Immunization Data Quality Assessment (DQA)

PAKISTAN

Draft Report

Pakistan

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World Health Organization

Contents

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Abbreviations

AEFI	Adverse Event Following Immunization
BCG	Bacillus Calmette-Guérin (vaccine)
BHU	Basic Health Unit
CBA	Childbearing Age
cMYP	Comprehensive Multi-Year Plan
DGHS	Director General Health Services
DHMT	District Health Management Team
DHO	District Health Office
DPT	Diphtheria, Pertussis and Tetanus vaccine
DQA	Data Quality Assessment
DQS	Data Quality Self-assessment
EIR	Electronic Immunization Registry
EMRO	Eastern Mediterranean Regional Office
EPI	Expanded Program on Immunization
HF	Health Facility
HMIS	Health Management Information System
IP	Improvement Plan
IPV	Inactivated Polio Vaccine
KP	Khyber-Pakhtunkhwa
LHW	Lady Health Worker
Measles1	1st dose of measles vaccine
M&E	Monitoring and Evaluation
MoNHSRC	Ministry of National Health Services, Regulation &Coordination
OPV	Oral Polio Vaccine
PCV	Pneumococcal Conjugate Vaccine
PDHS	Pakistan Demographic and Health Survey
Penta3	Pentavalent vaccine 3rd dose including diphtheria-tetanus-pertussis-hepatitis B-*Haemophilus influenzae* type b vaccine
PSLM	Pakistan Social and Living Standards Measurement Survey
RHC	Rural Health Center
SDH	Social Determinants of Health
UC	Union Council
UNICEF	United Nations Children´s Fund
VPD	Vaccine Preventable Disease
vLMIS	Vaccine Logistics Management Information System

WHO World Health Organization

Glossary

Accuracy: is also known as *validity*. Accurate data are considered correct and they measure what they are intended to measure. Accurate data minimize errors (for example, recording or interviewer bias, transcription error, or sampling error), to the degree that they are negligible.

Accuracy Ratio: this indicator compares the reported doses of a selected vaccine and the recounted values of doses of the same vaccine by source of data, as follows:

$$\text{Accuracy Ratio (\%)} = \frac{\text{Nº vaccines doses counted (verified from the source)}}{\text{Nº vaccines doses reported (found at the higher level)}} \times 100$$

Administrative vaccination coverage: is the percentage representing the number of administered doses on record in the registration system divided by the total target population (for example, children under 1 year of age).

$$\text{Administrative coverage (\%)} = \frac{\text{Nº vaccine doses administered}}{\text{Target population}} \times 100$$

Completeness: it means number of periodic reports received from reporting units out of total reporting units enlisted for the purpose for a specified period.

Dropout rate: is the proportion of children who initiate the vaccination series/schedule but do not complete it by receiving subsequent doses or antigen. It can be calculated by comparing the number of children vaccinated with an initial dose or antigen (e.g. Penta 1 or BCG) with subsequent dose or another antigen (e.g Penta 3 or Measles). It is used as an indicator of utilization of the immunization service.

$$\text{Dropout Rate (\%)} = \frac{\text{Nº DPT1 doses administered} - \text{Nº DPT3 doses administered}}{\text{Nº DPT1 doses administered}} \times 100$$

Random: depending on chance. It refers to the method used to generate a randomized sequence, either using a random number table or a computer program.

Sample: is a group of observation units or research units taken from the total population under study or at risk. There are different ways to obtain the sample: for example, simple random sampling, stratified sampling, or cluster sampling, among others.

Timeliness: it means number of periodic reports received from reporting units before the set date and time for submission of the report out of total reporting units enlisted for the purpose for a specified period.

Acknowledgements

This Immunization Data Quality Assessment (DQA) in Pakistan represents a joint effort of the EPI Pakistan and World Health Organization. The Federal and Provincial EPI of Punjab, Sindh, Khyber-Pakhtunkhwa and Balochistan provided valuable collaboration and relevant information to facilitate the planning and implementation of this assessment.

The DQA would not have been possible without the support of the personnel of the selected provinces, districts and Health Facilities included in this evaluation, the cooperation of WHO EMRO and WHO Pakistan Country Office, other partners (e.g. UNICEF and JICA) and the commitment and hard work of all the field teams.

Executive Summary

Credible data is one of the key cornerstone for proper monitoring and evaluation of programme performance and plan for improvement. Unfortunately, the quality of immunization data in Pakistan has been a concern for the program and partners. To identify the weaknesses and strengthens of data quality in Pakistan, a Data Quality Assessment (DQA) was conducted in June 2016. Its findings will be used to formulate a plan of action to improve its performance. To implement DQA, the World Health Organization provided technical support, through WHO Pakistan Country Office and WHO EMRO.

DQA in Pakistan assessed three main components:

- **Quality of the monitoring system**, using questionnaires administered at the province, district and health facilities, assigning scores to questions established for seven domains: demographics, registration, reporting and archiving, data analysis and use, supervision and feedback, planning and management and human resources. The range of the score was from a null value = 0 to a maximum value =10. Based on the score – overall and by domain- a Quality Index (QI) was calculated by each level and an aggregated index was also estimated by district and health facility.

- **Accuracy of data**, the doses of vaccine from different sources (daily register, monthly tabulation at the district and province) were recounted and compared with the reported values. Each team verified the number of doses of Pentavalent 3 and Measles 1 in children under 1 year-age registered daily in each Health Facility during the October, November and December 2015 (July – December 2015 in Punjab). An Accuracy Ratio (AR%) was calculated by level: Health Facility, District and Province.

- **Timeliness and completeness of reporting**, by calculating the number of reports sent on time and complete from the health facility to the district and from the district to the province.

The DQA started on June 13th with a debriefing at federal level, followed by the training of the evaluators assigned to each province and the validation of all the tools. Representatives from Federal and Provincial EPI, UNICEF, JICA, WHO EMRO and WHO Pakistan Country Office composed the DQA teams. After the training, each team travelled to one of the four major provinces: Punjab, Sindh, Khyber-Pakhtunkhwa and Balochistan. The collected data were entered in Excel spread sheets to calculate the data quality and accuracy indicators. Each team analysed and discussed the results to propose recommendations. A final debriefing was held in each one of the provinces to discuss the DQA report and to define the next steps and actions based on the findings.

Punjab. The QI was 82% at provincial level in Punjab, with higher scores in planning and management (score= 10.0), supervision and feedback (score= 10.0), and the rest of domain achieved scores close to 8.0, showing a better performance in the vaccine monitoring system when compared to other provinces. The aggregated QIs was 69% at the district level and QI= 60% at the Health Facility level, with the lowest values in supervision, feedback, data analysis and use. The overall QI varied widely between the districts (from 44% in Narowal to 86% in Sahiwal) and HF (from 43% to 82%). The AR% (Penta1 and Measles1) was 100% at the Provincial level and also achieved a very good performance at all districts, with AR% values equal to 100% or close. The range of overall values of AR% found at HF level showed important differences between reported and recounted doses of vaccines: Penta3 (lowest AR= 51.1%, highest AR= 107.1%) and Measles1 (lowest AR= 43.1%, highest AR=113.9%).

Sindh. The QI was 47.0% at provincial level in Sindh, with the highest score in demographics (score= 10.0). Supervision and Feedback had score = 0, followed by Planning and management (score= 3.3), Human resources (score= 3.0) and Data analysis and use (score= 2.5). The aggregated QIs was 55% at the district level and QI= 61% at the Health Facility level, showing the lowest values in supervision, feedback, data analysis and use. The overall QI score varied widely between the districts (from 17% in Liagatabad Town to 71% in Hyderabad) and HF (from 43% to 80%). The AR% achieved a good performance at the provincial level (AR Penta3= 100.4% and AR= 99.3% Measles1). At district level, the AR% was lower in Hyderabad (AR= 64% Penta3 and 62.4% Measles1) and achieved values equal 100% in Tando Mohammad Khan for both Penta3 and Measles1. The range of overall values or AR (%) found at HF level showed important differences between reported and recounted doses: Penta3 (lowest= 50.8%, highest=139.0%) and Measles1 (lowest= 26.7%, highest= 119.7%).

Khyber-Pakhtunkhwa. The QI was 60.0% at provincial level in KP, with higher scores in demographics (score= 7.9) and human resources (score= 7.0). Planning and management showed the lowest value (score= 3.3), followed by reporting and archiving (score= 5.4), data analysis and use (score= 5.8), supervision and feedback (score= 6.3). The aggregated QIs was 44% at the district level and QI= 59% at the Health Facility level, showing the lowest values in supervision, feedback, data analysis and use. The overall QI score varied widely between the districts (from 31% in Kohat to 58% in Mansehra) and HF (from 37.0% to 86%). The AR% achieved a good performance at the provincial level (AR Penta3= 99.3% and AR= 99.8% Measles1). At district level, the AR% was higher in Mansehra (AR Penta3= 97% and AR Measles1= 99.7%) and Abbottabad (AR Penta3= 95.9% and AR Measles1= 95.9) and lower in Kohat (AR Penta3= 78.7% and AR Measles1= 75.8%). The range of overall values or AR (%) found at HF level showed important differences between reported and recounted doses: Penta3 (lowest= 39.5%, highest= 109.2%) and Measles1 (lowest= 28.9%, highest= 285.9%).

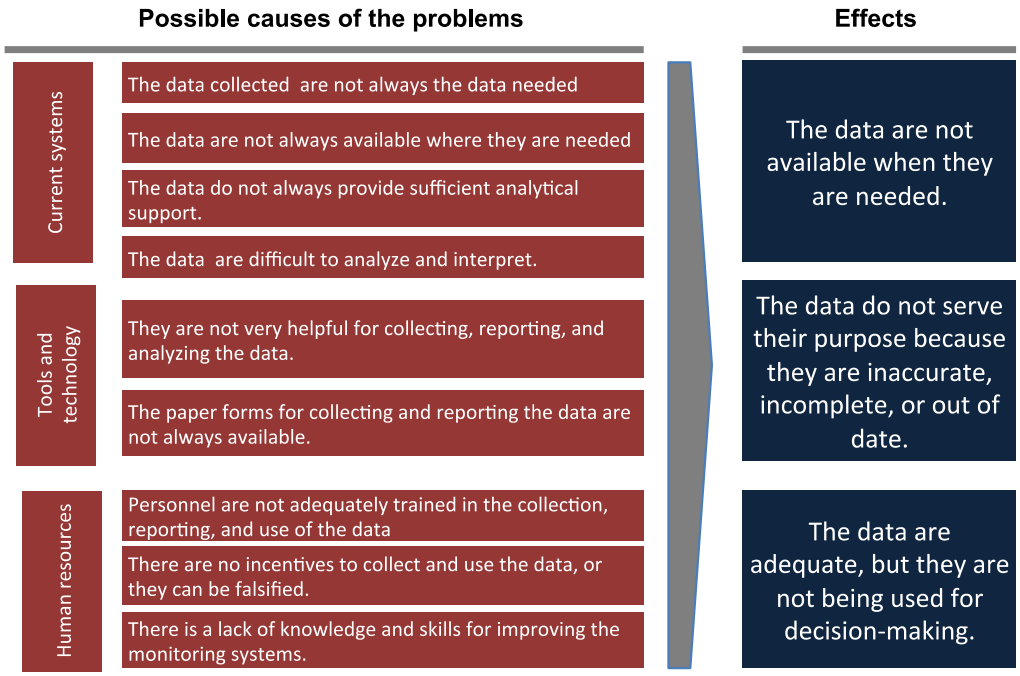
Balochistan. The QI was 76.0% at provincial level in Balochistan, with higher scores in demographics (score= 10), registration (score= 10), data analysis and use (score= 8.3). Planning and management showed the lowest value (score= 6.7), followed by supervision and feedback (score=0). The aggregated QIs was 31% at the district level and QI= 45% at the Health Facility level, showing the lowest values in supervision, feedback, data analysis and use. The overall QI score varied widely between the 3 districts (from 41% in Quetta to 22% in Harnai) and HF (from 67.0% to 17%). The AR% achieved a good performance at the provincial level (AR Penta3= 99.3% and AR= 99.8% Measles1) when compared to Districts and HFs. At district level, the AR% for Penta3 was higher in Quetta (AR Penta3= 94.8% and AR Measles1= 93.4%) and Killa Saifullah (AR Penta3= 98.6% and AR Measles1= 91.5) and lower in Harnai (AR Penta3= 27.7% and AR Measles1= 79.0%). The range of overall values or AR (%) found at HF level showed important differences between reported and recounted doses: Penta3 (lowest= 24.1% to 100.8%) and Measles1 (1.6% to 160.5%).

In all provinces, the monthly reports were received from the HF to the districts and then to the provincial level, but not on time. The main weaknesses found in the immunization monitoring system are: lack of systematic and comprehensive planning, supervision and feedback, limited capacity for data analysis and use of information for making decisions. Based on these findings, it is important to built capacities of EPI staff on data management, analysis & monitoring in all levels, but particularly at the districts and HFs. Establishing mechanisms for feedback, supervision, monitoring data quality and vaccine coverage indicators will be essential to strengthen the immunization programme.

1. Introduction

The evidence indicates that when the quality of coverage data improves, the vaccine coverage also improves, since the problem with coverage can be related to the quality of the information[1]. Good quality of data is essential for establishing vaccination tactics, reach the non-vaccinated populations, increase vaccine coverage and reduce the gaps. That is why improving the quality of data is a priority for the immunization programme. Table 1 shows possible causes of problems with the information systems and the effect that they cause on the immunization services.

Figure 1. Possible causes and effects of problems with information systems



Source: Diagram adapted from WHO.

The quality of immunization data in Expanded Programme on Immunization (EPI) of Pakistan is a concern for the programme and partners because, unfortunately, administrative data of EPI Pakistan enjoys very little credibility even among the programme managers. To understand the weaknesses in EPI data quality and take necessary steps for its improvement, the program decided to conduct a comprehensive Data Quality Assessment (DQA) in the four major provinces (Punjab, Sindh, Khyber-Pakhtunkhwa and Balochistan) followed by developing data quality improvement plan accordingly. World Health Organization provided technical support in conducting this exercise. WHO EMRO sent a mission to support WHO country office and WHO Pakistan Country Office conducted this evaluation. An international consultant was also hired by WHO Pakistan Country Office to assist in this exercise.

This DQA Report includes a section about the country context and background of EPI in Pakistan, describing the target populations and sources of data to calculate vaccine coverage of EPI immunization schedule in the country and its major provinces (Punjab, Sindh, Khyber-Pakhtunkhwa and Balochistan). It also includes a section about the methods, quality data indicators and tools used, describing each one of the steps to implement this

DQA. The findings and recommendations are presented by province. At the end of this report, challenges and lessons learned from this experience are presented. The Annexes includes summary tables to present data of the quality indexes and accuracy ratios by Province, Districts and Health Facilities.

2. Background

2.1. Country context

The Islamic Republic of Pakistan is a federal democracy, comprised of four major provinces namely Punjab, Sindh, Balochistan, and Khyber Pakhtunkhwa (formerly North-West Frontier Province), and four areas supported by the federal government namely, Gilgit-Baltistan, Azad Jammu and Kashmir (AJK), Federally Administered Tribal Area (FATA) and Islamabad Capital Territory. The estimated population in Pakistan is 188.925.000 (year 2015), the per-capita income (PPP, current international $) is US$ 2,655.3 and is ranked 110 out of 186 countries in HDI. The Gender Inequality Index for Pakistani is 0.567 and ranked 123 out of 186; 55% of females above 15 are illiterate. 36% of the population is under 15 years of age with a life expectancy 66 years (men) and 68 years (female)[2].

There are three lower tiers of government, including 34 divisions composed by districts, sub-districts (tehsil/taluka) and several thousand union councils (UC). The health care delivery system includes both state and non-state; and profit and not for profit service provision. In 2011 the Ministry of Health was dissolved following 18th amendment of the constitution devolving its responsibilities to provincial Departments of Health. Later Ministry of National Health Service, Regulation and Coordination (MoNHSRC) was formed at the federal level in an aim to provide technical leadership and coordination among the provinces on health issues. The country's health sector is also marked by urban-rural disparities in healthcare delivery. Only 48% of the population has access to sanitation [3].

At the Federal level, the National Program Manager – EPI under the MoNHSRC lead the Federal EPI mainly responsible for coordination, resource mobilization (internally and externally), policy and planning, technical guidance to the provinces and areas, monitoring and evaluation and vaccine-logistics procurement and distribution. Each province and area EPI program is headed by Provincial EPI manager under the respective Provincial Department of Health within the relevant directorate. At the district level the Executive District Officer (Health) and/or District Health Officer is head of the district health management. The EPI personnel work under the District Health Officer or Executive District Officer Health.

Pakistan Health care delivery system has three levels i.e., Primary, Secondary and Tertiary. The National EPI Policy demands that each health facility at each of these health care delivery levels should have an EPI centre. However not all the health facilities deliver EPI services.

Lady Health Workers (LHWs) and Basic Health Units (BHU) levels generate the first report on health information. The LHWs submit their reports to their respective LHS for onward submission to District LHW Coordinator. The Medical Officer of BHU submits BHU report to the DHO office. Similarly reports from Rural Health Centers (RHC), THQ hospitals and DHQ hospitals are submitted by respective in-charge of facilities to DHO/EDO office.

The reports are incorporated into District Health Information System (DHIS) and DHO/EDO submits consolidated report to Director General Office and Provincial Health Information System at the provincial level. The EPI data from the vaccinators is also the part of district and provincial HMIS. Regarding EPI Surveillance, each health facility in-charge prepares and submits surveillance report to District Surveillance Coordinator (DSC) on weekly basis. The DSC consolidates facility surveillance reports and submits to DHIS and the Provincial EPI offices. At the district level; DHO Office is responsible for the provision of vaccines, logistics and overall monitoring and supervision of UCs.

2.2. Expanded Programme on Immunization

After the successful small pox eradication, EPI in Pakistan started as a pilot project with 6 antigens in 1976, which extended nation wide in 1978. Intensified activities initiated in 1981, and National Polio Immunization days started since 1994. In 2007-2008, Pakistan implemented a National Measles Catch-up Campaign, and measles case based surveillance was introduced in 2009.

Through the years, the immunization schedule in Pakistan has been updated to include new vaccines. Monovalent Hep B vaccine was introduced in 2003, followed by a Tetravalent Combo vaccine (DPT-HepB) in 2006 and as Pentavalent vaccine (DPT-HepB-Hib) in 2009. During the last years, new vaccines were introduced: Pneumococcal Conjugate Vaccine (PCV10) in 2012 and IPV in 2015.

EPI in Pakistan aims to immunize all children below 23 months against nine vaccine preventable diseases (table 1). It also protects mothers and newborn against Tetanus (table 2). To reach the target populations, EPI implements routine immunization strategies that include: fixed vaccination in health centers, outreach and mobile vaccination. The beneficiaries are the children under two years of age and the women of Childbearing age.

Table 1. Routine immunization schedule for children in Pakistan

Disease	Vaccine	Doses	Age of administration
Childhood TB	BCG	1	Soon after birth
Poliomyelitis	OPV	4	OPV0: soon after birth OPV1: 6 wks. OPV2: 10 wks. OPV3: 14 wks.
	IPV	1	IPV: 14 wks.
Diphtheria, Tetanus, Pertussis, Hepatitis B Hib pneumonia and meningitis	Pentavalent vaccine (DTP-Hep B-Hib)	3	Penta1: 6 wks. Penta2: 10 wks. Penta3: 14 wks.

Pneumonia and meningitis due to *S. pneumoniae*	Pneumococcal conjugate vaccine (PCV10)	3	Pneumo1: 6 wks. Pneumo2: 10 wks. Pneumo3: 14 wks.
Measles	Measles	2	Measles1: 09 months Measles2: 15 months

Table 2. Tetanus Toxoid Immunization Schedule for Pregnant and CBA women

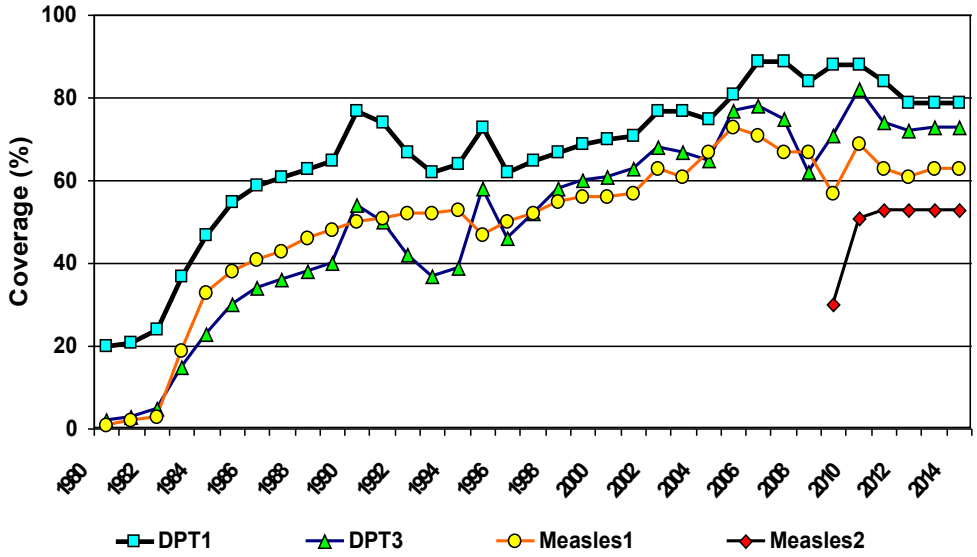
Vaccine	When to give	Dose & site	Expected duration of protection
TT 1	First contact during first pregnancy	0.5 ml intramuscular injection on upper arm	None
TT 2	At least 4 weeks after TT 1		1-3 years
TT 3	At least 6 months after TT 2		5 years
TT 4	At least 1 year after TT 3 or subsequent pregnancy		10 years
TT 5	At least 1 year after TT 4 or subsequent pregnancy		All child bearing years

Figure 2 shows that even though vaccine coverage has increased during the last years in Pakistan, it still remains low and there are important differences between the provinces as well as high dropout rates and incomplete immunization schedules (Figure 3).

An important issue concerning the validity of vaccine coverage is that the denominators face problems because the last census in Pakistan was conducted in 1998. Besides, birth registration practices are poor in overall Pakistan. As per UNICEF's Report on "Every Child's Birth Right: Inequities and trends in birth registration (2013)" [4], twenty seven percent births in children under five year-age were registered in Pakistan during 2006- 2007. However, this percentage differs within the country: 18% in the poorest household wealth quintile to 38% in the richest quintile. As an example, the situation in Punjab is much better as compared to other provinces, as 77% children get registration through the LHW to their UC.

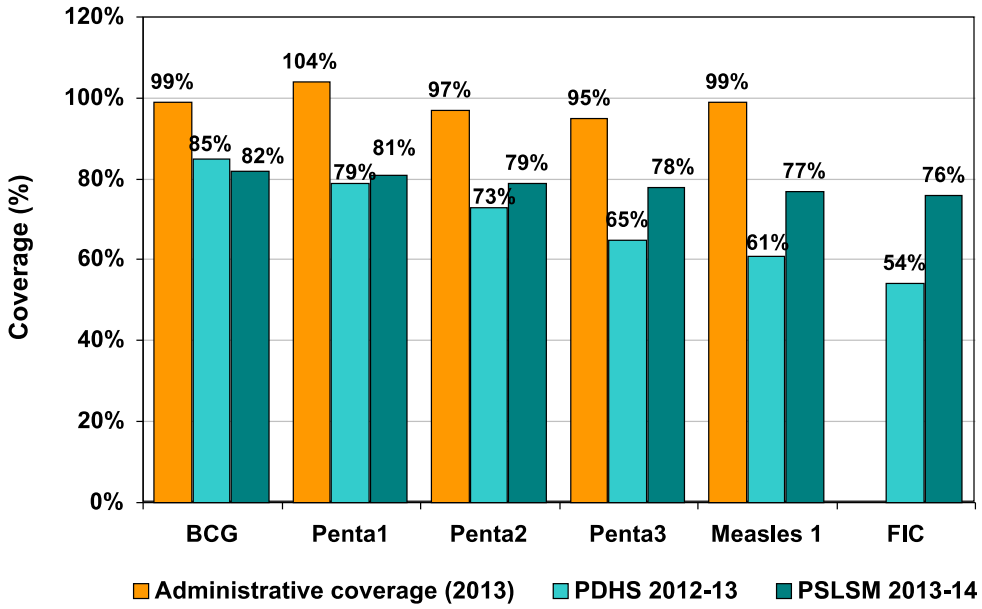
Different surveys have been implemented in Pakistan to provide better vaccine coverage estimates. All the surveys indicate that administrative vaccine coverages are overestimated in the country (figure 3) but also, that some provinces (Sindh and Balochistan) show greater differences between the surveys estimates and the reported vaccine coverages of Penta3 and Measles1 (figures 4 and 5) [5].

