Establishing and strengthening immunization in the second year of life

Practices for vaccination beyond infancy

World Health Organization

unicef

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Annexes

2YL	second year of life
AEFI	adverse event following immunization
BCG	bacille Calmette-Guérin (vaccine)
CDC	Centers for Disease Control and Prevention (USA)
CHW	community health worker
cMYP	comprehensive multi-year plan
CSO	civil society organization
DHIS2	district health information system, version 2
DHS	demographic and health survey
DQS	data quality self-assessment
DTP	diphtheria-tetanus-pertussis containing vaccine
DV-DMT	district vaccination data management tool
EID	early infant diagnosis of HIV/AIDS
EIR	electronic immunization record
EPI	Expanded Programme on Immunization
FAQ	frequently asked question
FIC	fully immunized child
GVAP	Global Vaccine Action Plan
GAVJ	Gavi, the Vaccine Alliance
GRISP	Global Routine Immunization Strategies and Practices
HBR	home-based record
HepB	hepatitis B vaccine
HepB-BD	hepatitis B birth dose
Hib	*Haemophilus influenzae type B*
HMIS	health management information system
iCCM	integrated community case management
ICG	Interagency Coordinating Committee
IMCI	integrated management of childhood illness
IPAC	Immunization Practices Advisory Committee
IPV	inactivated polio vaccine
ITN	insecticide-treated bed net
JE	Japanese encephalitis
KAP	knowledge-attitude-practice study
MCV	measles-containing vaccine
MCV1	first dose of measles-containing vaccine
MCV2	second dose of measles-containing vaccine

MDVP	multi-dose vial policy
MenA	meningitis A vaccine
MICS	multiple indicator cluster survey
MR	measles-rubella vaccine
MMR	measles-mumps-rubella vaccine
MOH	Ministry of Health
MOV	missed opportunities for vaccination
MUAC	middle upper arm circumference
NGO	nongovernmental organization
NITAG	National Immunization Technical Advisory Group
OPV	oral polio vaccine
PCV	pneumococcal conjugate vaccine
PIE	post-introduction evaluation
PIRI	periodic intensification of routine immunization
SAGE	Strategic Advisory Group of Experts on Immunization
SIA	supplementary immunization activity
SOP	standard operating procedure
TCV	typhoid conjugate vaccine
TOT	training of trainers
TTCV	tetanus toxoid-containing vaccine
UNICEF	United Nations Children's Fund
VPD	vaccine-preventable disease
WHO	World Health Organization

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The guidance of the WHO Strategic Advisory Group of Experts (SAGE) on Immunization and the Immunization Practices Advisory Committee (IPAC) shaped the key principles and directions that are reflected here.

The content of the document is based in part on a review of experience with vaccination in the second year of life in the Republic of Ghana, the Republic of Senegal and the Republic of Zambia. We offer sincere thanks to the Ministries of Health in those countries for having permitted the documentation and analysis of their experience in introducing immunization in the second year of life.

www.who.int/immunization/programmes_systems/policies_strategies/2YL/en/

SECTION

1

Purpose and use of this document

This document provides practical guidance on establishing and strengthening immunization in the second year of life (2YL) and beyond. It also suggests ways that immunization visits during the 2YL can be used as a platform for delivery of other child-health services.

1.1 Objectives

1.
To assist countries in making informed decisions about establishing or strengthening a well-child visit (or visits) in the second year of life that includes vaccination and other services as part of a continuum of care for children.[1]

2.
To provide practical guidance on planning, managing, implementing, and monitoring vaccination services and improving immunization coverage during a scheduled visit in the second year of life that may include other health interventions.

3.
To provide broad guidance on catch-up vaccination for children older than one year, who are delayed or missing vaccine doses ("un- and/or under-vaccinated").

1 While this document focuses largely on immunization during a scheduled visit in the second year of life, other health interventions are addressed to a limited extent. Detailed information on these interventions is beyond the scope of this document. Relevant publications are included in the Footnotes.

1.2 Intended users

The intended users of this manual are primarily those who work at country level on immunization and other child-health services. They include:

- country-level government decision-makers and programme managers for immunization, child health, nutrition, paediatric HIV/AIDS, community development, health education, health management information systems, cold chain and logistics management;
- members of National Immunization Technical Advisory Groups (NITAGs), as well as other technical advisory bodies for child health and nutrition;
- national, regional and global level immunization and child health advisors working with partner organizations such as WHO, UNICEF, development partners, and civil society organizations and nongovernmental organizations (NGOs).

1.3 Other publications to consult

Some of the material in this document is addressed in greater detail in other publications and on WHO web pages. These are highlighted in key resource boxes throughout this guide. A number of other resources that will be important to consult if establishing or strengthening a 2YL platform are currently under development by WHO and will be available in the near future:[2]

- *Working together: an integration resource guide for planning and strengthening immunization services throughout the life course*
- *Handbook on the collection, assessment, and use of immunization data*
- *Guide to introducing Meningococcal A conjugate vaccine into the routine childhood immunization programme.*

2 Information on the latest drafts can be requested by contacting the WHO Department of Immunization, Vaccines and Biologicals at vaccines@who.int

SECTION

2

Introduction to life-course vaccination with an emphasis on the second year of life

The Global Vaccine Action Plan (GVAP),[3] the global blueprint for action in immunization for the period 2011–2020, calls for the benefits of immunization to be equitably extended to all people. The Action Plan states that "a 'life-course' approach should be taken in order to make the benefits of immunization available to all those at risk in every age group" and recognizes that "this will mean creating strategies for reaching individuals throughout their life course and developing plans for the systems that will monitor and track progress."

The WHO's Global Routine Immunization Strategies and Practices (GRISP) document also identifies vaccination beyond infancy as one of nine transformative actions that are critical to strengthening routine immunization.[4] It encourages national immunization programmes to expand scheduled routine vaccination visits beyond the first year of life and provide needed vaccines in the preschool, school and adolescent and adult populations. Vaccination opportunities, such as healthy child visits in the second year of life, preschool preparation visits, and school visits should be used to assess vaccination status and administer any previously missed doses. The proper design, distribution, and long-term retention of home-based records (HBRs) are fundamental to ensure the proper screening and provision of vaccines to all who are eligible for them.

While many countries already provide routine vaccine doses to children in the second year of life or later, vaccination after one year of age is expected to increase in the coming years. A booster dose of diphtheria-tetanus-pertussis (DTP) containing vaccine is increasingly recognized as being of public health importance and a second dose of measles-containing vaccine (MCV2) through routine immunization is recommended in all countries, with many countries scheduling it during the second year of life. For some vaccines, including pneumococcal, dengue, and meningitis A, schedule options include one or more routine doses in the second year of life. Some new vaccines, such as for malaria, will likely be recommended for children over one year of age. Having an established platform for vaccination in the second year of life will increase the potential uptake of these vaccines when they are introduced.

However, vaccination is just one of many health interventions that young children need in order to thrive. As a health service that is often highly used relative to other interventions, immunization can be a platform to provide other essential services, such as growth monitoring and promotion, management of common illnesses, proper sanitation and, in some places, deworming, vitamin A supplementation, micronutrient supplementation, malaria prevention and care, and HIV/AIDS care.[5] Interventions to improve growth and development in the first two years of life have a higher impact than in later years. A scheduled visit during this period is also an

3 www.who.int/immunization/global_vaccine_action_plan/en/
4 www.who.int/immunization/programmes_systems/policies_strategies/GRISP/en/
5 www.UNICEF-irc.org/article/958/

opportunity to provide counselling to parents on nutrition, hygiene, home care practices, family planning, and timely care seeking.

Many countries already have policies of regular visits for growth monitoring, promotion, and complementary feeding, but the use of the visits often drops after one year of age, as families and health workers alike may not view them as a priority. If managed strategically, vaccination visits in the second year of life (2YL) can help augment progress both for immunization and other maternal and child health services.

BOX 1. KEY POINTS FOR VACCINATION IN THE SECOND YEAR OF LIFE AND BEYOND

1. **An increasing number of vaccine doses are recommended to be given after one year of age as part of a life course approach to vaccination.** WHO global recommendations for doses of childhood vaccines to be given after one year of age include a second dose of measles-containing vaccine (MCV) and booster doses of diphtheria, tetanus, and pertussis-containing vaccines. Additionally, countries may choose to adopt a "2 + 1" schedule for pneumococcal conjugate vaccine (PCV) in which the third dose is administered in the second year of life. WHO also recommends that doses of some regionally-indicated vaccines, including meningitis A (MenA) in the meningitis belt of Africa and Japanese encephalitis in parts of Asia, can be given after one year of age.

2. **The extension of the vaccination schedule beyond infancy means that the concept of a "fully immunized child (FIC)" indicator must be expanded in the second year.** FIC should be specific to the age of the child and the corresponding set of vaccines that the child should have received, as per the national schedule, by that age. Programmes may choose to track FIC in two or more age categories: FIC<1, FIC<2 (see *Section 7.1*).

3. **With increasing complexity and duration of the vaccination schedule comes increasing importance of home-based records (HBRs),** to remind caregivers of when to return to complete the schedule, to allow providers to screen for needed vaccinations, and to serve as a basis for evaluation through population-based coverage surveys. HBRs must be well-designed, available in sufficient supply for all caregivers, used properly by health personnel, and kept safely by caregivers/families.

4. **In some settings, concerted efforts, including strong communication and health worker capacity-building, are needed to change conventional thinking that immunization is just for infants.** If high levels of coverage in

the second year of life and throughout the life course are to be achieved, then health workers, caregivers, communities, and partners must have a solid understanding of why it is important and what they themselves can do to make it happen. This requires a major shift in thinking and practices by all parties involved.

5. **Whereas children should be vaccinated as soon as they are eligible, those who are brought "late" should not be denied vaccination.** Timely vaccination is crucial for reducing exposure to vaccine-preventable diseases (VPDs) but, with a few specific exceptions, it is better to vaccinate late than never. For 2YL vaccination, the age of 24 months should **not** be viewed as a cut-off point after which children are not vaccinated.

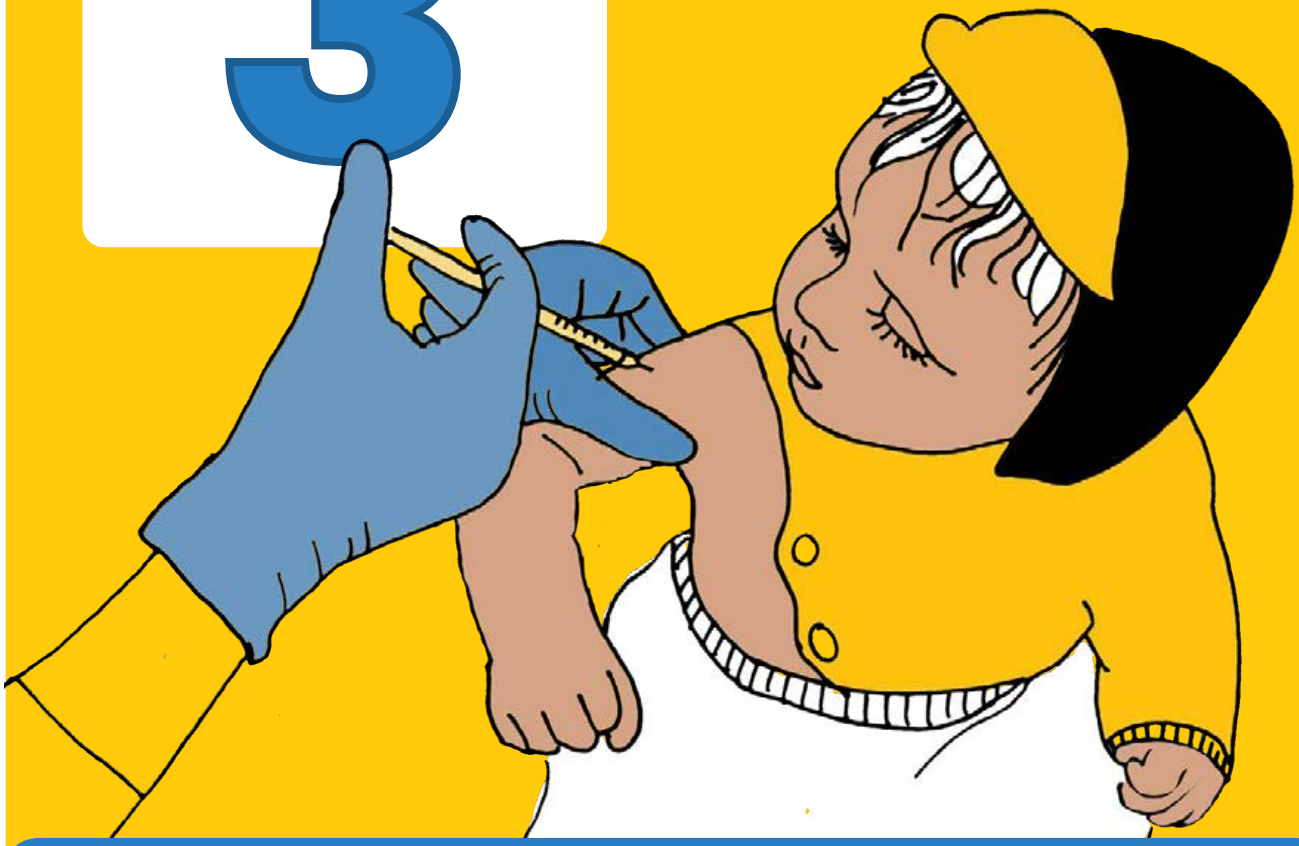
6. **Achieving high coverage in the second year of life, even with vaccines that have long been part of the vaccination schedule, requires even more attention, visibility and preparation as for introducing a new vaccine,** and should not be taken lightly. The very high MCV1 to MCV2 drop-out rates observed in many countries attest to the challenges in vaccinating a new age group. Areas requiring special attention include data management/monitoring and evaluation, communication, and health worker capacity building, including supportive supervision and other forms of post-training support.

7. **Data management, monitoring, and evaluation for vaccination in the second year of life pose particular challenges.** Tally sheets and other data management tools must be updated carefully to correctly capture all doses administered (even if the doses are not timely) and to encourage proper health worker screening, recording and reporting of doses administered, which will be needed to ensure good vaccine management and estimation of needs. Monitoring progress across at least two birth cohorts and providing meaningful feedback can be challenging. Careful planning and learning from experience to date is needed to address these issues.

8. **Vaccination in the second year of life can serve as a platform for providing other essential services to children and mothers.** If carefully coordinated with other programmes, immunization services can reinforce and stimulate the uptake of other health services, such as growth monitoring and promotion, nutritional counselling, vitamin A and micronutrient supplementation, deworming, health education and family planning, malaria prevention, and follow-up on early infant diagnosis of HIV/AIDS. Each country must assess the timing and schedules of these services and determine the feasibility of integration based on an examination of the human, material and financial resources needed.

SECTION

3



Background on vaccination in the second year of life and beyond

3.1 How widespread is vaccination in the second year of life?

While the vaccines given in the second year of life (or later) and the ages at which they are administered vary across countries, vaccination in the second year of life is a widespread practice. As of 2016,[6]

had immunization policies that included **at least one dose of any vaccine** to be given in the second year of life.

included **two doses of measles-containing vaccine** (MCV) in their routine immunization schedules.

recommended that the **second dose, MCV2**, be given in the second year of life.

recommended that **DTP4** be given in the second year of life.

include **both MCV2 and a fourth dose of vaccine containing diphtheria, pertussis, and tetanus (DTP4)** at any age.

had policies calling for both **MCV2 and DTP4 to be provided at the same time** in the second year of life.

6 WHO vaccine-preventable diseases: monitoring system. 2017 global summary. http://apps.who.int/immunization_monitoring/globalsummary/schedules, accessed 18 July 2017.

3.2 Opportunities and benefits for vaccinating in the second year of life

There are several reasons for establishing a strong platform for vaccination and other interventions in the second year of life and beyond.

Increase protection against vaccine-preventable diseases (VPDs)

The addition of new vaccines, and new doses of existing vaccines, in the second year of life increases the extent to which children can be protected from VPDs, as shown in *Table 1* below. The provision of additional doses of vaccines that are already in the national schedule contributes to higher levels of immunity and longer duration of protection. The immune response to tetanus toxoid-containing vaccine (TTCV), for example, decreases with age, which is why WHO recommends that an individual receives six doses (three primary plus three booster doses, one of which should be given in the second year of life).[7]

TABLE 1. WHO-RECOMMENDED VACCINES TO BE ADMINISTERED IN THE SECOND YEAR OF LIFE

VACCINE	WHO RECOMMENDATIONS
Second dose of measles-containing vaccine (MCV2), including measles-rubella (MR) and measles-mumps-rubella (MMR) vaccines	WHO recommends that a second dose of MCV be added to the routine immunization schedule in all countries. Where risk of measles mortality among infants remains high, MCV1 should be administered at 9 months of age and MCV2 should be administered at 15–18 months with a minimum interval of four weeks between doses. In countries with low risk of measles infection among infants (i.e. near elimination), MCV1 may be administered at 12 months; the optimal age for delivering MCV2 is based on programmatic considerations that achieve the highest coverage of MCV2. Measles vaccines. Position paper. Geneva: World Health Organization; 2017 (www.who.int/immunization/policy/position_papers/measles/en/).
Fourth dose of diphtheria-tetanus-pertussis-containing vaccine (DTP4)	WHO recommends that children be given a booster dose of DTP-containing vaccine, preferably during the second year of life, to strengthen immunity against these diseases. Diphtheria vaccines. Position paper. Geneva: World Health Organization; 2017 (www.who.int/immunization/policy/position_papers/diphtheria/en/), Tetanus vaccines. Position paper. Geneva: World Health Organization; 2017 (www.who.int/immunization/policy/position_papers/tetanus/en/), Pertussis vaccines. Position paper. Geneva: World Health Organization; 2015 (www.who.int/immunization/policy/position_papers/pertussis/en/).

7 Use of TTCV combinations with diphtheria toxoid (Td or DT) for subsequent tetanus boosters are strongly encouraged, to maintain high immunity to both diphtheria and tetanus throughout life.

Table 1.
Continued

VACCINE	WHO RECOMMENDATIONS
Pneumococcal conjugate vaccine (PCV)	WHO supports the option of a (2p+1) schedule for PCV in which two primary doses are provided in infancy and the third dose (booster) is given at 9-18 months of age.[8] The timing of the booster should be selected to maximize coverage (usually 9, 12, 15 or 18 months) depending on operational and programmatic factors, including timing of vaccination contacts in the national immunization schedule for other vaccines. Pneumococcal vaccines. Position paper. Geneva: World Health Organization; 2012 (www.who.int/immunization/policy/position_papers/pneumococcus/en/) and WHO Strategic Advisory Group (SAGE) on Immunization, October 2017. Conclusions and recommendations. Geneva: World Health Organization; 2017 (www.who.int/wer/2017/wer9248/en/).
Meningitis A conjugate vaccine (MenA) routine dose	WHO recommends a single dose of MenA at 9–18 months based on local programmatic and epidemiological considerations. Meningococcal A conjugate vaccine: updated guidance. Position paper. Geneva: World Health Organization; 2015 (www.who.int/immunization/policy/position_papers/meningococcal/en/).
Typhoid conjugate vaccine (TCV)	WHO recommends a single dose of TCV at 6-23 months in endemic countries. Timing of administration should be based on local epidemiological, geographic and programmatic considerations. WHO Strategic Advisory Group (SAGE) on Immunization, October 2017. Conclusions and recommendations. Geneva: World Health Organization; 2017 (www.who.int/wer/2017/wer9248/en/).
Japanese encephalitis (JE)	WHO recommends that JE vaccination be introduced into national immunization schedules in all areas where JE is recognized as a public health priority. WHO recommends one or two doses, starting from 6 months of age, with the schedule determined by local epidemiology and type of vaccine. Japanese encephalitis vaccines. Position paper. Geneva: World Health Organization; 2015 (www.who.int/immunization/policy/position_papers/japanese_encephalitis/en/).
Seasonal influenza	Country-specific information about risk groups, disease burden and cost-effectiveness are important to aid national policy-makers and health programme planners in making informed decisions about target groups and timing for vaccination. In those countries that decide to introduce it, WHO recommends seasonal influenza vaccination starting from 6 months of life and extending to 23 or 59 months, with two doses separated by at least 28 days for previously unvaccinated children <9 years of age. Vaccines against influenza. Position paper. Geneva: World Health Organization; 2012 (www.who.int/immunization/policy/position_papers/influenza/en/).

