

The Monitoring & Evaluation / Accountability Framework for the Global Vaccine Action Plan

2: The monitoring indicators

Background

The [Global Vaccine Action Plan](#) (GVAP) presented to the World Health Assembly (WHA) contained a set of indicators against each Goal and Strategic Objective (SO). Targets were also established for each of the goal indicators. The GVAP indicators were developed initially by the Decade of Vaccines Collaboration (DoVC) working groups and then subjected to a web-based review and prioritization, as well as reviews at a special SAGE meeting and by the DoVC Steering Committee. The indicators were also submitted to consultation by civil society, over 600 people from the DoVC distribution list, and the pharmaceutical industry (represented by International Federation of Pharmaceutical Manufacturers & Associations (IFPMA), BIO and Developing Countries Vaccine Manufacturers Network (DCVMN)).

Review and update of monitoring indicators post-WHA

Following the GVAP endorsement at the WHA, an informal consultation was convened to review and refine the existing indicators, develop operational definitions for each indicator, define the source(s) of data if they exist, or how they may be collected, and to establish baselines, milestones and targets, as appropriate. Participants at this consultation included members of the original DoVC M&E working group (WG), with additional participants (see Annex 1) representing the polio eradication and the measles and rubella initiatives, those representing the GVAP Leadership Council (LC) agencies (WHO, UNICEF, Bill & Melinda Gates Foundation, GAVI Alliance secretariat and NIAID), US Centers for Disease Control and Prevention, Measure DHS, and Departments of Health Statistics and Informatics, and Maternal Neonatal Child and Adolescent, respectively, in WHO.

Additional consultations were held by in person, by phone or online with the following groups:

1. Members of the DoV R&D WG, for the R&D related indicators.
2. The SAGE WG on Vaccine Hesitancy, for the indicator for Strategic Objective (SO) 2.
3. Project OPTIMIZE (WHO/PATH), for the indicator on innovations in immunization delivery systems.
4. UNICEF Supply Division and the Quality Standards & Safety (QSS) team in IVB, for the indicator on vaccine supply and access.

The updated indicators with operational definitions were shared with the CSO constituency, the WHO Regional Offices, key development partners, and with IFPMA, BIO, and DCVMN and more than 600 people from the DoVC distribution list for additional feedback and inputs.

The following principles were applied in the process to update the monitoring indicators:

1. The goals and strategic objectives were not subject to change.
2. The indicators for the goals and strategic objectives could be refined or reformulated, though the intent behind the original indicator needed to be retained as far as possible.
3. The operational definitions would provide the required specificity to measure and report on each indicator and would also assist in determining the feasibility of measuring the indicators and additional burden in monitoring them.
4. In reformulating the indicators, due attention would be paid to ensure that an excessive reporting burden would not be imposed on countries and consideration would be given to the resource requirements for monitoring the indicators.
5. For some indicators, a level of judgment would still be required to assess whether the target was met or not, e.g. whether a new vaccine developed addressed the public health needs of all countries, specifically low and middle income countries. This judgment would be left to the review process where progress against the indicators is reviewed (e.g. by the SAGE Decade of Vaccines WG and SAGE at the global level).
6. While milestones to track progress through the decade are relevant for some indicators, for others, tracking trends would be more appropriate.
7. There may be a need for a mid-term review (in 2015) and reset of the indicators and targets.

For the details of the indicators, with operational definitions, sources of data, targets and milestone, please refer to the accompanying spreadsheet.

Issues for SAGE consideration

This section highlights some of the main changes or revisions to the GVAP indicators where feedback is specifically sought from SAGE.

Goal indicators

G 1.1: *Interrupt wild poliovirus transmission globally*

G 1.2: *Certification of poliomyelitis eradication*

The target years for interruption of wild virus transmission and certification of polio eradication were revised to align them with the latest target dates set by the Polio Eradication Initiative. The revised target date for interruption of wild virus transmission is 2014 and for certification of eradication is 2018.