Figure 2. Vaccine coverage estimations (%) of DPT1, DPT3, Measles1 and Measles3 in Pakistan, 1980 - 2014



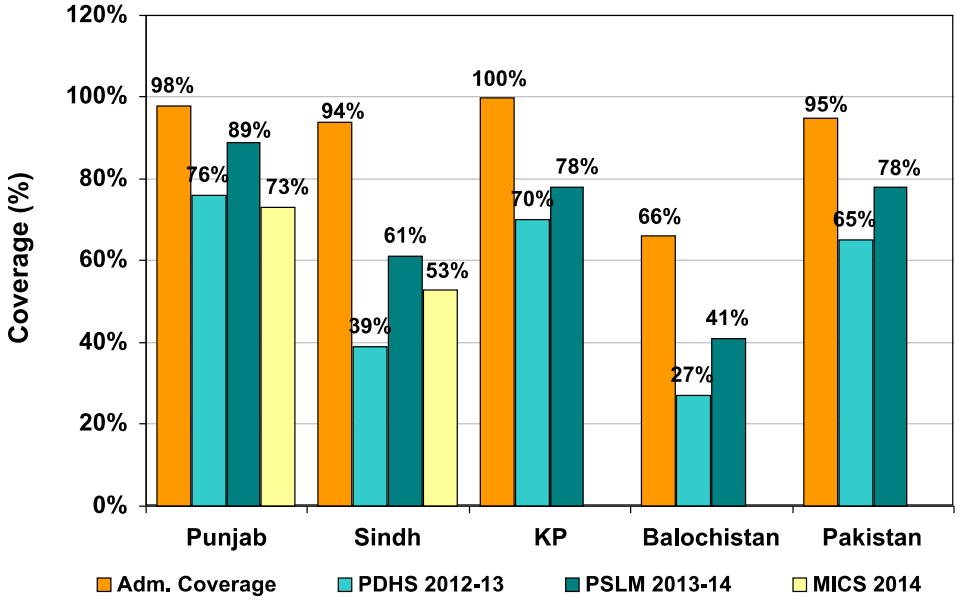
Source: WHO/UNICEF joint estimate, years 1980 2014

Figure 3. Routine Immunization vaccine coverage (%) comparing administrative data (2013) and surveys. Pakistán, 2012-2014



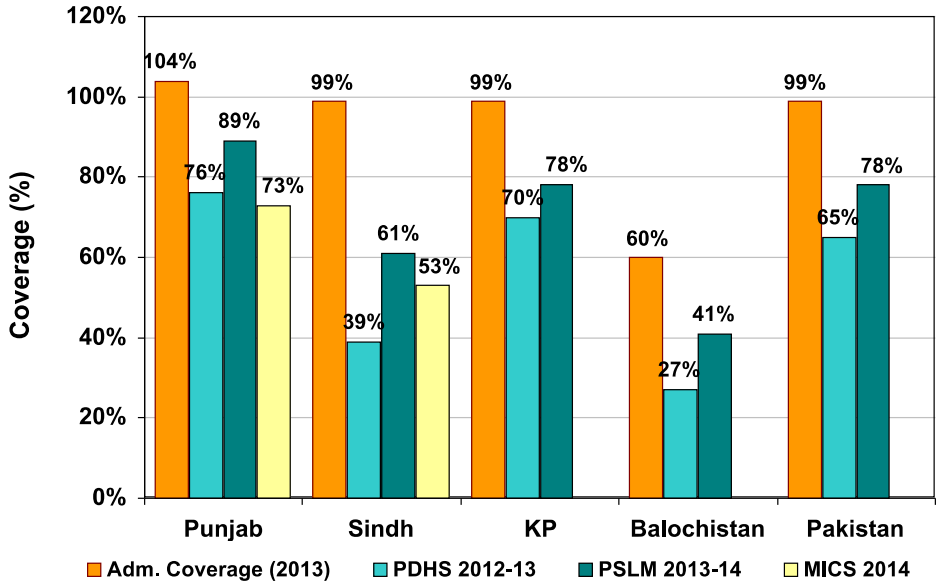
Source: Federal EPI level (administrative coverage) Pakistan Demographic and Health Survey (PDHS) and Pakistan Social and Living Standards Measurement Survey (PSLSM)

Figure 4. Vaccine coverage (%) of PENTA3 comparing administrative data (2013) and surveys. Punjab, Sindh, KP and Balochistan, Pakistan 2012-2014



Source: Federal EPI level (administrative coverage) Pakistan Demographic and Health Survey (PDHS) and Pakistan Social and Living Standards Measurement Survey (PSLSM), Multiple Indicators Cluster Survey (MICS)

Figure 5. Vaccine coverage (%) of MEASLES1 comparing administrative data (2013) and surveys. Punjab, Sindh, KP and Balochistan, Pakistan 2012-2014



Source: Federal EPI level (administrative coverage) Pakistan Demographic and Health Survey (PDHS) and Pakistan Social and Living Standards Measurement Survey (PSLSM)

3. Objectives

General Objectives

- To assist diagnosing the problems with the monitoring and reporting system through determining the accuracy of reported numbers of vaccinations, the quality of the immunization data management and information system and the completeness and timeliness of the periodic reports.
- To provide information and recommendations to develop and implement an improvement plan and integrate the relevant options into routine practice, in order to improve monitoring practices and management of immunization activities.

Specific objectives

- Calculate quality indicators for different categories of the immunization data management and information system at each level (Health facility, District and Province).
- Determine the accuracy of data by comparing the congruence between the data recorded from the Health Facilities and the data reported to the districts and province.
- Assess the completeness and timeliness of the data being reported by the program at different tier.
- Formulate recommendations to improve the quality of the data based on the analysis and identification of the strengths and weaknesses of the EPI system's coverage monitoring.

4. Methodology

4.1. Components and scope

DQA tools assess the quality of the data but also the quality of the system for monitoring vaccination coverage, based on the review of different sources of data, interviews to key informants and field visits [6, 7] to selected sites in order to evaluate:

- **Quality of the monitoring system:** evaluating the registers, reports, archiving, analysis and uses of information, demographic data, and others.
- **Accuracy of data:** analysing data consistency bethween different data sources and levels of the system.
- **Completeness and timeliness:** evaluating the report.

DQA implementation includes the following activities:

- Collect data to determine accuracy of the reported data (quantitative assessment).
- Collect data to determine quality of the monitoring and reporting system (qualitative assessment).
- Analyse the data and reporting.
- Present the findings of the DQA and agreeing on the recommendations.

- Develop the data quality improvement plan.

4.2. Preparation

EPI Pakistan decided to conduct the DQA in four major provinces individually and simultaneously by four teams comprising of external (WHO/UNICEF) and internal (Govt.) assessors (Figure 6).

Figure 6. Selected sites to implement DQA in Pakistan

Provinces (n=4)
- Punjab
- Sindh
- Khyber Pakhtunkhwa
- Balochistan

Districts (n=14)
- 4 districts in Punjab and Sindh;
- 3 districts in Khyber Pakhtunkhwa and Balochistan.

Health Facilities

n=3 health facilities (HF) in each district

Teams: external (WHO/UNICEF) and internal (Govt.) assessors with provincial participation

After the request from the government to conduct the DQA in Pakistan, a nomination request was communicated to the provincial EPI program to nominate a number of national professionals to join the team of assessors composed mainly from independent partners, namely WHO and UNICEF.

From each province 10% of the districts or equivalent administrative units was selected at random for fieldwork. In each district data was collected from at least three health facilities (HF) also selected at random with their catchment areas and respective district HQs. Data was also be collected from the provincial HQs.

4.3. Selection of the sites

To initiate the implementation of DQA in Pakistan, the international team met with the federal EPI in Pakistan on June 13th to discuss the scope of the evaluation, confirm the sites to be evaluated and arrange the logistics and participants in each province.

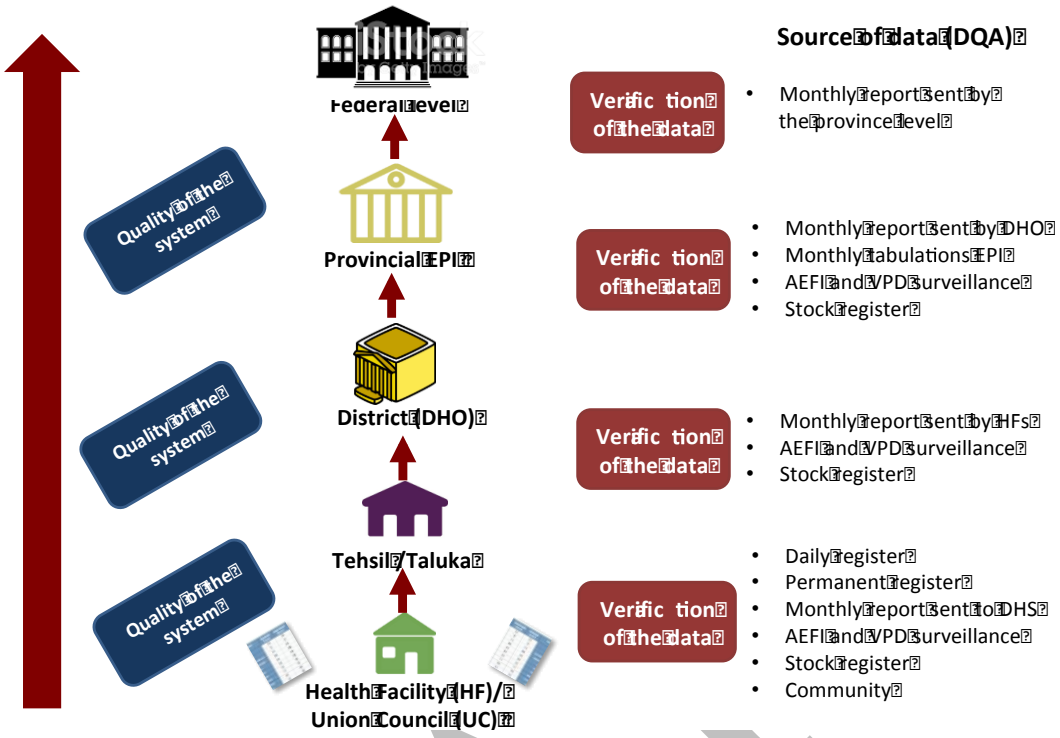
Based on the number of districts and units to be assessed, as well as the size of population, 3 or 4 teams were assigned to each one of the provinces as describe in table 3.

Table 3. Number of selected sites and field teams by province, DQA in Pakistan

Province	Total number of districts or equivalent administrative units	Number of districts or equivalent administrative units to be assessed	Number of Field teams and team members
Punjab	36 districts	4 districts	3 teams x 3 = 9 1 team x 2= 2 Team members + Provincial team leader (n=12)
Sindh	23 districts and 18 towns in Karachi	2 districts + 2 towns in Karachi	4 teams x 4 = 16 Team members + Provincial team leader (n=17)
Khyber Pakhtunkhwa	25 districts	3 districts	2 teams x 4 = 8 1 team x 3= 3 Team members + Provincial team leader (n=12)
Balochistan	30 districts	3 districts	3 teams x 3 = 9 Team members + Provincial team leader (n= 10)
Total	**132 districts or administrative units**	**14 districts or administrative units**	**51 members**

Figure 7 shows the levels, the flow of information and the sources of data used to conduct DQA. The discussion regarding the flow of data and the procedures used in the vaccine information system at all levels were an important issue agreed before and during the training.

Figure 7. Levels and flow of information to evaluate routine immunization data quality in Pakistan



4.4. Data tools

Several data collection tools were designed for the different levels of the reporting system to evaluate the quality of the monitoring system. The antigens and doses defined to be assessed were Pentavalent3 and Measles1.

A combined indicator expressed as Quality Index was calculated by reviewing the quality of the different components of the monitoring system. To calculate the Quality Index, three questionnaires were used (Annex 2), one for each level (province, district and HF). Each questionnaire included questions specific for each level according to seven domains. Each question had a score to get quantitative results, assigning its weight (1-3) according to the importance of the item. The questions were categorized in seven domains:

- Demographics
- Registration
- Reporting and archiving
- Data analysis and use
- Supervision and feedback
- Planning and management
- Human resources.

To collect the information needed to calculate the accuracy of data, several forms were used (Annex 3). The data were collected from different sources of information: daily register at the HF, tabulation of the vaccine doses of Penta1 and Measles1 registered in the monthly report at the HF and district and the provincial tabulation.

To assess the completeness and timeliness of the reporting system, two forms were used to register the date when the reports were sent and received during the months evaluated (Annex 4).

The data collection tool comprises of the following questionnaires and forms:

- **Data accuracy form**: It entails a comparison between the number of Penta3 and Measles1 doses administered at the lower service delivery level as compared with the number of the same antigen reported to the higher level for the period October-December 2015. The Punjab team agreed on having a larger period (1st of July to 31st of December 2015). The same data accuracy form was completed at all levels from the lowest HF/UC level passing by Tehsil/Taluka, district and provincial levels.
- **Data timeliness and completeness form**: It entails reviewing the report received at one level, if it is complete and timely reported to the higher level. The same form was completed from Tehsil/Taluka level, District level and Provincial level.
- **Data Quality form**: It entails reviewing of the quality of data as per the person in charge at each level. The form comprises a number of questions; each question was scored according to its importance tackling different program components.
- **Community questionnaire**: It is a list of 15 children selected randomly from daily register of every UC and compared with the actual vaccination status of only ten of those children as visited in their houses and comparing their vaccination cards for the registered antigens and vaccination dates. This questionnaire was filled out only at the HF/UC level.

4.5. Training and field testing

An initial Federal workshop was conducted in Islamabad, to train the teams from the four provinces. WHO regional office team briefed the participants about the objectives, the methodology and the implementation of the assessment (see agenda in Annex 5). The following activities were conducted during this workshop:

- Review data monitoring practices and flow of information
- Review and get oriented with the data collection tools for both the accuracy data and quality data
- Agree on the sample of sites to be visited
- Field testing of the data collection sheets
- Feed-back from the field testing
- Distribution of the teams for data collection

The first day of the training a participant from each of the provincial EPI presented the basic indicators of the immunization programme and a detailed description of the flow of information. During the second and third day, the participants were trained in the method and data collection, followed by the testing of all the questionnaires and forms to validate the tools and introduce adjustments.

Sharing and customization of the data collection forms and tool as well as data entry form and the interpretation of the potential results have been explained. Discussion ensured that all participants are well oriented about the activity tool, field work and data interpretation.

On the third day of the Workshop, a field test has been done in two nearby districts: Rawalpindi and ICT, where the teams have visited the DHQ as well as a HU and conducted the assessment both the quality and accuracy parts. At the end of the day, teams have reconvened to share their observation on the field test and the forms have been finally customized according to different feedback.

The final version of the questionnaires was shared with each team leader. One team leader was assigned responsible for a province; the team leaders were from WHO regional and country office as well as an external international consultant.

4.6. Data collection

Before starting the data collection, each team met with the Provincial EPI Manager to explain the purpose of the assessment. The team assigned to the provincial level stayed in the site and the other teams traveled to the respective districts.

Each team divided their roles, one person was responsible to collect the qualitative information and two or three persons collected the quantitative data. At the end of each day, each team verified that all forms were correctly filled.

4.7. Data entry and analysis

The data of each questionnaire, after being completed, were transferred to a data entry tool. Provincial team leader was responsible for collecting the data collection form (Hard or soft copy) to be entered in the data entry tool on daily basis. When all teams concluded the collection of data, all forms were double-checked for quality control and to identify inconsistences or missing data to reduce possibility of errors. Data entry verification, double-checking and data cleaning were implemented before generating the final results interpreted in the report.

To calculate the QI excel files were used to enter the data. Each spreadsheet had formulas to calculate the scores of each domain and the overall QI. Entered data will automatically generate a Quality index for each category and an overall Quality index for the assessed level, the evaluated domain as well as for the whole selected district and the whole province accordingly. The results were presented using spider graphs.

An accuracy ratio was also calculated for each level separately and the overall province for both Penta 3 and MEASLES1 separately for the three assessed months (six months in Punjab). To calculate the Accuracy Ratio the data were entered in two excel sheets: one to enter the Penta1 data recounted and reported in each HF and the second to enter the data regarding the measles 1 doses. To assess the accuracy of data, a review of reported data at different levels was conducted by comparing the data retrieved from the basic records with the data reported to the higher level.

A quantitative ratio was calculated as follows:

$$\textbf{Accuracy Ratio} = \frac{\text{Immunizations counted (verified from the 'source')}}{\text{Immunizations reported (found at the 'higher' level)}} \times 100$$

- Less than 100%: indicates over-reporting (not all reported vaccinations could be verified)
- More than 100%: indicates under-reporting (more vaccinations could be retrieved than was reported)

4.8. Report and discussion

After analyzing and interpreting the findings, a preliminary report was generated and a provincial workshop was conducted where detailed results related to data Accuracy and data Quality at all levels were shared, highlighting positive and negative findings. Summarization of strengths and weaknesses at different levels and suggesting potential recommendations for rectification of flaws detected were shared, for an aim of an overall improving data quality, accuracy and reporting.

Based on the overall assessment, and results interpretation and secondary to generation of the final recommendation, an improvement plan will be established, highlighting the main strategies to improve data quality and data accuracy. Those strategies will be involving a number of activities for each strategy coupled with a specific timeline and a follow up plan. Costing of the improvement plan will be also generated.

5. Punjab

5.1. Background

Punjab is the most populous of the four provinces of Pakistan. It has an area of 205,344 square kilometers (79,284 square miles) and a population estimated of 96,940,888 in 2015, approximately 52% of the country's total population. Its provincial capital and largest city is Lahore. The administrative unit are the district (n=36), which is further subdivided into tehsils (n= 147) and union councils (n= 3.520).

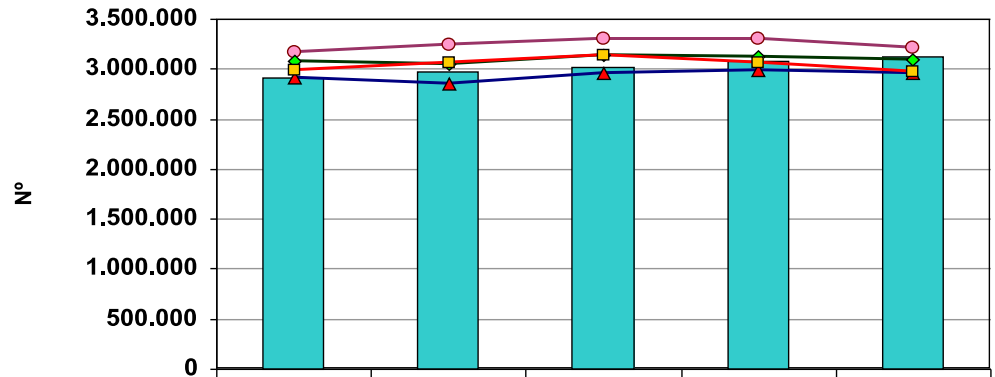
Punjab DQA sample included 4 districts: Shahiwal, Mandi Bahauddin, Narowal and Khushab and 12 Union Council (UC). The selected HF/UC were: Tibb Jay Singh, UC46, UC9, RHC Qila Ahmad Abd, RHC Sankhtra, BHU Masroor, Dhoul, Chack 40, Bar Musa, THQ Quaidabad, RHC Mitha Tiwana and BHU Bijjar. This province agreed that the review period of data would be from July to December 2015.

External immigration is common in Punjab province. People migrate from other provinces to the industrial cities of Punjab, like Lahore, Sialkot and Faisalabad, whereas people from rural areas migrate to foreign countries (especially gulf countries for labour related livelihood). Internal migration is not very common, but most of the people migrate from southern Punjab to Central Punjab for livelihood. Punjab province population is constituted 60% of Pakistan population and 17% of the population of the Eastern Mediterranean Region (EMR), moreover <1 year children in Punjab constituted 19.6% of the surviving infants of the EMR. All these factors, like more population residing in rural areas and immigration dynamics can affect immunization services delivery and need attention.

The baseline numbers of the EPI target groups in Punjab are calculated on the base of 1998 census data, applying National Institute of Population Studies (NIPS) growth rate. The province has two different types of target populations: the data calculated at the federal level and the province estimates using their own demographics. Those populations are shared with the federal EPI and are used at federal and province to levels to calculate the coverage accordingly.

The target population of children under 1 year-age was estimated in 3,131,675 for year 2015. This province achieved and maintains vaccine coverage above 95% for BCG, DPT1, DPT3 and Measles 1 during 2011 to 2105 (Figures 8 and 9). An important indicator to monitor follow up of vaccine schedules is dropout and Punjab also shows values under 10% of this indicator (Figure 10).

Figure 8. Population under 1 year age * and doses of BCG, DTP1, DPT3 and Measles1 administered by year. PUNJAB, Pakistan 2011-2015

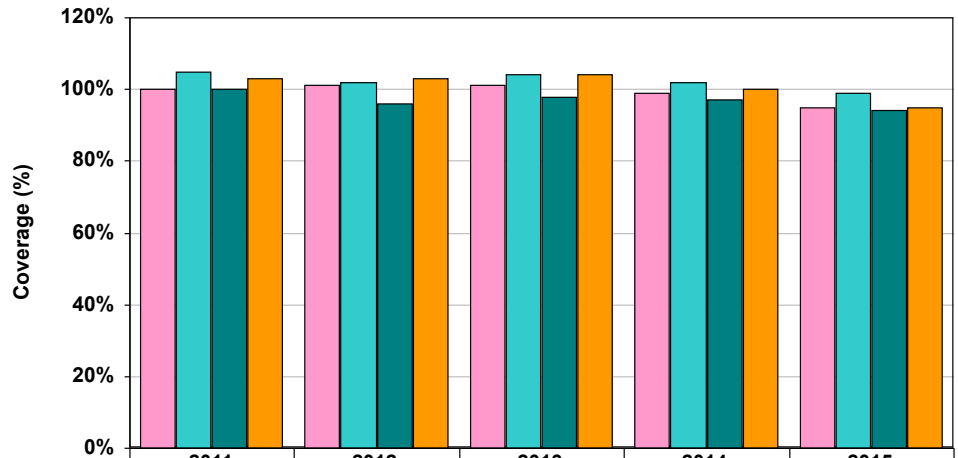


	2011	2012	2013	2014	2015
Pop. under 1 yr	2.918.280	2.970.225	3.023.095	3.076.906	3.131.675
BCG doses	3.167.622	3.251.624	3.304.909	3.304.786	3.216.483
Penta1 doses	3.073.966	3.042.052	3.132.797	3.126.599	3.091.746
Penta 3 doses	2.917.558	2.853.331	2.957.732	2.986.774	2.956.332
Measles1 doses	2.995.795	3.066.354	3.133.942	3.061.535	2.969.479

* Denominators used to calculate vaccine coverage are: Target Live Births @3.5% of total population for BCG and OPV-0 and Target Surviving Infants @92.30% of live births for all other antigens and doses.

Source: EPI Federal, MNHSRC

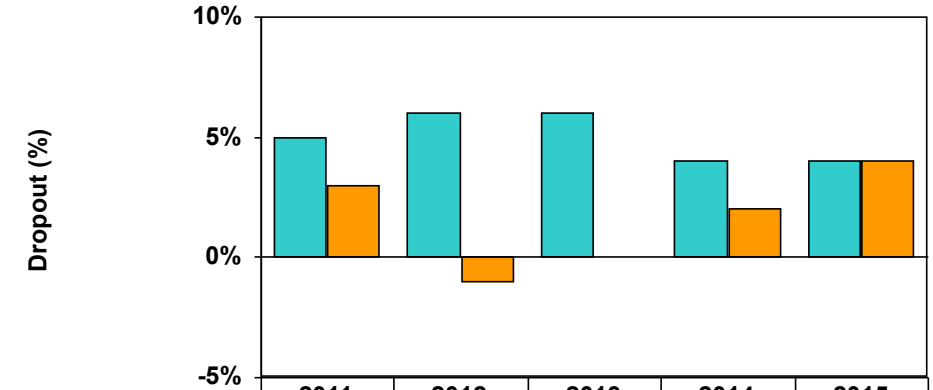
Figure 9. Vaccine coverage (%) of BCG, Penta1, Penta3, Measles 1. PUNJAB, Pakistán, 2011-2015



	2011	2012	2013	2014	2015
BCG	100%	101%	101%	99%	95%
Penta 1	105%	102%	104%	102%	99%
Penta 3	100%	96%	98%	97%	94%
Measles 1	103%	103%	104%	100%	95%

Source: EPI Federal, MNHSRC

Figure 10. Dropout (%) of Penta1- Penta3 and Penta1- Measles 1. PUNJAB, Pakistan 2011-2015



	2011	2012	2013	2014	2015
Penta 1-Penta 3	5%	6%	6%	4%	4%
Penta 1-Measles 1	3%	-1%	0%	2%	4%

Source: EPI Federal, MNHSRC

In 2010, Punjab developed an electronic immunization register (EIR) as a government initiative supported by UNICEF. The province uses it to receive monthly coverage data from each district as follows:

- Vaccinators (outreach focal person) prepare their report at the end of month with daily register of outreach and health facility; the UCs, where a health facility is present; report

is countersigned by health facility in charge; however, reports of the UCs where there is not health facility, are signed by vaccinator only.

- All reports are submitted in a meeting at tehsil, which is organized by 2-3rd day of each month, and compilation without any manipulation or tabulation submitted in hard copies to province on 5th of every month.
- At the district level they enter the data using the software and send them by email to the province by 5th -10th of each month
- At the provincial level the data managers import all the district report (by UC) to their software and produce the reports by district. The province sends it to the federal EPI by 12th -13th of each month.

This software was not updated until 2014, when they planned to introduce PCV. For that reason the calculated coverage using this EIR during 2011-2013 was not correct because calculations were done using 2010 target populations. Because of that since year 2015, the vaccine coverages are calculated using excel spreadsheets and 2014 targets populations. Moreover the software didn't include the birth target, so it calculates the BCG coverage using the under one year target population as shown in figure 8.

The EIR can produce coverage reports by district and UC for all antigens. It also calculates different dropout rates (Penta1-Penta3, BCG-MCV1, MCV1-MCV2) and generates surveillance reports for VPDs. It has other functionalities but yet not started e.g. vaccine wastage, because they are using vLMIS for vaccine management. In this moment, the province is updating the software to include the IPV, and update the population database. They do backup every month in the computer, but last year the software crashed and the database was lost for the previous years (2010-2015) and when they fix it they couldn't retrieve the data. Fortunately, the data were archived in backup files.

5.2. Results

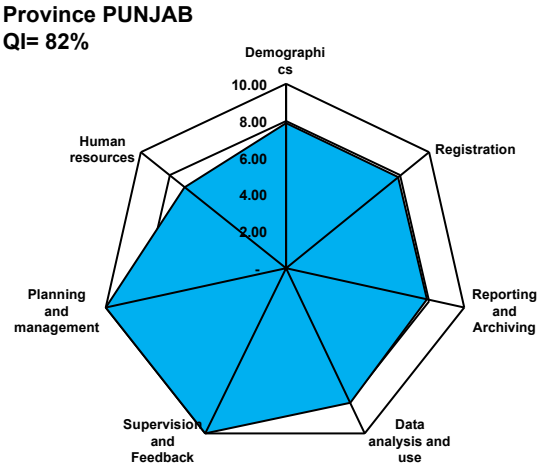
5.2.1. Quality of the monitoring system

The overall QI of Punjab was 82.0% at provincial level, with higher scores in supervision and feedback (score= 10), Planning and management (score= 10) and Data analysis and use (score= 8.2). Domains as Demographics, Registration, Reporting and archiving achieved scores close to 8, and Human resources had the lowest score (7) as shown in figure 11.

The overall QI at the district level was lower (QI= 69%) when compared to the provincial value. The lowest scores were found in: Data analysis and use (score= 3.6), Supervision and feedback (score= 4.7), Demographics (score= 6.6) and Planning and management (score= 7.5). The other 3 domains achieved scores close to 8. The QIs varied widely between districts: 44% in Narowai, 47% in Khushab, 79% in Mandi Bahauddin and 86% in Sahiwal.

The results of QI and its domain scores for each HF are presented in Annex 6. There is a wide range of QI values: from 43% in RHC Qila Ahmad Abd (district Narowai) to 82% in Dhoul (district Mandi Bahoudin).