8 Both schedule options (3p+0 or 2p+1) are recommended. For countries that have yet to introduce PCV, decisions regarding the choice of schedule should take into account operational and programmatic issues, including timeliness of vaccination, coverage expected to be achieved with the third dose, and pneumococcal disease age distribution patterns.

Catch-up children on vaccinations that were missed during the first year of life

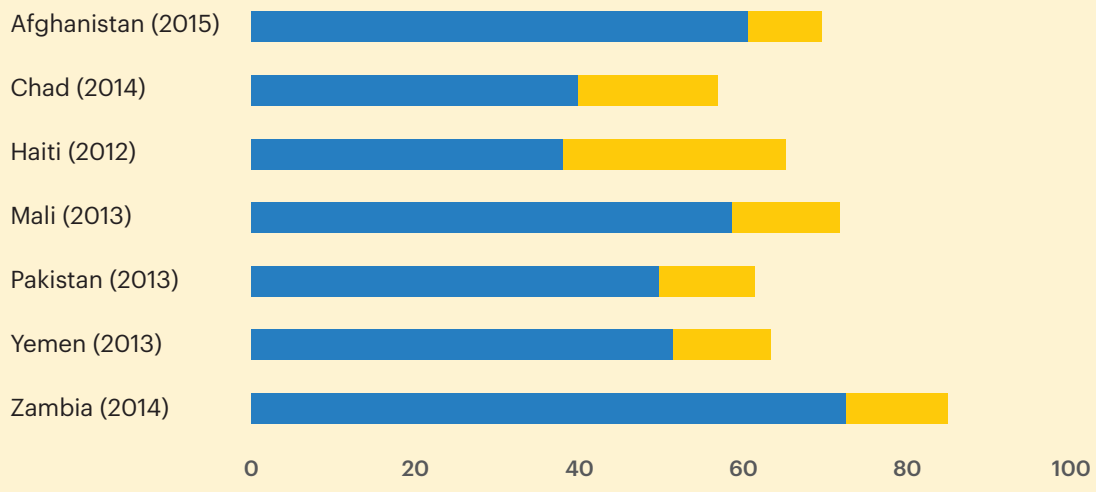
Vaccination in the second year of life is an opportunity to provide missed doses of several antigens, including BCG,[9] MCV, oral and inactivated polio vaccines, pentavalent (or DTP), pneumococcal vaccines, and rotavirus vaccine.

In some settings, families may face various social, geographical, and economic barriers to getting their children fully immunized by 12 months of age and this contributes to low coverage. A strong 2YL platform provides an important opportunity to improve overall protection and coverage. For instance, in a country where measles vaccine is given at 9 months of age and where a one-year age limit is enforced, children are by default limited to a three-month window to receive MCV1. This barrier would be removed by expanding vaccination services to the second year of life and encouraging catch-up vaccination beyond one year.

Vaccinating children in the 2YL with measles and other vaccine doses missed in the first year of life contributes to higher levels of population immunity. This was demonstrated in a 2009 analysis of Demographic and Health Surveys (DHS) from 45 countries. It showed that while pooled routine immunization coverage for MCV1 by 12 months of age was only about 50%, it rose to over 80% if the doses given after 12 months of age (i.e. "late doses") were included in the coverage estimates (see *Figure 1*).[10]

FIGURE 1. INCREASE IN ESTIMATES OF MCV1 COVERAGE WHEN DOSES ADMINISTERED IN THE SECOND YEAR OF LIFE ARE INCLUDED

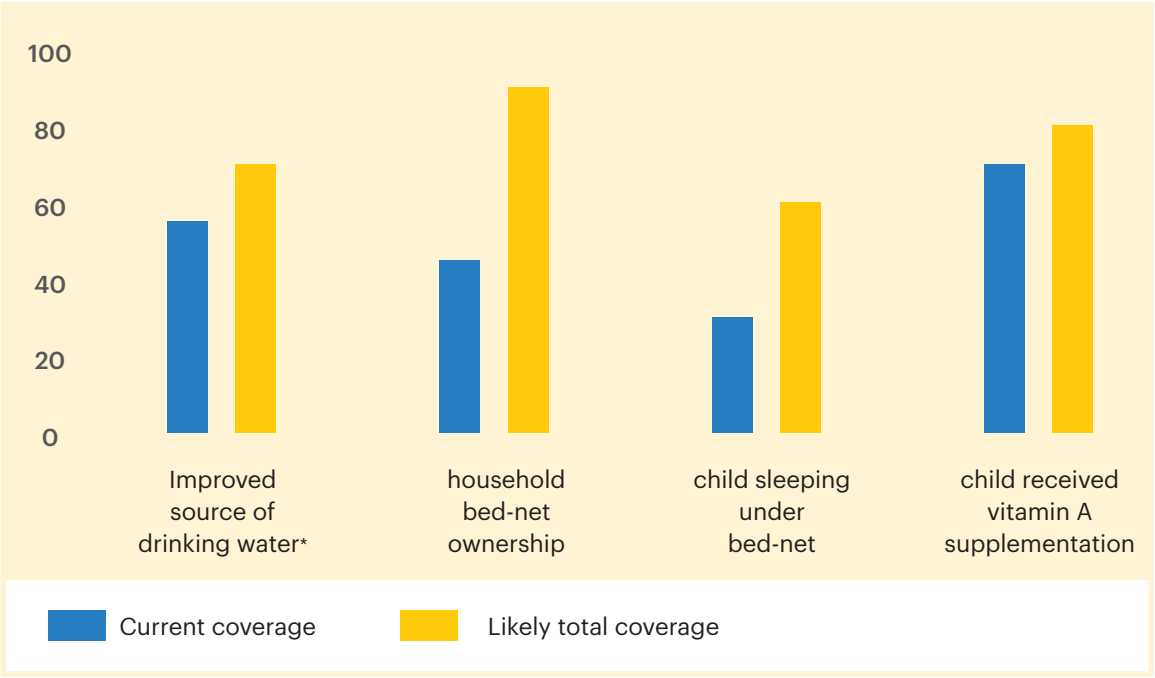
MCV1 coverage by age category in selected countries
Source: Demographic and Health Survey (Date of survey indicted for each country)



Create opportunities to integrate vaccination with other health and nutrition interventions

A scheduled routine contact with the health system in the second year of life is an opportunity to further integrate immunization with other health interventions, such as vitamin A supplementation, nutritional counselling, growth monitoring and promotion, deworming, paediatric HIV/AIDS care, provision of insecticide-treated bed nets (ITNs), or family planning. *Figure 2* illustrates the potential gains in coverage for several child health interventions when integrated with the routine immunization platform in Africa.

FIGURE 2. ESTIMATED COVERAGE OF INTERVENTIONS AMONG HOUSEHOLDS WITH A CHILD AGED 12-23 MONTHS, IF INTEGRATED WITH ROUTINE IMMUNIZATION (28 SUB-SAHARAN AFRICAN COUNTRIES)



*through provision of point-of-use water treatment kits (after Improved source of drinking water)

9 The WHO position paper on BCG vaccines was recently updated to include the recommendation for catch-up vaccination for unvaccinated older infants and children, as evidence shows that it is still beneficial beyond one year of age. BCG vaccines. Position paper. Geneva: World Health Organization; 2018. www.who.int/wer/2018/wer9308/en/

10 Clark A, Sanderson C. Timing of children's vaccinations in 45 low-income and middle-income countries: an analysis of survey data. Lancet. 2009;373:1543–9.

Make more efficient use of vaccines

Providing two doses of measles-containing vaccine, with one in the second year of life, can potentially reduce vaccine wastage rates as more doses per opened vial of vaccine will be given. This may also be true for catching up children with other vaccine doses that they missed in infancy and are given at a later age.

3.3 Challenges to vaccination in the second year of life

Over the past 40 years, immunization programmes have accumulated a wealth of experience in delivering vaccines, primarily to infants. Since vaccination in the second year of life has been introduced in many countries, experience has been mixed. For example, many national programmes assumed the introduction of MCV2 through a new routine visit in the second year of life would be straightforward, as MCV is already in the schedule in the first year of life and therefore, familiar to caregivers and health workers. However, reality has shown that it brings substantial complexity, in some cases of a nature not previously encountered by immunization programmes. High drop-out rates from MCV1 to MCV2 have been a particular concern in many countries.

Successful implementation of vaccination in the second year of life requires strong planning, coordination, community mobilization and demand creation, monitoring, and support for implementation.

Many immunization programmes still view immunization as a health intervention purely for infants, and do not offer vaccinations to children over one year even if they were never vaccinated. While policies must be established for vaccination beyond one year of age, without proper planning, training, and communication, these policies will not automatically translate to widespread changes in vaccination practices. Factors that have been shown to contribute to this situation include:

- insufficient messaging to front-line health workers on revised policies regarding provision of vaccination and other health services after one year of age;
- health worker hesitation to vaccinate children >12 months of age with MCV1 because it does not contribute to MCV1 coverage and they may worry about not having enough doses for the <12 months children;
- lower priority placed on vaccination of older children, compared with vaccination of infants;
- Insufficient communication and social mobilization to remind and encourage caregivers to use health services in the second year of life;
- complexity in recording, reporting, and analyzing vaccine doses given after one year;
- system barriers, such as limited human resources and uncoordinated supply chains, for different commodities.

Post-introduction evaluations (PIEs) of measles second dose in several countries, plus case studies on 2YL vaccination, indicate that the introduction of any vaccination after the first year of life should be treated as if it were a new vaccine introduction in terms of attention, visibility, and preparation, and the **added complexities of vaccinating a new age group should be adequately accounted for in the planning process**. If possible, 2YL vaccination should also be placed within the context of a healthy child visit so that it can reinforce the provision of other health interventions, and vice versa.

SECTION

4

Policies and planning for vaccination in the second year of life and beyond

Virtually all countries already have in place policies, guidelines, and other programme supports for child health care through the first five years of life, including growth monitoring and promotion, nutritional counselling, and integrated management of childhood illness, among others. Depending on their health priorities and current vaccination schedule, countries may want to:

1.

introduce vaccination in the second year of life as a new intervention (through a scheduled visit, or visits and catch-up of missed vaccination)

2.

strengthen existing 2YL vaccination (e.g. improve low MCV2 coverage), and/or

3.

develop a 2YL vaccination contact as a platform for coordinated delivery of other child health services.

In all three situations, systematic planning is needed to address both technical and managerial issues. The second situation (improvement of existing programmes) is addressed in *Section 10*.

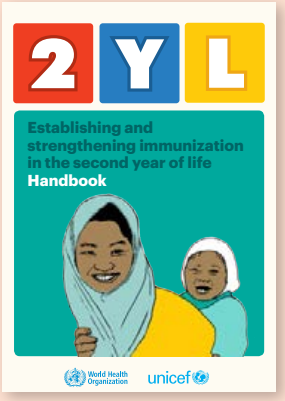
4.1 Steps for planning the introduction or strengthening of a 2YL visit

If setting up a new immunization visit in the 2YL, the planning process should begin one year prior to the anticipated launch date to permit sufficient time for the preparations described below. More detail on operationalizing these steps can be found in a companion resource *A handbook for planning, implementing, and strengthening vaccination into the second year of life* (*2YL Handbook*).[11]

Identify a 2YL focal point and establish or activate a 2YL working group

The 2YL focal point should be a staff member of the national immunization programme with sufficient authority to convene a working group. The working group should include representation from various areas of the immunization programme, such as data management, communications and service delivery. If other health interventions are to be coordinated with 2YL vaccination, then representation from these groups should also be included. Major stakeholders and partners in immunization and child health should also be involved. Membership in the working group may expand as planning evolves. The National Immunization Technical Advisory Group (NITAG) should be engaged and play a leading role in reviewing epidemiological and clinical considerations, as well as immunization programme needs, costing and financing issues, and the development of policies and guidelines. The Interagency Coordinating Committee (ICC) and/or health sector coordinating committees should also be engaged to enlist commitment and to establish a shared understanding of resource requirements.

—KEY RESOURCE



A handbook for planning, implementing, and strengthening vaccination into the second year of life

A companion resource to this document, the *2YL Handbook* is intended for use after the decision has been made to extend vaccination into the 2YL, or improve coverage of an existing platform. The *2YL Handbook* provides practical guidance on planning, managing, implementing and monitoring vaccination during a scheduled visit, or visits, in the 2YL, as well as useful steps for strengthening vaccination when coverage in the 2YL has not reached programme targets.

www.who.int/immunization/programmes_systems/policies_strategies/2YL/en/

11 www.who.int/immunization/programmes_systems/policies_strategies/2YL/en/

Develop a budgeted plan of action and secure funding

This should include activities, lead responsibilities, milestones, timelines, and resources needed to address the following actions, and should be informed by lessons learned and challenges from previous vaccine introductions.

1. Update policies and guidelines; obtain necessary approvals; produce and disseminate (print and/or electronically).

2. Define 2YL indicators for recording and reporting, revise health management information system (HMIS) and data management tools (HBRs, registers, monthly reports), and distribute these in advance of the launch date.

3. Identify and address needs for organization of service delivery.

4. Modify supply chain and logistics management tools, as needed, to include new doses of vaccines and other interventions in the second year of life.

5. Prepare, print and distribute a field guide and job aids for health workers.

6. Develop a training plan and new training and supervision materials, and carry out training.

7. Develop a communication strategy, plan and conduct social mobilization and community engagement activities, including knowledge-attitude-practice (KAP) studies or other behavioural analyses,[12] particularly regarding marginalized and hard-to-reach communities.

8. Secure funding for carrying out all preparatory work, and to cover operational and other related costs associated with 2YL.

—KEY RESOURCE

Tool for estimating the costs of introducing a 2YL healthy child visit[13]

UNICEF has developed a relatively simple Excel-based costing tool to estimate the costs of introducing a 2YL visit. The tool must be populated with demographic data, commodity prices, health worker salaries and approximate costs for training and communication activities. Results are then presented in terms of total costs, annual costs and costs per visit. Costs are divided into "up-front" costs (such as training) and recurring costs that need to be continually financed (such as vaccines and syringes). The cost analysis can be viewed as an advocacy opportunity for introducing a 2YL visit. The tool should also be used as an integral part of the planning process.

12 Tools for conducting behavioural analyses, including Guide for studying health worker/caregiver interactions for immunization. Geneva: World Health Organization; 2017 and The guide to tailoring immunization programmes (TIP). Copenhagen: WHO Regional Office for Europe; 2013, are available at: www.who.int/immunization/programmes_systems/vaccine_hesitancy/en/.
13 The 2YL costing tool can be accessed at: www.who.int/immunization/programmes_systems/policies_strategies/2YL/en/

- **Assign clear responsibilities for each aspect of preparation.**

Groups or committees that have been established to work on such issues, for vaccination campaigns or new vaccine introductions, in the past, can be re-activated. However, if other health interventions are to be included together with 2YL vaccination, then there should also be representation from other programmes, such as nutrition, integrated management of childhood illness (IMCI), malaria, water and sanitation, paediatric HIV/AIDS, etc.

- **Agree on the services or interventions to be provided during the visit and identify the policies, guidelines, and other materials that must be revised.**

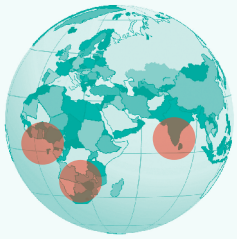
These are likely to include the following, in *Table 2* below, but there may be additional materials to revise depending on the country.

TABLE 2. MATERIALS TO REVIEW AND UPDATE FOR 2YL VACCINATION AND SERVICES

Policies, guidelines and standards	• Vaccination policy and reference manuals • National health/child health policy • Guidelines and other reference materials for health workers, including for IMCI
Planning documents	• Comprehensive multi-year plan (cMYP) and the annual plan of action for immunization • Formats for microplanning and plans for introducing them
Data management tools	• HBR • Tally sheets • Monthly reporting forms • Health facility registers • Community registers • HMIS, District Vaccination Data Management Tool (DV-DMT), district health information system, version 2 (DHIS2) • Monitoring tools and charts
Training and capacity-building	• Curricula for in-service and pre-service training • Supervision instruments • Job aids
Supply chain management	• Assessment of cold chain, logistics, and available storage • Standard operating procedures (SOPs) for handling of vaccines in 2YL • Vaccine and logistics forecasting tools
Communication, demand creation	• Communication and community engagement plan and strategy • Plans and materials for launch • Health education materials and job aids

4.2 Deciding on the timing of the 2YL visit or visits

A key step is to decide on the appropriate age at which to schedule the 2YL visit (or visits). This is a function of epidemiological data for the VPDs in question, plus the schedule for other child health services, as specified by national policies. Policy- and decision-makers need to consider public health goals and programmatic issues, using transparent criteria to evaluate their relative importance.

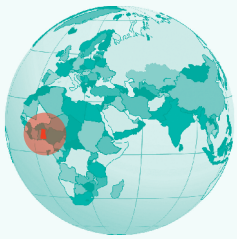
COUNTRY EXPERIENCE	AGES FOR SCHEDULED 2YL VISITS FOR VACCINATION IN THREE COUNTRIES
	**One Southern African** country decided to provide MCV2 at 18 months because it coincides with the age for vitamin A supplementation. **A West African** country chose to provide MCV2 at 15 months to minimize the length of potential exposure to measles virus, even though the timing was not synchronized with the schedule for other health services provided during the second year of life.
A South Asian country initially introduced MCV2 and DTP4 at different months in the second year of life for epidemiological reasons. However, it was later recognized that this added complexity to the immunization schedule and contributed to missed opportunities for vaccination. The country then modified the schedule to recommend both doses at the same visit.	

National immunization policies and guidelines should be written to clearly articulate the actions needed by health personnel and caregivers. For example:

- Clarify that, although it is best to vaccinate children as soon as they become eligible, for most vaccines there is no upper age limit after which the child should be denied the protection of vaccination. The exceptions are rotavirus vaccine, which is not recommended > 24 months of age, and hepatitis B (HepB) birth dose.[14]
- Convey the intended purpose of the 2YL vaccine doses. If the country is introducing a second dose of MCV into its routine schedule, then the dose must be included in the fully immunized child (FIC) requirement, and the dose should be referred to as Measles 2 or MR2 or MMR2, rather than a booster dose.

