child's vaccination status. The use of sub-national immunisation targets could also help accelerate progress to national immunisation targets. For example, a community based primary healthcare and education programme in Pakistan, HELP, noted that all provinces in Pakistan now have software to document vaccine delivery, as well as a national online registry. Data is generated at a community level and sent to district and provincial databases, before being collated at the federal level. These systems, combined with periodic surveys conducted by the WHO and the Government, have allowed for a more nuanced picture of vaccine coverage and an ability to identify under-immunised children.

However, for HELP, and more broadly, challenges remain in reaching hidden populations, such as in villages or dense urban settlements. Low quality demographic data in some countries means there is considerable uncertainty about the number of children being missed. For example, the last census in the Democratic Republic of Congo was in 1984, and one third of children globally are not registered at all, meaning data on the number of children is inaccurate, and immunisation systems cannot reach people if they do not know if they exist or where to find them. With population demographics changing rapidly in some high disease burden areas, such



as Sub-Saharan Africa, the rates of current coverage may not be able to keep up with demand. Without comprehensive improvements in data, those children that are under-immunised remain invisible and forgotten, resulting in less actionable movements to reach them.

Supply chains

Several organisations have noted the need for next-generation immunisation supply chains in order to increase coverage and equity. Immunisation supply chains, the system of people, infrastructure, and equipment required to deliver vaccines from manufacturer to child, were first developed 30 to 40 years ago when immunisation programs were much smaller and vaccines much less costly. Over the past 30 years, vaccination costs have risen six-fold per person, yet investments in supply chain systems have remained stagnant and narrowly focused on cold chain equipment (although this area also still requires innovation). Gavi estimates that USD 280 million is needed per year to address the supply chain needs in low-income countries. Between 2010 and 2020, immunisation services will require twice the storage and transport capacity to manage four times the vaccine volume per fully immunised person⁷. Health workers—already in short supply or with limited capacity to expand their activities—will need to administer six times as many doses per person, in more places, including health centres, schools, pharmacies, and hospitals. Vaccine supply chains could be strengthened by adapting them not just to countries, but to districts and communities.

Innovation and distribution of cold chain equipment remains a requirement of successful immunisation systems. VillageReach, an organisation working to increase access to healthcare in remote and LICs, noted that there are still major disparities with how regions are equipped with functioning cold chain equipment. Adequate cold chain equipment could help to maximize the performance of immunisation supply chains by directly or indirectly improving vaccine availability, quality and reducing wastage rates. Shortening the distance between vaccine stores and final delivery points would reduce the burden on health agents who would travel less to store their vaccines and have more time for vaccination.

Balancing equity and coverage with new vaccines

A legitimate tension that exists in immunisation efforts is the ability to reach every last child with existing vaccines, as well as develop new vaccines for diseases that have no vaccine, or have an ineffective vaccine. R&D of new vaccines is essential and should not be underestimated, but at the same time, there already exists a body of vaccines that are effective but not reaching all children. Whilst this tension can present a challenge for increasing coverage of the 11-WHO recommended vaccines, it should not be an 'either or' scenario. Primary health care systems are essential in order to access existing or new vaccines, and this should remain a focus of the immunisation and health communities. If a whole immunisation system, in a primary health care infrastructure, is running successfully, this will ensure that children receive existing vaccines on the market, but also allows for new vaccines to be introduced and integrated into a foundation that already exists. It is only through the creation and maintenance of a strong and functioning immunisation system, that we can tackle inequities, ensure successful introduction of new vaccines, and ensure coverage rates are maintained or increased where needed.

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PATH: Next-generation immunisation supply chains are needed to improve health outcomes

Summary

Stalling immunisation rates reflect challenging regional, country and global environments. Locating under-immunised children, addressing vaccine hesitancy and innovating supply chains all remain huge challenges to reaching every child with all 11 vaccines. The nature of conflict and displacement means immunisation services are disrupted and stunted – and those children that need vaccines the most are missing out. In order for the UK to continue the progress of the vaccines agenda, it must draw attention to the inequities that exist, and understand why some children are still not receiving these essential life-saving interventions. Improving equity and access to vaccinations requires a dynamic, innovative and thorough approach. Global immunisation stakeholders must recognise this and ensure that immunisation policies and practice are based on equity and reaching every child with every vaccine.