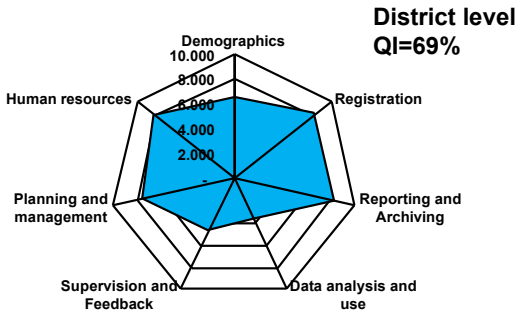
Figure 11. Quality Index: Province Level, PUNJAB



Quality Index: PUNJAB	QI= 82%
Demographics	7,9
Registration	7,8
Reporting and Archiving	7,9
Data analysis and use	8,2
Supervision and Feedback	10,0
Planning and management	10,00
Human resources	7,00

Figure 12. Quality Aggregated Index: District and Health Facility Level. PUNJAB

All selected districts	QI= 69%
Demographics	6,60
Registration	8,31
Reporting and Archiving	8,32
Data analysis and use	3,57
Supervision and Feedback	4,74
Planning and management	7,50
Human resources	8,25



All selected Health Facilities (HF)	QI= 60%
Demographics	4,62
Registration	8,48
Reporting and Archiving	6,37
Data analysis and use	5,04
Supervision and Feedback	1,38
Human resources	6,67

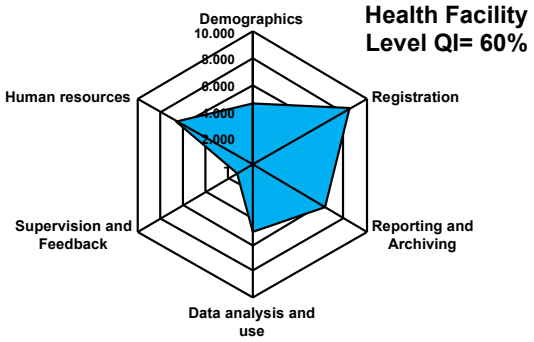
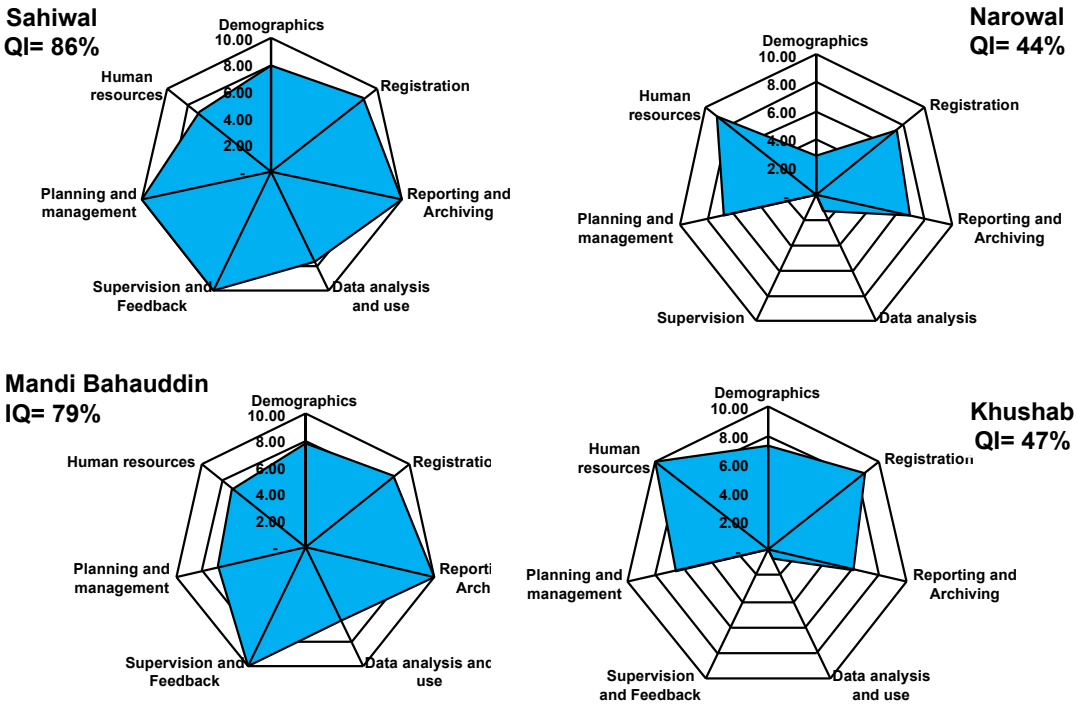


Figure 13. Quality Index: Districts Sahiwal, Narowai, Mandi Bahauddin, Khushab, PUNJAB



DQA evidenced that monitoring and evaluation are very weak across the Punjab province and the government employee do not conduct effective supervision. The key informants indicate that this situation is the cause by shortage of staff to perform supportive supervision at provincial level, so they delegate this activity to the polio staff hired by partners (WHO/UNICEF) at the district level under the PIE-EPI synergy initiative. To follow up the results, they send supervisory reports to the provincial EPI, and sometime they report the findings during the monthly meeting. But this support is possible only in 15/36 districts. In the other 21 districts there is no supervision for routine EPI neither from province, nor from district. Supervision usually is done only during polio/measles campaigns.

5.2.2. Data accuracy

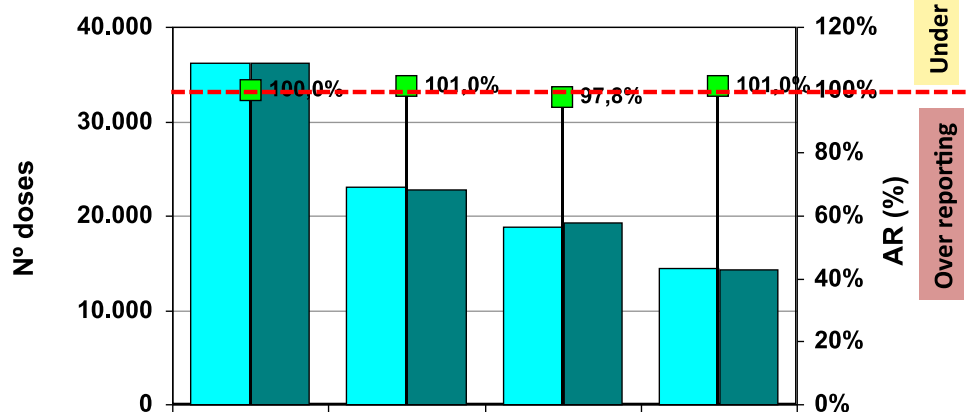
In reviewing the coverage data for the period July –December 2015, there were discrepancies in the district coverage data received at provincial level for all antigens. No data accuracy issues were found at provincial level because the data were received from the district using the software (upload, tabulation and analysis), so there was no chance of error (i.e. typing, miss calculation). But DQA found problems in data accuracy at the UC and district level, which need more focus and strength.

The AR% at the provincial level achieved the highest value: Penta3= 100% and Measles1= 100%. The AR was also high at the districts, with values very close to 100% (Penta3 AR range= 97.8% to 101.6% and Measles1 AR range= 99.6% to 100.2%).

The lowest AR% was found at the HF/UC with overall values of the period as low as 51.1% for Penta3 and 43.1% for Measles1, evidencing over reported doses for both vaccines during July-December 2015.

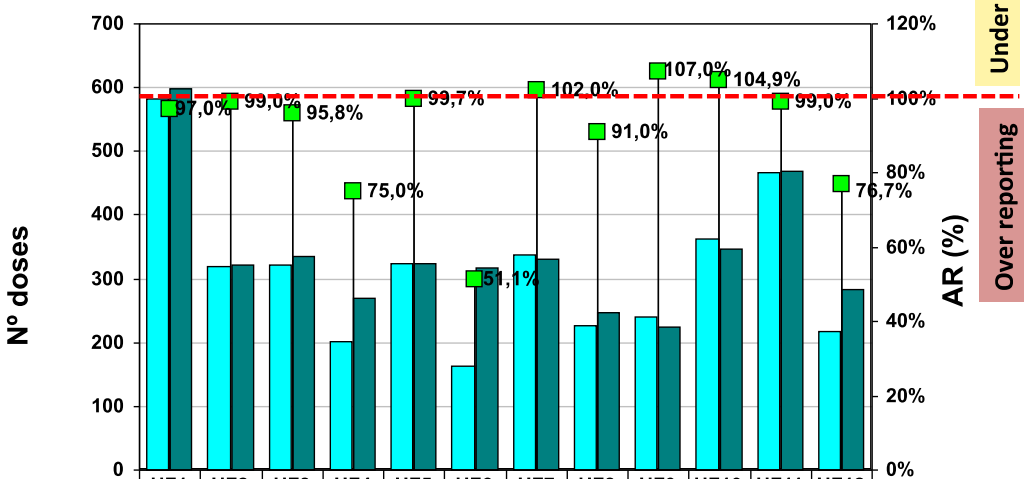
Community verification for the randomly selected 15 children who received Penta 3 during the period of July-December was done in all UCs with 93 % verification from cards and 100% by history.

Figure 14. Accuracy Ratio (%), number of doses of Penta3 verified and reported by the districts, PUNJAB, July-December 2015



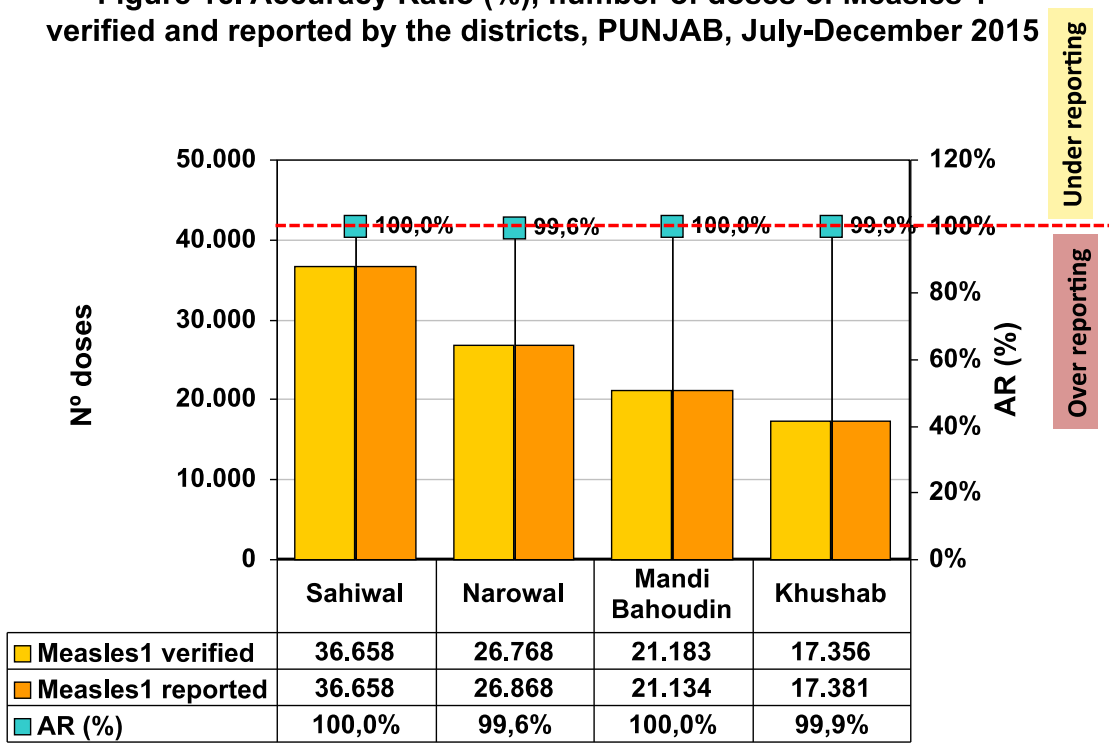
	Sahiwal	Narowal	Mandi Bahoudin	Khushab
Penta3 verified	36.269	23.105	18.789	14.517
Penta3 reported	36.232	22.845	19.207	14.290
AR (%)	100,0%	101,0%	97,8%	101,0%

Figure 15. Accuracy Ratio (%), number of doses of Penta3 verified and reported by the Health Facilities (HF) to the district level, PUNJAB, July-December 2015



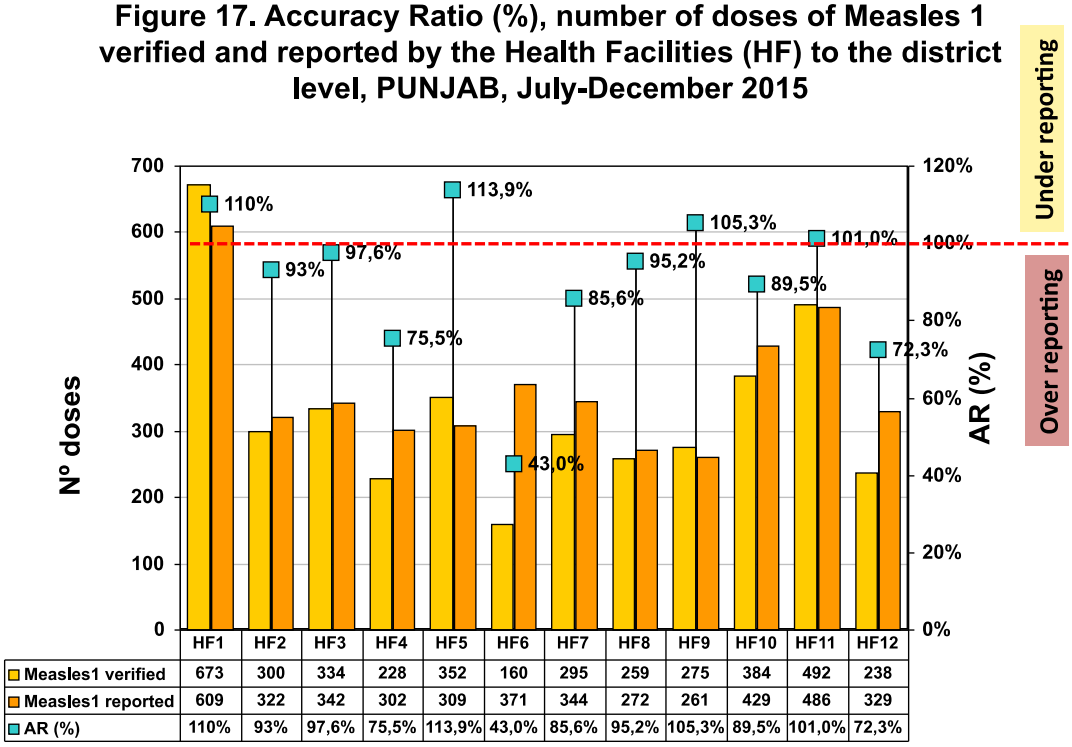
	HF1	HF2	HF3	HF4	HF5	HF6	HF7	HF8	HF9	HF10	HF11	HF12
Penta3 verified	583	319	321	202	324	162	338	227	241	363	466	218
Penta3 reported	598	321	335	269	325	317	331	248	225	346	469	284
AR (%)	97,0%	99,0%	95,8%	75,0%	99,7%	51,1%	102,0	91,0%	107,0	104,9	99,0%	76,7%

Figure 16. Accuracy Ratio (%), number of doses of Measles 1 verified and reported by the districts, PUNJAB, July-December 2015



	Sahiwal	Narowal	Mandi Bahoudin	Khushab
Measles1 verified	36.658	26.768	21.183	17.356
Measles1 reported	36.658	26.868	21.134	17.381
AR (%)	100,0%	99,6%	100,0%	99,9%

Figure 17. Accuracy Ratio (%), number of doses of Measles 1 verified and reported by the Health Facilities (HF) to the district level, PUNJAB, July-December 2015



	HF1	HF2	HF3	HF4	HF5	HF6	HF7	HF8	HF9	HF10	HF11	HF12
Measles1 verified	673	300	334	228	352	160	295	259	275	384	492	238
Measles1 reported	609	322	342	302	309	371	344	272	261	429	486	329
AR (%)	110%	93%	97,6%	75,5%	113,9%	43,0%	85,6%	95,2%	105,3%	89,5%	101,0%	72,3%

Over reporting of doses in some districts was observed which was due to the number of vaccinated children is not disaggregated by age (0-11 and 12-23 months). It is important to mention that the majority of reports were signed by the in charge of health facility without any data audit and verification before compilation. Moreover in some districts, the HF report is sent directly to the district or tehsil not to their UCs (in Narowal district) and the district compiled it in their reports.

Regarding under reporting, there is a district policy oriented to keep the routine EPI coverage in line with the district provided targets and to report near target within a narrow range. This occurs irrespectively of how much children they vaccinated. As an example, in some HFs the number of births per month was exactly the same number every month, therefore they reported the same number of vaccinated children each month. This variation is reflected in the daily register, but not in the monthly report. Another factor that explains the accuracy problems is the lack of skills on data management.

5.2.3. Completeness and timeliness

DQA found that Punjab do not monitor the timeliness and completeness of the monthly reports. However, the indicator of completeness of the reports for the review period was 100%.

5.3. Recommendations

After describing and analyzing the results and findings, the teams identified strengths and weakness. The following are the recommendation based on the interpretation of the findings.

Domain	Strengths	Weaknesses	Recommendations

Demographics	▪ Simple Maps are available in soft copy at the provincial and districts levels and in hard copies at the UCs level with clear boundaries. ▪ All the target age groups were found and it was consistent with the cMYP and updated in annual base. ▪ Birth registers present at LHW level and at RHC	▪ The target of the province was different from that found at the federal level although they communicated with the federal to change. ▪ Under one target is used to calculate BCG in the software and excel at province and district levels. ▪ Birth registration by the LHWs was not optimum nor complete ▪ Children 1-2 years were not separately mentioned and also the CBA women target was not available in some districts ▪ Inadequate filling of the birth registration	▪ For the federal: the process of decision on the target should be done in consultation with the provinces during the annual planning process taking in consideration the cMYP targets. ▪ All the maps and targets should be displayed outdoor. ▪ Comprehensive maps for Routine EPI should be prepared. ▪ Comprehensive Micro plans including maps for Routine EPI should be prepared for all districts. ▪ Strengthen the birth registration process. ▪ Update the software target to include birth for the BCG coverage calculation
Registration	▪ Computerized Access based software for data management in place at province and district level since 2010 with pack up and vLMIS for managing vaccine and supply stock. ▪ Availability of needed EPI registration document in UCs and districts (tally sheets, daily and permanent, vaccine and syringes stock registers, cards, monthly reports…etc.) ▪ All EPI manuals / guidelines were available.	▪ The vaccine stock register missed information about the batch number and expiry date (EVM finding since 2014). ▪ The vLMIS is not fully functioning in some districts. ▪ No use of daily tally sheets ▪ Some registers are not properly filled. ▪ In some UC permanent registers is recorded by different health workers in different styles ▪ There is no permanent register for pregnant women	▪ The vaccine and synergies stock register need to be revised and updated to include the batch number and expiry date. ▪ Make use of all functions of the vLMIS system. ▪ A training of health workers is recommended to ensure the properly recording of vaccination in a uniform manner in daily, permanent registers and monthly report all over the province. ▪ On job training for the vaccinators on proper registration practices.

Reporting and archiving	▪ Availability of all monthly EPI reports including AEFI and archived in hard copies at district and UC and soft copies at province and some districts. ▪ AEFI reporting format were available. ▪ Some reports were signed by the person authorized to submit the HU report and sometimes by the MO of the UCs.	▪ Archiving was not up to the standard and done in the same computer (at provincial level couldn't retrieve July 2015 districts report). ▪ No soft copy of the tabulation done by the district for the UC reports. ▪ AEFI surveillance is very weak, reports were not available in most of the UCs (they don't know about it and in some UC they just report sever cases). ▪ At the province the back up for the EPI software data done in monthly base and it is in the same computer which is risky in case of computer crash. ▪ No back up for the EPI software data at the district level. ▪ At HF, some EPI reports are not countersigned by supervisor and there is no date of sending or receiving ▪ The EPI reports are designed to report on the number of vaccinated children and the vaccine stock at UC level without any calculation for coverage or vaccine wastage. ▪ AEFI surveillance is very weak, reports were not available in most of the UCs ▪ Although they have AEFI reporting forms (they don't know about it and in some UC they just report severe cases).	▪ Strengthen archiving by on-job training. ▪ Back up on weekly base for the EPI data software should be done in another computer, server, CDs, external hard disk, etc. as applicable at province and district levels. ▪ EPI reports should be signed by supervisor with date of send/ receive. ▪ Update the monthly reports design to include % of coverage for all antigens and % of wastage and train the vaccinator on how to calculate the coverage and properly filling the reports. ▪ AEFI surveillance system needs to be strengthened.

Data analysis and use	▪ Provincial level do all types of EPI data analysis and triangulate with surveillance data and send feedback to district to be discussed ate the EDO meeting and action/plan taken accordingly then shared with the province. ▪ There is feedback for the monthly report from the provincial level to districts by administrative letter which is discussed with their UCs e.g. discrepancy in coverage data, question on causes of high /negative drop out and delay of report or no report ▪ Data analysis done automatically while uploading on EPI software. ▪ Health workers develop defaulter lists and they are covered by the LHW.	▪ No routine EPI Coverage monitoring chart, dropout rates at district level. They depend on the provincial level for analysis, so the feedback is poor. ▪ No monitoring for timeliness and completeness of the monthly reports at district level. However, completeness of the reports for the review period was 100%. ▪ The staff at most of the UC was not able to calculate the coverage, wastage and dropout rates, most of them don't use the monitoring charts. ▪ These calculations were only discussed verbally in the monthly vaccinator meetings and corrective actions were also communicated verbally to all. ▪ No displayed analysis charts or tabulation observed at all levels. ▪ Data analysis and data use is a weak area and they don't have enough capacity to prepare routine EPI Coverage and dropout charts/ tabulation, identify low performing UCs, triangulate coverage data and disease incidence, monitor vaccine wastage ▪ No clear feed-back on defaulter list by supervisory.	▪ Display the provincial /district coverage tabulation/ chart per month/ quarter. ▪ Province should play their role in technically support the district in solving their problem and attend the district meetings and technically support them in further analysis, discussion of their problems and involved in planning for improvement. ▪ Special training on data managements is highly needed for district level. ▪ Feedback on data analysis should be provided to UCs through letters. ▪ Defaulter list should be reviewed and supervisor should provide feedback. ▪ Train vaccinators and LHV to analyze data and use the monitoring charts to follow up vaccine coverage and EPI performance

Supervision and feedback	▪ Detailed signed supervisory monitoring plan along with the post monitoring notes and recommendations was available in one district. ▪ In some district the monthly district meeting minutes do carry a portion of feedback regarding EPI. ▪ There is quarterly supervision plan for the low performing district and UCs prepared by the provincial EPI and Polio synergy programme at the district level. ▪ There is a tentative tour plan prepared for Supervisors EPI and DHMT	▪ No plan for supervision by province and district level EPI staff for RI. ▪ No follow up on the implementation of the outreach plans and no technical comments or observations noted by the visitor in the daily register where they usually signed as proof of their visits. ▪ Province and district depend on the polio staff supervision for the RED polio focused district. ▪ In some district there is no system of feedback from district to UC level. ▪ EPI supervisor not properly following tentative tour plan, not follow the implementation of the outreach plans. ▪ Although provincial feedback is regularly send to district but no feed back was found in hard or soft form at district level.	▪ Establish proper supportive supervision system at the provincial and district level as strong tool for solving and improving the EPI performance at lower levels, ▪ Avail all the required resources for it (skilled HR, logistics, Financial) at provincial and district level. ▪ Strengthening process of feed back by attending the EDO meeting. ▪ A proper supervision plan for routine EPI should be prepared by the province and district EPI and follow-up its implementation by the with documentation. ▪ Involve the Polio staff for supportive supervision and include them in supervisory visits to UCs and districts ▪ Focal person of LHW program preferably to be trained on supervision and involved in supervisory visits of UCs with the province and district staff. ▪ All visits should be documented at the UC with technical report for proper follow up on the recommendations.

Planning and management	▪ Annual work plan for EPI available at provincial level for 2014-2015 ▪ There is comprehensive micro-plan for routine EPI in the 15 RED polio focused district/UC. ▪ Monitoring plans for the for UC outreach micro plans are available ▪ There are monthly EPI review meetings conducted by province with districts. ▪ There are monthly meetings with vaccinators in DOH office whereby all vaccinators submit their reports with issues and problems discussed.	▪ No comprehensive annual work plan /micro-plan for routine EPI at other district or UCs (out of the RED polio districts). ▪ District level plans only include 6-monthly master outreach plans of vaccinators.	▪ Comprehensive annual work plan / micro-plan for routine EPI (data management, monitoring, evaluation, Supervision, training, logistics) should be prepared at district level. ▪ Micro-plans for routine EPI should be prepared by the UCs and must keep copies at the district. ▪ All meetings should be taken as opportunity for data review with documentation. ▪ The province in monthly bases with documentation should monitor the implementation of the district micro-plans. ▪ Monitoring the implementation of the EPI UC micro-plans should be done by the district in monthly bases with documentation.

Human resources	▪ Availability of enough HR for EPI at district and UC level ▪ All staff attends recent training on IPV & PCV-10 in which data management was discussed. ▪ There is a person for data at provincial and district level. ▪ There is focal person for supervision and monitoring at the district level	▪ No specific full time person for EPI data management (data verification, entry, analysis), the current person had multi-task with other programme, so his task with EPI is receiving the reports, producing the monthly report. ▪ The EPI manager does analysis and monitoring. ▪ No focal person for monitoring and evaluation at the provincial level. ▪ Personnel at UC had limited capacity and knowledge for calculating and monitoring their coverage, defaulter tracing ▪ Poor accountability at all levels ▪ No proper / quality training are conducted on regular basis for staff (new or in service).	▪ Human resource need assessment with clear job description should be done for all level. ▪ Comprehensive regular good quality capacity building plan should be prepared with basic and refresher training for all staff. ▪ Proper basic and refresher training programme for the vaccinators, LHv, LHW on all aspects of EPI (calculation and monitoring coverage and calculation and monitoring vaccine wastage, proper registration and reporting, etc.) ▪ Ensure meaningful accountability at all the levels.

6. Sindh

6.1. Background

Sindh province is the third largest province of Pakistan with an area of 140,914 square kilometers (54,408 square miles). Based upon 1998 census the projected population of Sindh for 2015 was estimated at 41,363,874 approximately 22% of the country's total population.

Sindh is divided into five divisions, 23 districts, 123 Taluka and towns, and 1,166 union councils. There are 2,575 vaccinators in Sindh, 27 DSV and 123 TSV. The role of DSV and TSV in EPI is limited to supervise the vaccinators and they themselves do not vaccinate children.