14 It is important that programmes have a clear policy on how late HepB birth dose can be administered. Some countries stop providing HepB birth dose beyond two weeks after birth in order to maintain a four-week gap between doses. However, in countries using a 4-dose schedule (with combination vaccine), a four-week gap is not necessary prior to the first primary dose (as the combination schedule meets the dosing requirements), therefore, HepB birth dose can be given up until the day before the first combination vaccine is due. Both options are acceptable. For more information, see A guide for introducing and strengthening Hepatitis B birth dose vaccination. Geneva: World Health Organization; 2015 (www.who.int/immunization/documents/general/ISBN9789241509831/en/).

- Provide clear instructions on how to properly screen children for eligibility by reviewing HBRs, record doses, report data, and use it for improving services.
- Specify the actions that health workers should take when faced with situations that do not represent the ideal, such as children arriving with missing or delayed doses, children arriving with no HBR, etc. (see *Annex 3*).
- Clearly state the policy on vaccinating children who are 12 months or older and missing doses, during periodic intensification of routine immunization (PIRI) activities such as Child Health Days (see *Box 2* below).

COUNTRY EXPERIENCE	LEARNING FROM GHANA'S IMMUNIZATION POLICY
	**The Republic of Ghana's** immunization policy has been updated to provide clear guidance to health workers about vaccinating children older than 12 months of age. **Second year of life routine immunization policy** Additional routine contact for immunizations will be done during a child's second year of life at 18 months of age or soon after. Services available at this contact include MR2, MenA, and any intervention deemed appropriate (e.g. Vitamin A supplementation). **Catch-up policy** All children should be immunized per Ghana's recommended immunization schedule. Children with any missed doses should be vaccinated with appropriate antigen up to five years of age. During any health visit, a child's immunization status should be assessed and missed doses administered per the recommended catch-up schedule. **Fully immunized child (FIC)** The FIC indicator is split into three categories: FIC by age one, FIC by age two, and FIC after age two. A child is considered fully immunized by his/her age if he/she has received all the age-appropriate vaccines up to that point.

4.3 Catch-up vaccination at any time a child has contact with health services

Sick-child visits and visits to facilities for care of other family members in the second year of life are also opportunities to catch children up on missed doses from the first year of life, and to screen and vaccinate them for doses scheduled for the second year of life.

Immunization policies and health worker training/ supervision should emphasize the importance of caregivers bringing the child's HBR to health facilities for every visit and providing catch-up vaccination at any time that a child has contact with the health system.

Clear guidelines for catch-up vaccinations for antigens missed in the first year of life should be established and disseminated widely, including an accelerated vaccination schedule for children who present missing multiple vaccine doses. A useful resource for this is the WHO recommendations for catch-up vaccinations, available at: www.who.int/immunization/policy/Immunization_routine_table3.pdf

BOX 2. PROVIDING 2YL VACCINATION DURING PIRI EVENTS

Periodic intensification of routine immunization (PIRI) activities, such as Child Health Days or Maternal and Child Health Weeks, if regularly conducted, should be used to catch-up children for missed doses from the first year of life and to provide 2YL vaccinations for which the child is eligible. Immunization policies and health worker training for the PIRI should provide clear guidance on this point.

PIRI activities should also be used as an opportunity to communicate the importance of immunization in the second year of life and the need for children to be brought for all recommended 2YL vaccinations according to the national schedule. PIRI activities should also underscore the importance of encouraging caregivers to bring the child's HBR to every health contact.

Guidance for health workers on screening, provision of services, and recording of doses, both for the routine 2YL doses and for the PIRI, should be included in policies, field manuals, training, and supervision.

For more information on best practices for PIRI activities, please see WHO resource *Periodic Intensification of Routine Immunization. Lessons learned and implications for action*, available at: www.who.int/immunization/programmes_systems/policies_strategies/piri_020909.pdf?

4.4 Coordinating vaccination with other services in the second year of life

If it is decided to use the 2YL vaccination visit to deliver additional interventions, then the planning process must engage representatives from other related health programmes.

Analyse and compare the technical attributes of other interventions proposed for the scheduled 2YL visit(s)

The priorities, objectives, achievements, challenges, and plans of different evidence-based health and nutrition interventions offered in the second year of life should be compared systematically to identify both the opportunities and the limits of a 2YL vaccination contact in reinforcing other services. This may entail convening a meeting, or meetings, to foster direct communication and negotiation among stakeholders regarding the continuum of care for young children and the role of immunization within it.

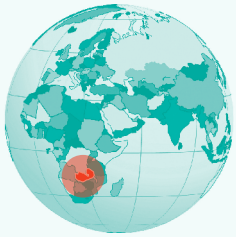
The package of services to be provided during the 2YL visit should be based on a combination of technical, managerial, and client-oriented considerations. Questions to consider in deciding on the components of the package include the following:

- What are the established public health priorities of the Ministry of Health?
- Which interventions can be provided at ages 12-23 months, are any of these visits already established, and does their timing coincide with a recommended schedule for 2YL vaccination?
- Which services, and how many, can be scheduled for a single visit in the 2YL, and will this improve convenience for the child and caregiver?
- Can all of the interventions be provided to children through fixed (static), outreach, and mobile services, and are these service delivery strategies fully functional?
- Are the proposed interventions for this visit carried out throughout the entire country or only in certain geographic areas?
- How similar are the logistical requirements?
- What are the implications for human resources, including capacity of staff, time to be spent per patient, and patient flow?
- Are sufficient human and financial resources available for providing and sustaining each intervention proposed for the visit?

Some countries have planned for integrated services that include vaccination beyond one year of age and have evaluated the experience to identify ways of improving services. The lessons learned from such experiences can help guide other countries in their decision-making and planning processes.

COUNTRY EXPERIENCE

ZAMBIA'S PACKAGE OF INTERVENTIONS FOR A COMPREHENSIVE HEALTHY CHILD VISIT AT 18 MONTHS OF AGE



One year after the Republic of Zambia introduced MCV2, the Ministry of Health and partners reviewed the experience in order to decide how to strengthen performance and integrate 2YL vaccination with other services. A meeting was convened in which officials from several programmes, including immunization, nutrition, and child health, as well as representatives from the HMIS, provincial and district teams, and key technical partners, deliberated on ways in which the 2YL visit for MCV2 could serve additional health needs.

A key outcome was definition of the package of services shown below. This reflected, in part, a decision by the MOH to shift its delivery strategy for vitamin A supplementation and deworming away from reliance on Child Health Weeks and into routine services.

At 18 months, all children now receive the following:

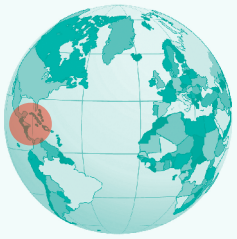
- MCV2
- catch-up of other vaccinations that the child missed in the first year of life and for which he or she is still eligible
- growth monitoring and promotion
- Vitamin A supplementation
- deworming treatment (mebendazole).

For some children, if indicated, the following are also provided:

- follow up/referral on early infant diagnosis (EID) for HIV/AIDS
- referral for IMCI or integrated Community Case Management (iCCM) for children with fever or other signs of illness during the visit.

COUNTRY EXPERIENCE

LESSONS LEARNED FROM HONDURAS IN INTEGRATING IMMUNIZATION WITH OTHER SERVICES IN THE FIRST FIVE YEARS OF LIFE



The immunization programme in the Republic of Honduras serves as a strong platform for providing other services from 2-5 years of age. These include vitamin A supplementation, folic acid for mothers, promotion of exclusive breastfeeding, education on identifying ocular tumours, and local time-limited measures to contain cholera outbreaks and control dengue. A study of early experience showed the following.

- Close **coordination and joint planning** across different programmes and different levels of the health system is key to success.
- **Jointly-prepared technical and programmatic guidelines** are essential to clearly define the delivery of the interventions to be provided during the healthy child visits that include immunization.
- Health personnel at **all levels must be trained** on the technical guidelines.
- **Timely and accurate forecasting, procurement, distribution, and storage** are needed for all supplies, not just vaccines, required at health facility level for the healthy child visit.
- A communications working group should **develop a strategic communication plan** that includes materials development, use of mass media, community engagement, and a timeline and budget.
- Forms for **data recording and reporting must be adapted a**nd the HMIS updated accordingly.
- Systematic **monitoring, by age group and strategy** of progress against goals should be carried out.
- **Joint supervision** with personnel from all relevant programmes should prioritize densely-populated areas and areas at risk.
- **Challenges to sustained integration** include uncertain funding and limited supplies of key commodities.

Source: Molina-Aguilera et al. J. Inf. Dis. 2012:205 (Suppl 1)

SECTION

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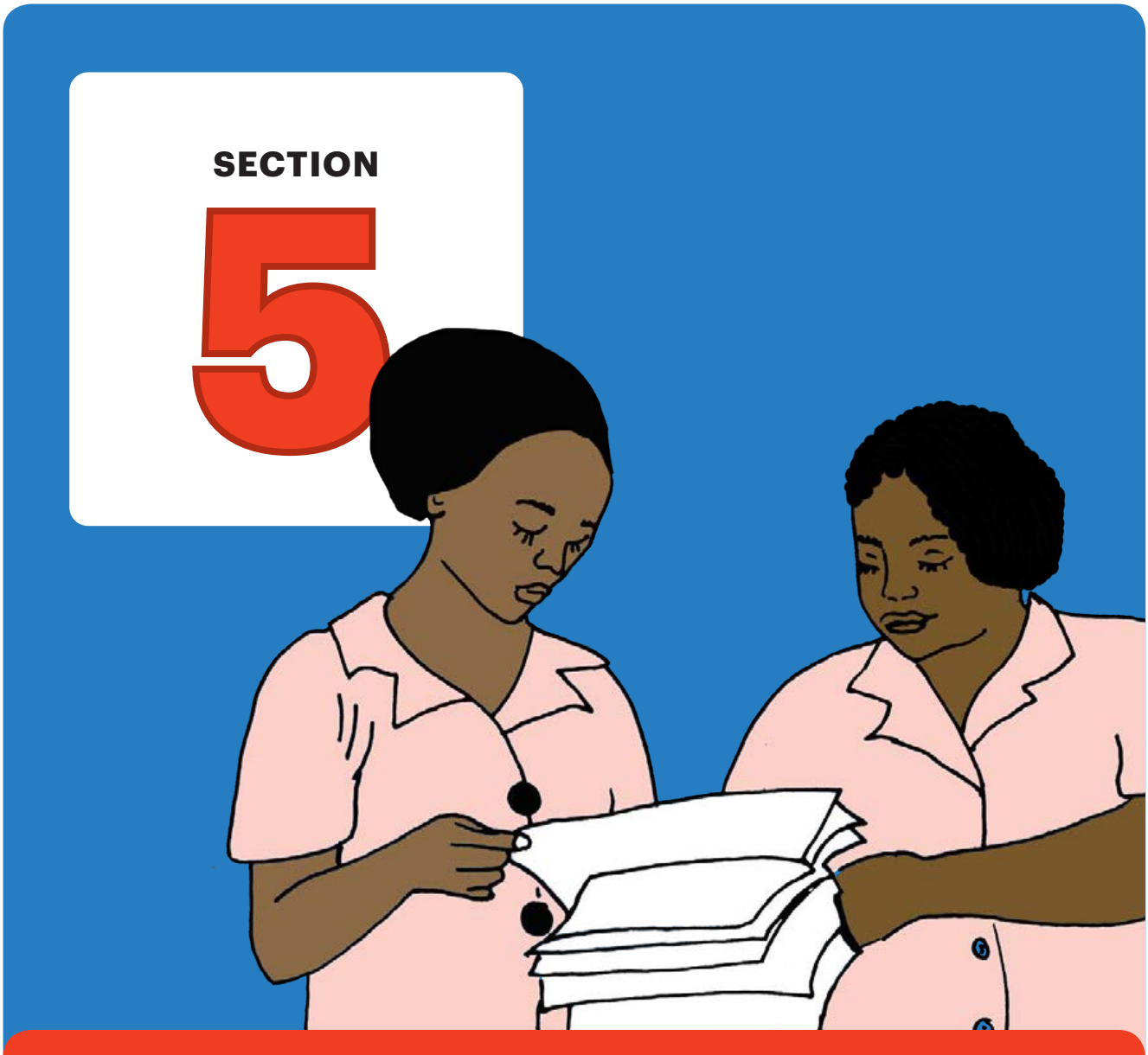

Facility-level planning, service organization, and human resources

The introduction of a scheduled 2YL visit for vaccination requires detailed planning to implement it within the existing organization and delivery of fixed, outreach, and mobile services. District and facility supervisors have an important role to play in adjusting microplanning and reviewing the organization of services, patient flow, human resources, and prevention of missed opportunities for vaccination.

The national level should provide guidance for updating microplanning templates and for ensuring high-quality service delivery, especially if there is a preferred sequence for administering the interventions. Vaccination, as an invasive procedure, should generally be provided after other procedures.[15] However, the health worker should complete the interaction with the caregiver by providing guidance on what to do in the event of side-effects or adverse events, and when and where to return for the next visit.

5.1 Update microplanning tools and processes

In many countries, microplanning tools currently in use are designed to support planning for vaccination in the first year of life. To accommodate 2YL vaccination, microplanning tools must be revised and expanded to include the second year cohort aged 12-23 months. The target population is surviving infants from the previous year's birth cohort. For example, if DTP4 is scheduled to be given to children who are 18 months of age or older, then the target group for microplanning for the current year is the number of surviving infants from the previous year. This information should be available from the previous year's plans.

Timely vaccination during a scheduled visit in the second year of life is highly desirable, but the age of 24 months should not be viewed as a cut-off point after which children are denied vaccination. Microplanning should be based on the cohort aged 12-23 months and, even if children are vaccinated later than the targeted age, it does not affect the number or catchment area of the children to be vaccinated, just the age at which they actually receive the vaccines. As further described in *Section 7*, all doses, regardless of when they are given, should be recorded on HBRs, tally sheets, facility registers, electronic immunization records (EIRs), and monthly reports, according to the age at which the child actually received the vaccines.

15 Reducing pain at the time of immunization. Position paper. Geneva: World Health Organization; 2015 (www.who.int/wer/2015/wer9039.pdf).

Microplanning should give particular attention to identifying outreach sites that are convenient for the caregiver(s), bearing in mind that a child in the 2YL is now older, heavier, and less easy to transport than an infant. Mothers are also more likely to be working outside the home. To improve access and reduce drop-out rates, the site selection, day of the week, and time of day for outreach sessions should, where possible, be decided in consultation with the community members.

The provision of additional health services during the scheduled 2YL visit means that microplanning should address the operational features of those services as well as those of immunization. Personnel responsible for nutrition, child health, water and sanitation, HIV/AIDS, family planning, health education, or other programmes, should be encouraged to take part in the microplanning process.

5.2 Review the implications for human resources for the 2YL visit

Many low-resource countries face severe limitations in human resources so that the true staffing situation in health facilities falls short of government standards. The ability to provide multiple services during the visit requires that the right types of health workers are present at each facility.

During the 2YL planning phase at national level, health officials should review the actual availability of human resources in health facilities, and provide guidance on which types of staff can carry out each task. Terms of reference and accountabilities may need to be revised. At the clinic level, head nurses or facility in-charges should clearly communicate the sequence of services, both for fixed and outreach services. They should also designate which staff will carry out specific tasks (described further in *Section 8*). These include:

- screening children to determine which services they should receive that day;
- providing each service in a pre-defined order: e.g. growth monitoring and promotion, Vitamin A supplementation, deworming, vaccination, counselling;
- recording services administered, in all the appropriate tools, immediately **after** the services are provided;
- discussing, with each caregiver, what the child has just received and what further actions the caregiver needs to take.

In smaller health facilities where one, or few, staff carry out all functions, it is preferable that all health workers at the facility are trained to provide all 2YL services to ensure continuous service delivery when any members of the team are on leave.

At both fixed and outreach service delivery points, community health workers (CHWs) or trained volunteers may be able to assist health workers with patient flow, health education, and possibly some aspects of record keeping. Within the communities, CHW tasks may include recording newborns, maintaining community registers of children 0-59 months of age and pregnant women, defaulter tracking and follow-up, talking with community members about the importance of vaccination and other services in the second year of life, and informing them of when and where to seek services.

However, some tasks are less appropriate for CHWs or volunteers. For example, screening of 12-23 month old children for eligibility for vaccination is more complex than for infant vaccination, as the number of doses these children should have received by that age is greater and there may be uncertainty about how to handle missing or late doses. This is, therefore, likely to require trained health workers.

In small health facilities with limited staff, it is preferable that all health workers are trained to provide all 2YL services to ensure continuous service delivery when any members of the team are on leave.

5.3 Determine the feasibility of providing all services desired for the 2YL visit and the practical issues of patient flow

In low-resource settings, it may not always be possible to have all the services available at the same time and in the same place. For instance, a national level mandate for daily vaccination may not be feasible in a small facility with only one or two health workers providing all services. In situations like this, it is important to communicate widely and mobilize communities to come for services on the specific days that they are offered.

At district and facility level, health officials should consider the following questions:

- What would be the specific tasks for each type of health worker in providing vaccination, plus other services, during the 2YL visit? What, if anything, will he/she do differently from current practice on a daily, monthly, quarterly, or annual basis?
- What bottlenecks are likely to occur that may result in long waiting times, especially in high-volume facilities? Clinic supervisors should determine how to reduce waiting times.
- In situations where all patients first go through the registration clerk prior to accessing services, can this step be used to communicate with parents, answer their questions, and triage children to the different service points? In some instances, it may be possible to provide certain services at the registration or waiting area before mothers or caregivers disperse to other departments. Immunization or other staff may need to be posted to the registration desk on a rotational basis to assist with this step.

—KEY RESOURCES

Missed Opportunity for Vaccination (MOV) resource guides

The WHO strategy for reducing missed opportunities for vaccination (MOV) aims to increase immunization coverage by making better use of existing vaccination sites (at health centres, hospitals, outreach/ mobile services, etc.) In addition to improving coverage, reducing MOV will improve health service delivery and promote synergy between programmes.

www.who.int/immunization/programmes_systems/policies_strategies/MOV/en/

- Are all services proposed to be provided during a 2YL visit for vaccination actually offered and available on the same days? Missed opportunities for vaccination and other services arise when not all staff and services are provided at the same time and place. The added complexity of the 2YL visit may require revising the schedule for outreach services, to optimize the use of human resources.
- Are policies and practices in place so that all children carry their HBRs and are screened and vaccinated, as appropriate, when they come for any type of care (curative and/or preventive)?

Recent country assessments have shown that rates of missed opportunities for vaccination (MOV) are particularly high during visits in the second year of life.[16] Therefore, it is important to design and organize services in ways that encourage coordination across different health interventions. Assessment findings further indicate that only 1-2 visits for preventive care take place during the second year of life, so there is an even greater need to capitalize on these opportunities. If a country has conducted an MOV assessment, the findings should be incorporated into planning to better organize services.

Policies should be put in place to ensure that all children carry their HBRs and are screened and vaccinated, if needed, when they come for any type of health service.

16 MOV assessments conducted in Chad (2015), Timor Leste (2015), and Burkina Faso (2016) indicated a higher proportion of MOVs occurring in the second year of life.

