Working together

an integration resource guide
for immunization services
throughout the life course
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throughout the life course
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  - Vitamin A supplementation
- **Malaria**
  - Distribution of long-lasting insecticidal nets (LLINs)
  - Intermittent preventive treatment in infancy (IPTi) of malaria
  - Seasonal malaria chemoprevention (SMC)
- **Neglected tropical diseases**
  - Deworming
- **Reproductive and maternal health services**
  - Family planning
- **HIV**
  - HIV services
  - Male circumcision for HIV prevention
- **Water, sanitation and hygiene interventions**
  - Hygiene kit distribution
- **Other health interventions**
  - Hearing screening
Acknowledgements

This document was developed by the Expanded Programme on Immunization (EPI) Department of Immunization, Vaccines and Biologicals (IVB) of the World Health Organization (WHO) and written by Emily Wootton (WHO), Laura Nic Lochlainn (WHO) and Margaret Watkins (CDC).

The following individuals have contributed to the production of the guide and their inputs are acknowledged with sincere gratitude.

**WHO**
- Tracey Goodman
- Paul Bloem
- Ikechukwu Ogbuanu
- Marta Gacic-Dobo
- Jan Grevendonk
- Laure Dumolard
- Christoph Steffen
- David Schellenberg
- Jan Kolaczinski
- Andrea Bosman
- Martina Penazzato
- Julie Samuelson
- Antonio Montresor
- Margie Montgomery
- Messeret E Shibeshi
- Teshome Desta Woldehanna
- Bernadette Daelmans
- Samira Aboubaker
- Rita Kabra
- Maurice Bucagu
- Özge Tunçalp
- Lina Mahy
- Lisa Rogers
- Tom O’Connell
- Nuria Toro Polanco
- Edward Kelley

**Centers for Disease Control and Prevention (CDC)**
- Aaron Wallace

**Burnet institute**
- Chris Morgan

**UNICEF**
- Imran Mirza
- Valentina Buj

**John Snow, Inc**
- Craig Burgess
- Robert Steinglass
- Rebecca Fields

**WaterAid UK**
- Om Prasad
- Megan Wilson-Jones
### Abbreviations and acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AEFI</td>
<td>Adverse events following immunization</td>
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<tr>
<td>ANC</td>
<td>Antenatal care</td>
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<tr>
<td>CHWs</td>
<td>Community Health Workers</td>
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<tr>
<td>cMYP</td>
<td>Comprehensive Multi-Year Planning for Immunization</td>
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<tr>
<td>DHS</td>
<td>Demographic and Health Surveys</td>
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<tr>
<td>DTP</td>
<td>Diphtheria-Tetanus-Pertussis</td>
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<tr>
<td>EID</td>
<td>Early infant diagnosis of HIV</td>
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<tr>
<td>EPI</td>
<td>Expanded Programme on Immunization</td>
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<td>GAPPD</td>
<td>Global Action Plan for the Prevention and Control of Pneumonia and Diarrhoea</td>
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<td>GRISP</td>
<td>Global Routine Immunization Strategies and Practices</td>
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<td>GVAP</td>
<td>Global Vaccine Action Plan</td>
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<tr>
<td>HBR</td>
<td>Home-based record</td>
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<tr>
<td>HEAT</td>
<td>Health Equity Assessment Toolkit</td>
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<tr>
<td>HEI HIV</td>
<td>HIV exposed infants</td>
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<tr>
<td>HepB-BD</td>
<td>Hepatitis B birth dose</td>
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<tr>
<td>HIV</td>
<td>Human immunodeficiency virus</td>
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<tr>
<td>HPV</td>
<td>Human Papillomavirus</td>
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<tr>
<td>iCCM</td>
<td>Integrated community case management</td>
</tr>
<tr>
<td>IMNCI</td>
<td>Integrated management of neonatal and childhood illnesses</td>
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<tr>
<td>IPTi</td>
<td>Intermittent preventive treatment in infants</td>
</tr>
<tr>
<td>IYCF</td>
<td>Infant and Young Child Feeding</td>
</tr>
<tr>
<td>LLINs</td>
<td>Long lasting insecticide treated nets</td>
</tr>
<tr>
<td>LMIS</td>
<td>Logistics management information systems</td>
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<tr>
<td>M&amp;E</td>
<td>Monitoring and evaluation</td>
</tr>
<tr>
<td>MNT</td>
<td>Maternal and neonatal tetanus</td>
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<tr>
<td>MOV</td>
<td>Missed opportunities for vaccination</td>
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<tr>
<td>NCD</td>
<td>Non-communicable disease</td>
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<tr>
<td>ORS</td>
<td>Oral rehydration salts</td>
</tr>
<tr>
<td>PIRI</td>
<td>Periodic intensification of routine immunization</td>
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<tr>
<td>PMTCT</td>
<td>Prevention of mother to child transmission of HIV</td>
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<tr>
<td>PPH</td>
<td>Postpartum haemorrhage</td>
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<tr>
<td>SDGs</td>
<td>Sustainable Development Goals</td>
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<tr>
<td>STH</td>
<td>Soil-transmitted helminths</td>
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<tr>
<td>TTCV</td>
<td>Tetanus toxoid containing vaccine</td>
</tr>
<tr>
<td>UHC</td>
<td>Universal Health Coverage</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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<tr>
<td>VAS</td>
<td>Vitamin A supplementation</td>
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<tr>
<td>VMMC</td>
<td>Voluntary medical male circumcision</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<tr>
<td>WRA</td>
<td>Women of reproductive age</td>
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About this resource guide

Who is this resource guide for?
This resource guide is intended for use by national managers from immunization, reproductive, maternal child and adolescent health and other related programmes. It may also be useful for global, regional and country level policy-makers and partners responsible for the design, implementation, monitoring and evaluation of integrated services, policies or health systems strengthening.

What are the objectives of the resource guide?
The guide aims to bring together a range of relevant resources, summarize current knowledge and provide guidance on the integration of immunization with other health interventions, health policies or activities to strengthen health systems.

The specific objectives of this guide are:
• to encourage all programme managers to consider opportunities for the integration of immunization with other services;
• to provide an overview of the global policies, potential interventions and strategies related to the integration of immunization services;
• to provide a planning resource to guide integration efforts, including a checklist to help determine the suitability of programmes for integration and to ensure that key issues are considered in the design, planning and implementation of integrated programmes;
• to support the effective design, implementation and monitoring and evaluation of integrated immunization programmes and services, while recognising that the local context is also a critical consideration;
• to highlight current knowledge gaps with regards to the integration of immunization with the health system and other programmes, and to encourage the generation of additional evidence and experiences to address them.

What does the guide include?
The guide applies existing academic literature on integration, and other sources, including World Health Organization (WHO) recommendations. Although the guide
includes numerous summaries of relevant studies, it is not intended to be a systematic review of evidence but aims to be a resource guide for policy-makers and programme managers.

Included in the guide is information on the interventions, or packages of interventions, that might be integrated with immunization and a summary of documented country experiences. Links are provided to additional relevant references.

**How is the guide structured?**
The guide begins with an overview of integration and its importance for immunization, followed by types of integration and health services that could provide immunization services or referrals. A section on immunization programme planning discusses a number of criteria that should be considered prior to integrating interventions. A section on monitoring and evaluation (M&E) of integrated health services highlights ways to improve knowledge of what works, and what doesn’t work, with integration. The benefits and risks of integration are also discussed. Useful references used throughout the document are listed. Finally, considerations relating to the integration of specific interventions with immunization are outlined in the *Appendix*. 

Child receiving oral polio vaccine in Niger

©WHO
WHO DEFINES INTEGRATED HEALTH SERVICES AS:

“health services that are managed and delivered so that people receive a continuum of health promotion, disease prevention, diagnosis, treatment, disease-management, rehabilitation and palliative care services, coordinated across the different levels and sites of care within and beyond the health sector, and according to their needs throughout the life course”.¹

Executive summary

Health systems combine both integrated and individual interventions, but the purpose, nature and extent of integration differ enormously, and seldom are they fully unintegrated or fully integrated. Integration is best seen as a continuum rather than as the two extremes of integrated or not integrated.

Routine immunization has a long history of integration with other programmes, such as vitamin A supplementation, growth monitoring, deworming or insecticide-treated bednets. The importance of integration, both in health systems in general and within immunization programmes more specifically, has been growing, and this is reflected in a broad range of global policies and strategies.

In Peru, a nurse visits a mother in her home to tell her about how to properly take care of herself and her newborn.
An integrated approach to global health and development is pivotal to the Sustainable Development Goals (SDGs) agenda, and is also key to the Global Vaccine Action Plan (GVAP) 2011–2020 that includes ‘integration’ as the fourth of its six guiding principles, emphasising that: “strong immunization systems, as part of broader health systems and closely coordinated with other primary health care delivery programmes, are essential for achieving immunization goals”. Elements of health systems that may be particularly suited to integration include aspects of service delivery, such as supply chain management, or human resources and monitoring and evaluation, such as data collection and analysis and demand generation.

Integration has also been proposed as a strategy to improve coverage and/or efficiency of immunization and other health programmes. While the other programmes may benefit from adding their interventions on to immunization programmes (which typically achieve higher coverage), immunization may also benefit from increased integration by cost sharing and by reducing missed opportunities for vaccination. Also, more generally, integration may provide health services to the population in a more efficient way that is of particular importance in resource-constrained settings.

In recent years, the WHO has increased the number of vaccines being recommended beyond infancy and there is increasing focus on a life course approach to immunization, as recommended in the GVAP and the Global Routine Immunization Strategies and Practices (GRISP). The life course approach focuses on addressing population health needs over time, and as such, it provides additional opportunities for integration with other age-appropriate interventions.

“The importance of integration, both in health systems in general and within immunization programmes more specifically, has been growing, and this is reflected in a broad range of global policies and strategies.”

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The development of “delivery platforms” across the life course (see figure below), for immunization and other services, provides opportunities to more easily integrate new vaccines and additional interventions in the future. It also increases efficiencies in the delivery of the package of services; for example, once a country has successfully introduced human papillomavirus (HPV) vaccine at adolescence, it will be easier to introduce other vaccines (such as tetanus-diphtheria (Td) booster doses) as well as other interventions (such as deworming or menstrual hygiene education), thereby strengthening the adolescent health platform.

**EXAMPLES OF DELIVERY PLATFORMS THAT CAN BE USED TO DELIVER A LIFE COURSE APPROACH FOR IMMUNIZATION.**
Finally, GVAP highlights that “as new vaccines become available that target some but not all pathogens that cause particular syndromes, such as pneumonia, diarrhoea and cervical cancer, it is important that their introduction be an opportunity to scale up the delivery of complementary interventions”. The available literature demonstrates that integration efforts related to immunization have varied widely and have been country and context specific. Fragmentation as opposed to integration is one of the main challenges facing health systems. Fragmentation undermines the ability of health systems to provide universal, equitable, high quality and financially sustainable care.

Most of the integration and immunization literature focuses on the delivery of additional services to the child during the immunization visit, although services may also be provided to the caregiver (for example, family planning and HIV testing). However, integration does not have to be limited to joint delivery but can also focus on the design and delivery of comprehensive approaches, such as those suggested by the Global Action Plan for the Prevention and Control of Pneumonia and Diarrhoea (GAPPD), or comprehensive cancer control strategies such as those that combine the use of the HPV vaccine with screening and treatment for cervical cancer. Integration can also be part of health systems strengthening efforts, such as integrated supply chain management or integrated programme monitoring (such as health management information systems).

Integration is not an objective in itself, but rather its focus should be on individual/population centred provision of health services (as opposed to programme centred), improving health-care coverage, quality, efficiency and/or responsiveness to people’s needs. It has been emphasised that “[…] integration isn’t a cure for inadequate

resources. Integrating two separate programmes may provide some savings, but integrating new activities into an existing system can’t continue indefinitely without the system as a whole being better resourced”. Therefore, the design of integrated service delivery needs to be carefully considered from the perspectives of the national and sub-national context, such as feasibility, compatibility between the interventions, acceptability to patients, caregivers and health workers, equity and accountability.

The choice of delivery mechanism is also important. For example, the distribution of bed-nets might be better suited to integration within a health facility setting, as the nets may be too bulky to distribute through outreach services or during an immunization campaign.

Integration naturally occurs at the level of the health service provider, as different health services may be provided in the same health centre, and by the same personnel. However, the challenge is to maintain integration at the planning and implementation level, in order to systematically leverage gains that one programme may bring to the other without compromising each individual programme.

Even well-designed integrated services introduced into a relatively strong immunization programme can have unintended consequences; hence, it is critical to ensure that robust monitoring and evaluation strategies are in place to assess the broad impact of service delivery changes.

Integration can generate significant benefits, such as increasing efficiencies, improving user satisfaction or generating greater demand for services. However, it can also create challenges, such as overloading health workers or reducing the demand for services due to stigma or privacy issues. Deciding on how to structure the integration of health services to achieve optimal service delivery efficiency, alongside optimal service quality, will continue to be a critical decision for national and sub-national managers.

“immunization service delivery should continue to serve as a platform for providing other priority public health interventions, such as those for vitamin A supplementation, deworming, and insecticide-treated bednets. Other priority programmes should also serve as a platform for delivering immunization. Every contact with the health sector should be used as an opportunity to verify immunization status and provide immunization where indicated”.

Source: Global Vaccine Action Plan (GVAP) 2011-2020

Rural mobile health unit on an elephant for malaria prevention in India
1 Introduction
What do we mean by integration?

Integration has different meanings and is approached in varying ways in health systems via a combination of both non-integrated and integrated interventions. However, the purpose, nature and extent of integration varies immensely, and interventions are seldom fully unintegrated or fully integrated.

Integration is best seen as a continuum, rather than as the two extremes of non-integrated or integrated interventions. A systematic review of the integration of health systems noted “there are few instances where there is full integration of a health intervention or where an intervention is completely non-integrated. Instead, there exists a highly heterogeneous picture both for the nature and also for the extent of integration”.

A WHO TECHNICAL BRIEF DESCRIBES THE SIX MAIN USES OF THE TERM “INTEGRATION”: 7

1. Package of preventive and curative health interventions for a particular population group, e.g. Integrated Management of Childhood Illnesses (IMCI) for children under five years.

2. Multi-purpose service delivery points, e.g. multi-purpose clinics.

3. Continuity of care over time (either for chronic conditions or life cycle approach) e.g. antenatal, postnatal, newborn and child care.

4. Vertical integration of different levels of service, e.g. district hospital, health centres and health posts (different services provided at each level, but with referrals, clinical supervision, and shared health information across the levels).

5. Integrated policy-making, planning and management, e.g. integrated supervisory visits, shared supply chains and logistics.

6. Working across sectors, e.g. school health promotion campaigns.

How is integration reflected in global policies and strategies?

The 2030 Agenda for Sustainable Development is of unprecedented scope and ambition and is based around the 17 SDGs that are applicable to all countries. The health goal is broad, to “ensure healthy lives and promote well-being for all at all ages”. There are many linkages between the health goal and other goals and targets, reflecting the integrated approach underpinning the SDGs.9

One global initiative at the heart of the 2030 SDGs is Universal Health Coverage (UHC) which means that “all people and communities can use the promotive, preventive, curative, rehabilitative and palliative health services they need, of sufficient quality to be effective, while also ensuring that the use of these services does not expose the user to financial hardship”.\textsuperscript{10}

UHC cuts across all of the health-related SDGs and is based on the WHO constitution of 1948 declaring health a fundamental human right and on the Health for All agenda set by the Alma Ata declaration in 1978. In order to expand affordable UHC provision and ensure high quality and more cost-effective service delivery, service integration is seen as an essential requirement to achieve UHC.

In his address during the launch of the SDG themed issue of the Bulletin of the World Health Organization, Dr Tedros Adhanom Ghebreyesus, Director-General of WHO, emphasized the importance of SGG 3, which advocates for healthy lives and well-being for all, at all ages. “The centrepiece of goal 3 is target 3.8: UHC. This is the one target that, if achieved – or let’s say when achieved – will contribute to all the others. One of the key features of the SDGs is that they are “integrated and indivisible” – none can be achieved without progress on the rest.”\textsuperscript{11}

The Global Strategy for Women’s, Children’s and Adolescents’ Health 2016–2030 is a roadmap “to transform the future and ensure every newborn, mother and child not only survives, but thrives”. This new strategy builds on the success of the 2010 Strategy and its “Every Woman Every Child” movement, putting women, children and adolescents at the heart of the new SDGs and continues to advocate for the integrated delivery of health services and life-saving interventions and commodities. Furthermore, the Global Strategy adopts “an integrated and multisector approach, recognizing that health-enhancing factors including nutrition, education, water, clean air, sanitation, hygiene and infrastructure are essential to achieving the SDGs”.

The Global Vaccine Action Plan (GVAP) 2011–2020 includes integration as the fourth of its six guiding principles. “Strong immunization systems, as part of broader health systems and closely coordinated with other primary health care delivery programmes, are essential for achieving immunization goals”. GVAP also highlights that “immunization service delivery should continue to serve as a platform for providing other priority public health interventions, such as those for vitamin A supplementation, deworming, and insecticide-treated bednets. Other priority programmes should also serve as a platform for delivering immunization. Every contact with the health sector should be used as an opportunity to verify immunization status and provide immunization where indicated”.

The Global Routine Immunization Strategies and Practices (GRISP) document includes “integrating the routine immunization programme through comprehensive approaches and joint service delivery” as one of the key strategies to maximize the reach of routine immunization and lists the following three interventions for country implementation:

1. Place vaccines into the context of comprehensive approaches to disease control.
2. Deliver other key preventive maternal and child health interventions during vaccination visits, where appropriate.
3. Start immunization programme tracking with pregnant women and in antenatal care.


Section 1: Introduction
Working together

Why is integration growing in importance for immunization programmes?

The EPI was launched in 1974. During the following three years, a goal was established to provide universal immunization to all children by 1990. This goal initially focused on vaccination against six diseases, administered in infancy. Today, WHO recommends vaccination against 12 diseases, administered between birth and adolescence, with additional vaccines recommended for certain regions, some high-risk populations and for immunization programmes with certain characteristics.

This expansion in the WHO recommendations, combined with a life course approach to vaccination, provides significant opportunities for integration with other programmes (see section on The life course approach to integration). The GVAP describes the broader benefits of coordinating immunization with integrated primary health-care programmes, such as helping to generate community demand for services and address inequity.

The WHO’s vision for immunization and vaccines in the period 2015 to 2030 is to “support all countries to deliver quality immunization services as part of an integrated, people-centred platform of disease prevention that spans the human life course”.

There has been much interest in using immunization as a platform for other interventions due to the fact that immunization coverage is relatively high in most countries compared to other interventions along the continuum of care (see Fig. 1 below). In addition, childhood immunization has regular immunization contacts at set intervals, such as five contacts in the first year of life and additional contacts during the second year of life, school age and adolescence, depending on the national immunization schedule.

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For example, vaccination in the second year of life is an opportunity to provide other essential services to both children and caregivers, such as vitamin A supplementation, growth monitoring, bednets and deworming. However, it is important that the scheduling of integrated services is assessed to determine their feasibility based on the human and material resources needed versus those available.\(^\text{17}\)

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**FIGURE 1**

Intervention coverage along the continuum of care in Countdown countries—with available data since 2012 in %

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An analysis of Demographic and Health Surveys (DHS) in 28 sub-Saharan African countries estimated that if non-vaccine interventions could be delivered with vaccinations, the median percentage of households owning a bednet could increase from 46–92% and the median percentage of children who received vitamin A supplementation could increase from 66–90%.

Recent assessments of missed opportunities for vaccination (MOV) demonstrate that immunization coverage rates may also benefit from increased integration (see *Box 1* below). Improving links between immunization programmes and other services, for example, outpatient visits for sick children, could help to ensure that each contact that a child has with a health facility is used as an opportunity to screen their vaccination status and to either provide all of the appropriate vaccinations or to refer them to immunization services (“screen and vaccinate, or refer”). The design and availability of *home-based records (HBRs)* are key tools to facilitate this type of service integration.19

***BOX 1***

**Reducing missed opportunities for vaccination (MOV)**

An MOV refers to any contact with health services by an individual (child or person of any age) who is eligible for vaccination (e.g. unvaccinated or partially vaccinated and free of contraindications to vaccination), but that does not result in the person receiving one or more of the vaccine doses for which he or she is eligible.