BRITISH BUSINESS SUPPORTING IMMUNISATION SUPPLY CHAINS

Dulas, a British solar-fridge manufacturer, based in Bognor Regis has been developing innovations in supply chains through solar power that support the delivery of vaccines in communities across the world. Solar powered vaccine fridges that run battery-free in all weather conditions have regularly been procured by DFID and numerous other national governments. This shows that British business has also contributed to, and benefited from, the UK's leadership in global immunisation.

CHAPTER 4

Leave no one behind: What needs to be done to ensure all children are reached with all 11 vaccines?

It is possible to achieve the ambitious goal of equitable and equal access to all 11 vaccines for all children, no matter where they live. Advances made in immunisation rates should not be underestimated. The great achievements seen over the past decades are the result of the efforts of numerous organisations and people that have saved millions of lives. Polio eradication efforts reflect the possibilities of what is achievable when ambitious targets are set and global political will and funding is coordinated and focused on achieving aspiring goals. Equally, the next stage of the mission to reach every child with all vaccines, is no simple task. As outlined in Chapter 3, the key challenges of finding the under-vaccinated, improving bad data and out-dated supply chains remain challenging. As populations increase and the demography of the world changes, new challenges and difficulties continue to rise and the global community must remain dynamic and dedicated to achieving ambitious immunisation goals. Without doing so, there is a risk of hard won progress being undone, leaving millions of lives at risk.

The importance of country-owned, strong essential immunisation systems is key. In order to ensure that every child receives all of the essential vaccines, it is paramount that immunisation systems are robust and reliable, and prioritise routine immunisation. The entirety of the system that is needed to deliver immunisation should be strong, interconnected and focused on working towards the ambitious goal of successful routine immunisation for every child. It is essential that the system as a whole is strong. This includes every element from the research lab to the health worker on the ground, cold-chain equipment, vaccine registries and data, and educating communities. For immunisation to reach the millions of new children being born every day, robust immunisation systems, that are sufficiently funded, are essential.

A focus of the global immunisation community over the years has been on achieving eradication and elimination targets. For some countries and districts, this has meant repeated individual vaccination campaigns which have had a tendency to overshadow routine services. Eradication initiatives have been successful and generate much public interest, however, in looking to achieve a holistic and sustainable system of immunisation, a focus on routine immunisation would be much more sufficient. With the near eradication of polio, the value of vertical immunisation initiatives in comparison to the development of routine immunisation systems must be assessed. Instead of children just receiving a polio vaccine, it is imperative they get pulled into the primary healthcare system fully. Over time, sustainability of vaccination services can only be achieved through strengthening routine immunisation and health systems.



Country ownership

Country ownership is key to successful immunisation programmes. Evidence shows that countries that did well under the Millennium Development Goals invested heavily into their health care systems, and countries that are not performing well on vaccine indicators, generally spend less on their health systems. For example, Nigeria spends less than 0.9% of its Gross Domestic Product (GDP) on health and has one of the world's highest rates of under-immunised children. This comes as a result of a lack of prioritisation of health, or for some countries as a result of poorly managed health financing, with funds put into tertiary care despite weak primary health-care. National governments must be prepared to commit domestic resources towards primary health, which can be sustained and increased when necessary to deal with transitions away from donor support. Capacity building and increased technical support in national ministries of health, finance and planning to determine fiscal capacity, budget planning and allocation is crucial as part of this. Increasing dialogue around tax, and the importance of spending and allocation efficiency needs to happen, and the UK must support countries with these technical discussions. In upper-MICs health expenditure per capita is on average USD 278, in Gavi-eligible fragile countries is USD 19 per capita, and in Gavi-eligible non-fragile countries is USD 33. The UK and other donors should support countries to increase their domestic resources dedicated to health. This could include technical support for improved taxation systems, or supporting governments to take responsibility for their health budgets.

Political leadership and collaboration

Without question, political leadership and collaboration are essential in the mission to reach all children with immunisation. Immunisation and health must be a political, financial and policy priority for the UK and other governments. One of the enduring lessons of polio eradication

efforts should be the sustained and increased focus of partnerships in a global environment in order to achieve health goals rooted in equity. Given huge competition for resources to address global health, development and humanitarian crises, collaboration between national governments, multilateral agencies, civil society and the private sector is crucial to achieve ambitious targets such as reaching every child with all the recommended vaccines. Civil society is a central partner in the fight against vaccine hesitancy, whilst also playing a key role in the implementation and accountability of immunisation programmes at a local, country, and global level. The role of civil society should be recognised, by Gavi and all immunisation stakeholders, and put front and centre if coverage of immunisation is to be increased.