SECTION

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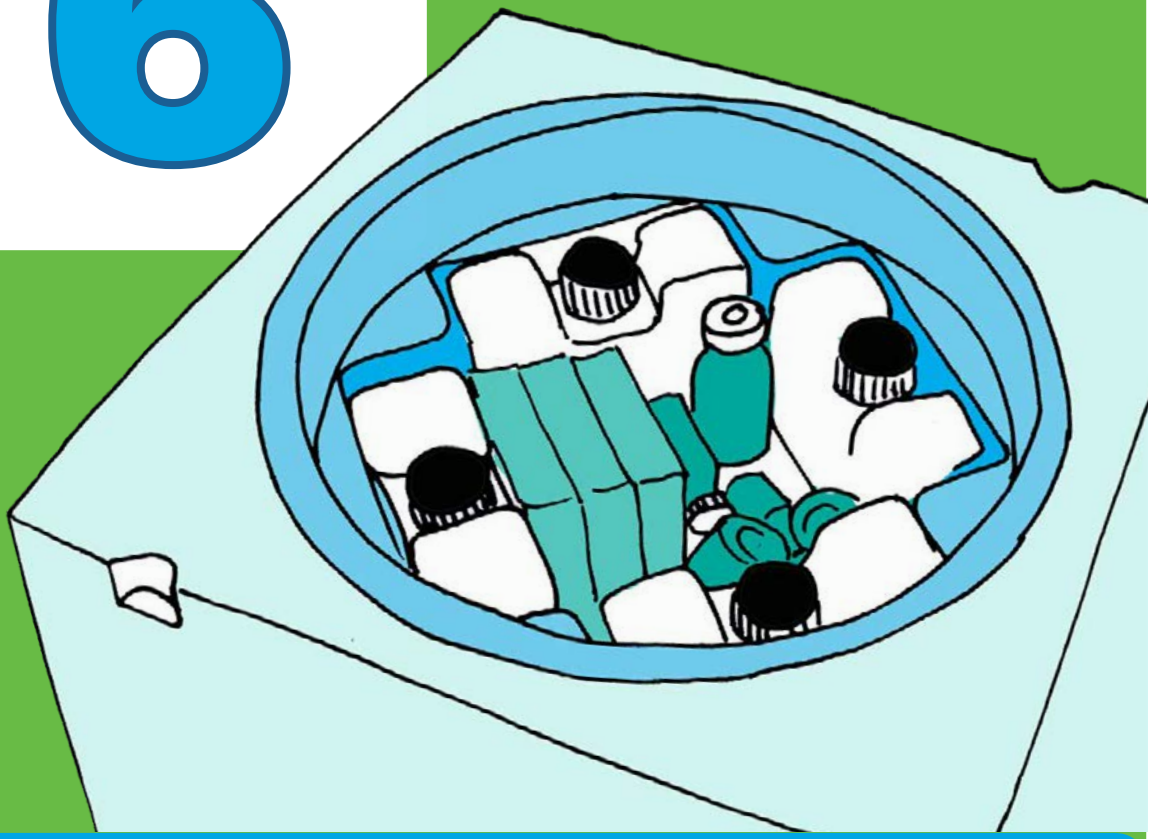

Supply chain management for vaccines and other commodities

6.1 Commodities needed for vaccination and other services in the second year of life

Planners should review all supplies required for the 2YL visit, both for vaccination and other services. Any adjustments needed for forecasting, distribution, and storage should be identified and addressed to ensure that all commodities are available at each service delivery point. *Table 3* presents an illustrative example based on the package of services adopted in Zambia. Countries can adapt this to correspond to the package of services that they intend to include in their 2YL healthy child visit.

TABLE 3. INTERVENTIONS AND COMMODITIES FOR VACCINATION AND OTHER SERVICES IN A SCHEDULED 2YL VISIT (illustrative example)

SERVICE/ INTERVENTION	COMMODITIES NEEDED	STEPS TO PREPARE FOR 2YL VISIT
Vaccine dose recommended in the 2YL (MCV2, MenA, DPT4/Penta booster)	• Vaccine • Diluent • Needles and syringes • Safety boxes • Updated data management tools	• Forecast additional quantities of vaccine needed, if any • Assess needs for additional cold storage capacity • Forecast additional quantities of needles and syringes needed • Estimate additional safety boxes needed • Review and address increased needs for waste management • Update recording and reporting tools
Catch-up of other vaccinations missed in the first year of life	• Vaccine • Diluent • Needles and syringes • Safety boxes • Updated data management tools	• Forecast additional quantities of vaccine, if needed • Assess needs for additional cold storage capacity • Forecast additional quantities of needles and syringes needed • Estimate additional safety boxes needed • Review and address increased needs for waste management • Ensure data management tools allow for recording/reporting “late” doses

SERVICE/ INTERVENTION	COMMODITIES NEEDED	STEPS TO PREPARE FOR 2YL VISIT
Vitamin A supplementation	• 200 000 IU capsules of Vitamin A • Clippers/scissors • Data management tools	• Forecast quantities needed for vitamin A to be provided through routine 2YL visit. This may represent a change in service delivery strategy (if previously provided through semi-annual Child Health Days, for example) • Review quantities provided in essential drug kits to determine whether they are sufficient to meet needs for routine services • As needed, address gaps between forecasted needs and quantities available through essential drug kits
Deworming treatment	• Deworming medication • Data management tools	• Forecast quantities needed for deworming treatment to be provided through routine 2YL visit • Compare with quantities provided in essential drug kits to determine whether they are sufficient to meet needs for routine services • As needed, address gaps between forecasted needs and quantities available through essential drug kits
Growth monitoring and promotion	• Weighing scales • Middle upper arm circumference (MUAC) tapes • Counselling materials • Growth record, if separate from HBR • Data management tools	• Review availability for all supplies and materials at service delivery point based on estimated levels of utilization and attendance during second year of life
Follow-up on early infant diagnosis of HIV/AIDS	• Data management tools • Counselling materials	• Review whether additional quantities of medications such as cotrimoxazole are needed as part of follow-up steps

17 In general, additional quantities may not be required as these are "delayed vaccinations" of children already accounted for in vaccine forecast of previous year, not additional doses. However, to cover wastage at field level, countries may consider extra doses for catch-up based on previous years' coverages.

Depending on which interventions countries choose to provide along with immunization in the 2YL, other potential commodities to consider may include:

- preventive zinc supplementation or zinc use in diarrhoea management[18]
- multiple micronutrient powders
- treatments for severe acute malnutrition
- iron supplements
- insecticide-treated bed nets (ITNs)

In some countries, commodities such as vitamin A supplementation and deworming medication are provided primarily through campaign-style activities, such as semi-annual Child Health Days or weeks that have their own supply chains, which operate independently of those for routine services. If countries decide to shift to providing them through an integrated 2YL visit, then they must ensure that there are sufficient quantities at all service delivery points for routine delivery. In countries where these commodities are provided to health facilities as part of essential drug kits, determine whether the kits provide sufficient quantities to meet the needs of 2YL visits.

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Countries can consult their existing programme guidelines and standards or global references including the WHO guidelines *Vitamin A supplementation in infants and children 6–59 months of age*[19] and *Preventive chemotherapy in human helminthiasis. Coordinated use of anthelminthic drugs in control interventions: a manual for health professionals and programme managers*.[20]

18 www.who.int/elena/titles/zinc_diarrhoea/en/
19 www.who.int/nutrition/publications/micronutrients/guidelines/vas_6to59_months/en/
20 www.who.int/neglected_diseases/preventive_chemotherapy/9789241547109/en/

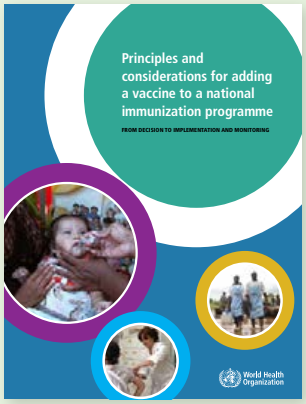
6.2 Vaccines and vaccination supplies in the second year of life

In forecasting requirements for vaccination in the second year of life, **the target population is surviving infants from the previous year's birth cohort**. For example, if MenA is scheduled to be given to children at 18 months, then the target group for forecasting purposes for the current year is the number of surviving infants from the previous year. As noted in *Box 1*, timely vaccination during a 2YL visit is highly desirable, but the age of 24 months should not be viewed as a cut-off point after which children are denied vaccination. The practical implications for forecasting are that it should be based on the cohort aged 12-23 months. If children are vaccinated later than 23 months, it does not affect the number of doses required, just the age at which they actually receive these doses. While the doses should be accurately recorded and reported on tally sheets and monthly reports according to actual age of vaccination, this should not affect stock management practices.

Introducing a new vaccine

If an entirely new vaccine (for example, MenA) is to be introduced into the routine immunization schedule in the second year of life, then country planners should consult the WHO document *Principles and considerations for adding a vaccine to a national immunization programme. From decision to implementation and monitoring*. *Sections 3.4* and *3.5* contain an in-depth discussion of vaccine management and forecasting.[21] The specific modifications to vaccine supply chain management will depend on the characteristics of the new vaccine being introduced.

—KEY RESOURCE



Principles and considerations for adding a vaccine to a national immunization programme. From decision to implementation and monitoring

This resource outlines the key principles and issues to be considered when introducing a new vaccine into a national immunization programme, and includes references and tools/checklists for planning, implementation, and monitoring. Importantly, this guide also highlights the ways to use the opportunity of adding a new vaccine to strengthen immunization and health systems.

www.who.int/immunization/programmes_systems/policies_strategies/vaccine_intro_resources/nvi_guidelines/en/

21 www.who.int/immunization/programmes_systems/policies_strategies/vaccine_intro_resources/nvi_guidelines/en/

Adding another dose of a vaccine that is already in the schedule

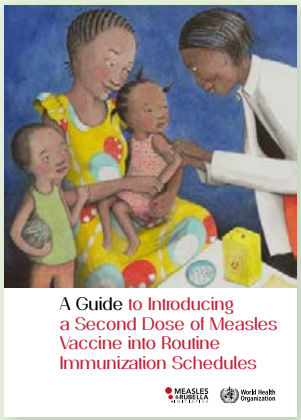
If the 2YL visit will include provision of an additional or booster dose of a vaccine already in the national schedule, the preparations necessary will also depend on the vaccine(s) in question.

The introduction of a second dose of measles or MR vaccine in 10-dose vials has been estimated to require a 15-25% increase in cold chain storage space. The need for additional vaccine doses is offset to some extent by an expected reduction in the wastage rate for vaccines in 10-dose vials because, due to the larger target population, more doses will be used per vial. It has been estimated that the measles wastage rate could be reduced by 40% with the switch from a one-dose schedule to a two-dose schedule.[22]

Programme managers and logisticians also need to monitor and revise the wastage rate and wastage factor for measles-containing vaccine based on any changes in policies, or actual practices, regarding circumstances for health workers to open multi-dose vials of these vaccines. With additional training or skills reinforcement, it should become standard practice for health workers to open 10-dose vials when only one or two children are brought to an immunization session. This practice would improve timely immunization, which is an important programme priority, particularly for measles. However, it could potentially increase wastage rates.

With regard to introducing DTP4, the effect on supply chain management is determined by the vaccine product to be used. For example, if a country that uses pentavalent vaccine for infant vaccination plans to provide DTP4 using DTP only, then the situation is similar to adding a new vaccine to the cold chain. If the country

—KEY RESOURCE



A guide to introducing a second dose of measles vaccine into routine immunization schedules

This resource provides guidance to support policy discussions and operational aspects of the introduction of a second dose of measles vaccine into the routine immunization schedule.

It provides useful direction on issues specific to vaccinating in the second year of life, including vaccine forecasting, communications, and data monitoring.

http://www.who.int/immunization/documents/WHO_IVB_13.03/en/

22 A guide to introducing a second dose of measles vaccine into routine immunization schedules. Geneva: World Health Organization; 2013 (www.who.int/immunization/documents/WHO_IVB_13.03/en/) pp. 21–22.

decides instead to provide DTP4 in the form of an additional dose of pentavalent vaccine, then the additional cold storage requirements may be minimized and, programmatically, it will be easier to manage supplies. Using pentavalent vaccine means that additional doses of hepatitis B and *Haemophilus influenzae* type B (Hib), though not harmful, will be provided without any necessity. This is a decision that will need to be weighed by the country programme.

Catch-up vaccination for doses missed in the first year of life

Many countries already account for some catch-up vaccination using existing supplies. With the introduction of a 2YL platform and strengthened policies for catch-up vaccination, it is possible that vaccine and logistics requirements will increase in the short term; therefore, managers should monitor trends in vaccine consumption so that they can adjust their vaccine forecasts accordingly. The potential impact on vaccine and cold chain management of catch-up vaccination can be estimated based on a combination of factors, including past trend data on immunization in children over one year of age, the expected number of doses of each vaccine to be given after one year, and whether the vaccine vials in question can be used on subsequent days after being opened, as per the multi-dose vial policy.[23]

Other commodities for vaccination

Increased quantities of needles, syringes and safety boxes are required to accommodate the additional vaccinations to be provided in the second year. *Section 3.5* of *Principles and considerations for adding a vaccine to a national immunization programme. From decision to implementation and monitoring* provides detailed guidance on this topic.[24]

The quantities of these supplies needed will depend on the estimated coverage for each dose of each vaccine and this is likely to change over time. In some countries, the MCV1 to MCV2 drop-out rate was initially high but then fell within a few years, whereas in others, high drop-out rates have persisted. Programme managers and logisticians should monitor actual patterns of coverage and vaccine consumption each year, and adjust their targets and forecasts accordingly.

23 WHO Policy Statement: Multi-dose vial policy (MDVP), Revision 2014. Geneva: World Health Organization; 2014 (www.who.int/immunization/documents/general/WHO_IVB_14.07/en/).
24 www.who.int/immunization/programmes_systems/policies_strategies/vaccine_intro_resources/nvi_guidelines/en/

SECTION

7

Recording, reporting, and using data for decision-making

The recording, reporting, and use of data at all levels can be the most complex aspect of introducing vaccination in the second year of life. The target groups to be vaccinated, or provided with other services, must be clearly defined and appropriate denominators used to calculate coverage in these target groups. To determine the data requirement, decisions must be made about the types of information and indicators to be used to monitor performance and guide action. Data recording and reporting instruments need to be revised carefully and with input from end-users to ensure that they promote correct screening for eligibility, service provision, and recording and reporting practices by health personnel.

This section examines the following topics:

1. PERFORMANCE INDICATORS.
Programmes must decide how to monitor introduction and performance and how indicators will be used to guide activities and decision-making. They must also consider alternative ways of obtaining programme data such as through population-based coverage surveys or knowledge-attitude-practice (KAP) surveys.

2. DATA REQUIREMENTS.
Once performance indicators are known, data requirements for generating the indicators can be defined.

3. UPDATING DATA FORMS AND SYSTEMS.
This includes all recording, reporting, and monitoring tools.

7.1 Performance indicators

A core principle in deciding which changes to make to data management tools and procedures is that only those data that are likely to be used should be collected. Countries should be aware that there are certain global immunization indicators that must be reported on a regular basis. However, other data needs may vary across countries, depending on programme priorities and problems. *Table 4* presents immunization indicators relevant to establishing or strengthening a 2YL visit.

Measuring 2YL indicators requires recording and tallying doses administered by the age of administration. In settings where vaccination is known to happen late and improving timeliness is a priority, tally sheets can be disaggregated to three age groups: 0-11 months, 12-23 months, and >24 months. This will enable the programme to monitor whether timeliness improves over time. A country with a strong record of timely vaccination may not see this as important and may prefer that their tally sheets have only two age groups: 0-11 months, and >12 months.

To avoid overloading health workers with reporting requirements, countries should carefully consider what, if any, additional data will be needed for 2YL indicators and take the opportunity to review, and possibly remove, indicators not currently used. On this basis, countries need to decide which data to collect administratively each year, from all vaccine service delivery points and which data to collect less frequently through population-based coverage surveys such as Demographic and Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS), or KAP studies. It is important to differentiate between data collected through each of these methods.

Population-based coverage surveys for routine immunization must be adapted to capture data for all doses administered. The WHO *Vaccination Coverage Cluster Surveys: Reference Manual* (2017)[25] provides guidance on defining the target populations to be surveyed if immunization extends beyond one year of age. For coverage of vaccines recommended between 12–23 months of age (for example, MCV2, DTP4), the Reference manual suggests surveying children aged 24–35 months of age in addition to those 12–23 months usually surveyed for vaccines recommended <12 months.

Monitoring drop-out from MCV1 to MCV2

MCV1 to MCV2 drop-out should be monitored at national, subnational and facility level based on monthly summary reports. Monitoring charts are also encouraged at facility level. This is complicated by the fact that the doses are scheduled to be

25 www.who.int/immunization/monitoring_surveillance/routine/coverage/en/index2.html

given to two different birth cohorts; however, in reality, the actual difference in size between cohorts for two consecutive years is very small so, for the purpose of calculating the drop-out, the same denominator should be used for calculating coverage of both doses. The recommended denominator to use is surviving infants for the cohort receiving MCV1.[26] A sample coverage monitoring chart including MCV1-MCV2 drop-out is included in *Annex 2*.

Monitoring if all interventions to be provided during a scheduled 2YL visit are provided

The 2YL visit is an opportunity to provide multiple services to the same child, encouraging greater use of services during a vulnerable age. It is important to have in place a system for monitoring uptake of all interventions provided during the 2YL visit. For example, if performance for immunization is higher than that for other services, it could flag obstacles to delivery and could help managers to identify specific problems and explore solutions. If all services to be provided during the 2YL visit were recorded in the same register, then facility heads and supervisors can perform regular spot checks to assess the extent to which children coming for the 2YL visit receive all of them. On the other hand, recording multiple services in the same place can result in a large unwieldy register that can quickly become impractical. The feasibility of these recording practices should be discussed and tested with health workers. Uptake of integrated interventions can also be monitored through facility visits, surveys and exit interviews.

Determining fully immunized child (FIC)

The addition of new vaccines and new doses of existing vaccines in the second year of life adds complexity to the health worker's task of using administrative data to determine a FIC according to age and the country's immunization schedule. FIC, as an indicator, must be specific to the age of the child and the corresponding set of vaccines that the child should have received by that age, as per the national schedule.

It is increasingly the case that a child should receive 15 or more doses of vaccines in the first 15-18 months of life. This increases the amount of time the health worker needs to review the child health card or go through all entries in the register to determine if the child is fully vaccinated. One option is to split the indicator into two or more categories (FIC<12 months, FIC<24 months). Alternatively, programmes may opt not to include FIC in the tally sheets, but rather monitor the indicator(s) through periodic vaccination coverage surveys.

26 A guide to introducing a second dose of measles vaccine into routine immunization schedules. Geneva: World Health Organization; 2013 (www.who.int/immunization/documents/WHO_IVB_13.03/en/) Annex 6, p.16.