Recent MOV assessments in priority countries in the regions of Africa and the Americas documented the prevalence of MOVs between 43% and 57%. These assessments provided evidence that children attending health facilities for vaccination, clinical care or other reasons, were not consistently being offered all of the recommended vaccines (57% for all clinic attendees, 25% for children attending for vaccination and 89% among those attending for medical consultation).20

Lack of service integration was illustrated by the high proportion of children attending for treatment that were not referred for vaccination. With little effort or cost (compared with reaching children who have no access to the health system), ensuring that all visitors to health centres are vaccinated could have a major impact on vaccination coverage.21


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The life course approach to integration
As people are living longer than ever before, there is growing interest in health outcomes apart from preventing death and disease, to the optimization of childhood development and extending to improving quality of life. As a result, when taking a life course approach, the focus of the health system is on addressing population health needs over time (Fig. 2).²²

**FIGURE 2**
Life course approach to health: conceptual framework²²

![Diagram of life course approach to health](image)

- **Social and environmental determinants of health**
  - Families and communities, health services and multisectoral factors related to sociocultural norms, economics, politics, physical environments and sustainable development

- **Principles in practice for the realization of rights**
  - Apply a human rights-based, gender-responsive and equity-driven approach

*Fig. 3* below, provides an illustration of how different immunization platforms could be designed to deliver a range of services over the life course. Traditionally, immunization programmes have focused on children under one year of age. However, due to the changing epidemiology of certain diseases and the availability of new vaccines, there is an increasing need to reach and deliver immunization services to other population groups, such as older children and adolescents, with new vaccines and booster doses.² The selection and design of platforms to deliver immunization and related services should be determined at national and/or sub-national level, depending on the national vaccination schedule and the local context, including the strength of the health system.

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Vaccines recommended by WHO for all immunization programmes

- Tetanus toxoid containing vaccine (TTCV)

Vaccines recommended by WHO for certain regions/high risk populations/immunization programmes with certain characteristics

- BCG
- Hep B-BD
- Seasonal influenza

Distribution of long-lasting insecticidal nets (LLINs)

Intermittent preventive treatment of malaria in infants (IPTi)

Seasonal malaria chemoprevention (SMC)

Deworming

Family planning services

HIV services

Male circumcision for HIV prevention

Hygiene kit distribution

Health counselling

* Complete WHO immunization recommendations can be found in the Vaccine Position Papers and Summary Tables available at www.who.int/immunization/policy/en/

** For caregiver
**VACCINES**

Vaccines recommended by WHO for all immunization programmes

- Tetanus toxoid containing vaccine (TTCV)
- Seasonal influenza
- BCG
- Hep B-BD
- Japanese Encephalitis
- Meningococcal
- Rabies
- Seasonal Influenza
- Typhoid
- Yellow Fever
- Cholera
- Hepatitis A
- Meningococcal
- Mumps
- Rabies
- Cholera
- Dengue
- Rabies
- Seasonal Influenza

**Distribution of long-lasting insecticidal nets (LLINs)**

**Intermittent preventive treatment of malaria in infants (IPTi)**

**Seasonal malaria chemoprevention (SMC)**

**Deworming**

**Family planning services**

**Male circumcision for HIV prevention**

**HIV services**

**Hygiene kit distribution**

**NUTRITION**

**MALARIA**

**NEGLECTED TROPICAL DISEASES**

**REPRODUCTIVE & MATERNAL HEALTH SERVICES**

**HIV**

**WASH**

- Growth monitoring/
  nutritional counselling
- Vitamin A supplementation

**HEALTH EDUCATION**

**For caregiver**

**WHO vaccine recommendations as per August 2018**

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Vaccines recommended by WHO for certain regions/high risk populations/immunization programmes with certain characteristics:
Examples of a life course approach to integration within immunization include:

- Immunization as part of antenatal and postpartum care;
- Immunization as part of caring for the child’s healthy growth and development;
- Immunization as part of Integrated Management of Childhood Illness;
- Vitamin A supplementation with routine infant immunization;
- Disease-specific interventions along the life course, for example, comprehensive cancer control strategies might include the provision of HPV vaccine in adolescence followed by cervical cancer screening in later life.

The GVAP emphasizes the need to take a “life course” approach for immunization and its third strategic objective is “the benefits of immunization are equitably extended to all people”. The GVAP further emphasizes that “as diseases are being successfully controlled through infant immunization, the need to boost immunity to sustain and extend these gains is increasingly being recognized. In addition, new and existing vaccines that are beneficial for school children, adolescents and adults at special risk—such as health workers, immunocompromised individuals, animal handlers, and the elderly—(for example, vaccines against HPV, influenza and rabies) are now available and being increasingly used. The success of efforts to eliminate maternal and neonatal tetanus […] has increased interest in exploring the development of other vaccines that could be used during pregnancy (for example, group B streptococcus or respiratory syncytial virus vaccines)”.

The GRISP includes life course vaccination as one of nine proposed transformative investments to achieve better immunization outcomes (shown in Fig. 4). In particular, “national immunization programmes are encouraged to expand scheduled routine vaccination visits beyond the first year of life and to provide needed vaccines in the preschool, school, and adolescent and adult populations, in keeping with transformative investment. Vaccination opportunities, such as healthy child visits in the second year of life, preschool preparation visits and school visits, should be utilized to assess vaccination status and to administer previously missed doses”.

“as diseases are being successfully controlled through infant immunization, the need to boost immunity to sustain and extend these gains is increasingly being recognized”
FIGURE 4
Nine transformative investments to achieving better immunization outcomes

- National team
- Strategies to reach
- Strategic and operational plans
- Operational level funding
- Vaccinator and manager skills
- Modern vaccine supply chain
- Accurate information system
- Community support

Expanded routine immunization schedules that cover people’s entire lives
A life course approach to immunization facilitates integration between programmes

A life course approach to immunization can facilitate integration opportunities. For example, the delivery of a birth dose of Hepatitis B vaccine could be provided alongside other postnatal care and be used as a key advocacy opportunity to inform the parents about the national immunization schedule and provide them with a home-based record for their child.

The need to identify all newborns in the community, to provide the birth dose vaccinations, could also strengthen systems for civil registration and vital statistics, which could in turn improve the denominators used to monitor immunization coverage rates.

In the video entitled Immunization Throughout the Life Course created by the Pan American Health Organization (PAHO) and WHO, it describes how the life course approach can not only benefit health today but also the health of future generations.24

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BOX 3

A life course approach to service delivery: Providing adolescent health interventions with HPV vaccination

In general, there are few contacts between adolescents and the health system. Furthermore, few interventions currently target adolescents and those that exist are often not reaching them. The introduction of HPV vaccination may provide an important entry point for other health interventions targeting 9–14 year olds. The graphic below (Fig. 5) outlines a number of short duration health interventions that could be jointly delivered with HPV vaccination.25 In addition, the need to reach adolescents with vaccines may also provide an opportunity to strengthen school health services.

FIGURE 5
Short duration health interventions that can be linked with HPV vaccination

<table>
<thead>
<tr>
<th>TYPE</th>
<th>POSSIBLE HEALTH INTERVENTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening</td>
<td>Vision screening, if referral and glasses available and affordable</td>
</tr>
<tr>
<td>Commodities and treatment</td>
<td>Anthelmintic treatment for schistosomiasis and soil-transmitted helminths (STH)</td>
</tr>
<tr>
<td></td>
<td>Insecticide-treated bednet for malaria prevention</td>
</tr>
<tr>
<td></td>
<td>Iron and folic acid supplementation</td>
</tr>
<tr>
<td>Information and life skills</td>
<td>Promotion of physical activity</td>
</tr>
<tr>
<td></td>
<td>Prevention of mosquito-borne diseases</td>
</tr>
<tr>
<td></td>
<td>Menstrual hygiene education</td>
</tr>
<tr>
<td></td>
<td>Sexual and reproductive health education, HIV prevention and condom promotion</td>
</tr>
<tr>
<td>Other vaccines</td>
<td>Td, Hep B, co-administration with other vaccines under investigation</td>
</tr>
</tbody>
</table>

In many countries, health-care resources are limited and many policy- and decision-makers are faced with decisions on where and how to prioritize resources for certain health-care services and technologies to different groups in an equitable manner to achieve more effective care.\textsuperscript{26} As a result, many low- and middle-income countries promote policies to deliver a minimum package of health interventions or an essential package of health services (EPHS).\textsuperscript{27} A minimum package of health interventions, or an EPHS, represents a broad policy statement and can both be considered incremental measures to move towards universal health coverage.

There is no universal minimum package of health interventions or EPHS that applies to every country. Therefore, when creating a package of services it is important to ensure that they are available and accessible for everyone, for example, antenatal care and vaccination. Over time, the package can increase to evolve into a more comprehensive set of services.

These national policies can drive the necessity for the health sector to decide on how to integrate services and, over time, the question may evolve from “should we integrate?” to “how do we integrate?” to ensure that a minimum package of health services is provided in accordance with the national policy. Once policy-makers define priority services, they must also ensure that the services are available to all who need them.

Countries, such as the United Republic of Tanzania, have had in place a national package of essential health interventions, which is an integrated collection of cost-effective interventions to serve the population, since 2000. In order for a service to be considered for inclusion in the package, it must meet a certain set of criteria, such as: addresses major health problems; cost effective; improves equity, and be coordinated with mutually reinforcing interventions.\textsuperscript{28}

\textsuperscript{26} Essential Packages of Health Services in 24 Countries: Findings from a Cross-Country Analysis. [website]. Washington (DC): United States Agency for International Development; 2017(https://www.hfgproject.org/ephs-cross-country-analysis/)


Types of integration
A well-functioning health system is built on having well-informed, trained and motivated health workers, a well-maintained infrastructure and a reliable supply of medicines and technologies backed by adequate funding, strong health plans and evidence-based policies. In addition, health systems require safe and reliable water, sanitation and energy services. Integrating immunization programmes into broader health systems and primary health care is critical to achieve SDGs related targets including UHC. However, the WHO’s six building blocks of health systems (shown in Fig. 6) can provide a useful framework for countries to consider how to improve integration and/or coordination between immunization programmes and the broader health system.

Atun and colleagues carried out a systematic review of the evidence on the integration of targeted health interventions into health systems and provided an overview of parts of the health system that may benefit from integration, grouped into categories according to the health system functions. This may also provide a framework through which opportunities to strengthen health systems through integration may be identified (see Table 1 below).

FIGURE 6
Six building blocks of health systems

SYSTEM BUILDING BLOCKS

SERVICE DELIVERY

HEALTH WORKFORCE

HEALTH INFORMATION SYSTEMS

ACCESS TO ESSENTIAL MEDICINES

FINANCING

LEADERSHIP/GOVERNANCE

OVERALL GOALS/OUTCOMES

IMPROVED HEALTH (LEVEL & EQUITY)

RESPONSIVENESS

SOCIAL AND FINANCIAL RISK PROTECTION

IMPROVED EFFICIENCY

Access

Coverage

Quality

Safety

Section 2: Type of integration

**TABLE 1.**
Critical health systems functions and elements of integration

<table>
<thead>
<tr>
<th>CRITICAL HEALTH SYSTEM FUNCTION</th>
<th>ELEMENTS OF INTEGRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stewardship and governance</td>
<td>Accountability function</td>
</tr>
<tr>
<td></td>
<td>Reporting</td>
</tr>
<tr>
<td></td>
<td>Performance management</td>
</tr>
<tr>
<td>Financing</td>
<td>Pooling of funds</td>
</tr>
<tr>
<td></td>
<td>Provider payment methods*</td>
</tr>
<tr>
<td>Planning</td>
<td>Needs assessment</td>
</tr>
<tr>
<td></td>
<td>Priority setting</td>
</tr>
<tr>
<td></td>
<td>Resource allocation</td>
</tr>
<tr>
<td>Service delivery</td>
<td>Structural, including water, sanitation and energy services</td>
</tr>
<tr>
<td></td>
<td>Human resources</td>
</tr>
<tr>
<td></td>
<td>Shared infrastructure with other services</td>
</tr>
<tr>
<td></td>
<td>Referral systems</td>
</tr>
<tr>
<td></td>
<td>Guidelines/care pathways</td>
</tr>
<tr>
<td></td>
<td>Procurement</td>
</tr>
<tr>
<td></td>
<td>Supply-chain management</td>
</tr>
<tr>
<td>Monitoring and evaluation</td>
<td>Information technology infrastructure</td>
</tr>
<tr>
<td></td>
<td>Data collection and analysis</td>
</tr>
<tr>
<td>Demand generation</td>
<td>Financial incentives</td>
</tr>
<tr>
<td></td>
<td>(e.g. conditional cash transfers, insurance)</td>
</tr>
<tr>
<td></td>
<td>Population interventions</td>
</tr>
<tr>
<td></td>
<td>(e.g. education and promotion)</td>
</tr>
</tbody>
</table>

*Relates to how and how much to pay providers.
What do we know about integration in health systems in general?

There is limited evidence available in the literature regarding the benefits, risks and impact of health systems integration. This may be partly explained by the varying definitions, types and extent of integration and the challenge of measuring the impact of a concept which is difficult to define and measure.

A systematic review of integration of targeted health interventions into health systems found the following.3

- **The presence of both integrated and non-integrated programmes in many countries suggests there may be benefits to either approach**, but the relative merits of integration in various contexts, and for different interventions, have not been systematically analysed and documented.

- Health systems combine both non-integrated and integrated interventions, but the **purpose, nature and extent of integration varies enormously**.

- There were few instances where there is full integration of a health intervention or where an intervention is completely non-integrated. Instead, there exists a **highly heterogeneous picture**, both for the nature and also for the extent of integration.

- **More evidence is needed** in order to decide on the effectiveness of health programme integration, particularly from country case-studies with robust designs using a common methodology and replication logic.

A 2011 Cochrane review of strategies for integrating primary health services in low- and middle-income countries at the point of delivery found that: “there was some evidence [...] that adding on services or creating linkages to an existing service improved its use and delivery of health care but little or no evidence that fuller integration of primary health care services improved people’s health status in low- or middle-income countries” and suggested that “if policy makers and planners consider integrating health care services they should monitor and evaluate them using good study designs”.30

There is a range of resources available to support integration efforts between the immunization programme and the broader health system in this document, namely:

- overview of Malawi and Senegal’s experience in developing their own essential package of services (see Box 4);

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• overview of the guidelines on developing comprehensive multi-year planning for immunization (see Box 5), including how to strengthen the links with the national health sector plan;

• overview of integrated supply chain management (see Boxes 6 and 7), including the use of immunization cold-chain infrastructures for the transportation of oxytocin (a drug used to prevent and treat postpartum haemorrhage);

• overview of using HBRs to integrate programme monitoring (see Box 8).

**BOX 4**

**Making service integration a reality – case studies on integrated service delivery**

The United States Agency for International Development (USAID) MEASURE evaluation project chose to develop case studies on integrated service delivery in Malawi and Senegal as both countries were willing to participate as a case study model and were in the process of scaling up an integrated service-delivery intervention. In both Malawi and Senegal, their respective Ministries of Health (MOHs) and partners introduced a package of essential services corresponding to the health priorities identified at the local level, including the reduction of maternal, newborn and child morbidity and mortality.

Evidence-based packages of integrated services and delivery strategies were agreed upon, and improved policies, strong leadership and governance, planning and management functions supported the collaboration among partners to provide integrated services. Although health information systems, and monitoring and evaluation data collection improved, challenges with human resources, supervision and commodities and supplies remained, and there was limited data that supported the contribution of integrated interventions on improved service coverage and other outcomes.31
“it is useful to consider where links can be made to other health interventions as a more effective way of achieving national health goals. […] Planning for such links may involve a review of other programme health plans, for integrated management of neonatal and childhood illnesses (IMNCI), malaria, nutrition and non-communicable disease (NCD) control, to identify areas of synergy. This can be followed by regular discussions to determine the best strategies to adopt, and to plan activities for training, service delivery and monitoring.” 32
**Box 5**

How can immunization programmes and health sector planning be strengthened?

The *WHO-UNICEF Guidelines for Comprehensive Multi-Year Planning for Immunization (cMYP)*[^32] provides guidance on how to position immunization programmes within the broader national health sector strategies and identify opportunities for integration within the health programmes.

The national health sector plan is the basis for the national health budget, and is a key document to consider while preparing the cMYP. In addition, the objectives, strategies, cost and financing information from the cMYP should be integrated within the national health plan and budget.

During the development of the cMYP, “it is useful to consider where links can be made to other health interventions as a more effective way of achieving national health goals. [...] Planning for such links may involve a review of other programme health plans, for integrated management of neonatal and childhood illnesses (IMNCI), malaria, nutrition and non-communicable disease (NCD) control, to identify areas of synergy. This can be followed by regular discussions to determine the best strategies to adopt, and to plan activities for training, service delivery and monitoring.

Many countries have developed essential medical care benefit packages, which usually include immunization and other maternal and child health-care interventions, delivered either at fixed health facilities or through health outreach services. Integration of programmes through common delivery systems promotes efficiency through sharing of costs and, most importantly, enhances impact through making more life-saving interventions accessible to the population”.

BOX 6

**Example of health system integration:**

integrated supply chains

Successful immunization programmes are built on functional, end-to-end supply chain and logistics systems. The role of the supply chain is to ensure effective vaccine storage, handling and stock management, rigorous temperature control in the cold chain and maintenance of adequate logistics management information systems (LMIS). The ultimate goal is to ensure the uninterrupted availability of quality vaccines from manufacturer to service-delivery levels so that opportunities to vaccinate are not missed because vaccines are unavailable. This requires a system to achieve the six rights of supply chain management.33

- **Right PRODUCT**
- **Right PLACE**
- **Right QUANTITY**
- **Right TIME**
- **Right CONDITION**
- **Right COST**

Yadav and colleagues defined supply chain integration as “the merging of more than one vertical supply chain for specified programmes or product categories” and considered various country experiences, both positive and negative, with supply chain integration. For example, Nepal successfully integrated all MOH logistics activities under a single entity. The LMIS, procurement, forecasting, storage, distribution and requisitioning were all integrated across multiple programmes. The integration project took several years to reach its intended outcomes but is now considered the hallmark of effective integration. A less successful example cited by the authors was Mali, which attempted to integrate family planning into the essential medicines programme without adequate planning, resulting in poor availability and system disruption.

The authors developed a framework for decision-making on whether or not to integrate supply chains for immunization and other health commodity supply chains, and also cautions about the pitfalls of integration as a one-size-fits-all strategy. An overview of the integration potential of various supply chain activities is provided in Table 2 below.34

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TABLE 2.
Overview of integration potential of supply chain activities

<table>
<thead>
<tr>
<th>ACTIVITIES WITH POTENTIAL FOR INTEGRATION</th>
<th>DIFFICULT ACTIVITIES TO INTEGRATE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Storage</strong></td>
<td><strong>Quantification</strong></td>
</tr>
<tr>
<td>Possible cost savings (storage security or administration).</td>
<td>Forecasting of vaccines and non-vaccines (e.g. medicines, test kits) demands require different assumptions and methodologies.</td>
</tr>
<tr>
<td>Additional cold chain space resulting from the introduction of new vaccines.</td>
<td></td>
</tr>
<tr>
<td><strong>Transport</strong></td>
<td><strong>Procurement</strong></td>
</tr>
<tr>
<td>If temperature requirements, resupply intervals and service delivery points are well matched.</td>
<td>Vaccines and non-vaccines usually have very different procurement processes.</td>
</tr>
<tr>
<td><strong>Information systems</strong></td>
<td><strong>Requisition/ordering</strong></td>
</tr>
<tr>
<td>Common LMIS would provide an integrated overview of multiple supply chains and could improve coordination.</td>
<td>Requisitions for vaccines are carried out using a routine order process based on immunization schedules and birth cohorts. Essential medicines follow a less predictable process.</td>
</tr>
</tbody>
</table>

Working together

It is important to consider the product attributes when considering supply chain integration, such as temperature requirements, shelf life, volume and demand seasonality. Based on literature and consultations with different stakeholders, Yadav and colleagues also provide a summary table with a preliminary analysis of products that have the potential for integration in storage and distribution with vaccines (see Table 3). The authors concluded as follows.34

- It is evident that many products, such as deworming tablets, childhood iron or vitamin A deficiency tablets, and intermittent preventive treatment in infants (IPTi) drugs, that is, sulfadoxine-pyrimethamine (IPTi-SP), would all be very suitable for integration given the similarities of their target population and distribution schedule with vaccines.

- Other products, such as HIV test kits, are ideal candidates for integration due to the temperature-controlled distribution requirements and a pre-set distribution schedule.

- Oxytocin (to prevent and treat postpartum haemorrhage) presents a particularly strong example of a product that has cold-chain needs, a somewhat predictable demand/stock supply pattern and resupply frequency and also has significant overlap in the service delivery points.