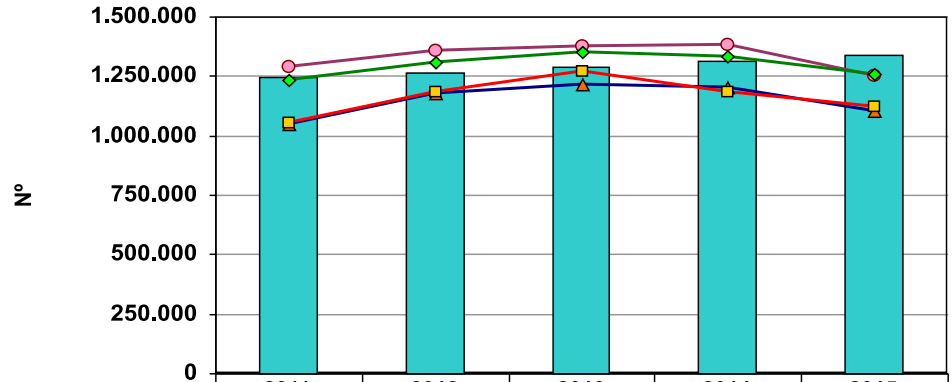
The contribution of LHVs in EPI service delivery is only around 5%. For routine immunization activities, each vaccinator has an EPI register where he enters the vaccination information

and based on that prepares a report on monthly basis and submits to Taluka Supervisor Vaccines (TSV). TSV computerizes all vaccinators' reports and a consolidated report is submitted to District Supervisor Vaccines (DSV). DSV consolidates Taluka reports and shares the district report with EPI Focal Person (who is not a fulltime employee for EPI) for onward submission to DHIS and the EPI province headquarters.

For Sindh assessment, ten percent of districts and towns have been selected randomly for the assessment; this has resulted in selection of two districts: Hyderabad and TM Khan. TM Khan has replaced the initially randomly selected Larkana district because of the ongoing Polio outbreak response campaign during the assessment period. Two towns have been selected: Liaqatabad and Nazimabad. For each district a list of Talukas has been generated from which one Taluka has been randomly selected and again two UCs have been randomly selected from the selected Taluka. For each town three UCs have been randomly selected for assessment.

The target population of children under 1 year-age was estimated in 1,336,260 for year 2015. During years 2011 to 2014, Sindh achieved vaccine coverage above 95% for BCG, and DPT1. Vaccine coverage for DPT3 and Measles1 are lower, showing dropout rates = 10% or above (Figure 10).

Figure 18. Population under 1 year age * and doses of BCG, DTP1, DPT3 and Measles1 administered by year. SINDH, Pakistan 2011-2015

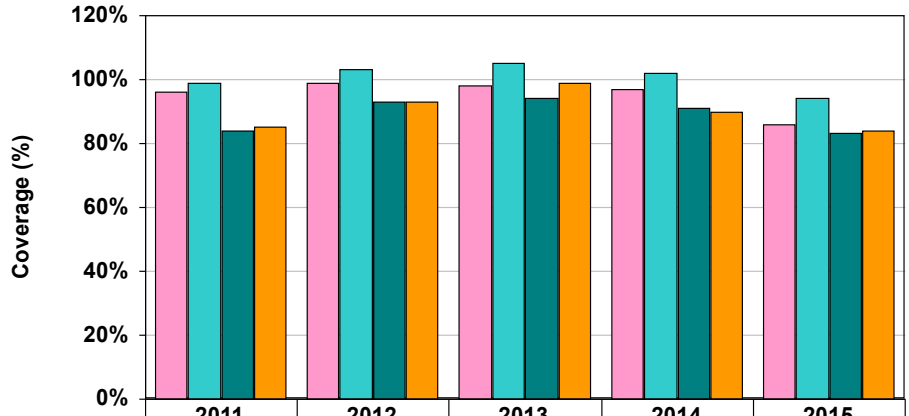


	2011	2012	2013	2014	2015
Pop. under 1 yr	1.245.206	1.267.370	1.289.930	1.312.891	1.336.260
BCG doses	1.289.933	1.358.776	1.374.508	1.379.146	1.250.307
Penta1 doses	1.231.758	1.307.998	1.353.914	1.332.965	1.257.815
Penta 3 doses	1.048.989	1.176.983	1.214.439	1.199.744	1.104.452
Measles1 doses	1.052.811	1.181.267	1.273.238	1.180.866	1.120.910

* Denominators used to calculate vaccine coverage are: Target Live Births @3.5% of total population for BCG and OPV-0 and Target Surviving Infants @92.30% of live births for all other antigens and doses.

Source: EPI Federal, MNHSRC

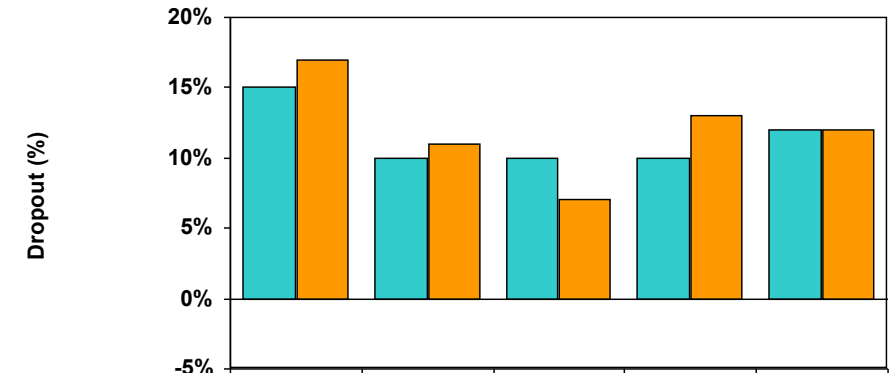
Figure 19. Vaccine coverage (%) of BCG, Penta1, Penta3, Measles 1. SINDH, Pakistán, 2011-2015



	2011	2012	2013	2014	2015
BCG	96%	99%	98%	97%	86%
Penta 1	99%	103%	105%	102%	94%
Penta 3	84%	93%	94%	91%	83%
Measles 1	85%	93%	99%	90%	84%

Source: EPI Federal, MNHSRC

Figure 20. Dropout (%) of Penta1- Penta3 and Penta1- Measles 1. SINDH, Pakistan, 2011-2015



	2011	2012	2013	2014	2015
Penta 1-Penta 3	15%	10%	10%	10%	12%
Penta 1-Measles 1	17%	11%	7%	13%	12%

Source: EPI Federal, MNHSRC

6.2. Results

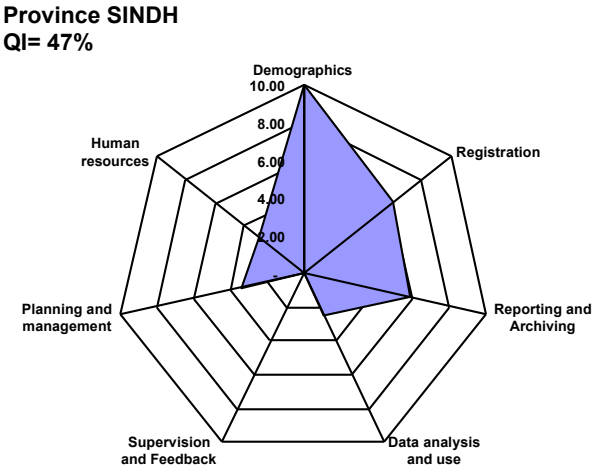
6.2.1. Quality of the monitoring system

As shown in Figure 21, the overall data Quality Index for the provincial data evaluation was 47%, the main weakness was the supervision and feedback which had a 0 score, also the data use for action was 25%. Shortage in human resources and insufficient planning were 30% and 33 % respectively. Registration was 60% and on the other hand the demographic information was 100%.

Findings at the district/town level shows that Hyderabad district got an overall QI of 71%, with the least index of 50% for data analysis and use for action and with 100% score for supervision and feedback. TM Khan had a lower overall score of 51%. Supervision had a score of 0%; however demographic data and human resources got a score of 100% each. Nazimabad and Liaqatabad towns of Karachi got an overall score of 43% and 17% respectively. Supervision and feedback got a score of 0% for both of them. While Nazimabad had a reasonable score of 71% and 90% for demographics and human resources respectively, yet Liaqatabad had below than average score for all domains except the human resources which got a score of 77%.

The overall districts/town score was 55%, with the least score of the domains Data use and planning 25% each, the best overall score for registration and Human resource domains were 75% and 77% respectively.

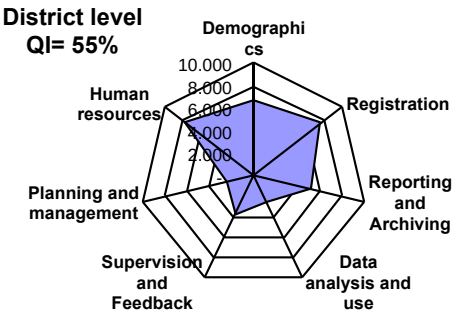
Figure 21. Quality Index: Province Level, SINDH



Quality Index: SINDH	QI= 47%
Demographics	10,0
Registration	6,1
Reporting and Archiving	5,9
Data analysis and use	2,5
Supervision and Feedback	0,0
Planning and management	3,33
Human resources	3,00

Figure 22. Quality Aggregated Index: District and Health Facility Level, SINDH

All selected districts	QI= 55%
Demographics	6,67
Registration	7,57
Reporting and Archiving	5,09
Data analysis and use	2,54
Supervision and Feedback	3,75
Planning and management	2,50
Human resources	7,75



All selected Health Facilities (HF)	QI= 61%
Demographics	5,29
Registration	7,62
Reporting and Archiving	6,03
Data analysis and use	6,30
Supervision and Feedback	0,78
Human resources	9,00

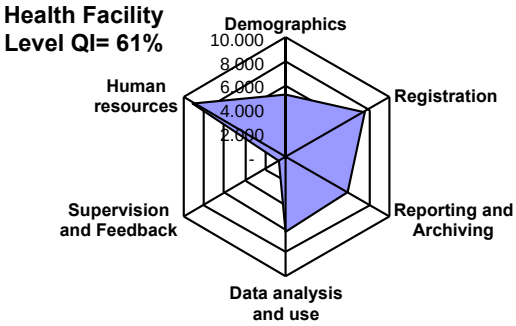
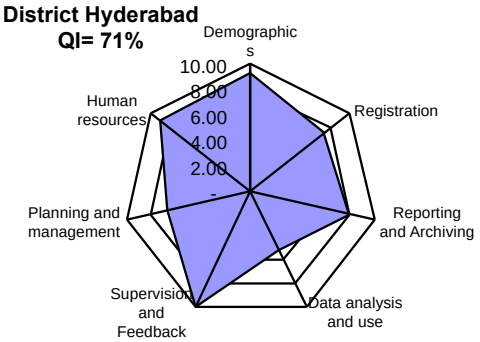
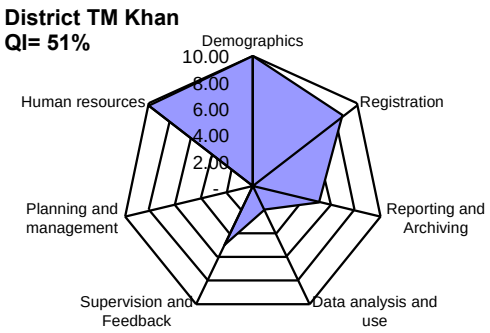
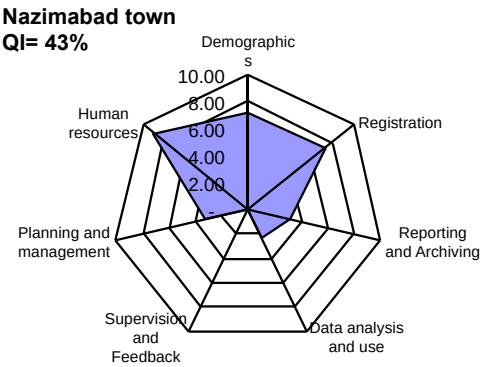
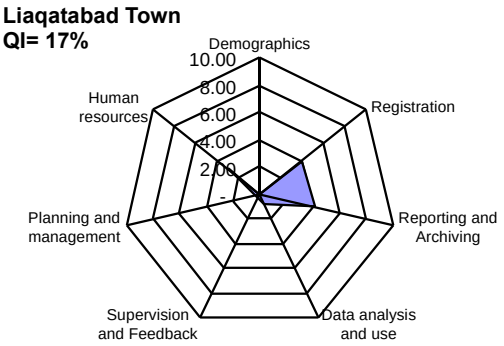


Figure 23. Quality Index: Districts Hyderabad, TM Khan, Nazimabad Town and Liagatabad Town, SINDH









Annex 9 describes the results of QI in each UC/HF; the most relevant findings are:

- UC Mustafabad got a total Quality Index of 64%, planning and management did not exist, so was not evaluated. Supervision and feedback have a score of 0%. Reporting and archiving got a score around 50%. A better score of 80% was for the registration.
- UC Dak Khana reached an overall Quality Index of 43%. Planning and management did not exist, so was not evaluated. Supervision and feedback had a score of 0%. Human resource was perfect getting a score of 100%.
- UC Khando Goth got an overall Index of 72%. , Planning and management did not exist so not evaluated. Human resource was 100%, other domains had all a score around 70%, except supervision and feedback which had 40%.
- UC Masu Burghri had an overall Data Quality Index of 55%. Planning and management did not exist so not evaluated. Supervision and feedback have a score of 0%. Registration and human resources had the highest score of 80% and 100% respectively.
- UC TG Haider had an overall Quality Index of 75%. Planning and management did not exist so not evaluated. Supervision and feedback have a score of 0%. Data analysis and Human resources had both a score of 100%
- UC Nazimabad reported an overall Quality Index as low as 45%. Planning and management did not exist so not evaluated. Supervision and feedback and human resources had a score of 0. Maximum score of 7.7 was in the domain of registration.
- UC Sakhi Hasan had an overall Quality Index of 70%. Planning and management did not exist so not evaluated. Supervision and feedback and human resources had a score of 0.Human resources had a score of 100% and other domains were around 70%.
- UC Tandu Fazal had an overall Quality Index of 48%. Planning and management did not exist so not evaluated. Supervision and feedback had a score of 0. Human resources had a score of 100%. Other domains ranged from 44% to 58%.
- UC Dandu had an overall Quality Index of 80%. Planning and management did not exist so not evaluated. Dad analysis and use for action and Human resources have each the maximum score of 100%. Other domains had score ranging from 50% to 87%.
- UC Shaeed Abbas had an overall Quality index of 65%. Planning and management did not exist so not evaluated. Supervision and feedback had a score of 0. Human resources had a score of 100%. And demographics had the lowest score of 26%.

6.2.2. Data accuracy

At the provincial level, Penta 3 AR% for the three months of 2015 ranged from 98.9% to 101.3% and an overall ratio of 100.4%, which reflects minor over reporting and minor under reporting throughout the evaluated months. The same results applied also for Measles1: the AR% ranged from 92.3% to 101.1% and an overall ratio of 99.3%.

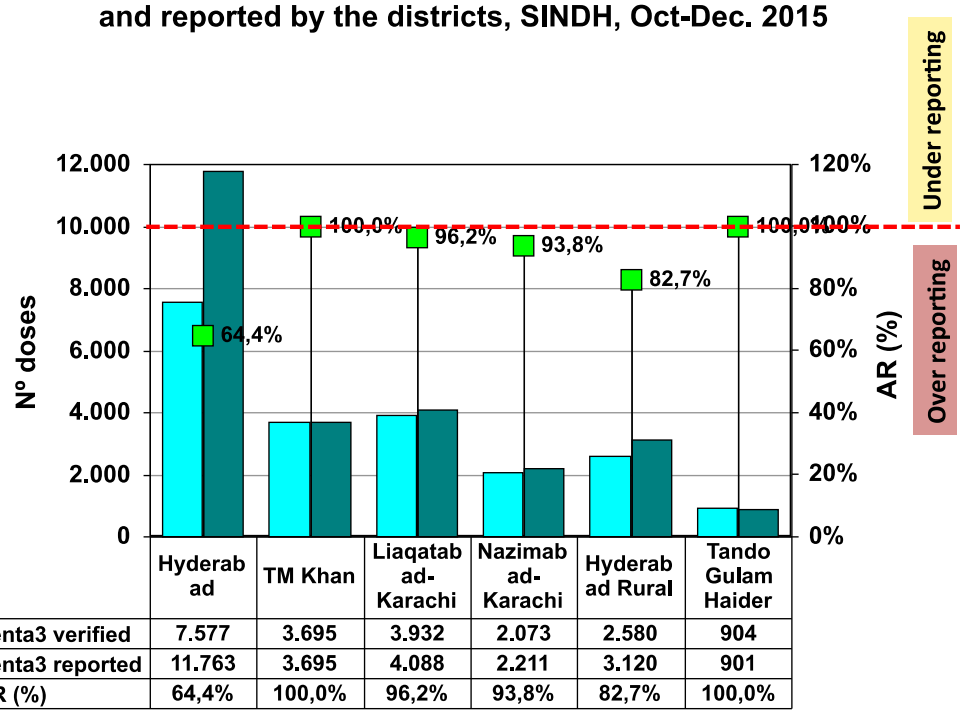
At the two Karachi towns, the AR% for Penta 3 were 92.3% and 94.8% in Liakatabad for October and December which reflect an under reporting however it was an over reporting of 100.6% in November. For Nazimabad Penta3 got an over reporting for October and December with an accuracy score of 92.3%, 94.8% with an overall score of 93.7%. For Measles1, the AR% ranged from 95.2 to 97.8 in the three months for Liqatabad and from 88.1% to 100% in Naziamabd town for the same antigen.

Hyderabad district over reported Penta3 coverage and recorded a score of 72.9%, 61.9% and 60.1% for October, November and December 2015 respectively. It also over reported Measles1 for the three month with a score of around 62%.

TM khan district had an accuracy score of 100% throughout the three evaluated months for the two antigens, this observation mainly caused by the support offered by three organizations named WHO, UNICEF and Agha Khan University being supporting the district since 2 years. The main related activities were strengthening RED strategy, engagement of LHWs in routine immunization and a project lead by Agha Khan University providing e mobile to vaccinators for immediate data entry coupled with photo registration and tracing.

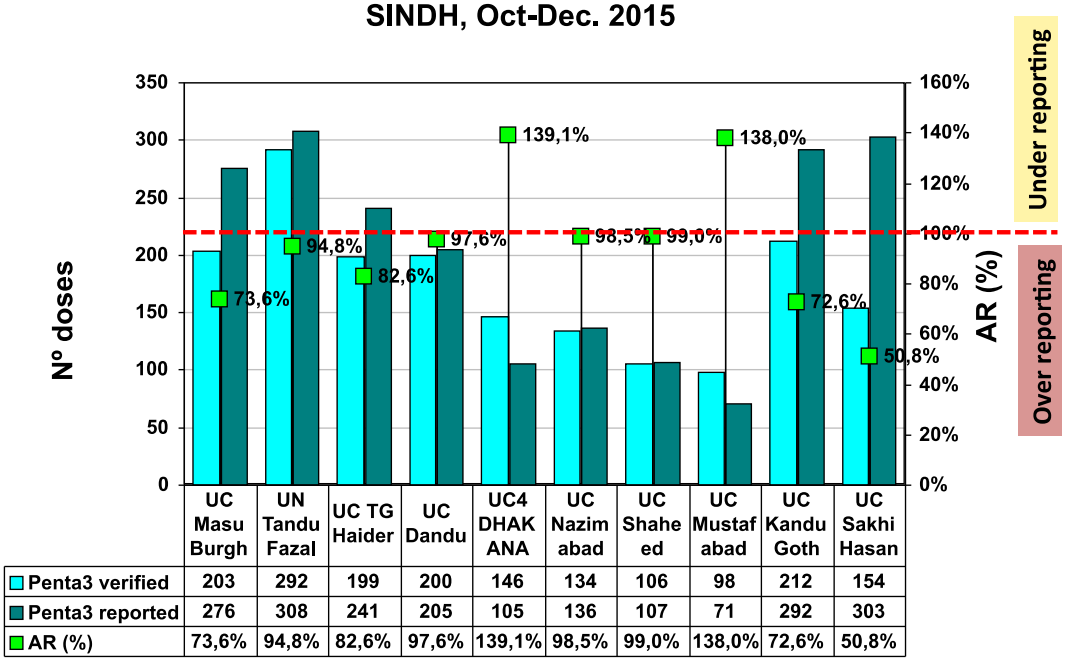
The overall AR% for all the two towns and two districts were 93.7% and 68.4% for Penta 3 and Measles1 reflecting an overall over reporting at district/town level.

Figure 24. Accuracy Ratio (%), number of doses of Penta3 verified and reported by the districts, SINDH, Oct-Dec. 2015



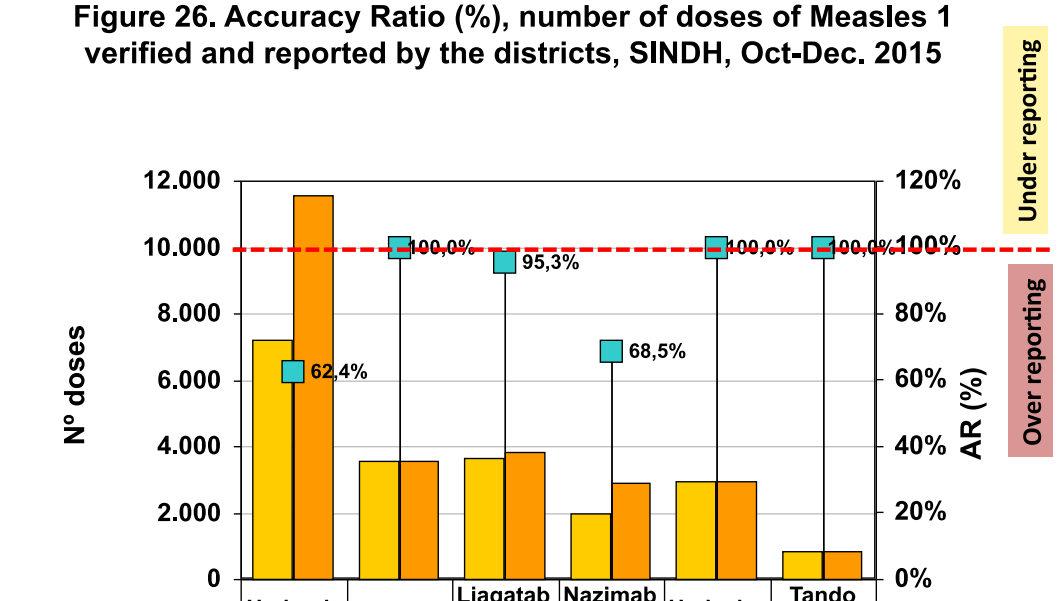
	Hyderabad	TM Khan	Liaqatabad-Karachi	Nazimabad-Karachi	Hyderabad Rural	Tando Gulam Haider
Penta3 verified	7.577	3.695	3.932	2.073	2.580	904
Penta3 reported	11.763	3.695	4.088	2.211	3.120	901
AR (%)	64,4%	100,0%	96,2%	93,8%	82,7%	100,0%

Figure 25. Accuracy Ratio (%), number of doses of Penta3 verified and reported by the Health Facilities (HF) to the district level, SINDH, Oct-Dec. 2015



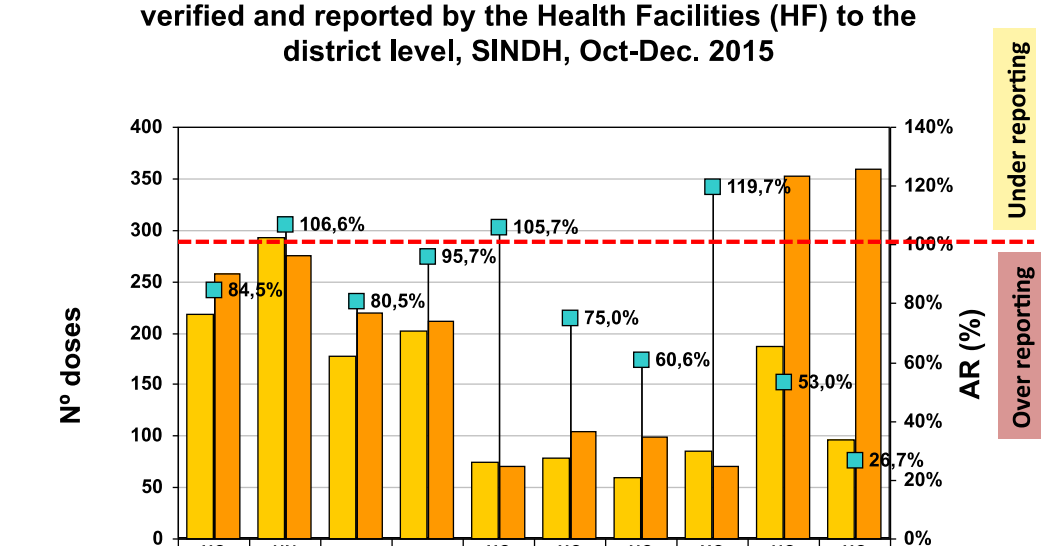
	UC Masu Burgh	UN Tandu Fazal	UC TG Haider	UC Dandu	UC4 DHAK ANA	UC Nazim abad	UC Shahe ed	UC Mustaf abad	UC Kandu Goth	UC Sakhi Hasan
Penta3 verified	203	292	199	200	146	134	106	98	212	154
Penta3 reported	276	308	241	205	105	136	107	71	292	303
AR (%)	73,6%	94,8%	82,6%	97,6%	139,1%	98,5%	99,0%	138,0%	72,6%	50,8%

Figure 26. Accuracy Ratio (%), number of doses of Measles 1 verified and reported by the districts, SINDH, Oct-Dec. 2015



	Hyderabad	TM Khan	Liaqatabad-Karachi	Nazimabad-Karachi	Hydeabad Rural	Tando Gulam Haider
Measles1 verified	7.219	3.565	3.635	1.990	2.949	822
Measles1 reported	11.569	3.565	3.814	2.906	2.949	822
AR (%)	62,4%	100,0%	95,3%	68,5%	100,0%	100,0%

Figure 27. Accuracy Ratio (%), number of doses of Measles 1 verified and reported by the Health Facilities (HF) to the district level, SINDH, Oct-Dec. 2015



	UC Masu Burghri	UN Tandu Fazal	UC TG Haider	UC Dandu	UC DHAKA NA	UC Nazima bad	UC Shahee d	UC Mustafa bad	UC Kandu Goth	UC Sakhi Hasan
Measles1 verified	218	293	177	202	74	78	60	85	187	96
Measles1 reported	258	275	220	211	70	104	99	71	353	359
AR (%)	84,5%	106,6%	80,5%	95,7%	105,7%	75,0%	60,6%	119,7%	53,0%	26,7%

Annexes 10 and 11 describes the results of AR (%) at the HF/UC; the most important findings are:

- In UC Mustafabad, accuracy couldn't calculated for October and November as the number of vaccinated kids in the report to the town health office couldn't be found but for December the accuracy ratio was 45% for Penta 3 and 32.3% for Measles1. None of the registered children for vaccination has been traced in the community because of the invalid addresses.
- UC Dak Khana accuracy ratio was calculated. Penta3 coverage was not able to be traced in October however under reporting was high in November and December, accuracy ratio of 108% and 225%, respectively, The same was applied to Measles1, where month of October was missing , an over reporting in November and under reporting in December with an overall accuracy ratio of 107%, reflecting under reporting. Six out 10 children have been traced in the community to verify the vaccination status, which was correct in identified children; however other children were not traced due to wrong address.
- UC Kandu Goth Accuracy Ratio was calculated For Penta 3 coverage; it was over reported in the three month with an overall accuracy ratio of 72.6. Over reporting for MEASLES1 was even higher ranging from 44.2% to 68.3% throughout the 3 months and an overall accuracy ration of 52.9%. Fifty percent of children allocated from the registry to verify their vaccination status in their houses have been traced with exact immunization recording, however the other 50% were not able to trace in the community because of the wrong addresses.
- UC Masu Burghri over reported both Penta3 and Measles1 coverage for the three evaluated months, the overall score for Penta3 was 73.4% and for Measles1 was 72.4%. Five children were traced in the community; their vaccination was correctly recorded except one, where the date of vaccination in the registry was not

concordant with that on the child vaccination card. Nine other children could not be traced because they are no existing in the community.

