Assessment of health facility data quality

Data quality report card Cambodia, 2012





Abbreviations

ANC Antenatal care

ANC1 Antenatal care first visit

ANC4+ Four or more antenatal care visits

CDHS Cambodia Demographic and Health Survey

DHS Demographic and Health Survey

DTP Diphtheria-tetanus-pertussis vaccine

DTP1 Diphtheria-tetanus-pertussis vaccine – first dose

DTP3 Diphtheria-tetanus-pertussis vaccine – third dose

HMIS Health Management Information system

IPT2 Intermittent Presumptive Treatment – second dose

NIS National Institute of Statistics

OD Operational District

OP Outpatient

OPD Outpatient Department

PHD Provincial Health Department

SD Standard deviation

UNPD United Nations Population Division

Executive summary

Health facility data are a critical input into assessing national progress and performance on an annual basis and they provide the basis for subnational/district performance assessment. This report assesses the quality of Cambodia's health facility data collected through the health management information system (HMIS) for the period January to December 2012. The assessment focuses on four dimensions of quality and within each dimension, several indicators are used to track progress and assess the quality of the facility data generated by the HMIS, for both national level and for provinces.

At the **national level**, health facility reporting produces data of good quality for most indicators of intervention coverage, but problems with the denominators for infants which seem to be too low:

- Completeness of reporting: excellent; 99.8% of facilities submitted monthly reports for the year and there were no missing/zero values at the provincial and district level for four tracer indicators (Antenatal care second visit–ANC2–, measles immunization, institutional deliveries, and outpatient department –OPD–).
- Internal consistency of the reported data: good; extreme outlying values from provinces were very
 rare, consistency over time was good, consistency between antenatal care first visit (ANC1) and
 diphteria-tetanus-pertussis vaccine first dose (DTP1) was good, and data verification showed high
 consistency between facility source documents and reported values. There were several provinces
 and Operational Districts that had poor consistency between DTP1 and DTP3 (diphteria-tetanuspertussis vaccine third dose).
- Consistency of population denominators: fair; projections are based on 2008 census with published birth and death rates; highly consistent with UN projections and high level of internal consistency; comparison with estimated number of pregnant women suggest that the national population denominators for immunization are too low.
- External comparison of coverage rates: poor correspondence with survey coverage rate for measles
 immunization but good consistency for antenatal care and health facility deliveries based on facility
 reporting.

For the assessment of performance in the 24 **provinces** and **77 ODs** shows that:

- Completeness of reporting: excellent; for all provinces and ODs.
- Internal consistency of the reported data: good; extreme outlying values were very rare, consistency over time was good, consistency between ANC1 and DTP1 was good; however, 17% of provinces and 22% of ODs had DTP3 higher than DTP1.
- Consistency of population denominators: inconsistencies at subnational level in population denominators for immunization.
- External comparison of coverage rates: poor correspondence for coverage of measles immunization, as coverage based on facility reporting was much higher than survey results, with some provinces having greater differences. Subnational correspondence with survey results has improved since 2011.

Cambodia has a well-functioning reporting system, which has performed consistently over the past years. It can be further strengthened in the following ways: (1) accelerate the inclusion of private facilities in the reporting of key health indicators; (2) assess the consistency between the revised denominators for ODs based on local population projections and census projections once revision has been completed; (3) review and improve the population denominators for immunization, looking in particular at the consistency with estimated pregnancies; (4) institutionalize the facility data verification survey.

				% of	% of ODs
			National	PROVINCES	with poor
Indic	ator	Definition	DQ Score	with poor	DQ score
			2012	DQ score 2012	2012
1	COMPLETENESS OF REPOR	RTING		Very good	
1a	Completeness of district reporting	% of monthly district reports received	N/A	N/A ^[1]	N/A ^[1]
1b	Completeness of facility reporting	% of expected monthly facility reports received	99.8%	0% ^[2]	0% ^[2]
1c	Completeness of indicator reporting (missing data for selected indicators)	% of monthly provincial/district reports that are not zero/missing values (average for 5 indicators: ANC2, measles, deliveries, OPD, malaria cases)	100%	0% ^[3]	0% ^[3]
2	INTERNAL CONSISTENCY	OF REPORTED DATA		Good	
2a	Accuracy of event reporting	% of monthly provincial values that are	3%/0.1%	33% ^[4] /4.8% ^[5]	22% ^[4] /1.3% ^[5]
Za	(moderate/extreme outliers)	moderate/extreme outliers (2 SD/3 SD or more from mean) (average for 5 indicators)	3/0/0.1/0	·	
2b	Consistency over time	Number of events for current year divided by mean of preceding 3 years (average for 4 indicators)	1.09	0% ^[6]	1% ^[6]
2c	Consistency between indicator values	Rate ratio DTP1 to ANC1: facility DTP1/ANC1 ratio divided by survey-derived DTP1/ANC1 ratio	0.91	0% ^[7]	0% ^[7]
2d	Consistency between DTP1 and DTP3	Number of DTP3 immunizations divided by the number of DTP1 immunizations (should be less than 1)	0.98	17% ^[8]	22% ^[8]
2e	Verification of reporting consistency through facility survey	% of agreement between data in sampled facility records and national records for the same facilities for 3 core indicators	0.94	N/A	N/A
				l data good, den	
3	CONSISTENCY OF POPULA	ITION DATA	probler	ms for children u subnational leve	
3a	Consistency with UN population projection	NIS (official) population projection divided by UN population	0.99	N/A	N/A
3a.1	Availability of crude birth rates and infant mortality rates	Rates used to compute target population estimates are available and clearly documented	Partially	Partially	Partially
3a.2	Consistency of local population projection (PHD and NIS)	Provincial health department (PHD) population divided by the NIS (official) population	N/A	N/A	N/A
3b.1	Consistency with survey derived estimates (estimated number of pregnant women)	Number of pregnant women derived from ANC1 survey coverage (CDHS 2010) and reported number of events, divided by the official estimate	0.96	16%	N/A
3b.2	Consistency with survey derived estimates (estimated number of children under 1 year)	Number of children under 1 year derived from DTP1 survey coverage (CDHS 2010) and reported number of events, divided by the official estimate	0.92	5%	N/A
4	EXTERNAL COMPARISON OF COVERAGE RATES		-	rences for immu overage higher t	
4a	External comparison: ANC2	Coverage from facility reports divided by survey	0.96	N/A	N/A
4b	External comparison: Measles immunization	for the most recent comparable year (2010) ^[10] Coverage from facility reports divided by survey for the most recent comparable year (2010) ^[10]	1.26	26% ^[11]	N/A
4c	External comparison: Institutional deliveries	Coverage from facility reports divided by survey for the most recent comparable year (2010) ^[10]	1.00	26% ^[11]	N/A

^[1] N/A because of web based reporting.
[2] % of provinces/districts with monthly facility reporting rates below 80%.
[3] % of provinces/districts with more than 20% zero values.
[4] % of provinces/districts with at least 5% of the values that are moderate or worse outliers (+/-2 standard deviations).

^{[5] %} of provinces/districts in which at least one of the monthly provincial values are extreme outliers in any of the 4 indicators (+/-3 standard deviations from the provincial/district mean).

[6] % of provinces/districts with at least 33% difference with the national ratio of current year to mean of preceding 3 years (mean over 4 indicators).

[7] % of provinces/districts with at least 33% difference with the national ratio of DTP3 to ANC1 coverage.

^{[8] %} of provinces/districts with the number of DTP3 immunizations over 2% higher than DTP1 immunization.

^{[9] %} of provinces with at least 15% difference between NIS and PHD population projections.

Most recent survey year was used for the comparison. If there is a significant gap between the year of survey and year of HMIS data, the two data points are not be directly comparable.
[11] % of provinces with at least 33% off the expected coverage.

Introduction

Health sector performance in Cambodia is assessed on an annual basis through the Joint Annual Performance Review and National Health Congress. Monitoring of health sector progress and performance towards HSP2 targets should be based on sound and reliable data. A number of different data sources exist for monitoring progress, such as population-based and facility-based surveys, administrative data, census data, and health facility reporting. Population-based surveys are conducted only once every three to five years and collect retrospective information. Thus surveys are not necessarily a reliable reflection of the current health situation of the population. In contrast, health facility data are collected and aggregated on a continuous basis and provide an important source of information, especially to monitor annual and subnational performance.

All health data are imperfect in some way. Data quality assessment should always be undertaken to understand how much confidence can be placed in the health data used to assess health sector performance. Population-based surveys use standard methods to assess data quality and make adjustments as needed to address problems of bias or missing values. These adjustments are carefully documented. However, such rigorous quality control mechanisms are rarely applied to routinely-collected administrative and health facility data. Yet these data are often the basis for annual monitoring; decision makers using them need assurance of their reliability and soundness.

In practice, HMIS data have a number of limitations and quality problems, such as missing values, bias, data entry and computation errors. Furthermore, when HMIS data are used to estimate population coverage rates, assumptions have to be made about the relevant denominators or target populations. These assumptions are often prone to errors. Based on the assessment of data completeness and quality, the report discusses the quality of national coverage estimates derived from the HMIS using the analysis methodology of the WHO data quality report card¹. The assessment focuses on four dimensions of health facility data quality:

1. Completeness of reporting

To be able to compute accurate population coverage rates from facility data, it is necessary that a high proportion of events (e.g. immunizations) be counted and reported through the health facility reporting system, including events occurring at public and private facilities. The completeness of reporting is analysed to determine whether there are significant gaps in the figures reported through the HMIS.

2. Internal consistency of reported data

A number of consistency checks can be applied for reported data (numerators / number of events), such as identifying outliers or checking that the number of events shows consistent trends over time. Data points flagged for inconsistencies should be investigated further and any errors identified should be fixed.

3. Consistency of denominators

To obtain accurate coverage rates, it is also necessary to have accurate estimates of target populations such as total population, number of pregnant women, and number of children under five years of age. Under-estimated population estimates will result in over-estimation of coverage rates, and vice-versa. Estimates of target populations are not collected through the HMIS, but are extensively used by the system to compute coverage rates; thus any issues with target population estimates should be identified and adjusted for if possible.

4. External comparison of coverage rates

¹ http://www.who.int/healthinfo/topics_standards_tools_data_quality_analysis/en/index.html

Population coverage rates computed from facility data should be compared to coverage rates obtained from independent data sources, such as household surveys. A high consistency between coverage rates from different sources would indicate greater reliability of the HMIS coverage rates, whereas highly disparate results would indicate the need for further investigation to determine why these disparities occur.

This report card describes the quality of the HMIS health facility data in Cambodia for January to December 2012 at the national, provincial, and the operational district levels, using a number of indicators within each of the four dimensions. Comparisons with data from 2009, 2010, and 2011 are provided where possible to track progress. The Cambodia HMIS is a web-based system², in which health facilities send monthly reports on paper to the health operational district (OD) office, where the facility-level data are entered electronically into the online database. Hospitals and large health centers with internet connections can enter their monthly reports directly into the web-based system. Once data have been entered into the system, it is visible to those with viewing rights to the national database.

This is the second annual assessment of health facility data quality using this methodology. The 2011 report³ found that Cambodia has a well-functioning reporting system which has performed consistently over the past few years. The main recommendations were to conduct a facility data verification survey to look at the reliability of reporting for key indicators, and to review and improve the target population denominators. To address these recommendations, a data verification survey was conducted on a national sample of 110 facilities in December 2012, the results of which are included in this report. In addition, a joint workshop with the National Institute of Statistics was conducted in May 2012 to discuss population denominators.

Cambodia's reporting system has the following general characteristics:

- Health administrative units: 24 provincial health departments (PHDs), which are further subdivided into 77⁴ operational districts (ODs).
- Population per unit: the national population was estimated at 14.3 million in 2012, projected from the 2008 census; provincial populations range from around 41,000 (Kep) to 1.7 million (Kampong Cham) with an average population of approximately 600,000 per province. OD populations range from 37,000 (Kep) to 395,000 (Kampong Speu) with a mean OD population of approximately 180,000.
- Facilities: 1018 functioning health centers and 88 referral hospitals (district, provincial, and national) in the public sector⁵. Private-for-profit and NGO health facilities are currently being added to the HMIS (170 facilities currently included in the system); however, only a few submit reports regularly, and they are currently not included in completeness measures nor in coverage estimates based on HMIS data.

Data

Five core NHSP2 indicators were selected as tracers for the data quality analysis: antenatal care second visits (ANC2), measles immunizations, institutional deliveries, total outpatient visits, and malaria cases. Data were downloaded from the web-based HMIS on February 8, 2013. A summary of the indicator definitions, numerator data from the HMIS, as well as target populations and population coverage rates for 2009 – 2012 at the national level is given in Table 19 in the Annex.

Target populations for the number of pregnant women and number of children under 1 year of age show some irregularities for 2011. The underestimation of target populations was identified as a serious issue in

² http://hiscambodia.org/public/homepage kh.php

³ http://www.who.int/entity/healthinfo/country_monitoring_evaluation/KH_DataQualityReportCard_2011.pdf

⁴ Two additional operational districts (Stueng Trang, Batheay) were created in 2013 in Kampong Cham province, bringing the current total to 79.

⁵ Number of functioning health facilities reporting to HMIS at the time of data download on February 8, 2013.

last year's data quality report card, and the Ministry of Health has since taken steps to start addressing this issue. The denominators based on local population projections are currently being revised; the revision is planned to be completed by the end of 2013.

Survey data used for comparison purposes in this study come from the Cambodia Demographic and Health Survey 2010. In addition to the survey report, some estimated were obtained from the website http://statcompiler.com.

Completeness of reporting

Ind	cator Definition		National DQ Score	% of PROVINCES with poor DQ score 2012	% of ODs with poor DQ score	
			2012		2012	
1a	Completeness of district reporting	% of monthly district reports received	N/A ^[1]	N/A ^[1]	N/A ^[1]	
1b	Completeness of facility reporting	% of expected monthly facility reports received	99.8%	0% ^[2]	0% ^[2]	
1c	Completeness of indicator reporting (missing data for selected indicators)	% of monthly provincial/district reports that are not zero/missing values (average for 4 indicators: ANC2, measles, deliveries, OPD)	100%	0% ^[3]	0% ^[3]	

^[1] N/A because of web based reporting.

Indicator 1a: Completeness of district reporting

The Cambodia Ministry of Health requires all public facilities (referral hospitals and health centers) to submit reports by the 5th of each month. Reporting forms are standardized (HC1 for health centers, HO2 for referral hospitals) and are either entered directly into the web-based HMIS at the health facility or sent to the district office where the forms are entered into the web-based system. Once entered into the web-based HMIS, the data are available for viewing to all users with access authorization, and all aggregations of the data are computed automatically using routines programmed into the web-based HMIS. Due to web-based reporting, districts no longer submit a monthly report to higher levels, thus district reporting is no longer applicable as a measure of reporting completeness. District HMIS staff are required to check the data in the forms, and correct any errors by the 10th of each month. All districts are expected to perform data checking and correcting; however, there is no method to verify the extent of this process, and whether it is consistently applied across districts.