- Some products that are now receiving increased attention, such as uterotonics (which act as analogues of oxytocin) for maternal health, or insulin for diabetes, also offer opportunities for integration with vaccine storage and distribution, as they also need controlled temperature distribution.
TABLE 3. Preliminary analysis of product categories that fit with vaccines for integration

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>Demand side characteristics with vaccines</th>
<th>Service delivery points</th>
<th>Temperature sensitive distribution requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deworming tablets (Albendazole, medendazole, levamisole, praziquantel)</td>
<td>Distributed on a pre-set schedule</td>
<td>Similar to vaccines</td>
<td>Ambient</td>
</tr>
<tr>
<td>Childhood iron or vitamin deficiency tablets e.g. vitamin A</td>
<td>Consumption based but somewhat predictable</td>
<td>Similar to vaccines</td>
<td>Ambient</td>
</tr>
<tr>
<td>IPTi drugs (i.e. SP)</td>
<td>Distributed on a pre-set schedule</td>
<td>Similar to vaccines</td>
<td>Ambient</td>
</tr>
<tr>
<td>HIV test kits and reagents</td>
<td>Consumption based but somewhat predictable</td>
<td>Often different from vaccines</td>
<td>Controlled temperature or cold chain</td>
</tr>
<tr>
<td>Laboratory reagents</td>
<td>Consumption based but somewhat predictable</td>
<td>Often different from vaccines</td>
<td>Controlled temperature or cold chain</td>
</tr>
<tr>
<td>Reproductive health products</td>
<td>Consumption based but somewhat predictable</td>
<td>Often different from vaccines</td>
<td>Ambient for most controlled temperature for some</td>
</tr>
<tr>
<td>Malaria bednets</td>
<td>Mostly distributed in campaigns</td>
<td>Often different from vaccines</td>
<td>Ambient</td>
</tr>
<tr>
<td>Equipment spare-parts</td>
<td>Uncertain</td>
<td>Similar to vaccines</td>
<td>Ambient</td>
</tr>
<tr>
<td>ARVs</td>
<td>Distributed based on patient enrollment and diagnostic status</td>
<td>Often different from vaccines</td>
<td>Controlled temperature chain</td>
</tr>
<tr>
<td>ACTs malaria medicines</td>
<td>Uncertain and seasonal</td>
<td>Similar to vaccines</td>
<td>Controlled temperature chain</td>
</tr>
<tr>
<td>Insulin</td>
<td>Consumption based but somewhat predictable</td>
<td>Often different from vaccines</td>
<td>Cold chain</td>
</tr>
<tr>
<td>Uterotonics (i.e. oxytocin)</td>
<td>Uncertain</td>
<td>Often different from vaccines</td>
<td>Cold chain</td>
</tr>
</tbody>
</table>
In 2015, WHO and UNICEF published a joint statement on “temperature-sensitive health products in the Expanded Programme on Immunization cold chain” to encourage greater health commodity supply chain convergence for temperature-sensitive pharmaceuticals, where appropriate.36

**BOX 7**

**Example of integrated supply chains:**

**answering the oxytocin challenge**

Postpartum haemorrhage (PPH), or excessive bleeding after childbirth, is the leading cause of maternal mortality worldwide.36 The use of oxytocin, a temperature-sensitive medicine, has been recommended by WHO as the first-line choice for prevention and treatment of PPH. Universal access to oxytocin, and similar medicines, is expected to prevent an estimated 41 million PPH cases and save 1.4 million lives over the next ten years.

Oxytocin can degrade when exposed to prolonged heat, hence WHO and UNICEF have recommended that oxytocin-based products be kept refrigerated as much as possible. However, in countries with unreliable or unavailable electricity sources, or inadequate cold-chain infrastructure, and where daytime temperatures exceed 30°C (86°F), keeping oxytocin cool can be challenging.

Following a proposal by the United Nations (UN) Commission on Life-saving Commodities for Women and Children, that oxytocin is transported within national EPI cold-chain infrastructures, WHO and the United Nations Children’s Fund (UNICEF) endorsed this integration. Several countries, including Benin, Niger, Senegal, South Sudan and Togo, have adopted this integrated approach, along with good storage and labelling practices. Lessons learned from this experience can support future integration of other drugs and products.

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HBRs play an important role in documenting immunization services received by individuals to ensure that both the family and health workers are aware, and have documentation of the services received. In turn, regular screening of HBRs by health workers can ensure that individuals are not missing any recommended vaccination doses. HBRs can be classified into three broad groups.

1) **Vaccination only cards** that exclusively record basic identifying information and immunization services received.
2) **Vaccination Plus cards** that record vaccinations and a broader range of health services received, as well as child growth and development (such as child growth charts) and a limited set of basic information related to child survival (such as infant and young child feeding).
3) **More comprehensive child health books** that often include a record of birth characteristics, health services received beyond vaccination, growth charts, etc. These books also provide detailed guidance to parents in the areas of infant and young child feeding, developmental milestones, prevention of diarrhoea, malaria and other illnesses, and family planning.
4) **Maternal and child health books** that offer a way to monitor and track antenatal care (ANC) of expectant mothers during their pregnancy, and their child up to the age of five years.

The WHO’s *Practical guide for the design, use and promotion of home-based records in immunization* programmes suggests that “depending on space and the nature of the home-based record, it may also be appropriate to include additional information on complementary and integrated health interventions (for example, vitamin A supplementation, promotion of breastfeeding, oral rehydration therapy or zinc treatment for diarrhoea).”

In Mexico, an integrated health booklet is used to document an individual’s vaccination history across the life span, as well as to provide other health promotion, nutrition, physical activity, and disease control and prevention information. Five distinct, yet similar HBRs comprise the lifetime HBR, each containing messaging about *keeping the HBRs in good condition and bringing them to every health encounter.*

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The term “integrated health services” can have different meanings according to local contexts, and Table 4 summarizes four main types of integrated health services.

**TABLE 4.**
Types of integrated health services

<table>
<thead>
<tr>
<th>TYPE</th>
<th>IMMUNIZATION EXAMPLE</th>
<th>POTENTIAL ADVANTAGES FOR THE SERVICE USERS</th>
</tr>
</thead>
</table>
| **Integrated package of services**  
A package of preventive and curative health interventions for a particular population group. | The package of care defined for children in the IMCI combines treatment of the major childhood illnesses, while emphasizing prevention of disease through immunization and improved nutrition. | Users are more likely to receive all appropriate interventions, thereby increasing access and convenience. |
| **Integrated service delivery points**  
A range of services for a catchment population is provided at one location. | Multi-purpose clinics where a caregiver could take her child for immunization and also receive family planning services. | Users receive coordinated care, and may need to make fewer visits to the health-care providers. It may also improve the referral system. |
| **Integrated services, over time**  
Either (a) the provision of continuity of care over time for chronic conditions, or (b) a continuum of care throughout the life cycle. | (a) HPV vaccination as part of a comprehensive cervical cancer strategy.  
b) A national immunization schedule designed to reach users, at appropriate points throughout their lifetime, with the appropriate vaccines. | Users are more likely to receive timely care and all appropriate interventions. |
| **Integrated referral system**  
A coordinated service is provided through the use of referrals to the appropriate level of the health system. | Referrals between community health volunteers and health centres according to the local policies for immunization. | Users benefit from well-functioning procedures for referrals up and down the levels of the system and would be less likely to miss out on appropriate interventions. |

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(WHO Technical Brief, No. 1; http://www.who.int/healthsystems/technical_brief_final.pdf).
BOX 9

How can integrated health services contribute towards the GVAP coverage goals?

1. **Sustaining existing coverage.** Providing additional integrated services (such as bednets or hygiene kits) may provide increased motivation to caregivers to fully immunize their children. Integrated service delivery may help to increase efficiency as operational costs are shared across programmes and could therefore contribute to their long-term sustainability.

2. **Reducing MOV.** Improving links between immunization programmes and other services (such as outpatient visits for sick children) can help to ensure that each contact that a child has with a health facility is used as an opportunity to screen their vaccination status and to provide either all of the appropriate vaccinations or a referral to immunization services. The design and availability of HBRs is key to facilitate this type of integrated service (see Box 8).

3. **Facilitating the delivery of a package of interventions to new populations.** Integrated service delivery may reduce the costs of reaching hard-to-reach populations in the future. New vaccines targeting new target populations, such as HPV vaccine for adolescents, provide an opportunity to reach these populations with broader health interventions (such as deworming, sexual and reproductive health education, etc.), which may, in turn, also increase demand for vaccination. New delivery systems, for example, microarray patches or compact prefilled auto-disable devices (such as Uniject™), will simplify the delivery of immunizations in the future and may further facilitate integrated service delivery, as they allow the delivery of immunizations by different cadres of health workers who may not need to be fully trained in the delivery of injections, for example, community health workers (CHWs).

Immunization has a long history of integration with a broad range of other health services delivered using both routine and campaign-based delivery strategies. A literature review published in 2012, found that the most successful integration efforts with immunization included “an easy-to-administer intervention, such as malaria treatment, vitamin A, and deworming tablets, which were added to existing immunization services with little additional effort”. Examples of country experiences with integrated health interventions are found in Table 5 below.

---

TABLE 5.
Types of maternal and child health interventions that have been jointly delivered with immunization using routine, campaign and other strategies.39

<table>
<thead>
<tr>
<th>TYPE OF SERVICE</th>
<th>COUNTRY AND TYPE OF STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Routine</td>
</tr>
<tr>
<td>FAMILY PLANNING</td>
<td></td>
</tr>
<tr>
<td>Family planning</td>
<td>Zambia</td>
</tr>
<tr>
<td>Family planning counselling</td>
<td>Madagascar</td>
</tr>
<tr>
<td>Family planning promotion</td>
<td>Philippines</td>
</tr>
<tr>
<td>HEALTH EDUCATION</td>
<td></td>
</tr>
<tr>
<td>Health education</td>
<td>Zambia</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>HEARING</td>
<td></td>
</tr>
<tr>
<td>Infant hearing screening</td>
<td>Nigeria; South Africa</td>
</tr>
<tr>
<td>HIV</td>
<td></td>
</tr>
<tr>
<td>HIV testing</td>
<td>South Africa</td>
</tr>
<tr>
<td>Referral for counselling</td>
<td>Zimbabwe</td>
</tr>
<tr>
<td>MALARIA</td>
<td></td>
</tr>
<tr>
<td>Bednet distribution</td>
<td>Malawi</td>
</tr>
<tr>
<td>Bednet vouchers</td>
<td></td>
</tr>
<tr>
<td>Bednet promotion</td>
<td></td>
</tr>
<tr>
<td>Bednet retreatment</td>
<td></td>
</tr>
<tr>
<td>IPTi</td>
<td>Gabon; Ghana; Kenya; Malawi; Mozambique; United Republic of Tanzania</td>
</tr>
<tr>
<td>Malaria treatment for pregnant women</td>
<td></td>
</tr>
</tbody>
</table>
**Section 2: Type of Integration**

**“the most successful integration efforts with immunization included an easy-to-administer intervention, such as malaria treatment, vitamin A, and deworming tablets, which were added to existing immunization services with little additional effort”**

### Type of Service: Neglected Tropical Diseases

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Country and Type of Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deworming</td>
<td>Ethiopia; Zambia</td>
</tr>
<tr>
<td></td>
<td>Cameroon; Madagascar; Mexico; various countries**</td>
</tr>
<tr>
<td></td>
<td>Congo (POLIO);</td>
</tr>
<tr>
<td></td>
<td>Madagascar (MEASLES);</td>
</tr>
<tr>
<td></td>
<td>Togo (MEASLES, POLIO);</td>
</tr>
<tr>
<td></td>
<td>United Republic of Tanzania (MEASLES)</td>
</tr>
</tbody>
</table>

### Type of Service: Nutrition

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Country and Type of Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>Ethiopia; Philippines; Zambia</td>
</tr>
<tr>
<td></td>
<td>Cameroon; Madagascar; various countries**</td>
</tr>
<tr>
<td></td>
<td>Congo (POLIO);</td>
</tr>
<tr>
<td></td>
<td>Madagascar (MEASLES);</td>
</tr>
<tr>
<td></td>
<td>Niger (POLIO);</td>
</tr>
<tr>
<td></td>
<td>United Republic of Tanzania (MEASLES)</td>
</tr>
<tr>
<td>Growth monitoring</td>
<td>Zambia</td>
</tr>
<tr>
<td>Complementary feeding practices</td>
<td>India; Viet Nam</td>
</tr>
<tr>
<td>Nutritional screening</td>
<td>Ethiopia; various countries**</td>
</tr>
<tr>
<td>Information, Education and Communication (IEC) materials on breastfeeding</td>
<td>Madagascar</td>
</tr>
<tr>
<td>Nutrition promotion</td>
<td>Cameroon</td>
</tr>
</tbody>
</table>

* e.g. Child Health Days/weeks

**Various countries were the following five countries grouped in a study: Ethiopia; Madagascar; Uganda; United Republic of Tanzania, and Zambia.**
Section 2: Type of Integration

Working together

BOX 10

Immunization delivery strategies should influence the design of integrated health services

Routine immunization can be delivered at a health facility, at an outreach site, or through periodic intensification of routine immunization (PIRI) approaches.

Integrated health services during routine immunization outreach

The reported advantages of integrated health services at outreach sites included increased coverage thanks to volunteer support in Cambodia and cost sharing in Vietnam, where the malaria control programme hosted immunization, vitamin A distribution and deworming outreach sessions.40

Successful integration of other health interventions with immunization at outreach sessions requires a series of carefully planned and implemented steps, including “selecting interventions that can be feasibly integrated at the outreach level; instituting intersectoral coordination at all program levels; exploring service funding sources; conducting joint training and supervision of health workers and programme managers; ensuring the participation of community based organizations, leaders, and volunteers; and establishing a robust monitoring and review mechanism”.40

Periodic intensification of routine immunization (PIRI)41,42,43

The reported benefits of integrating health services during PIRI are:
- coverage of vitamin A supplementation and immunization improved;
- activities raised the profile of child survival with the community.

The reported challenges of integrating health services during PIRI are:
- competing priorities meant that primary health care staff were diverted from their usual primary functions and managers reported being distracted by the time required for the implementation of the activities;
- examples of distortion of the routine primary health system, as health workers only receive incentives during Child Health Day (CHD) activities;
- coverage improvements did not occur in non-CHD interventions, such as exclusive breast-feeding.

Section 2: Type of Integration

Immunization campaigns

The SIAs provide an excellent platform to deliver additional public health and nutrition interventions, including vitamin A supplementation, deworming medicines and additional vaccinations. Although integration of multiple interventions may raise additional logistical challenges, studies have concluded that integrated health SIAs are cost-effective and save more lives.44

The decision to integrate other health interventions in a measles/measles–rubella SIA should be made on a case-by-case basis and will mainly depend on whether the additional activities contribute to the SIA’s main objective of reaching the unvaccinated, and do so at an affordable cost.

TABLE 6.
Immunization delivery strategies

<table>
<thead>
<tr>
<th>Name and Definition</th>
<th>Specific considerations for integrated health services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Routine immunization – health facility</strong>&lt;br&gt;Immunization services are delivered at a health facility.</td>
<td>The design of the integrated health services could be more flexible than in other settings due to the availability of staff and the potential to store supplies.</td>
</tr>
<tr>
<td><strong>Routine immunization – outreach sites</strong>&lt;br&gt;(school-based or other strategies)&lt;br&gt;Immunization services are delivered by health-facility staff through single day visits to an outreach site typically located 5–15 km from a fixed facility.40</td>
<td>Health services selected for integration should be carefully selected to ensure that the health workers delivering the package of interventions will be appropriately trained and that logistical challenges can be addressed. Providing time-consuming services (e.g. family planning counselling) or distributing bulky items may be less practical.</td>
</tr>
<tr>
<td><strong>PIRI</strong>&lt;br&gt;Integrated country-specific packages of preventive services are delivered through regular events, e.g. child health days. Existing health resources and extensive social mobilization are used to achieve high coverage, typically in areas that are hard-to-reach or underserved.</td>
<td></td>
</tr>
<tr>
<td><strong>Immunization campaigns</strong>&lt;br&gt;Immunization campaigns, or supplementary immunization activities (SIAs) rapidly deliver vaccinations to large groups of people in order to increase routine immunization coverage or as part of disease control, elimination or eradication programmes, or in response to disease outbreaks (e.g. yellow fever).44</td>
<td></td>
</tr>
</tbody>
</table>

BOX 11

Vaccination week in the Americas

Since 2003, vaccination weeks have been a key immunization strategy in the Americas. Vitamin A supplementation is the most common integrated intervention with immunization, followed by deworming. A variety of other interventions have been integrated, such as educational activities, supplementation with other vitamins and minerals and provision of health services.45

COUNTRY EXAMPLE

National vaccination weeks in Honduras

Since 1991, Honduras has been integrating immunization with other interventions during National Vaccination Weeks. In addition to common interventions, Honduras has also integrated disease control activities during public-health emergencies, such as dengue and cholera.46

Factors contributing to success in Honduras include:
- close and effective coordination between different health programmes;
- joint planning at all levels of the health system;
- timely and accurate programming of supplies;
- training of health personnel at all levels;
- proper adaptation of documentation forms;
- development of joint technical guidelines;
- formation of a National Committee for the promotion of National Vaccination Weeks, including active participation of personnel from different programmes, international agencies and other partners;
- systematic progress monitoring by age group and strategy;
- joint supervision with personnel from EPI and other relevant programmes prioritizing highly-populated areas and areas at risk;
- national EPI evaluation, including annual interventions integrated with vaccination;
- development of an annual written report by health region, including lessons learned and coverage data.

BOX 12

Child Health Days in Africa

COUNTRY EXAMPLE

Integrated package of critical child survival interventions to reduce child mortality in Somalia

Given its weak health care infrastructure, Somalia has used twice yearly CHDs since 2008 to deliver integrated interventions. Nationwide CHDs target children and women of reproductive age (WRA), delivering services directly to the community through teams of vaccinators and non-technical community members (assisting with crowd control, registration and social mobilization). Children under five years of age are screened by age for appropriate interventions (including malnutrition screening by mid-upper arm circumference) and then provided with oral polio vaccine (OPV), vitamin A, albendazole, measles vaccine and diphtheria-tetanus-pertussis (DTP). Tetanus-toxoid-containing vaccine (TTCV) is administered to WRA before their child is vaccinated, and mothers are given three sachets of oral rehydration salts (ORS) sachets and water purification tablets for later use, to promote safe water and prompt diarrhoea management practices.47

Somalia’s experience has highlighted that problems with supplies and logistics management are exacerbated during CHDs; factors complicating commodity management included additional health commodities, more service delivery points and the short time frame for planning. Easy-to-use job aids for health workers and community volunteers, and frequent supervision, were recommended as important elements of the CHDs. Message dissemination during CHDs was also recommended to encourage use of routine immunization services during and following the CHDs.

COUNTRY EXAMPLE

Integrated immunization campaign in Togo used a mix of delivery methods

Integrated campaigns use either house-to-house or fixed-site delivery methods, or a mix. In Togo, a campaign used a two-phase delivery strategy in which vaccinators provided deworming tablets during house-to-house polio vaccination and then distributed bednets in conjunction with measles vaccine at fixed posts.39

Women gather to register their children during the nationwide integrated immunization campaign in Togo.
Integrated settings

Certain settings provide specific opportunities for integration of immunization with other programmes. Integrated health services should be tailored to the setting in which they are being delivered. Examples of specific settings include acute humanitarian emergencies (see Box 13) and schools (see Box 14).

BOX 13

Vaccination in acute humanitarian emergencies

This decision-framework document\(^{48}\) aims to provide an approach for deciding which vaccines, if pre-emptively and properly delivered at the outset of an emergency, would constitute high-priority public-health interventions and would reduce avoidable death and disease. It assists the user to determine thoughtfully, deliberately, ethically and rationally whether or not the delivery of one or more vaccines to specific target populations during the acute phase of an emergency, would result in an overall saving of lives, a reduction in the population burden of disease and generally more favourable outcomes. The document also highlights the opportunity to add-on interventions to immunization.