G 3.1: *Reach 90% national coverage and 80% in every district or equivalent administrative unit for diphtheria-tetanus-pertussis-containing vaccines*

G 3.2: *Reach 90% national coverage and 80% in every district or equivalent administrative unit for all vaccines in national programmes, unless otherwise recommended*

During the last consultation with over a 100 participants in DC on October 9, it was pointed out that the two coverage indicators, for DTP containing vaccines and for all vaccines in national immunization programmes, were actually one indicator with two targets. It was suggested that these two be merged into one indicator with two targets. The indicator would read “Reach 90% national immunization coverage and 80% in every district or equivalent administrative unit”. The targets would read: reach 90% national coverage and 80% coverage in all districts/equivalent administrative units with DTP3 containing vaccines by 2015 and for all vaccines that have been in national programme for one or more years by 2020”

There was also a call for an additional indicator on number of countries that have sustained coverage of three doses of DTP containing vaccines of $\geq 80\%$ for 3 or more years. If the current indicators 3.1 and 3.2 are merged, then this suggested indicator could be used as an additional indicator.

Another discussion item related to the Goal 3 indicators is that currently countries report on proportion of districts that have achieved $\geq 80\%$ DTP3 coverage. However, for countries where the WHO UNICEF Estimates of National Immunization Coverage (WUENIC) are different from the country reported administrative national coverage estimates, there is no valid source of data for district level coverage. The M&E WG recommends that in such countries, a coverage survey that allows measurement of district level coverage be conducted at baseline and once during the decade to monitor changes in district level coverage. This will entail large and expensive surveys in these countries. A preliminary estimate of the cost is US\$800 per district or equivalent administrative unit. Since some large countries may have over 1000 such units, the costs could go up to US\$ 1 million per survey. However, it was noted that one of the largest countries, India, does conduct periodic district level surveys. Hence, it was felt that this would be doable in other countries. Also, this may serve as an incentive for countries to improve the quality of their administrative and other data, so that these expensive surveys are not required.

SAGE is asked to consider merging current indicators 3.1 and 3.2 with two targets.

SAGE is asked to consider and make a recommendation on adding the proposed indicator on sustained coverage with 3 doses of DTP containing vaccines of $\geq 80\%$.

SAGE is asked to comment on the proposed mechanisms to collect district level coverage data, including conduct of district level surveys in countries where WUENIC does not match national reported coverage.

G 4. 1: *Licensure and launch of vaccine or vaccines against one or more major currently non-vaccine preventable diseases.*

The list of vaccines included in the original indicator was removed since it was felt that the indicator needed to be inclusive, rather than limited to a subset of diseases, as long as the licensure and launch of any new

vaccine was considered to be of significant public health value. The assessment of whether the vaccine is of public health value and whether the indicator is met may be assessed by the proposed SAGE WG that will review the progress reports of the GVAP M&A framework. The list of vaccines originally included in the indicator would be used to actively track progress in their development, though other vaccines developed during the decade would also be considered, should any be licensed for use.

It was also felt that new generation vaccines with improved product characteristics (e.g. a new pneumococcal vaccine with significantly broader coverage, or a rotavirus vaccine with higher efficacy in high child mortality settings) should be included in this indicator, since they would be preventing an additional number of cases of the targeted disease. A similar list of diseases was constructed to proactively monitor progress on a periodic basis, though other products could be considered should a vaccine be developed.

Progress reports would, therefore, provide a summary report on progress with the development of these vaccines.

SAGE is asked to comment on the proposed changes

G 4.2: Licensure and launch of at least one new platform delivery technology

The term “new delivery platform technology” was taken to represent technologies for delivering specific vaccines to an individual recipient that made the process of administration easier or more acceptable or resulted in better efficacy, antigen sparing or delivery cost savings. These will include technologies such as micro needles, cutaneous patches, aerosol delivery devices, or new adjuvants. A new indicator to represent innovations in immunization delivery systems (supply chains, ICT etc.), which would cover innovations to facilitate delivery of immunization at the population level, was added to GVAP SO6 on R&D.

Consideration was also given to the inclusion of manufacturing technologies in this category. However, on discussing how this might be monitored and reported publicly, it was felt that this would be near impossible to achieve given the confidentiality around such issues.