TABLE 4. SUMMARY OF IMMUNIZATION INDICATORS RELATED TO 2YL

INDICATOR	RECOMMENDATION	INTERPRETATION
COVERAGE		
'Total MCV2' MCV2 given anytime (timely plus late)	Core indicator	Proportion[a] of children vaccinated with at least two routine doses of measles-containing vaccine, including both timely and late doses
'Total DTP4' Fourth dose of DTP-containing vaccine given anytime (timely plus late)	Core indicator	Proportion[a] of children who received a booster dose of DTP-containing vaccine, including both timely and late doses
Doses of other vaccines scheduled to be given after one year of age (e.g. MenA)	Core indicator	Proportion[a] of children who received the indicated doses in the vaccination schedule after 12 months
Fully Immunized Child (FIC) by 24 months	Optional unless source of data is a population-based survey	Proportion of children vaccinated, in a timely manner, with all doses of all vaccines that are in the national immunization schedule to be given by the age of <24 months
Other health interventions, e.g., vitamin A supplementation at ages scheduled in country programme	Consult relevant programme for guidance	Check with relevant health programmes for interpretation
TIMELINESS		
'Late DTP3' **DTP3 after 12 months**	Optional indicator	Captures number of children who complete their primary DTP-containing vaccine series late; in 2YL or later. Measure of 2YL visit used for catch-up
'Late MCV1' **MCV1 after 12 months[b]**	Core indicator	Captures number of children who receive MCV1 late; in 2YL or later. Measure of 2YL visit used for catch-up
DROP-OUT		
MCV1-MCV2 drop-out rate	Core indicator	Describes those who are not coming back for a second dose of a measles-containing vaccine

a Denominator should be birth cohort of 12-23 months (i.e. surviving infants), even if data is age-disaggregated into three groups.
b This indicator is most useful in countries where MCV1 is recommended to be given at 9 months. In countries where MCV1 is scheduled to be given at 12 months or later it would need to be modified accordingly.

POTENTIAL ACTIONS IF LOW PERFORMANCE	DATA SOURCE
Analyse reasons for low performance. Depending on reasons identified, possible actions may include strengthening skills of health workers, social mobilization and communication activities on importance of two doses of measles-containing vaccines, or improving defaulter tracing.	Administrative data or population-based survey
Analyse reasons for low performance. Depending on reasons identified, possible actions may include strengthening skills of health workers, social mobilization and communication activities on importance of a booster dose, or improving defaulter tracing.	Administrative data or population-based survey
Analyse reasons for low performance. Depending on reasons identified, possible actions may include ensuring an adequate supply of vaccine, strengthening health worker skills, and conducting communication or social mobilization activities to promote the demand for, and use of, these vaccines.	Administrative data or population-based survey
Review reasons and take actions. If indicated, work to change paradigm of EPI as an infant programme to one that reaches multiple birth cohorts. Actions may include strengthening health worker knowledge and skills through training, supervision, and feedback; strengthening defaulter tracing; improving data reporting, and increasing communication and social mobilization directed at health workers, communities, families, and caregivers.	Population-based surveys
Seek input from other programmes to analyse reasons for low performance and appropriate actions to take.	Seek guidance from the relevant programmes
Increase communication to families and caregivers about the importance of timely immunization. Implement better recall/reminder systems to timely track potential defaulters.	Administrative data (if data are age-disaggregated and known to be of high quality) or population-based survey
Increase communication to families and caregivers about the importance of timely immunization.	Administrative data (if data are age-disaggregated and known to be of high quality) or population-based survey
Through supervision, feedback, and training, improve health worker interpersonal communication to remind caregivers to return for second dose; strengthen health worker technical skills as needed; increase defaulter tracing and communication with communities about need for MCV2	Population-based survey or administrative data at national and subnational levels. It may be possible to analyse such data at the facility level.

FIC, as an indicator, must be specific to the age of the child and the corresponding set of vaccines that the child should have received by that age, as per the national schedule.

7.2 Data requirements

Determining denominators

For vaccinations scheduled to be given after the first year of life, the best target is the estimate of **surviving infants from the previous year's birth cohort**. Administrative vaccine coverage can then be estimated by dividing the current year's administered doses (numerator) by the estimated number of surviving children from last year's birth cohort (denominator).

Recording doses administered

Vaccine doses should be tallied in at least two age groups (0–11 months, and >12 months) as a minimum standard or, preferably, three age groups (0–11 months, 12–23 months, >24 months) as a best practice. Examples of tally sheets with these two alternative age groupings are shown in *Annex 1*. The creation of additional subcategories for recording doses, such as service delivery (fixed or outreach), adds to the workload for health workers and increases the potential for mistakes; therefore, disaggregating by extra groupings beyond age must be carefully considered. The ways in which such additional data will be used to guide activities should be clearly identified in order to determine if it actually needs to be collected. If required, separate tally sheets can be used for fixed and outreach sessions, and monthly reporting sheets should have separate rows for fixed and outreach sessions against each antigen.

Monitoring health indicators by sex has been recommended by some to ensure equity; however, coverage surveys have shown repeatedly that the child's gender is

not a barrier for vaccination.[27] Hence, given the added complexity that stratification places on the administrative system, WHO does not recommend tallying doses by sex. Similarly, it is not advisable to try to separate doses given to children within a catchment area versus those outside the catchment area. If concerns exist about inequalities in childhood immunization, by sex or other characteristics, it is recommended that when surveys are implemented, they be powered to detect inequalities or disparities in coverage.

Including three age groupings to record doses addresses the common problem of how to record late doses of vaccine. If children come for immunization or other 2YL services at 24 months of age or older, they should not be denied vaccination or other care. Health workers should provide the doses and services and record them on the tally sheet, HBR, child register, and monthly summary report, in the age column that corresponds to the child's age when the dose or services were **actually received**. Country field guides should provide clear instructions and scenarios on administering, tallying, recording, and reporting of late doses.

BOX 3. PROMOTING ACCURATE RECORDING AND REPORTING TO IMPROVE SERVICES

Health workers may be reluctant to record doses accurately if they fear that they will be disciplined for documenting practices that are not in accordance with national standards. Proper documentation of actual practices is essential if problems are to be detected and addressed; therefore, accurate recording and reporting must be encouraged and supported. For example, if a first dose of MCV is given after one year of age, it needs to be recorded as the first dose, regardless of the age of the child.

If health workers feel pressure to report that they have not exceeded established vaccine wastage rates, they may turn mothers and children away unimmunized if just one or two children show up for MCV or other lyophilized vaccines in multi-dose vials that must be discarded within six hours of reconstitution. Denying these children vaccination on that day is a missed opportunity for vaccination, prolongs exposure to disease and risks losing these children from the system for good.

Supervisors have an important role to play in promoting accurate recording and reporting of data and in supporting health workers with decision-making when they face less than ideal circumstances.

27 State of Inequality: Childhood immunization. Geneva: World Health Organization; 2016 www.who.int/gho/health_equity/report_2016_immunization/en/

7.3 Updating forms and health information systems

All data collection and reporting instruments should be reviewed and revised, as needed, to accommodate 2YL data requirements. A user-centered approach to the design of data instruments should be used to foster proper screening, vaccination, recording, and reporting of doses. Data recording tools should promote the key concept that full immunization includes doses given in the second year of life or later.

- As health workers are expected to use HBRs, tally sheets, and registers on a daily basis, **the tools should be designed with their input and formally pre-tested to assess how well they are understood and how easy they are to use.**

These steps will help avert problems in recording data or even in vaccination practices, such as denying vaccination if a child comes late. The pre-test findings should inform the revision of the tools themselves and strengthen training on their proper use. Functionality of current tools should be reviewed, on an ongoing basis, through data quality reviews or assessments,[28] in order to eliminate or revise aspects that are not being used properly, or at all.

- **Engage representatives from HMIS and all programmes involved** to develop a plan to review and revise the system and to ensure updates are synchronized with the dissemination of paper-based tools, including HBRs.

Reporting systems should be examined to eliminate duplication and contradiction among parallel systems (for example, the HMIS and DV-DMT or other vaccination-specific information systems) in order to avoid increased workload and reduce the possibility of health worker confusion.

- **Prepare a plan with budget, timeframe, and secure funding, for revising all data collection and reporting instruments.**

The plan should designate lead responsibilities, processes for review, timeframe, quantities required, budget, funding source, and a clear dissemination plan. The budget should include the costs for printing sufficient quantities of HBRs and all new forms plus distributing them to all facilities to replace older forms and registers. All new instruments should be ready in time for training of health workers so that they can gain direct experience with using them. If electronic immunization records (EIRs) and other electronic systems are used at health facility level, the changes in

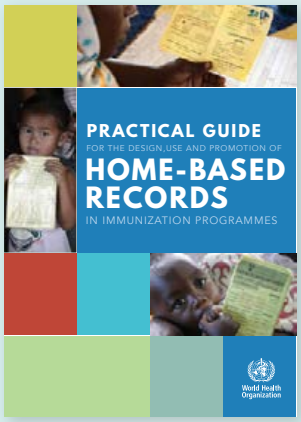
28 For example, the Data Quality Self-assessment (DQS). The DQS is a flexible toolbox of methods used to evaluate different aspects of the immunization monitoring system at district and health facility levels. For details and tools visit: www.who.int/immunization/monitoring_surveillance/routine/coverage/en/index3.html

all aspects of the system must be made in time for training, so that health workers are able to practice using them.

Revise all relevant data collection instruments.

- **HBRs** should contain sufficient space for the health worker to record all routine doses of vaccines, their dates of administration, and other services provided during the 2YL visit. HBR design should allow for easy screening by all health workers (including non-immunization staff providing curative care) for doses due. The WHO *Practical guide for the design, use and promotion of home-based records in immunization programmes* (see *Key Resource*) provides user-friendly advice for producing high-quality HBRs.
- **Tally sheets** should be designed in a way that guides health workers to accurately record doses administered, disaggregated by age groups, as described above and shown in *Annex 1*.
- **Monthly summary reports** should capture and summarize all data produced by the tally sheets. For example, if the tally sheet contains space for reporting doses administered outside the recommended age range, or fixed/outreach sessions, then the monthly summary should also capture this so that health workers do not have to improvise their own solutions.
- **Registers** should include space for additional doses (and possibly other interventions) to be provided in the 2YL visit, and beyond, without restricting the recording of doses to the second year of life. The amount of data to be entered should be determined by how it will be used, time needed to enter the data, cost, and the bulkiness of the registers. It is also crucial that registers, or *tickler files*, be organized in a manner that facilitates tracking defaulters.

—KEY RESOURCE



Practical guide for the design, use and promotion of home-based records in immunization programmes

HBRs, such as vaccination cards or integrated child health records, should be designed to serve the needs of the health system and promote appropriate health practices among caregivers. They must be made available to all caregivers free of charge, and properly filled in. Health workers should encourage caregivers to safeguard HBRs and retain them for several years. However, they should not punish or deny services to those who have lost or forgotten them, as this could discourage caregivers from returning for immunization or other essential services. Lost or damaged HBRs should be replaced free of charge.

www.who.int/immunization/monitoring_surveillance/routine/homebasedrecords/en/

As described in *Section 8*, training and supervision should address unusual circumstances that health workers are likely to encounter that would complicate the ability to record and report doses accurately. *Annex 3* provides some sample scenarios for illustrative purposes.

BOX 4. HBRS FOR IMMUNIZATION AND OTHER CHILD HEALTH SERVICES

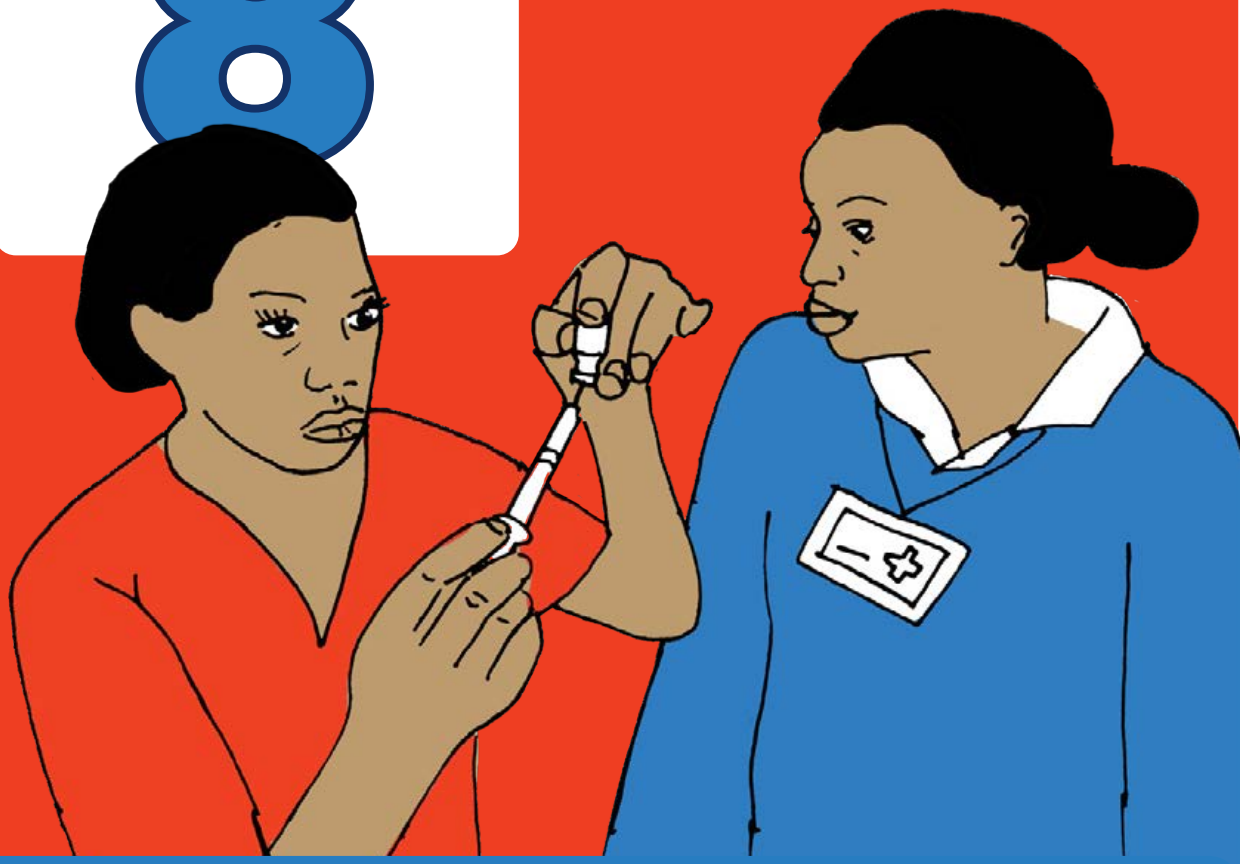
With immunization extending into the second year of life and beyond, and more vaccines included in the vaccination schedule, it is increasingly important that all mothers or caregivers have HBRs that document children's vaccination status and provide key information on immunization and health.

Immunization policies and health worker training/ supervision should emphasize the importance of caregivers bringing the child's HBR to health facilities for every visit to screen for vaccine eligibility at any time that a child has contact with the health system.

Some countries have introduced immunization status checks at the time of enrolment in primary education (school registration), and caregivers should be reminded of the importance to save the HBR until the child is enrolled in the education system.

SECTION

8



Health worker training and capacity-building

The success of any health intervention depends on competent front-line health workers and managers. In health worker capacity-building, "competencies" are defined as being comprised of skills, knowledge, and attitudes. For vaccination and other well-child services in the second year of life to be viewed as a priority, health workers' interpersonal skills, motivations and attitudes need to be addressed in training, supervision, and the feedback they are given. Training is essential for introducing new skills, but must be followed with post-training support to reinforce skills and improve practices on an ongoing basis.

Representatives from all programmes involved in a 2YL vaccination visit should contribute to the process of developing the training curriculum. A training workplan, timeline, and budget for developing the training materials should be developed so that there is clear, shared understanding of responsibilities and deadlines for drafting, reviewing, finalizing, and producing the training materials and any supporting materials, such as slides, job aids, materials for exercises, etc.

Training, supervision, and other means of post-training support should reinforce policies and standard operating procedures including the core principle that timely vaccination is ideal but (with few exceptions) late vaccination is preferable to no vaccination at all.

8.1 Determine required health worker competencies

A key step is to identify the competencies required of all cadres of health personnel involved in vaccination and other health and nutrition interventions in the second year of life and later. A task analysis or learning needs assessment should be conducted to clearly identify which staff are responsible for carrying out specific duties, as noted in *Section 5*. For a 2YL visit that includes other health services, trainers should identify the expected tasks and required competencies of:

- vaccinators;
- other health care providers involved in an integrated 2YL visit;
- health facility supervisors or in-charges;
- community health workers (CHWs);
- district- or regional-level staff responsible for immunization, child health, logistics management, data management, and advocacy, communication, community engagement and social mobilization.

One way to approach this is to list the specific changes to health worker responsibilities on a daily, weekly, monthly, and annual basis, that result from introducing vaccination after one year of age.

BOX 5. HEALTH WORKER COMPETENCIES FOR 2YL VACCINATION

Training and capacity-building for 2YL vaccination must ensure that health workers can correctly carry out the following tasks.

1. **Prepare microplans and forecast commodity needs for reaching an additional cohort based on a correct estimate of the target population.[29]**

2. **Screen children properly to determine any vaccine doses needed. This requires knowledge of the immunization schedule (including whether there is an upper age limit for any vaccines or doses), the minimum interval between doses, what to do in case of late or interrupted vaccinations, how to screen for eligibility if the child lacks a HBR, and whether a child who has come for curative care can be vaccinated.**

3. **Communicate clearly with caregivers as follows:**
   - **When caregivers bring their children for vaccination in the first year of life, particularly for MCV1, explain the reasons and benefits for returning for vaccination and other services in the 2YL. Clearly inform caregivers of when they should return and indicate this on the HBR.**
   - **During the 2YL visit, thank the caregiver for coming and provide standard information on the vaccines received, including the fact that receiving simultaneous injections is safe, and address caregiver concerns about side-effects.**

4. **Provide child with other services during the 2YL visit, such as growth monitoring and promotion, vitamin A supplementation, and deworming medication, as per national policy.**

5. **Record and report the doses administered during the 2YL visit on tally sheets, HBRs, child registers, and monthly summary reports.**

6. **Identify and trace defaulters so that they complete the vaccination schedule. This may entail managing and supporting CHWs.**

7. **Review the facility's data to assess performance and problem-solve to address issues related to 2YL vaccination that need attention.**

29 For information and tools for effective micro-planning, see Chapter 3 of Reaching Every District (RED): A guide to increasing coverage and equity in all communities in the African Region, 2017 revision, available at: www.afro.who.int/publications/reaching-every-district-red-guide-increasing-coverage-and-equity-all-communities

The success of any health intervention depends on competent front-line health workers and managers.

8.2 Prepare the training curriculum

Much of the technical content on proper administration of vaccines and the provision of other well-child services is already available in existing training materials. It can be adapted and updated as needed for 2YL training. The curricula for other programmes that may be integrated with 2YL vaccination, such as nutrition and child health, should also be reviewed and updated as needed.

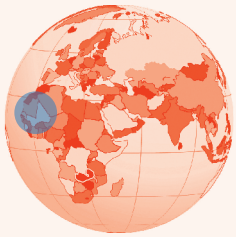
New training content should be developed for the 2YL-specific competencies noted above. These competencies serve as the basis for defining the learning objectives for the training curriculum. The learning objectives help to focus the training on the "must know" as opposed to "nice-to-know" content. Learning objectives are also a useful basis for meaningful pre- and post-test questions.

The use of well-designed pre- and post-tests based on the learning objectives serves two purposes. First, they give information on the effectiveness of the training itself and can therefore help identify ways to strengthen it. Second, they identify areas of limited understanding. This information can then be used to focus post-training support through supervision, feedback, on-the-job training, and other means.

The learning objectives for training in the Republic of Senegal, shown below, address the introduction of a second dose of measles-rubella vaccine. For a 2YL visit with multiple interventions, the learning objectives for such a training would need to reflect the competencies described above, as well as for other services to be provided during the 2YL visit.