It is critical that the UK does not reduce its ambition or engagement in global fora, using the extensive experience and expertise of DFID and the DHSC to work with country governments and institutions to tackle the complex challenges that remain. National governments must also show political will for improving domestic health services. In January 2017, a historic pledge was endorsed by Heads of State at the 28th African Union Summit with the aim to increase political will to ensure that everyone in Africa – regardless of who they are or where they live – receives the full benefits of immunisation. Global opportunities such as this and those that exist with the new GVAP allow for increased attention and commitments for immunisation. To ensure that immunisation remains a global priority, the UK should make immunisation a key political priority in key global processes, such as the G7, G20, and Commonwealth Heads of Government Meetings, and support global and regional opportunities to foster and showcase political leadership in vaccinations.

There is also room for improvement within agencies, global initiatives and governments to identify areas of mutual benefit and harmonise limited resources accordingly. For example, infectious diseases are more easily spread in areas with poor sanitation, therefore, successful WASH facilities are also crucial to immunisation services. Nutrition is also inextricably linked as a vaccine is less likely to be effective if a child is malnourished, and vitamin supplements are often given to children when they are vaccinated.

INDIA'S POLIO ERADICATION TRIUMPH

An example of the power of successful ownership can be seen when looking at polio eradication in India. In the early 1990s, India had higher incidences of polio than all other polio-affected countries combined, with an average of 500-1000 suffering paralysis every day¹. Whilst it was initially expected that India would be the last stronghold of polio due to the myriad of challenges it faced, sustained and extraordinary efforts and investment in polio eradication, including strong national ownership, allowed for this achievement. India was certified polio free in 2014 and has since leveraged investments in polio for improvements in routine immunisation systems.

¹ John, J. and Vashishtha, V., 2013: Eradicating poliomyelitis: India's journey from hyperendemic to polio-free status

Leveraging the power of vaccines for universal health coverage and primary healthcare

Investing in immunisation systems can elevate progress towards strong primary healthcare systems and universal health coverage. Universal Health Coverage (UHC) allows everyone access to quality essential health services without suffering financing hardship. The NHS remains a shining example of UHC, and a clear demonstration of how immunisation and UHC are inextricably linked. Routine immunisation is a critical tool for accelerating progress toward UHC, as effective national immunisation programmes provide an ongoing connection between parents, children and primary healthcare facilities beyond the immediate post-natal period. This creates an entry point for wider health education and promotion, nutrition interventions and diagnosis of unrecognised conditions. In 2016 alone, 62 million children were immunised with Gavi-supported vaccines: this equates to more than 185 million points of contact between these children and the primary health system. Furthermore, by providing a more cost-effective response than diagnosis and treatment, and reducing complications associated with contracting preventable childhood diseases, routine immunisation reduces the cost of UHC and creates additional fiscal space for funding expansion of access to health.

INNOVATION IN INCREASING COVERAGE OF VACCINES

Innovation is key to improving vaccination rates. Amref Health Africa's innovative mobile health technology solution known as mVacciNation, used to improve data efficiency, stock management and safety and health seeking behaviour. mVacciNation works by creating an individual health record for every child through a smartphone application, capturing contact details and age, vaccine visit type and actual vaccine received. Using the data, health facility staff can identify individuals who are not fully immunised, decreasing the number of defaulters. Fridge temperatures and stock levels per vaccine are also captured by the mobile system and accessible to district immunisation officers and nurses. Reminders and awareness messages to caregivers are sent through the system to alert them of upcoming vaccinations to ensure sustainability of the intervention. Data is synchronised in real time with the cloud. mVacciNation project reflects how civil society can participate in the development and testing of innovative approaches to deliver immunisation services that reach the most vulnerable people.

In September 2019, the United Nations will hold a High-Level Meeting on UHC which will provide an opportunity for the UK to discuss the importance of vaccines as a core pillar to create, and then be administered by, UHC.