The current target is set as licensure and launch of **at least one** such device, with launch being defined as launch in a low or middle-income country.

SAGE is asked to comment on the proposed definition of “platform delivery technology” and the proposed target for this indicator.

G 4.3: Number of low- and middle-income countries that have introduced one or more new or underutilized vaccines

This indicator was initially under **Goal 3**, which reads “*Meet vaccination coverage targets in every region, country and community*”. After discussion with the M&E WG and with the LC Sherpas, the indicator was moved under Goal 4, which reads “*Develop and introduce new and improved vaccines and technologies*”

The target for this indicator was also revised, from 80 to 90 countries, based on the latest projections of country uptake of new or underutilized vaccines.

A new target for 2020 was established, which is that “all low- and middle- income countries have added one or more vaccines to their national programmes”.

SAGE is asked to comment on moving this indicator from G 3 to G 4 and on the proposed revision in targets.

Strategic objective (SO) indicators

SO 1.1: Domestic expenditures for immunization per immunized person

The original indicator for this strategic objective was “*Presence of a legal framework or legislation that guarantees immunization financing*”. However, at some regional consultations and at the WHA, a few Member States objected to this indicator and felt that legal framework or legislation was not required to guarantee immunization financing in their countries. This indicator was, therefore, replaced with the following indicator: “*Domestic expenditures for immunization per immunized person.*”

The original indicator may still be considered relevant and useful in some regions, where it may be used as an indicator in the regional monitoring framework.

SAGE is asked to comment and make recommendations on the change in indicator

SO 2: The SAGE WG on Vaccine Hesitancy was tasked to propose indicators for this strategic objective. The WG proposed that the indicator measure “vaccine confidence” as defined below, using the proposed indicators and sources of data:

Definition of vaccination confidence

Trust in the usefulness and safety of vaccines and in the system that delivers them. Vaccination confidence exists on a continuum and is one of the factors that influences behavior ranging from acceptance to refusal.

Global (Indicator 1):

% of countries that have assessed (or measured) the level of confidence in vaccination at subnational level with implementation of activities to improve it.

This will be collected through introduction of questions in the JRF.

Question 1:

Has there been some assessment (or measurement) the level of confidence in vaccination at subnational level in the past?

Question 2:

If yes, please specify the type and the year the assessment has been done _____

Question 3:

What action has been or will be taken to improve confidence? _____

National (Indicator 2):

% of un- and under-vaccinated in whom lack of confidence was a factor that influenced their decision.

This will be collected through introduction of questions in the JRF.

Question 1:

What is the % of un- and under-vaccinated in whom lack of confidence was a factor that influenced their decision (this applies to all vaccines)?

Question 2:

Was this % measured or estimated?

Question 3:

Any comments or specific issue?

Feedback on this indicator from JRF review meeting

The inclusion on this indicator in the JRF was discussed at the JRF review meeting that included representatives of WHO and UNICEF (from HQ and regional offices), as well as a few country immunization managers.

The group felt that question 1 and 2 for the global indicator (the 1st of the two proposed indicators) could be included. They suggested that the third question needed to be modified to require a simple “yes/no” response. A long narrative would be difficult to collect and analyse through the JRF.

They suggested that the questions for this indicator be included in select regions in 2013 (PAHO volunteered to collect the information) and then included more generally in the 2014 revision of the JRF.

The group had serious concerns about the inclusion of the national level indicator (2nd of the two proposed indicators) questions in the JRF in the absence of clear guidance on how such surveys/studies may be conducted and how the % of population with confidence in immunization would be measured. They suggested that inclusion of this set of questions in the JRF be deferred till such guidance was available.

An earlier suggestion proposed by the SAGE WG was to use the DTP1-MCV1 dropout rate as an indicator for community demand. One suggestion is to revert to this indicator, instead of using surveys, as an indicator for community demand and use DTP1-DTP3 dropout rate for monitoring SO4. However, it may be noted that in 2011, 18 countries reported a negative dropout rate for DTP1-MCV1. The majority of these

countries had high performing systems with close to or over 90% coverage with both DTP1 and MCV1; the two countries with the largest negative dropout rates were, however, those with low immunization coverage, i.e. Nigeria (-18%) and South Sudan (-6%) in 2011. This may be related to stock out of a particular vaccine (in the case of Nigeria). Seventeen countries reported dropout rates > +20%; from available data, it is difficult to determine whether this indicator measures confidence in immunization.