A complementary guide on vaccination in humanitarian emergencies, implementation and country case studies are available.\(^{49}\) In addition, two online tools are available; (i) an eTool based on the framework for decision-making, and (ii) an eLearning course intended to provide methodology and tools to immunization programme managers for vaccination during humanitarian emergencies.\(^{50}\)

In 2017, a Humanitarian Mechanism was launched by WHO, UNICEF, Médecins Sans Frontières and Save the Children, to enable civil society organizations, governments and UN agencies to quickly procure affordable vaccine supplies on behalf of populations facing humanitarian emergencies and who do not have such access.\(^{50}\)

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BOX 14

School-based immunization

School settings are increasingly important for reaching older children and adolescents with vaccination services. With the availability of newer vaccines (such as HPV) and greater attention to providing booster doses of routine vaccines to older children (for example, DTP, Td, second dose of measles), there is a growing interest in using schools as a platform for immunization and immunization screening. With increases in school enrolment rates, particularly in low-income countries, the school immunization strategy has become even more promising.

School settings provide good opportunities to integrate vaccine delivery with other health and nutrition interventions aimed at reducing vaccine-preventable diseases (VPDs) and improving population health. For example, HPV vaccination can be linked with health information to prevent tobacco use, as an intervention aimed at primary prevention of cancer or information about healthy diets to prevent overweight/obesity and diet-related non-communicable diseases (NCDs). It can also be used as an opportunity to provide puberty and menstruation education booklets, or iron/folic-acid supplements to adolescents. In addition, linking HPV vaccine delivery with other health interventions, like deworming, can increase coverage of these interventions and reduce the overall cost of delivery.

The WHO’s School vaccination readiness assessment tool is specifically designed to assess country-wide readiness to implement school vaccination.

Comprehensive approaches to disease control

The GVAP highlights that “as new vaccines become available that target some but not all pathogens that cause particular syndromes, such as pneumonia, diarrhoea and cervical cancer, it is important that their introduction be an opportunity to scale up the delivery of complementary interventions”.² These comprehensive approaches to disease control have been reflected in the development of comprehensive cervical cancer control strategies (see Box 15)⁶ and the GAPPD (see Box 16).⁵
The WHO’s guidance on comprehensive cervical cancer control highlights the importance of a comprehensive approach throughout the life course. The core principle of a comprehensive approach to cervical cancer prevention and control is to act across the life course using the natural history of the disease to identify opportunities in relevant age groups to deliver effective interventions (Fig. 7).

**FIGURE 7**
Overview of programmatic interventions over the life course to prevent HPV infection and cervical cancer

<table>
<thead>
<tr>
<th>9 years</th>
<th>15 years</th>
<th>30 years</th>
<th>45 years</th>
<th>60 years</th>
</tr>
</thead>
</table>

**PRIMARY PREVENTION**
Girls 9 -13 years
• HPV vaccination
Girls and boys, as appropriate
• Health information and warnings about tobacco use*
• Sexuality education tailored to age & culture
• Condom promotion/ provision for those engaged in sexual activity
• Male circumcision

**SECONDARY PREVENTION**
Women >30 years of age
Screening and treatment as needed
• “Screen and treat” with low cost technology VIA followed by cryotherapy
• HPV testing for high risk HPV types (e.g. types 16, 18 and others)

**TERTIARY PREVENTION**
All women as needed
Treatment of invasive cancer at any age
• Ablative surgery
• Radiotherapy
• Chemotherapy

* Tobacco use is an additional risk factor for cervical cancer
The Global Action Plan for the Prevention and Control of Pneumonia and Diarrhoea (GAPPD)

WHO and UNICEF launched **GAPPD** in 2013 to propose a cohesive approach to ending preventable pneumonia and diarrhoea deaths. It provides an integrated framework of key interventions proven to prevent and treat childhood pneumonia and diarrhoea, including vaccines (pertussis, measles, *Haemophilus influenzae* type b, pneumococcal conjugate and rotavirus), handwashing with soap, exclusive breastfeeding for six months, vitamin A supplementation and the provision of appropriate treatment (**Fig. 8**).  

Although effective interventions have been well established, they are not always promoted together to achieve maximum benefit. The GAPPD identifies opportunities to better integrate activities as well as to capture synergies and efficiencies. It groups the various interventions for controlling pneumonia and diarrhoea, in children less than five years of age, into three focus areas:

- protecting children by establishing and promoting good health practices from birth;
- preventing children from becoming ill from pneumonia and diarrhoea by ensuring universal coverage of immunization, HIV prevention and healthy environments;
- treating children who are ill from pneumonia and diarrhoea appropriately.

**FIGURE 8**
GAPPD outlines a continuum of care, within its “protect, prevent and treat” framework

<table>
<thead>
<tr>
<th>PROTECT</th>
<th>Children by establishing good health practices from birth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Exclusive breastfeeding for 6 months</td>
</tr>
<tr>
<td></td>
<td>• Adequate complementary feeding</td>
</tr>
<tr>
<td></td>
<td>• Vitamin A supplementation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PREVENT</th>
<th>Children becoming ill from pneumonia and diarrhoea</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• vaccines: pertussis, measles, Hib, PCV and rotavirus</td>
</tr>
<tr>
<td></td>
<td>• Handwashing with soap</td>
</tr>
<tr>
<td></td>
<td>• Safe drinking-water and sanitation</td>
</tr>
<tr>
<td></td>
<td>• Reduce household air pollution</td>
</tr>
<tr>
<td></td>
<td>• HIV prevention</td>
</tr>
<tr>
<td></td>
<td>• Cotrimoxazole prophylaxis for HIV-infected and exposed children</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TREAT</th>
<th>Children who are ill from pneumonia and diarrhoea with appropriate treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Improved care seeking and referral</td>
</tr>
<tr>
<td></td>
<td>• Case management at the health facility and community level</td>
</tr>
<tr>
<td></td>
<td>• Supplies: low-osmolarity ORS, zinc, antibiotics and oxygen</td>
</tr>
<tr>
<td></td>
<td>• Continued feeding (including breastfeeding)</td>
</tr>
</tbody>
</table>
BOX 17

Example of GAPPD implementation in Sudan

Sudan has made significant gains in adopting the interventions recommended by the GAPPD. In 2011, Sudan introduced a rotavirus vaccine with Gavi support. In addition, it also introduced the pneumococcal conjugate vaccine (PCV) and was the first country to introduce the meningitis A vaccine (MenA) to its routine immunization programme. These new vaccine introductions provide opportunities to strengthen both primary health care and equity.

Examination of the GAPPD score, an indicator of the country’s progress in combatting child mortality, were mixed. However, between 2015 and 2016, it was encouraging that the GAPPD-pneumonia score increased by two points and the GAPPD-diarrhoea score by five points. These two indicators tend to have lowest coverage rates, with many countries not reporting any data.

Prioritizing data quality improvement for vaccination coverage and disease surveillance, can lead towards evidence-based solutions to address any challenges. Sudan is making efforts by establishing a weekly case-based VPD surveillance system that includes polio, diphtheria, pertussis, neonatal tetanus, rotavirus, bacterial meningitis and measles. The country also introduced reporting on adverse events following immunization and intussusception. However, due to the conflict in Sudan, community-based disease surveillance is weak among internally displaced persons and refugees.


55 GAPPD scores are calculated as the average of the following 10 relevant indicators for which coverage data is available: exclusive breastfeeding; MCV1; DTP3; RotaC; Hib3; oral rehydration salts; PCV3; zinc; appropriate care seeking, and antibiotic treatment.
Intersectoral collaboration

While the focus for integration has traditionally been on health service delivery, it is important to note the interaction of other sectors. “Generally speaking, Ministries of Health prioritize child survival and physical well-being; Ministries of Education focus on schooling; Ministries of Finance promote economic development and Ministries of Welfare address breakdowns across multiple domains of function”. However, a broader approach may be needed to address complex issues with multiple causes. For example, “undernutrition linked to poverty is estimated to contribute to 35% of all child deaths due to measles, malaria, pneumonia, and diarrhoea, as well as to stunted growth for >200 million children worldwide”.56

BOX 18

Examples of sectors beyond health that may be of particular relevance for immunization programmes

Water and sanitation. Vaccines to prevent diseases such as rotavirus, cholera or typhoid, should only be part of the response, with improvements in water and sanitation key to reducing prevalence of these diseases in the long term. The management of health-care waste, including syringes and vaccine vials, used in the immunization programme, may also fall into the remit of water and sanitation programmes.57

Education. Interaction with the education sector is growing in importance for immunization and other health programmes, as schools establish a common system for organizing services for children within the school system. In many countries, schools exist as a form of routine service provision.58 A systematic review of effective interventions for reducing multiple health risk behaviours in adolescents, found that integrated prevention programmes are both feasible and effective and may also be more efficient than discrete prevention strategies.59 In particular, the development and provision of school health services may become an increasingly important reason for Ministries of Education and Health to engage and collaborate in a range of activities.

Section 2: Type of Integration

Water, Sanitation and Hygiene (WASH) in Health Care Facilities Global Action Plan

In 2015, for the first time, WHO and UNICEF assessed the status of WASH in health-care facilities in low- and middle-income countries. Almost 40% of facilities were without any services at all. At a global meeting, WHO, UNICEF and partners committed to addressing the situation, with the aim of achieving universal access in all facilities, in all settings, by 2030. The action plan focuses on four main areas: advocacy and policy; monitoring; evidence and research, and standards and facility-based improvements (see Fig. 9), with the underlying objective of embedding WASH in health-care facilities, in health programmes and planning and in health systems monitoring and budgeting.60

WHO and UNICEF have also published a tool to assist health workers and community partners in assessing and prioritizing WASH services, hygiene practices and risks in health-care facilities, plus developing continual improvement plans. The tool, water and sanitation for health-facility improvement (WASH FIT) has been implemented in 15 countries in Africa and Asia, and initial results indicate it provides an important mechanism to address and sustain change.61 However, more rigorous monitoring and evaluation is needed together with combining the WASH FIT process with broader quality of care and health systems strengthening efforts. Furthermore, a renewed WHO WASH strategy aims to strengthen WHO’s contribution to improving health through WASH actions and, beyond WHO, to reinforce WHO’s influence within WASH partnerships, to mobilize resources, to strengthen alignment with the SDGs and to build on synergies between the SDGs, health and WASH.62

---

Change objective 1 + 2

Advocacy and Policy

AIM To advocate for global and national action to improve WASH in health care facilities and support leaders dedicated to this effort.

ACTIVITIES Document national case studies including processes and change mechanisms for improving WASH in health care facilities.

Change objective 3

Monitoring

AIM To develop, test and revise core and expanded indicators to track WASH in health care facilities.

ACTIVITIES Core and expanded indicators incorporated into all relevant WASH and health monitoring and accountability mechanisms.

Change objective 4

Evidence and Research

AIM To draw on and extend the evidence base to support increased investments, quality improvements and advocacy efforts.

ACTIVITIES Develop priority operational research agenda and seek opportunities to address the evidence gaps.

Change objective 5

Standards and Facility Improvements

AIM To develop a suite of field-tested tools, training and reference materials for a variety of facilities and settings.

ACTIVITIES Support regular training and competency assessments for all health facility staff including cleaners and health care workers.
BOX 19 COUNTRY EXAMPLE

integrating hygiene promotion in Nepal’s routine immunization programme

Due to a lack of access to safe water, basic sanitation and inadequate hygiene practices, diarrhoeal diseases are a leading cause of child mortality in Nepal. In 2016, Nepal tested a novel approach to hygiene promotion, led by the MOH and Population with financial and technical support from WaterAid. The project integrated hygiene promotion into Nepal’s routine immunization programme in four pilot districts (Jajarkot, Bardiya, Nawalparasi and Myagdi) ahead of the planned rotavirus vaccine introduction, and aimed to demonstrate best practice for rolling out this approach across Nepal.

While caregivers waited at immunization clinics, a range of hygiene health-promotion tools were demonstrated, including games, storytelling, handwashing rituals, competitions to commitment-making, and certification for caregivers who have completed the programme. Caregivers were also provided with branded visual aids, such as a fan or wall mirror, or a bib for the baby, to serve as reminders for practicing the behaviours at home.

The initiative targeted 38 000 mothers/caregivers of infants aged 12 months and younger, and around 2 200 female community health volunteers (FCHVs) were trained.

Recent findings highlight that integrating hygiene promotion through a regular service delivery mechanism was effective in improving all key hygiene behaviours (from 2% during baseline to 54% after one-year implementation). In addition, this integrated approach increased immunization coverage, reduced drop-out and vaccine wastage rate, and helped to reach the previously un-reached population. The capacity of the health workers and FCHVs to run innovative hygiene promotion increased and there are plans to scale-up this approach nationwide.63

Health services that could provide immunization services or referrals
WHO and UNICEF launched the Integrated Management of Childhood Illness (IMCI) in 1995 as a key strategy for improving child health and survival. In 2003, neonate care was added and the strategy was renamed as IMNCI. Both terms are used here, depending on the context and information source. IMCI combines prevention and treatment of the most common childhood illnesses into simple guidelines and messages that can be used to train health workers. Over 100 countries have adopted IMNCI and implemented it to varying degrees.

A recent review recommends that IMNCI enhance linkages with several other health programme areas, including immunization. Although IMNCI focuses on the integrated management of sick children under five, it also encompasses care of the well child, including immunization. As part of the training for IMCI, health workers are taught to check a child's vaccination status and provide them with vaccination, when necessary. IMCI training may provide opportunities to reinforce immunization practices with health workers, including assessment for vaccination status and vaccination. However, these messages should be reinforced regularly, as it cannot be assumed that most health workers have had recent IMCI training, or that the training included immunization, or that training automatically translates into improvements in practice.

---


Many countries have adopted the integrated community case management (iCCM) strategy to improve access to life-saving treatment for common childhood illnesses. The iCCM is implemented in hard-to-reach areas, which in most countries are communities located five or more kilometres from the nearest health facility. Under this approach, CHWs are trained, supervised and equipped to assess, classify and treat fast breathing pneumonia with amoxicillin, malaria with artemisinin-based combination therapy (ACT), and diarrhoea with ORS and zinc. They also assess, classify and refer children with severe disease to health facilities.

Besides case management of common childhood diseases, mobilizing communities for vaccinations is sometimes a part of CHW activities, hence, CHWs could be trained to mobilize communities for immunization. Also, under the iCCM case-management protocol, the vaccination status of each sick child presenting to a CHW should be checked. In the event that a child is not vaccinated, the CHW should take steps to get the child vaccinated.

“The iCCM is implemented in hard-to-reach areas, which in most countries are communities located five or more kilometres from the nearest health facility”
Tetanus remains an important public-health problem in many parts of the world, particularly in the poorest districts of tropical developing countries, where tetanus morbidity and mortality are dominated by maternal and neonatal tetanus (MNT).

Tetanus is preventable through TTCVs that are included in childhood immunization programmes. However, booster doses are required for long-lasting immunity. The incorporation of TTCV vaccination for pregnant women within ANC is a long-standing practice. WRA are also targeted, as part of immunization campaigns in high-risk districts for MNT, and it is an opportunity to provide other interventions at the same time.

The WHO’s 2016 antenatal care guidelines now recommend a minimum of eight ANC contacts to reduce perinatal mortality and improve women’s experience of care. The guidelines also recommend TTCV vaccination “for all pregnant women, depending on previous tetanus vaccination exposure, to prevent neonatal mortality from tetanus”.68

Integrating TTCV into ANC is a sustainable way to ensure that pregnant women are protected against tetanus. In the longer term, ensuring that everyone receives the full infant TTCV series and the required TTCV booster doses will provide lifelong protection against tetanus.

Over time, the ANC contact will focus more on screening for TTCV status, only providing vaccination when the required number of TTCV doses have not been documented.69 In addition, as other new vaccinations for pregnant women become available, the importance of integration between ANC and immunization will increase.
Postnatal care (Hepatitis B birth dose, postpartum screening)

Hepatitis B birth dose

Hepatitis B virus (HBV) infection is a leading cause of liver cancer and liver disease. In 2015, an estimated 257 million people were living with chronic HBV infection and an estimated 887,220 died due to HBV infection. Perinatal transmission or early childhood exposure is an important cause of chronic hepatitis B infection. Perinatal transmission or early childhood exposure are important causes of chronic hepatitis B infection.

The WHO recommends that “all infants (including low birth weight and premature infants) should receive their first dose of hepatitis B vaccine as soon as possible after birth, ideally within 24 hours.” However, the integration of Hepatitis B birth dose (HepB-BD) as a standard component of quality newborn care is not universally adopted, as national policies or local practices do not support it in all countries. For example, many babies are born at home and so may not have access to timely vaccination.

HepB-BD varies from other vaccinations in that the delivery of the vaccine cannot be scheduled, placing special demands on the health system to respond within 24 hours of birth.
childbirth. Thus, the successful delivery of HepB-BD requires integration with maternal and newborn care in health facilities or with home visits.

The strategic approach to integrating HepB-BD needs to be based on the local context, with a particular focus on the number of home births, as well as on the training of the health workers that will administer the HepB-BD. Vaccinating newborns with HepB-BD, at health facilities and during home visits, has been shown to have additional benefits (such as, earlier birth registration or providing other postnatal care).\footnote{A guide for introducing and strengthening Hepatitis B birth-dose vaccination. Geneva: World Health Organization; 2016 (http://apps.who.int/iris/bitstream/10665/208278/1/9789241509831_eng.pdf).}

**BOX 20  COUNTRY EXAMPLE**

**Vaccinating newborns delivered at health facilities in India**

A project in Jharkhand and Uttar Pradesh states in India, focused on operationalizing an already existing strategy to vaccinate newborns with HepB-BD, oral polio virus vaccine birth dose and bacille Calmette-Guérin (BCG).\footnote{Taneja G et al. Institutionalizing early vaccination of newborns delivered at government health facilities: experiences from India. International journal of medical research and review. 2015;3(5).} Results demonstrated that vaccinating newborns delivered at health facilities as early as possible after birth was implementable and replicable. Furthermore, there was the additional benefit of early birth registration of infants in health-facility records for subsequent follow-up for complete immunization and other services.
A woman visits Nebbi hospital with her 5 months old son to immunize and growth monitoring of her baby
Postpartum screening

BOX 21
Using a postpartum checklist in Nigeria increased screening for immunization

A case study in Nigeria describes the potential use of a postpartum systematic screening checklist to increase screening for other relevant services, including immunization.\textsuperscript{73} Using a standardized checklist, health-care providers identified each beneficiary’s needs and desires for services, and then provided these services, either during the same visit or during referrals, as needed. Providers in immunization, newborn care and paediatric/sick baby units of the selected hospitals, were trained to improve their interpersonal communication, counselling skills and use of the postpartum systematic screening checklist. The checklist emphasized screening or referral for the following service(s):

- referral or providing postnatal care (PNC) for women who deliver within six weeks;
- providing lactational amenorrhea method (LAM) and LAM transition counselling for women who meet the three LAM criteria;
- providing postpartum family planning (PPFP), including healthy timing and spacing of pregnancy (HTSP) counselling for women not using any family planning method;
- providing general family planning counselling for women who do not want to get pregnant and are not using any family planning methods;
- referral or providing immunization for women attending PNC who have children under five years old and who are not fully vaccinated;
- referral for other services for women who have additional service(s) needs.

With the postpartum systematic screening checklist, beneficiaries attending immunization, newborn care and paediatric/sick baby services were more likely to be screened for family planning, postnatal care and immunization services (17% versus 68%, 13% versus 57% and 47% and 89%, respectively).

\textsuperscript{73} Postpartum systematic screening in northern Nigeria: a practical application of family planning and maternal newborn and child health integration. Washington (DC): United States Agency for International Development; 2010.
Planning for integrated immunization programmes
Planning for integrated immunization programmes

Before deciding to integrate an immunization programme with other interventions, a number of criteria should be considered, either relating to the intervention(s) or the health system context.

These are summarized in Table 7 below, and a checklist with key considerations for integrated service can be found at the end of this chapter in Box 29.

Considerations relating to the integration of specific interventions, including Malaria, Neglected Tropical Diseases, Reproductive and maternal health services, HIV, and Water, Sanitation and Hygiene interventions with immunization can be found in the Appendix.

