



Selected vaccine introduction status into routine infant immunization worldwide, 2003

This report summarizes the current status of national immunization schedules in 2003, as reported by WHO Member States in the WHO/UNICEF Joint Reporting Form. Acknowledging the diversity of national immunization schedules, the report aims at describing the general situation and trends of most common vaccines introduced into infant immunization schedules worldwide. The report does not review specific issues on the vaccines presentations and timing. It should be noted that the introduction of a vaccine into a routine national immunization schedule does not mean that the entire population targeted has access to the vaccine. Hence, immunization schedules should be reviewed together with vaccine coverage achievements (see section reference pp34) to best understand the degree of access to a particular vaccine. While the analyses in this report are broken down by WHO region, additional analyses are presented using the development status categorisation which is described on page vii in this document.

1. Basic EPI vaccines

As a remarkable achievement of the Expanded Programme on Immunization, all 192 WHO Member States propose 1 dose of measles and 3 doses of polio, diphtheria, pertussis and tetanus vaccine before 18 months in their current immunization schedule.

Another successful achievement is the widespread use of the bacille Calmette-Guérin vaccine (BCG), for which a single dose is recommended as soon as possible after birth in population at high risk of tuberculosis infection. In 2003, the number of Member States with a routine immunization schedule including BCG at birth was 158 i.e. 82% (Table 1).

Table 1: Member States having introduced BCG vaccine into routine immunization schedule, by WHO region, 2003

WHO region	Number of Member States	Number of Member States with BCG introduced among infants (% in the Region)	Number of Member States with BCG into schedule after infancy (% in the Region)
AFR	46	46 (100)	0
AMR	35	27 (77)	1 (3)
EMR	21	18 (86)	1 (5)
EUR	52	33 (63)	3 (6)
SEAR	11	11 (100)	0
WPR	27	23 (85)	1 (4)
Total	192	158 (82)	6 (3)

Among the 34 Member States where BCG is not in the routine infant schedule, six stopped BCG routine infant vaccination recently: Austria in 1990, Denmark in 1985, Israel in 1984, Italy in 1995, Japan in 1993 and Malta in 1996. Discontinuation criteria were developed recently by the International Union against Tuberculosis and Lung Disease, largely based on low TB incidence and risk of disease.

Despite the lack of clear evidence to demonstrate the effectiveness of BCG booster doses, 25 countries currently have multiple BCG doses in their national immunization schedule. In addition, 6 other Member States propose a routine schedule with a first dose of BCG vaccination at older ages.



2. Hepatitis B introduction

Universal infant immunization is now recognised as the proper strategy for every country for the long-term control of chronic hepatitis B virus (HBV) infection and its sequelae. There is still a geographic disparity in the introduction of the vaccine into routine infant schedule by Region (Table 2).

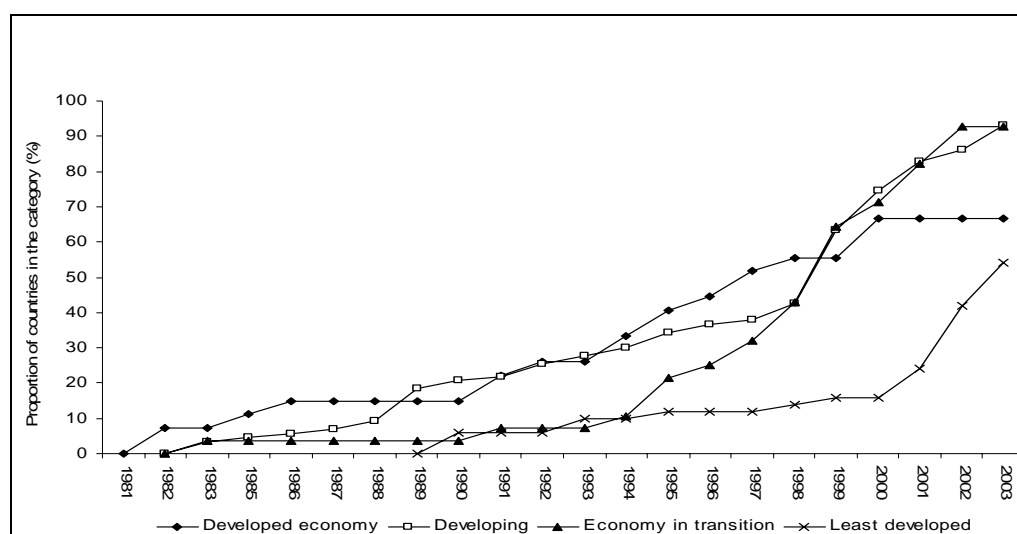
Table 2: Member States having introduced hepatitis B vaccine (HepB) into routine immunization schedule, by WHO region, 2003