Indicator 1b: Completeness of facility reporting

All public facilities are expected to submit reports every month. The facility reporting completeness is defined as the total number of monthly facility reports (HC1 for health centers, HO2 for hospitals) received divided by the total expected number of monthly facility reports and expressed as a percentage. Table 1 shows the facility reporting completeness for 2009 - 2012. Cambodia had 99.8% reporting of public facilities in 2012: There were a few missing reports from facilities in Siem Riep and Ankor Chhum ODs, as well as one monthly report missing from Kantha Bopha national hospital. Facility reporting completeness has improved since 2009, when the completeness rate was 94%, due in part to the introduction of the web-based reporting system.

Table 1: Facility reporting completeness rate and provinces with poor completeness rate

	2009	2010	2011	2012
National facility reporting completeness rate	94.2%	100%	99.8%	99.8%
Number (%) of provinces with completeness rate below 80%	2 (8%)	0 (0%)	0 (0%)	0 (0%)
Provinces with facility completeness rate below 80%	Mondul Kiri, Oddar Meanchey	_	_	_
Number (%) of ODs with completeness rate below 80%	4 (5%)	0 (0%)	0 (0%)	0 (0%)
ODs with facility completeness rate below 80%	Kroch Chhmar, Sen Monorom, Ankor Chhum, Samraong	_	_	_

^{[2] %} of provinces/districts with monthly facility reporting rates below 80%.

 $^{^{\}rm [3]}$ % of provinces/districts with more than 20% zero values.

Indicator 1c: Completeness of indicator reporting (missing data for selected indicators)

Completeness of indicator reporting refers to the extent to which facility reports include all reportable events. Missing data should be clearly differentiated from zero values in district and facility reports. A true zero value indicates that no reportable events occurred that month; a missing value indicates that reportable events occurred but were not actually reported. In many HMIS reports, missing entries are assigned a value of 0, making it impossible to distinguish between a true zero value (no events occurred) from a missing value (events occurred but were not reported).

The indicators considered for this analysis include ANC2 (revisits), measles vaccination, deliveries, and outpatient visits⁶. Table 2 shows that no ODs or provinces had any missing/zero values in monthly reports for these four indicators in 2012. The introduction of the web-based system appears to have helped, as there have been no missing/zero values for these four indictors at the provincial level since 2010.

Table 2: Completeness of indicator reporting – Missing and zero values in monthly reports at provincial and OD level for 4 indicators in 2012

Number (%) of data points with missing or zero value			
Provincial	OD		
0 (0%)	0 (0%)		
0 (0%)	0 (0%)		
0 (0%)	0 (0%)		
0 (0%)	0 (0%)		
0 (0%)	0 (0%)		
	Provincial 0 (0%) 0 (0%) 0 (0%) 0 (0%) 0 (0%)		

However, it should be noted that the analysis above, in which data are aggregated to the OD and provincial level, can mask missing data at facility level, which can be particularly important for large hospitals that handle high patient volumes. Table 3 below shows results on missing/zero values for the 24 provincial and 10 national hospitals for institutional deliveries and outpatient visits. Measles immunization and antenatal care are not included as hospitals are not expected to provide these services. Note that zero values throughout the year could indicate that the hospital does not provide the corresponding service, or it could indicate lack of reporting for these indicators.

Table 3: Completeness of indicator reporting – Zero values in provincial and national hospital monthly reports for institutional deliveries, outpatient consultations, and authorized inpatient discharges in 2012.

	Number (%) of monthly	data points with zero value
	Provincial hospitals (N=24)	National hospitals (N=10)
Institutional deliveries	0 (0%)	72 (60%) Ang Duong, Angkor Pediatric, CENAT, JaYa 7, Kantha Bopha, and National Pediatric (all 12 months)
OPD	0 (0%)	42 (35%) Ang Duong, Angkor Pediatric, and CENAT (all 12 months); JaYa 7 (5 months); Kantha Bopha (1 month)
Authorized discharges (inpatient)	0 (0%)	31 (26%) Angkor Pediatric, CENAT (all 12 months); JaYa 7 (5 months); Khmer- Soviet Friendship, Kantha Bopha (1

⁶ Malaria cases were excluded from this analysis, as many of the zero values are expected to be true zeroes.

	month)

Internal consistency of reported data

Indicator		dicator Definition		% of PROVINCES with poor DQ score	% of ODs with poor DQ score
			2012	2012	2012
2a	Accuracy of event reporting (moderate/extreme outliers)	% of monthly OD values that are moderate/extreme outliers (2 SD/3 SD or more from mean) (average for 5 indicators)	3%/0.1%	33% ^[4] /4.8% ^[5]	22% ^[4] /1.3% ^[5]
2b	Consistency over time	Number of events for current year divided by mean of preceding 3 years (average for 4 indicators)	1.11	0% ^[6]	1% ^[6]
2c	Consistency between indicator values	Number of DTP1 immunizations divided by the number of ANC1 visits	0.91	0% ^[7]	0% ^[7]
2d	Consistency between DTP1 and DTP3	Number of DTP3 immunizations divided by the number of DTP1 immunizations (should be less than 1)	0.98	17% ^[8]	22% ^[8]
2e	Verification of reporting consistency through facility survey	% of agreement between data in sampled facility records and national records for the same facilities for 3 core indicators	0.94	N/A	N/A

 $^{^{[4]}}$ % of provinces/districts with at least 5% of the values that are moderate or worse outliers (+/-2 standard deviations).

Indicator 2a: Accuracy of event reporting (moderate/extreme outliers)

Although the number of services provided in health care settings is likely to vary from month to month, large fluctuations are improbable. It is important to identify outliers from the expected values, as these can severely distort coverage rates, particularly at the district level. A large number of outliers can be indicative of poorer data quality. Table 4 shows the number of extreme outliers, that is, data points more than 3 standard deviations from the mean of monthly values across the five indicators for OD and provincial data. Extreme outliers are likely to be due to data entry errors. There were 3 extreme outliers in the OD data (one extreme data point each for measles immunization, outpatient visits, and malaria cases), and 1 extreme outlier in the provincial data. All extreme data points were over 3 standard deviations higher than the respective monthly means.

Table 4: Extreme outliers in OD and provincial monthly data in 2012 for five indicators

	ANC2	Manalas	Institutional	ODD	Malaria casas
Operational districts	(revisits)	Measles	deliveries	OPD	Malaria cases
Number (%) of monthly data					
that are extreme outliers (outside 3 SD of mean) ¹	0 (0%)	1 (0.1%)	0 (0%)	1 (0.1%)	1 (0.1%)
ODs with extreme values much <u>higher</u> than mean	-	Lech (Dec)	_	Smach Mean Chey (Feb)	Lech (Jun)
ODs with extreme values much <u>lower</u> than mean	_	_	_	_	_
Provinces					
Number (%) of monthly data that are extreme outliers (outside 3 SD of mean) ¹	0 (0%)	0 (0%)	0 (0%)	1 (0.3%)	0 (0%)
Provinces with extreme values much <u>higher</u> than mean	_	_	_	Koh Kong (Feb)	_
Provinces with extreme values much <u>lower</u> than mean	_	_	_	_	_

^{[5] %} of provinces/districts in which at least one of the monthly provincial values are extreme outliers in any of the 4 indicators (+/-3 standard deviations from the provincial mean).

[%] of provinces/districts with at least 33% difference with the national ratio of current year to mean of preceding 3 years (mean over 4 indicators).

 $^{^{[7]}}$ % of provinces/districts with at least 33% difference with the national ratio of DTP1 to ANC1 coverage.

 $^{^{[8]}}$ % of provinces/districts with the number of DTP3 immunizations over 2% higher than DTP1 immunization.

The results for moderate outliers (data points between 2 and 3 standard deviations from the monthly mean) are shown in Table 5. The majority of outliers lie above the monthly mean values. More detailed results listing the ODs that have moderate outliers and the months in which the outliers occur can be found in the Annex. The overall percentage with moderate and extreme outliers is 3% which is what one would expect (in a normal distribution 4.6% of values are outside 2 standard deviations of the mean). The number of extreme and moderate outliers has remained stable compared to 2009, 2010, and 2011, ranging between 2% to 5%.

Table 5: Moderate outliers in OD and provincial monthly data in 2012 for five indicators

	ANC2 (revisits)	Measles	Institutional deliveries	OPD	Malaria cases
Operational districts					
Number (%) of monthly data that are moderate outliers (between 2 and 3 SD of mean) ¹	24 (2.5%)	34 (3.6%)	37 (3.9%)	25 (2.6%)	27 (3.5%)
Number of ODs with moderate outliers higher than mean	14	29	31	15	26
Number ODs with moderate outliers <u>lower</u> than mean	10	5	6	10	1
Provinces					
Number (%) of monthly data that are moderate outliers (between 2 and 3 SD of mean) ¹	8 (2.8%)	12 (4.2%)	9 (3.1%)	7 (2.4%)	9 (3.1%)
Number of provinces with moderate outliers <u>higher</u> than mean	3	8	8	4	8
Number of provinces with moderate outliers lower than mean	5	4	1	3	1

¹ Zero values and missing data were excluded from the calculation of the means and standard deviations. These were not included in the counts in the table

¹ Zero values and missing data were excluded from the calculation of the means and standard deviations. These were not included in the counts in the table

Indicator 2b: Consistency over time

This indicator shows the consistency of the values for key indicators in the most recent year compared with the previous 3 years. While some differences are to be expected, very large changes are likely to be due to reporting errors.

Consistency over time was measured using the ratio of the total number of events in the current year with the mean number of events from the preceding 3 years for each indicator. A consistency over time ratio greater than 1 indicates an increase in the number of events from previous years, while a ratio less than 1 indicates a decrease. Table 6 shows the consistency over time ratios for 2009 (comparison with 2006–2008), 2010 (comparison with 2007–2009), 2011 (comparison with 2008–2010), and 2012 (comparison with 2009-2011) for four indicators. Most indicators showed a fairly large increase in service volumes for all four years. Institutional deliveries has shown particularly dramatic increases; however, the rate of increase appear to be declining over time. This likely reflects a true underlying increase in the number of institutional deliveries, as well as higher reporting completeness over the past several years.

Table 6: National ratio of total number of events in the current year to mean number of events in preceding 3 years

				0 ,
	2009	2010	2011	2012
	(comparison to	(comparison to	(comparison to	(comparison to
	2006–2008)	2007–2009)	2008–2010)	2009–2011)
ANC2	1.34	1.08	1.10	1.07
Measles	1.01	1.14	1.00	1.06
Institutional deliveries	2.02	1.67	1.32	1.21
Total OP visits	1.13	1.41	1.26	1.09
Overall	1.37	1.32	1.17	1.11
(excl. deliveries)	(1.16)	(1.21)	(1.12)	(1.07)

A similar analysis was done at the subnational level. Provinces and ODs that had a relative difference greater than 33% between the subnational percent change and the national average change are flagged in Table 7.

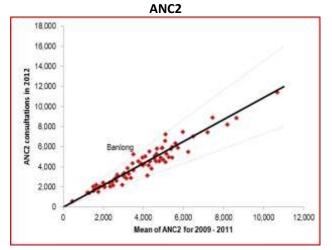
Table 7: ODs and provinces with percent change between current year (2012) and preceding 3 years (2009 – 2011) more than 33% higher or lower than the national average change for four indicators

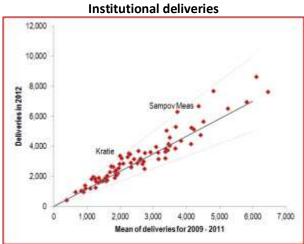
	ANC2	Measles	Institutional deliveries	OPD
National ratio ¹	1.07	1.06	1.21	1.09
Operational districts				
ODs with consistency ratio 33%+ <u>higher</u> than national ratio	1 (1%) Banlong	0 (0%) -	2 (3%) Kratie, Sampov Meas	1 (1%) Smach Mean Chey
ODs with consistency ratio 33%+ <u>lower</u> than national ratio	_	-	-	-
Provinces				
Provinces with consistency ratio 33%+ higher than national ratio	1 (4%) Ratanakiri	1 (4%) Oddar Meanchey	2 (8%) Kratie, Pursat	0 (0%) -
Provinces with consistency ratio 33%+ lower than national ratio	_	_	_	_

¹ Total number of events in the 2012 divided by mean number of events from 2009-2011

Figure 1 shows scatterplots of the number of events in 2012 compared to the mean number of events in 2009–2011 for ANC2 and institutional deliveries at the OD level. (Results are similar for other indicators and for the provincial level analysis.) Although a few ODs fall outside the dashed lines indicating 33% difference from the national ratio (solid line), most ODs are quite consistent with the national trend.

Figure 1: Consistency over time for ANC2 and institutional deliveries for 2012 compared to 2009–2011 for ODs (solid line indicates the national ratio; dashed lines indicate 33% relative difference from the national ratio)





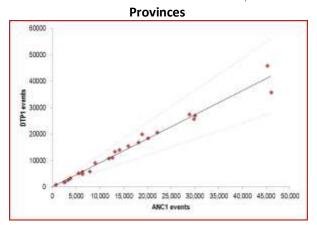
Indicator 2c: Consistency between indicator values

As high priority health interventions with a high level of continuity of care, ANC1 and DTP1 coverage rates are expected to show a high degree of correlation. The CDHS 2010 showed that 90% of pregnant women had at least one antenatal care visit, and 93% of children under 1 received the first dose of DTP vaccine. There was a fairly high degree of correlation between the two indicators across provinces (ρ =0.72). A large discrepancy between the ANC1 and DTP1 may be indicative of errors in reporting and problems with data quality.

Nationally, there were 342 790 DTP1 immunizations and 375 769 ANC1 visits, for a national DTP1 to ANC1 ratio of 0.91 in 2012. Provincial and OD-level DTP1 to ANC1 ratios are computed and compared to the national ratio, and any subnational units that are far (more than 33% different) from the national ratio are flagged.

Figure 2 shows a scatterplot of DTP1 and ANC1 events for all provinces. The solid line shows the national DTP1/ANC1 ratio, and the dotted lines show a relative difference of 33% from the national ratio. All provinces had a DTP1 to ANC1 ratio within 33% of the national ratio. At the provincial level, all provinces had a DTP1/ANC1 ratio within 33% of the national ratio. At the OD level, there were a few ODs that fell outside 33% of the national ratio, but overall the trends were quite consistent.

