



# Immunization



at a glance

## Why is immunization of high priority?

**Immunization** deserves high priority, especially in developing countries, for three main reasons:

- Vaccine-preventable diseases disproportionately affect the poorest fifth of the population;
- Immunization is among the most cost-effective health interventions, has had a major impact in reducing the burden of disease, and the benefits are public goods; and
- Newer vaccines, and those under development, have the potential to prevent diseases, e.g., tuberculosis, malaria, and human immunodeficiency virus (HIV), that currently cause an enormous burden of disease.

Communicable diseases, many of which are vaccine-preventable, account for 77% of the mortality gap and 79% of the disability-adjusted life years (DALY) gap, between the world's poorest and richest 20%.

The Expanded Programme on Immunization (EPI), targeting mainly six communicable diseases of childhood, reduced the share of these six diseases in the total burden of disease among children under five from about 23% in the mid-1970s, to less than 10% in 2000. To fully immunize a child against the six diseases costs about US\$17, making immunization one of the most affordable interventions available. Most vaccines cost under US\$50 per DALY gained.

Malaria, tuberculosis, and HIV are responsible for more than five million deaths each year, and all are potentially preventable by vaccines. Rapid scientific progress suggests that an effective vaccine is likely to be available for at least one of these diseases in the next decade.

**The gains** from additional investments in immunization services and research and development (R & D) for new vaccines include:

- Narrowing the burden of disease gap between the richest and poorest segments of the population;
- Contributing to health sector reform and development efforts;
- Savings of \$1.5 billion annually from completing the eradication of polio;
- Substantial reduction in the burden of disease by making effective, under-used vaccines widely available, e.g., vaccines against Hepatitis B, *Haemophilus influenzae type b*, and yellow fever;
- Reducing the burden of disease from conditions such as Vitamin A and iodine deficiencies, by expanding the coverage of these interventions as components in immunization services, in countries where they are highly prevalent.

Immunization is acknowledged to be among the most cost-effective and highest-impact health interventions. Nearly 3 million deaths are prevented each year by immunization, and an even greater amount of illness and disability. An additional 3 million deaths a year could be prevented by existing vaccines.

**What to do about Immunization** The table below summarizes the core immunization interventions, the intended beneficiaries, and key indicators to track achievement of objectives

Objectives	Core Interventions	Beneficiaries/ Target Groups	Indicators
<b>Reduce vaccine-preventable disease and disability</b>	<p><b>Prevent six communicable diseases of childhood as well as tetanus in adulthood, including maternal tetanus</b></p> <p>The EPI package of vaccines against diphtheria, tetanus, pertussis (whooping cough), polio, measles, tuberculosis, and Hepatitis B</p> <p>The EPI immunization schedule* is:</p> <ul style="list-style-type: none"> <li>✓ Birth – BCG (TB), OPV-0 (polio)</li> <li>✓ 6 weeks – DTP-1 (diphtheria, tetanus and pertussis), OPV-1, Hep B-1</li> <li>✓ 10 weeks – DTP-2, OPV-2, Hep B-2</li> <li>✓ 14 weeks – DTP-3, OPV-3, Hep B-3</li> <li>✓ 9 months – Measles</li> <li>✓ Women of reproductive age – 2 doses tetanus toxoid</li> </ul> <p><small>*Dosage and timing of immunizations may vary slightly in some countries.</small></p>	<p>Children under five and women in the reproductive age group</p>	<ul style="list-style-type: none"> <li>✓ Reduction in vaccine-preventable deaths</li> <li>✓ % of children under 12 months fully immunized for DTP</li> <li>✓ % of children under 12 months immunized for measles</li> <li>✓ % of districts that have achieved 80% coverage</li> </ul>
<b>Prevent other selected diseases, where they are causing a large disease burden</b>	<p>Introduce or scale up under-used vaccines, such as those against Hepatitis B, <i>Haemophilus influenzae</i> type b, and yellow fever</p>	<p>Target groups vary according to the epidemiological situation and program implementation capacity: usually infants for Hepatitis B and for <i>Haemophilus influenzae</i> type b, and people of all age groups living in countries at risk for yellow fever</p>	<ul style="list-style-type: none"> <li>✓ % of target group immunized against each selected disease</li> </ul>
<b>Reduce vaccine-preventable diseases and major associated conditions</b>	<p>Include vitamin A supplements with routine immunization visits where this deficiency is prevalent: for postpartum mothers (within 60 days of birth) and twice yearly for children 6-59 months; vitamin A can be added to mass immunization campaigns (such as polio NIDs, measles campaigns, Child Health Days, etc.) Give high-dose treatment for clinical signs of vitamin A deficiency and other severe health problems (see <i>Nutrition at a glance</i>)</p>	<p>Susceptible groups, especially young children and post-partum women</p>	<ul style="list-style-type: none"> <li>✓ % of children, 6-59 months, receiving vitamin A supplements</li> <li>✓ prevalence of night-blindness in the population (symptom of vitamin A deficiency)</li> </ul>

## Simplified assessment of national immunization services

The following questions are intended to provide a quick overview of national immunization systems. Answers to the questions should be readily available from the Ministry of Health (MOH) or World Health Organization (WHO). A “no” answer to any question indicates that corrective action is needed (including possible World Bank support).