WHO region	Number of Member States	Number of Member States with HepB introduced in the entire country, infant schedule (% in the region)	Number of Member States with HepB introduced in part of the country, infant schedule (% in the region)
AFR	46	24 (52)	1 (2)
AMR	35	31 (89)	0
EMR	21	17 (81)	0
EUR	52	38 (73)	0
SEAR	11	4 (36)	6 (55)
WPR	27	24 (89)	2 (7)
Total	192	138 (72)	9 (5)

In the African Region, the introduction of the hepatitis B vaccine (HepB) is lower partly because of vaccine affordability. Except for Timor-Leste, all Member States of the South-East Asia Region have introduced HepB into their routine infant immunization schedule, of which 6 introduced it recently (in 2002 and 2003) in part of the country only (phased introduction). In the European Region, 14 countries still do not have HepB in their routine infant schedule; these countries are mainly northern European countries. Within these, 5 European countries chose to give the vaccination at a later age: Hungary, Croatia, Malta, Slovenia, and Switzerland. In addition, some countries (not shown in the table) do provide HepB immunization among high risk groups only (e.g. the Netherlands, Finland ...).

The HepB vaccine first became available in 1982 and since then an increasing number of countries have adopted it. The relatively low introduction rate in countries with developed economy is largely related to the decision by European countries not to use HepB (Figure 1).

Figure 1. Year of introduction of HepB vaccine into routine schedule[§], by development status, 1981-2003



[§] Includes all Member States having introduced into routine, even if in part of the country



3. Hib introduction

WHO recommends that Haemophilus influenzae type b vaccine (Hib) should be included, as appropriate to epidemiological evidence of disease burden and national capacities and priorities, in routine infant immunization services. As of 2003, less than half of the Member States had included it (Table 3).

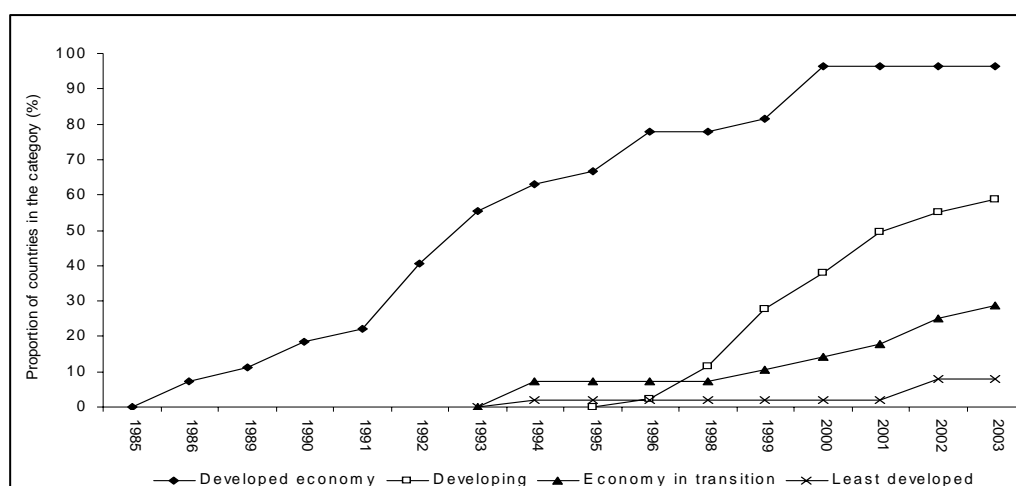
Table 3: Member States having introduced Hib vaccine into routine immunization schedule, by WHO region, 2003