SAGE is asked to provide their recommendations on the proposed options for indicators for community demand for inclusion in the M&E framework.

SO 3.1: *Percentage of districts with 80% or greater coverage with 3 doses of diphtheria-tetanus-pertussis-containing vaccine*

A minor modification was made to the indicator, so it now measures % of districts with \geq 80% DTP3 coverage, rather than < 80% coverage.

It was also noted that this overlaps with the coverage indicators under GVAP goals that report on district level coverage and that this indicator could be dropped, if the number of indicators needed to be reduced.

SAGE is asked to comment as to whether this indicator should be retained.

SO 3.2: *Reduction in coverage gaps between wealth quintiles (AND another appropriate equity indicator)*

A minor modification was made to this indicator in that instead of measuring the gap between coverage in the highest and lowest wealth quintiles, it was felt that coverage gaps across the wealth quintiles should be measured since the greatest gaps may not be between the lowest and highest quintile. However, it may be noted that the related indicator monitored as part of the UNSG Global Strategy for Women's and Children's Health reports on differences between the highest and lowest wealth quintiles.

During the consultative process, the GAVI Alliance secretariat requested that all countries be asked to report coverage by wealth quintile as this was also a GAVI target. Of note, all the countdown countries are reporting DTP3 coverage by wealth quintile. CSO organizations requested that other equity indicators be added to the list.

The GAVI secretariat also suggests adding a target to this indicator as follows:

% of countries that have a disparity of <20 percentage points in immunization coverage between the lowest and highest wealth quintile: 60% by 2015 and 75% by 2020

Based on above comments, suggestion is to modify this indicator to read: *Reduction in coverage gaps between wealth quintiles (AND another appropriate equity indicator)* with targets as proposed by the GAVI Alliance secretariat.

SAGE is asked to comment and make recommendations on the change in the indicator and the proposed targets.

SO 4.1: *DTP1 to measles first dose dropout rate*

The indicator that is currently included in the GVAP is "DTP1 to measles first dose dropout rate (DTP1-MCV1)". The choice between this indicator versus an indicator that measured DTP1-DTP3 dropout rate was discussed at the SAGE special meeting. At that time the DTP1-MCV1 was preferred on the grounds that it measured dropout over a longer time interval between doses. During the post-WHA consultations, several agencies that provided feedback strongly argued for reverting to DTP1-DTP3.

An analysis of the pros and cons of the two indicators with illustrative data from countries was provided by MCHIP and is appended to this report as Annex 2.

The contents of Annex 2 were discussed by the GVAP M&E WG. The consensus of the group was that if only one indicator could be accommodated, then the drop-out rate of DTP1-DTP3 should be used, however, there was value in including both indicators.

SAGE is asked to provide their recommendations on the choice of dropout rates for this indicator or the suggestion to include both dropout rates (see related comment on using DTP1-MCV1 drop out as indicator of community demand for SO 2).

SO 4.2: *Immunization coverage data assessed as high quality by WHO and UNICEF.*

For this indicator, it is proposed that we use the Grade of Confidence (GoC) around WUENIC. This measure does not assess the quality of the administrative data, but rather, on the confidence that WHO and UNICEF have in their estimate for that country and is dependent on consistency between different sources of data that form the basis of WUENIC. The GoC was first published in 2012 and may be subject to slight modifications based on early experience.

A comment was made that, given current status the target of 100% countries with high GoC was too ambitious. Alternative targets suggested were: 50% of countries have high GoC by 2015 and 75% by 2020.

SAGE is asked to consider and make a recommendation on the change of target for this indicator

SO 4.3: There were several requests to include a surveillance indicator to replace the indicator on immunization financing moved to SO 1. The following indicator is proposed:

"Number of countries that have established surveillance, with laboratory confirmation, for invasive bacterial diseases and rotavirus diarrhoea and report data to WHO"

The data required to monitor this indicator is collected through the JRF currently and reports to WHO through the surveillance databases.