Figure 2: Consistency between DTP1 and ANC1 events in 2012 at the provincial and OD levels (solid line indicates the national ratio of DTP1 to ANC1 number of events; dashed lines indicate 33% relative difference from the national ratio)



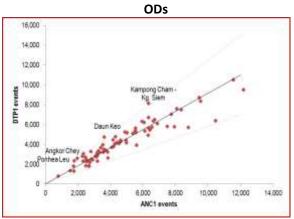


Table 6 shows the results at the provincial and OD levels for 2009 to 2012. The OD-level analysis was introduced in 2012, thus results for previous years are not available.

Table 6: Consistency between indicator values – National ratios for DTP1 and ANC, and ODs and provinces with poor consistency (outliers more than 33% above or below national ratio)

	2009	2010	2011	2012
National ratio ¹	0.89	1.07	0.92	0.91
Operational districts				
ODs with DTP1/ANC1 ratio 33%+ <u>higher</u> than national ratio (DTP1 too high or ANC1 too low)				6 (8%) Kampong Cham - Kg. Siem, O Reang Ov - Koh Soutin, Srey Santhor - Kang Meas, Angkor Chey, Ponhea Leu, Daun Keo

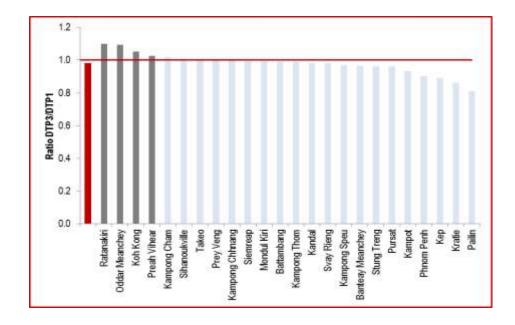
ODs with DTP1/ANC1 ratio 33%+ <u>lower</u> than national ratio (DTP1 too low or ANC1 too high)				1 (1%) Lech
Provinces				
Provinces with DTP1/ANC1 ratio 33%+ higher than national ratio	0 (0%) -	1 (4%) Kep	0 (0%) -	0 (0%) -
Provinces with DTP1/ANC1 ratio 33%+ lower than national ratio	4 (16%) Kampot, Mondul Kiri, Stung Treng, Oddar Meanchey	0 (0%) —	0 (0%) -	0 (0%) -

Indicator 2d: Consistency between DTP1 and DTP3

The CDHS 2010 indicated that the national dropout rate from the first dose to third dose of DTP was 8.3% among children 12–23 months, with provincial dropout rates ranging from 0% (Takeo) to 26.5% (Mondul Kiri/Ratanakiri). While it is theoretically possible for the number of DTP third doses to be slightly higher than the number of first doses, such as in provinces with a lot of in-migration or due to the size of cohorts, it is unlikely to happen systematically and have a large effect. Thus if DTP3 immunizations is higher than DTP1, this likely indicates problems with data quality.

The DTP1-3 consistency ratio is defined to be the number of DTP3 immunization divided by the number of DTP1 immunizations. Normally, one would expect this ratio to be below 1. At the national level, there were 342 790 DTP1 immunizations reported for 2012, and 336 744 DTP3 immunizations reported for a DTP1-3 consistency ratio of 0.98 (1.8% drop out rate). Figure 3 shows the DTP1-3 consistency ratios by province. There were 4 provinces that had DTP3 more than 2% greater than DTP1: Ratanakiri, Oddar Meanchey, Koh Kong, and Preah Vihear. At the OD level, there were 17 ODs (22%) that had DTP third doses more than 2% higher than first doses: Sangkae, Choeung Prey - Batheay, Kampong Cham - Kg. Siem, Ponhea Krek - Dambae, Srey Santhor - Kang Meas, Kampong Chhnang, Koh Thom, Muk Kam Poul, Smach Mean Chey, Srae Ambel, Tbeng Meanchey, Pearaing, Preah Sdach, Banlong, Bati, Daun Keo, Samraong. This could indicate some problems with recording of the information at the facility level (e.g. inaccurate recording of the dose of DTP when it is administered) or when the numbers are tallied for reporting purposes. It is interesting to note that when considering only immunizations given at health facilities (i.e. excluding outreach activities), no provinces or ODs had third doses higher than first doses. It is only when immunizations from outreach are included that some ODs and provinces have more third doses than first doses. This indicates that any problems with recording and reporting of immunization data lies with that collected during outreach activities.

Figure 3: Ratio of the number of DTP third doses to first doses by province (this ratio should be below one; provinces with DTP3 more than 2% higher than DTP1 are shown in dark gray)



The results for 2012 and for preceding years 2009 to 2011 are shown in Table 8. Some of the provinces appear to have consistent issues with the number of DTP third doses being higher than first doses over the years. The reasons for this should be investigated in further detail.

Table 8: National consistency ratio for DTP1 and 3, and provinces that have a consistency ratio greater than 1

	2009	2010	2011	2012
National DTP1-3 consistency ratio	0.94	1.02	0.97	0.98
Provinces with consistency ratio >1.02 (DTP3 greater than DTP1 by 2% or more)	1 (4%) Kep	7 (29%) Kampong Cham, Koh Kong, Kep, Sihanoukville, Kampong Speu, Oddar Meanchey, Siemreap	2 (8%) Ratanakiri, Oddar Meanchey	4 (17%) Ratanakiri, Oddar Meanchey, Koh Kong, Preah Vihear

Indicator 2e: Verification of reporting consistency through facility survey

This indicator is based on data verification for selected indicators through a record review in a national sample of health facilities. This is the only indicator in the report card that requires a facility visit, and is implemented as a facility survey in which facility source documents (registers and tally sheets) are compared to data reported monthly to the HMIS, to determine the proportion of the reported numbers that can be verified from the source documents. The objective is to verify if the information contained in the source documents has been transmitted correctly to the next level of reporting. This allows the identification of systematic errors that occur in the reporting of data and also gives an estimate of the degree of over/under-reporting of the system at the national level for specific indicators. The data verification does not provide information on the correctness of the information recorded in the facility records, only on whether it has been transmitted accurately from the facility records to the monthly reports.

Following the recommendation in the 2011 data quality report card, Cambodia conducted a data verification survey in November to December 2012. The objective was to conduct a systematic verification of reporting accuracy between registers, tally sheets, and the monthly reports for tracer indicators on a national sample of facilities. The same five tracer indicators used in this report card (ANC2, institutional deliveries, measles immunization, new outpatient consultations, and outpatient and inpatient malaria

cases) were selected for verification for the three month time period from July to September 2012. A national sample of 110 facilities was selected for the survey, stratified by facility type (national, provincial, and district hospitals, and health centres) and whether or not the facility was covered by the SOA incentive scheme (SOA vs. non-SOA). Table 9 shows the number of facilities per stratum in the sampling frame and in the sample. The sample is approximately 10% of all reporting facilities; however, higher level facilities and facilities covered under SOA are over-sampled to ensure sufficient representation. Overall, the sample included 40 hospitals and 70 health centres, which included 45 facilities covered under SOA.

Table 9: Total facilities reporting to HMIS and the number of facilities sampled by facility type and coverage by SOA.

All facilities

	reporting to HMIS ⁷	Facilities in sample
National hospitals	8	4
Provincial RH (SOA)	8	8
Provincial RH (non-SOA)	16	10
District RH (SOA)	17	7
District RH (non-SOA)	39	11
Health centre (SOA)	315	30
Health centre (non-SOA)	703	40
Total	1106	110

The data collection tool was developed based on the WHO data verification tool, and can be found in the Annex. For each indicator verified, the questionnaire covered the following:

- 1. Availability of registers, tally sheets, and monthly reports for review
- 2. Recounted service delivery outputs from register and tally sheet for the three months
- 3. Reported values from the monthly report (HC1/HO2) for the three months
- 4. Closing date of register
- 5. Reasons for discrepancies between register, tally sheet, and monthly reports.

The questionnaire was programmed in CSPro for electronic data entry. Data collection teams consisted of six teams of four people, with each team equipped with a laptop for field data entry. A one-week training workshop for data collectors and field supervisors was conducted the week of November 12, 2012, including a field test on the third day of training in four health centres. Field data collection took place from November 19 to December 20, 2012. Data were collected both on the paper forms as well as electronically on laptops using CSPro.

The final data set consisted of 110 facilities. One facility in the sample was inaccessible due to flooding and was replaced by a facility from the list of sampled replacement facilities. Data collection took approximately two to three hours in a health centre, and one day in a hospital, depending on the size. For quality control purposes, eight facilities in the sample were assessed twice by different data collection teams, to verify the accuracy and reliability of data collection. The analysis showed that of the 648 comparable data items between validation cases, only 9 items differed between the two visits. That is,

⁷ List of health facilities reporting to HMIS was downloaded from the web-based HMIS for the purposes of sampling in June 2012. Note that the sample frame does not include private-for-profit facilities that are not expected to report. Data were downloaded for DQRC analysis in February 2013; the slight discrepancies in the number of facilities reporting to the system are due to changes in the system in the intervening eight months.

98.6% of items matched between the two assessments conducted by different teams at the same facility, indicating good quality control of the data collection process.

Facilities in sample providing each service

The percentage of facilities in the sample providing the specific health services covered in the data verification exercise is shown in Table 10. This is to provide information on the number of facilities on which the subsequent data verification results are based. Thus, while almost all facilities provide delivery services, indicating that all 40 hospitals and almost all 70 health centres in the sample are included in the analysis for the consistency of reporting of deliveries, only 8 hospitals are included in the analysis for measles immunizations as the remaining hospitals do not provide child immunization services. As expected, only a small proportion of hospitals provide antenatal care and child immunization services. However, it is possible that even if the number of hospitals in the sample providing a service is small, the service volumes are large due to the high throughput. The percentage of facilities in the sample providing services is approximately even across services for SOA and non-SOA facilities.

Table 10: Percentage of facilities in the sample providing each health service, by facility type and SOA/non-SOA.

	Overall	Hospitals	HCs	SOA	Non-SOA
ANTENATAL CARE	74%	31%	100%	73%	74%
DELIVERIES	98%	100%	97%	98%	98%
CHILD IMMUNIZATION	69%	19%	100%	67%	70%
OUTPATIENT SERVICES*	96%	90%	100%	100%	93%

^{*} including malaria outpatient services

Availability of documents for review

Provided a facility offers a particular service, then it must also have the source documents (registers and tally sheets) covering the three month verification period available for review on the day of the data verification survey visit. All four of these services have standard MoH registers and tally sheets which health facilities are supposed to use to record daily activities. Table 11 shows the percentage of facilities in the sample offering a particular service that are missing the corresponding register and/or tally sheet. The results show that almost all facilities had registers for the four services covering July to September 2012. However, over 80% of facilities did not have tally sheets for antenatal care and for deliveries. Similarly, close to 60% of facilities did not have tally sheets in the outpatient department. In most cases, the tally sheets were missing because the facility did not use them at all to tally monthly totals. Only for immunization (where child-based registers make monthly tallies more difficult) were tally sheets used by the majority (87%) of facilities.

Table 11: Percentage of facilities in the sample offering the service with missing source documents (registers and tally sheets).

	ANC	Deliveries	EPI	OPD
Register	0%	2%	1%	6%
Tally sheet	84%	83%	13%	58%

Exact match between source documents and monthly reports

Ideally, the number of events recounted from the register should exactly match the number reported in the monthly reporting form. Table 12 shows the percentage of facilities that have an exact match between recounted numbers from registers and reported values from HC1/HO2 forms. Overall, the percentage of exact matches was high at 70% or higher for all indicators verified. For ANC2 and deliveries, the percentage of exact matches was over 80%. (It was 90% for malaria outpatient cases, but this is likely

due in part to the small number of cases each month.) The rate of exact matches was lower for measles immunization (71%) and outpatient visits (70%). This is likely due to the EPI register being child-based (record of all immunizations per child) instead of consecutive temporally, making it more difficult to count the number of immunizations for each month. For outpatient visits, the large number of cases each month (particularly at large health centres and hospitals) makes miscounts more likely for monthly totals. Overall, hospitals had a slightly lower rate of exact matches (75%) compared to health centres (83%), which could be due to higher service volumes. SOA facilities had a higher percentage of exact matches (85%) compared to non-SOA facilities (76%).

The results for tally sheets are not shown due to the low availability for most services except child immunization. For measles immunization, 98% of facilities that had EPI tally sheets available for review had an exact match between the monthly tally sheet numbers and reported figures for July to September 2012.

Table 12: Percentage of facilities that have an exact match between recounted numbers from registers and reported values from HC1/HO2 forms.

	Overall	Hospitals	HCs	SOA	Non- SOA
ANC2	88%	85%	89%	85%	91%
Deliveries	83%	71%	91%	86%	81%
Measles immunization	71%	67%	71%	86%	59%
Outpatient visits	70%	72%	68%	78%	62%
Malaria cases (outpatient)	90%	82%	95%	91%	87%
Average	80%	75%	83%	85%	76%

Verification factor

While ideally there would be no discrepancies between the recounted and reported figures, in practice it is unlikely that 100% of facilities would have exact matches all the time. Given the reality that there are often discrepancies between recounted and reported data, it is interesting to know the degree of disparity between the two: a discrepancy of 1 or 2 children immunized in a facility would not affect coverage estimates, but a difference of several hundred could very well. The verification factor (VF) is a measure of the degree of under or over-reporting; the further this value is from 1, the larger the disparity between the recounted and reported numbers. A VF higher than 1 implies that there is an underreporting of events in the HMIS for the verification period. If the VF is less than 1, this would imply that there was an over reporting of events in the HMIS for the period chosen for the analyses. The first step in the data analyses is to compute verification ratios for individual health facilities, which are then combined to form the national verification ratio. For a given indicator, the verification ratio at a facility is computed as the recounted number of events from source documents divided to the reported number of events from HMIS.

$$\label{eq:Verification} \textit{Verification ratio} = \frac{\textit{Recounted number of events from source document}}{\textit{Reported number of events from HMIS}}$$

For each health facility in the sample, a verification ratio is computed for each of the core data verification indicators. If a particular service is not offered at the facility, the verification ratio cannot be calculated for the corresponding indicator.

To obtain a national verification factor for an indicator, a weighted mean is computed from the individual health facility verification ratios. The weights are required to adjust for discrepancies between the sample and the sample frame in the distribution of the number of health interventions of interest (e.g. institutional deliveries) recorded at the facilities. In general, the weights for each stratum for a given indicator are computed as the number of events in stratum in population divided to the number of events in stratum in sample.

$$Weig \textbf{h}t = \frac{\textit{Number of events in stratum in population}}{\textit{Number of events in stratum in sample}}$$

A different set of weights need to be computed for each indicator, as the distribution of events across facilities will differ between indicators.