WHO region	Number of Member States	Number of Member States with Hib introduced in the entire country (% in the region)	Number of Member States with Hib introduced in part of the country (% in the region)
AFR	46	7 (15)	0
AMR	35	31 (89)	0
EMR	21	10 (48)	0
EUR	52	30 (58)	2 (4)
SEAR	11	0 (0)	0
WPR	27	9 (33)	0
Total	192	87 (45)	2 (1)

While the vaccine has been successfully introduced in most of the Americas, the speed of introduction in the other Regions of WHO is impeded by lack of confidence in sustainable financing of the vaccine at its current cost (African Region), and insufficient evidence of substantial disease burden in large areas of Asia and the Newly Independent States (the latter also referred to as economies in transition countries) (Figure 2). The cost of the vaccine is significant, raising questions of public health priorities (i.e. Hib vaccine introduction versus other public health interventions).

Two countries in the European Region (Bosnia and Herzegovina and Estonia) introduced Hib vaccine in part of the country.

Figure 2. Year of introduction of Hib vaccine into routine schedule[§], by development status, 1985-2003



[§] Includes all Member States having introduced into routine, even if in part of the country



4. Yellow fever and Japanese encephalitis

Two available vaccines are recommended in routine only in countries at risk for the disease. These include yellow fever vaccine, recommended in countries "at risk", i.e. where evidence of yellow fever virus transmission has been demonstrated and where ecological factors can support yellow fever virus transmission in humans (selected AMR, EMR and AFR countries). As shown in Table 4, yellow fever vaccine has been introduced in all Member States of the Region of the Americas. Only 61% of the 31 countries at risk in the African Region introduced the vaccine while neither of the 2 Member States at risk of the Eastern Mediterranean Region (Somalia and Sudan) have done so. Moreover, a number of countries have introduced yellow fever vaccine in their routine infant immunization schedule in selected high risk districts only.

Japanese encephalitis (JE) is endemic in a number of Asian countries, but few of them have actually introduced a JE vaccine in their routine immunization schedule (Table 4). Among these, Vietnam, China, and Malaysia (Western Pacific Region) as well as Sri Lanka (South-East Asia Region) introduced the vaccine in high risk districts only. Efforts are underway to better document the burden and epidemiology of JE through improved surveillance and laboratory diagnostics. Research efforts are also underway to develop improved JE vaccines that would meet WHO pre-qualification requirements.

Table 4: Member States having introduced yellow fever and Japanese encephalitis vaccine into their routine immunization schedule†, by WHO region, 2003

WHO region	Number of Member States at risk for yellow fever	Number of at risk Member States having introduced yellow fever vaccine (% of the Member States at risk in the Region)	Number of Member States having introduced Japanese encephalitis vaccine
AFR	31	19 (61)	-
AMR	10*	10 (100)	-
EMR	2	0	-
EUR	0	-	-
SEAR	0	-	1
WPR	0	-	5
Total	43	29 (67)	6

† Countries having introduced a vaccine in part of the country only are included

* does not include French Guiana, which is considered at risk for Yellow Fever, but is classified as a reporting entity and not as a WHO Member State



5. Other vaccines

A number of effective vaccines are already available which could potentially be introduced on a large scale. Some of them have been available for many years (mumps, rubella), while some of them are more recent (conjugate vaccines). Regarding influenza and varicella, vaccines available for several years, the impact of nationwide vaccination was only recently described in a few countries.