SAGE is asked to consider and make recommendations on the inclusion of this indicator as a marker or immunization systems strength.

SO 5.1: *Percentage of doses of vaccine of assured quality, produced, procured and used worldwide*

The indicator *"Percentage of routine immunization costs financed through government budgets"* was deleted. Instead an indicator that monitored total government expenditures was used to frame **SO 1**. It was felt that the % of routine immunization expenditures financed through the government budgets would change as and when countries introduced a new, expensive vaccine with GAVI support and this change may not necessarily reflect a decline in country commitment to immunization. Hence, the decision to just monitor country expenditures per target person and monitor trends in a particular country over time under SO 1.

The second original indicator *"Installed capacity for production of universally recommended vaccines within five years of licensure/potential demand"* was also deleted as further discussions indicated that the process to monitor this indicator would be very labour intensive and expensive.

These two indicators were replaced by the following indicators:

SO 5.1: *Percentage of doses of vaccine of assured quality, produced, procured and used worldwide*

SO 5.2: *Sufficient doses procured to meet stated program requirements*

However, UNICEF SD indicated that the proposed indicator SO 5.2 could not be monitored for self-procuring countries and it would not be possible to track this for all countries. It is proposed that this indicator be dropped. Thus, this SO will have only one indicator, i.e. SO 5.1.

SAGE is asked for their recommendation on the proposed indicator

SO 6: The R&D core group felt that under innovations, indicators should monitor three areas of work, namely vaccine development, innovations in vaccine delivery systems, and research capacity.

SO 6.1: *Progress towards development of HIV, TB, and malaria vaccines*

There was discussion whether the indicator SO 6.2 should be merged with this one, but it was decided to retain these as two independent indicators. For this indicator a vaccine with proof of concept of efficacy > 75% was retained as an aspirational target, though there were comments that this target was unlikely. The proposed SAGE DoV WG would make a decision whether progress was sufficient to determine whether this indicator was met and no specific operational definition was established for what constituted "proof of concept". Biennial progress reports would consist of data on number of clinical trials of these vaccines with a narrative report describing progress.

SO 6.3: *Progress towards institutional and technical capacity to make vaccines and/or carry out related vaccine clinical trials*

The indicator originally read “Progress towards institutional and technical capacity to make vaccines and/or carry out related vaccine clinical trials, operational and organizational research”. It was felt that it would be very labour intensive to monitor all these types of research. Instead it was decided to focus on capacity to conduct vaccine clinical trials as a surrogate for research capacity and track this using the international clinical trial registries. Negotiations are on-going to see if criteria to assess quality of the clinical trial may be included in the registries.

SAGE is asked to comment on the reformulated indicator

SO 6.4 & 5: It was felt that innovations in immunization delivery systems should also be added to the strategic objective, instead of limiting it to include only vaccine development. The OPTIMIZE project was asked to propose indicators and have proposed the following two for consideration.

SO 6.4: *Number of vaccines that have either been re-licensed or licensed for use in a controlled temperature chain (CTC) at temperatures above the traditional 2-8 C range*

It is proposed that this indicator be monitored by seeking information through NRAs that are considered as fully functional.

SO 6.5: *Number of vaccine delivery technologies (devices & equipment) that have received WHO pre-qualification compared to the 2010 baseline*

The WHO PQS database will be used to track this indicator. The following devices will be considered:

1. Refrigerators and freezers
2. Cold boxes and vaccine carriers
3. Coolant packs
4. Temperature monitoring devices

Whether or not the pre-qualified device is considered innovative will be determined by the proposed SAGE DoV WG that will review progress reports.

SAGE is asked to provide recommendations on inclusion of one or both of above indicators in the GVAP M&E framework

Specific issues for SAGE consideration:

GVAP Goals

G 3.1 & 3.2: SAGE is asked to consider merging current indicators 3.1 and 3.2 with two targets
SAGE is asked to consider and make a recommendation on adding the proposed indicator on sustained coverage with DTP containing vaccines of $\geq 80\%$

G 3.1: SAGE is asked to comment on the proposed mechanisms to collect district level coverage data.