Table 13 shows the verification factors for registers for the five indicators. One may generally consider a VF between 0.95 and 1.05 to indicate high reliability or consistency, while a VF below 0.9 or above 1.1 may indicate that there may be systematic over- or under-reporting issues in the system. (Note however, that these thresholds are not absolute, and should be set within the local context.) The results show high consistency between registers and monthly reporting forms HC1/HO2 for ANC2 and health facility deliveries. There appears to be some over-reporting for measles immunizations, outpatient visits, and outpatient malaria cases (ie. more cases reported in monthly report than were recounted from registers). This seems particularly the case for non-SOA facilities: overall, SOA facilities had VFs closer to 1 across indicators. As for the analysis on exact matches, the results on tally sheets were not included due to low availability of the tally sheets in the facilities, except for EPI.

Table 13: Verification factors for consistency between registers and monthly reporting forms, by facility type and SOA/non-SOA. VFs between 0.95 and 1.05 are shown in blue, while those below 0.9 or above 1.1 are shown in red.

	Overall	Hospitals	HCs	SOA	Non- SOA
ANC2	0.985	0.943	0.996	0.961	1.001
Deliveries	0.983	0.953	0.995	0.984	0.983
Measles immunization	0.875	0.959	0.849	0.963	0.823
Outpatient visits	0.925	0.977	0.903	0.992	0.896
Malaria cases (outpatient)	0.916	0.816	0.976	0.994	0.880
Average	0.937	0.930	0.944	0.979	0.917

Closing date of source documents

According to MoH guidelines, health facilities are supposed to close their registers for compiling their monthly reports on the 25th of the month or later. The survey asked the closing date of registers/tally sheets to determine whether this had an impact on the consistency of reporting from source document to monthly report. Table 14 shows the percentage of facilities that closed their registers/tally sheets before the 25th of the month. Approximately 15% of facilities close their registers and tally sheets prior to the

25th of the month, including over 20% of SOA facilities. A larger proportion of SOA facilities close their registers earlier compared to non-SOA facilities. Given the findings that SOA facilities have a higher proportions of exact matches as well as VFs closer to 1, this could indicate that these facilities close their registers earlier to ensure sufficient time to compile monthly reports accurately before the end of the month.

Table 14: Percentage of facilities closing source documents before the 25th of the month, by facility type and managing authority.

					Non-
	Overall	Hospitals	HCs	SOA	SOA
ANC REGISTER	16%	15%	16%	28%	7%
DELIVERY REGISTER	15%	10%	18%	21%	10%
EPI TALLY SHEET	17%	12%	18%	27%	9%
OPD REGISTER	12%	6%	16%	21%	5%

Key findings from the data verification survey 2012

- Almost all facilities had registers available for review
- Most facilities were not using tally sheets (except for EPI and OPD)
- Over 75% of facilities had an exact match between source documents and monthly reported values for each of the indicators
- Generally good consistency between source documents and monthly reported values (VFs close to 1), particularly for ANC2 and institutional deliveries
- Some discrepancies for immunization, OPD, and malaria OPD for recounted numbers from register and HC1/HO2
- SOA facilities had higher consistency of reporting measured both in terms of exact matches and verification factor.
- More SOA facilities tended to close their registers before the 25th of the month.

Consistency of population data

Indic	ator	Definition	National DQ Score 2012	% of PROVINCES with poor DQ score 2012
3a	Consistency with UN population projection	NIS (official) population projection divided by UN population	0.99	N/A
3a.1	Availability of crude birth rates and infant mortality rates	Rates used to compute target population estimates are available and clearly documented	Partially	Partially
3a.2	Consistency of local population projection (PHD and NIS)	Provincial health department (PHD) population divided by the NIS (official) population	N/A	N/A ^[9]
3b.1	Consistency with survey derived estimates (estimated number of pregnant women)	Number of pregnant women derived from ANC1 survey coverage (CDHS 2010) and reported number of events, divided by the official estimate	0.96	16%
3b.2	Consistency with survey derived estimates (estimated number of children under 1 year)	Number of children under 1 year derived from DTP1 survey coverage (CDHS 2010) and reported number of events, divided by the official estimate	0.92	5%

^{[9] %} of provinces with at least 15% difference between NIS and PHD population projections.

There are a number of sources of population estimates, including NIS projections based on the 2008 census, HMIS OD populations based on OD reported figures, and population estimates from programmes such as EPI. Following the recommendations of the 2011 Data Quality Report Card, the Ministry of Health held a joint workshop in May 2012 with the National Institute of Statistics and Ministry of Planning to discuss population projections and target population estimates. As a result, the decision was made to use the mid-year census projections for all national and provincial populations in the HMIS.

Indicator 3a: Consistency with UN population projection

Population projections at the national and provincial levels are provided by the Cambodia National Institute of Statistics (NIS) and are based on the 2008 General Population Census. The coverage estimates for the health indicators use the NIS population projections for the national and provincial levels. These projections are based on mortality and fertility estimates that are adjusted for under-enumeration of births and infant deaths in the 2008 census. Due to the rapid decrease in fertility rates in Cambodia in recent years, it is possible that population projections are based on higher than actual fertility, resulting in over-estimation of population figures. The national population projection from the NIS is compared with UNPD population projections. The higher the level of consistency between denominators from different sources, the more confidence can be placed in the accuracy of the population projections.

Population Consistency ratio (UN): The total population from NIS for 2012 (14.2 million) divided by the population projection (medium variant) from UNPD for 2010 (14.4 million). The population consistency ratio (UN) is 0.99, indicating high consistency.

Indicator 3a.1: Availability of crude birth rate and infant mortality rates

Crude birth rate and infant mortality rates are used to obtain population denominators, such as live births and surviving infants. The following sources were used in the Cambodia projections:

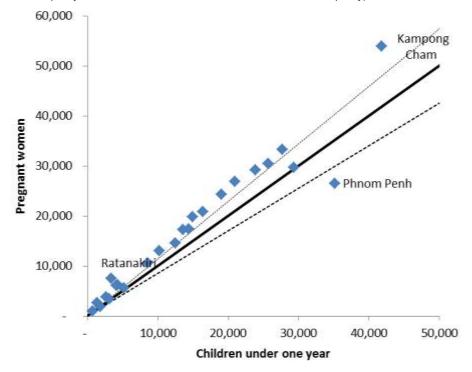
	National	Provincial	
Total population	2008 census	2008 census	

Crude birth rate	HMIS	HMIS
Infant mortality rate	No data available	No data available

While national and provincial crude birth rates are presented in the HMIS report, the source of these numbers is not clear. It is also unclear whether these figures were used to derive denominators (such as the estimated number of pregnant women and children under 1 year) and how these denominators were derived, as the formulas are not presented.

Overall, the estimated number of pregnant women is 1.19 times higher than the estimated number of children under 1 (Figure 4). While this ratio is lower than in 2011 (1.36), this still suggests that a very high late pregnancy loss and infant mortality figure is used, and may possibly lead to underestimation of the denominators, for instance, for immunization. For example, in Ratanakiri and Mondul Kiri, the number of children under 1 year is approximately half the number of pregnant women, while in Oddar Meanchey, Stung Treng, and Preah Vihear, it is approximately two thirds. It does not seem likely that there should be such a large difference between the two target population estimates.

Figure 4: Consistency between the number of pregnant women and the number of children under 1 year (solid line indicates equality; dashed lines indicate 15% relative difference from equality)



Indicator 3a.2: Consistency of local population projection

Since operational district boundaries do not necessarily coincide with those of administrative districts, PHDs are responsible for providing population estimates for their operational districts based on local population estimates. Estimates from local population estimates result in provincial and national populations that are slightly different from official NIS estimates.

This comparison could not be done for 2012, as the local population estimates are currently being revised, one of the key outcomes of the joint NIS-DPHI workshop conducted in May 2012. The revision is expected to be completed by the end of 2013.

Consistency with survey-derived estimates

The population denominators can be compared using coverage estimates from independent other sources, notably survey data. This requires the following: (1) an estimate of coverage for a specific intervention for national and provincial levels (2) accurate numerator of the event. Ideally, an indicator with high levels of coverage and relatively little variability across the country is selected. Often, first antenatal visit or first vaccination (BCG or DTP1) are suitable.

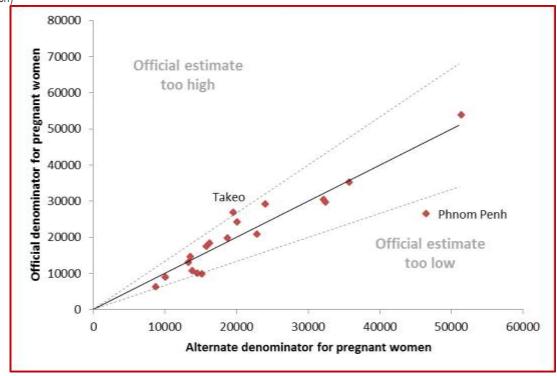
Indicator 3b.1: Consistency of estimated number of pregnant women

According to CDHS 2010, antenatal care coverage is 89.1% nationally, ranging from 61.8% in Mondul Kiri/Ratanakiri to 99.1% in Phnom Penh. Provincial ANC coverage rates from CDHS are used to compute an alternative estimate of the denominator (number of pregnant women), using the number of first antenatal care visits from the HMIS. This alternative estimate was compared to the official estimate for the number of pregnant women in the HMIS. As the CDHS used 19 sampling domains (5 groups of paired provinces and 14 individual provinces), the same grouping was used here.

ANC1 Denominator consistency ratio (for number of pregnant women): The official estimate of the number of pregnant women divided by the estimate derived from ANC1 coverage. At the national level, the ANC1 denominator consistency ratio is 0.96, indicating high consistency between the two estimates.

Comparison at the provincial level showed greater variability. Figure 5 shows the two estimates for the number of pregnant women for each province.

Figure 5: Estimated number of pregnant women, official estimate vs. estimate derived from ANC1 coverage, 2012 (solid line indicates an exact match between the two estimates; dashed lines indicate 33% relative difference from an exact match)



Phnom Penh and Preah Vihar/Stung Treng, had official population estimates over 33% lower than ANC1 derived estimates in 2012. One province, Takeo, had an official population over 33% higher than the ANC1 derived estimate.

Table 10: National ANC1 denominator consistency ratio and provinces with more than 33% difference between the two population estimates for 2009–2012

	2009	2010	2011	2012
National ANC1 denominator consistency ratio	0.86	1.03	0.96	0.96
Provinces with consistency ratio <0.67 (official estimate too low)	3 (16%) Mondul Kiri/Ratanakiri, Oddar Meanchey, Phnom Penh	1 (5%) Phnom Penh	2 (11%) Oddar Meanchey, Phnom Penh	2 (11%) Preah Vihear/Stung Treng, Phnom Penh
Provinces with consistency ratio >1.33	0 (0%)	2 (11%)	1 (5%)	1 (5%)
(official estimate too high)	-	Kratie, Takeo	Takeo	Takeo

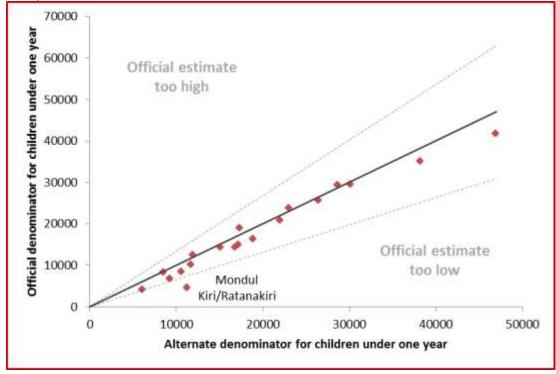
^{*} Percentages in this table are computed for the 19 provinces or paired provinces.

Indicator 3b.2: Consistency of estimated number of children under 1 year

The CDHS 2010 showed that DTP1 coverage is 93.1% nationally, ranging from 66.5% in Mondul Kiri/Ratanakiri to 97.9% in Banteay Meanchey. Provincial DTP1 coverage rates from CDHS are used to compute an alternative estimate of the denominator (number of children under 1 year), using the number of DTP1 immunizations from the HMIS. This alternative estimate was compared to the official estimated number of children under 1 year in the HMIS. As for ANC1, the 19 CDHS sampling domains (5 groups of paired provinces and 14 individual provinces) were used for this analysis instead of 24 individual provinces.

DTP1 Denominator consistency ratio (for number of children under 1 year): The official estimate of the number of children under 1 divided by the estimate derived from DTP1 coverage. At the national level, the DTP1 denominator consistency ratio is 0.92, indicating a slight disparity between the two estimates. Figure 6 shows the comparison of the two at the provincial level.

Figure 6: Estimated number of children under 1 year, official estimate vs. estimate derived from DTP1 coverage, 2012 (solid line indicates an exact match between the two estimates; the dashed lines indicate 33% relative difference from an exact match)



Only Mondul Kiri/Ratanakiri had an official estimated number of children under 1 year was more than 33% lower than the estimate derived from survey DTP1 coverage. While most provinces had good

consistency between the two denominator estimates, the majority of provinces had an official estimate that was lower than the DTP1-derived estimated denominator.

Table 11: National DTP1 denominator consistency ratio and provinces with more than 33% difference between the two population estimates for 2009–2012

	2009	2010	2011	2012
National DTP1 denominator consistency ratio	0.82	0.83	0.85	0.92
Provinces with consistency ratio < 0.67 (official estimate too low)	2 (11%) Mondul Kiri/Ratanakiri, Phnom Penh	1 (5%) Kratie	2 (11%) Mondul Kiri/Ratanakiri, Phnom Penh	1 (5%) Mondul Kiri/Ratanakiri
Provinces with consistency ratio >1.33 (official estimate too high)	2 (11%) Oddar Meanchey, Preah Vihear/Stung Treng	2 (11%) Mondul Kiri/Ratanakiri, Phnom Penh	0 (0%) -	0 (0%) -

^{*} Percentages in this table are computed for the 19 provinces or paired provinces.

External comparison of coverage rates

Indicator		Definition	National DQ Score 2012	% of PROVINCES with poor DQ score 2012
4a	External comparison: ANC2	Coverage from facility reports divided by survey for the most recent comparable year (2010) ^[10]	0.96	N/A
4b	External comparison: Measles immunization	Coverage from facility reports divided by survey for the most recent comparable year (2010) ^[10]	1.26	26% ^[11]
4c	External comparison: Institutional deliveries	Coverage from facility reports divided by survey for the most recent comparable year (2010) ^[10]	1.00	26% ^[11]

^[10] Most recent survey year was used for the comparison. If there is a significant gap between the year of survey and year of HMIS data, the two data points are not be directly comparable.