Table 5: Number of Member States having introduced rubella, mumps, meningococcal C, influenza and varicella vaccination into routine infant or child immunization schedule, by WHO region, 2003

WHO region (number of Member States)	Number of Member States having introduced into routine infant or child schedule †					
	Rubella vaccine (% in the Region)	Mumps vaccine (% in the Region)	Meningococcal C conjugate vaccine	Pneumococcal conjugate vaccine	Influenza vaccine	Varicella vaccine
AFR (46)	2 (4)	2 (4)	0	0	0	0
AMR (35)	34 (97)	34 (97)	1	2	1	2
EMR (21)	12 (57)	11 (52)	0	0	0	1
EUR (52)	47 (90)	48 (92)	8	1	0	0
SEAR (11)	2 (18)	1 (9)	0	0	0	0
WPR (27)	14 (52)	11 (41)	2	0	0	0
Total (192)	111 (58)	107 (56)	11	3	1	3

†countries reporting that the vaccine is recommended among high risk groups only are excluded. Countries having introduced a vaccine in part of the country only are included

The data on immunization schedules reported by Member States to WHO indicate that the number of vaccines available and introduced into national immunization schedule has increased over time, but that large disparities exist between Regions and countries (figure 3). The number of diseases that are currently covered by routine infant/child immunization ranges from a minimum of 6 (15 countries) to a maximum of 12 (2 countries).

Figure 3. Number of diseases covered by routine immunization before 24 months by WHO Member State





6. Shift towards different vaccines for the same disease

Although more costly than oral polio vaccine (OPV), inactivated polio vaccine (IPV) is being chosen by countries with high coverage to avoid the risk of vaccine-associated paralytic polio (estimated to be one per 3 million doses) in vaccines and their contacts, and to avoid the persistence of vaccine-derived polioviruses that could be neurovirulent. Some countries have fully shifted to IPV while some have introduced it in conjunction with OPV (Table 6).

Acellular pertussis (aP) vaccines are associated with less reactogenicity than whole-cell pertussis (wP) vaccines. They have a similar efficacy but are more costly so that only a limited number of countries are using it. Some have introduced it in combination with other vaccines (Table 6).

Table 6: Member States having introduced IPV and aP vaccination into routine immunization schedule, by WHO region, 2003

WHO region (number of Member States)	Number of Member States with IPV only	Number of Member States with IPV introduced (OPV still in schedule)	Number of Member States with aP introduced
AFR (46)	0		0
AMR (35)	2		2
EMR (21)	0		0
EUR (52)	17	9	24
SEAR (11)	0		0
WPR (27)	3		5
Total (192)	22	9	31



7. Measles second dose

The UN General Assembly Special Session on Children (UNGASS) and the World Health Assembly have endorsed a global goal of reducing measles mortality by 50% between 1999 and 2005. In addition, four WHO regions have defined goals of regional elimination. One of the key strategies to achieving these goals is the provision of a second opportunity for measles immunization through either a second dose in the routine immunization schedule or through supplementary immunization activities (Table 7).

Table 7: Member States having introduced 2 doses of measles vaccine in the routine immunization schedule and/or a second dose opportunity*, by WHO region, 2003

WHO region (number of Member States)	Measles elimination planned in the Region by	Member States with 2 doses of measles vaccine in schedule (% in the Region)	Member States with second opportunity* (% in the Region)
AFR (46)	mortality reduction goal	6 (13)	28 (61)
AMR (35)	2000	24 (69)	35 (100)
EMR (21)	2010	14 (67)	18 (86)
EUR (52)	2007	51@ (98)	51 (98)
SEAR (11)	mortality reduction goal	2 (18)	6 (55)
WPR (27)	2012‡	18 (63)	25 (93)
Total (192)	-	115 (59)	163 (85)

@ Italy not included. A 2 dose schedule will be introduced by 2004

‡ Year still to be discussed by the Regional Committee

* Defined as a 2 dose routine measles schedule and/or the conduct of a national measles immunization campaign achieving $\geq 90\%$ coverage in children under 5 years of age within the last 4 years

Conclusions

This summary describes the large variability in national immunization schedules. Access to immunization is a function of both immunization schedules and levels of immunization coverage achieved throughout the country. Therefore, both must be addressed to have an impact on morbidity and mortality. This summary describes the status of the former issue, while levels of immunization coverage are described in summary and for each Member State throughout this global summary. There remains great potential to further reduce morbidity and mortality through more widespread introduction of currently available vaccine and improved coverage, particularly in Asia and Africa.