G 4.2: SAGE is asked to comment on the proposed definition of “platform delivery technology” and the proposed target for this indicator

G 4.3: SAGE is asked to comment on moving this indicator from G 3 to G 4 and on the proposed revision in targets

GVAP Strategic Objectives

SO 1.1: SAGE is asked to comment and make recommendations on the change in indicator

SO 2: SAGE is asked to provide their recommendations on the proposed options for indicators for community demand for inclusion in the M&E framework

SO 3.1: SAGE is asked to comment as to whether this indicator should be retained

SO 3.2: SAGE is asked to comment and make recommendations on the change in the indicator and the proposed targets

SO 4.1: SAGE is asked to provide their recommendations on the choice of dropout rates for this indicator or the suggestion to include both dropout rates (see related comment on using DTP1-MCV1 drop out as indicator of community demand)

SO 4.2: SAGE is asked to consider and make a recommendation on the change of target for this indicator

SO 4.3: SAGE is asked to consider and make recommendations on the inclusion of this surveillance indicator as a marker or immunization systems strength

SO 5.2: SAGE is asked for their recommendation on the proposed indicator

SO 6.3: SAGE is asked to comment on the reformulated indicator

SO 6.4 & 6.5: SAGE is asked to provide recommendations on inclusion of one or both of above indicators in the GVAP M&E framework

Annex 1

Informal Consultation of Developing a Monitoring and Accountability Framework for the Global Vaccine Action Plan (GVAP)

June 25-26 June 2012

Geneva

List of Participants

Logan Brenzel (by phone) Consultant Bill & Melinda Gates Foundation
David Brown UNICEF
Peter Hansen (was unable attend) Head, Monitoring and Evaluation Policy & Performance GAVI Alliance Secretariat
Rouslan Karimov Statistics & Monitoring Specialist, Immunization UNICEF
Altat Lal (was unable attend) Consultant Decade of Vaccines Collaboration
Chung-Won Lee Lead, Strengthening the Quality and Use of Immunization Data (SQUID) Team Global Immunization Division Centers of Disease Control
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Annex 2

GVAP proposed indicator for monitoring drop-out rates: pros and cons of different options

(prepared by MCHIP 30 September 2012)

A set of indicators has been proposed to monitor the implementation of the GVAP. The indicators will be discussed at the November 2012 meeting of the WHO Strategic Advisory Group of Experts (SAGE). As an indicator for the GVAP SO, "Strong immunization systems are an integral part of a well-functioning health system," DTP1 to measles first dose (MCV1) drop-out rate is being considered in the draft M & E plan.

Selecting the most appropriate drop out rate is important, since a focus on drop out at higher levels (global and regional) will continue to validate the importance for national and sub-national levels to actively monitoring their own drop out data to improve their programs. A high drop out rate is generally considered to be a composite indication of multiple failures in the immunization services, reflecting problems in the system, supply, demand, and quality of services.

For over a decade, most countries have been monitoring drop-out rates based on DTP1 to DTP3. The proposal to replace that indicator with DTP1 to MCV1 raises a number of concerns. A comparison of the pros and cons of the two indicators is provided below. A general premise here is that in order to get an estimate of the full magnitude of the problem, underestimating the drop out rate should be avoided.

DTP1 – DTP3 drop out rate ("DTP" refers to vaccine products containing the DTP antigens, for example pentavalent vaccine)

Pros:

1. Measures the ability of the immunization system to reach a child multiple times with the same antigen(s), specifically DTP-containing vaccine.
2. DTP1-DTP3 drop out measures the same delivery system multiple times, thereby giving insight into factors that may hinder caregivers to continue utilizing a delivery system.
3. Drop out between DTP1 and DTP3 is also a better indirect measure of timeliness of coverage during the first year of life than DTP1-measles because many countries currently give MCV1 starting from 12 months. And the number of countries shifting the starting age for MCV1 from 9 to 12 months is expected to increase, as coverage rates at 9 months of age reach high levels.
4. DTP1 and DTP3 are given only through routine immunization and not as supplemental doses. Therefore they describe the routine immunization system.
5. DTP-containing vaccine is a proxy for pentavalent vaccine, which most (but not all) countries use. DTP1-DTP3 drop out rates also provide essential managerial and effectiveness information relevant to pneumococcal conjugate vaccine, which follows the same vaccination schedule as DTP and which an increasing number of countries will be introducing during the GVAP timeframe.
6. The DTP1-DTP3 drop out rate provides information that bridges two broad areas of the GVAP: strengthening routine immunization and introduction of new vaccines.
7. While DTP3 is not the final antigen/dose in the immunization schedule, it has been noted for years that in countries with weaker immunization programs, DTP3 coverage is actually lower than measles coverage. (See Figure 1 and Tables 1 and 2 for data from the African Region.) Thus in countries with weaker systems, the drop out rates for DTP1-DTP3 would, paradoxically, be higher than for DTP1-measles and therefore give a better idea of the magnitude of the drop out rates. More than 60% of surviving infants in AFR live in countries where measles coverage is higher than DTP3 coverage. For AFR and SEAR as a whole, measles coverage is higher than DTP3 (75% vs. 71% in AFR; 79% vs. 75% in SEAR). For other WHO regions, DTP3 is either slightly higher or the same as measles coverage. Globally measles coverage is higher than DTP3 coverage (84% vs. 83%).
8. DTP1-DTP3 drop-out is one of the key indicators in the GAVI monitoring and evaluation plan. As such, its value has already been debated and accepted by the GAVI Board and is part of country reporting to GAVI.
9. The Reaching Every District (RED) strategy and all countries now use coverage with DTP1 and DTP3, as well as the drop out between them, to guide program strategies.
10. Other than for short periods of time or in small geographic areas if service is disrupted, it is impossible to have a true negative drop-out rate with DTP1-DTP3. A negative drop-out rate can only be due to data quality problems.

Cons:

1. DTP3 is not the final antigen or dose in the official infant vaccination schedule when it is optimally implemented.

2. The measurement points for DTP1 and DTP3 fall relatively close together (2-4 months) when the official vaccination schedule is optimally followed, thereby focusing on obstacles in service delivery and uptake over a shorter period.
3. The DTP1-3 indicator does not give any operational information as to the progress of the measles and rubella initiative.

DTP1-measles first dose (MCV1) drop out rate

Pros:

1. Measles is the final antigen/dose in the infant vaccination schedule of most countries. Therefore in places where measles vaccine is given after DTP3, DTP1-measles drop out describes a longer period of time than DTP1-DTP3 drop out.
2. DTP1-measles is thought by some to be a better measure of overall program effectiveness whereas DTP1-DTP3 is considered by some to be a better measure of delivery effectiveness.
3. Adding an indicator on DTP1-measles introduces a measles-related indicator to GVAP monitoring, thus spanning the GVAP goals pertaining to disease elimination and extending immunization benefits to all. In that the global measles and rubella strategic plan calls for attaining high levels of population immunity through both routine immunization and SIAs, it would be useful to have a measles related indicator in the GVAP monitoring plan.

Cons:

1. It is easier to achieve single dose versus triple dose coverage, i.e., measles vs. DTP3; thus the DTP1-measles drop out rate may be artificially low, obscuring the dip in coverage between successive doses of DTP (and other vaccines such as PCV given at the same time) and thus minimizing the magnitude of the challenge facing the routine immunization program.
2. Because measles is easily recognized and feared by communities, demand for measles vaccine may be higher than for DTP, resulting in a lower drop-out rate for DTP1-measles than DTP1-DTP3 that does not capture the challenges of delivering multiple doses of the same vaccine.
3. DTP1-measles compares apples to oranges, since the service delivery systems may differ for the first dose of DTP and the first dose of measles.
4. Measles vaccine is given both through routine immunization and SIAs. There is the possibility that some supplemental doses are inappropriately counted as being given through the routine delivery service. This will become more complicated with plans to start recording measles doses administered during SIAs. Since SIAs are not conducted every year, data interpretation from year to year will become even more difficult.
5. It is possible to have negative drop-out rates for DTP1 and measles because of the different service delivery strategies. (See attached data.)
6. Monitoring DTP1-measles drop out is not included among the global indicators specified in the global measles and rubella strategic plan for 2012-2020, so DTP1-measles drop-out represents a new dimension to measles monitoring.
7. Is not clear what operational information DTP1-measles provides the measles and rubella initiative that would facilitate better programming and strategy development.