Indicators 4a–4c: External comparison with values derived from household surveys: antenatal care revisits, measles immunization, and institutional deliveries

If the HMIS is accurately detecting all health care service delivery events and there are sound estimates of relevant population denominators, the values for indicators derived from the HMIS should be similar to those derived from household surveys. The survey consistency ratio is calculated as the population coverage for an indicator based on the facility reports divided by the population coverage based on household survey data. The consistency ratio gives an idea of how close the intervention coverage estimated from facility reports is to the coverage obtained from survey data: the closer this ratio is to 1, the higher the consistency.

Table 15 shows a comparison of coverage rates for antenatal care (ANC) revisits, measles immunization, and deliveries in a health facility from population-based surveys and from facility reports. It is important to note that the Demographic and Health Survey (DHS) coverage rates on ANC revisits and delivery refer to the five years (2006-2010) and the three years (2008-2010) preceding the survey, respectively. This is an important caveat in the analysis for Cambodia, as both coverage rates have increased tremendously in Cambodia in the last 5 years. Indeed, comparing the 5-year institutional delivery rate of 53.8% for 2006 – 2010 to the 3-year coverage rate of 61.8% for 2008 – 2010 provides an indication of the magnitude and rapidity with which coverage has increased. The 5-year rates were used in the analysis for last year's analysis in the 2011 Cambodia Data Quality Report Card; the 3-year institutional delivery rates are used for the 2012 analysis as they are undoubtedly closer to the current reality. However, the 3-year coverage rates for 2008 – 2010 are likely to represent an underestimate of coverage rates in 2012. Note that the 3-year coverage rate for institutional deliveries is not available disaggregated into public and private health facilities; for the 5-year rate, 9.9% of all deliveries occurred in private facilities.

The survey-based coverage of second visit antenatal care (ANC 2+) increased from 61% to 85% during 2001–2005 (DHS 2005) and 2006–2010 (DHS 2010); however, there is not a big difference between the five-year (84.5%) and three-year (86.0%) coverage rates. Therefore, it is likely that the 2012 coverage rates are somewhat higher than 86%. It appears that the facility reports of the HMIS are underestimating coverage rates (81%) compared to the survey. This could partly be due to interventions in the private sector, which may be included in the survey but less so in the HMIS.

As noted above, institutional delivery rates have increased rapidly in Cambodia: deliveries in public facilities increased from 17% in 2001–2005 (DHS 2005) to 43.9% in 2006 – 2010. The latter corresponds closely to the 2009 HMIS coverage rate of 44.1%, which is likely to cover births mostly in public facilities. Comparing the 2012 HMIS coverage rate (61.6%) to the 2008 – 2010 survey estimate (61.8%) shows an

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 $^{^{\}left[11\right]}$ % of provinces with at least 33% off the expected coverage.

⁸ Available at http://statcompiler.com/

almost exact match between the two. It is likely that the underestimation of the 2012 rate by the survey due to the increase in institutional deliveries since 2010 is more or less balanced by the overestimation due to the inclusion of deliveries in private facilities.

Measles immunization coverage from the survey is for the year preceding the survey (2009). The rate based on facility reports appears to overestimate the survey rate quite substantially across the four years, although for rate of overestimation has decreased from 48% in 2010 to 26% in 2012.

Table 15: Comparison of coverage rates from surveys and from facility reports

<u>-</u>	Most recent surveys	Facility reports (HMIS)		Ratio (coverage from facility data/coverage from survey)					
	(DHS 2010)	2009	2010	2011	2012	2009	2010	2011	2012
ANC2+ (revisits)	84.5%	77.8%	72.7%	79.1%	80.9%	0.92	0.86	0.94	0.96
Measles immunization	77.0%*	97.5%	114%	104%	97.3%	1.27	1.48	1.36	1.26
Institutional deliveries	61.8%**	44.1%	53.0%	56.3%	61.6%	0.72	0.85	0.91	1.00

^{*} Immunized by 12 months of age

Figure 7 shows a comparison of measles immunization coverage rates from facility reports in 2012 and from CDHS 2010 by province. Despite a narrowing of the gap since the 2011 report, coverage from facility reports is systematically higher than the survey-based coverage rates (children immunized any time before survey) across provinces. Table 16 shows the national measles immunization consistency ratio (measles immunization coverage from facility reports divided by coverage from CDHS 2010) and provinces in which the relative difference between the two is greater than 33%.

Figure 7: Comparison of measles immunization coverage rates from facility reports in 2012 (bars) and from CDHS 2010 (points) by province.

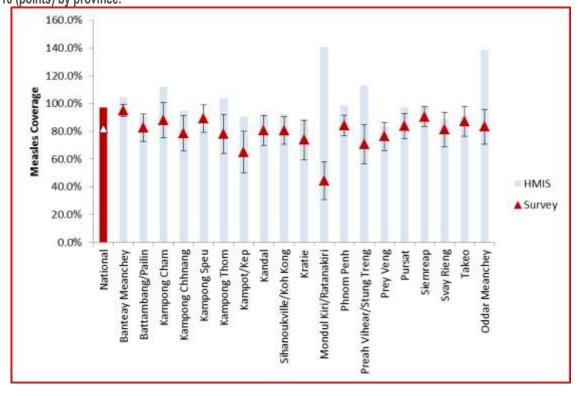


Table 16: Consistency ratio for measles immunization coverage rates, and provinces with very low and very high consistency ratios

^{**} Deliveries in health facility in the 3 years preceding the survey – results disaggregated by public and private facilities not available for 3-year estimates; however, 9.9% of deliveries in the 5 years preceding the survey occurred in private facilities.

	2009	2010	2011	2012
National measles consistency ratio*	1.19	1.40	1.27	1.19
Provinces with measles consistency ratio <0.67	3 (16%) Kratie, Oddar Meanchey, Preah Vihear/Stung Treng	0 (0%) -	0 (0%) -	0(0%) -
Provinces with measles consistency ratio >1.33	4 (21%) Kampong Chhnang, Kandal, Mondul Kiri/Ratanakiri, Phnom Penh	11 (58%) Kampong Cham, Kampong Chhnang, Kampot/Kep, Kandal, Mondul Kiri/Ratanakiri, National, Phnom Penh, Prey Veng, Pursat, Siemreap, Sihanoukville/Koh Kong	4 (21%) Kampong Chhnang, Kampot/Kep, Mondul Kiri/Ratanakiri, Phnom Penh	5 (26%) Kampong Thom, Kampot/Kep, Mondul Kiri/Ratanakiri, Preah Vihear/Stung Treng, Oddar Meanchey

^{*} Consistency ratios computed with immunization rate in children 12–23 months any time before survey. Note: Percentages in this table are computed for the 19 provinces or paired provinces.

Figure 8 shows a comparison of institutional delivery rates from facility reports in 2012 and the 3-year rates (2008 - 2010) from CDHS by province. Most provinces show a fairly good correspondence between facility reports and survey results, with

In most provinces, the institutional delivery rate in public facilities based on facility reports greatly exceeds that from survey results. The institutional delivery rate in Phnom Penh based on facility reports is particularly high, due to the large number of national hospitals. The target population size estimate may however also be too low. As noted above however, this may for an important part be due to the rapid increase in coverage in delivery care in Cambodia during the past years. Table 17 shows the national consistency ratio (institutional delivery rate in public facilities from facility reports divided by coverage from CDHS 2010) and provinces in which the relative difference between the two is greater than 33%.

Figure 8: Comparison of institutional delivery rates from facility reports in 2012 (bars) and 3-year rates (2008 – 2010) from CDHS by province

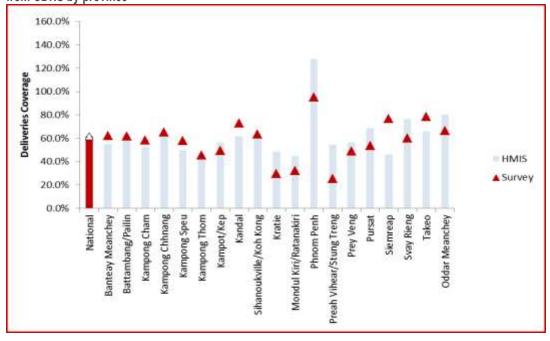


Table 17: Consistency ratio (facility/survey) for institutional deliveries rates, and provinces with very low and very high consistency ratios

	2009	2010	2011	2012
National institutional delivery consistency ratio	0.72	0.85	0.91	1.00
Provinces with consistency ratio < 0.67	7 (37%) Banteay Meanchey, Battambang/ Pailin, Kampong Cham, Kampong Speu, Kratie, Pursat, Siemreap	1 (5%) Siemreap	1 (5%) Siemreap	1 (5%) Siemreap
Provinces with consistency ratio >1.33	0 (0%)	1 (5%) Preah Vihear/Stung Treng	2 (11%) Kratie, Preah Vihear/Stung Treng	4 (21%) Kratie, Mondul Kiri/Ratanakiri, Phnom Penh, Preah Vihear/Stung Treng

^{*} Percentages in this table are computed for the 19 provinces or paired provinces.

There is a high consistency between the institutional delivery rates from surveys and from facility data. However, as noted above, the survey rate is an estimate for 2008 – 2010 and is likely to underestimate the true rate for 2012. At the same time, the survey rate includes deliveries at private facilities as well as public facilities: the delivery rate in public facilities is likely to be approximately 10 percentage points lower based on the disaggregated five-year estimates. These two effects appear to have the effect of cancelling each other out in this case.

At the provincial level, HMIS institutional delivery rates appear to consistently underestimate survey rates across all four years. At the same time, disaggregated survey rates for public and private facilities from CDHS 2010 shows only 0.8% of all deliveries occurring in private facilities compared to 68% in public facilities. It would be interesting to examine in further detail why this discrepancy occurs, as well as for other provinces with large discrepancies.

Overall, it appears that the consistency in coverage rates between survey and health facility data is quite good for antenatal care revisits and institutional deliveries. For measles immunization coverage, HMIS still appears to overestimate survey coverage rates substantially, although the gap has narrowed compared to previous years. This was an issue identified across immunization indicators in the 2011 Data Quality Report Card which has been addressed to a certain extent by revisions of the denominators. While the coverage rates for DTP3 and measles immunization based on HMIS for 2012 are below 100%, the rates remain approximately 15% higher than survey coverage rates, as seen in Table 18.

Table 18: Comparison of immunization coverage rates

	Facility reports (HMIS) January–December 2012	Most recent survey (children 12–23 months, DHS 2010) By 12 months/any time before survey
DTP1	101%	92.6%/93.1%
DTP3	98.8%	83.6%/84.8%
Measles immunization	97.3%	77.0%/81.9%

Immunization rates from facility reports that are too high can be due to a numerator that is too large or a denominator that is too small (or both). A numerator could be too large due to over-reporting of the number of immunizations, for example, inflating of reported numbers due to financial incentives, or systematically failing to disaggregate immunizations in children under and over the age of 1 year in reporting. In this light, it is interesting to note the earlier finding that data from outreach activities, which when added to routine immunizations cause the number of DTP third doses to be higher than first doses in a number of provinces and ODs. In addition, while revision of the population denominators has

improved coverage estimates, it may be necessary to examine them in further detail once OD-level population figures have been fully revised. The analysis of the consistency between denominators for the number of pregnant women and children under one year of age indicate that the number of children under one is low compared to the number of pregnant women. This situation could be improved by bringing more clarity to how these target populations are estimated.

Summary and recommendations

The reporting system in Cambodia is well-functioning, and has shown steady improvement over time. The recommendations from the 2011 Data Quality Report Card have largely been addressed: a data verification survey was conducted in November to December 2012, provincial population estimated have been revised based on discussion with the NIS, and a revision of the local population estimates to obtain OD population estimates has been set in motion. However, an assessment of the revised population estimates remains to be done, as the revision is set to be completed by the end of 2013.

An improvement can be seen in a number of the data quality indicators as a result of these actions taken. Some issues still remain, particularly pertaining to the denominators and possible over-reporting of numerators for immunization indicators. The contribution of the private sector also remains unknown, although increasing numbers of private facilities are being included in the web-based HIS.

The system could be further strengthened as follows:

- (1) accelerate the inclusion of private facilities in the reporting of key health indicators
- (2) assess the consistency between the revised denominators for ODs based on local population projections and census projections once revision has been completed
- (3) review and improve the population denominators for immunization, looking in particular at the consistency with estimated pregnancies
- (4) institutionalize the facility data verification survey.

Annex

Table 19: Summary of tracer health indicators for data quality assessment; national data for 2009-2012.