Considerations related to the selection and design of integrated programmes can be grouped into the following six categories, which will be discussed in turn:

- context
- compatibility
- feasibility
- acceptability
- accountability
- equity

Measles-Rubella immunization campaign in Viet nam
### TABLE 7.
Criteria to consider before integrating immunization with other interventions

<table>
<thead>
<tr>
<th>RELATED TO THE INTERVENTION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Has a similar target group as for routine vaccination</td>
<td></td>
</tr>
<tr>
<td>Requires similar timing or frequency as routine vaccination</td>
<td></td>
</tr>
<tr>
<td>Has similar logistical requirements</td>
<td></td>
</tr>
<tr>
<td>Has as high a level of acceptability among patients, communities and health workers as immunization</td>
<td></td>
</tr>
<tr>
<td>Entails a similar skill level among health workers</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>RELATED TO HEALTH SYSTEM CONTEXT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>High-level political will exists to promote integration and coordination among the different programme managers involved</td>
<td></td>
</tr>
<tr>
<td>National policies support each intervention</td>
<td></td>
</tr>
<tr>
<td>Financial support and commodity logistics are secure for each intervention</td>
<td></td>
</tr>
<tr>
<td>Primary health-care structures exist for delivering each intervention</td>
<td></td>
</tr>
<tr>
<td>Responsibility for monitoring each intervention is clearly defined among programmes</td>
<td></td>
</tr>
<tr>
<td>Health workers are “multi-purpose”, not designated or funded for a single intervention</td>
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</tr>
<tr>
<td>Combining the interventions does not disrupt or create an unrealistic burden for service delivery</td>
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</table>

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Context

Context is fundamental for designing successful integration initiatives and needs to be considered at the national and/or sub-national level. There are examples from the literature that identify differences in outcomes following integration in rural areas, as compared to urban areas (see Box 22 and 23 below).

**BOX 22  COUNTRY EXAMPLE**

Uganda’s schistosomiasis control programme used National Immunization Days to reach target populations

In Uganda, the schistosomiasis control programme initially targeted schoolchildren, “but as one-third of children in certain endemic areas were not enrolled in schools, the intervention failed to reach large population groups. The intervention was then modified to facilitate integration with other targeted programmes enabling use of this intervention in a wider range of opportunities, such as National Immunization Days”.

**BOX 23  COUNTRY EXAMPLE**

Distribution of hygiene kits increased vaccine coverage in urban settings, but were not sufficient to overcome access barriers in rural areas in Kenya

In Kenya, mothers with children <12 months of age attending vaccination services were provided with education and a hygiene kit – soap, dilute sodium hypochlorite to treat household water (WaterGuard®) and an educational brochure. Findings from this study found that “incentives such as hygiene kits may not be of adequate value to overcome access barriers that are common in rural areas. However, in urban settings, where clinic location is closer and more convenient, the incentive may be sufficient”.

While the current context is important, the service provision policy may indicate whether integrated service delivery is feasible or not. For example, places with a policy of multi-functional health workers may find it easier to reintroduce integrated services in the future.

**Compatibility**

The compatibility of potential services for integration should be considered, with a particular focus on:

- **target populations**;
- **type of intervention**, for example, schedulable interventions are easier to match together than clinical interventions;
- **timing of service delivery**, for example, the seasonality of malaria and year-round postpartum family planning.

Additional compatibility factors identified in the literature are: logistical needs; health-worker training; stakeholder support; costs, and supply-chain requirements.

**BOX 24 COUNTRY EXAMPLE**

**Zimbabwe needed to decentralize HIV follow-up counselling services in order to integrate them with immunization clinics**

In Zimbabwe, vaccination visits were used to provide follow-up counselling to HIV-positive mothers. However, because follow-up counselling was only available at the district hospitals, mothers who normally attended local immunization clinics needed to travel longer distances to get their children vaccinated. This highlighted the need to decentralize HIV follow-up counselling services to all health facilities.39
Feasibility

The feasibility of providing the integrated interventions is a critical consideration, and will depend on the following factors.

**The strength of the immunization programme:** care must be taken to evaluate the absorptive capacity of existing immunization programmes to determine those that are too fragile to cope with extra services.\(^{76}\)

**The health system context:** the fragility of health systems in many countries can constrain effective integration of services.\(^{77}\)

**The coverage levels of immunization or the intervention(s) to be integrated:** higher coverage levels will provide a stronger platform for integrated service delivery.

**The number of interventions to be included:** noting that interventions can be provided at the same time, or a mechanism for referral to other services can be used.\(^{76}\)

**The complexity of the service provision:** given this will impact cost, time to deliver and the skills required by the health worker.

**The cost of all of the interventions and funding availability.**

**The availability of trained health workers.**

**Supply-chain considerations,** particularly those related to the availability of products at the service-delivery level.\(^{78}\)

**Availability of a separate room** (or privacy screen): providing the patients with privacy, where required (such as family planning or HIV services).

**The impact on health-worker time or service availability** is important, especially if integration may result in longer patient waiting times.


\(^{78}\) Vaccine management and logistics support [website]. Geneva; World Health Organization. (http://www.who.int/immunization/programmes_systems/supply_chain/resources/tools/en/)

“vaccinations generally take a shorter amount of time compared to other interventions”\(^{79}\)
BOX 25

The time taken to deliver the integrated interventions should be carefully considered

One study that directly observed delivery of 11 maternal and child health intervention times in Cameroon, Ethiopia and Mali, found that vaccinations generally take a shorter amount of time compared to other interventions (see Fig. 10). The study authors highlighted that “adding more services without additional health workers might increase patient waiting times, resulting in decreased satisfaction and perceived quality of care, as well as decreased health care utilization by mothers”.

FIGURE 10
Median time (minutes and seconds) to deliver health-care interventions

Section 4: Planning for integrated immunization programmes

Working together

BOX 26

Integrating two weak services does not make a stronger service when integrated

“Integrating other health interventions with immunization services can result in rapid increases in coverage of the second intervention. However, the integrated method appears to inherit the same challenges that immunization services were likely already facing prior to integration. For example, challenges often mentioned related to systemic issues such as:

- poor supply chains;
- infrequent supportive supervision;
- insufficient planning
- inadequate engagement of community leaders.

When integrating a new intervention, a useful pre-integration activity is to identify the key challenges already facing the system, and to incorporate strategies to address them, rather than solely focusing on how to integrate”.39
Acceptability

Even if feasible, the integrated service delivery will only be successful if it is also acceptable to the community, the caregivers and the health workers. Acceptability of integration will vary between, and within countries (see the section on context above). Therefore, it may be useful to carry out studies on the acceptability of the integrated interventions before any integrated approach is implemented.

Perceptions and acceptability are interrelated with other factors, such as supply-chain issues. For example, interventions may not be acceptable to the community or health workers if there are frequent stock outs of commodities. Furthermore, the selection of the target population can also impact community acceptability. One study in Kenya of integrating hygiene kit distribution with infant vaccination found that “there was concern around the inequity of only offering the intervention to children being vaccinated. Mothers felt the intervention should be expanded to include anyone <5 years of age coming into the clinic, particularly those with diarrhoeal illness and/or pregnant women”.

BOX 27

**Using studies to assess community and health worker acceptability of integration**

A combination of health worker interviews and community focus groups was used to assess community and health worker acceptability of integration in four African countries (Cameroon, Ethiopia, Kenya and Mali). Integration was generally well accepted by both community members and health workers. Most integrated services were viewed positively by communities, although perceptions around socially sensitive services (such as family planning and HIV) differed by country.

The study concluded that “when considering integrating activities, decision makers should evaluate community-level preferences and demands for integrated services in their countries, determine the additional staff and training needed, and consider how to organize services to provide privacy and confidentiality without reducing service quality or increasing wait times”.

The following statements from health workers and mothers participating in the study highlight various aspects of acceptability around integrated services.
“Firstly, it [integration] will reduce the death of mother and child; secondly, it is pleasing to see our clients satisfied with our services. But basically, the fact that a mother comes for her child treatment and finds treatment for herself is significant for me”.

HEALTH WORKER IN ETHIOPIA

“The advantage is that mothers like ITNs. Before, if you asked a mother to come back at nine months, there are some who do not return. But at nine months, the women know very well, we give them an ITN, they do not miss this opportunity”.

HEALTH WORKER IN MALI

“It has motivated us, even those who never came [before], because if we go and say we’ve been given soap and WaterGuard®, they come [to the facility]”.

MOTHER IN KENYA

“If the services are combined in one day, the rest of the days will be used to do other activities in the house”.

MOTHER IN CAMEROON
Accountability for each of the integrated interventions needs to be clearly defined and agreed by stakeholders. A key part of ensuring accountability is the design of monitoring and evaluation strategies. Changes to service provision, such as those resulting from integration efforts, should have some form of monitoring in place to assess changes in factors such as utilization, quality, and both health worker and beneficiary’s acceptability. Further information on monitoring and evaluation, and implementation research, is provided in the chapter below on Monitoring and evaluation of integrated immunization programmes.

Equity

The design of integrated service delivery models should take into account any potential impact on equity. As highlighted by Victora and colleagues, “packaging several interventions through a single delivery strategy, while making economic sense, could contribute to increased inequities unless population coverage is very high”. The impact on equity may be measured through monitoring and evaluation strategies.

Monitoring equitable coverage is important to ensure that any change to services has not reduced access for disadvantaged groups. A more integrated service will usually improve access to health care for all community members. However, it may be helpful to check whether coverage is equitable across income, geography or social group. In particular, it is important to check whether remote communities, poorer families, or certain social groups, have reduced access to care after services are integrated and this can be assessed by reviewing service-delivery data, coverage data or health-worker opinions during supervision visits.

BOX 28 COUNTRY EXAMPLE

Discovering who misses out on health – the example of Indonesia

To improve health and increase access to health services, data are needed about the health of all population subgroups, including the most disadvantaged. “Monitoring health inequality is essential to ensure no one is being left behind,” said Dr Ahmad Reza Hosseinpoor, who leads WHO’s work on health inequality monitoring. “WHO has developed a package of resources and tools to encourage the practice of and build capacity for global and national health inequality monitoring”.

One of the key products in the package is the Health Equity Assessment Toolkit (HEAT), a software application launched by the WHO in 2016. The HEAT tool contains data from WHO’s Health Equity Monitor database, sourced from demographic and health surveys (DHS) and multiple indicator cluster surveys (MICS).

The new edition of the toolkit, called HEAT Plus, enables users to upload data from their own sources, making it a much more powerful tool for analysing and reporting health inequalities across a range of topics. HEAT Plus was tested in Indonesia and allowed the country to analyse and interpret inequalities in many other health topics using extensive amounts of its own data.

Indonesia developed its first national report on the state of health inequality, which provides policy-makers valuable insights in making strategic decisions to improve health. The nation is committed to integrating health inequality monitoring into its national health information system.

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Integrated service checklist

The integrated service checklist in *Box 29* is designed to highlight the broad range of considerations to take into account when planning an integrated service.

**BOX 29**

**Integrated service checklist**

**Key considerations: general**

- What are the potential benefits (e.g. improved system efficiency) and risks (e.g. additional workload for health workers) of integrating the services?
- Do the potential benefits of the integrated services outweigh the potential risks?
- Do the proposed intervention(s) have high level support?

**Key considerations: context**

- Does service integration make sense in the local context (including national and sub-national)?
- Is any adjustment to the service design or delivery required given the local context?

**Key considerations: compatibility**

- Is there a good match between the types of services being proposed (noting that schedulable services are easier to integrate)? e.g. a sufficient overlap between the target population, time and place of delivery for all of the interventions proposed.
- What is the immunization coverage level at the proposed contact? Is immunization provided in line with the national schedule? If not, what impact could delays have on the services to be integrated with immunization?

**Key considerations: feasibility**

- Are national policies in place for all of the interventions being considered?
Can the health system support the integrated interventions?

Are all of the interventions financially sustainable?

How many interventions can be delivered together? Can they be delivered without disrupting or creating a burden on service delivery?

Are a sufficient number of trained health workers available to deliver the interventions? If not, can additional health workers be trained to deliver them?

Are the interventions complex and, if so, can challenges related to the complexity of service provision be overcome?

Are the supply chains for all interventions functioning effectively?

Do the interventions require any additional logistics, such as, separate room or screened area to provide privacy?

How much time will it take to deliver all of the interventions?

Will clients need to wait in multiple queues? If yes, will patient flow need to be re-organized?

**Key considerations: acceptability**

Is the proposed integration of services acceptable to health workers?

Is the proposed integration of services acceptable to community members?

**Key considerations: equity**

What is the expected impact on the equity of access to immunization and other services?

Can any equity issues be addressed?

How will the impact on equity be monitored and evaluated?

**Key considerations: accountability, including M&E strategies**

Is there clear management accountability for each of the integrated interventions?

How will the integrated services be monitored (how frequently, by whom, with which tools)?

How will the integrated services be evaluated (how frequently, by whom, with which tools)?
5

Benefits and risks of integrated immunization programmes
A goal of integration is to improve coverage rates of preventative and curative interventions.

Examples of improved coverage exist in the literature (see Boxes 30 and 31). However, a 2012 review of the literature found that few studies reported coverage of immunization or the additional health interventions both pre- and post-intervention. Those that did report on coverage of the linked intervention generally demonstrated that coverage increased, though not always to the level of the corresponding immunization coverage.39

**BOX 30  COUNTRY EXPERIENCE**

**EPI+ in the Philippines increased coverage levels**

A strategy known as “EPI+” integrated family planning and vitamin A supplementation into routine immunization services at outreach sites. After one year, fully immunized coverage increased from 80–90%, utilization of any family planning services by mothers of infants increased from 70–80%, and infant vitamin A supplementation coverage increased from 70–90%.39

<table>
<thead>
<tr>
<th>Metric</th>
<th>Pre-intervention</th>
<th>Post-intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully immunized coverage</td>
<td>80%</td>
<td>90%</td>
</tr>
<tr>
<td>Utilization of any family planning services</td>
<td>70%</td>
<td>80%</td>
</tr>
<tr>
<td>Infant vitamin A supplementation coverage</td>
<td>70%</td>
<td>90%</td>
</tr>
</tbody>
</table>

Other benefits of integration have been reported in the literature, such as:76

- more efficient use of resources, including trained health workers, transport and other logistical equipment;
- increased convenience for the service users due to the reduced number of visits needed to address health needs;
- reduced missed opportunities;
- increased community acceptance of the integrated interventions.
Integrated health services have risks, as well as benefits. A key challenge is the increased time it takes to deliver all of the interventions. For example, the additional demands placed on health workers could overburden them and/or negatively impact their morale. Furthermore, any challenges encountered by one programme will impact the linked interventions. Logistical challenges, including stock outs, may pose a particular risk to the success of integrated health-service delivery. Similarly, while integration could help to reduce the stigma surrounding access for certain services (such as HIV services and family planning) and therefore improve access, it is also possible that stigma surrounding these integrated services could also reduce demand for immunization services (Table 8 below).

BOX 31 COUNTRY EXPERIENCE

Impact of coupling immunization activities with deworming in the Congo

An immunization campaign initially had weak support from parents, who believed that the polio vaccine had few benefits because vaccine effects were not immediately visible. However, participation reportedly increased with the addition of deworming tablets, as community members reported immediate and visible effects following their receipt.

BOX 32 COUNTRY EXPERIENCE

Integrating delivery of maternal and child health services with childhood immunization programmes in Madagascar

During a Child Health Week (CHW), the addition of HIV testing and family planning counselling, with childhood immunization, resulted in a noticeable increase in service delivery time compared with that required for vaccination delivery alone. This slowed the approach of the CHW.


### TABLE 8.
Summary of the potential benefits and risks of integration

<table>
<thead>
<tr>
<th>POTENTIAL BENEFITS</th>
<th>POTENTIAL RISKS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Increased coverage</strong> of a new intervention to level of existing intervention (i.e. immunization)</td>
<td>Negative impact on overall coverage rates or equity</td>
</tr>
<tr>
<td>Improved <strong>system efficiency</strong>, reduce redundancy/costs</td>
<td>Reduced <strong>quality of care</strong> due to less health worker time available</td>
</tr>
<tr>
<td>Improved <strong>user satisfaction</strong>, convenience; able to meet multiple health needs of the patient</td>
<td><strong>Health workers may not accept taking on additional responsibilities</strong> or workload due to issues with pay, conditions, skills, knowledge or training</td>
</tr>
<tr>
<td><strong>Increased demand</strong> through cross-promotion; may reduce missed opportunities for vaccination</td>
<td><strong>Beneficiaries may not accept integrated services</strong>, especially if stigmatized services are mixed with non-stigmatized (although this can also be a mechanism to reduce stigma)</td>
</tr>
</tbody>
</table>
Section 5: Benefits and risks of integrated immunization programmes

Monitoring and evaluation of integrated immunization programmes
A strong plan for M&E of integrated health services is key, as it will allow programme managers to monitor progress, make any necessary improvements and evaluate impact. Good M&E will also contribute towards improving knowledge of what works, and what doesn’t work, with integration. However, it will be important to utilize existing monitoring systems, or programmatic evaluations for immunization or the integrated service(s) wherever possible, to minimize the resources needed to support the M&E strategy.

**BOX 33**

**Why is it important to monitor and evaluate integrated services?**

Integrated services should be monitored and evaluated in order to understand the impact of the change in services. M&E activities should be used for the following.

1. Monitor and manage (a) the increase or decrease in service delivery; (b) increase or decrease in coverage; (c) any changes to equity or quality of care. See sections on Monitoring changes in integrated service use and coverage and Monitoring changes in the quality of care, below.

2. Evaluate the (a) benefits of, or problems with, changed services; (b) reasons for improvement or problems to allow programme change. See section on Evaluating integrated services, below.

3. Build the local evidence base and, where possible, contribute to the regional and global evidence base. See section on: Strengthening the evidence base for integration below.

4. Provide a feedback mechanism to improve the programme and achieve greater coverage.

Lessons learned from integration projects can contribute to the global evidence base, thereby ensuring that integration efforts yield sound empirical guidance for tomorrow’s decisions. Immunization programmes are encouraged to share their experiences and lessons learned with integration by utilizing all available opportunities, including those provided through publications or conference presentations.
BOX 34

Available M&E resources for immunization

- *Immunization in Practice, 2015, Module 5: Managing an Immunization Session and Module 6: Monitoring and Surveillance*[^85]

- Indicators for monitoring district and national performance[^86]

- Key considerations for monitoring and evaluating family planning and immunization integration activities[^87]

- Updated handbook on the collection, assessment and use of immunization data[^88]

[^88]: Information on the latest draft can be requested by contacting the WHO Department of Immunization, Vaccines and Biologicals (vaccines@who.int).
BOX 35  COUNTRY EXAMPLE

A project integrating family planning and immunization in Liberia demonstrated the importance of ongoing monitoring and adjustments in implementation

In Liberia, prior to design of an intervention to integrate family planning and immunization, the team undertook preparatory work in the form of formative research with health workers and mothers and fathers. During this preparatory step, a number of implementation challenges related to stigma associated with mothers with infants seeking family-planning services were identified. During monitoring visits, these challenges became increasingly apparent. Most notably, a lack of privacy at the EPI station prevented some women from accepting family-planning referrals, especially at facilities where vaccinations were given in a public space. Other challenges included human resource constraints, extended waiting times for family-planning services and vaccine and contraceptive commodity stock outs.

In light of these and other observations, a number of important adjustments were made, including: encouraging teams to develop facility-specific plans for managing increased family planning visits; advocating improvements in the commodity supply chain; encouraging service providers (both vaccinators and family-planning providers) to set weekly meetings in order to improve communication and coordination, and introducing privacy screens at facilities where vaccinations were conducted in public areas of the facility.

These screens provided visual privacy for beneficiaries and a quieter space for child vaccination, while reducing the likelihood of others watching or listening to their conversations with the vaccinator.

Planning for monitoring and evaluation (M&E)

M&E should be consistent with existing national immunization guidelines and/or standard programme guidance such as *Immunization in Practice*\(^{85}\) (especially Module 5 and Module 6). It will also be important to coordinate with other M&E programmes, such as, reproductive health, maternal, newborn and child health (MNCH), family health, disease control or nutrition programmes.

**Planning for M&E should include the following elements.**

1. **Review of the main aims, outcome measures and reporting formats for each programme involved in the integrated service.** The reporting forms should be revised according to services and workflow, for example, services provided at the same time are recorded in the same form. In particular, look for any differences that may affect coverage measurements, such as target populations (denominators) or age groups, and for differences in timeframes used in routine or evaluation reporting. To ensure comprehension and also feasibility by those who are to use the forms, forms should be designed with input from end-users or tested prior to finalization.

2. **Identify where existing data sources, reporting or supervision can be adapted to provide information on the progress of any changes to promote integration.**

3. **Identify the best timing and resourcing of potential joint programme evaluation(s), and any other evaluation activities that may be able to include measures of integrated services.** These may include:

   - for immunization, new strategies to reduce missed opportunities for vaccination, new vaccine introductions and post-introduction evaluations, or immunization programme reviews;

   - for other programmes, evaluations or health surveys that collect health service or health care experience data.
Monitoring changes in integrated service delivery and coverage

When implementing integrated services, it is important to routinely monitor and manage any:

- increase or decrease in service delivery;
- increase or decrease in coverage;
- changes to equity or quality of care.