### Infrastructure

1. Is there an individual in the MOH designated with responsibility and authority to achieve immunization system goals?
2. Is there a multi-year plan of action for the immunization services specifying both vaccine coverage and disease reduction goals?
3. Is there a line item in the MOH budget to support the immunization services?
4. Are the immunization services reaching at least 80% of children nation-wide?
5. Is the vaccine used of assured quality (e.g., procured from a pre-qualified source or through UNICEF, or regulated by an independent and fully functional National Regulatory Authority)?
6. Has an injection practices assessment ever been conducted? If so, have the findings led to changes in policy (e.g., WHO-UNICEF-UNFPA joint policy statement WHO/V&B/99.25 on the use of auto-disable syringes in immunization services and the gradual phasing out of standard disposable and sterilizable syringes)?
7. Is the vaccine management system adequate (e.g., stock management, cold chain, wastage, use of vaccine vial monitors and other indicators)?
8. Are opportunities to integrate other health interventions (such as vitamin A) with immunization services, being used effectively?
9. Do the MOH staff responsible for immunization services at district-level receive training and refresher training regularly (i.e., does the MOH have a human resources development strategy for immunization services)?
10. Is there a communications strategy and an implementation plan for raising awareness about the need for immunization services?

### Disease prevention/control

11. Is the country on track to achieve polio eradication?
12. Is the surveillance system functioning well (e.g., standard case definition in use, at least 80% completeness of reporting from established reporting sites, and feedback information being provided by the central levels to peripheral levels on system performance)?

### Introduction of new vaccines

13. Do estimates of the disease burden for Hepatitis B, yellow fever, and *Haemophilus influenzae* type b exist or are there plans to carry out disease burden studies?
14. Does the multi-year immunization plan include a plan and funding for introducing new vaccines?

## Do's and don'ts in national immunization systems:

- **DO** take advantage of the potential of immunization to strengthen and reform the health system, e.g., by facilitating decentralization, and strengthening surveillance systems, and **DON'T** make it a vertical program.
- **DO** focus on strengthening routine immunization, but **DON'T** forget that supplementary immunization campaigns are important to mobilize communities and achieve certain accelerated disease control initiatives of international importance.
- **DO** take advantage of the high degree of national and international collaboration and ownership of immunization as a good model for overall health sector development.
- **DON'T** forget that NGOs and the private sector are key participants in immunization coalitions: for social mobilization, in public-private partnerships for vaccine R & D, and for giving immunizations.
- **DON'T** assume that vaccines for developing countries will be developed, marketed, and used, without a major international effort, like the one pioneered by WHO and UNICEF, and being extended by the Global Alliance for Vaccines and Immunization (GAVI).
- **DO** remember the importance of high quality immunization coverage data, now a key indicator for Poverty Reduction Strategy Papers (PRSPs), and an important component of debt relief (HIPC) efforts.
- **DO** remember that a continuous supply of vaccines of assured quality is essential.
- **DON'T** forget that managerial skills are essential, for example, to maintain the cold chain, supervise staff, plan resource mobilization, etc.
- **DO** seek opportunities for immunization to be discussed in the macro-policy dialogue with governments, and in World Bank country assistance strategies; this helps to extend discussions to finance and planning ministries which play a key role in financial sustainability.
- **DO** take advantage of the fact that immunization is one of the interventions in the Integrated Management of Childhood Illness (IMCI) package.
- **DO** remember the importance of reliable surveillance to assess the overall impact of immunization systems and to identify outbreaks, areas of high-risk, and/or weak system performance.

## Resources ready to help with immunization projects

- *World Bank Regional Immunization focal points* (Africa—Christy Hanson; EAP—Puti Marzoeki; ECA—Nedim Jaganjac; LAC—Ruth Levine; MENA—Maryse Pierre-Louis; SAR—Benjamin Loevinsohn) and the Anchor (Amie Batson, and Joe Naimoli, CDC Secondee), who can make available technical information, technical assistance, and funds for studies and project preparation
- **GAVI**: Amie Batson (Financing Task Force co-chair), Laura Cooley (Advocacy Task Force) or Tony Measham (Country Coordination Task Force) for contacts and resources
- Bank-financed immunization projects recommended for adaptation in other settings: the FY1999 Bolivia Health Sector Reform project, and the FY2000 India Immunization Strengthening project

## Key web sites

- GAVI: [www.vaccinealliance.org](http://www.vaccinealliance.org)
- The Bill and Melinda Gates Children's Vaccine Program at PATH: [www.ChildrensVaccine.org](http://www.ChildrensVaccine.org)
- WHO: [www.who.int/vaccines](http://www.who.int/vaccines)
- Centers for Disease Control and Prevention: [www.cdc.gov/NIP](http://www.cdc.gov/NIP)
- World Bank: [www.worldbank.org/vaccines](http://www.worldbank.org/vaccines)

## Key references

- S.A. Plotkin, Orenstein, W.A., eds. *Vaccines*, Third edition. W.B. Saunders, Philadelphia, 1999.
- A.R. Hinman, "Eradication of vaccine-preventable diseases", in Fielding, J., ed, *Annual Review of Public Health*, 20:211-229, 1999.
- William Foege, "The Power of Immunization", in *The Progress of Nations*, 2000, UNICEF, New York, pp 19-21.
- WHO, Product Information Sheets, WHO/V&B/00.13, 2000.
- WHO, *Safety of injection: WHO-UNICEF-UNFPA Joint Statement on the use of auto-disable syringes in immunization services*, WHO/V&B/99.25, 1999.
- *Integrating Vitamin A with Immunization: An Information and Training Package* (A CD-ROM produced by WHO and Helen Keller International, 2000).

Expanded versions of the "at a glance" series, with e-linkages to resources and more information, are available on the World Bank Health-Nutrition-Population web site: [www.worldbank.org/hnp](http://www.worldbank.org/hnp)