	Number of events (HMIS)	Target population	Coverage
ANC2			
Number of even	ts: Number of pregnant w	omen having at least two ANC consul	tations by a health professional
Target population	n: Expected number of pr	egnant women	
2009	315,477	342,000	92%
2010	290,423	361,432	80%
2011	315,856	358,739	88%
2012	328,376	365,609	90%
		hat occurred in health facilities	
2009	178,777	342,000	52%
2010	211,538	361,432	59%
2011	224,694	358,739	63%
2012	250,321	365,609	68%
		munized against measles before their nildren under 1 year	first birthday
2009	291,631	279,211	104%
2010	336,560	295,076	114%
2011	307,317	292,877	105%
2012	331,757	344,186	96%
		consultations (new cases)	
2009	7,451,181	13,900,000	54%
2010	8,981,320	14,100,000	64%
2011	9,145,074	14,300,000	64%
2012	9,272,134	14,741,425	63%
Malaria cases			
	ts: Number of malaria cas on: Total mid-year populat	es (probable and confirmed) treated piion / 1000	oer year
2009	74,800	13,900	5.38 per 1000
2010	59,024	14,100	4.18 per 1000
2011	63,175	14,300	4.42 per 1000
2012	47,090	14,741	3.19 per 1000

Table 20: Moderate outliers (between 2 and 3 standard deviations from the monthly mean) in OD and provincial monthly data for five indicators.

monthly data for five in	Number (%) of monthly data that are		
	moderate outliers (between 2 and 3 SD of mean) ¹	ODs/provinces with moderate outliers higher than mean and the months in which they occur	ODs/provinces with moderate outliers <u>lower</u> than mean and the months in which they occur
Operational districts			
ANC2	24 (2.5%)	Jan: Prey Kabass Feb: Kampong Trabek Mar: Kampong Chhnang, Boribo Jun: Kampot, Svay Rieng, Daun Keo Jul: Memut, Ankor Chhum Aug: Ksach Kandal, Lvea Em, Mesang Sep: Steung Treng, Kep	Oct: Pailin Dec: Chamkar Leu - Stueng Trang, Kampong Cham - Kg. Siem, Ponhea Krek – Dambae, Srey Santhor - Kang Meas, Kampong Trach, Smach Mean Chey, Pearaing, Siem Reap, Preah Sihanouk
Measles	34 (3.6%)	Mar: Kampong Chhnang, Kampong Tralach May: Mongkol Borei, Kroch Chhmar - Stung Trang, Takhmao Jun: Kampong Trach, Kampot Jul: Srey Santhor - Kang Meas, Svay Antor, Chi Phu Aug: Thma Puok, Ponhea Leu, Prey Kabass Sep: Memut, Samraong, Pailin Oct: Preah Sdach, Kralanh Nov: Kampong Cham - Kg. Siem, Boribo, Ou Dongk, Baray and Santuk, Angkor Chey, Chhouk, Sen Monorom, Sen Sok, Sot Nikum Dec: Koh Thom, Steung Treng	Jan: Tbong Feb: Kong Pisey, Lvea Em Sep: Kep Dec: Kampot
Institutional deliveries	37 (3.9%)	Jan: Chamkar Leu - Stueng Trang, Kampong Cham - Kg. Siem, Ponhea Krek - Dambae, Srey Santhor - Kang Meas, Tbong Khmum - Kroch Chhmar, Kong Pisey, Angkor Chey, Chhouk, Kampong Trach, Koh Thom, Sen Monorom, Pearaing, Sot Nikum Mar: Kampong Chhnang, Kampong Tralach, Boribo Sep: Preah Net Preah Oct: Thma Puok, Thmar Koul, Battambang, Sangkae, Kroch Chhmar - Stung Trang, Smach Mean Chey Nov: Ksach Kandal, Muk Kam Poul Dec: Baray and Santuk, Takhmao, Lvea Em, Chhlong, Cheung, Chi Phu	Mar: Poipet, Daun Keo Apr: Ponhea Leu Jul: Kirivong Aug: Srae Ambel, Kampong Trabek
OPD	25 (2.6%)	Jan: Kroch Chhmar - Stung Trang, Srey Santhor - Kang Meas, Svay Antor Feb: Kampong Trabek Mar: Kampong Chhnang, Kampong Tralach, Boribo Jul: Preah Net Preah, Thmar Koul, Kean Svay, aang, Takhmao, Lvea Em Aug: Kampong Trach, Kratie Sep: Srae Ambel	Mar: Pearaing Apr: Muk Kam Poul, Ponhea Leu, Kamchay Mear May: Baray and Santuk Dec: Chamkar Leu - Stueng Trang, Preah Sihanouk, Bati, Prey Kabass
Malaria cases	27 (3.5%)	Jan: Chamkar Leu - Stueng Trang, O Reang Ov - Koh Soutin, Ponhea Krek - Dambae, Prey Chhor - Kang Meas, Srey Santhor - Kang Meas, Stong, Chhouk, Kampong Trach, Kampot, Chhlong, Sen Monorom, Siem Reap, Sot Nikum, Ankor Chhum, Preah Sihanouk Feb: Poipet, Memut, Srae Ambel, Tbong, Ang Rokar Jun: Preah Net Preah, Kampong Speu, Jul: Romeas Hek Sep: Kean Svay Oct: Daun Keo Dec: Sen Sok	Apr: Tbeng Meanchey

Provinces		_	
ANC2	8 (2.8%)	Kampong Chhnang (Mar), Stung Treng (Sep), Kep (Sep)	Pailin (Oct), Kampong Cham (Dec), Koh Kong (Dec), Prey Veng (Dec), Sihanoukville (Dec)
Measles	12 (4.2%)	Kampong Chhnang (Mar), Banteay Meanchey (Aug), Oddar Meanchey (Sep), Pailin (Sep), Kampot (Nov), Mondul Kiri (Nov), Phnom Penh (Dec), Stung Treng (Dec)	Svay Rieng (Jan), Koh Kong (Apr), Kep (Sep), Kampot (Dec)
Institutional deliveries	9 (3.1%)	Kampong Cham (Jan), Kampong Speu (Jan), Kampot (Jan), Mondul Kiri (Jan), Prey Veng (Jan), Kampong Chhnang (Mar), Koh Kong (Oct), Pursat (Oct)	Takeo (Jul)
OPD	7 (2.4%)	Kampong Chhnang (Mar), Kandal (Jul), Kratie (Aug), Pursat (Aug)	Kampong Thom (Apr), Phnom Penh (Sep), Sihanoukville (Dec)
Malaria cases	9 (3.1%)	Kampong Cham (Jan), Kampot (Jan), Kandal (Apr), Kratie (Jan), Mondul Kiri (Jan), Siemreap (Jan), Sihanoukville (Jan), Phnom Penh (Jun)	Preah Vihear (Apr)

លេខរៀង	សំណួរ	លទ្ធផល	រំលង			
Number	Question	Result	Skip			
	ឧបករណ៍សម្រាប់ផ្ទៀងផ្ទាត់ទិន្ន					
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	ការប្រមូលទិន្នន័យ	ការផ្ទៀងផ្ទាត់ទិន្នន័យ				
	DATA COLLECTION	VALIDATION				
សំណូរទី១	ឈ្មោះមូលដ្ឋានសុខាភិបាល					
Q01	Name of facility	***************************************				
សំណួរទី២	ប្រភេទមូលដ្ឋានសុខាភិបាល	មន្ទីរពេទ្យ	មណ្ឌលសុខភាព			
Q02	Type of facility		нс			
សំណូរទី៣	ទីកន្លែងរបស់មូលដ្ឋានសុខាភិបាល					
Q03	(ភូមិ/ឃុំ/ស្រុក/ខេត្ត)					
	Location of facility	-				
	(Town/City/Village/Commune)					
សំណូរទី៤	ខេត្ត (លេខកូដខេត្ត)					
Q04	Province code					
សំណូរទី៥	ការិយាល័យស្រកប្រតិបត្តិ (លេខកូដស្រកប្រតិ.					
Q05	Operational district code	_				
សូមសុ	រុះសំណួរទៅអ្នកដែលធ្វើរបាយការណ៍រៀងរាល់ខែ	នៅក្នុងមូលដ្ឋានសុខាភិបាល ដើម្បីផ្តល់	នូវបញ្ជីកត់ត្រា			
	, ៖ពិនិត្យផ្ទៃពោះមុនសម្រាល, សម្រាលកូន, ផ្ដល់ថ្នាំ					
	រីវាគ្រនចាញ់ OPD & IPD) និងរបាយការណ៍ HC		1000			
ASK THE PER	SON IN THE FACILITY WHO REGULARLY PREPA	ARES THE MONTHLYREPORTSTO PRO	OVIDE THE FACILITY			
	D TALLY SHEETS FOR ANTENATAL CARE, DELIN PATIENT ADMISSIONS, AND HC1/HO2 REPORT					

	អារពិនិង្យផ្ទៃរន	ាះសើតនឹង		
	ANTENATAL CARE SEC	OND VISIT (ANC	2)	
សំណូរទី៦	តើមូលដ្ឋានសុខាភិបាលមានផ្តល់សេវាពិនិត្យ	មាន	9	
Q06	ផ្ទៃពោះមុនសម្រាលដែរឬទេ? Does this facility provide antenatal care services?	YES	1	បើគ្មានរំលងទ
		គ្មាន	D	
		NO	2	សំណួរទី១៤ →014

សូមពិនិត្យបញ្ជីកត់ត្រា, ស្រង់ចូលេខ និងរបាយការណ៍ប្រចាំខែ ការពិនិត្យថ្នៃពោះមុនសម្រាល ហើយបន្ទាប់មក សូមឆ្លើយនូវសំណួរដូចខាងក្រោមនេះ

REVIEW THE ANTENATAL CARE REGISTERS, TALLY SHEETS AND MONTHLY REPORTS AND ANSWER THE FOLLOWING QUESTIONS.

បំណូទី៧ Q07	តើមានបញ្ជីកត់ត្រា និងស្រង់តូលេខការពិនិត្យ ថ្ងៃពោះមុនសម្រាល ចាប់ពីខែកក្កដា រហូតដល់ ខែកញ្ញា ឆ្នាំ២០១២ ឬទេ?	មានគ្រប់ឯកសារទាំងអស់ YES, all documents are available	9	បើមានគ្រប់ដ កសាររំលង ទៅសំណួរទី
	Are the antenatal care registers and tally sheets for July to September 2012 available for review?	មានផ្នែកខ្លះ PARTLY, some documents are available	19 2	0 € →Q09
		គ្មាន NO, no documents are available	m e 3	
សំណួរទី ៨ Q08	សូមរៀបរាប់អំពីបញ្ជីកត់ត្រា ឬស្រង់តូលេខ ដែលមិនមានគ្រប់គ្រាន់ និង/ឬ កង្វះខាតព័ត៌មាន សម្រាប់ពិនិត្យ ហើយសូមបញ្ជាក់ពីមូលហេតុ Describe which registers or tally sheets are missing and/or not available for review, and why.			
	សូមពិនិត្យលើសំណួរទី៧៖ Check Q07:			
	- ប្រសិនបើចម្លើយថា មាន ឬមានមួយផ្នែក សូមបន្តរ If answer is YES or PARTLY, continue to Q09 - ប្រសិនបើចម្លើយថាគ្មាន (គ្មានឯកសារ សម្រាប់ពិនិ If answer is NO (no documents available) then ski	ត្យ) បន្ទាប់មករំលងទៅសំណួរទី១៤		
សំណូរទី៩ Q09	If answer is YES or PARTLY, continue to Q09 - ប្រសិនបើចម្លើយថាគ្មាន (គ្មានឯកសារ សម្រាប់ពិនិ If answer is NO (no documents available) then ski បញ្ជីកត់ត្រា៖សូមរាប់ឡើងវិញចំនួនការពិនិត្យផ្ទៃពោះ សម្រាលលើកទី២(ANC2) ពី បញ្ជី កត់ត្រានៃការពិនិ	ត្យ) បន្ទាប់មករំលងទៅសំណួរទី១៤ p to Q14. មុន កក្កដា សី	un ust	កញ្ញា SEPTEMBER
Tark Street	If answer is YES or PARTLY, continue to Q09 - ប្រសិនបើចម្លើយថាគ្មាន (គ្មានឯកសារ សម្រាប់ពិនិ If answer is NO (no documents available) then ski បញ្ជីកត់គ្រា៖សូមរាប់ឡើងវិញចំនួនការពិនិត្យផ្ទៃពោះ សម្រាលលើកទី២(ANC2) ពី បញ្ជី កត់គ្រានៃការពិនិ	ត្យ) បន្ទាប់មករំលងទៅសំណួរទី១៤ p to Q14. មុន កក្កដា សី វិត្យ JULY AUG	m	

សំណួរទី១០ Q10	បញ្ជីស្រង់ចូលេខ៖ សូមរាប់ឡើងវិញ ចំនួនការពិនិត្យផ្ទៃពោះ លើកទី២ (ANC2) ពីបញ្ជីស្រង់ចូលេខសម្រាប់ខែនីមួយៗ ប្រសិនបើបញ្ជីស្រង់ចូលេខមិនមានសម្រាប់ពិនិត្យទេ សូមកត់ត្រា "N/A" TALLY SHEET: Recount the number of ANC2 visits from the tally sheets for each month. IF THE TALLY SHEETS ARE NOT AVAILABLE, RECORD "N/A".	
សំណួរទី១១ Q11	ទម្រង់របាយការណ៍ប្រចាំខែ៖ សូមចម្លងនៃការពិនិត្យផ្ទៃពោះ លើកទី២ (ANC2) ពីមូលដ្ឋានសុខាភិបាលសម្រាប់របាយ ការណ៍ប្រចាំខែ (HC1/HO2) សម្រាប់ខែនីមួយៗ។ ប្រសិនបើរបាយការណ៍ប្រចាំខែមិនមានសម្រាប់ ពិនិត្យទេ សូមកត់ត្រា "N/A" MONTHLY REPORTING FORM: Copy the number of ANC2 visits from the facility monthly report (HC1/HO2) for each month. IF THE MONTHLY REPORTS ARE NOT AVAILABLE, RECORD "N/A".	
សំណូរទី១២ Q10	ថ្ងៃ ខែ ឆ្នាំបិទបញ្ជីកត់ត្រា៖ កត់ត្រាកាលបរិច្ឆេទដែលបញ្ជី កត់ត្រាការពិនិត្យផ្ទៃពោះដែលត្រូវបានបិទបញ្ជីសម្រាប់ខែ និមួយៗ។ ឧទាហរណ៏៖ ប្រសិនបើបញ្ជីកត់ត្រាត្រូវបានបិទ នៅថ្ងៃទី ២៥ ខែកក្កដា ឆ្នាំ២០១២ សូមបញ្ចូល ២៥- ទៅក្នុងប្រអប់ទី១ (ខែកក្កដា) CLOSING DATE OF REGISTER: Record the day of the month on which the ANC register was closed for each month. e.g. If the register was closed for the month on the 25th of July, enter "25" in the first box.	
សំណ្ហរទី១៣ Q13	តើមានហេតុផលអ្វីដែលខុសគ្នា (ប្រសិនបើមាន អ្វីមួយដទៃទៀត) សូមធ្វើការអង្កេត។ ឧទាហរណ៍៖ ការបញ្ចូលទិន្នន័យដែលមានដំណើរការ មិន ប្រក្រតី ការគណនា ដំណើរការមិនប្រក្រតី មានចន្លោះ ឬកង្វះ ខាតព័ត៌មាននៅក្នុងប្រភពឯកសារ។ល។ What are the reasons for the discrepancy (if any) observed? E.g. data entry errors, arithmetic errors, gaps or missing information in source documents, etc	