Monitoring levels of use of an integrated service separately from coverage is important for several reasons. Changes in service delivery can show whether more (or less) beneficiaries are receiving care. Service delivery may be easier to measure than coverage if population denominators are inaccurate or do not match up across the immunization and other integrated programme(s). Service delivery can also show whether integrated services are consuming more or less resources.

Examples of service delivery measurements include:

**Use of the immunization programme, represented by**

- the number of children receiving vaccines by month (e.g. DTP1, DTP3, MCV1) or drop-out rates (e.g. DTP1-3).

**Use of the integrated service(s) by month, for example,**

- number of doses (e.g. of vitamin A) or treatments (e.g. ORS and zinc for diarrhoea) or educational sessions (e.g. for nutrition) or referrals (e.g. for family planning) or commodities (e.g. of LLINs) provided.

**Service inputs of immunization and the integrated service(s), including:**

- number and duration of stock outs of vaccines, immunization supplies and/or integrated programme supplies;
- number of health workers involved in service provision;
- number and type of service delivery points in use;
- number of cross-referrals between different departments/programmes.
BOX 36

Sources of information for service delivery measures

Sources of information for service delivery measures should, wherever possible, come from existing data-collection systems or tools. In many countries, immunization monitoring is relatively stronger than that for other services. In this situation, it may be best to incorporate service delivery measurements of the integrated service(s) into immunization monitoring tools.  

It may be possible to adapt immunization monitoring tools to add items to capture the provision of additional services, including health-facility service registers, maternal and child health (MCH) registers, tally sheets, defaulter tracking and monthly reports. HBRs may also be adaptable to include records of other service provision. Records may also be needed for other family members – for example, adaptation of a mother’s pregnancy HBR to include family planning or malaria prevention services.

In some situations, where monitoring of the integrated service is active, it may be possible to include measures of immunization into those services. This is especially important if immunization is being integrated into another clinical service, such as, integration of birth-dose vaccination into newborn or postnatal care. It may also be helpful if the integrated service has strong monitoring mechanisms already, for example, children receiving HIV treatment or malaria prevention services. 

For vaccination, routine monthly or quarterly coverage calculations should be continued, and coverage of one or more interventions in the integrated service could also be calculated. Some monitoring measures, such as defaulter tracing, may also offer an opportunity to combine questions for both immunization and the integrated service(s). It is important to look for comparisons across interventions that should be at similar coverage (for example birth-doses of BCG and hepatitis B vaccine and skilled birth attendance). This can highlight opportunities or gaps in integrated service delivery.
A boy holds up his vaccination card after his vaccinations in Cambodia
BOX 37

How often should monitoring take place?

Levels of service delivery and coverage should be reviewed monthly, where possible. Improvements may be slow at first if uptake of the integrated service takes time among health workers and/or the community.

Monitoring month-by-month is helpful to achieve the following.

1. Compare changes in service inputs and service delivery to understand whether this has led to increased activity.

2. Look for increased activity that may indicate an increase in coverage of either immunization or the integrated service(s).

3. Monitor for any decrease in activity that may indicate that the integrated service(s) may be negatively impacting the provision of, or acceptance of, the services to the health workers or community members.

When monitoring service delivery, it is important to review the original aims of the immunization and integrated service(s), especially if their target populations are different. It is also important to be aware of services that may have different timings than immunization, for example, seasonal targeting of malaria control activities. Therefore, rather than comparing month-on-month changes, it may be necessary to compare a monthly rate with the same month in a preceding year.
Monitoring changes in the quality of care

More integrated services often add new duties for existing health workers, so it is important to monitor their workload. It may also be helpful to regularly monitor the quality of immunization sessions. If data are available, this should be carried out through routine monitoring, but could alternatively be addressed in more detail through programme evaluation.85

Quality-of-care of the integrated service(s) may be monitored by standard reporting, or structured supervision. It may be helpful to add specific questions about immunization session quality, for example, an immunization session checklist taken from Immunization in Practice, Module 5: Managing an immunization session85 or other indicators noted above.

Supportive supervision visits to health facilities may facilitate the monitoring of changes due to integrated services. If possible, additional questions could be added to the standard supervision checklist. Extra questions during supervision could also ask for the health workers’ or beneficiaries’ opinions regarding the benefits and disadvantages of integrated services.

Evaluating integrated services

Baseline data is of great importance in evaluating integration, as it serves as a basis for comparison of service delivery performance prior to, and following, the introduction of integrated service(s). Evaluating the impact of integrated services should be agreed on by all relevant programmes as early as possible and could be carried out through:

- dedicated programme evaluations of the integrated services;
- as part of programme evaluations of immunization, such as post-introduction evaluations of new vaccines, immunization programme reviews;91
- as part of programme evaluations of the integrated service(s).

BOX 38

Examples of evaluation questions

1. What changes in service inputs (costs, staffing, commodities, etc.) have been required to support the integrated services?

2. What changes in service delivery have been experienced in immunization and in the integrated service(s)?

3. What changes in coverage have been experienced in immunization and in the integrated services?

4. Does the quality of care provided match national and local policy expectations?

5. What has been the impact of the integrated service(s)? This could be defined in terms of each programme’s overall goals and may include changes in deaths or disease.

The evaluation should involve the managers of the immunization programme, managers of the integrated service(s), central planning health workers who are senior to those managing the integrated services, and other stakeholders (such as development partner programme managers and WHO/UNICEF advisers). Involvement of some supervisors or front-line health workers may be helpful to provide a field perspective.92

The evaluation(s) should utilize the available monitoring data and may also need to collect and use additional data.

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BOX 39

Examples of additional data-collection processes to support programmatic evaluations of integrated services

- Quality-of-care study using supervision checklists (for example, immunization session checklist).

- Modifications to standard data-collection tools to enable analyses of specific outcomes (for example, quantification of the number of mothers who came to family-planning services from an immunization contact).

- Beneficiary satisfaction survey for the users of the integrated services.

- Qualitative study of knowledge, attitudes and practices (KAP) with health workers, supervisors and/or beneficiaries, to assess the levels of satisfaction with the new service design, as well as its acceptability. 93

- A positive deviance study, which is an approach to assess behavioural and social change, could be useful in facilities or districts that have integrated services and achieved higher coverage, or other beneficial outcomes. This could be followed by qualitative research in those sites to assess the reasons behind the success. 94

Strengthening the evidence base for integration

There is a general need for more empirical evidence about what works with integration, using scientifically valid implementation research methods. Research is not always needed for integration, but it is appropriate when questions exist about its implementation, impact, or cost-effectiveness.

A strong M&E effort can help to ensure successful implementation of integration projects, and can also provide useful information for other countries.

## Integration related

**Towards people-centred and integrated health services.**
(http://www.who.int/servicedeliverysafety/areas/people-centred-care/pcihs_brochure.pdf?ua=1).

**Options for linking adolescent health interventions with HPV.**
(http://www.who.int/entity/immunization/diseases/hpv/AdoPlusHPV.pdf?ua=1).

**Integrated health services – what and why? Making health systems work.**
(Technical Brief, No. 1; http://www.who.int/healthsystems/technical_brief_final.pdf).

## Immunization related

**A guide for conducting an Expanded Programme on Immunization (EPI) Review.**
Geneva: World Health Organization; 2018

**Establishing and strengthening immunization in the second year of life: practices for immunization beyond infancy.** Geneva: World Health Organization; 2018
(http://apps.who.int/iris/bitstream/handle/10665/260556/9789241513678-eng.pdf?ua=1).

**Reaching Every District (RED) – a guide to increasing coverage and equity in all communities in the African Region.** Geneva: World Health Organization; 2018
(http://www.afro.who.int/sites/default/files/2018-02/Feb%202018_Reaching%20Every%20District%20%28RED%29%20Eng%20%28F%29%20Web%20v3.pdf).

**Vaccination in acute humanitarian emergencies: a framework for decision-making.**
Geneva: World Health Organization; 2017

(http://www.who.int/immunization/programmes_systems/policies_strategies/GRISP/en/).

**WHO’s vision and mission in immunization and vaccines 2015–2030.**
A guide for introducing and strengthening Hepatitis B birth dose vaccination.
(http://apps.who.int/iris/bitstream/10665/208278/1/9789241509831_eng.pdf).

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(http://www.who.int/immunization/programmes_systems/financing/tools/cmyp/en/).

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Regional action plans [website]. Geneva: World Health Organization
(http://www.who.int/immunization/global_vaccine_action_plan/Regional_vaccine_action_plans/en/).

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(http://www.who.int/immunization/programmes_systems/policies_strategies/MOV/en/).

(http://www.who.int/immunization/programmes_systems/supply_chain/en/).

WHO recommendations for routine immunization – summary tables [website].
Geneva: World Health Organization
(http://www.who.int/immunization/policy/immunization_tables/en/).

Maternal and child health related

**WHO recommendations on antenatal care for a positive pregnancy experience.**
(http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/anc-positive-pregnancy-experience/en/).

**Health in 2015: from MDGs to SDGs.** Geneva: World Health Organization; 2015
(http://www.who.int/gho/publications/mdgs-sdgs/en/).

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**Comprehensive cervical cancer prevention and control: a healthier future for girls and women.**
(http://www.who.int/reproductivehealth/publications/cancers/9789241505147/en/).

**School vaccination readiness assessment tool.** Geneva: World Health Organization; 2013
(http://apps.who.int/iris/bitstream/10665/90566/1/WHO_IVB_13.02_eng.pdf?ua=1&ua=1).


**Health systems service delivery [website].** Geneva: World Health Organization
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**Every newborn action plan [website].** Geneva: World Health Organization
(http://www.who.int/maternal_child_adolescent/newborns/every-newborn/en/).

**Global Accelerated Action for the Health of Adolescents (AA-HA!): guidance to support country implementation [website].** Geneva: World Health Organization
(http://www.who.int/maternal_child_adolescent/topics/adolescence/framework-accelerated-action/en/).
Appendix: additional health services that can be provided with immunization
The literature highlights a wide range of health services that can be provided with immunization. This Appendix provides summary, technical and programmatic information relevant to integration of the following:

- **NUTRITION**
- **MALARIA**
- **NEGLECTED TROPICAL DISEASES**
- **REPRODUCTIVE & MATERNAL HEALTH SERVICES**
- **WATER, SANITATION AND HYGIENE INTERVENTIONS**
- **HEARING SCREENING**
- **HIV**
Nutrition

Growth monitoring and nutritional counselling, including breastfeeding

Growth monitoring is the process of following the growth rate of a child in comparison to a standard by periodic, frequent anthropometric measurements, in order to assess growth adequacy and identify faltering.\(^{95}\) It is usually accompanied by nutrition counselling, breastfeeding promotion and support, and/or complimentary feeding education.

Globally, only 40% of infants aged 0–6 months are exclusively breastfed. Sub-optimal breastfeeding practices, including non-exclusive breastfeeding, contribute to 12% of mortality in children under five years of age.\(^{96}\) Complementary feeding frequently begins too early or too late, and foods are often nutritionally inadequate and unsafe.\(^{97}\)

Opportunities to link to immunization

Growth monitoring and nutrition counselling has the advantage of providing frequent contact with health workers, enabling access to child health interventions, including immunization. Conversely, immunization contacts provide opportunities for growth monitoring and nutrition counselling, including breastfeeding support. Health education, including breastfeeding information, could also be provided to pregnant women during ANC.

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95 Griffiths M, Del Rosso J. Growth monitoring and the promotion of healthy young child growth. Evidence of effectiveness and potential to prevent malnutrition. 2007.


WHO recommendations

GROWTH MONITORING
The WHO has a number of indicators for child growth standards, such as: length/height-for-age; weight-for-age; weight-for-length/height; body mass index-for-age; head circumference-for-age, etc. Many countries incorporate these indicators into HBRs that allow for monitoring healthy growth, ensure timely screening and treatment of undernutrition and recommend following appropriate nutritional practices.98

NUTRITION COUNSELLING
The Global Strategy for Infant and Young Child Feeding (IYCF), endorsed by WHO Member States and the UNICEF Executive Board, aims to revitalize efforts to protect, promote and support healthy growth and healthy diet nutrition counselling to address malnutrition in all its forms, including overweight/obesity, undernutrition and vitamin/mineral deficiencies. The Global Strategy recommends “a comprehensive national policy, based on a thorough needs assessment, should foster an environment that protects, promotes and supports appropriate infant and young child feeding practices. An effective feeding policy […] requires the following critical interventions […] For support through the health care system, providing skilled counselling and help for infant and young child feeding, for instance at well-baby clinics, during immunization sessions, and in in- and out-patient services for sick children, nutrition services, and reproductive health and maternity services”.99

BREASTFEEDING
Infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health. Thereafter, infants should receive nutritionally adequate and safe complementary foods while breastfeeding continues for up to two years of age or beyond96,100

A nurturing care framework will be launched which builds upon state-of-the art evidence of how child development unfolds and of the effective interventions that can improve early childhood development. Nurturing care encompasses conditions that promote health, nutrition, safety and security, responsive caregiving and opportunities for early learning. The framework outlines how parents and caregivers can be supported to provide nurturing care for young children.101

Integration experiences and considerations

**EXPERIENCES**

**Growth monitoring should be coupled with growth promotion activities, including nutrition counselling.**

- Focusing efforts on growth promotion and intensive nutrition counselling for caregivers at all child health contacts is more effective than growth monitoring alone.

**There is limited information about the provision of breastfeeding and/or complementary feeding counselling at immunization visits, but some studies suggest missed opportunities to provide these services.**

- A study in Bangladesh found that, although a large proportion of children below two years of age were seen by health workers at multiple contacts for immunizations (national DTP3 coverage of 88%), few mothers (8%) reported receiving any information about breastfeeding or complementary feeding during immunization visits. The authors recommend use of counselling techniques to reinforce specific, priority messages by health workers at all contact points (including immunization visits) with mothers of young infants.

**Immunization visits have been successfully used as opportunities to gather information about breastfeeding practices and/or provide brief counselling; however, time constraints mean that the visits may not be suitable for more extensive support or counselling for breastfeeding.**

- With the goal of assessing breastfeeding rates in a province in Italy, DTP vaccination visits were used to gather information from mothers about breastfeeding. Preliminary results included discovery of lower rates of breastfeeding than national rates and global recommendations.

- A study in Tasmania, Australia, assessed the feasibility and acceptability of an infant feeding data-collection tool during scheduled child vaccination visits. Although scheduled childhood vaccination visits provided an opportunity for health practitioners to talk briefly about infant feeding and to gather information about breastfeeding practices, immunization visits were not well suited to a breastfeeding support intervention because immunization visits were already busy with immunization issues. Reasons were summarized into six conceptual headings: time pressures; resources and collaboration; mothers need to talk; professional exclusion, and lack of collaboration. They concluded that consideration be given to the evaluation of a dedicated primary health infant feeding consultation.

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CONSIDERATIONS

• Although growth monitoring provides opportunities for preventive and curative care, there is little evidence for the effectiveness of growth monitoring alone.\(^{105}\) When carried out, growth monitoring should be linked with nutrition counselling on feeding practices and growth promotion.

• Given that nutrition counselling requires time, adequate human resources and schedule planning are needed. The local context should be carefully considered when considering the possible integration of nutrition interventions with immunization, with a particular focus on the amount of time required to provide sufficient counselling.

• Communicating specific, priority messages for caregivers may be possible (such as “breast milk is good for child’s physical and brain development” or “breast milk protects from illness”\(^{102}\)), but more extensive counselling and support may not be feasible during immunization visits. Alternatively, referrals to a dedicated infant feeding consultation may be provided. Waiting times at immunization clinics may provide opportunities to reinforce key health messages, including on nutrition and breastfeeding.

Useful references

**Global targets tracking tool [online tool].** (In 2012, WHO Member States endorsed six global nutrition targets for improving maternal, infant and young child nutrition. To assist countries setting their own targets and monitor progress, a web-based tracking tool was set up). Geneva: World Health Organization; 2012 [http://www.who.int/nutrition/trackingtool/en/].


Vitamin A is essential during childhood to support rapid growth and to help combat infections. Inadequate intake of vitamin A results in vitamin A deficiency, that can cause visual impairment and may increase the risk of illness and death from childhood infections, including measles and those causing diarrhoea. Vitamin A deficiency affects almost one third of preschool-age children in low- and middle-income countries, mostly in Africa and South-East Asia. Vitamin A can be safely provided to children in a large dose, as it can be stored by the body and released over time. Vitamin A is also important during pregnancy for visual health, immune function and fetal growth and development.

Opportunities to link to immunization

Many countries have successfully integrated strategies in their national health policies to deliver vitamin A supplements to infants and children, including delivery during routine health visits and immunizations, as well as child health weeks (see integrated health services in section 2). As polio campaigns phase out, countries may choose to integrate vitamin A supplementation with routine immunization services instead.

The provision of vitamin A supplements to pregnant women, in certain settings, could be integrated with maternal vaccinations, such as TTCV or influenza.

Studies show that combining the delivery of vitamin A supplements with immunization is safe and does not have a negative effect on seroconversion of childhood vaccines.

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WHO recommendations

INFANTS AND CHILDREN 6–59 MONTHS OF AGE

High-dose vitamin A supplementation is recommended in infants and children 6–59 months of age in settings where vitamin A deficiency is a public-health problem.\textsuperscript{106, 110, 111}

WHO recommends that vitamin A supplements should be delivered twice yearly to children 6–59 months of age during health system contacts, and should be marked on the child health card. Alternatively, vitamin A supplementation should be integrated into other public-health programmes, such as polio or measles national immunization days, or biannual child health days, delivering a package of interventions such as deworming, distribution of insecticide-treated mosquito nets and immunizations.\textsuperscript{106}

PREGNANT WOMEN

Vitamin A supplementation is only recommended for pregnant women in areas where vitamin A deficiency is a severe public-health problem,\textsuperscript{112} to prevent night blindness.\textsuperscript{68, 113}

\textsuperscript{110} Determination of vitamin A deficiency as a public-health problem involves estimating the prevalence of deficiency in a population by using specific biochemical and clinical indicators of vitamin A status.


\textsuperscript{112} Vitamin A deficiency is a severe public-health problem if \( \geq 5\% \) of women in a population have a history of night blindness in their most recent pregnancy in the previous 3–5 years that ended in a live birth, or if \( \geq 20\% \) of pregnant women have a serum retinol level < 0.70 µmol/L. Determination of vitamin A deficiency as a public-health problem involves estimating the prevalence of deficiency in a population by using specific biochemical and clinical indicators of vitamin A status.

\textsuperscript{113} Vitamin A supplementation, full set of recommendations [website]. Geneva: World Health Organization (http://www.who.int/elena/titles/full_recommendations/vitamin_a_supp/en/).
Integration experiences and considerations

**EXPERIENCES**

Vitamin A supplementation for children over six months of age has been successfully delivered through routine immunization and integrated campaigns, such as mother and child health weeks.

- Many countries have integrated vitamin A supplementation with immunization services. In 2016, of 191 countries globally, 54 (28%) of countries distributed vitamin A, 17 (9%) with both routine and supplementary immunization activities, 37 (19%) distributed vitamin A only with routine immunization, and 12 (6%) distributed vitamin A only with supplemental immunization activities.\(^{114}\)

A sole reliance on the use of integrated campaigns for vitamin A supplementation is likely to leave infants unprotected between campaigns.

- In Sierra Leone, a country with high child malnutrition, mass vitamin A supplementation every six months through mother and child health weeks (MCHW) was successful, reaching over 85% of children 6–59 months (see Box 40). However, only a small percentage of children were reached through routine health services, leaving infants who turn six months soon after MCHWs unprotected during the second half of infancy.\(^{115}\)


BOX 40  COUNTRY EXAMPLE

In Sierra Leone, the highest coverage of vitamin A supplementation was achieved when provided alongside routine immunization, nutrition and family planning services, supported by a revised child health card.\textsuperscript{115}

A revised child health card was developed that integrated routine vitamin A supplementation into the EPI schedule when the infant reaches six months of age, and deworming and vitamin A supplementation at 12 months. The revised card also included illustrated sections for updated growth charts, information on exclusive breastfeeding and complementary feeding, feeding of the sick child, family planning, hygiene and malaria prevention.