- UC TG Haider over reported both Penta 3 and Measles1 coverage for the three evaluated months. Penta3 had a score of 90.5%, 66.2% and 92.5% for the three months respectively with an overall score of 82.5%. Similarly, Measles1 had an overall score of 80.4%. Eight Children out of 10 children have been traced in the community, the vaccination date were incorrect in four of them however two children were not traceable in their registered addresses.
- UC Nazimabad had an over reported Penta 3 throughout two months with an overall accuracy ratio of 98.5. Measles1 had significantly high over reported reaching a score of 47.6 in December 2015. The overall Measles1 Accuracy score was 75%. Five children out of fifteen has been traced with correct vaccination, four children not found in the address and six children have the address incomplete.
- UC Sakhi Hasan had extreme over reporting for Penta 3 with an accuracy ratio of 35% and 37% for the month of October and November with an overall accuracy ratio of 50.8. Measles1 situation was even more with a ratio of 18 and 19 in October and November with an overall ratio of 26.7%. Only two children out of the fifteen selected from the register, could be found, other children didn't exist in the registered addresses.
- UC Tandu Fazal had for Penta3 coverage an under reporting for the month of October and over reporting for the two other months of 2015 with an overall Accuracy score of 94.8% which reflect an over reporting. Measles1 reporting was the reverse with an overall score of 106.5% denoting under reporting. Nine Children has been identified in the community among those selected from daily register for immunization verification, although that immunization was concordant, yet four out of them had different dates on the vaccination cards
- UC Dandu over reported Penta3 coverage for the three last months of 2015 with an overall accuracy ratio of 97.5%. Measles1 was also over reported with an accuracy ratio of 95.7%. Eight children were identified in the community search to compare their vaccination status with that of the daily register and two were not identified due to incorrect address. Two among identified children had incorrect dates of vaccination.
- UC Shaheed Abbas had an over reporting for Penta 3 for October however under reporting for the two other months resulting in minor over reporting with an overall score of 99.3%. For Measles1 over reporting was extremely higher with an overall over reporting score of 60.6%. Only two children have been identified from the selected children, because of the incomplete address. Identified children had a correct vaccination status and dates.

One Taluka from each selected district has been evaluated. Tando Gulam Haider had an accuracy ration of 82.6% for Penta 3 and 100% for Measles1 throughout the three months. Completeness and Timeliness is 100% for the three months as well. Taluka Hyderabad Rural had accuracy ration for Penta 3 ranged from 50.8 in October to 102.9 in December with an overall accuracy of 82.6 reflecting an over reporting of Penta 3 coverage and for Measles1, It was 100 all months. Completeness of reporting was 100% and Timeliness was 91%.

6.2.3. Completeness and timeliness

Completeness and timeliness of reporting were evaluated at district and towns' level. In Hyderabad, the completeness was 100% however the timeliness was 76% in October and 81% in both November and December 2015. In TM Khan all reports were timely received, i.e.: completeness and timeliness of reporting was 100% for the three evaluated months. Nazimabad town health office has reported 100% completeness for all 3 months, timeliness in October and December were 0% (No date tracked for reports receipt) and 30% in November 2015. In Liaqatabad, the completeness was 100% in October and December and 91% in November 2015; the timeliness was 0% as there is no any registration on the date received.

The most relevant findings about this component of the data quality assessment are:

- Completeness of reporting in small number of assessed sites was less than 100%
- Timeliness, as per the province set dates was not respected in most of the sites
- Completeness was from 80-100% however Timeliness ranged from 0-40%
- Tracing of children in the community for vaccination registration ranged from 20-80%
- Large number of untraceable addresses
- Children sometime do not exit in the found address
- Vaccination dates was only correct in 50-60% of verified vaccination cards

6.3. Recommendations

After describing and analyzing the results and findings, the fieldwork teams identified strengths and weakness. The following are the recommendation based on the interpretation of the findings.

Domain	Strengths	Weaknesses	Recommendations
Demographics	▪ The same figures of target population used for all coverage analysis (tabulations, charts, reports)	▪ Incomplete maps ▪ Poor AEFI reporting and VPDs Surveillance System	▪ Prepare and display complete UC maps with target and health information
Registration	▪ All records are available and properly used ▪ Reporting system-maintained the timeliness and completeness indicators	▪ No updated stock registry at UC	▪ Proper description of addresses in vaccination registries

Reporting and archiving	▪ All reports are available ▪ Register available for assessed month ▪ Completeness is high	▪ Poor archiving ▪ Old reports are not achieved ▪ Over reporting is present but with different degree from one district to another ▪ Report not signed or dated ▪ Timeliness is very low ▪ Over reporting are found for both antigens in the three assessed month ▪ Some month with other reporting and other month of under reporting	▪ Utilization of Tally sheet for data compilation before final reporting to higher level ▪ Ensure a regular back up for the electronic recording and reporting ▪ Maintain and update and feedback on AEFI report ▪ Improve timely compilation and submission of reports from UC and to provincial level ▪ Improve record keeping and documentation ▪ Ensure accountability and responsibility at all levels ▪ Discourage incorrect reporting and take action against those sending fake report ▪ Avoid incorrect reporting and taking corrective action against responsible persons
Data analysis and use	▪ Data is partially analyzed and never used for action	▪ No back up data ▪ No data analysis or use for action at UC ▪ No coverage chart at UC	▪ Ensure triangulation of data for action taking
Supervision and feedback	▪	▪ No supervision plan and no documentation of supervisory visits ▪ Feedback of supervisory visit is very scarce ▪ At UC supervision is not existing	▪ Province should generate a prospective supervisory plan with effective feedback ▪ Improve providing written feedback and documentation at district and HF ▪ Ensure quality and periodic supportive supervision in place ▪ Support from polio staff for supervision ▪ Involve Medical officers in daily monitoring and all EPI activities in the Health Unit.

Planning and management	▪ Annual Work plan and district microplan are available	▪ No regular EPI meetings ▪ No documentation of the meeting ▪ Microplan is rarely found	▪ Ensure updating all district work plans ▪ Prepare District wide map with all targets and health information included ▪ Develop a separate outreach microplan for each Health Unit and Union Council ▪ Maintain regular review meeting
Human resources	▪ Enough human resources is available at provincial level for data management	▪ Lack of training ▪ Irrational distribution of vaccinators	▪ Ensure regular training on data management system ▪ Provide refresher training to all vaccinators in the district on data quality improvement ▪ Build Capacity of vaccinators and ensure their proper training especially for coverage and drop out calculation ▪ Improve coordination between vaccinators and Lady Health Workers ▪ Better utilization and distribution of Human resources specially Vaccinators

7. Khyber-Pakhtunkhwa

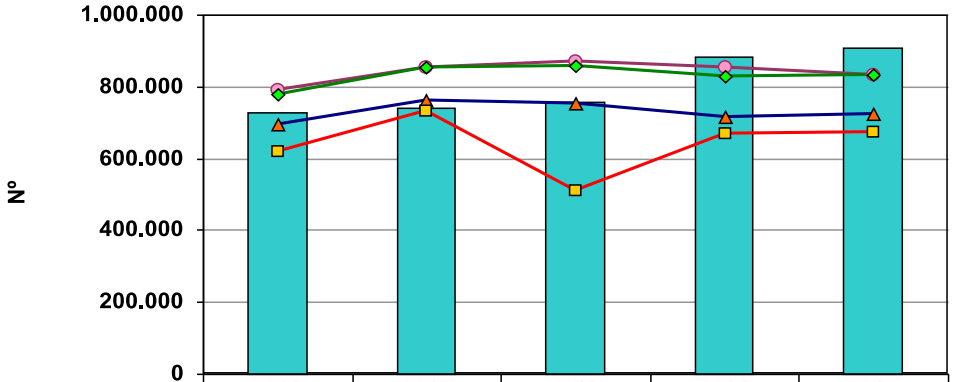
7.1. Background

Khyber Pakhtunkhwa (abbreviated as KP) is a province located in the northwestern region of Pakistan that runs for over 1,100 kilometers along the border with Afghanistan. KP has an area of 74.512 square kilometers and a population estimated of 28.128.375 in 2015, approximately 15% of the country's total population. Its provincial capital and largest city is Peshawar, followed by Mardan.

To conduct DQA in Khyber Pakhtunkhwa, 3 districts were selected randomly, but also taking in account security considerations. The DQA was conducted in: Kohat, Abbottabad and Mansehra. Three HF were selected in each district (total= 9 HF): CH Shakardara, RHC Bilitang, CD Jangal Kheil, CD Nagri Bala, BHU Jabriyan, UC Salhad BHU Barwaal, UC Langra BHU Kotlibala, BHU Hangrai and GMH Dadar.

The target population of children under 1 year-age was estimated in 908.687 for year 2015. As shown in Figure 28, this estimated target populations have increased during the period 2011-2015, indicating higher denominators to calculate administrative vaccine coverage. Even though the number of children vaccinated also increased during this period, vaccine coverage are in general decreasing (Figure 29) but % drop-out maintains stable values (Figure 30), with exception of Measles1 vaccine in year 2013 because of an outline reported data of administered doses).

Figure 28. Population under 1 year age * and doses of BCG, DTP1, DPT 3 and Measles 1 administered, by year. KHYBER-PAKHTUNKHWA, Pakistan, 2011-2015

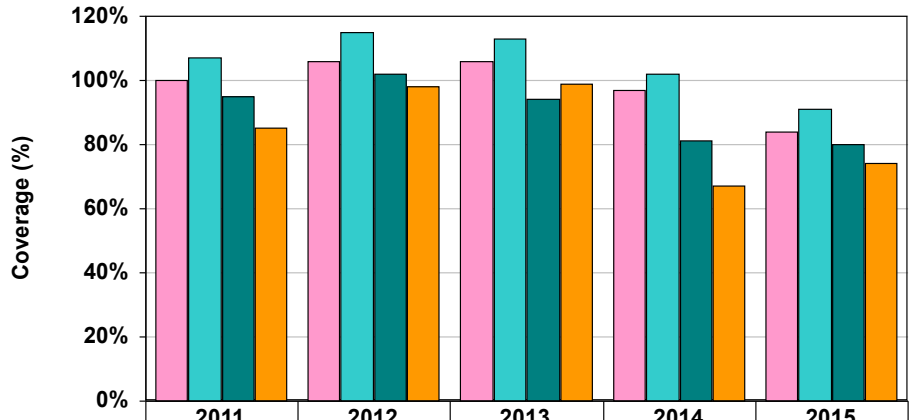


	2011	2012	2013	2014	2015
Pop. under 1 yr	729.570	742.556	755.774	883.805	908.687
BCG doses	788.748	853.357	869.071	852.735	831.122
Penta1 doses	777.693	854.004	857.659	826.462	831.131
Penta 3 doses	693.298	759.740	752.562	717.004	724.451
Measles1 doses	619.413	730.380	510.342	668.704	675.299

* Denominators used to calculate vaccine coverage are: Target Live Births @3.5% of total population for BCG and OPV-0 and Target Surviving Infants @92.30% of live births for all other antigens and doses.

Source: EPI Federal, MNHSRC

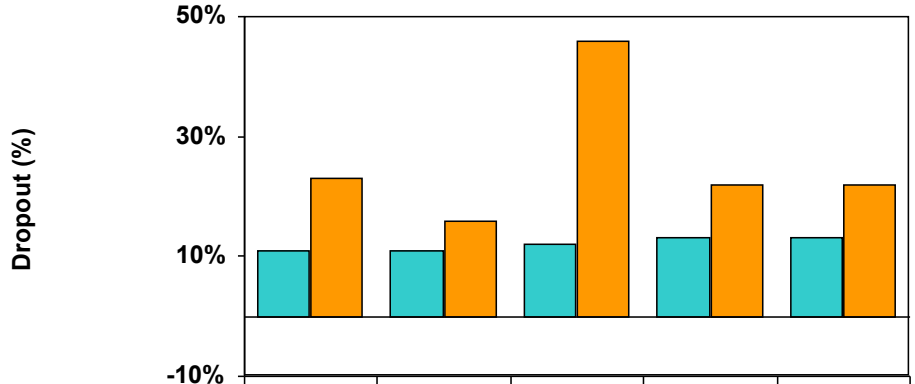
Figure 29. Vaccine coverage (%) of BCG, Penta1, Penta3, Measles 1. KHYBER-PAKHTUNKHWA, Pakistán, 2011-2015



	2011	2012	2013	2014	2015
BCG	100%	106%	106%	97%	84%
Penta 1	107%	115%	113%	102%	91%
Penta 3	95%	102%	94%	81%	80%
Measles 1	85%	98%	99%	67%	74%

Source: Provincial EPI Office, Balochistan

Figure 30. Dropout (%) of Penta1- Penta3 and Penta1- Measles1. KHYBER-PAKHTUNKHWA, Pakistan, 2011-2015



	2011	2012	2013	2014	2015
Penta 1-Penta 3	11%	11%	12%	13%	13%
Penta 1-Measles 1	23%	16%	46%	22%	22%

Source: Provincial EPI Office, Balochistan

7.2. Results

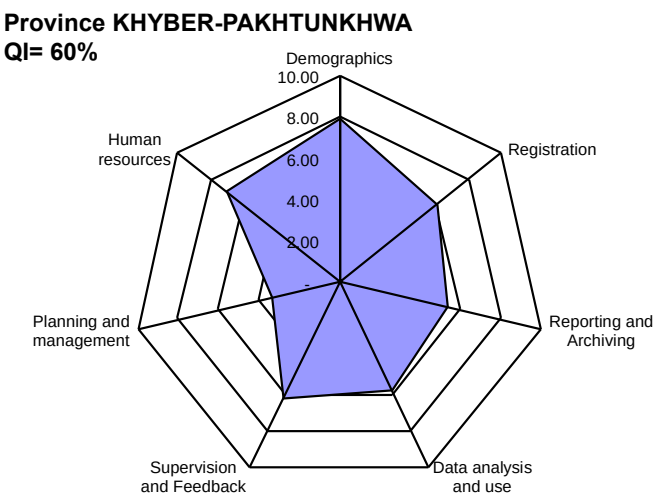
7.2.1. Quality of the monitoring system

The overall QI of KP was 69% at provincial level, with the highest score achieved in the domain Demographics (score= 7.9), followed in descendent order by Human Resources (score= 7.0). The lowest value (score= 3.3) was found in Planning and management (figure 31)

The overall QI was also low in the districts (QI= 44%) and HF (QI= 59%) showing as found at the province level, low values in supervision and feedback (Districts= 0,8, HF= 1,8), but also low scores in planning and management, data analysis and use of information. The QIs varied widely between districts (from 31% in Kohat to 58% in Mansehra).

The results of QI for each HF are presented in Annex 12. There is a wide range of QI value when comparing the 9 HF: from 30% in BHU Hangrai (District Mansehra) to 86% in CD Nagri Bala (district Abbottabad).

Figure 31. Quality Index: Province Level, KHYBER-PAKHTUNKHWA



Quality Index: KP	QI= 60%
Demographics	7,9
Registration	6,1
Reporting and Archiving	5,4
Data analysis and use	5,8
Supervision and Feedback	6,3
Planning and management	3,3
Human resources	7,0

Figure 32. Quality Aggregated Index: District and Health Facility Level, KHYBER-PAKHTUNKHWA

All selected districts	QI= 44%
Demographics	6,67
Registration	4,78
Reporting and Archiving	5,06
Data analysis and use	3,33
Supervision and Feedback	0,83
Planning and management	2,22
Human resources	9,33

All selected Health Facilities (HF)	QI= 59%
Demographics	5,91
Registration	7,19
Reporting and Archiving	6,01
Data analysis and use	4,89
Supervision and Feedback	1,80
Human resources	6,67

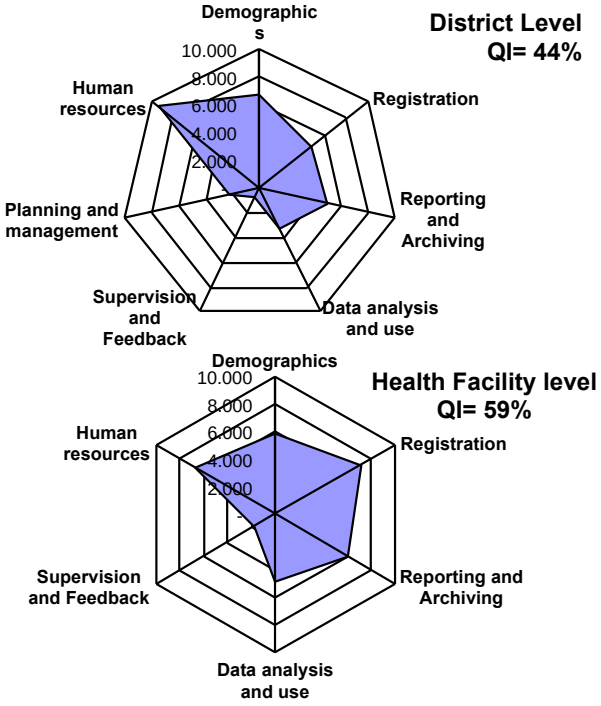
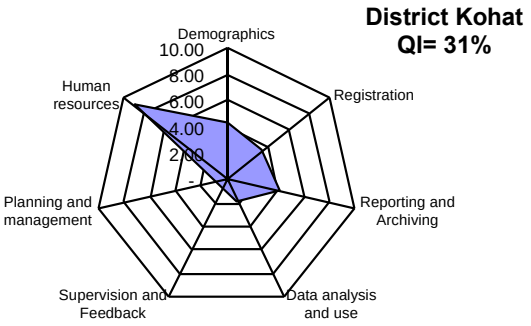
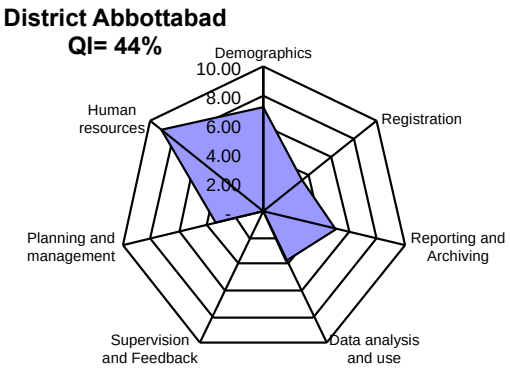
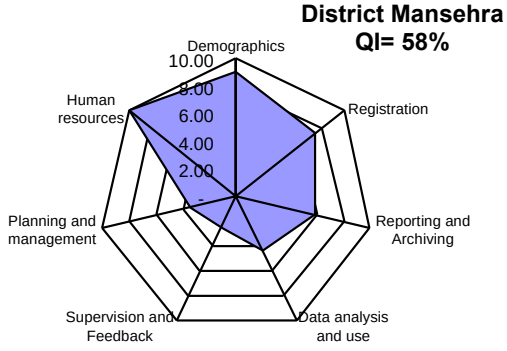


Figure 33. Quality Index: Districts Kohat, Abbottabad, Mansehra, KHYBER-PAKHTUNKHWA



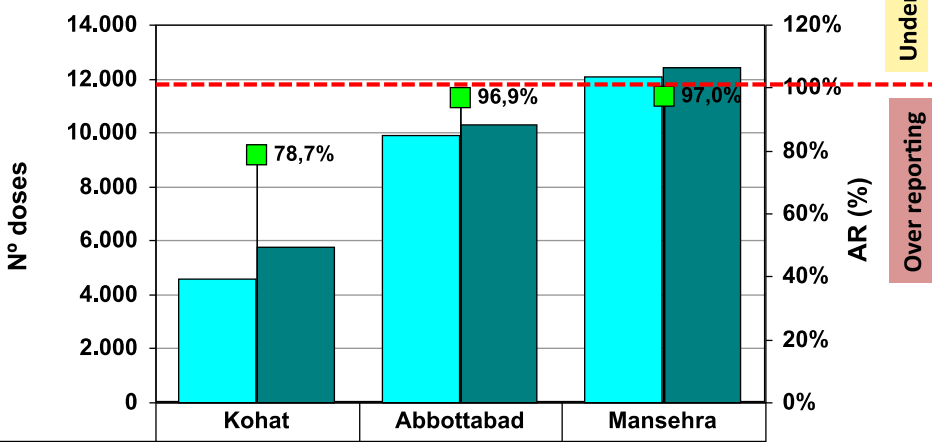




7.2.2. Data accuracy

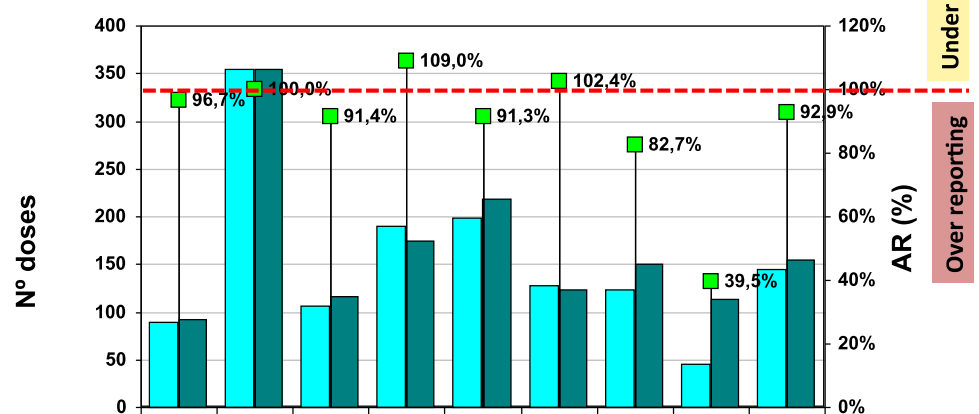
The Accuracy Ratio (AR) was higher at the provincial level (Penta3= 99,1% and Measles1= 99,9%). The AR in the districts were 97.0% in Manshera, 95.9% in Abbottabad and 78.7% in Kohat, indicated over reporting of doses of Penta 3. Similar pattern was found for Measles 1 (99.7% in Manshera, 95.9% in Abbottabad and 75.8% in Kohat).

Figure 34. Accuracy Ratio (%), number of doses of Penta3 verified and reported by the districts, KHYBER-PAKHTUNKHWA, Oct-Dec. 2015



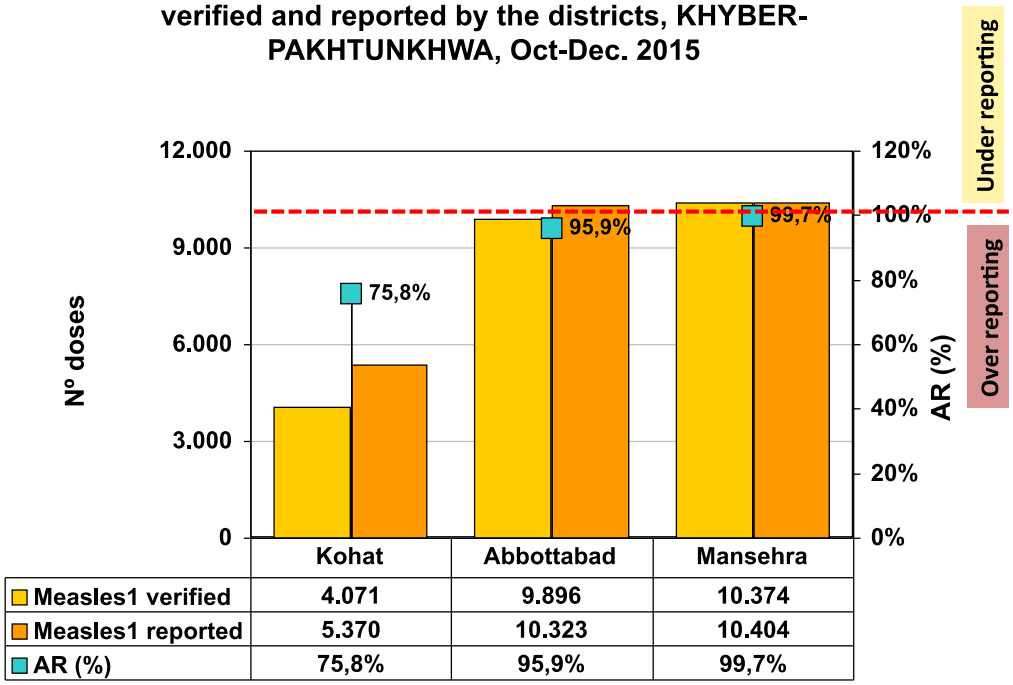
	Kohat	Abbottabad	Mansehra
Penta3 verified	4.560	9.896	12.059
Penta3 reported	5.791	10.323	12.427
AR (%)	78,7%	96,9%	97,0%

Figure 35. Accuracy Ratio (%), number of doses of Penta3 verified and reported by the Health Facilities (HF) to the district level, KHYBER-PAKHTUNKHWA, Oct-Dec. 2015



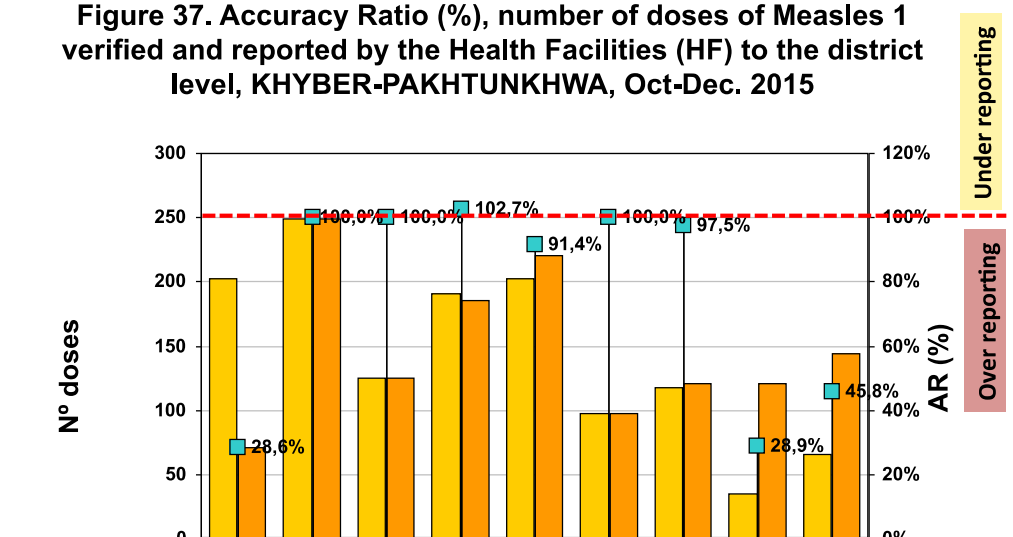
	CH Shakardara	RHC Bilitang	CD Jangal Kheil	CD Nagri Bala,	BHU Jabriyan UC	BHU Barwaal, UC	BHU Kotlibala	BHU Hangrai	GMH Dadar
Penta3 verified	89	354	106	190	199	127	124	45	144
Penta3 reported	92	354	116	174	218	124	150	114	155
AR (%)	96,7%	100,0%	91,4%	109,0%	91,3%	102,4%	82,7%	39,5%	92,9%

Figure 36. Accuracy Ratio (%), number of doses of Measles 1 verified and reported by the districts, KHYBER-PAKHTUNKHWA, Oct-Dec. 2015



	Kohat	Abbottabad	Mansehra
Measles1 verified	4.071	9.896	10.374
Measles1 reported	5.370	10.323	10.404
AR (%)	75,8%	95,9%	99,7%

Figure 37. Accuracy Ratio (%), number of doses of Measles 1 verified and reported by the Health Facilities (HF) to the district level, KHYBER-PAKHTUNKHWA, Oct-Dec. 2015



	CH Shakardara	RHC Bilitang	CD Jangal Kheil	CD Nagri Bala,	BHU Jabriyan UC	BHU Barwaal, UC	BHU Kotlibala	BHU Hangrai	GMH Dadar
Measles1 verified	203	249	125	191	202	97	118	35	66
Measles1 reported	71	249	125	186	221	97	121	121	144
AR (%)	28,6%	100,0%	100,0%	102,7%	91,4%	100,0%	97,5%	28,9%	45,8%

7.2.3. Completeness and timeliness

Completeness of district monthly EPI reports sent to the provincial EPI office for the assessed period (Oct – Dec 2015) was 97.33%. However reporting timeliness couldn't be

measured as date of receipt of district monthly reports are not registered at the provincial EPI office.