	អាសេទ្រាល់អុខនៅមុខ	បដ្ឋានសុខាអិចា	ณ			
	INSTITUTIONAL DELIVERIES (DELIVE	ERIES AT THE HEA	ALTH FACILITY			
សំណូរទី១៤	តើមូលដ្ឋានសុខាភិបាលនេះផ្តល់សេវាសម្រាល	មាន	9	បើគ្ន	ានរំលងទៅ	
Q14	កូនដែរឬទេ?	YES 1		សំព	សំណួរទី២២	
	Does this facility provide delivery services?	គ្មាន	b	>	Q22	
		NO	2			
សូមពិរ	និត្យឡើងវិញនូវបញ្ជីកត់ត្រា បញ្ជីស្រង់តួលេខ និងរបា	យការណ៍ប្រចាំខែ បេ	ហីយឆ្លើយនូ វ សំព	បំរជុំឧនា	ងក្រោម	
REVIEW	THE DELIVERY REGISTERS, TALLY SHEETS AND M QUESTIO		AND ANSWER	THE FOL	LOWING	
សំណូរទី១៥	តើមានបញ្ជីកត់ត្រានៃការសម្រាលកូន និងបញ្ជី	មានគ្រប់ឯកសារ	ទាំងអស់	9	បើមានគ្រប់	
Q15	ស្រង់តូលេខពីខែកក្កដា រហូតដល់ខែកញ្ញា	YES, all docume		1	លងទៅ	
	ឆ្នាំ២០១២ សម្រាប់ពិនិត្យដែរបទេ?	មានផ្នែកខ្លះ		ь	សំណូរទី១ព	
	Are the delivery registers and tally sheets for July to September 2012 available for	PARTLY, some d available	ocuments are	2	→ Q17	
	review?	គ្នាន		m	Ť	
		NO, no docume	documents are available			
សំណូរទី១៦	សូមរៀបរាប់អំពីបញ្ជីកត់ត្រា ឬបញ្ជីស្រង់			1 200		
Q16	តួលេខដែលមិនមានគ្រប់គ្រាន់ និង/ឬ	***************************************				
	កង្វះខាត ព័ត៌មានសម្រាប់ពិនិត្យ					
	ហើយសូមបញ្ជាក់ពី មូលហេតុផង។					
	Describe which registers or tally sheets are			***************************************		
	missing and/or not available for review, and why.	***************************************			***************************************	
	សូមពិនិត្យទៅលើសំណូរទី១៥៖					
	Check Q15:		h.			
	- ប្រសិនបើ ចម្លើយថា មាន ឬមានមួយផ្នែក សូម	បន្តទោសណ្ឌរទ១ព	រឡេត			
	If answer is YES or PARTLY, continue to Q17	and market	velvered e ^t en neti	n le		
	- ប្រសិនបើចម្លើយថាគ្មាន (គ្មានឯកសារ សម្រាប់ If answer is NO (no documents available) then		បជទេលេវេជ្ជារទ	90		
សំណូរទី១៧	1	22 22	ក់ដា ។	រីហា	8m	
Q17	បណ្ឌូកត្យោះ សូមរាប់ចំនួនសម្រាលកូននៅមូលដ្ឋានសុខាភិបា		0	GUST	កញ្ញា SEPTEMBE	
QI/	លឹមរាប់ចំនួនសម្រាប់កូននៅចូលផ្លានសុខរកបា ពី បញ្ជីកត់ក្រា ចាប់ពីខែកក្កដា រហូតដល់ខែកញ្ញា	,	JET AC	3031	JEF I EIVIBE	
	ឆ្នាំ២០១២។ សូមបញ្ចូលចំនួននៃសេវាសម្រាល	58				
	ទៅតាមខែ។					
	ប្រសិនបើបញ្ជីកត់ត្រាមិនមានសម្រាប់ពិនិត្យទេ សុ	អេកក់កោ				
	"N/A".	,0,1,1,0,1				
	REGISTER: Recount the number of institutions	557				
	deliveries from the delivery register for July to					

	IF THE REGISTERS ARE NOT AVAILABLE, RECORD "N/A".	
សំណូរទី១៨ Q18	បញ្ជីស្រង់តួលេខ៖ សូមរាប់ឡើងវិញចំនួនសម្រាលកូន ពីបញ្ជីស្រង់តូលេខសម្រាប់ខែនីមួយៗ។ ប្រសិនបើបញ្ជីស្រង់តួលេខមិនមានសម្រាប់ ពិនិត្យទេ សូមកត់គ្រា "N/A" TALLY SHEET: Recount the number of institutional deliveries from the tally sheets for each month. IF THE TALLY SHEETS ARE NOT AVAILABLE, RECORD "N/A".	
សំណួរទី១៩ Q19	ទម្រង់របាយការណ៍ប្រចាំខែ៖ សូមចម្លងចំនួនសម្រាលកូន ពីមូលដ្ឋានសុខាភិបាល សម្រាប់របាយការណ៍ប្រចាំខែ (HC1/HO2) សម្រាប់ខែនីមួយៗ។ ប្រសិនបើរបាយការណ៍ប្រចាំខែមិនមានសម្រាប់ ពិនិត្យទេ សូមកត់ត្រា "N/A"	
	MONTHLY REPORTING FORM: Copy the number of institutional deliveries from the facility monthly report (HC1 or HO2) for each month. IF THE MONTHLY REPORTS ARE NOT AVAILABLE, RECORD "N/A".	
សំណូរទី២០ Q20	ថ្ងៃ ខែ ឆ្នាំបិទបញ្ជីកត់ត្រា៖ កត់ត្រាកាលបរិច្ឆេទ ដែលបញ្ជីកត់ត្រាសេវាសម្រាលកូន ដែលច្ចូវបានបិទបញ្ជីសម្រាប់ ខែនិមួយៗ។ ឧទាហរណ៍៖ ប្រសិនបើបញ្ជីកត់ត្រាត្រូវបានបិទ នៅថ្ងៃទី ២៥ ខែកក្កដា ឆ្នាំ២០១២ សូមបញ្ចូល-២៥- ទៅក្នុងប្រអប់ទី១(ខែកក្កដា) CLOSING DATE OF REGISTER: Record the day of the month on which the delivery register was closed for each month. e.g. If the register was closed for the month on the 25 th of July, enter "25" in the first box.	
សំណួរទី២១ Q21	តើមានហេតុផលអ្វីដែលខុសគ្នា (ប្រសិនបើមាន ដទៃទៀត) សូមធ្វើការអង្កេត។ ឧទាហរណ៍៖ ការបញ្ចូលទិន្នន័យដែលមាន ដំណើរការមិនប្រក្រតី ការគណនា ដំណើរការ មិនប្រក្រតី មានចន្លោះ ឬ កង្វះខាតព័ត៌មាន នៅក្នុងប្រភពឯកសារ។ល។ What are the reasons for the discrepancy (if any) observed? E.g. data entry errors, arithmetic errors, gaps or missing information in source documents, etc.	

	<i>គារផ្តល់ថ្នាំចទ្វារស</i> ្រ	ម្រាប់បំខឹត	មស្រិល		
	MEASLES IMMU	INIZATION	s	99	
សំណួរទី២២ Q22	តើមូលដ្ឋានសុខាភិបាលផ្តល់នូវសេវាថ្នាំបង្ការស ម្រាប់កុមារដែរ ឬទេ? Does this facility provide child immunization services?	មាន YES គ្មាន NO	9 1 19 2	បើគ្មាន រំលងទៅ សំណូរទី៣០ →030	
សូម	ពិនិត្យទៅលើបញ្ជីកត់ត្រាការផ្ដល់ថ្នាំបង្ការ (EPI REGIS	Control of the contro		រ័ាប្រចាំខែ	
DEVIEW TH	ហើយបន្ទាប់មកសូមឆ្លើយនូវត E EDI BEGISTERS TALLY SHEETS AND MONTHLY			ING OUESTIONS	
សំណួរទី២៣ Q23			មានគ្រប់ឯកសារទាំងអស់ 9 YES, all documents are available 1 មានផ្នែកខ្លះ ២ សំណួ PARTLY, some documents are 2 available		
		គ្មាន NO, r	no documents are available	т е з	
សំណួរទី២៤ Q24	សូមរៀបរាប់អំពីបញ្ជីកត់ត្រា ឬបញ្ជីស្រង់ តូលេខដែលមិនមានគ្រប់គ្រាន់ និង/ឬ កង្វះខាត ព័ត៌មាន សម្រាប់ពិនិត្យ ហើយសូមបញ្ជាក់ ពីមូល ហេតុផង។ Describe which registers or tally sheets are missing and/or not available for review, and wh	113033000			
	សូមពិនិត្យទៅលើសំណួរទី២៣៖ Check Q23: - ប្រសិនបើ ចម្លើយថា មាន ឬមានមួយផ្នែក សូមប If answer is YES or PARTLY, continue to Q25 - ប្រសិនបើចម្លើយថាគ្មាន (គ្មានឯកសារ សម្រាប់ពិ If answer is NO (no documents available) then s	និត្យ) បន្ទាប់	8.72		
សំណូរទី២៥ Q25	បញ្ជីកត់ត្រា៖ សូមរាប់ចំនួនកុមារអាយុក្រោម ១ឆ្នាំ	///	កក្កដា សីហា JULY AUGU:	80	

	ដែលបានទទួលថ្នាំបង្ការជំងឺកញ្ជ្រិលពី បញ្ជីកត់ត្រាផ្តល់ថ្នាំបង្ការ ចាប់ពីខែ កក្កដា រហូតដល់ខែកញ្ញា ឆ្នាំ២០១២។ បញ្ចូលចំនួន កុមារអាយុក្រោម១ឆ្នាំ ដែលបានទទួលថ្នាំបង្ការជំងឺកញ្ជ្រិល	
	ទៅតាមខែនីមួយៗ ។ ប្រសិនបើបញ្ជីកត់ត្រាមិនមានសម្រាប់ពិនិត្យទេ សូមកត់ត្រា "N/A".	
	REGISTER: Recount the number of measles immunizations in children under 1 year from the EPI register for July to September 2012. Enter the number of measles immunization in children under 1 year by month.	
សំណូរទី២៦	r the registers are not available, record"n/a". បញ្ជីស្រង់តូលេខ៖ សូមរាប់ឡើងវិញចំនួនកុមារអាយុក្រោម	
Q26	១ឆ្នាំ ដែលបានទទួលថ្នាំបង្ការជំងឺកញ្ជ្រិល ពី បញ្ជីស្រង់តូលេខ	
Q20	(ក្បាលម្ជល) សម្រាប់ខែនីមួយៗ។	
	ប្រសិនបើបញ្ជីស្រង់តូលេខមិនមានសម្រាប់ ពិនិត្យទេ	
	សូមកត់ក្រា "N/A"	
	TALLY SHEET: Recount the number of measles immunizations in children under 1 year from the tally sheets for each month.	
	IF THE TALLY SHEETS ARE NOT AVAILABLE, RECORD "N/A".	
សំណួរទី២៧	ថ្ងៃ ខែ ឆ្នាំ ធ្វើរបាយការណ៏បញ្ជីស្រង់តួលេខប្រចាំថ្ងៃ ៖	
Q27	កត់ត្រាកាលបរិច្ឆេទដែលបញ្ជីកត់ត្រាសេវាផ្តល់ថ្នាំបង្ការ	
	ដែលត្រូវបានរាយការណ៏សម្រាប់ខែនិមួយៗ។	
	ឧទាហរណ៏៖ ប្រសិនបើបញ្ជីស្រង់តួលេខ(ក្បាលម្នល)	
	ត្រូវបានបិទ នៅថ្ងៃទី២៥ខែកក្កដា ឆ្នាំ២០១២	
	សូមបញ្ចូល-២៥- ទៅក្នុងប្រអប់ទី១(ខែកក្កដា)	
	REPORTING DATE OF TALLY SHEET: Record the day of the month on which the immunizations were tallied for the month.	
	e.g. If immunizations in July were tallied for June 26 to July 25 th , enter "25" in the first box.	
សំណូរទី២៨	ទម្រង់របាយការណ៍ប្រចាំខែ៖ សូមចម្លងចំនូ កុមារអាយុ ក្រោម	
Q28	១ឆ្នាំ ដែលបានទទូលថ្នាំបង្ការជំងឺកញ្ច្រិលពី	
	របាយការណ៍ប្រចាំខែ (HC1/HO2) សម្រាប់ខែនីមួយៗ។	
	ប្រសិនបើរបាយការណ៍ប្រចាំខែមិនមានសម្រាប់ពិនិត្យទេ	
	សូមកត់ត្រា "N/A"	
	MONTHLY REPORTING FORM: Copy the number of measles immunizations in children under 1 year from the facility monthly report (HC1 or HO2) for each month.	
	IF THE MONTHLY REPORTS ARE NOT AVAILABLE, RECORD "N/A".	

សំណូរទី២៩ Q29	តើមានហេតុផលអ្វីដែលខុសគ្នា (ប្រសិនបើមាន ដទៃទៀត) សូមធ្វើការអង្កេត។ ឧទាហរណ៍៖ ការបញ្ចូលទិន្នន័យដែលមានដំណើរការ មិនប្រក្រតី ការគណនាដំណើរការមិនប្រក្រតី មានចន្លោះ ឬ កង្វះខាតព័ត៌មាននៅក្នុងប្រភពឯកសារ។ល។ What are the reasons for the discrepancy (if any) observed? E.g. data entry errors, arithmetic errors, gaps or missing information in source documents, etc.				
	អារពិសិត្យពិគ្រោះខំទឹ				
	OUTPATIENT VISITS	(NEW CAS			
សំណូរទី៣០	តើមូលដ្ឋានសុខាភិបាលផ្តល់សេវាពិនិត្យពិគ្រោះ	មាន		បើគ្មាន រំលងទៅ	
Q30	ជំងឺក្រៅដែរ ឬទេ?	YES		សំណួរទី៣៨	
	Does this facility provide outpatient care	គ្មាន	р	→ Q38	
	services?	NO 2			
	ត្យទៅលើបញ្ជីកត់ត្រានៃ សេវាពិនិត្យជំងឺក្រៅ (OPD RE ហើយបន្ទាប់មកសូមឆ្លើយនូវសំ E OPD REGISTERS, TALLY SHEETS AND MONTHLY R	ណូរដូចខាង	ក្រោមនេះ		
សំណួរទី៣១ Q31	តើមានបញ្ជីកត់ត្រានៃ ការពិនិត្យពិគ្រោះជំងឺក្រៅ និង បញ្ជីស្រង់តូលេខ សម្រាប់ខែកក្កដា រហូត ដល់ខែកញ្ញា ឆ្នាំ២០១២ សម្រាប់ការត្រូតពិនិត្យ ដែរឬទេ? Are the OPD registers and tally sheets for July to September 2012 available for review?	YES, all មានផ្នែក PARTLY, availabl គ្មាន	some documents are	 ១ បើមានគ្រប់រំ 1 លងទៅ ២ សំណួរទី៣៣ 2 → q33 ៣ 3 	
សំណូរទី៣២ Q32	សូមរៀបរាប់អំពីបញ្ជីកត់ត្រា ឬបញ្ជីស្រង់ តួលេខ ដែលមិនមានគ្រប់គ្រាន់ និង/ឬ កង្វះខាតព័ត៌មាន សម្រាប់ពិនិត្យ ហើយសូមបញ្ជាក់ពីមូលហេតុ ផង។ Describe which registers or tally sheets are missing and/or not available for review, and why.				
	សូមពិនិត្យទៅលើសំណូរទី៣១៖ Check Q31: - ប្រសិនបើ ចម្លើយថា មាន ឬមានមួយផ្នែក សូមបន្ត If answer is YES or PARTLY, continue to Q33 - ប្រសិនបើចម្លើយថាគ្មាន (គ្មានឯកសារ សម្រាប់ពិនិ If answer is NO (no documents available) then sk	- ត្យ) បន្ទាប់រ			