Selected health facilities offered either a mini package of vitamin A supplementation and IYCF, a full package of vitamin A supplementation, IYCF and family planning, or child health card only. The effectiveness of these different packages on vitamin A supplementation coverage was assessed and found that:

- integrating vitamin A supplementation into the child health card at the six-month contact increased routine vitamin A supplementation to over 60%;
- IYCF and family planning at the six-month contact point further increased routine vitamin A supplementation coverage to over 70%. There was also a high uptake of family planning services when offered as routine services.
- Although there were no significant differences in fully vaccinated children at six months between the groups of various service packages, significantly more infants received catch-up vaccinations (doses 2 or 3) of polio, pentavalent and/or pneumococcal conjugate vaccines, in both the full and partial package of services versus the revised child health card only (P = 0.019, P = 0.003 respectively). In total 6.1\% (95\% confidence interval [CI]: 5.5–6.5) infants received a catch-up vaccination at the six-month contact.
CONSIDERATIONS

- There are a number of operational issues with vitamin A supplementation, as the capsule has to be cut with scissors and squeezed into the infant/child's mouth. Also, there are different doses for different ages (100 000 IU (30 mg RE) for 6-11 months and 200 000 IU (60 mg RE) for 12-59 months).

- Given the potential for integration in routine immunization and with campaigns or child health days, careful consideration should be given as to how the vitamin A supplementation will be documented.

- In addition to vitamin A supplementation, other types of nutrition interventions, such as distribution of micronutrient powders, growth monitoring and nutritional counselling, may also be considered.

Useful references

**Guideline: vitamin A supplementation in infants and children 6–59 months of age.**
(http://apps.who.int/iris/bitstream/10665/44664/1/9789241501767_eng.pdf).

**Vitamin A supplementation in postpartum women.** Geneva: World Health Organization; 2011
(http://www.who.int/elena/titles/vitamina_postpartum/en/).

**Multiple micronutrient powders for point-of-use fortification of foods consumed by children 6–23 months of age.** Geneva: World Health Organization; 2016
(http://www.who.int/elena/titles/micronutrientpowder_infants/en/).

**Multiple micronutrient powders for point-of-use fortification of foods consumed by children 2–12 years of age.** Geneva: World Health Organization; 2016
(http://www.who.int/elena/titles/micronutrientpowder-children/en/).
Malaria

Distribution of long-lasting insecticidal nets (LLINs)

Long-lasting insecticidal nets (LLINs) play an important role in reducing malaria burden. In addition to mass campaigns, to achieve universal coverage, routine continuous distribution of LLINs through routine antenatal and child immunization clinics is a key strategy and a high priority in countries where contact rates are high (such as sub-Saharan Africa). Each country’s malaria control programme should develop its own LLIN distribution strategy, based on the local context. Distribution through antenatal, immunization and child health services has the advantage of coverage focused on pregnant women and young children, groups that are most vulnerable to malaria infections in areas of moderate and high malaria transmission.

 Opportunities to link to immunization

Routine continuous distribution of LLINs through child immunization and antenatal services is a key strategy in addition to mass campaign distribution of LLINs. Despite recommendations, the continuous distribution of LLIN distribution, through antenatal and child immunization channels, is not policy in many countries, and so implementation is incomplete.

WHO recommendations

WHO recommends that universal coverage (defined as universal access to, and use of, LLINs at the rate of one LLIN for every two persons) be the goal for all people at risk of malaria. “In order to maintain universal coverage, countries should apply a combination of mass free distributions and continuous distributions through multiple channels, in particular antenatal and immunization services. Mass campaigns are a cost-effective way to rapidly achieve high and equitable coverage, but coverage gaps start to appear almost immediately post-campaign through net deterioration, loss of nets, and population growth, requiring complementary continuous distribution channels”.118

Integration experiences and considerations

EXPERIENCES

Operational weaknesses (logistics, data collection) challenge effective LLIN distribution through antenatal and child immunization contacts.

- A rapid-assessment study in four sub-Saharan African countries (Malawi, Mali, Kenya and Rwanda) identified operational strengths and weaknesses of continuous distribution of LLINs through antenatal and immunization clinics. Stock outs at the facility level were common and hindered smooth LLIN distribution operations. Supply forecasting and logistics and data-collection problems contributed to stock outs. The countries lacked guidelines for responding to stock outs or systems for local health workers to request additional LLINs. Data collection regarding LLIN distribution was incomplete at facilities and not used for planning. Health-worker training and understanding that LLINs at the facility level should be given at the first ANC contact was frequently less than optimal.

CONSIDERATIONS

- The strategy of supplying LLINs to pregnant women through antenatal services and to infants through immunization services, is appropriate where attendance for antenatal and child health immunization services is high and where adequate supply-chain logistics exist.

- Careful consideration should be given to logistical challenges, including transportation, storage and distribution, particularly when LLINs are to be distributed during campaign, PIRI (for example, child health days) or outreach activities, given the bulky nature of LLINs.

- Immunization programmes in countries with malaria should consider how their programme interfaces with the malaria programme and potential gains for either programme by linking them together. Initial consideration should include current LLIN coverage, latest indicators on LLIN use, most recent mass campaign and local LLIN attrition rates. Additional country profile information is available at http://www.who.int/malaria/publications/country-profiles/en/.

- Careful joint planning for training, logistics and data collection is needed for successful implementation.


120 Vectorworks ITN access and use. Columbia (MA): Vectorworks (http://www.vector-works.org/resources/itn-access-and-use/).
Useful references


**Vectorworks ITN access and use report** [online data] (http://www.vector-works.org/resources/itn-access-and-use/).


**The Alliance for Malaria Prevention (AMP) guidelines and statements** [website] (http://allianceformalariaprevention.com/amp-tools/amp-guidelines-and-statements/).

**NetCALC®.** NetCALC® is a user-friendly Excel model that helps planners calculate the number of LLINs they need to reach and maintain ownership targets, and then allows them to try out different strategy mixes, selecting different continuous distribution mechanisms to determine which combination of approaches will deliver sufficient LLINs [online tool] (http://www.networksmalaria.org).
Intermittent preventive treatment in infancy (IPTi) of malaria

The concept of intermittent preventive treatment (IPT) with antimalarials has been developed to take advantage of the protective effect of chemoprevention on malaria. Since treatment is given intermittently, it is less likely to interfere with the development of natural immunity than sustained chemoprophyaxis. The IPT strategy was first explored and rolled out for pregnant women (IPTp). Its success in reducing maternal anaemia and low birth weight led to interest in using IPT for malaria prevention in infants (IPTi).

IPTi is a full therapeutic course of antimalarial medicine delivered to infants at scheduled intervals through routine immunization services, regardless of whether the child is infected with malaria. Treatment is given three times during the first year of life at approximately 10 weeks, 14 weeks and nine months of age, corresponding to the routine vaccination schedule.

Opportunities to link to immunization

IPTi is administered at routine immunization visits, at the second and third DTP visits and the first measles immunization visit. By coordinating IPTi delivery with immunization visits, IPTi coverage can be rapidly increased. However, progress in adopting and implementing IPTi has been slow and experiences to date have been limited.

WHO recommendations

WHO recommends\textsuperscript{124} the co-administration of sulfadoxine-pyrimethamine IPTi (SP-IPTi) with DTP2, DTP3 and measles immunization to infants, through routine EPI in countries in sub-Saharan Africa, in areas:

- with moderate-to-high malaria transmission – defined as annual entomological inoculation rates \( \geq 10 \);
- where parasite resistance to SP is not high – defined as a prevalence of the \textit{Plasmodium falciparum} dihydropteroate synthetase (Pfdhps) 540 mutation of \( \leq 50\% \).

SP-IPTi should not be given to infants receiving a sulfa-based medication for treatment or prophylaxis, including co-trimoxazole (trimethoprim-sulfamethoxazole) that is widely used as prophylaxis against opportunistic infections in HIV-infected infants.

Considerations and caveats for implementation of the WHO recommendation.

- IPTi may be implemented at a provincial or district scale, depending on the local context.\textsuperscript{125}
- Programmes implementing the SP-IPTi strategy should regularly monitor and evaluate the impact on immunization services and performance.
- Pharmacovigilance systems to monitor potentially serious adverse reactions to SP should be strengthened.
- Surveillance of parasite resistance to SP should accompany the implementation of SP-IPTi as a surrogate measure of its efficacy.


\textsuperscript{125} In situations where a national-scale implementation may not be feasible due to varying levels of the \textit{Plasmodium falciparum} dihydropteroate synthetase (Pfdhps) 540 mutation, IPTi may be implemented at a provincial or district scale, targeting areas with Pfdhps 540 mutation prevalence \( \leq 50\% \).
Integration experiences and considerations

EXPERIENCES

IPTi was reported to be widely acceptable, with little evidence of negative impacts on immunization or other malaria prevention practices.

- A study in five African countries found that IPTi was widely acceptable and found little evidence that IPTi had a negative impact on attitudes about EPI, effect on EPI adherence, or health seeking for infants with febrile illness. Single-dose formulations were most likely to be acceptable and adhered to.\(^\text{126}\)
- A pilot implementation of IPTi was conducted in southern United Republic of Tanzania, whereby the strategy was integrated into existing systems and found to be well-accepted by health workers.\(^\text{127}\) Time-and-motion studies documented that IPTi implementation took a median of 12.4 min (range 1.6–28.9) per nurse per vaccination clinic.\(^\text{128}\) IPTi was also found to be safe.\(^\text{129}\)
- A Papua New Guinea study also found little evidence that IPTi had negative impacts on EPI adherence or existing malaria prevention practices.\(^\text{130}\)
- Another study found no serious adverse events following simultaneous administration of sulfadoxine-pyrimethamine (SP-IPTi) with immunizations.\(^\text{131}\)

IPTi has been shown to be cost effective in areas of moderate to high malaria transmission.

- A study\(^\text{132}\) concluded that IPTi delivered alongside the EPI is a highly cost-effective intervention against clinical malaria, especially in areas where malaria transmission is moderate to high, but not cost effective where IPTi did not have a significant impact on malaria, generally in low transmission sites. The authors acknowledge that the cost effectiveness of IPTi benefits from the existing EPI system, a routine point-of-contact for infants.

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CONSIDERATIONS

• In October 2009, the WHO’s Strategic Advisory Group of Experts on Immunization (SAGE), endorsed the co-administration of IPTi with sulfadoxine-pyrimethamine with immunizations and made the following recommendations.\(^{133}\)

  (i) Programmes implementing IPTi with sulfadoxine-pyrimethamine should regularly monitor and evaluate the impact on immunization services and performance.

  (ii) When a suitable opportunity arises, assessment of the effect of IPTi with sulfadoxine-pyrimethamine (and other drug combinations likely to be used for IPTi) on serological responses to rotavirus vaccine and pneumococcal vaccine should be undertaken.

  (iii) The development of a paediatric formulation of sulfadoxine-pyrimethamine is needed for infants.

• The potential impact of IPTi on the EPI needs to be monitored to ensure that IPTi does not overburden EPI activities, negatively influence the uptake of immunization, or lead to inequities. Conversely, IPTi could provide extra resources and momentum to increase vaccination uptake.

• IPTi is intended to complement and not replace ongoing malaria control activities, such as prompt diagnosis and treatment, and vector control measures, such as the use of LLINs and indoor residual spraying.

• In areas where seasonal malaria chemoprevention (SMC) is appropriate, IPTi should not be used.

• IPTi requires crushing a tablet, mixing with clean water and administering to an infant using a spoon.

Useful references


\(^{133}\) WHO. Meeting of the Strategic Advisory Group of Experts on immunization, October 2009 – Conclusions and recommendations. Biologicals. 2010. Vol 38, Issue 1, Pages 170-177
In the Sahel sub-region of Africa, most childhood malaria mortality and morbidity occurs during the rainy season. Giving effective malaria treatment at monthly intervals during this period has been shown to prevent illness and death from malaria in children. Seasonal malaria chemoprevention (SMC), formerly known as intermittent preventive treatment of malaria in children, is the intermittent administration of full treatment courses of an antimalarial medicine to children, during the malaria season, in areas of highly seasonal transmission. An estimated 25 million children aged 3–59 months could benefit from SMC every year.134

**Opportunities to link to immunization**

Whereas IPTi can be delivered as an add-on to EPI when infants come for vaccination, reaching older infants and children requires alternative approaches. SMC has typically been implemented through mass campaigns (either fixed-point or door-to-door) using trained community health workers. There is limited experience on health facility-based or immunization outreach-based delivery of SMC, although immunization outreach visits and campaigns have been used to deliver SMC to children.

**WHO recommendations**

SMC is recommended in areas of highly seasonal malaria transmission across the Sahel sub-region where rates of drug-resistance to SP are low. A complete treatment course of amodiaquine plus sulfadoxine-pyrimethamine (AQ+SP) should be given to children aged 3–59 months at monthly intervals, beginning at the start of the transmission season, to a maximum of four doses during the malaria transmission season (provided both drugs retain sufficient antimalarial efficacy).134

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134 Seasonal malaria chemoprevention (SMC) for Plasmodium falciparum malaria control in highly seasonal transmission areas of the Sahel sub-region in Africa. Geneva: World Health Organization; 2012
Integration experiences and considerations

**EXPERIENCES**

SMC can be feasibly delivered by community health worker–based delivery programmes or by health workers at both health centres and outreach clinics.

- A small study in Ghana\(^\text{135}\) compared two delivery systems, one by community volunteers and one by a health facility-based system via health-facility workers at health centres or immunization outreach clinics. Both systems achieved > 60% coverage for all four malaria treatment courses and > 80% coverage for three or more courses. However, good supervision and support from health management and study teams was necessary. A facility-based approach alone would not reach children living in remote areas with limited access to health facilities.

**CONSIDERATIONS**

- There is limited experience on health facility-based or immunization outreach-based delivery of SMC, with some evidence that these programmes are less effective in achieving high coverage than community health worker approaches. A facility-based approach alone would struggle to reach children living in remote areas with limited access to facilities.
- Joint planning with the malaria programme is needed when considering feasibility of delivery via immunization outreach, incorporating the country context.
- SMC and IPTi should not be administered concomitantly. In target areas for SMC, IPTi should not be used.

**Useful references**

(http://apps.who.int/iris/bitstream/10665/85726/1/9789241504737_eng.pdf?ua=1).


Neglected tropical diseases

Deworming

Worldwide, approximately 1.5 billion people are infected with soil-transmitted helminths (STH) that can impair the nutritional status of the people they infect in multiple ways. Pregnant women and children in many developing countries are particularly at risk for STH. Deworming drugs are often given through immunization campaigns. A global target is set to eliminate morbidity due to STH in children by 2020. This will be achieved by regularly deworming at least 75% of the children in endemic areas (an estimated 836 million in 2016).136

Opportunities to link to immunization

Periodic deworming can be easily integrated with child health days or supplementation programmes for preschool children, or integrated with school health programmes (together with vaccines targeting school-aged children, such as HPV or TTCV).136

WHO recommendations

YOUNG CHILDREN, PRESCHOOL AND SCHOOL-AGE CHILDREN.

To reduce the burden of STH, preventive chemotherapy (deworming), using annual or biannual single-dose albendazole (400 mg) or mebendazole (500 mg), is recommended as a public-health intervention for all young children (12–23 months of age), preschool (24–59 months of age) and school-age children living in areas where the baseline prevalence of any soil-transmitted infection is 20% or more among children (strong recommendation, low quality of evidence).  

Integration experiences and considerations

EXPERIENCES

Deworming has been integrated with routine immunization campaigns and periodic intensification of routine immunization.

- A systematic review of integration and immunization noted that “the most successful integration efforts appeared to be those that included an easy-to-administer intervention, such as malaria treatment, vitamin A, and deworming tablets, which were added to existing immunization services with little additional effort”.  
- During Vaccination Week in the Americas, the experience of 14 countries and territories that have integrated other interventions with immunization were summarized and it was found that vitamin A supplementation was the most common integrated intervention, followed by deworming.  

Integrating campaigns can significantly reduce the delivery costs. However, understanding the local context is key to designing campaigns that will be accepted by health workers and caregivers.

- In Lao People’s Democratic Republic, the integration of deworming with an immunization campaign, compared with sole implementation of a deworming campaign, resulted in a tenfold reduction of the individual cost (from US$ 0.23 in the deworming campaign to US$ 0.03 in the integrated campaign). When drug cost was excluded, the cost of deworming an individual through an immunization campaign was US$ 0.007, implying that deworming 100 children would cost less than US$ 1 if drug donation was in place. The burden of the integration process posed on health workers was perceived as minimal and manageable. Moreover,
mothers accompanying their children strongly appreciated the simultaneous delivery of multiple interventions.\textsuperscript{138}

**Careful consideration should be given to the total number of interventions to be added to an immunization campaign, even when the interventions themselves are relatively simple to deliver.**

- Based on concerns by immunization programme managers that the addition of vitamin A and deworming tablets might jeopardize the immunization campaign, a decision was made in Republic of Congo to add only one intervention per campaign round.\textsuperscript{39}

**INTEGRATION CONSIDERATIONS**

- Deworming is a relatively simple and low-cost intervention that benefits from integration with immunization as the interventions share a similar target population. Immunization programmes may benefit through sharing the costs of campaign delivery and from the increased coverage attained as a consequence of the high appreciation of multiple intervention delivery by caregivers.

**Useful references**


Reproductive and maternal health services

Globally, unintended pregnancy resulting from the unmet need for family planning threatens the lives and wellbeing of women and girls and their families.\textsuperscript{139} There are an estimated 1.6 billion WRA (15–49) living in developing regions, of which half (885 million women), want to delay or stop childbearing. However, an estimated 214 million women have an unmet need for a modern method of family planning, with 21\% in sub-Saharan Africa accounting for the highest proportion of women with unmet family-planning needs.\textsuperscript{139, 140, 141} Discounting the partial protection from lactational amenorrhea, unmet need for family planning is particularly high among postpartum women\textsuperscript{142} resulting in high levels of unintended pregnancies (estimated at 73 million in 2012).\textsuperscript{143}

Estimates by the Guttmacher Institute indicate that if all women who want to avoid a pregnancy used modern contraceptives and all pregnant women and their newborn(s) received care at the standards recommended by the WHO, unintended pregnancies would drop by 70\%, maternal deaths by 67\% and newborn deaths would decline by 77\%.\textsuperscript{144}

Opportunities to link to immunization

In many low-income countries, the use of family-planning services in the postpartum period remains low, yet the unmet need remains high. In contrast, the use of child immunization services is high. Therefore, women may be offered family-planning counselling, services or referrals during their own contacts with immunization or during their child’s immunization visits. A modified composite coverage index (CCI) with key interventions across the continuum of care, highlights that family planning coverage is frequently below that of immunization, even in countries with CCI > 70%, suggesting potential missed opportunities for integration.145

A paper using 2010–2011 DHS data from Nepal, Senegal and Uganda, estimated a large unmet need for family planning among women of reproductive age ranging from 67–76%. Reported DTP1 coverage among children aged 6–18 months, of women with an unmet need for family planning, was > 90% in the three countries. The authors estimated that integration of family-planning services with DTP1 provision could reach 16–30% of these women with an unmet need.146 Therefore, the integration of family planning and immunization is logical for maternal and child health programmes that aim to improve the reach of services they provide. There is significant potential, albeit theoretical, for improvement in family-planning coverage via linking with immunization services.

WHO recommendations

Family planning is essential to promoting the well-being and autonomy of women, their families and their communities, and ensuring quality of care in contraceptive services is paramount for achieving high standards of health for all. In order for health-care workers to provide high-quality contraceptive services, contraceptive programmes need to include certain elements, such as:147

- choice among a wide range of contraceptive methods;
- evidence-based information on the effectiveness, risks and benefits of different methods;

• technically competent, trained health workers;
• provider–user relationships based on respect for informed choice, privacy and confidentiality;
• the appropriate constellation of services that are available in the same locality.

The practice recommendations contained in the WHO’s 2016 guideline, *Selected practice recommendations for contraceptive use*[^148], contribute to improving the quality of care in family planning by presenting evidence-based guidance on the safe provision of contraceptive methods for both women and men.

The guideline covers method initiation/continuation, incorrect use, any problems during use and programmatic issues for a range of family-planning methods for women and men. These include progestogen-only pills, combined oral contraceptive pills, combined injectable contraceptives, emergency contraception and male sterilization. Decisions about what methods to use should take into account eligibility of the beneficiary to use various contraceptive methods (refer to the WHO’s *Medical eligibility criteria for contraceptive use*, fifth edition, 2015).

Integration experiences and considerations

**EXPERIENCES**

Successful integration of family planning and immunization services demonstrated acceptability of the strategy among postpartum women.