Sustainable transition

For successful immunisation systems that reach every child to be effective, sustainable transition away from aid is essential. There is a need for better analysis, informed decision making, and joint assessments and plans with other donors, in order for transition to be sustainable. There is a need for this planning to occur in a timely manner and in dialogue with soon-to-be-transitioning countries. Transitions away from donors such as Gavi, GPEI and DFID should be coordinated to ensure that countries do not face severe losses from several sources of financial and technical support at once, which can put immunisation systems at risk. The UK must ensure that adequate transition plans are in place for transition away from DFID health funding, but also that Gavi and GPEI transitions are managed with sustainability and equity considerations at the forefront.



The use of GNI as a key indicator for health outcomes and therefore transition has been questioned by various stakeholders. Targeting children in need should be the priority of any health initiative. However, transition away from aid based on GNI per capita often leaves many children living in poverty without access to basic healthcare or immunisation services. While GNI is a useful indicator of economic growth, it does not reflect or capture the realities of a country's development or the strength of immunisation systems, and therefore, transition policies should be guided by indicators beyond GNI. Ideally there should be a greater analysis of a country's current and future financial capacity, domestic resources allocated to health, and the preparedness and capabilities of the health system to be able to maintain immunisation functions. Other indicators that could measure progress of a health system include, but are not exclusive to: universal health coverage implementation, DTP3 drop-out rate, reliability of cold chain equipment, available health professionals, fully immunised children, and the number and size of disease outbreaks. Gavi's next strategic period (2020-2025) presents a welcome opportunity to look at the current flaws in transition policy and practice and make amendments for improvement. The UK Government, as Gavi's biggest donor, has a chief voice in influencing

this. Ensuring eligibility and transition policies are built on health and health service indicators will help ensure donor funding targets the most vulnerable, and most in need children, and not just the poorest countries.

The discussion around Gavi's role in MICs must also come into play in GAVI's next strategic period. In Gavi's next strategic period, more unimmunised children will live in non-Gavi eligible than in Gavi eligible countries and there is a need to discuss whether Gavi's role should extend post-eligibility to technical assistance or further. This would require a change in Gavi's core focus from the lowest income countries, to countries with high numbers of unimmunised children. Gavi must also continue to facilitate a healthy vaccine market to ensure vaccines are available at the prices which are affordable to countries that have high numbers of unimmunised children.

Continued donor investment and prioritisation of vaccines and health

Health must be seen and prioritised as a fundamental pillar of poverty reduction and security. Continued financing is crucial to ensure advances in immunisation are not compromised and move forward. As populations rise, financing will also need to adapt to this challenge. It is imperative that international and domestic resources are committed to creating sustainable primary healthcare systems under UHC. This includes the UK, national governments and stakeholders ensuring that key partnerships, such as Gavi and GPEI, are fully-funded and can undertake their life saving work. Within the prioritisation of vaccines and health must remain a firm commitment from the UK and Gavi to equity if no child is to be left behind.

Summary

The incentives to leave no one behind and reach all children with all essential vaccines are clear. An overview of what is needed to progress towards this has been outlined in this chapter. This includes strong country ownership, political leadership, innovation, sustainable transition and prioritisation of vaccines and health. Only through the creation and maintenance of strong immunisation systems, can a new vaccines be successfully introduced, and can coverage rates be maintained and increased where necessary. The entirety of the system that is needed to deliver immunisation should be strong, interconnected and focused on working towards the ambitious goal of successful routine immunisation for every child. Without continued commitment and political leadership from the UK and others, the world will see millions more unnecessary deaths every year. More than ever, in the face of populism and increasing vaccine hesitancy, the world needs strong political will and collaboration from all global immunisation stakeholders, including civil society, for immunisation and global health security.

CONCLUSION

In the decade of vaccines from 2011 to 2020, the world has made great progress in vaccination coverage, with millions of children vaccinated against deadly diseases leading to countless healthier lives. Improvements in vaccination rates are one of the greatest public health achievements of our time, yet in recent years coverage rates have stalled and distortions in data mean accurate assessments of our achievements may be obscured. Crucially, the number of children receiving all 11 WHO-recommended vaccines remains well below acceptable levels, falling short of the UK's adoption of the SDGs and promise to leave no one behind.

The fight against polio remains, but with continued political and financial commitment to this task, eradication can be achieved. With transitions away from polio funding over the coming years, the world also has an opportunity to capitalise on the resources and the efforts of polio eradication's legacy. The immunisation community must work together, with urgency, in order to ensure these resources are utilised to create routine immunisation systems that administer all vaccines to all children. DFID and Gavi have key roles to play in supporting the development of robust essential immunisation systems in-countries and reaching the goal of the fully-immunised child.