Completeness of the monthly EPI report from UCs to the district HQ for the same period was 90%, 98% and 95% respectively for Kohat, Abbottabad and Manshera districts. Timeliness was 90% and 53% for Kohat and Manshera for the same report during the same period. Timeliness for Abbottabad couldn't be measured as data of report receipt was not registered at district office.

7.3. Recommendations

After describing and analyzing the results and findings, the fieldwork teams identified strengths and weakness. The following are the recommendation based on the interpretation of the findings.

Domain	Strengths	Weaknesses	Recommendations
Demographics	▪ Maps were displayed in the selected sites	▪ Map: displayed everywhere but not complete and not used ▪ Target: inconsistent across different levels, time period and with different source	▪ Facilitate completeness of map during supervisory visits ▪ All districts should use target sent by Provincial EPI ▪ Districts will assign target for each UC or HF catchment area based on local knowledge and census figures
Registration	▪ Daily and permanent registers and other EPI recording and reporting tools were available at almost all health facilities. ▪ Temperature and inventory sheets were also available.	▪ No standard registration system of the newborns	▪ Use polio micro-census data where available to set local target ▪ Vaccinators to register all newborn in their catchment area using different available sources e.g. LHW, CMW, PEI, SW dept. etc.

Reporting and archiving	▪ Completeness was found satisfactory at all levels	▪ SOPs of uniform reporting system are not in place ▪ Format, reporting timeline, protocols, archiving etc. ▪ Date of reports received are not registered/recorded at receiving office	▪ Provincial EPI to develop and disseminate a comprehensive SOP for recording, reporting and archiving ▪ Standardized reporting format to be used ▪ Reporting timeline to be followed, recorded and monitored ▪ Regular documented feedback from higher level ▪ Implementation to be followed during supervision
Data analysis and use	▪ Updated immunization chart and table was found in some of the HFs	▪ Routine monitoring of key indicators is weak ▪ No data analysis at local level for action ▪ Incorrect use or no use of data recording, reporting tools ▪ UC microplan are not shared with districts ▪ Gender disaggregated data not available	▪ Capacity building of concerned staff ▪ Monitor and share specific indicators for different levels regularly ▪ Document all meetings, events, discussion and decisions ▪ Conduct Data Quality Self-assessment by every district regularly and share report with province
Supervision and feedback	▪ There is a practice of conducting supervisory visit by the district officials but not well planned and documented	▪ Supervisory plan not available everywhere and shared in advance ▪ Supervisory visits are done on ad-hoc basis, not well documented and followed-up ▪ Feedback and follow-up from higher level not regular, systematized and documented ▪ No regular EPI review meeting at district level	▪ Supervisory plan to be developed and shared in advance with higher office on time and regular basis ▪ Monitoring of implementation of the plan by higher office and sharing feedback ▪ Document and archive all feedback provided (letter, electronic, reports, minutes, checklist etc.) ▪ All supervisory visits to be recorded in a standardized format maintained at the respective facility/office ▪ Mandatory monthly EPI review meeting at district level with documented meeting minute
Planning and management	▪	▪ No annual workplan	▪ Development of periodic workplan by each district and share with provincial EPI

Human resources	▪	▪ Weak capacity of mid-level managers ▪ Inequitable distribution of available HR ▪ Designated HR for different technical area lacking e.g. surveillance, data management etc	▪ MLM training for mid-level managers ▪ Administrative steps for equitable distribution of available HR and monitor implementation ▪ Available officers in Prov EPI are assigned for monitoring all aspects of specific districts ▪ Implementation of HR component KPISP and regularization of Gavi/JICA supported staff at the earliest

8. Balochistan

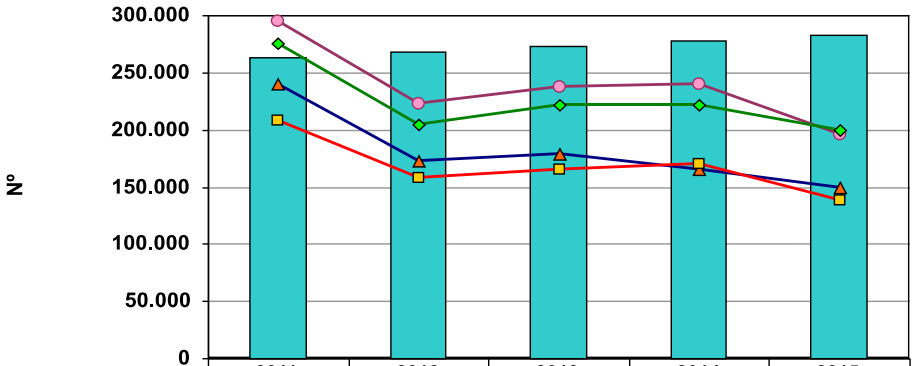
8.1. Background

Balochistan is located at the southwest of Pakistan and covers an area of 347,190 square kilometers (134,050 sq. miles). It is Pakistan's largest province by area, constituting 44% of Pakistan's total land mass. This province has a population estimated of 8.746.546 in 2015, approximately 5% of the country total population. Its provincial capital and largest city is Quetta.

To conduct DQA in Balochistan, 3 districts were selected randomly, but also taking in account security considerations. The DQA was implemented in: Quetta, Killa Saifullah and Harnai. The selected HF were: BHU Wahdat Colony, MCH Gawalmandi, BHU Gor Colony, Hospital Killa Saifullah, BHU Nassai, THQ Muslim Bagh Sharag, BHU Zardalo and DHQ Hospital Harnai.

The target population of children under 1 year-age was estimated in 282.557 for year 2015. As shown in Figure 38, during the period 2011 to 2015 the denominator has gradually increased and the number of vaccinated children showed an important reduction in all the vaccines. The vaccine coverage of the basic schedule of immunization is decreasing. Drop out not only is high through the years but it is increasing. In year 2015, drop out Penta 1- Penta 3 was 25% in Balochistan and for Penta 1- Measles 1 was 41%.

Figure 38. Population under 1 year age * and doses of BCG, DTP1, DPT3 and Measles1 administered by year. BALOCHISTAN, Pakistan, 2011-2015

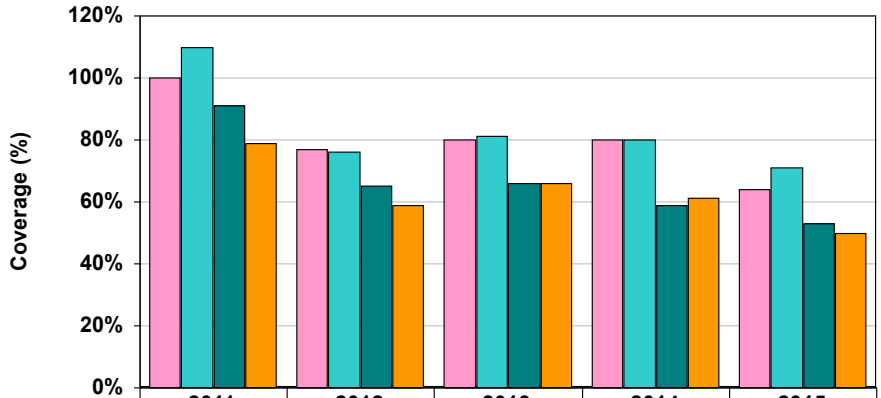


	2011	2012	2013	2014	2015
Pop. under 1 yr	263.303	267.990	272.760	277.616	282.557
BCG doses	295.239	222.478	237.830	240.247	196.109
Penta1 doses	275.662	204.848	221.698	222.131	200.029
Penta 3 doses	239.932	173.087	178.882	165.064	149.252
Measles1 doses	208.641	157.497	164.854	170.722	138.953

* Denominators used to calculate vaccine coverage are: Target Live Births @3.5% of total population for BCG and OPV-0 and Target Surviving Infants @92.30% of live births for all other antigens and doses.

Source: EPI Federal, MNHSRC

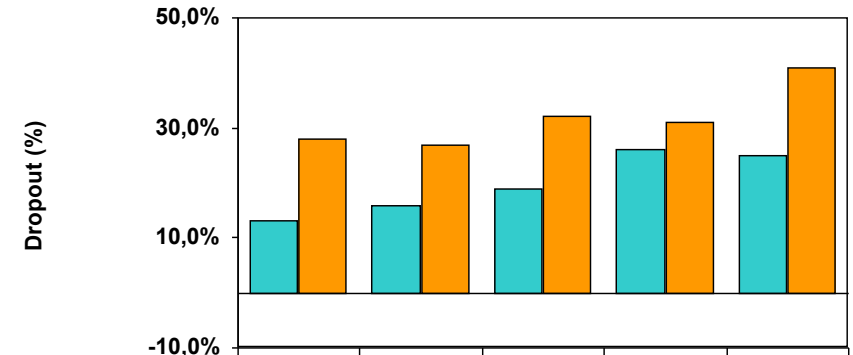
Figure 39. Vaccine coverage (%) of BCG, Penta1, Penta3, Measles1. BALOCHISTAN, Pakistán, 2011-2015



	2011	2012	2013	2014	2015
BCG	100%	77%	80%	80%	64%
Penta 1	110%	76%	81%	80%	71%
Penta 3	91%	65%	66%	59%	53%
Measles 1	79%	59%	66%	61%	50%

Source: Provincial EPI Office, Balochistan

Figure 40. Dropout (%) of Penta1- Penta3 and Penta1-Measles1. BALOCHISTAN, Pakistan, 2011-2015



	2011	2012	2013	2014	2015
Penta 1-Penta 3	13,0%	16,0%	19,0%	26,0%	25,0%
Penta 1-Measles 1	28,0%	27,0%	32,0%	31,0%	41,0%

Source: Provincial EPI Office, Balochistan

8.2. Results

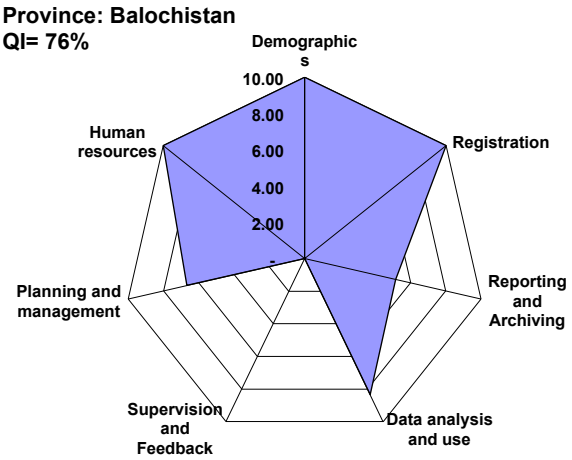
8.2.1. Quality of the monitoring system

The overall QI of Balochistan was 76.0% at provincial level, with higher scores in demographics, registration and data analysis. Supervision and feedback were the domains that achieved the lowest scores (figure 41)

The overall QI was low in the districts (QI= 31%) and HF (QI= 45%). As found at the province level, the lowest values were found in supervision and feedback (Districts= 0,3, HF= 0), but also low scores in planning and management, data analysis and use of information to make decisions. The QIs varied widely between districts (41% in Quetta vs. 22% in Harnai) and HF (range 67% to 17%).

The results of QI for each HF are presented in Annex 15. There is a wide range of QI value when comparing the 9 HF: from 17% in BHU Zardalo (Harnai) to 67% in BHU Wahdat Colony (Quetta).

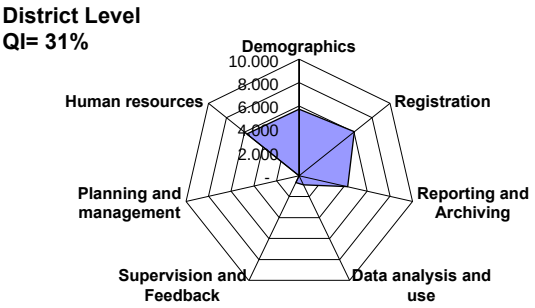
Figure 41. Quality Index: Province Level, BALOCHISTAN



Quality Index: BALOCHISTAN	76%
Demographics	10,0
Registration	10,0
Reporting and Archiving	5,2
Data analysis and use	8,3
Supervision and Feedback	-
Planning and management	6,7
Human resources	10,00

Figure 42. Quality Aggregated Index: District and Health Facility Level, BALOCHISTAN

All selected districts	QI= 31%
Demographics	5,7
Registration	6,1
Reporting and Archiving	4,3
Data analysis and use	0,9
Supervision and Feedback	0,7
Planning and management	-
Human resources	5,8



All selected Health Facilities (HF)	QI= 45%
Demographics	-
Registration	6,0
Reporting and Archiving	-
Data analysis and use	-
Supervision and Feedback	-
Human resources	8,9

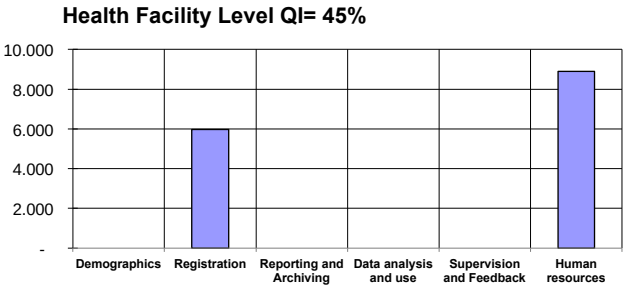
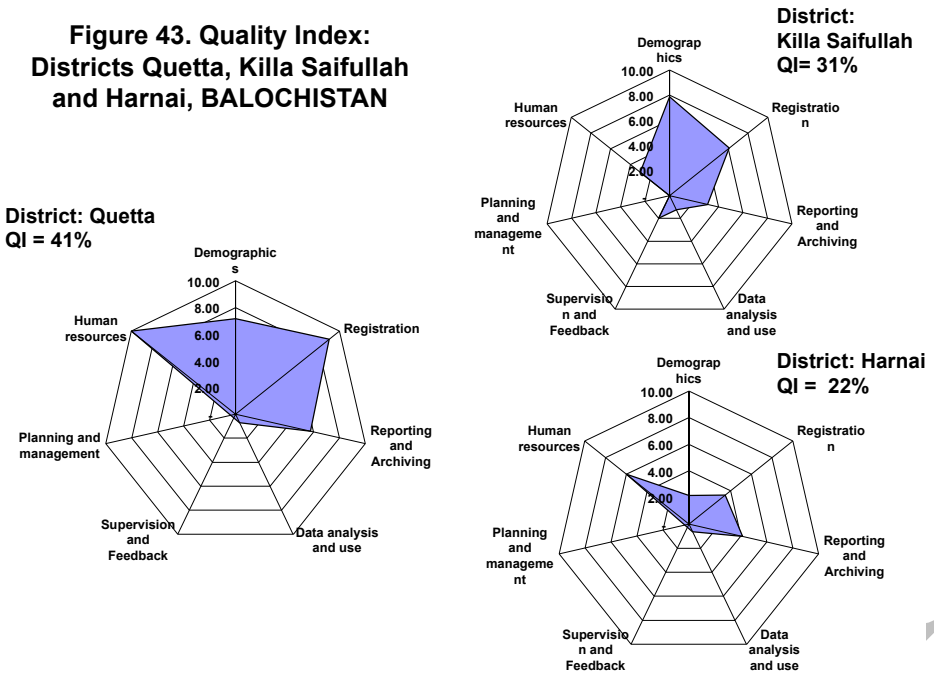


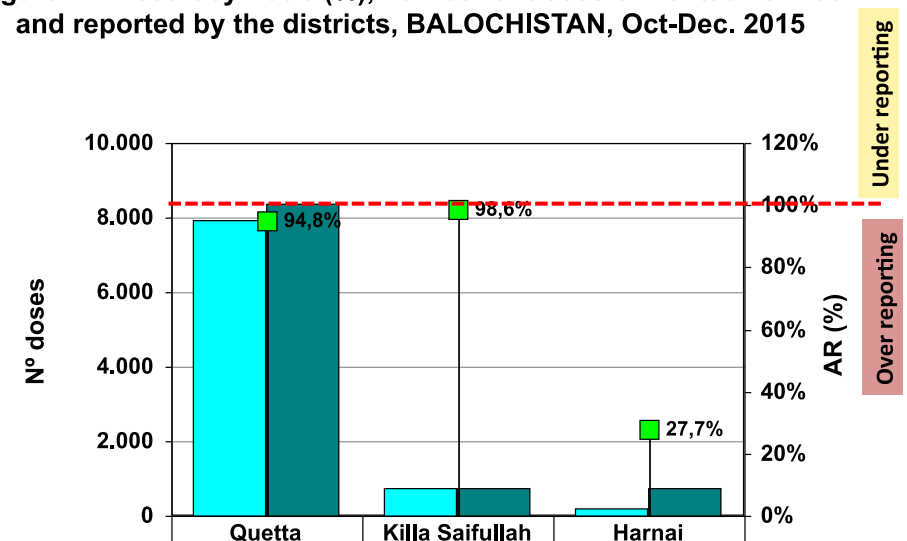
Figure 43. Quality Index: Districts Quetta, Killa Saifullah and Harnai, BALOCHISTAN



8.2.2. Data accuracy

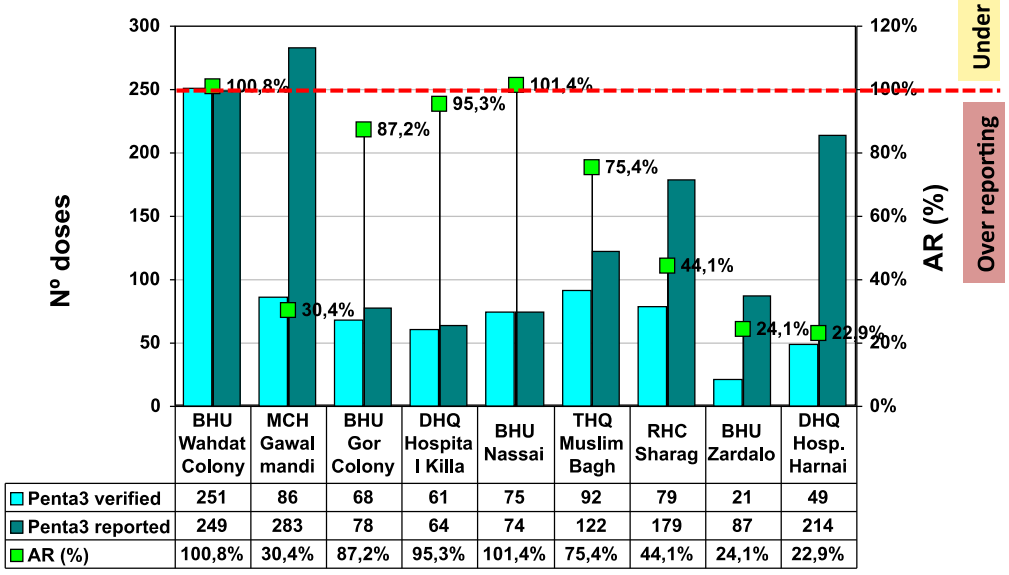
The Accuracy Ratio (AR) was higher at the provincial level when the data were compared to the federal report (Penta3= 99.3% and Measles1= 99.8%). The AR in the districts were 95% in Quetta, 99% in Killa Saifullah and 28% in Harnai, indicated over reporting of doses of Penta 3. Similar pattern was found for measles 1 (93%, 92% and 79% respectively in each district).

Figure 44. Accuracy Ratio (%), number of doses of Penta3 verified and reported by the districts, BALOCHISTAN, Oct-Dec. 2015



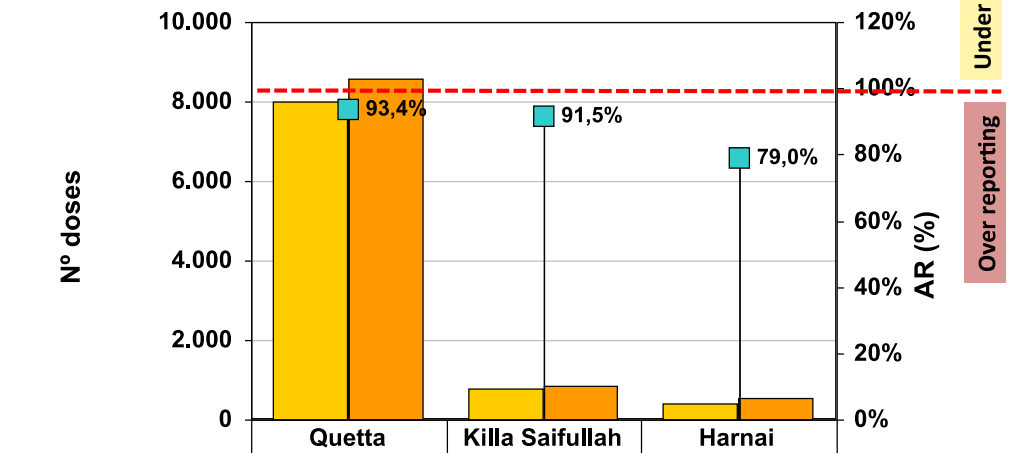
	Quetta	Killa Saifullah	Harnai
Penta3 verified	7.926	751	205
Penta3 reported	8.357	762	740
AR (%)	95%	99%	28%

Figure 45. Accuracy Ratio (%), number of doses of Penta3 verified and reported by the Health Facilities (HF) to the district level, BALOCHISTAN, Oct-Dec. 2015



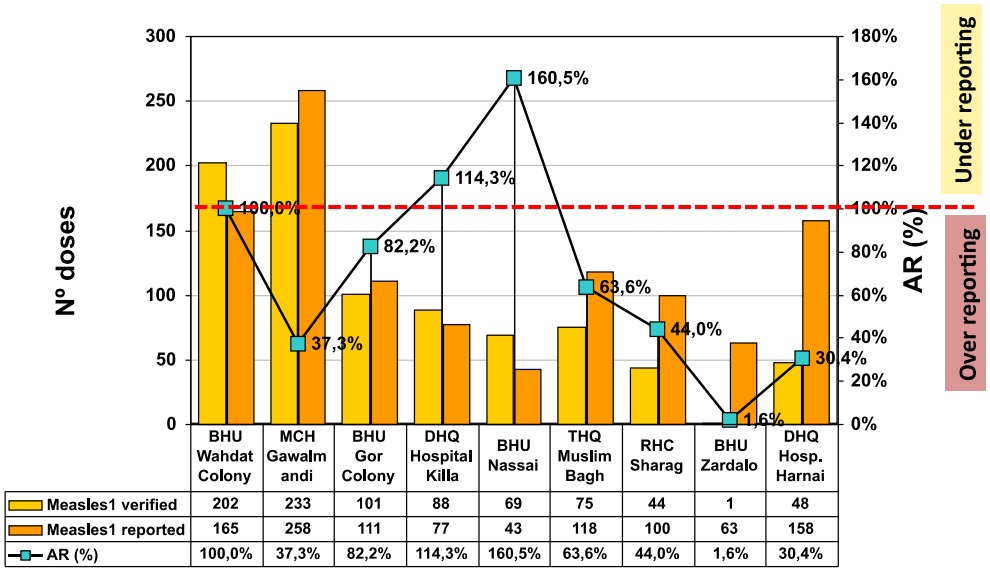
	BHU Wahdat Colony	MCH Gawal mandi	BHU Gor Colony	DHQ Hospital Killa	BHU Nassai	THQ Muslim Bagh	RHC Sharag	BHU Zardalo	DHQ Hosp. Harnai
Penta3 verified	251	86	68	61	75	92	79	21	49
Penta3 reported	249	283	78	64	74	122	179	87	214
AR (%)	100,8%	30,4%	87,2%	95,3%	101,4%	75,4%	44,1%	24,1%	22,9%

Figure 46. Accuracy Ratio (%), number of doses of Measles1 verified and reported by the districts, BALOCHISTAN, Oct-Dec. 2015



	Quetta	Killa Saifullah	Harnai
Measles1 verified	8.016	777	417
Measles1 reported	8.583	849	528
AR (%)	93,4%	91,5%	79,0%

Figure 47. Accuracy Ratio (%), number of doses of Measles1 verified and reported by the Health Facilities (HF) to the district level, BALOCHISTAN, Oct-Dec. 2015



	BHU Wahdat Colony	MCH Gawalmandi	BHU Gor Colony	DHQ Hospital Killa	BHU Nassai	THQ Muslim Bagh	RHC Sharag	BHU Zardalo	DHQ Hosp. Harnai
Measles1 verified	202	233	101	88	69	75	44	1	48
Measles1 reported	165	258	111	77	43	118	100	63	158
AR (%)	100,0%	37,3%	82,2%	114,3%	160,5%	63,6%	44,0%	1,6%	30,4%

To evaluate the feasibility of finding children using the daily register available at the HF, a community search was conducted. The main barriers to find the listed children were incomplete or wrong address. This is an important finding because to implement outreach activities to reach the defaulters, it is necessary to have appropriate information to find the non-vaccinated children.