សំណួរទី៣៣	បញ្ជីកត់ត្រា៖ សូមរាប់ចំនួន ករណីថ្មី ពីបញ្ជីកត់ត្រា	កក្កដា	សីហា	កញ្ញា
Q33	ពិនិត្យជំងឺក្រៅចាប់ពីខែ កក្កដា រហូតដល់ខែ កញ្ញា ឆ្នាំ ២០១២។ សូមបញ្ចូលចំនួនករណីថ្មី	JULY	AUGUST	SEPTEMBER
	នៃការពិនិត្យពិគ្រោះជំងឺក្រៅ ទៅតាមខែ។			
	ប្រសិនបើបញ្ជីកត់ត្រាមិនមានសម្រាប់ពិនិត្យទេ សូមកត់ត្រា "N/A". REGISTER: Recount the number of new outpatient visits from the OPD registersfor July to September 2012. Enter the number of new outpatient vsits by month. IF THE REGISTERSARE NOT AVAILABLE, RECORD "N/A".			
សំណួរទី៣៤ Q34	បញ្ជីស្រង់តូលេខ ៖ សូមរាប់ឡើងវិញ ចំនួនករណីថ្មី ពីបញ្ជីស្រង់តូលេខសម្រាប់ខែនីមួយៗ។			
	ប្រសិនបើបញ្ជីស្រង់ចូលេខមិនមានសម្រាប់ ពិនិត្យទេ សូមកត់ត្រា "N/A"			
	TALLY SHEET: Recount the number of new outpatient visits from the tally sheets for each month. IF THE TALLY SHEETS ARE NOT AVAILABLE, RECORD "N/A".			
សំណួរទី៣៥	ទម្រង់របាយការណ៍ប្រចាំខែ៖ សូមចម្លងចំនួននៃ ករណីថ្មី ពី			
Q35	របាយការណ៍ប្រចាំខែរបស់មូលដ្ឋាន សុខាភិបាល (HC1/HO2) សម្រាប់ខែនីមួយៗ។			
	ប្រសិនបើរបាយការណ៍ប្រចាំខែមិនមានសម្រាប់ ពិនិត្យទេ សូមកត់ត្រា "N/A"			
	MONTHLY REPORTING FORM: Copy the number of new outpatient visits from the facility monthly report (HC1 or HO2) for each month.			
	IF THE MONTHLY REPORTS ARE NOT AVAILABLE, RECORD "N/A".			
សំណួរទី៣៦	ថ្ងៃ ខែ ឆ្នាំ បិទបញ្ជីកត់ត្រា៖ កត់ត្រាកាលបរិច្ឆេទ ដែលបញ្ជី			
Q36	កត់ត្រាការពិនិត្យពិគ្រោះជម្ងឺក្រៅ ដែលត្រូវបានបិទបញ្ជី សម្រាប់ខែនិមួយៗ។			
	ឧទាហរណ៏៖ ប្រសិនបើបញ្ជីកត់ត្រាត្រូវបានបិទ នៅថ្ងៃទី ២៥			
	ខែកក្កដា ឆ្នាំ២០១២ សូមបញ្ចូល-២៥- ទៅក្នុង ប្រអប់ទី១(ខែកក្កដា)			
	CLOSING DATE OF REGISTER: Record the day of the month on which the OPD register was closed for each month.			
	e.g. If the register was closed for the month on the 25 th of July, enter "25" in the first box.			
សំណូរទី៣៧ Q37	តើមានហេតុផលអ្វីដែលខុសគ្នា (ប្រសិនបើមាន ដំទៃទៀត)	***************		

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	សូមធ្វើការអង្កេត។				
	ឧទាហរណ៍៖ ការបញ្ចូលទិន្នន័យដែលមាន				
	ដំណើរការមិនប្រក្រតី ការគណនា		***************************************		
	ដំណើរការមិនប្រក្រតី មានចន្លោះ ប្				
	កង្វះខាតព័ត៌មាននៅក្នុងប្រភពឯកសារ។ល។				
	What are the reasons for the discrepancy (if any)		***************************************		
	observed? E.g. data entry errors, arithmetic error	s, gaps			
	or missing information in source documents, etc.				
	អរណីខំទីទ្រុ	<i>ရောက်</i>	F		
	MALARIA C				
សំណូរទី៣៨	តើមូលដ្ឋានសុខាភិបាលផ្តល់រោគវិនិច្ឆ័យ និងផ្តល់	មាន	9		
Q38	ការព្យាបាលសំរាប់ជំងឺគ្រនចាញ់ដែរឬទេ?	YES	1	200	
	Does this facility provide diagnosis and	គ្មាន	២	បើឮ	ក្រន បញ្ចាប់
	treatment of malaria (inpatient or outpatient)?	NO	2	>	END
សូមពិនិត្យទៅ	លើបញ្ហីកត់ត្រានៃ សេវាពិនិត្យជំងឺសម្រាកពេទ្យ សេវាពិ	និត្យជំងឺក្រេ	(INPATIENT/OUTPA	TENT) (រញ្ជីស្រង់ តូលេខ
	និងរបាយការណ៍ប្រចាំខែ ហើយបន្ទាប់មកសូ	មឆ្លើយនូវត់	វ់ណ្ឌរដូចខាងក្រោមនេះ		
REVIEW T	HE REGISTERS (INPATIENT/OUTPATIENT), TALLY S		MONTHLY REPORTS	AND AN	ISWER THE
12 - 22 - 22	FOLLOWING QUE	and the second second	that a rad words		Later and the
សំណួរទី៣៩	តើមានបញ្ជីកត់ត្រាពិគ្រោះជំងឺក្រៅ និង/ឬ បញ្ជី		រឯកសារទាំងអស់	9	បើមានគ្រប់រំ
Q39	សម្រាកពេទ្យ និងបញ្ជីស្រង់ចូលេខ ពីខែកក្កដា		documents are availab		លងទៅ
	រហូតដល់ខែកញ្ញា ឆ្នាំ២០១២ សម្រាប់ការត្រូត	មានផ្នែក	77	Ю	សំណូរទី៤១
	ពិនិត្យដែរឬទេ?	PARTLY availabl	, some documents are e	2	→ Q41
	Are the registers (inpatient and/or outpatient) and tally sheets for July to September 2012	គ្នាន		m	
	available for review?	S.,	documents are availab	le 3	
សំណូរទី៤០	សូមរៀបរាប់អំពីបញ្ជីកត់ត្រា ឬបញ្ជីស្រង់តួលេខ				
Q40	ដែលមិនមានគ្រប់គ្រាន់ឬកង្វះខាតព័ត៌មាន				
200	សម្រាប់ពិនិត្យហើយសូមបញ្ជាក់ពីមូលហេតុផង				***************************************
	Describe which registers or tally sheets are	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
	missing and/or not available for review, and				
	why.				
	សូមពិនិត្យទៅលើសំណួរទី៣៩៖				
	Check Q39:				
	- ប្រសិនបើ ចម្លើយថា មាន ឬមានមួយផ្នែក សូមបន្ត	ទៅសំណូរ	ទី៤១ទៀត		
	If answer is YES or PARTLY, continue to Q41				
	- ប្រសិនបើចម្លើយថាគ្មាន (គ្មានឯកសារ សម្រាប់ពិនិ	ត្យ) បន្ទាប់។	មកបញ្ចប់សំណួរ		

If answer is NO (no documents available) then skip to end.

សំណូរទី៤១	បញ្ជីកត់ត្រាពិនិត្យពិគ្រោះជំងឺក្រៅ៖ សូមរាប់ឡើងវិញ ចំនួនករណីថ្មីនៃជំងឺគ្រុនចាញ់ពីបញ្ជីកត់ត្រាពិគ្រោះជំងឺក្រៅ	កក្កដា	សីហា	កញ្ញា
Q41		JULY	AUGUST	SEPTEMBER
	(OPD) ចាប់ពីខែកក្កដា រហូតដល់ខែកញ្ញា ឆ្នាំ២០១២ ។ សូមបញ្ចូលចំនួនករណីថ្មីនៃជំងឺគ្រនចាញ់ទៅតាមខែនីមួយៗ។			
	ប្រសិនបើបញ្ជីកត់ត្រាមិនមានសម្រាប់ពិនិត្យទេ សូមកត់ត្រា "N/A". OUTPATIENT REGISTER: Recount the number of malaria cases from the outpatient register for July to September 2012. Enter the number of malaria casesby month.			
	IF THE REGISTERS ARE NOT AVAILABLE, RECORD "N/A".			
សំណួរទី៤២ Q42	បញ្ជីស្រង់តួលេខពិនិត្យពិគ្រោះជំងឺក្រៅ ៖ សូមរាប់ឡើងវិញ ចំនួនករណីថ្មីនៃជំងឺគ្រុនចាញ់ ពី បញ្ជីស្រង់តួលេខ (OPD) សម្រាប់ខែនីមួយៗ។			
	ប្រសិនបើបញ្ជីស្រង់តួលេខមិនមានសម្រាប់ ពិនិត្យទេ សូមកត់ត្រា "N/A" OUTPATIENT TALLY SHEET: Recount the number of malaria			
	cases from the outpatient tally sheets for each month. IF THE TALLY SHEETS ARE NOT AVAILABLE, RECORD "N/A".			
សំណូរទី៤៣	ទម្រង់របាយការណ៍ប្រចាំខែ៖			
Q43	សូមចម្លងចំនួនករណីថ្មីនៃជំងឺគ្រុនចាញ់ (ពិនិត្យពិគ្រោះជំងឺក្រៅ) (OPD) ពីរបាយការណ៍ ប្រចាំខែរបស់មូលដ្ឋានសុខាភិបាល			
	(HC1 or HO2) សម្រាប់ខែនីមួយៗ។			
	ប្រសិនបើរបាយការណ៍ប្រចាំខែមិនមានសម្រាប់ ពិនិត្យទេ សូមកត់ត្រា "N/A"			
	MONTHLY REPORTING FORM: Copy the number of malaria outpatient cases from the facility monthly report (HC1 or HO2) for each month. IF THE MONTHLY REPORTS ARE NOT AVAILABLE, RECORD "N/A".			
សំណូរទី៤៤	បញ្ជីកត់ត្រា៖ សូមរាប់ចំនួនជំងឺគ្រនចាញ់សម្រាកពេទ្យ ពីបញ្ជី			
Q44	កត់ត្រាជំងឺសម្រាកពេទ្យ (IPD) ចាប់ពីខែកក្កដា រហូតដល់			
	ខែកញ្ញា ឆ្នាំ២០១២។ សូមបញ្ចូល			
	ចំនួនជំងឺ គ្រុនចាញ់សម្រាកពេទ្យ ទៅតាមខែ។			
	ប្រសិនបើបញ្ជីកត់ត្រាមិនមានសម្រាប់ពិនិត្យទេ សូមកត់ត្រា "N/A".			
	INPATIENT REGISTER: Recount the number of malaria inpatient admissions from the inpatient register for July to September 2012. Enter the number of malaria inpatient admissions by month.			
	IF THE REGISTERS ARE NOT AVAILABLE, RECORD "N/A".			
សំណូរទី៤៥ Q45	បញ្ជីស្រង់ចូលេខជំងឺសម្រាកពេទ្យ ៖ សូមរាប់ ឡើងវិញចំនួនករណី ជំងឺគ្រនចាញ់សម្រាកពេទ្យ			

	ពីបញ្ជីស្រង់តួលេខ (IPD)សម្រាប់ខែនីមួយៗ។			
	ប្រសិនបើបញ្ជីស្រង់តួលេខមិនមានសម្រាប់ ពិនិត្យទេ សូមកត់គ្រា "N/A" INPATIENT TALLY SHEET: Recount the number of malaria inpatient admissions from the inpatient tally sheets for each month. IF THE TALLY SHEETS ARE NOT AVAILABLE, RECORD "N/A".			
សំណូរទី៤៦ Q46	ទម្រង់របាយការណ៍ប្រចាំខែ៖ សូមចម្លងចំនួនជំងឺគ្រុនចាញ់ សម្រាកពេទ្យ (IPD) ពីរបាយការណ៍ប្រចាំខែរបស់មូលដ្ឋាន សុខាភិបាល (HC1 or HO2) សម្រាប់ខែនីមួយៗ។ ប្រសិនបើរបាយការណ៍ប្រចាំខែមិនមានសម្រាប់ ពិនិត្យទេ សូមកត់ត្រាគ្មាន "N/A" MONTHLY REPORTING FORM: Copy the number of malaria inpatient admissions from the facility monthly report (HC1 or HO2) for each month.			
សំណួរទី៤៧	IF THE MONTHLY REPORTS ARE NOT AVAILABLE, RECORD "N/A". ថ្ងៃ ខែ ឆ្នាំបិទបញ្ជីកត់ត្រា៖ កត់ត្រាកាលបរិច្ឆេទ បញ្ជីកត់ត្រា			
Q47	ជំងសម្រាកពេទ្យ (IPD) ដែលត្រូវបានបិទសម្រាប់ខែនិមួយៗ។ ឧទាហរណ៏៖ ប្រសិនបើបញ្ជីកត់ត្រាត្រូវបានបិទ នៅថ្ងៃទី ២៥ ខែកក្កដា ឆ្នាំ២០១២ សូមបញ្ចូល ២៥- ទៅក្នុង ប្រអប់ទី១(ខែកក្កដា)			
	closing date of inpatient register: Record the day of the month on which the inpatient register was closed for each month. e.g. If the register was closed for the month on the 25 th of July, enter "25" in the first box.			
សំណូរទី៤ ៤ Q48	តើមានហេតុផលអ្វីដែលខុសគ្នា (ប្រសិនបើមាន ដំទៃទៀត) សូមធ្វើការអង្កេត។ ឧទាហរណ៍៖ ការបញ្ចូលទិន្នន័យដែលមានដំណើរការមិនប្រក្រតី ការគណនា ដំណើរការមិនប្រក្រតី មានចន្លោះ ឬ កង្វះខាតព័ត៌មាននៅក្នុងប្រភពឯកសារ។ល។ What are the reasons for the discrepancy (if any) observed?			
	E.g. data entry errors, arithmetic errors, gaps or missing information in source documents, etc.			

អ្នកសម្ភាសន៍ធ្វើការអច្ចេ ង INTERVIEWER OBSERVATIONS
INTERVIEWER OBSERVATIONS

ប្រធានមូលដ្ឋានសុខាភិបាល Chief of Health Facility ហត្ថលេខា Signature

ប្រធានក្រុមចុះអង្កេត Team Leader ហត្ថលេខា Signature