COUNTRY EXPERIENCE

LEARNING OBJECTIVES FROM SENEGAL FOR TRAINING ON INTRODUCING A SECOND DOSE OF MEASLES-RUBELLA VACCINE (MR2)



The training curriculum for the introduction of MR2 in Senegal outlined clear learning objectives.

By the end of training, health workers will be able to do the following.

- Describe the new vaccination schedule for providing MR2.
- Identify the target group for MR2 vaccination.
- Correctly estimate MR vaccine needs taking into account MR2.
- Correctly fill out all management tools, including the child register, tally sheet, monthly report, stock management record, and vaccination card.
- Cite at least three benefits of providing MR2.
- Explain to parents at least two reasons why they should retain the vaccination card and return for MR2.
- Cite the number of vaccination contacts that a child needs to be fully vaccinated.
- Describe at least four tasks for community mobilizers to carry out to support MR2.

When preparing the training curriculum, it is important to incorporate the use of adult learning methods. Examples of these methods are provided in the *Box 6 below*.

BOX 6. **EFFECTIVE LEARNING METHODS**

Effective learning in adults occurs when the content is clearly relevant to the learner's own experience, has immediate application, and clearly serves a practical purpose. Whenever possible, interactive methods that permit the practice of skills should be used. For the 2YL visit, useful interactive methods can include:

- **skills practice for interpersonal communication, including responding accurately to questions in a manner that fosters trust**
- **hypothetical scenarios for screening, administration, recording, and reporting of doses (several examples for 2YL immunization are shown in *Annex 3)*.**
- **case studies and problem-solving for situations with low coverage of 2YL doses.**

Experience with MCV2 vaccination in several countries has shown that screening, recording and reporting doses in the second year of life or later can be challenging because health workers face a wide variety of situations that do not correspond exactly to the vaccination schedule. Health workers need clear guidance on such points as:

- how to record a first dose of MCV that is given after 12 months (in a country that recommends MCV1 at nine months of age);
- what to do when a mother brings the child for the 2YL visit after 23 months;
- the minimum interval between doses; and
- how to implement strategies to reduce pain from multiple injections.[30]

Annex 3 presents several scenarios that health workers may encounter and suggests how they can be addressed directly during training. *Annex 4* provides an example of a job aid to assist health workers to determine the vaccines for which a child is eligible.

Training also provides an opportunity to address known areas of weak performance. For example, it can be used to promote the practice of opening a vial to provide MCV even if only one or two children come for an immunization session. District-level supervisors must support this principle if front-line health workers are to carry out this practice successfully.

30 Reducing pain at the time of vaccination. Position paper. Geneva: World Health Organization; 2015 (www.who.int/wer/2015/wer9039.pdf).

8.3 Plan the training strategy

Planners should develop a training strategy for building the skills of health workers, their direct supervisors, district health teams, and trainers. Several points should be addressed:

☐	Identify who will conduct the training sessions and provide them with thorough orientation on both the technical content and how to train others.
☐	Prepare a detailed training schedule. Work backwards from the anticipated date for launching 2YL vaccination and take into consideration any other concurrent events, such as holidays, elections, or vaccination campaigns that may cause delays.
☐	If other new vaccine introductions are planned to take place in the same timeframe, it may be possible to combine this with the 2YL training to improve efficiency.
☐	Time the training so that front-line health workers receive it two to three weeks before the 2YL launch takes place.
☐	Ensure that printing and/or electronic distribution of updated data collection tools are available to be used for skills practice during the training.
☐	Print and disseminate other key materials, such as technical guidelines or operational field guides, job aids, behaviour change communication materials (see *Section 9*) and training reference materials, for participants to share with other staff at their facility.
☐	For longer term, ensure that information is incorporated into pre-service and continuing education curricula.

Cascade training is often used to reach large numbers of health personnel in a short period of time. However, the quality of training is known to erode and become more variable with each level of cascade; hence, it is best to limit the number of cascade levels to two or three at a maximum. If a cascade strategy is used, the following tips can help maintain the quality of training.

- Use the "teach-back" method during the training of trainers (TOT). In this method, a portion of the TOT time is spent having some participants practice their skills by simulating a training of other participants, and vice versa.
- Produce hypothetical scenarios for simulations, with mock history and mock HBRs, during interactive training sessions. If health workers use handheld EIR

devices, conduct real-life simulations of recording data with the devices and review the records together with participants.

- Include some higher-level trainers in the training sessions at the lower levels.
- Use post-test results of earlier training sessions to adapt and improve the training for later sessions.
- Produce interactive DVDs to use at all levels of the cascade to ensure that the most complex content is addressed in a standardized way. For the 2YL visit, this would include screening and recording and reporting of vaccine doses given to children over the age of one year. The possible use of DVDs requires first assessing whether appropriate equipment for using them is available at all levels.
- Work with instructional designers to ensure that the teaching methods are appropriate for training adults.

8.4 Provide supportive supervision and other forms of post-training support

A single training session is often insufficient to bring about mastery of new and complex subject matter. Post-training support is needed to strengthen skills and practices, both to reinforce content introduced during training and to orient new staff or those who were unable to attend the training.

Supportive supervision is a standard, essential method for reinforcing skills. However, it requires both reliable funding and transportation, which can be lacking in many settings. The planning for a 2YL vaccination visit is an opportunity to highlight the importance of supportive supervision and advocate for adequate levels of funding.

Prepare an integrated supportive supervision visit checklist for the 2YL visit.

Countries can adapt their existing supportive supervision checklists to include specific 2YL questions. These questions can also be asked during informal on-the-job training:

☐	Are 2YL guidelines, job aids, and revised data management instruments, including HBRs, available at the facility?
☐	Is the MCV1-MCV2 drop-out rate being monitored? If yes, how much higher is the MCV1-MCV2 drop-out rate compared to that for Penta1-Penta3, PCV1-PCV3, or rotavirus1-rotavirus last dose?

☐	If children come for the 2YL visit later than the target age, how do health workers respond? Do these children receive vaccinations? Which ones? How are the doses recorded and reported?
☐	Is the provision of immunization coordinated with other services or are there missed opportunities for doing so?
☐	In what ways do CHWs identify and mobilize parents to bring their children for the 2YL visit?
☐	Are there sufficient supplies of all commodities needed for the 2YL visit?

Supervisors should provide written feedback that remains at the facility for future reference.

Additional types of post-training support may take the following forms.

- **Prepare a job aid to guide health workers to screen and vaccinate children** that have missed doses, are late with vaccinations, or who do not have a vaccination card. A flow chart or algorithm may be useful for this purpose. *Figure 3* provides an example of a decision-making flow chart adapted from Ghana. The job aid might also include key messages to assist in responding to common questions or concerns from caregivers or community members. See *Annex 4* for another sample job aid to guide health workers to determine a child's eligibility for vaccination.

- **Develop a poster or job aid on patient flow** to remind all health workers in the facility, as well as parents and caregivers, how services should be organized during the 2YL visit. The job aid should particularly emphasize referral between different departments.

- **Prepare a list of frequently asked questions** (FAQ) so that health workers are capable and confident to respond to a variety of questions and situations. *Annex 5* contains an example of a FAQ list that countries can adapt.

- **Plan for refresher training** to take place one to two years following initial training.

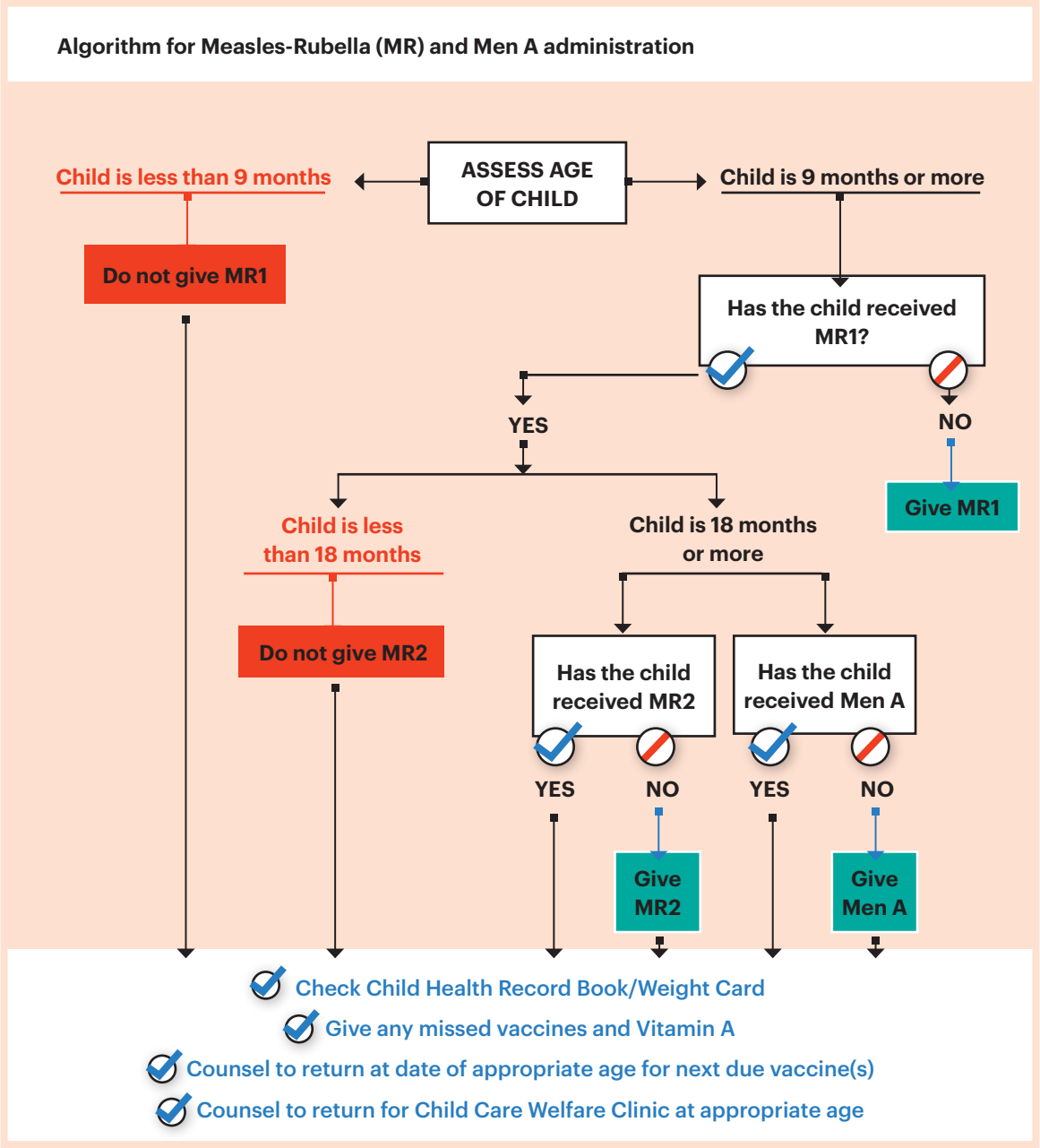
- **Provide health workers with a support phone number** (e.g. to a supervisor or a hotline) and encourage them to call and check if they are unsure how to vaccinate a child or record a vaccination.

- **Explore alternative means of post-training support.** Depending upon country circumstances, these could include:

  - peer exchanges or quarterly review meetings;

- a hotline that health workers can use to consult experts when they have questions;
- reminder SMS texts or other mobile messages sent to health workers' phones to reinforce practices. Text messages can also be used to provide recognition for correct and timely recording and reporting of data;
- in settings where health workers have high access to smart phones, a WhatsApp group or similar chat application can provide peer-to-peer and regular supervisory support.

FIGURE 3. EXAMPLE FROM GHANA OF AN ALGORITHM FOR DETERMINING ELIGIBILITY FOR MENINGITIS A AND MEASLES-RUBELLA VACCINE



BOX 7. DETERMINING ELIGIBILITY FOR MCV2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WHO recommends that, where risk of measles mortality among infants remains high, MCV2 should be administered at 15–18 months, with a minimum interval of four weeks after MCV1. In settings where utilization of health services drops considerably after the first year, ensuring caregivers bring their babies for the second dose at 18 months, for example, is challenging and the risk of drop-outs can be quite high.

An alternative approach in these cases may be to stipulate that if a child presents **any time** between 12 and 18 months, it is better to vaccinate with MCV2 immediately, rather than hoping that they will return again at 18 months. From an immunological perspective, as long as 4 weeks has elapsed their first dose, and they are in the 2YL, then a child is already technically eligible for MCV2.

Understandably however, this may cause confusion for health workers, and a policy based on interval rather than strict adherence to a schedule may not work in all settings. Ultimately it rests with the programme to set a policy on this and ensure the proper training and tools are available to health workers to make these decisions.

Strategies to reduce drop-outs and ensure that the child returns at 18 months include:

1) providing counselling to caregivers, emphasizing the importance of MCV2 and the time to return;
2) active follow-up through a call or home visit with the caregiver to remind them about the visit;
3) in some settings, providing vaccinations at their home if they do not return at 18 months or soon after.

SECTION

9

Communication, demand promotion, and community engagement

Communication is an important factor for the success of vaccination in the second year of life and beyond. A comprehensive, but targeted, communication strategy that is fully costed and implemented, including a high visibility launch and ongoing community engagement activities, is key to promoting demand for, and generating utilization of, 2YL vaccination and other services.

To succeed in building and maintaining confidence in immunization requires a mix of approaches that focus on building knowledge and awareness, but also take into consideration the individual, social, and structural/political dynamics that shape vaccination behaviours. *Table 5* provides the key elements of a 2YL behaviour change strategy to build acceptance and uptake. It lists target groups, key areas of knowledge, and desired actions to be promoted through communication, community engagement, and other coordinated programme interventions. This information serves as the basis for deciding which materials, messages, and activities are required to promote demand for, and utilization of, 2YL services.

TABLE 5. ELEMENTS OF THE 2YL BEHAVIOUR CHANGE COMMUNICATION FRAMEWORK

TARGET GROUP	KEY AREAS OF KNOWLEDGE	DESIRED ACTIONS
Caregivers and families	• The importance of vaccination and benefits of vaccines for preventing disease/death • Vaccination continues into the 2YL • Reasons why 2YL vaccination and other well-child care beyond one year of age are important • Timing for scheduled 2YL visits • Importance of safekeeping the HBRs until child starts school and beyond	• Take children for the 2YL vaccination and other well-child services • Keep the HBR and bring it to every health contact
Health workers	• Vaccination and other services to be provided in a 2YL visit; 2YL as opportunity for catch-up vaccination • Why 2YL vaccination is important for child health • How and when to provide and record vaccinations • How and when to communicate with caregivers about 2YL services, particularly during the MCV1 visit (see *Section 8*) • How to promote 2YL services to the community	• Communicate with caregivers in the first year of life to encourage them to come for 2YL visit and retain HBR • Communicate key information during the 2YL visit • Correctly screen, provide services, record, and report data • Engage their communities to help encourage 2YL visits

TARGET GROUP	KEY AREAS OF KNOWLEDGE	DESIRED ACTIONS
District-level managers and supervisors to health workers	• Review data and identify gaps in the knowledge and skills of health workers • Provide feedback and technical support to health workers and motivate them on the importance of 2YL vaccination and other services	• Support health workers in providing high-quality services
Community health workers	• The importance of 2YL vaccination and the age to bring child for a scheduled visit • How to trace defaulters for 2YL vaccination • Other services provided during 2YL visit	• Provide key information on importance of 2YL visit and when to bring child • Mobilize families to bring their children • Trace defaulters
Community leaders and politicians (chiefs, parliamentarians, councilors, civil authorities, religious leaders)	• The importance of 2YL vaccination and the age to bring child for a scheduled visit • Other services provided during 2YL visit • When and where 2YL services are offered • Immunization is free-of-charge	• Encourage families to bring their children for 2YL services • Communicate on the importance of vaccination
The media	• The importance of vaccination and other child health services during infancy and into the second year of life • When and where 2YL services are offered • Immunization is free-of-charge	• Provide coverage on the launch of the 2YL visit • Provide accurate, timely information to the public to encourage vaccination and the use of 2YL services
Professional and medical associations	• Current science and policy considerations to inform the development of policies and practices with regard to 2YL visit	• Contribute to development of policies, guidelines and materials • Promote proper practice among constituents • Provide support to community leaders in reinforcing the importance of vaccination
Teachers, counsellors, pre-school/ day-care providers	• The importance of 2YL vaccination and other services beyond one year of age • Immunization is free-of-charge	• Encourage families to bring their children for 2YL services

The broad steps needed to plan for promoting or increasing demand for 2YL vaccination and other services are shown in *Figure 4,* and described in the sections below.

FIGURE 4. DEMAND AND PROMOTION PLANNING CYCLE

These steps are elaborated throughout the following sections.

9.1 Data collection and analysis: understanding your target groups

Communication plan and working group

A multi-partner communications working group should be convened (or reconvened, if it already exists for the immunization programme in general) to develop a demand promotion plan for 2YL vaccination.

Though the plan should address the unique features and challenges of 2YL vaccination, it should also be aligned and linked with the overall communication plan for the national immunization programme. This will help ensure that communication activities, messages and targeting are harmonized and support the strengthening of routine immunization. The working group should coordinate closely with others planning the aspects of 2YL to ensure that their work is mutually reinforcing and technically consistent.

The 2YL communication plan should agree on the key audiences and stakeholders, communication needs and desired actions by each group, tailoring it from *Table 5*, as needed. This information serves as the basis for deciding which materials, messages, and activities are needed to promote uptake of 2YL services, and accordingly which data and background information is necessary to shape these efforts.

Data collection and analysis

Initial data collection and analysis is essential to understand the reasons why different target groups would, or would not, carry out the desired actions in *Table 5*.

A situation analysis and a behavioural analysis (for example, a Knowledge, Attitudes, and Practices (KAP) study, or other similar research activity) can together identify the barriers that need to be addressed and the factors that promote the desired intentions

and behaviours. They can also provide key information to decide how messages should be worded and the appropriate materials, media, and channels for reaching each target group. This helps ensure that resources are used effectively and efficiently. For example, brochures or posters about 2YL vaccination could be found to be less important to caregivers than having health workers use the opportunity of the MCV1 visit to provide reminder messages and to note the return date for 2YL vaccination on the child's HBR. In such cases, resources might be better spent on health worker capacity-building and the design of the HBR.

Understanding health worker views about 2YL vaccination, including their perceptions of obstacles and enabling factors, is particularly important. Health workers are the most frequently cited source of vaccine information, and a recommendation by a health worker is one of the strongest factors associated with vaccine acceptance. They have a key role to play in interpersonal communication with caregivers on the need for, and timing of, the 2YL visit. Information collected on health worker perspectives about 2YL vaccination should feed directly into the design of the training curriculum, supervision instruments, job aids, data management tools, and communication messages and materials.

9.2 Strategic design and planning

Involvement of key stakeholders

As with any new development in the health system, the engagement of well-known, credible national level stakeholders is important to focus the public's attention on the topic and create trust. For introducing 2YL vaccination or increasing attention to it, planners should reach out to well-known health officials and trusted political, community, and academic leaders. Medical associations, schools and daycares, civil society organizations (CSOs), and NGOs are other influential players whose show of commitment to 2YL vaccination and other services can encourage appropriate actions among their constituents and communities. Communication planners should engage with them, provide them with talking points or other materials, and jointly identify specific opportunities, such as press conferences, launch ceremonies, or annual meetings, for demonstrating their support for 2YL vaccination.