The aid landscape is rapidly changing, with the majority of under-vaccinated children now living in middle income countries or in conflict-affected and fragile states. Successes from the past decade must now be adapted to the new challenges that the world presents. The global immunisation community must be honest about its current shortcomings and work collaboratively to ensure that hard won gains are not lost. Gavi's next strategy, Gavi 5.0, should reflect and address the key challenges that remain in a robust manner in order to ensure no child is prevented from receiving any of the essential vaccines they need. The next 'decade of vaccines' is likely to be uncertain, so the immunisation community must work even harder to achieve these ambitious goals.

RECOMMENDATIONS

- 1. The UK must continue its leadership and prioritisation of essential immunisation systems in its development portfolio.** This must include continued financial support to Gavi, the Vaccine Alliance and the Global Polio Eradication Initiative. It is recommended that the UK increase its financial contribution from 2016 to 2020 in the next Gavi replenishment cycle from 2021-2025. The UK should continue to fund the GPEI until global polio eradication is certified.
- 2. The UK, Gavi, and all global immunisation stakeholders must raise their immunisation targets to encompass full access to all 11 WHO-recommended vaccines for all children everywhere.** The UK should use key political moments, such as the UN High-Level Meeting on Universal Health Coverage (UHC) and the G20, to champion ‘the fully immunised child’ and ensure that routine immunisation is recognised as a core service of UHC.
- 3. The UK should call for Gavi’s Eligibility and Transition Policy to be reviewed.** This review should consider additional indicators to inform transition that go beyond GNI per capita alone, and look at the sustainability of essential immunisation systems, immunisation coverage, and the fully immunised child. This review should be informed by a full analysis of the impact of Gavi transition in the 20 countries which transitioned between 2016 and 2020 and should be used to inform Gavi 5.0.
- 4. All global immunisation stakeholders, including the GPEI, Gavi and the WHO, should assess and prepare for polio transition as a matter of urgency.** In order to effectively transition polio assets into routine immunisation systems, the UK must call for a global governance mechanism to be set up to provide oversight and accountability for the polio transition process and the implementation of the post certification strategy.
- 5. The UK must increase its investment and support for the development of in-country health systems.** This should include increased support for country ownership of essential elements of the immunisation and health systems by encouraging country governments to prioritise immunisation, and increase health financing and investments in health workers. Health systems support should be focused on countries where the need is greatest, not on GNI per capita. In particular this should focus on fragile and conflict affected states.
- 6. The UK, Gavi, and all global immunisation stakeholders should recognise the contribution and potential of civil society in increasing access to, and uptake of, vaccines.** The UK should use its voice to promote support for the inclusion of civil society as a critical partner, recognising their crucial role in every area of immunisation, including in tackling vaccine hesitancy.
- 7. All global immunisation stakeholders should invest in robust and simple approaches to digital recording for families and local health workers, as well as, data systems for vaccine indicators and demographic data.** Data should be collected at a regional, national, and global level for every vaccine available, going beyond an assessment of just DTP3.

APPENDICES

The APPG would like to thank everyone who contributed to this inquiry.

Written evidence was received from the following stakeholders

Amref Health Africa UK

The Bill and Melinda Gates Foundation

The Department for International Development, the Department of Health and Social Care and Public Health England

Gavi Civil Society Organisation Steering Committee

Gavi, the Vaccine Alliance

HELP, Pakistan

Jon Snow Institute

London School of Hygiene and Tropical Medicine: Dr Katherine E. Gallagher, Dr Sandra Mounier-Jack, Dr Ifedayo M. O. Adetifa, Professor Deborah Watson-Jones and Professor Anthony Scott

London School of Hygiene and Tropical Medicine: Dr Rose Wilson

Rotary International

The Royal College of Paediatrics and Child Health

PATH

Pfizer

Save the Children UK

United Nations Foundation

Oral evidence was taken from the following stakeholders

Rt Hon Alistair Burt MP, Minister of State, Department for International Development

Alice Gilbert, Health Advisor, Department for International Development

Kiran Attridge, Health Advisor, Department for International Development

Dr Chris Elias, President of Global Development, The Bill and Melinda Gates Foundation