8.2.3. Completeness and timeliness of reports

During the period from October to December 2015, 88/90 of the monthly reports sent by the districts were available in the province (Completeness = 97.8%), but not all of them on time (Timeliness = 62.2%). Regarding the local level, all the reports were sent from the HF to districts (completeness = 100%), but timeliness was low (7.4% of reports were received on time).

8.3. Recommendations

After describing and analyzing the results and findings, the fieldwork teams identified strengths and weakness. The following are the recommendation based on the interpretation of the findings.

Domain	Strengths	Weaknesses	Recommendations

Demographics	▪ District (simple) maps are available. ▪ Standardized Reporting formats were found in most of the health facilities. ▪ Baseline Population data is available in all levels	▪ MAPs are not consistent and used for Routine immunization strategies ▪ Different target population are not available in HF and districts (< 5 yrs.) ▪ No mechanism of using local information and community resources to update target population (e.g. New birth, etc.)	▪ Target Population used for RI should be available at all levels. ▪ Proper mapping and micro planning should be done at district and health facility/UC level. ▪ Implement local mechanisms to update target populations.
Registration	▪ Daily and permanent registers and other printing materials were available at almost all health facilities. ▪ Temperature and inventory mapping sheets were also available. ▪ Vaccination card is well filled up by vaccinators.	▪ Defaulter tracing mechanism is not properly established. ▪ No mechanism of temperature monitoring on weekends/holidays is established. ▪ No use of daily tally sheets. ▪ In some health facilities, old recording and reporting tools were used. ▪ Registers are not properly filled. ▪ Vaccines inventory was not properly maintained in some health facilities	▪ Focus should given on registration component of EPI ▪ All records should be checked during monitoring visits for rectification of errors. ▪ Orientation of vaccinators for proper filling of daily tally sheets, register's and record keeping. ▪ To ensure availability and use of standardized and updated recording.
Reporting and archiving	▪ In Harnai & Killa Saifullah, consolidation/compilation electronically/ is computerized ▪ Monthly reports were available in most of the health facilities. ▪ In some health facilities defaulter list was available.	▪ No charts for analysis completeness /timeliness is used in HF and districts. ▪ Lack of knowledge to calculate vaccine coverage/drop out rate. ▪ AEFI and VPD reports were not available. ▪ Archiving is not optimal at all levels. ▪ Capacity of EPI staff is not up to mark in reporting, record keeping and archiving.	▪ Strengthening /scale - up of vLMIS ▪ Computerized reporting system should be developed at least at the district level. ▪ Capacity building of EPI staff on reporting and archiving. SOPs should be developed and distributed at all levels. ▪ Monitoring of Timeliness and completeness of monthly reporting and weekly VPD & AEFI surveillance reporting should be initiated at district levels. ▪ Coordination should be improved between DHMT and private sector for timely and complete reporting.

Data analysis and use	▪ In few health facilities updated immunization charts were available.	▪ No data analysis done for low coverage/drop out rates/vaccine wastage and no action is taken. ▪ Yearly / monthly plans were not available. ▪ VPD surveillance data was not done. ▪ No proper monitoring activities were conducted to check immunization data.	▪ Capacity building of staff on data analysis and information for actions. ▪ Development of EPI electronic Data Base Management System. ▪ Monitoring and motivation of staff to regularly update the monitoring charts. ▪ Ensuring the availability and use of monitoring, vaccine coverage, and dropouts charts at all levels. ▪ After analysis, data should be used for actions
Supervision and feedback	▪ Availability of potential human resource for supervision and monitoring at all levels.	▪ No proper mechanism for supervision / feedbacks at Provincial and district levels. ▪ Poor capacity of EPI supervisors in EPI's M & E. ▪ M & E plan is not available at all levels. ▪ Potential human resource is not properly utilized. ▪ No one is responsible to supervise and monitor EPI activities at service delivery point.	▪ Proper monitoring mechanism should be developed. ▪ M & E plan should be developed and implemented monthly/quarterly. ▪ Proper utilization of available human resource for supervision and monitoring. ▪ Capacity building of EPI staff on M &E and supervision. ▪ Feedback and feed forward mechanism should be developed for taking prompt actions. ▪ To ensure availability of standardized monitoring tools at all district levels and HF.

Planning and management	▪ Provincial level review meetings are conducted. ▪ Management structure is available.	▪ No microplan available for outreach / mobile sessions. Subsequently, no outreach / mobile sessions are conducted at HF, district/provincial levels. ▪ Yearly/Monthly plan is not available. ▪ Provincial review meetings are conducted irregularly. ▪ District level review meetings are not conducted.	▪ Effective utilization of management structure for smooth implementation of programme activities. ▪ UC and district level Microplan should be developed and implemented. ▪ Capacity building of EPI staff / management on planning and management. ▪ Review meetings at all level should be conducted regularly.
Human resources	▪ Wide range human resource is available at district and provincial levels.	▪ Inequitable distribution/placement of human resource in most of the health facilities (one government vaccinator is present in entire Harnai district). ▪ No appropriate HR structure is present at all levels ▪ Quality compromised training are conducted in past at all levels. ▪ Specific staff member is not assigned for computerized data management at district level. ▪ Staff capacity is very poor. ▪ One person is performing multiple assignments.	▪ Comprehensive HR review should be conducted and its recommendation implemented ▪ Creation of new posts and redistribution of available HR should be done on equity basis. ▪ Vacant post of DSVs, ASVs, Vaccinators should be filled immediately. ▪ Capacity building of staff on programme activities. ▪ Performance appraisal should be established. ▪ Accountability must be ensured at all levels.

9. Challenges and lessons learned

Among the strengths, the DQA found that the maps, baseline population and reporting formats were available in all levels and, in general, stock registers were also well filled up and updated. But DQA found omissions and systematic errors on data register (figures 48 and 49); inaccuracy on the reported doses of vaccine; inappropriate practices of archiving (figure 50); lack of supervision and feedback; poor data analysis and use of information for making decisions; inequitable distribution of human resources; insufficient training and poor capacities of personnel regarding data quality and monitoring vaccine coverage (figure 51).

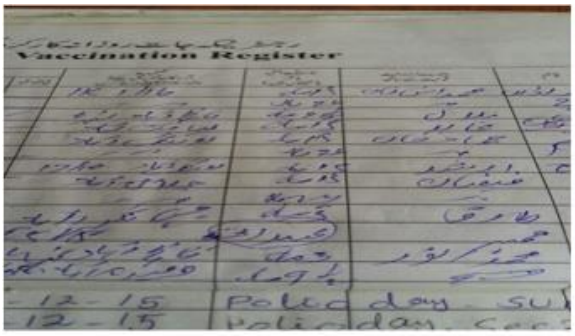
To improve immunization data quality, EPI faces several challenges:

- Develop SOP for the EPI information system at all levels.

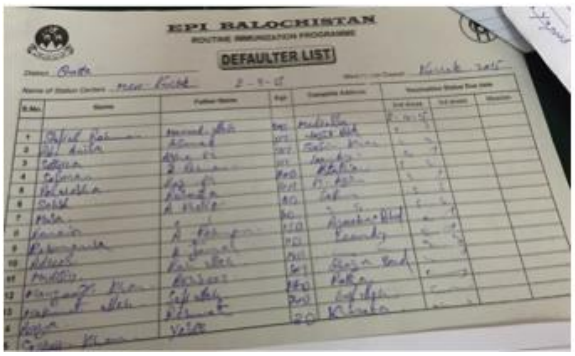
- Improve human resource structure and performance appraisal system.
- Capacity building of provincial, district and EPI staff that works at the facility level on data management, analysis, monitoring and evaluation.
- Comprehensive training program for capacity building for all districts and HF/UCs staff on proper data management.
- Prepare and implement plans for supervision to assess performance and provide technical support to the district and HF levels.
- Establish mechanisms for feedback, supervision, monitoring data quality and vaccine coverage indicators.
- Use the DQA tools for regular supervision to be DQS (Data Quality Self Assessment).
- Improve coordination and synergy with polio eradication strategies to strengthen the routine immunization programme.
- Scale-up Health information system and Vaccine Logistics Management Information System (vLMIS).
- Strengthen the delivery service of the immunization. As found in this assessment, the HF and district level are the weakest levels.
- Use community resources as the LHWs to reach the defaulters, to update target population (e.g. New birth, etc.) and improve immunization coverage, especially to reach the uncovered rural and urban poor population areas.
- Development of improvement plan to implement DQA recommendations, considering:
    - Short-term plan: action that doesn't require additional resources.
    - Intermediate and long term plans: additional resources are needed.
    - Develop monitoring framework to follow on implementation of the IP.
    - Regular periodic DQA/DQS at different level and review findings, developing action plans:
        - At least one district in every quarter by Provincial EPI
        - At least one HF by every supervisor at district level every month
        - Review findings in EPI review meetings
        - Monitor implementation of the DQA improvement plan every quarter by senior health management at provincial level

This is the first time that DQA is conducted in Pakistan and one important lesson learned from this experience is to select the best time to conduct the assessment. In this opportunity, DQA coincided with the month of Ramadan, requiring extra effort and special commitment of all the persons involved in this assessment.

Figure 48. Examples of vaccine daily registers and defaulter list found at the Health Facilities



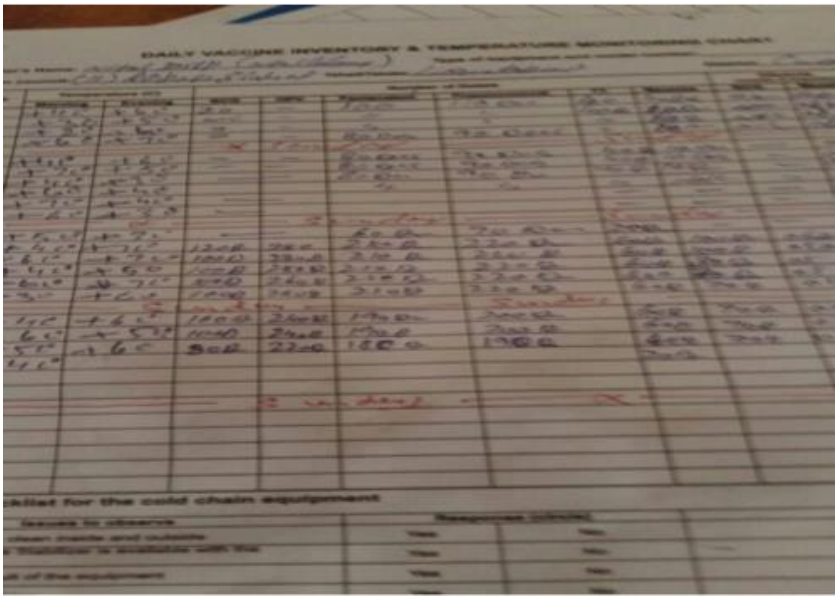
Vaccine register with incomplete addresses



Defaulter list with incomplete addresses

Daily register with missing data. Even though there have tally sheets available in the HFs, the personnel do not use them to tabulate the doses of administered vaccines. The daily register is the source of data to count and prepare the monthly report.

Figure 49. Example of Daily Vaccine Inventory and Temperature Monitoring Chart

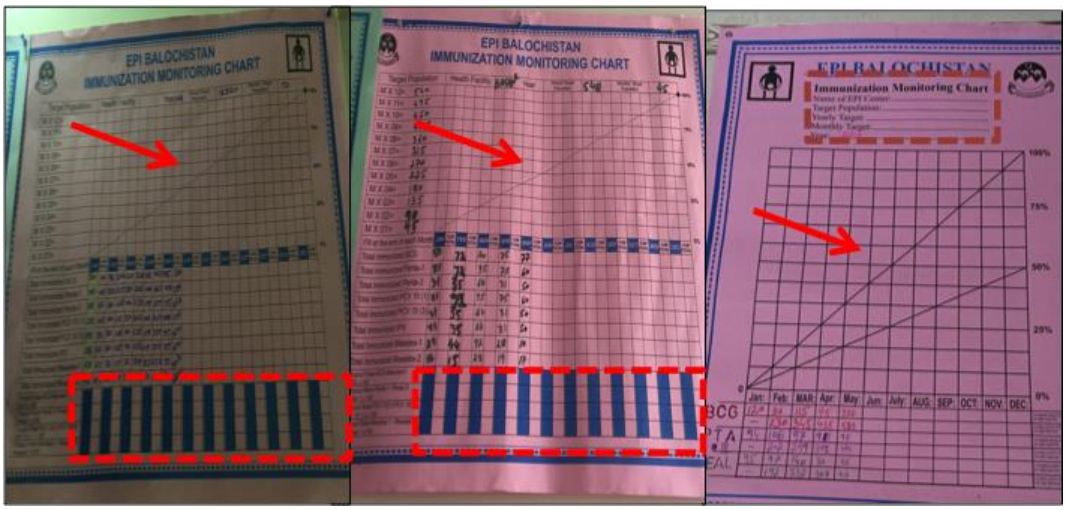


Sunday marked as holiday in the register used to monitor the temperature of vaccines

Figure 50. Examples of archiving practices of daily and permanent registers in the Health Facilities

Custody of documents under the stairs

Figure 51. Examples of immunization monitoring charts found at the Health Facilities



Monitoring chart is not used to systematically monitor the monthly progress on a regular basis. Dropout is not calculated and target populations are not included in the chart.

Figure 52. Example of synergies: tools used by Polio eradication strategies for micro planning, analysis of vaccine coverage and monitoring surveillance

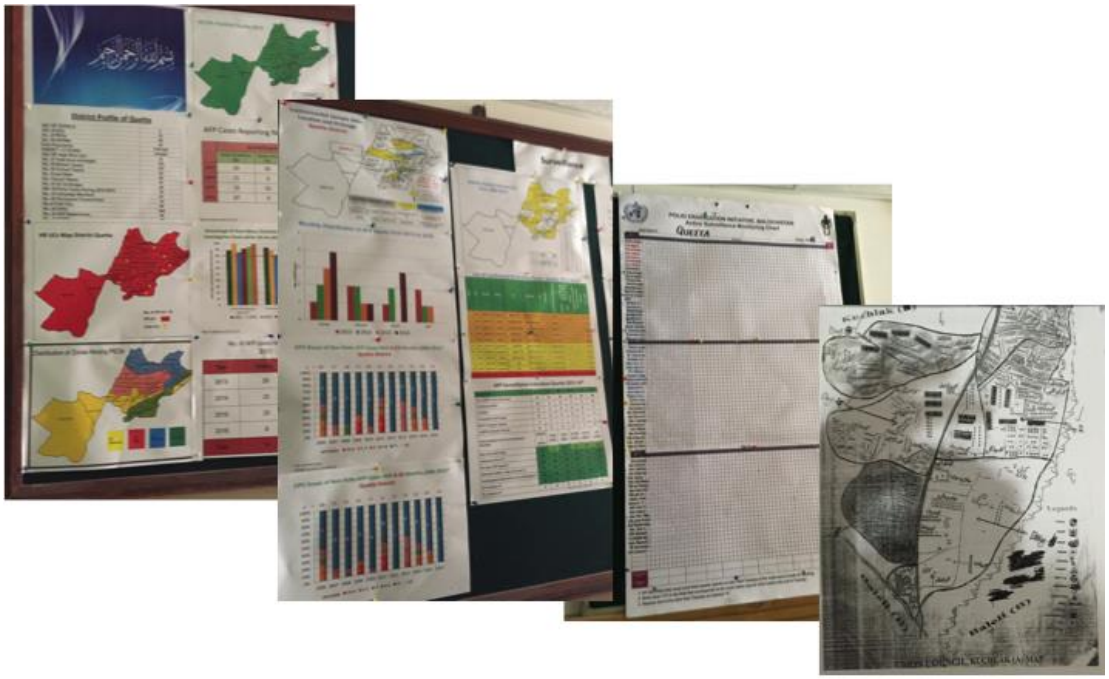


Figure 53. Example of community resources: Lady Health Workers assisting to reach the defaulters to increase the immunization coverage

10. References

[1] Papania M, Rodewald L. For better immunization coverage, measure coverage better. Lancet. 2006;367(9515):965-6.

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[5] National Institute of Population Studies (NIPS) [Pakistan] and ICF International. 2013. Pakistan Demographic and Health Survey 2012-13. Islamabad, Pakistan, and Calverton, Maryland, USA: NIPS and ICF International. Available in: https://dhsprogram.com/pubs/pdf/FR290/FR290.pdf

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Annexes

Annex 1. DQA Provincial Teams

Province: Punjab

Team	District	Name and position of team member
Team 1	Sahiwal	Dr. Muhammad Mazhar Qureshi, Provincial EPI Officer, WHO Punjab Dr. Farah, Federal EPI Cell Mr. Rauf Majeed, School Health & Nutrition Supervisor, Sheikhupura
Team 2	Mandi Bahauddin	Dr. Nauman Khan, Consultant RED UNICEF Punjab Mr. Muhammad Nawaz, School Health & Nutrition Supervisor, Nankana Sahib Dr. Azhar Iqbal, MO EPI Punjab
Team 3	Khushab	Dr. Tauqir Nawaz, WHO PEO, Saialkot Dr. Sarmad, DSC Lahore Mr. Mazhar Hussain , SO EPI Punjab
Team 4	Narowal	Dr. Imran Qureshi, PEI/EPI Synergy coordinator, WHO Punjab Dr. Asad Aly, Federal EPI Cell
Team leader		Dr. Nasrin Musa, TO-VPI/EMRO

Province: Sindh

Team	District	Name and position of team member
Team 1	Tando Muhammad Khan	Dr Waqar Ahmed Soomro. Prov EPI Officer WHO Mr Sohail Naseem Federal EPI Dr Zahid Shaikh MO Hyderabad Dr Leela Raam SMO Hyderabad
Team 2	N. Nazimabad	Dr Amjad Ansari, Prov Immunization Officer UNICEF Dr Raj Kumar, Prov Surveillance Officer, EPI Sindh Dr Gotam Kumar MO, Tharparkar Mr Alaf Khan TSV, Thatta
Team 3	Hyderabad	Dr Tadesse Birru, Consultant, WHO-PEI Dr Nazir Ahmed SMO, Sujawal Dr Nadir, Deputy PD, EPI Sindh Dr Zahoor Baloch, AD-PD, EPI Sindh
Team 4	Liaqatabad	Dr Sayed Faizan, Prov. EPI-PEI Officer Dr Sarbuland Khan, WHO Fed EPI Dr Saira Zaidi, Provincial EPI Focal Person, EPI Sindh Dr. Zahid Saddar, SMO, Matirai
Team leader		Dr Kamal Fahmy, MO-VPI/EMRO

Province: Khyber-Pakhtunkhwa

Team	District	Name and position of team member
Team 1	Kohat	Dr Rahim Khattak – AD, Provincial EPI, KP Dr Haroon Rasheed – Technical Officer, Surveillance, Fed EPI Dr Kamran Qureshi – Immunization Officer, UNICEF, KP & FATA
Team 2	Abbottabad	Dr Nasreen Akbar – AD, Provincial EPI, KP Dr Mohammad Hamayoun – EPI-PEI synergy officer, WHO, KP Mr Mohammad Imran – Finance and Compliance assistant, Fed EPI Ms Huma Nayab – Health Education and Communication Officer, Provincial EPI, KP
Team 3	Mansehra	Dr Riaz Nasrullah – Provincial EPI Officer, WHO, KP & FATA Dr Raza Shah – Technical Officer, M&E, Fed EPI Dr Mohammad Tariq – Project Manager, JICA Mr Khalid Saifullah – Vaccine Management Officer, Provincial EPI, KP
Team leader		Dr Quamrul Hasan, MO - EPI, WHO

Province: Balochistan

Team	District	Name and position of team member
Team 1	Quetta	Dr. Abida Raza, Prov. EPI-PEI synergy officer Officer, WHO Dr. Adnan Ghani, Finance & Compliance Officer- Federal EPI Mr. Mohammad Hayat, Data Cell In charge, EPI Balochistan
Team 2	Killa Saifullah	Dr. Badar Nadeem, RED Consultant, UNICEF Mr. Ameenullah Kakar, Pharmacist Provincial EPI Mr. Mohammed Ameen, DSV, Quetta
Team 3	Harnai	Dr. Rehmatullah, Prov. EPI Officer, WHO Dr. Mohammad Ishaque Panezai, Deputy Provincial Coordinator EPI, Balochistan Mr. Mohammad Ismaeel, DSV, Zhob
Team leader		Dr. Ana Morice, Consultant WHO

Annex 2. Quality Index Questionnaires

Questionnaire for the assessment of the quality of EPI monitoring system at Province levels

Province: …… Name and position of respondent (s):……
Name of the interviewer/s: …… Date of the visit: ……/ …… / ……

Serial	Questions	Explanation	Yes/No/ NA	Comments
	Demographic data			
1.	Is there a detailed map for the province?	With districts' boundaries		
2.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years • Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
3.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age • Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Write the source of data (no score)		
	Are these targets for 2016 consistent with the cMYP?	Compare with the provincial cMYP provincial. Check the concordance of sources of information and the number of estimated populations. If copy of the cMYP is not available, indicate in the comment and copy the figures of the targets		
4.	Is the same denominator used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer "No")		
5.	Are these target groups different from previous year?	To see if the target groups are updated. Compare target groups of year 2015 and year 2016		

6.	Is the target < 1 year used at the provincial level the same at national level?	Ask and compare the data from the 2 levels (prior information is required)		
	EPI monthly report			
7.	Are copies of the provincial monthly reports of EPI data sent to the Federal level available for the period Oct-December 2015?	All the reports (3) should be available If any one of the report not available the answer should be NO. If electronic reporting is used, check the availability of archived e mails		
8.	Are monthly reports received from district level available for the period Oct-December 2015?	All the reports should be available Number of reports =number of months verified X number of districts) If any one of the report not available the answer should be NO. If electronic reporting is used, check the availability of archived e mails (3 e mails)		
9.	Are the copies (hard or electronic) of monthly reports received from the districts available and stamped/duly signed with dates of receiving if they are in paper?	Check the files and if they are hard copies, compare if they have stamp/signature with dates in all reports If electronic reporting is used, the answer is "NA"		
10.	Are copies of the district reports on AEFI reported to the provinces available?	Check the reports		
11.	Are reports on investigation of the most recent severe/serious AEFI available?	Check the reports		
12.	Are tables representing analysis of completeness of monthly reports available?	Table of completeness (number of reports) and timeliness (date of receiving the report) for all districts available.		
13.	Are tables representing analysis of timeliness of monthly reports available?	Table of timeliness (date of receiving the report) for all districts available.		
14.	Does the EPI person responsible for monitoring and evaluation of EPI know the following calculations: (coverage rate – drop-out rate of any 2 doses)	Ask for calculating the 2 rates. If one of them is not correct, the answer should be no		
	Computerized data management system			

Serial	Questions	Explanation	Yes/No/ NA	Comments
	Demographic data			
1.	Is there a detailed map for the province?	With districts' boundaries		
2.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years • Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
3.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age • Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Write the source of data (no score)		
	Are these targets for 2016 consistent with the cMYP?	Compare with the provincial cMYP provincial. Check the concordance of sources of information and the number of estimated populations. If copy of the cMYP is not available, indicate in the comment and copy the figures of the targets		
4.	Is the same denominator used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer "No")		
5.	Are these target groups different from previous year?	To see if the target groups are updated. Compare target groups of year 2015 and year 2016		
6.	Is the target < 1 year used at the provincial level the same at national level?	Ask and compare the data from the 2 levels (prior information is required)		
15.	Does the province have computerised data management system/ software?	Check the software and describe it here		
16.	If yes, is the last date of backup within one week?	Check the presence of back-up file on another computer or on external desk and date of creating the file		

Serial	Questions	Explanation	Yes/No/ NA	Comments
	Demographic data			
1.	Is there a detailed map for the province?	With districts' boundaries		
2.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years • Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
3.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age • Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Write the source of data (no score)		
	Are these targets for 2016 consistent with the cMYP?	Compare with the provincial cMYP provincial. Check the concordance of sources of information and the number of estimated populations. If copy of the cMYP is not available, indicate in the comment and copy the figures of the targets		
4.	Is the same denominator used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer "No")		
5.	Are these target groups different from previous year?	To see if the target groups are updated. Compare target groups of year 2015 and year 2016		
6.	Is the target < 1 year used at the provincial level the same at national level?	Ask and compare the data from the 2 levels (prior information is required)		
17.	Can the official immunization tabulations for the previous year be reproduced from an archived electronic file for the previous year?	Ask the responsible officer to get the previous year's data table, if the system was not computerized in the previous year put NA		
18.	Is there specific staff member assigned for the computerised data management?	Meet him and discuss his work		

Serial	Questions	Explanation	Yes/No/ NA	Comments
	Demographic data			
1.	Is there a detailed map for the province?	With districts' boundaries		
2.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years • Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
3.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age • Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Write the source of data (no score)		
	Are these targets for 2016 consistent with the cMYP?	Compare with the provincial cMYP provincial. Check the concordance of sources of information and the number of estimated populations. If copy of the cMYP is not available, indicate in the comment and copy the figures of the targets		
4.	Is the same denominator used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer "No")		
5.	Are these target groups different from previous year?	To see if the target groups are updated. Compare target groups of year 2015 and year 2016		
6.	Is the target < 1 year used at the provincial level the same at national level?	Ask and compare the data from the 2 levels (prior information is required)		
19.	Is there back-up staff assigned for computerised data management?	Name of the person		
	Supervision			
20.	Is there current plan for supportive supervision for 2016?	Check the plan (at least quarterly plan should be available)		
21.	Has the provincial EPI team conducted field	Check the no of reports to be consistent		

Serial	Questions	Explanation	Yes/No/ NA	Comments
	Demographic data			
1.	Is there a detailed map for the province?	With districts' boundaries		
2.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years • Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
3.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age • Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Write the source of data (no score)		
	Are these targets for 2016 consistent with the cMYP?	Compare with the provincial cMYP provincial. Check the concordance of sources of information and the number of estimated populations. If copy of the cMYP is not available, indicate in the comment and copy the figures of the targets		
4.	Is the same denominator used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer "No")		
5.	Are these target groups different from previous year?	To see if the target groups are updated. Compare target groups of year 2015 and year 2016		
6.	Is the target < 1 year used at the provincial level the same at national level?	Ask and compare the data from the 2 levels (prior information is required)		
	supportive supervision during the period Oct-December 2015 according to the plan?	with the plan		
	Feedback			
22.	Is there a process of feedback for the monthly report from the provincial level to the districts?	Check documentation of the feedback provided (e.g. written feedback report, minutes of meetings for providing the		

Serial	Questions	Explanation	Yes/No/ NA	Comments
	Demographic data			
1.	Is there a detailed map for the province?	With districts' boundaries		
2.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years • Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
3.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age • Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Write the source of data (no score)		
	Are these targets for 2016 consistent with the cMYP?	Compare with the provincial cMYP provincial. Check the concordance of sources of information and the number of estimated populations. If copy of the cMYP is not available, indicate in the comment and copy the figures of the targets		
4.	Is the same denominator used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer "No")		
5.	Are these target groups different from previous year?	To see if the target groups are updated. Compare target groups of year 2015 and year 2016		
6.	Is the target < 1 year used at the provincial level the same at national level?	Ask and compare the data from the 2 levels (prior information is required)		
		feedbacks etc…)		
23.	Is there a action taken to deal with late or non-reporting	Provide the action they take		
	Data analysis and data use for action			
24.	Is there updated provincial immunization monitoring chart/ table?	Look for a displayed monitoring chart/table and check if it is updated		

Serial	Questions	Explanation	Yes/No/ NA	Comments
	Demographic data			
1.	Is there a detailed map for the province?	With districts' boundaries		
2.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years • Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
3.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age • Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Write the source of data (no score)		
	Are these targets for 2016 consistent with the cMYP?	Compare with the provincial cMYP provincial. Check the concordance of sources of information and the number of estimated populations. If copy of the cMYP is not available, indicate in the comment and copy the figures of the targets		
4.	Is the same denominator used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer "No")		
5.	Are these target groups different from previous year?	To see if the target groups are updated. Compare target groups of year 2015 and year 2016		
6.	Is the target < 1 year used at the provincial level the same at national level?	Ask and compare the data from the 2 levels (prior information is required)		
25.	Is dropout rate monitored?	Check availability of monthly analysis of at least one drop-out rate		
26.	Is there any report on any planned activity based on data analysis during the past year?	Look for any documentation (e.g…. report of activities implemented or any plan for activities to address any identified problem based on analyzed data.)		