Figure 1

Comparison of 2011 DTP3 and measles coverage in the WHO/AFRO region, by category of DTP3 performance

(WHO/UNICEF estimates posted 14 July 2012)

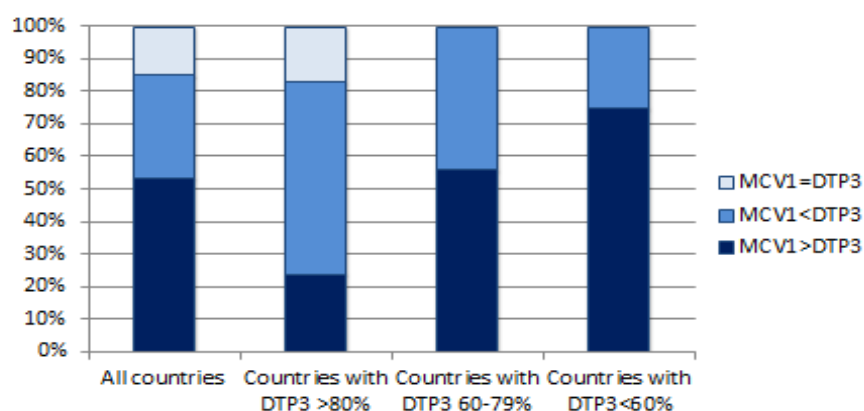


Table 1. Number of AFR Countries by Level of DTP3 Coverage and Drop Out Rates

Category of country, by DTP3 coverage	DTP3 > MCV1		DTP3 < MCV1		DTP3=MCV1
	Number of countries (%)	Mean difference and range in percentage points	Number of countries (%)	Mean difference and range in percentage points	Number of countries (%)
DTP3 ≥80% (N=29)*	17 (59%)	8 (1-28)	7 (24%)	3.3 (1-7)	5 (17%)
DTP3 60-79% (N=9)**	4 (44%)	13 (8-16)	5 (56%)	4.8 (1-10)	0 (0%)
DTP3 <60% (N=8)***	2 (25%)	5 (1-9)	6 (75%)	12 (6-24)	0 (0%)
All countries (N=46)	23 (50%)	8.4 (1-28)	18 (39%)	6.6 (1-24)	5 (11%)

*Algeria, Angola, Benin, Botswana, Burundi, Burkina Faso, Cap Verde, Comoros, Congo, Eritrea, Gambia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Namibia, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe

**Cameroon, Cote d'Ivoire, DRC, Guinea-Bissau, Mali, Mauritania, Mozambique, Niger, South Africa

*** CAR, Chad, Equatorial Guinea, Ethiopia, Gabon, Guinea, Liberia, Nigeria,

Source: WHO Coverage Estimates, accessed September 15, 2012

Table 2. Number of AFR Countries and Percent of Surviving Infants, by Level of DTP3 Coverage and Drop Out Rates

Category of country, by DTP3 coverage	DTP3 > MCV1		DTP3 < MCV1		DTP3 = MCV1	
	Number of Countries (#)	Percent of surviving infants (%)	Number of Countries (#)	Percent of surviving infants (%)	Number of Countries (#)	Percent of surviving infants (%)
DTP3 ≥80% (N=29)	17	24.7%	7	11.2%	5	6.1%
DTP3 60-79% (N=9)	4	5.0%	5	20.0%	0	0%
DTP3 <60% (N=8)	2	1.8%	6	31.2%	0	0%
All countries (N=46)	23	31.5%	18	62.4%	5	6.1%

Source: WHO Coverage Estimates, accessed September 15, 2012