- A successful strategy that integrated family planning and immunization was demonstrated in a recent cluster-randomized controlled trial in Rwandan women\(^\text{149}\) in which 14 randomly selected health facilities were allocated to intervention (integrated family planning and immunization services at the same time and location) and control groups (standard immunization services only). There was a significant, positive effect on modern contraceptive method use among intervention-group participants compared with control-group participants (regression coefficient, 0.15; 90% CI: 0.04–0.26). Furthermore, women supported the concept of integrating family-planning services into infant immunization services (98% in each study group), and service data showed no negative effect on immunization uptake in the intervention group. The study suggests that integrating family-planning services into infant immunization services can be an acceptable and effective strategy to increase contraceptive use among postpartum women.

- Integration of family-planning services with the EPI was tested in an operations research study in Togo\(^\text{150}\). Mothers were provided with a referral message during EPI visits with their infant(s). The introduction of the referral message was accompanied by an 18% increase in the awareness of available family-planning services and an increase in the average monthly number of new family-planning clients, by 54%\(^\text{150}\).

Family-planning messages and referrals in Ghana and Zambia’s vaccination sessions did not improve access or knowledge of family planning, possibly due to challenges with providing family-planning information in one-to-one settings.

A cluster-randomized trial in 2009-2010 in Ghana and Zambia\(^\text{151}\) tested an intervention in which vaccinators were trained to provide individualized family-planning messages and referrals to women presenting their child for immunization services. In both countries, there was no significant effect on non-condom family-planning method use. Reported referrals to family-planning services did not improve, nor did women’s knowledge of contraception. Challenges with implementing the intervention may explain the findings. Some providers reported having made modifications to the intervention. They generally

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provided family planning information, in group talks, and not individually as they had been trained to do. The authors concluded that providing individualized messages during child vaccinations may be too difficult in many developing country service-delivery settings, which often do not allow adequate time for one-on-one time with clients.

**CONSIDERATIONS**

Offering family-planning services to postpartum women at infant immunization contacts is one of several promising “high-impact practices in family planning” (HIPs) described in the *High-impact practices in family planning (HIP) document*. However, a promising practice has limited evidence, and additional information to fully document implementation experience and impact is needed. Therefore, provision of family-planning services to postpartum women at infant immunization contacts was widely promoted, “provided that they are implemented within the context of research and are carefully evaluated in terms of both impact and process”.

The HIP document also provides a list of tips from implementation experience.

- Integrate family-planning services into routine immunization services rather than mass campaigns.
- The impact of integration on both services should be monitored to measure its effect on service delivery and health outcomes.
- Systematic screening, an evidence-based approach to comprehensively assess clients’ needs for services, can support integrated service delivery.
- The use of a dedicated family-planning provider, as part of a combined service provision model, may help increase family-planning use, including long-acting methods.
- Functioning health systems are needed to support integrated service delivery.
- Political and community support are critical to building a supportive environment for integration.
- If vaccinators provide family-planning education, screening or referrals during immunization contacts, keep messages simple and reinforce provider communication skills.
- Ensure clear and effective referral systems.

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Useful references


The USAID-funded Knowledge for Health (K4Health) Project includes a useful reference for a toolkit for family planning and immunization at https://www.k4health.org/toolkits/family-planning-immunization-integration/country-experiences. It also maintains an interactive map of family planning projects, including immunization integration, at https://www.fhighimpactpractices.org/hips/map.

In addition, because of the importance of monitoring integrated programmes for key indicators, for both immunization and family planning, the site includes a document Key considerations for monitoring and evaluating family planning and immunization integration activities at https://www.k4health.org/toolkits/family-planning-immunization-integration/me-and-research developed by the Family Planning and Immunization Integration Working Group and highlighting recommended indicators, priority research questions, and key considerations for monitoring and evaluating family planning and immunization integration activities.
An estimated 160,000 children were newly infected with HIV in 2016. Without treatment, approximately half of HIV-infected infants die by age two years, and 80% die before age five. Early identification of HIV-infected and HIV-exposed infants (HEI) provides opportunities for HIV treatment. However, limited coverage of early infant diagnosis of HIV (EID) has been a significant gap in the global HIV response, with only 43% of HEI being tested by two months of age, the prerequisite to early treatment.

Opportunities to link to immunization

WHO’s strategy on the prevention of mother-to-child transmission of HIV (PMTCT), includes integration of HIV prevention, care and treatment services with maternal, newborn and child health and reproductive health programmes, as one of seven strategic directions. Immunization clinics are one of the few contacts healthy children have with the health system, so they provide an opportunity for early identification of asymptomatic HIV exposed and infected children. There are several opportunities to integrate EID into immunization programmes, with HIV testing recommended at a number of points in the first two years of life (further information in WHO recommendations section below), that may coincide with key points in the immunization schedule, such as the first dose of pentavalent and other vaccines at six weeks, the first dose of measles at nine months and the second dose of measles at 18 months.

In addition to routine scheduled immunization contacts, outreach immunization sessions, supplemental immunization campaigns and immunization coverage surveys could offer opportunities for other interventions, such as co-trimoxazole prophylaxis (a drug used to prevent pneumocystis pneumonia in HIV-infected children).

While BCG vaccination is especially important in countries with significant HIV prevalence, infants who are HIV positive, or unknown HIV status with symptoms consistent with HIV, should not be vaccinated, unless already stable on antiretroviral therapy (ART) with evidence of immunological recovery.\textsuperscript{156}

## WHO recommendations

### WHO recommendations that pertain to potential PMTCT linkages with immunization include the following.\textsuperscript{157}

- All infants with unknown or uncertain HIV exposure being seen in health-care facilities at or around birth or at the first postnatal visit (usually 4–6 weeks), or other child health visit, have their HIV exposure status ascertained  
  (STRONG RECOMMENDATION, HIGH-QUALITY EVIDENCE).

- All HIV-exposed infants have HIV virological testing at 4–6 weeks of age or at the earliest opportunity thereafter  
  (STRONG RECOMMENDATION, HIGH-QUALITY EVIDENCE).


• For infants with an initial positive virological test result, it is strongly recommended that ART be started without delay and, at the same time, a second specimen be collected to confirm the initial positive virological test result. Do not delay ART. Immediate initiation of ART saves lives and should not be delayed while waiting for the results of the confirmatory test (STRONG RECOMMENDATION, HIGH-QUALITY EVIDENCE).

• Infants with signs or symptoms suggestive of HIV infection should undergo HIV serological testing and, if positive (reactive), virological testing (STRONG RECOMMENDATION, LOW-QUALITY EVIDENCE).

• HIV-exposed infants should undergo HIV serological testing at around nine months of age. Infants who have reactive serological assays at nine months, should have a virological test to identify HIV-infected infants who need ART (STRONG RECOMMENDATION, LOW-QUALITY EVIDENCE).

• Children 18 months of age, or older, with suspected HIV infection or HIV exposure, have HIV serological testing performed according to the standard diagnostic HIV serological testing algorithm used in adults (STRONG RECOMMENDATION, HIGH-QUALITY EVIDENCE).

Integration experiences and considerations

EXPERIENCES

High acceptance of HIV testing during immunization visits.
Five studies (out of nine) included in a systematic review on the integration of HIV infant testing into immunization sessions, measured mothers’ acceptability of their infants being tested for HIV during the first pentavalent or DTP vaccination visit, and found high acceptance (90–100%).

Main benefits of integrated services reported as time and cost savings and perceived increased demand for HIV testing, whereas main challenges reported as confidentiality issues, perceived mandatory testing and increased workloads for health workers.

A qualitative assessment\(^\text{159}\) of the integration of HIV services with infant routine immunization in United Republic of Tanzania, found general acceptance among mothers and health providers. Mothers’ perceived benefits of the integrated services included time and cost savings due to fewer visits, opportunity to learn their child’s HIV status and to receive HIV treatment if needed. Providers’ perceived benefits included reaching mothers who otherwise would not come for HIV testing alone. Mothers and providers reported challenges, including mothers’ fear of HIV testing, poor spousal support, perceived mandatory HIV testing, poor patient flow affecting confidentiality of service delivery, heavier provider workloads and community stigma against HIV-infected persons. The stigma issue was mentioned more often in rural than in urban locations.

Uptake of services following integration showed mixed results, depending on the local context. Stigma associated with HIV testing may impact the uptake of both HIV testing and vaccinations, particularly in rural areas.

- Four studies (out of nine) included in a systematic review on the integration of HIV infant testing into immunization sessions reported the proportion of mothers who returned for HIV test results (57–86%).\(^\text{158}\)
- Increased uptake of HIV testing, with integration, was found in two studies included in a systematic review on the integration of HIV infant testing into immunization sessions.\(^\text{158}\)
- In two articles, service-providers and mothers perceived stigma as the potential risk following integration, particularly in rural settings.\(^\text{158}\)
- A study in United Republic of Tanzania determined the uptake of vaccinations following integration, with urban facilities showing stable or slight increase of monthly vaccine uptake, while decreases in vaccine uptake were observed across the rural sites.\(^\text{160}\)
- In contrast to the decreases in immunization coverage in rural areas in United Republic of Tanzania, a study in rural Zambia found no negative effect on immunization coverage.\(^\text{161}\) This demonstrates the need for strong M&E and also consideration of the context.


• A study in two urban clinics in Malawi compared the integration of EID testing in immunization clinics with testing at an under-five paediatric clinic. A seven-fold greater proportion of infants received HIV testing and counselling at immunization clinics than at under-five clinics (84% versus 11%, P < 0.001). In addition, acceptance of testing at immunization clinics was higher than at paediatric clinics (100% versus 90%, P = 0.03) and more than three times as many HIV-exposed infants at immunization clinics returned for their result and enrolled into care (79% versus 25%, P < 0.001). The impact on immunization services was not assessed and no rural sites were included.

**CONSIDERATIONS**

Integration of EID with immunization presents a range of potential benefits. However, there is a risk that HIV-related stigma may have negative effects on the immunization uptake and this should be carefully monitored. In addition, increased workload due to EID, as health workers have to take a sample of blood from infants via a heel prick, and without additional human resource allocation could potentially harm the delivery of quality immunization services, especially in understaffed areas. Efforts are needed to ensure that the physical location and patient flow patterns protect the confidentiality of patients during EID and counselling. For example, separate rooms or screens may be needed. Furthermore, it is important to ensure that mothers are aware that HIV testing is voluntary and health workers should therefore communicate this clearly during their interactions. If mothers incorrectly perceive that HIV testing is a mandatory component of the immunization visit, they may not seek immunization services. All forms of HIV testing and counselling should adhere to the five C’s: consent, confidentiality, counselling, correct test results and connections to care, treatment and prevention services.

**Useful references**


Male circumcision for HIV prevention

There is compelling evidence that male circumcision reduces the risk of heterosexually-acquired HIV infection in men by approximately 60%. The WHO and the Joint United Nations Programme on HIV/AIDS (UNAIDS) recommend that male circumcision should be regarded as an additional efficacious intervention for HIV prevention. Since 2007, voluntary medical male circumcision (VMMC) programmes have been implemented in 14 priority countries in east and southern Africa that have generalized HIV epidemics and low prevalence of male circumcision. Evidence has shown that VMMC programmes have been successful in decreasing HIV incidence in the community.

By end of 2016, 14.7 million VMMC had been performed under a programme for HIV prevention. Unfortunately, 15 cases of tetanus, of which ten resulted in death, had been reported as of May 2016 as part of the ongoing safety monitoring of VMMC programmes. The main risks of tetanus contamination among these cases were attributed to a specific device-based method (elastic collar compression) or post-surgical wound care practices. Inappropriate wound care practices that include application of substances (such as animal dung poultices or herbs) that may contain Clostridium tetani bacterial spores could be a risk in all types of circumcision procedures (and wounds) and should be strictly avoided.

A report published by the WHO Technical Advisory Group on Innovations in Male Circumcision (TAG) reviewed in detail each male circumcision method, safety profiles, the pathogenesis and burden of tetanus and different approaches to mitigating tetanus risk. The experts recognized the limited coverage of TTCV among adolescent and adult men.


164 Male circumcision provides only partial protection against HIV infection, and therefore should be only one element of a comprehensive HIV prevention package which includes: the provision of HIV testing and counselling services; treatment for sexually transmitted infections; the promotion of safer sex practices; the provision of male and female condoms, and promotion of their correct and consistent use.


in most of the countries implementing VMMC programmes. They recommended a dual approach to reducing tetanus risk through: (a) promoting good personal wound care and standard surgical skin preparation for all male circumcision methods; (b) phasing in strategies to provide TTCV as relevant to their context, including at a minimum a single dose at the time of circumcision.\textsuperscript{167}

### Opportunities to link to immunization

In an ideal situation, every adult would have already received a complete series of TTCV, including males undergoing VMMC who should have already been vaccinated against tetanus at the time of circumcision. However, the tetanus cases identified following VMMC indicated an immunity gap among males in eastern and southern Africa, secondary to the main focus for TTCV reaching WRA to prevent maternal and neonatal tetanus. The need to receive a series of 5–6 doses of TTCV throughout the life course, provides an opportunity to integrate with delivery of other vaccines and health interventions being provided at each point in the life course.

The broadened targeting of adolescent boys for VMMC provides an opportunity to protect males before they come for VMMC for HIV prevention, as well as to protect them from tetanus secondary to injuries. It may be potentially delivered alongside HPV and TTCV vaccination for girls, and with the provision of other adolescent health interventions, as appropriate to the local context.

### WHO recommendations

The WHO recommends a three-dose TTCV primary series, with the first dose of TTCV administered as early as six weeks of age. Subsequent doses should be given with a minimum interval of four weeks between doses. The third dose of the primary series should ideally be completed by six months of age. WHO recommends that immunization programmes ensure that three TTCV booster doses are administered. These should be given at: 12–23 months of age; 4–7 years of age, and 9–15 years of age. Ideally, there should be at least four years between booster doses.\textsuperscript{69}

In 2016, TAG provided the following advice on the timing and number of doses of TTCV according to the circumcision method, in line with the position of SAGE.

- Circumcision with a device method where the foreskin is left in situ and removed several days after application should be undertaken only if the client is adequately protected against tetanus by immunization with TTCV that includes:

• two TTCV doses at least four weeks apart, with the second dose at least two weeks before device placement; or
• if a client has previously received three infant doses, or one dose during adolescence or adulthood, a TTCV booster at least two weeks before device placement (a booster at the time of placement provides only limited protection as it takes 7–14 days for antibodies to rise to protective levels); or
• a series of five doses of TTCV.

• For conventional surgical methods in which the foreskin was removed at the time of the surgical procedure, Ministries of Health were advised to develop and phase in effective and practical delivery strategies for providing tetanus vaccination in the context of their programmes for VMMC for HIV prevention, and for vaccination. The strategies used would depend on the country’s TTCV schedule and practices, and its tetanus burden. Unless an individual has documented evidence of having received a full five-dose TTCV series, it is advised that, at a minimum, a single TTCV dose be administered before, or at the time of circumcision.

• A TTCV dose could also be provided at post-operative follow-up visits, at least four weeks after the previous dose.

• In addition to TTCV, a Clean Care approach for VMMC is advised; namely, enhanced attention to standard protocols for skin preparation and promoting personal cleanliness (both at the facility and by individuals who undergo the circumcision procedure), irrespective of VMMC method, and enhancing individual and community education on clean wound care after circumcision or any other surgical procedure.

Integration experiences and considerations

EXPERIENCES

In order to reduce the risk of tetanus within VMMC services, the Uganda Ministry of Health requires that all VMMC sites incorporate tetanus vaccination within their service package. This can occur either through mass vaccination campaigns, as part of demand creation and mobilization, or administration of TTCV to men without a history of tetanus immunization. The MOH and implementing partners have developed several resources to support integration of tetanus risk mitigation in VMMC services, including a site readiness assessment tool and provider and client information materials.
CONSIDERATIONS

Opportunities for integration of TTCV boosters will differ among countries.\textsuperscript{168} The need to introduce TTCV for VMMC is only applicable in countries implementing VMMC programmes; namely, Botswana, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, Swaziland, Uganda, the United Republic of Tanzania, Zambia and Zimbabwe. However, in other countries, traditional circumcision ceremonies may be undertaken; hence, all countries should strive towards ensuring that their populations are protected from tetanus. The need to provide multiple TTCV doses throughout the life course presents a range of opportunities for integration.

The introduction of HPV vaccine may also provide an opportunity to offer TTCV to both males and females. Additional adolescent health services, including health education on safe sex practices for pregnancy and sexually transmitted infections, could also be provided at the same time, where appropriate.

Useful references


Many diseases that lead to high morbidity and mortality are attributable to inadequate hygiene; therefore, safe water and adequate sanitation are fundamental for health. The benefits of water and sanitation include: diarrhoeal diseases averted; other infections prevented; better nutrition; financial and economic savings, and improved education.\textsuperscript{169} Hygiene kits can include a range of items, including cooking sets, soap, buckets, water purification tablets and jerry cans.

**Opportunities to link to immunization**

Hygiene kit distribution provides an opportunity to reach people of all ages and can occur during hygiene promotion, water improvement activities, emergencies, or through routine immunization.

WHO recommendations

There is no WHO recommendation for hygiene kit distribution. However, the renewed WHO WASH strategy aims to strengthen the contribution to improving health through WASH actions.\textsuperscript{62}

Integration experiences and considerations

EXPERIENCES

Integrated distribution of hygiene kits with routine immunization was found to be feasible and may have a positive impact on both interventions.

In Kenya, a study, which distributed hygiene kits during routine immunizations, found that it positively impacted household water treatment and hygiene without a negative impact on vaccination coverage. Prior to commencing the study, both intervention and comparison caregivers were interviewed about hygiene practices and vaccination history. Water treatment and hygiene kits were distributed to caregivers during infant immunization sessions in intervention clinics over a 12-month period, and then a follow-up survey was conducted. The survey found significant increases in reported household water treatment (30\% versus 44\%, $P < 0.001$) and correct hand washing technique (25\% versus 51\%, $P < 0.001$) in intervention households. No changes were found in comparison households. It was also found that immunization coverage improved in both intervention and comparison infants (57\% versus 66\%, $P = 0.04$; 37\% versus 53\%, $P < 0.001$, respectively).\textsuperscript{170}

CONSIDERATIONS

It is important to involve hygiene promoters in the selection and distribution of hygiene kits, especially where items may not be used for their intended purpose.

Monitoring of the acceptance and use of the hygiene kits should take place as soon as possible after the distribution, and modifications made, as necessary, prior to the next distribution.

Useful references


*Mobile app for WASH FIT* [online application] (https://washfit.org/).

**WHO/UNICEF Water and sanitation for health care facilities global knowledge portal [website]** (https://www.washinhcf.org/home/).
Other health interventions

Hearing screening

Hearing impairment is an obstacle to a child’s optimal development and education. The benefits of early hearing detection and intervention programmes, which identify hearing loss during the first few months and link the infant to interventions, have been demonstrated.171

Opportunities to link to immunization

Routine immunization visits have been used as opportunities to conduct infant hearing screening.

WHO recommendations
No WHO recommendation.

Integration experiences and considerations

EXPERIENCES
Immunization visits enabled screening of a majority of infants; immunization visits at younger ages enable earlier detection of hearing loss.

Studies from Nigeria\textsuperscript{172} and South Africa\textsuperscript{173} reported on the referral of infants seen at routine immunization visits for hearing screening conducted at the same site in a separate room. In Nigeria, where only BCG vaccination visits were used, 88\% of infants < 3 months of age were screened. In South Africa, where all infant vaccination visits were used, 93\% of infants < 12 months of age were screened. The benchmark for confirmation of hearing loss is < 3 months of age. In the Nigerian study, the average age was 18 days, and in South Africa, 105 days. The later age at diagnosis was attributed to the enrolment of infants up to 12 months of age.

CONSIDERATIONS
The benchmark for confirmation of hearing loss is at < 3 months of age. Hearing screening conducted at immunization visits at younger ages (for example, BCG, DTP1) will identify hearing loss sooner. Decisions to conduct hearing screening should consider availability of medical and educational interventions.

Useful references

\textit{Newborn and infant hearing screening. Current issues and guiding principles for action.}


This document brings together a range of resources to provide an overview of the global policies, potential interventions and strategies related to the integration of immunization services. It also provides guidance and country examples on the integration of immunization with additional health interventions throughout the life course.

This document was published by the Expanded Programme on Immunization (EPI) of the Department of Immunization, Vaccines and Biologicals and is available at: www.who.int/immunization/documents/en/

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World Health Organization
Department of Immunization, Vaccines and Biologicals
CH-1211 Geneva 27
Switzerland
Email: vaccines@who.int
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