Community engagement

Depending on the community structures and leaders that are active and functional in a given area, different types of volunteers or community members have a role to play in supporting 2YL vaccination. They can be engaged to provide reminder messages, trace defaulters, and keep community attention focused on the 2YL visit after it is launched.

District health and community development teams should identify community networks that are actively functioning and outline a realistic set of steps for CHWs or volunteers to carry out to support the 2YL visit. Printed reminder materials or other aids should be developed for this purpose that give information on all components of the 2YL visit, not just vaccination.

Community members can also assist health care providers to select where and when to provide outreach services and how to reach the most marginalized or underserved populations. These are groups for which the risk of non-use of 2YL services is the highest.

The following checklist can help ensure that all the key steps of the communication planning process are followed.

BOX 8. COMMUNICATION PLANNING CHECKLIST

- ☐ **Is there a government-endorsed, multi-agency communications working group in place to support the 2YL visit?**
- ☐ **Has a situation analysis been completed?**
- ☐ **Has a behavioural analysis been completed?**
- ☐ **What messages and materials are required?**
- ☐ **Has a plan of action (budgeted) been developed?**
- ☐ **Have you secured funding for the implementation of the plan?**
- ☐ **Have the communication products/materials been pre-tested?**
- ☐ **Is there a distribution plan for the materials?**
- ☐ **Is there a crisis communication plan, including explicitly agreed partner roles and responsibilities, and does it include the relevant elements for 2YL?**
- ☐ **Have agreed spokespeople been identified and trained?**

9.3 Development and testing of messages and materials

Messages and materials

All messages and materials should clearly state when caregivers should take their children for 2YL vaccination and what they can expect to receive during the 2YL visit.

Suggested content of key messages to support 2YL vaccination, tailored to different audiences, is shown in *Table 5*. These messages should be adapted and pre-tested before incorporating them into communication materials, training, or radio or TV spots. Additional messages specific to MCV2 are found in *A guide to introducing a second dose of measles vaccine into routine immunization schedules*.[31]

Community networks have a key role to play in supporting the 2YL platform and communicating the importance of the 2YL visit as part of a continuum of care for the entire first five years of the child's life.

31 www.who.int/immunization/documents/WHO_IVB_13.03/en/, p. 27.

TABLE 6. EXAMPLES OF KEY MESSAGE TOPICS TO SUPPORT 2YL VACCINATION

AUDIENCE: HEALTH WORKERS
The reasons to provide vaccination and other child health interventions after one year of age.
The age at which vaccinations in the 2YL are scheduled to be given and the importance of providing doses of antigens missed in the first year of life.
There is no upper age limit or cut-off for most vaccines. "It is never too late to vaccinate."
During the MCV1 visit, the need to inform the caregiver when to bring the child back for 2YL vaccination and discuss why it is important.
A child can only be considered fully immunized when they have received all doses, including those scheduled to be given after one year of age. Coverage of the 'FIC' indicator must include vaccinations given in the second year of life, or be separated by age categories (i.e. FIC by 1 yr year, FIC by 2 yrs).
The other services to provide during the 2YL visit, e.g., growth monitoring and promotion, nutritional counseling.
How to respond to caregivers with any questions or concerns about vaccination
AUDIENCE: COMMUNITIES AND CAREGIVERS
To be classified as fully vaccinated, children need to have completed the required schedule of vaccinations during infancy, 2YL and beyond, as necessary.
The age at which vaccinations in the 2YL are scheduled to be given and the importance of catching up on any vaccines missed in the first year of life.
There is no upper age limit or cut-off for most vaccines. "It is never too late to vaccinate."
The importance of keeping the home-based record throughout childhood and bringing it for each contact with the health system.
The benefits to the child (and family) of receiving vaccination and other services into the 2YL.

9.4 Implementation and monitoring

A strong communication plan cannot be successful unless it is fully executed. This means:

- the strategic plan must be fully budgeted with funds secured well in advance of the launch in order to produce sufficient supplies of materials;
- materials and messages must be translated into the commonly used local languages as needed;
- materials must be systematically disseminated to intended audiences at the appropriate time, in advance of when they are to be used;
- messages for health worker interpersonal communication with mothers must be finalized in time for them to be incorporated into training materials, and the training designed in such a way that permits adequate time for health workers to practice these communication skills.

Formal launch for 2YL visit

Lessons learned from past introductions of MCV2 indicate that it is important to **conduct a formal launch for the 2YL** visit to raise awareness, convey key information, demonstrate high-level political and community support from credible spokespersons, and promote the use of the 2YL services.

The engagement of influential community leaders must begin well before the launch takes place. They need to understand why the 2YL visit is being introduced, how it benefits their community, and what actions they can take to support its success. This engagement should continue on a regular basis, even after the launch, to ensure that relationships are maintained and that community leaders are able to continue to advocate for vaccination.

The 2YL visit should be positioned as part of a continuum of care for the entire first five years of the child's life. The introduction of the 2YL visit is an opportunity to highlight the importance of services that have been available in the past but have not been fully utilized.

Following the launch of the 2YL visit

Communication officials at the national level of the immunization programme should continue to interact with counterparts at subnational level to monitor the implementation of the communication plan and to enquire about any issues or obstacles that may be emerging so that corrective actions can be taken.

9.5 Evaluation and re-planning

In keeping with the overall communication strategy for immunization and child health, monitoring and evaluation of communication efforts should be carried out by the working group on a regular basis. Based on the data gathered and reviewed in Step 1 above, indicators or measures should be established – covering both process, outcomes, and impact – that can be tracked through implementation of the various communications and engagement activities. The findings should be used to inform decisions about the corrective actions to take.

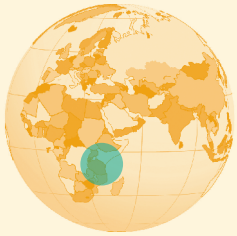
BOX 9. EXAMPLES OF POTENTIAL OUTCOME INDICATORS TO EVALUATE COMMUNICATION AND DEMAND PROMOTION ACTIVITIES

- **% caregivers with correct knowledge of the schedule and timings of when a child needs to be brought for vaccination in the first two years of life**
- **% caregivers who say they intend to fully vaccinate their children, including the 2YL visits**
- **% vaccinators with correct knowledge of the national schedule**
- **% vaccinators who consistently and correctly communicate to caregivers the timing of the infant's next visit for vaccination, including the 2YL visits**

To evaluate communication and demand promotion activities, it is ideal to carry out a survey or rapid research exercise targeting caregivers, health workers and, potentially, community leaders or stakeholders. Such an assessment will provide a systematic and structured approach to learning about what people know about 2YL vaccination, how they developed this knowledge, what they think it means, and whether they intend to take the desired actions. The findings should inform adjustments to communications or demand promotion strategies, so that they may be more targeted or impactful in future. If resources are not available for a large-scale study, then the points raised in *Section 10* can be used to understand reasons for low demand and utilization of 2YL vaccination.

COUNTRY EXPERIENCE

RAISING AWARENESS ABOUT IMMUNIZATION AFTER ONE YEAR OF AGE IN TANZANIA



United Republic of Tanzania's post-introduction evaluation for MCV2 revealed that many parents interviewed were not aware of the need for further vaccination after their children received MCV1 at nine months. Although children were supposed to attend clinics for growth monitoring after they were one year old, mothers no longer considered it important to come for these monitoring visits.

Health officials raised community awareness about the need for vaccination and other services beyond the first year of life through:

- broadcasting radio and TV spots;
- conducting a seminar with journalists from various local media to get the word out;
- conducting meetings on MCV2 with regional primary health care committees;
- providing health education about MCV2 to women who attended antenatal and postnatal care visits.

SECTION

10

Strengthening 2YL vaccination performance

10.1 Understanding the reasons for low performance

If the national immunization programme and partners observe that 2YL vaccination coverage is low and that the MCV1-MCV2 drop-out rate is high, they should systematically review existing data and assess the situation to identify key problems and their root causes. Decisions on how to use resources to improve the situation should be based on these findings, rather than assumptions that the problem is due, for example, to low demand or insufficient vaccine supply. A starting point would be to review the quality of the reported data to determine if it can be considered complete, timely, reliable, and accurate.

- **At national level,** review the geographic scope of the 2YL performance problem. If widespread, then examine system-wide factors, including the following.

1.	Are policies and guidelines complete, clear, accurate, and easy to understand and use?
2.	Have policies and guidelines been disseminated systematically?
3.	Does the training curriculum cover all key points and use effective methods for adult learning?
4.	Has the training strategy reached all vaccinators and their supervisors? Are there any known shortcomings in how it has been implemented?
5.	Were supervision instruments updated to include 2YL vaccination, and have they been widely disseminated and used?
6.	Were data management tools updated, and do they support all aspects of the policy and guidelines? Did they include input from end-users or pre-testing to determine how easy they are to use? Have they been disseminated systematically?
7.	Has there been a high-visibility launch to focus attention on the introduction of 2YL vaccination? Was the communication strategy for 2YL vaccination sufficiently developed, budgeted, and carried out as planned?

If the problem of 2YL vaccination performance is localized to particular geographic areas, then follow-up with health officials from those subnational/district teams is necessary, as well as visits to facilities to gain a first-hand understanding of the problems and their root causes.

- **At subnational/district level,** review data to see how geographically widespread the problem is. If it is widespread, review factors that may affect 2YL vaccination, including the following.

1.	Have there been shortages or stockouts of the vaccines used for immunization in the second year of life?
2.	Are there challenges with human resources that would affect 2YL vaccination, such as insufficient staffing or high turnover? Have health workers received training on 2YL vaccination? Has the district provided supportive supervision or other feedback/post-training support since the initial training was conducted?
3.	Are there any particular circumstances or characteristics of the population in this district that would pose challenges to 2YL vaccination, e.g. population movement, high levels of employment of mothers after the child is one year of age, remote populations with difficult access to facilities or to information about changes in the vaccination schedule, lack of social support systems, or vaccine hesitancy?
4.	Have updated data management tools been systematically introduced to all facilities, or are old forms and tools still widely in use?
5.	What issues or problems with data quality have been observed? Have data quality assessments been carried out to assess the reliability and consistency of data on 2YL vaccination? What are the findings and what corrective actions are needed?
6.	Have community leaders and influential persons been educated on the need for 2YL vaccination and why it is important? What actions do they take to encourage families to seek vaccination after one year of age?
7.	Are there functional systems of CHWs or volunteers in the district who have been oriented on 2YL vaccination? Do they know how to trace defaulters and encourage families to bring their children for 2YL vaccination? Do they regularly carry out these tasks?

- **At health facility level,** discuss 2YL vaccination with health workers and with caregivers at the facility and in the community.

Health worker interviews. Questions to ask health workers include the following.	
1.	Tell me what you know about 2YL vaccination? How, or from whom, did you learn these things?
2.	How frequently are you visited for supportive supervision? If you have a question about something, who do you ask for support or where do you seek help?
3.	Do you know your facility's coverage for 2YL vaccination and MCV1-MCV2 drop-out rate?
4.	If 2YL vaccination rates are low, what are the reasons?
5.	Are any reference materials on 2YL vaccination (e.g. field guide, training materials, job aids) available at the facility?
6.	When is a child considered fully immunized – after they have received which doses of vaccine?
7.	Have there been stockouts or shortages of the vaccines used for 2YL vaccination?
8.	Does the health facility have a system for tracing defaulters, particularly for 2YL vaccination? What is the system and how well does it work?
9.	What information do you give to caregivers who bring children for the MCV1 visit?
10.	What do you do if a child is brought "late" for vaccination? Are there any circumstances where you would send away an unvaccinated child who has been brought for vaccination? What are they? Do you believe that there are upper age limits for 2YL vaccination? What are they?
11.	If a child comes to your facility for vaccination in the second year of life, do they receive other services as well? What are they? Are they always available?
12.	Are updated recording and reporting forms (HBRs, tally sheets, registers, monthly summary reports) available at the facility? If yes, what are the steps for recording and reporting 2YL vaccination? Do caregivers bring updated HBRs? If not, are 2YL doses recorded on the HBR? *[Ask to see samples of recording and reporting tools and ask where the 2YL vaccinations are recorded]*

13.	Has any comparison been done of 2YL data recorded on tally sheets, monthly reports, child registers, and HBRs, as part of a data quality assessment? If so, what have the findings indicated?

Exit interviews. Health officials can visit several facilities, on days when routine immunization sessions are being held, and interview caregivers whose children have received MCV1. Questions to ask caregivers include the following.

1.	Has your child received all vaccines in the national immunization schedule or do you need to bring your child back for more doses of vaccines?
2.	*[If applicable]*: Are you able to tell me when you will bring your child next time and which vaccines he/she should recieve at that time?
7.	What, if anything, would make this difficult for you? What would make it easier?

Community discussions. Visit communities and ask community members what they know about vaccination in the second year of life.

1.	By what age should a child have completed the full vaccination schedule?
2.	If a child receives measles by the time he/she is one year old, do you need to bring the child back for more vaccinations? At what age?
3.	[For those who know about 2YL vaccination]: How did you learn that you needed to take your child for immunization after one year of age?
4.	If you brought your child for 2YL vaccination, what was your experience? Which vaccines did you receive? Did your child receive other services? Do you need to return for further vaccinations?
5.	If your child is over the age of two and you did not bring them for 2YL services, what were the reasons?
6.	What would help you to bring your child for 2YL services? [Probe: reminder materials; a visit by a CHW; more information about why it is needed]

Without conducting a major assessment, health managers can add some of the above questions to their supportive supervision visits and augment them by conducting exit interviews with caregivers whose children have just been vaccinated. They can also do exit interviews with mothers who have brought young children for curative care, or other preventive services, to see if they were screened for

immunization and vaccinated. During supervision visits, district health officials can talk with community leaders who may provide insight as to the level of awareness of 2YL vaccination among the community.

Additional guidance on how to integrate a small assessment to strengthen 2YL performance into a national immunization programme review is included in the WHO *Guide for conducting an Expanded Programme on Immunization (EPI) review*.[32]

During supervision visits, health managers can speak with mothers whose children have just been vaccinated, or who have brought young children to the health facility for other services, and ask if they were screened for immunization.

10.2 Taking actions to address the problems

The findings from the reviews described above should be used to decide what steps to take to strengthen 2YL vaccination. Health managers should convene a discussion to review the problems and their root causes in order to identify solutions and develop a plan for implementing them.

Table 7 presents several illustrative examples of possible actions that programmes can take to improve 2YL performance.This list is not exhaustive; rather, it is intended to stimulate thinking about solutions that can be implemented using existing resources or with limited additional funds. Furthermore, the most appropriate actions to take will depend upon a deep understanding of the problems and of the context in which they occur.

32 Guide for conducting an Expanded Programme on Immunization (EPI) review. Geneva: World Health Organization; 2017. www.who.int/immunization/documents/WHO_IVB_17.17/en/

TABLE 7. COMMON PROBLEMS AND POSSIBLE ACTIONS TO STRENGTHEN 2YL VACCINATION

PROBLEMS /ISSUES	EXAMPLES OF POSSIBLE ACTIONS
Persistent low coverage and high drop-out rates	• Mobilize CHWs or volunteers to trace defaulters and encourage 2YL vaccination among community members. • Improve the convenience of locations for outreach sessions so that it is easier for caregivers or mothers of two year-old children to bring them for vaccination. • Consider offering routine immunization sessions at fixed facilities at a time of day that is more convenient for mothers of older children.
Outreach sessions are not conducted as often as planned	• Compare actual outreach sessions conducted during the last six months with the number of scheduled outreach sessions in the microplan. If there is a clear discrepancy, find out why the outreach is not being implemented.
Stockouts of vaccines and supplies	• Review the availability of vaccines needed for 2YL vaccination at all levels to ensure that sufficient supplies are available. • If concerns over high wastage rates are deterring health workers from opening a vial of MCV for small numbers of children, review national policies on this topic and reinforce during supportive supervision visits. Remind health workers that 2YL vaccination may result in lower levels of MCV vaccine wastage.
Deficiencies in health worker practices	• Address health worker motivation: recognize and praise those who have achieved high coverage. Ask them to share their experience through peer learning with health workers at other facilities. Remind health workers of the reasons for 2YL vaccination and note that immunization programme performance is also based on coverage with vaccinations given after one year of age. • Provide on-the-job training during supportive supervision visits to address the deficiencies. • If shortages of human resources are contributing to suboptimal health worker performance (overburdened staff), review the possible role of volunteers to help assume some of the less technical duties. However, recognize that volunteers need technical orientation and management, and that their contribution is voluntary. • Refer to Section 8.4 for more possible actions, e.g. WhatsApp groups, telephone hotlines, SMS texting to reinforce key points.

PROBLEMS /ISSUES	EXAMPLES OF POSSIBLE ACTIONS
Problems with screening, recording, reporting doses	• Review data management instruments and revise, if needed, to make them more user-friendly, to enable proper practice for screening, recording, and reporting. • Ongoing supervision and feedback on how to use the data collection instruments. • Job aids, hotlines or WhatsApp groups to help address particular problem areas, e.g. difficulties with screening, recording, reporting. • Conduct data quality assessments and use the findings to correct particular problems and monitor progress.
Low awareness or demand for 2YL vaccination	• Strengthen health worker skills in interpersonal communication to remind caregivers when to return for vaccination in the second year of life. • Engage community leaders to get the word out to families about when and where to go for 2YL vaccination and why it is important. Use the occasion of community meetings to give feedback on coverage for 2YL vaccination and discuss how to improve it. • Work with local NGOs to explore how they can support 2YL vaccination; for example, by mobilizing resources for outreach sessions in convenient locations in the community. • Re-launch 2YL through high-visibility activities such as press conferences, ceremonies, meetings, radio, SMS, etc. • Use radio talk shows to discuss 2YL vaccination and increase attention around the need for 2YL vaccination. Develop songs or memorable jingles that can be broadcast to remind communities of the need for 2YL vaccination.