Dr Seth Berkley, CEO, Gavi, the Vaccine Alliance

Sebastian Meaney, Head of UK Strategy, Gavi, the Vaccine Alliance

Frances Longley, Chief Executive, Amref Health Africa UK

Simon Wright, Director of International Development, Policy Advocacy and Campaigns, Save the Children UK

Laura Kerr, Child Health Policy Advisor, RESULTS UK

Helen Bedford, Professor of Children's Health, UCL Great Ormond Street Institute of Child Health and Member of the Royal College of Paediatrics and Child Health's Health Promotion Committee

Members of the APPG on the inquiry committee

Dr Philippa Whitford MP
Lloyd Russell-Moyle MP
Baroness Sheehan
Stephen Twigg MP
Rt Hon Stephen Crabb MP

APPENDIX 1

Vaccine list

The WHO recommends vaccinating children against 11 antigens for routine immunisation. These are:

TB (BCG)
Diphtheria, Tetanus, Pertussis (DTP)
Hepatitis B (HepB)
Haemophilus influenza (Hib)
Pneumococcal (PCV)
Polio (OPV or IPV)
Rotavirus (Rota C)
Measles (MCV)
Rubella (RCV)

The WHO also recommends vaccinating against the human papilloma virus (HPV), but this is currently only widely targeted at girls. There are other vaccines recommended for inclusion in certain parts of the world where certain diseases are more prevalent, such as Japanese Encephalitis, Yellow Fever, Typhoid, Cholera, and Tick-Borne Encephalitis.

APPENDIX 2

Call for written evidence

The All Party Parliamentary Group (APPG) on Vaccinations for All was created in 2017 in order to raise the political profile of the importance of routine immunisation around the world and within the UK.

The APPG on Vaccinations for All is launching an inquiry to assess the reasons for low and stalling immunisation rates and the role of the UK in ensuring all children receive all 11 World Health Organisation (WHO) recommended vaccines. It is hoped that the resulting report will build political will within the UK towards continued UK support for immunisation, key multilateral immunisation institutions and civil society organisations in driving progress towards equitable and sustainable delivery of vaccinations for all.

The APPG invites written submissions into all aspects of coverage and global accessibility to routine immunisation, and is particularly interested in your opinions on the following questions:

1. What are the most pressing current and future challenges for measurement and coverage of immunisation?
 - To what extent do challenges in measurement have an effect on determining the success of current immunisation programmes?
 - How much of a challenge do discrepancies in data collection and presentation pose to securing equitable access to all 11 WHO recommended vaccines?
2. What needs to be done, in the short and long term, to increase coverage and equitable access to all 11 WHO recommended vaccines?
 - Please highlight successful/unsuccessful examples of existing efforts
3. How can routine immunisation play a role within the achievement of universal health coverage?
4. What are the biggest risks for the UK and globally if equity and access to vaccinations is not improved?
5. What role do UK decision makers play in improving equitable access to all 11 WHO recommended vaccines?
 - Is there more the UK should do in terms of bilateral and multilateral investments?
 - To what extent is the prioritisation of routine immunisation programmes by the Department for International Development (DfID) compatible with DfID, and cross-government, strategies?
6. What role do civil society and the private sector have to play in improving equitable access to all 11 WHO recommended vaccines?
7. Are there any other barriers to equitable access to immunisation, in the UK and globally, that you think the inquiry should consider?
 - To what extent can and should these be addressed, and what role does the UK have to play?

Please give specific examples wherever possible. Please feel free to only write evidence on particular aspects that are relevant to your area of expertise.

Responding to the Call for Evidence

The APPG welcomes submissions of evidence from as wide a range of organisations and respondents as possible. Please ensure that your written submission adheres to the following guidelines:

- Is no more than 2,000 words in length, in Word format
- States clearly who the submission is from, i.e. whether from yourself in a personal capacity or sent on behalf of an organisation, and includes a brief description of yourself/your organisation

The deadline for submissions is 18 May 2018. Please email your submission as an attachment to yasmin.mahboubi@appg-vfa.org.uk and please contact Yasmin if you have any questions about submitting evidence.

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RESULTS UK acts as the APPG Vaccinations for All's secretariat. RESULTS UK is a charity registered as RESULTS Education in England and Wales (1015286), a company limited by guarantee (2761858), and a charity registered in Scotland (SC041481).