Annex 1a: Example of minimum standard tally sheet for vaccination[33]

Date: _____ Region: _____ District: _____ Health Facility: _____

Service Delivery Strategy: ◯ fixed ◯ outreach ◯ mobile Location: _____

ANTIGENS/ ITEMS	0-11 MONTHS	TOTAL	12 MONTHS OR OLDER	TOTAL	TOTAL VACCINATED
BCG	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
Hep B BD	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○				
OPV 0	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○				
OPV 1	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
OPV 2	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
OPV 3	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
IPV	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
Penta 1	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
Penta 2	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
Penta 3	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
Rota 1	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
Rota 2	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
Rota 3*	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
PCV 1	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
PCV 2	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
PCV 3	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
M/MR 1	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
M/MR 2			○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
DTP4/ Other*			○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
Vitamin A	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		
Long lasting insecticidal net*			○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		

**depending on national health priorities and schedule of services*

33 As described in *Section 7*

Annex 1b: Example of best practice tally sheet for vaccination[33]

Date: _____ Region: _____ District: _____ Health Facility: _____

Service Delivery Strategy: ◯ fixed ◯ outreach ◯ mobile Location: _____

ANTIGENS/ ITEMS	0-11 MONTHS	TOTAL	12–23 MONTHS	TOTAL	24 MONTHS OR OLDER	TOTAL	TOTAL vaccinated
BCG	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○		
Hep B BD	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○						
OPV 0	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○						
OPV 1	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○		
OPV 2	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○		
OPV 3	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○		
IPV	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○		
Penta 1	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○		
Penta 2	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○		
Penta 3	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○ ○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○		
Rota 1	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○				
Rota 2	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○				
Rota 3*	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○				
PCV 1	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○		
PCV 2	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○		
PCV 3	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○		
M/MR 1	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○		
M/MR 2			○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○		
DTP4/Other*			○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○		
Vitamin A	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○		
Long lasting insecticidal net*			○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		○○○○○ ○○○○○ ○○○○○ ○○○○○		

**depending on national health priorities and schedule of services*

33 As described in *Section 7*

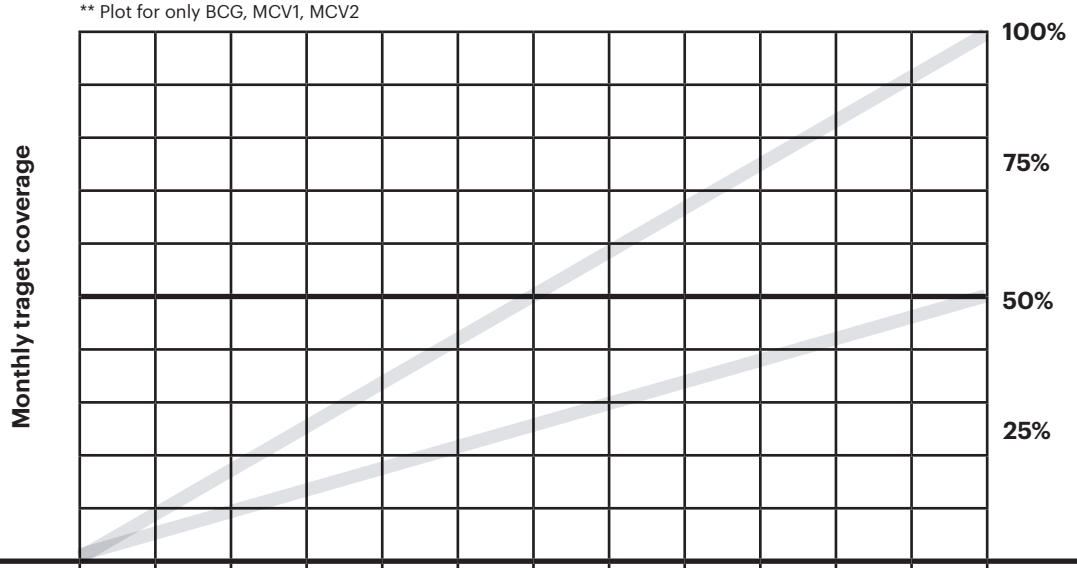
Annex 2: Immunization monitoring chart showing MCV1-MCV2 drop-out

Health Facility: _____

Year: _____

Annual target population (0-11 months): _____
Annual target population (12-23 months): _____
Minimum coverage target for the year—BCG: _____
Minimum coverage target for the year—MCV1: _____
Minimum coverage target for the year—MCV2: _____

** Plot for only BCG, MCV1, MCV2



Vaccine	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
BCG													Total immunized this month
A													Cumulative total for the month
MCV1													Total immunized this month
B													Cumulative total for the month
MCV2													Total immunized this month
C													Cumulative total for the month

BCG-MCV1 DROP-OUT RATE = $\frac{A-B}{A} * 100$

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

MCV1-MCV2 DROP-OUT RATE = $\frac{B-C}{B} * 100$

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

A drop-out more than 10% is an indication for immediate action

Annex 3: Scenarios for vaccination in the second year of life

(for use in training and supervision)

Vaccinators encounter many situations where they are not sure what to do if the child has missed previous doses, has come late for vaccination, or lacks a home-based record.

The following are real situations that have been reported from different countries.

These scenarios are based on a schedule that includes MCV1 at nine months of age and MCV2 at 18 months of age. They should be adapted to fit the appropriate vaccine schedule and country context.

These scenarios can be used during training for interactive discussions and skill building for proper screening, administration, recording, and reporting of doses. In each case, trainers can show just the first two columns, or print out hard copies of the scenarios and ask training participants to review them in pairs. Afterwards, discuss as follows.

- Do you think the health worker did the right thing?
- If not, what should have been done differently?
- How could this problem be prevented?

The third and fourth columns are for use by training facilitators and supervisors. The third column provides the correct response. The fourth column presents some possible responses that can be further developed and discussed.

FOR TRAINING PARTICIPANTS

SCENARIO	HEALTH WORKER "INCORRECT" RESPONSE
1. A child is brought late for MCV1 at 14 months of age	The health worker vaccinates the child and records and reports the dose as MCV2 because the child is over one year of age. The health worker believes that only doses given under one year of age can be considered as MCV1.
2. A child is brought for his first dose of MCV at 18 months of age (the time of the scheduled MCV2 visit)	The health worker vaccinates the child and records and reports the dose as MCV2 because the child has come at the time when MCV2 is scheduled to be given.
3. At a rural facility with infrequent outreach and few children seen before the age of 12 months, a 15-month old boy is brought in who has never received measles vaccine.	The health worker believes the child is not eligible for MCV1 because he is too old to receive it. She also believes he is not eligible for MCV2 because he has not received MCV1. So she sends him away without vaccinating him against measles.
4. Children at one clinic are often brought for MCV1 at 10, 11, 12, or 13 months of age.	The health worker tells the mothers to come back 9 months later for MCV2, believing that it is the 9-month interval and not the target age (of 18 months) that is important.
6. A child is brought for MCV2 at 3 years of age. The child has already received MCV1 at 9 months.	The health worker does not vaccinate the child because they are older than 23 months.
7. A child is brought for MCV2 at 2-1/2 years of age. The child has already received MCV1 at 9 months.	The health worker vaccinates the child but records the dose on a special register so that it is not included in estimates of coverage.
8. The health worker says that she cannot provide a measles second dose because she has no "MSD" vaccine.	The health worker does not provide a second dose of measles to any children.
9. A child is brought for MCV2 at 18 months. The mother does not have a vaccination card but remembers that her baby received MCV1 soon before he started walking.	The health worker vaccinates him but records it as MCV1 and tells the mother to come back in one month for MCV2.

These scenarios are based on a schedule that includes MCV1 at nine months of age and MCV2 at 18 months of age.

FOR TRAINING FACILITATORS AND SUPERVISORS

	WHAT SHOULD THE HEALTH WORKER HAVE DONE?	HOW COULD THIS PROBLEM BE PREVENTED? (for discussion)
1.	She should have given the vaccine and recorded the dose as MCV1 in the column of the tally sheet for "12 months or older" or "12-23 months" and advised the caregiver to bring the child back for a scheduled MCV2 visit at 18 months.	• Proper training and supervision for immunization after one year of age • Well-designed tally sheet • Job aid to promote correct screening, recording, reporting
2.	She should have given the vaccine and recorded the dose as MCV1 in the column of the tally sheet for "12 months or older" or "12-23 months." She should have advised the caregiver to bring the child back for MCV2 after 4 weeks.	• Proper training and supervision for immunization after one year of age • Well-designed tally sheet • Job aid to promote correct screening, recording, reporting
3.	She should have vaccinated the child and recorded the dose as MCV1 in the column of the tally sheet for "12 months or older" or "12-23 months" and advised the caregiver to bring the child back for a scheduled MCV2 visit at 18 months.	• Proper training and supervision to emphasize that it is better to vaccinate late than to send a child away unvaccinated • Well-designed tally sheet • Job aid
4.	She should have advised the caregivers to bring their children back for MCV2 at 18 months of age.	• Training and supervision to emphasize that it is the age of vaccination that is most important, as long as there is one month minimum interval between MCV doses.
6.	She should have given the child MCV2 and recorded the dose as MCV2 in the column of the tally sheet for "12 months or older" or "24 months or older"	• Training and supervision to emphasize that the need for MCV does not stop at 24 months (no upper limit – all children need 2 doses of MCV), and it is better to vaccinate late than to send a child away unvaccinated • Well-designed tally sheet
7.	She should have recorded the dose as MCV2 on the column of the tally sheet for "12 months or older" or "24 months of older"	• MOH needs to design the tally sheet to permit recording and reporting of doses given to children 24 months or older
8.	She should have provided MCV2 doses to all eligible children who are over the age of one.	• Field guide, training, supervision, data recording forms, social mobilization should use more familiar convention of numbered doses (e.g. measles1/ measles2, MR1/MR2) for measles or measles rubella
9.	She should have first checked the child's age and vaccination status in the child health register to ascertain whether the child received MCV1 at or soon after 9 months. If no record is found, then the health worker response was correct. A new vaccine card should have been provided. If a record is found, the health worker should have given MCV2, and transferred the information from the registry to a new vaccination card.	• Field guide should provide clear guidance on what health workers should do in the absence of an HBR or record of the child in the health facility register.

Annex 4: Illustrative example of job aid on screening for vaccine eligibility

The sample job aid is adapted from Timor Leste (IMMUNIZATIONbasics, 2007) and is based on a child immunization schedule that calls for BCG and hepatitis B at birth; Pentavalent, oral polio vaccine (OPV), pneumococcal conjugate vaccine (PCV), and rotavirus (RV) doses at 6, 10, and 14 weeks; inactivated polio vaccine (IPV) at 14 weeks; MCV1 at nine months; and MCV2, MenA and DTP4 at 18 months of age. Please adapt this document to match your local immunization schedule.

This, along with other 2YL tools and resources, can be found at www.who.int/immunization/programmes_systems/policies_strategies/2YL/en/

Instructions:

Step 1: Praise the parent or caregiver for bringing their child for vaccination today. Find out from the child's immunization record or the caregiver:

1. How old is the child today?
2. Which vaccines has the child already received? (Check the home-based record or child register)

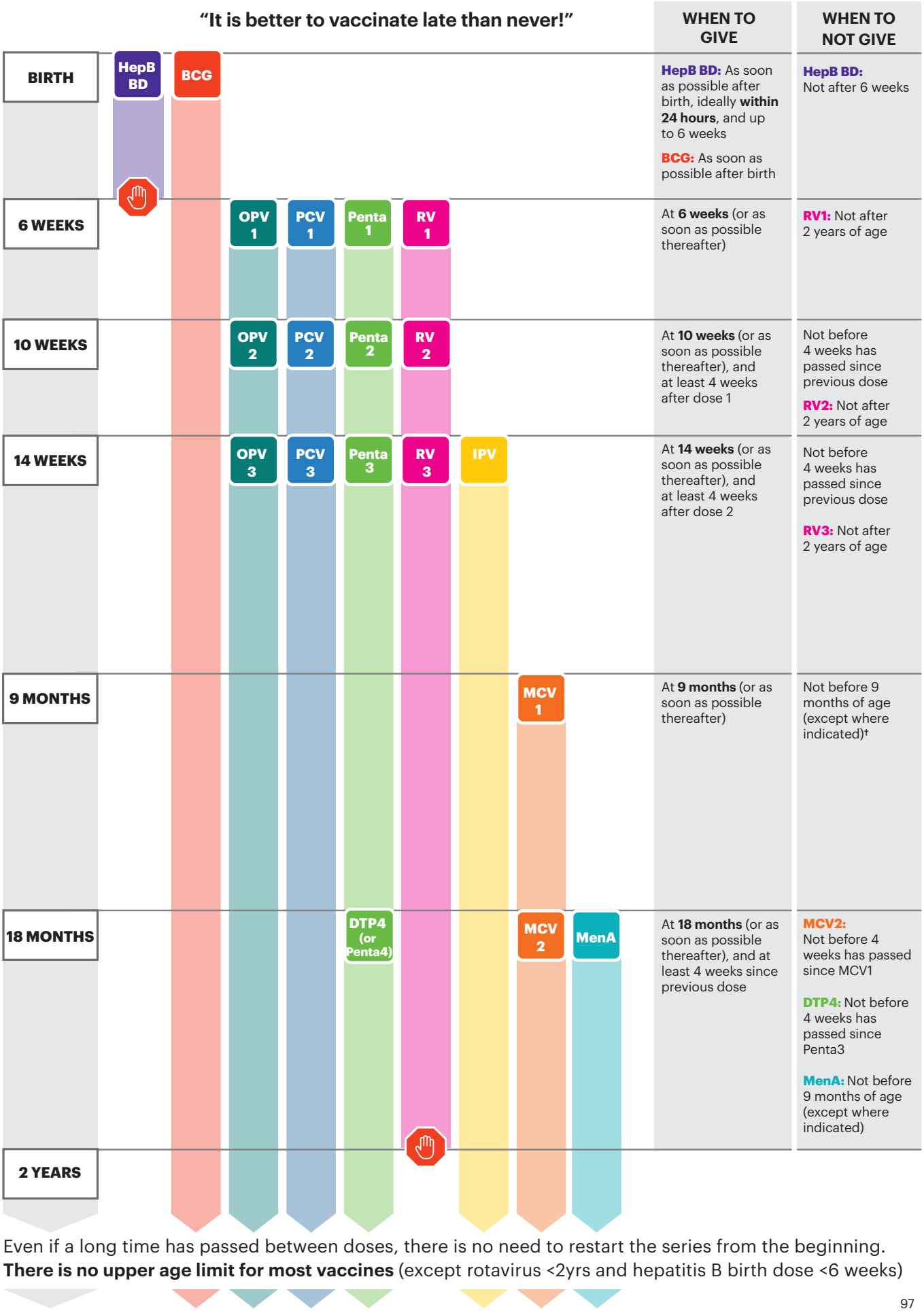
Step 2: Use the chart to the right to decide what to give. The child should already have received all vaccines due up until their current age. If they are missing doses, it is not too late. Administer the vaccines for which they are eligible, respecting the necessary spacing (see far right column).

Step 3: Remind the caregiver when to bring the child back for the subsequent doses due. Take this opportunity to emphasize the importance of receiving the complete series of vaccines for the child to be fully protected.

† In certain situations, MCV can be given from 6 months of age. This dose should be considered a zero dose ("MCV0") and two subsequent doses (MCV1 and MCV2) should still be provided according to the national schedule.
Measles vaccines. Position paper. Geneva: World Health Organization; 2017 (www.who.int/immunization/policy/position_papers/measles/en/).

WHICH VACCINES CAN BE GIVEN TODAY?

Use this chart to determine which vaccines should be given to a child at or after a specific age.



Even if a long time has passed between doses, there is no need to restart the series from the beginning.
There is no upper age limit for most vaccines (except rotavirus <2yrs and hepatitis B birth dose <6 weeks)

Annex 5: Frequently asked questions about vaccination in the second year of life

The following questions can help health workers respond to questions about vaccination in the second year of life or later.

1. Why is it important to vaccinate children after their first birthday?

Both the level of protection and the duration of immunity are increased by providing additional doses of vaccine after the child has reached one year of age. This means that older children will continue to be protected from many vaccine-preventable diseases.

For measles, a second dose ensures early protection of the individual child and also reduces the rate of accumulation of susceptible children and the risk of an outbreak.

2. Which vaccines, and at what age, should children receive vaccines after the first year of life?

This depends on the schedule of the national immunization programme in each country.

- WHO has recommended that all countries provide a second dose of measles-containing vaccine after one year of age. Many countries schedule it in the second year of life.
- WHO also recommends a booster dose of vaccine containing diphtheria, tetanus, and pertussis, to be given in the second year of life.
- Other vaccines that may be scheduled between 12-23 months include those against meningitis A, Japanese encephalitis, typhoid and yellow fever.
- Many countries also recommend catch-up vaccination to provide doses of vaccines missed in the first year of life.

3. Are there some vaccines or doses that should not be given to a child in the second year of life or later?

Vaccination in the second year of life is an opportunity to increase the level and duration of protection against vaccine preventable diseases. If children

34 Available at: www.who.int/immunization/documents/positionpapers/en/

are missing doses of certain vaccines that they should have received in the first year of life, in general, it is better to vaccinate late than never. There are certain exceptions as indicated in the national immunization schedule and noted in WHO position papers.[36] These are:

- Birth doses of hepatitis B vaccine should be given only in the newborn period, as stipulated in the national policy.
- Rotavirus vaccination after 24 months is not considered necessary because of the age distribution of rotavirus gastroenteritis.

4. On what occasions should a child over one year of age be vaccinated?

- When they come for a scheduled vaccination visit according to the national immunization schedule
- Any time they are in contact with the health system, including if they come for curative care. Mild illness is not a reason to deny vaccination to a child, and screening sick children for immunization eligibility is a standard component of IMCI. If children have been brought for growth monitoring and nutritional counselling, this also provides an opportunity for screening and vaccinating them. Another opportunity for screening and vaccination is if the child has accompanied one of their family members, such as a sibling or mother, coming for care.[35]
- During a scheduled Child Health Week, or other similar campaign or event in which catch-up vaccination is provided.

5. What messages should the mother or caregiver be given during their infant's last vaccination contact before reaching one year of age?

For most children, the measles contact is the last vaccination visit before the child reaches one year of age. During that visit, the health worker should make sure to inform the mother as follows.

- It is important for her child to come back at the scheduled time [depending on the national vaccination schedule] to receive the remaining doses of vaccine to be given in the second year of life. Unlike in the past, the child cannot be considered fully immunized until they receive these recommended vaccine doses as well.

35 For more information, refer to the WHO missed opportunities for vaccination (MOV) strategy. Available at: www.who.int/immunization/programmes_systems/policies_strategies/MOV/en/

- These additional doses will provide stronger and longer-lasting protection against important childhood diseases. With additional doses, this protection will last beyond early childhood.

- Be sure to keep the home-based record, such as vaccination card, in a safe place and bring it the next time they come for vaccination, and any time they come to a health facility for services.

- She should bring her child for vaccination at the next scheduled time [specify the date]. However, if she is unable to come at that time, to come as soon as possible thereafter.

6. If a child comes for services substantially later than the scheduled time, should they still be vaccinated?

Yes. While timely vaccination as soon as the child is eligible is highly desirable to reduce potential exposure to disease, it is always important that the child receive protection from vaccination and not be sent away if they come for vaccination late. With very few exceptions, as explained in Question 3 above, it is "better to vaccinate late than never".

7. If a child comes late for the 2YL vaccination visit and they are older than 23 months, should the dose be recorded as given in the second year of life (12-23 months)?

- Always record and report the dose accurately so that it corresponds to the age at which the child actually received it. This will depend on how the tally sheets and monthly reporting forms are designed.
- If they contain two age groups ("0-11 months" and "over 12 months"), then record the doses as being given "over 12 months".
- If they contain three age groups ("0-11 months", "12-23 months", and "24 months or over"), then record the doses as being given at "24 months or older".

8. Is it safe to vaccinate children after one year of age? Are there any additional risks?

It is safe and there are no additional or different risks to vaccinating children after one year of age compared with vaccinating them during infancy.

9. What other services or care can the child receive when they come for vaccination in the second year of life?

- Growth monitoring and promotion, nutritional counselling, advice on hygiene and sanitation, and, depending on national policies, vitamin A or deworming medication can be provided during a visit for vaccination in the second year of life.
- Some countries may decide to provide additional services, such as follow-up on early infant diagnosis of HIV/AIDS, or family planning services for mothers.

Tables

Figures

www.who.int/immunization/programmes_systems/policies_strategies/2YL/en/

This document provides practical guidance on establishing and strengthening immunization in the second year of life (2YL) and beyond. It also suggests ways that immunization visits during the 2YL can be used as a platform for delivery of other child-health services.

For tools and resources on immunization in the 2YL, please visit www.who.int/immunization/programmes_systems/policies_strategies/2YL/en/

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