Serial	Questions	Explanation	Yes/No/ NA	Comments
	Demographic data			
1.	Is there a detailed map for the province?	With districts' boundaries		
2.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years • Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
3.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age • Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Write the source of data (no score)		
	Are these targets for 2016 consistent with the cMYP?	Compare with the provincial cMYP provincial. Check the concordance of sources of information and the number of estimated populations. If copy of the cMYP is not available, indicate in the comment and copy the figures of the targets		
4.	Is the same denominator used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer "No")		
5.	Are these target groups different from previous year?	To see if the target groups are updated. Compare target groups of year 2015 and year 2016		
6.	Is the target < 1 year used at the provincial level the same at national level?	Ask and compare the data from the 2 levels (prior information is required)		
27.	Are district of low coverage identified based on data analysis?	Check availability of list low performing districts that's based on analysis of coverage data		
28.	Have reasons of high or negative dropout rates been identified?	Check the reports with high (+10%) or negative dropout rates		
29.	Have plans to address reasons of high or negative	Check the reports or discuss to get clear		

Serial	Questions	Explanation	Yes/No/ NA	Comments
	Demographic data			
1.	Is there a detailed map for the province?	With districts' boundaries		
2.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years • Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
3.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age • Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Write the source of data (no score)		
	Are these targets for 2016 consistent with the cMYP?	Compare with the provincial cMYP provincial. Check the concordance of sources of information and the number of estimated populations. If copy of the cMYP is not available, indicate in the comment and copy the figures of the targets		
4.	Is the same denominator used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer "No")		
5.	Are these target groups different from previous year?	To see if the target groups are updated. Compare target groups of year 2015 and year 2016		
6.	Is the target < 1 year used at the provincial level the same at national level?	Ask and compare the data from the 2 levels (prior information is required)		
	dropout rates been developed?	information. If reports or information is not available, the answer is "no"		
30.	Have surveillance and coverage data been triangulated to identify inconsistencies between coverage data and disease incidence?	Check the reports or discuss to get clear information. If reports or information is not available, the answer is "no"		

	Planning and management			
31.	Is there annual work-plan at Provincial level that includes activities related to EPI monitoring and evaluation? (Supervision, training, logistic ……)	See the plan		
32.	Are copies of the districts micro-plans of all districts available?	Check availability of districts micro plans for all districts		
33.	Is there at least one senior staff and one assistant responsible for monitoring and evaluation of EPI?	Get information on the staff. If there is no qualified senior staff, the answer is "no"		
34.	Have these staff received specific training course on EPI monitoring and evaluation since they joined this position/during the past 5 years (whichever shorter)	Any type of training course on EPI monitoring and evaluation, including data analysis and interpretation. Ask for the date and name of the course		
35.	Does the province conduct regular periodic EPI review meetings with the districts?	Check meetings' minutes		
	Documents			
36.	Is there EPI guidelines/manual available for EPI staff that includes a section on EPI reporting system and data quality?	See the EPI guidelines/manual		
37.	Is there enough stock of the requirement for at least 3 months of the following: • Vaccination cards • Daily/permanent registers • reporting forms	Observe the stock of each. If any one is absent, the answer will be "no". if this is the responsibility of the district, the answer is "NA"		

	Archiving			
38.	Is files keeping & archiving optimum	Arranged & kept according to the years.		
39.	Are files updated?	Up-to-date reports and communication		
40.	Are there separate files/sub files for archiving the different reports for: • Monthly data • Supervision (to districts and from national) • Feedback (to districts and from national)	Check availability, if not for any, the answer should be "No"		
	Cold chain and vaccine management			
41.	Is there registration of temperature twice daily?	See the registration paper. Go to the ware house		

42.	Is there vaccine stock register (arrival, dispatch, lot number, expiry date)?	Check the stock register.		
43.	Is the vaccine stock register updated?	Check if it is updated. If there is no vaccine store, the answer should be 'NA"		
44.	Is the vaccine batch number registered in the vaccine stock register?	Check the information in the stock register. If there is no vaccine store, the answer should be 'NA"		
45.	Is there a concordance between the number of measles doses and measles diluent in the registration book and the stock?	Check and calculate.		
46.	Is there stock register for syringes receipt and release?	Review the stock register		

Field editor: _____ Signature: _____ Date: _____/_____/_____

Questionnaire for the assessment of the quality of the EPI monitoring system at the District levels

District: …… Province…… Name and position of respondent(s)…….
……
Interviewer: ……. Date of the visit: ……/……/……

Serial	**First : Demographic data**			**Comment**
	Questions	**Explanation**	**Yes/No/NA**	
47.	Is there a detailed map for the district?	With districts' boundaries and health facilities or services		
48.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
49.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Descriptive data (no score)		
50.	Is the same figures of target population used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer NO)		
51.	Are these target groups different from previous year?	To see if the target groups are updated		
52.	Is the target < 1 year used at the district level the same at provincial level?	Ask and compare the data from the 2 levels (prior information is required). If the source of this target figures is the province, the answer is "NA"		
	EPI monthly report			
53.	Are copies of the District monthly reports of EPI data sent to the provincial level available for the period Oct-December 2015?	All the reports (3) should be available If any one of the report not available the answer should be NO.		

Serial	**First : Demographic data**			**Comment**
	Questions	**Explanation**	**Yes/No/NA**	
47.	Is there a detailed map for the district?	With districts' boundaries and health facilities or services		
48.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
49.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Descriptive data (no score)		
50.	Is the same figures of target population used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer NO)		
51.	Are these target groups different from previous year?	To see if the target groups are updated		
52.	Is the target < 1 year used at the district level the same at provincial level?	Ask and compare the data from the 2 levels (prior information is required). If the source of this target figures is the province, the answer is "NA"		
		If electronic reporting is used, check the availability of archived e mails		
54.	Are monthly reports received from HUs/UCs level available for the period Oct-December 2015?	All the reports should be available Number of reports =number of months verified X number of districts) If any one of the report not available the answer should be NO. If electronic reporting is used, check the completeness of archived e mails		

Serial	**First : Demographic data**			**Comment**
	Questions	**Explanation**	**Yes/No/NA**	
47.	Is there a detailed map for the district?	With districts' boundaries and health facilities or services		
48.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
49.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Descriptive data (no score)		
50.	Is the same figures of target population used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer NO)		
51.	Are these target groups different from previous year?	To see if the target groups are updated		
52.	Is the target < 1 year used at the district level the same at provincial level?	Ask and compare the data from the 2 levels (prior information is required). If the source of this target figures is the province, the answer is "NA"		
55.	Are monthly reports received from the private units available for the period Oct-December 2015?	All the reports should be available. Number of reports=Number of private unit X 3 If one of the report not available the answer should be no. If electronic reporting is used, check completeness as above If private sector is not active/shouldn't report to this level, the answer is "NA"		
56.	Are tables representing analysis of completeness of monthly reports available?	Table of completeness (number of reports) and timeliness (date of receiving the report) for all districts		

Serial	**First : Demographic data**			**Comment**
	Questions	**Explanation**	**Yes/No/NA**	
47.	Is there a detailed map for the district?	With districts' boundaries and health facilities or services		
48.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
49.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Descriptive data (no score)		
50.	Is the same figures of target population used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer NO)		
51.	Are these target groups different from previous year?	To see if the target groups are updated		
52.	Is the target < 1 year used at the district level the same at provincial level?	Ask and compare the data from the 2 levels (prior information is required). If the source of this target figures is the province, the answer is "NA"		
		available.		
57.	Are tables representing analysis of timeliness of monthly reports available?	Table of timeliness (date of receiving the report) for all districts available.		
58.	Does the responsible person know the following calculations: (coverage rate – drop-out rate of any 2 doses)	Ask for calculating the 2 rates. If one of them is not correct, the answer should be no		
59.	Are copies of the district reports on AEFI reported to the provinces available?	Check the reports		

Serial	**First : Demographic data**			**Comment**
	Questions	**Explanation**	**Yes/No/NA**	
47.	Is there a detailed map for the district?	With districts' boundaries and health facilities or services		
48.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
49.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Descriptive data (no score)		
50.	Is the same figures of target population used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer NO)		
51.	Are these target groups different from previous year?	To see if the target groups are updated		
52.	Is the target < 1 year used at the district level the same at provincial level?	Ask and compare the data from the 2 levels (prior information is required). If the source of this target figures is the province, the answer is "NA"		
60.	Are reports on investigation of the most recent severe/serious AEFI available?	Check the reports		
	Computerized data management system			
61.	Does the District have computerised data management system/software?	Check the system and describe it here		
62.	If yes, is the last date of backup within one week?	Check the back-up file and date of creating the file		
63.	Can the official immunization tabulations for the previous year be reproduced from an archived	Ask the responsible officer to get the previous year's data table, if the system was not computerized in the		

Serial	**First : Demographic data**			**Comment**
	Questions	**Explanation**	**Yes/No/NA**	
47.	Is there a detailed map for the district?	With districts' boundaries and health facilities or services		
48.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
49.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Descriptive data (no score)		
50.	Is the same figures of target population used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer NO)		
51.	Are these target groups different from previous year?	To see if the target groups are updated		
52.	Is the target < 1 year used at the district level the same at provincial level?	Ask and compare the data from the 2 levels (prior information is required). If the source of this target figures is the province, the answer is "NA"		
	electronic file for the previous year?	previous year put NA		
64.	Is there specific staff member assigned for the computerised data management?	Meet him and discuss his work		
65.	Is there back-up staff assigned for computerised data management?			
	Supervision			
66.	Is there a current plan for supportive supervision?	Check the plan (at least quarterly)		
67.	Has the District EPI team conducted field supportive supervision to the lower level during the	Check the no of reports to be consistent with the plan		

Serial	**First : Demographic data**			**Comment**
	Questions	**Explanation**	**Yes/No/NA**	
47.	Is there a detailed map for the district?	With districts' boundaries and health facilities or services		
48.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
49.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Descriptive data (no score)		
50.	Is the same figures of target population used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer NO)		
51.	Are these target groups different from previous year?	To see if the target groups are updated		
52.	Is the target < 1 year used at the district level the same at provincial level?	Ask and compare the data from the 2 levels (prior information is required). If the source of this target figures is the province, the answer is "NA"		
	period Oct-December 2015 according to the plan?			
68.	Are the recommendations of supervisory visits followed up?	Check availability of any documentation		
	Feedback			
69.	Is there a process of feedback for the monthly report from the district level to the health facilities?	Check documentation of the feedback provided (e.g. written feedback report, minutes of meetings for providing the feedbacks etc…)		
70.	Is there a system or mechanism for dealing with late or non-reporting	Check documentation of related action		
	Data analysis and data use for action			

Serial	**First : Demographic data**			**Comment**
	Questions	**Explanation**	**Yes/No/NA**	
47.	Is there a detailed map for the district?	With districts' boundaries and health facilities or services		
48.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
49.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Descriptive data (no score)		
50.	Is the same figures of target population used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer NO)		
51.	Are these target groups different from previous year?	To see if the target groups are updated		
52.	Is the target < 1 year used at the district level the same at provincial level?	Ask and compare the data from the 2 levels (prior information is required). If the source of this target figures is the province, the answer is "NA"		
71.	Is there updated District immunization monitoring chart/ table?	Look for a displayed monitoring chart/table		
72.	Is dropout rate monitored?	Check availability of monthly analysis of at least one drop-out rate		
73.	Is there any report on any planned activity based on data analysis during the past year?	Look for any documentation (e.g…. report of activities implemented or any plan for activities to address any identified problem based on analyzed data.)		
74.	Are HUs of low coverage identified based on data analysis	Check availability of list low performing districts that's based on analysis of coverage data		

Serial	**First : Demographic data**			**Comment**
	Questions	**Explanation**	**Yes/No/NA**	
47.	Is there a detailed map for the district?	With districts' boundaries and health facilities or services		
48.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
49.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Descriptive data (no score)		
50.	Is the same figures of target population used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer NO)		
51.	Are these target groups different from previous year?	To see if the target groups are updated		
52.	Is the target < 1 year used at the district level the same at provincial level?	Ask and compare the data from the 2 levels (prior information is required). If the source of this target figures is the province, the answer is "NA"		
75.	Have reasons of high or negative dropout rate been identified?	Check the reports		
76.	Have plans to address reasons of high or negative dropout rates been developed?	Check the reports		
77.	Have surveillance and coverage data been triangulated to identify inconsistencies between coverage data and disease incidence?	Check reports		
78.	Is there a table or graph showing the number of reported VPDs by HU or Hospital?	Check graph or table		

Serial	First : Demographic data			Comment
	Questions	**Explanation**	**Yes/No/NA**	
47.	Is there a detailed map for the district?	With districts' boundaries and health facilities or services		
48.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
49.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Descriptive data (no score)		
50.	Is the same figures of target population used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer NO)		
51.	Are these target groups different from previous year?	To see if the target groups are updated		
52.	Is the target < 1 year used at the district level the same at provincial level?	Ask and compare the data from the 2 levels (prior information is required). If the source of this target figures is the province, the answer is "NA"		
79.	Was action taken based on VPDs data analysis?	Check documentation of action taken		
80.	Is there any monitoring of vaccine wastage per HU and action taken?	Check monitoring and action taken for vaccine wastage		
81.	Is there a monitoring of HU vaccine stock out?	Check monitoring and action taken for Vaccine stock out		
	Planning and management			
82.	Is there annual work-plan at District level that includes activities related to EPI monitoring and evaluation? (Supervision, training, logistic ……)	See the plan		
83.	Are copies of the micro-plans of all HUs/UCs	Check availability of HU micro plans		

Serial	First : Demographic data			Comment
	Questions	**Explanation**	**Yes/No/NA**	
47.	Is there a detailed map for the district?	With districts' boundaries and health facilities or services		
48.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
49.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Descriptive data (no score)		
50.	Is the same figures of target population used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer NO)		
51.	Are these target groups different from previous year?	To see if the target groups are updated		
52.	Is the target < 1 year used at the district level the same at provincial level?	Ask and compare the data from the 2 levels (prior information is required). If the source of this target figures is the province, the answer is "NA"		
	available?			
84.	Is there at least one senior staff and one assistant responsible for monitoring and evaluation of EPI?	Get information on the staff		
85.	Have these staff received specific training course on EPI monitoring and evaluation since they joined this position/ during the past 5 years (whichever shorter)	Training course on EPI monitoring and evaluation, including data analysis and interpretation		
86.	Does the District conduct regular periodic EPI review meetings with the HUs?	Check meetings' minutes		

Serial	First : Demographic data			Comment
	Questions	**Explanation**	**Yes/No/NA**	
47.	Is there a detailed map for the district?	With districts' boundaries and health facilities or services		
48.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
49.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Descriptive data (no score)		
50.	Is the same figures of target population used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer NO)		
51.	Are these target groups different from previous year?	To see if the target groups are updated		
52.	Is the target < 1 year used at the district level the same at provincial level?	Ask and compare the data from the 2 levels (prior information is required). If the source of this target figures is the province, the answer is "NA"		
	Documents			
87.	Is there EPI guidelines/manual available for EPI staff that includes a section on EPI reporting system and data quality?	See the EPI guidelines/manual		
88.	Is there enough stock of the requirement for 3 months of the following: • Vaccination cards • registers, • reporting forms	Observe the stock of each. If anyone is absent, the answer will be "no"		
	Archiving			

Serial	First : Demographic data			Comment
	Questions	**Explanation**	**Yes/No/NA**	
47.	Is there a detailed map for the district?	With districts' boundaries and health facilities or services		
48.	Are the numbers of the following target groups available for year 2016? • Target population 0-11 months • Target population 1-2 years Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
49.	Are the numbers of the following target groups available for year 2016? • Target population of women in child bearing age Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
	What is the source of the data related to the target?	Descriptive data (no score)		
50.	Is the same figures of target population used for all coverage analysis (tabulations, charts, reports,..)	Check the charts and tables (if anyone is missing answer NO)		
51.	Are these target groups different from previous year?	To see if the target groups are updated		
52.	Is the target < 1 year used at the district level the same at provincial level?	Ask and compare the data from the 2 levels (prior information is required). If the source of this target figures is the province, the answer is "NA"		
	Questions	**Explanation**	**Yes/No/NA**	
89.	Is Files keeping & archiving optimum	Arranged & kept according to the years.		
90.	Are Files updated?	Up-to-date reports and communication		
91.	Are there separate files/sub files for archiving the different reports for: • Monthly data • Supervision (to districts and from national) • Feedback (to districts and from national)	Check availability, if not for any, the answer should be "No"		

	Cold chain and vaccine management			
	Questions	**Explanation**	**Yes/No/NA**	
92.	Is there registration of temperature twice daily seven days a week?	See the registration paper. If there is no vaccine store, the answer should be 'NA"		
93.	Is there registration for vaccine stock register (arrival, dispatch, lot number, expiry date)?	Check the registry book. If there is no vaccine store, the answer should be 'NA"		
94.	Is the vaccine batch number registered in the vaccine stock registry?	Check the information in the registry book. If there is no vaccine store, the answer should be 'NA"		
95.	Is the vaccine stock register book updated?	Check if it is updated. If there is no vaccine store, the answer should be 'NA"		
96.	Is there a concordance between the number of measles doses and measles diluent in the registration book and the refrigerator stock?	Check and calculate. If there is no vaccine store, the answer should be 'NA"		
97.	Is there stock register for syringes receipt and release?	Review the stock register		

Field editor: _____ Signature: _____ Date: _____/_____/_____

Questionnaire for the assessment of the Quality of EPI monitoring system at the health unit level

Health unit:……UC: ……Tehsil……District:..……Province:..……HU Type:…..…….. ……. Name/s and position/s of respondent/s: ……..……

Serial	Questions	Explanation	Yes/No/NA	Comments
	Demographic data			
1.	Is there a map for the catchment area of this health unit?	Map with the catchment area boundaries		
2.	If the map is available, dose the map include all the household /villages related to the area (if applicable; hard to reach areas, and special population link to this area).			
3.	Does the map include a target by type of strategy: fixed/outreach/mobile, with outreach villages?			
4.	Are the numbers of the following target groups available for year 2016? Target populations: • Target population 0-11 months • Target population 1-2 years Target population <5 years	All the targets should be available (if anyone is missing answer "No")		
5.	Are the numbers of the following target populations available for year 2016? • Target population of women in child bearing age • Target population of pregnant women	All the targets should be available (if anyone is missing answer "No")		
6.	Is the same figures of the target population used for all coverage analysis (charts, reports,..)	Check the charts and reports		

7.	Does the HU have a system/mechanism which allow the collection of information about new births in the community?	This may include community health workers, LHW, traditional birth attendants, outreach clinics etc. A system/mechanism means (a) organized way to collect the information in every village/community and (b) a written track available at the HU.		
	Monthly reports of EPI			
8.	Do you have copies of the monthly reports sent from the HU to the UC/district for Jul-Dec 2015?	All reports (3 reports) should be available). If there is any missing report, the answer should be "No".		
9.	Do you have copies of the vaccine wastage reports for Jul-Dec 2015?	All reports (3 reports) should be available). If there is any missing report, the answer should be "No"		
10.	Do you have copies of the sever AEFIs reports for Jul-Dec 2015?	All reports (3 reports) should be available). If there is any missing report, the answer should be "No"		
11.	Are the HU reports correctly filled in?	Select a number of fields to be checked in all HU reports and check whether these have been filled in correctly.		
12.	Are the monthly reports for the period Jul- Dec 2015 signed by the person authorized to submit the HU report??	Check, if 2/3 reports are signed score "Yes"		
13.	Does the authorized person for preparing the immunization data know how to calculate vaccination coverage, dropout rate, and wastage?	At least he/she should know correctly how to calculate vaccination coverage to answer "Yes"		
	How many health workers are providing immunization at this facility?	Write the number of all health worker assigned to provide vaccination service at this HU for both fixed service and outreach (no score)		
14.	Has the EPI staff at this HU received formal training on EPI monitoring and evaluation, including data quality improvement, during the past 2 years? Any type of training that include EPI data recording,	Check documentation (e.g. certificate, training materials), or get training details e.g. the type of training, duration, content, who conduct it, when….etc. Ask for the date and name of the		

	reporting, archiving, data analysis and using data for action) (basic or refresher, NV…..etc.)	course		
	Using data for action			
15.	Is the vaccination coverage data analyzed monthly?	Look for tables or graphs		
16.	Is the coverage data used for action?	Ask about examples of using the data for action like tracing defaulters by phone/letter/ home visit, increasing outreach/mobile team, conducting campaigns, etc.		
	Supervision			
17.	Is there any documentation of the supervisory visits by the governmental staff (if there are supervisory visits) in the period Jul – Dec 2015?	If there is supervisory book with technical comments/recommendation or technical report, the answer is "yes". If there was no documentation of the visit, the answer is "no". if there was no supervisory visit, the answer is "not applicable"		
18.	Is there any follow up for implementation of recommendation of the supervisory visits?	Look for any documentation of the implemented recommendation in the next visits. If there is no documentation, the answer is "no". if there was no supervisory visit, the answer is "NA"		
	Feed-back			
19.	Is there feedback from the upper level to this health unit regarding the reported data (coverage, drop out, wastage,..)	Check availability of documented feedback. If copies of the feedback are not retained, the answer is "No" If the officer indicated that no written feedback was received, the answer is "NA"		
	Cold chain and vaccine management			
20.	Is there a vaccine stock register for vaccine and supply registration?	Check availability of the stock register		

21.	Is the vaccine register up to date?	Compare the amount one vaccine available and amount registered in the stock record		
22.	Is the batch number and expiry date of each vaccine registered?	Check the stock register		
23.	Is there a stock register for receipt/issuing of syringes (AD/ disposal/reconstitution syringes)?	Check the stock register		
24.	Is the cold chain temperature monitoring chart completed twice daily seven days a week? Please comment on how they solve the problem during the weekend and official holidays?	Check the charts for the period Jul – Dec 2015, if one is not complete answer "No"		
	Registration			
25.	Are registers used for recording individual information about child immunizations?	Each health center should have a book or register where each immunization history can be registered and traced back.		
26.	Can a child's vaccination history be easily and rapidly retrieved in the permanent registers for the period Jul- Dec 2015?	A new dose should not be entered as a complete new entry but entered in the location where previous doses have been entered.		
27.	Are registers used for recording individual information about women's TT immunizations?	There may be registers or health cards if cards kept in HU.		
	Observe at least five vaccinations and answer the following			
28.	Is the vaccination card well filled out?	All records should be filled in		
29.	Does the vaccinator record each vaccination dose in the daily register immediately?	Check the daily records		
30.	Were all vaccinations well registered on the tally sheet?	Check the daily tally sheet		
	Defaulters tracing			
31.	Is there form/sheet for listing defaulters?	Check availability of defaulter list		
32.	Are the defaulters identified at least monthly?	Check the date of list of defaulters		

33.	Is there a defined system for reaching defaulters? Please describe the system?	Home visits, phone call, letter		
34.	Were action taken to trace defaulters?	Check action taken and the notes on how many defaulters were identified		
	Printed materials			
35.	Is there EPI manual?	Check availability of the immunization manual		
36.	Is there enough stock of tally sheets?	Check availability for at least 3 months		
37.	Is there enough stock of daily register?	Check availability for at least 3 months		
38.	Is there enough stock of permanent register?	Check availability for at least 3 months		
39.	Is there enough stock of child immunization card?	Check availability for at least 3 months		
40.	Is there stock of Temperature recording sheets?	Check availability for at least 3 months		
41.	Is there enough stock of monthly reporting forms?	Check availability for at least 3 months		
	Archiving			
42.	Are all the reports /records related to monitoring and evaluation of the period Jul- Dec 2015 well archived?	Filed and arranged in order (by year or month) and in save and clean place		
43.	Is there one location where the immunization reports and recording forms for the period Jul – Dec 2015 are stored?	Inside the HU. If any record/register is missing, the answer is "no"		
44.	Can all tally sheets / reports/ registers covering child immunization for the period Jul- Dec 2015 be found easily?	Check archiving		
45.	Are registers for TT vaccinations to pregnant women available for the period Jul – Dec 2015?	Should be well archived		

Name of the interviewer/s:…… …… Date of the visit:……/……/……..…

Field editor: _____ Signature: _____ Date: _____/_____/_____

Annex 3. Accuracy Forms

Data collection sheet for accuracy of vaccination data for children 0-11 months for the period October-December 2015
Verification of Penta3 and Measles1 vaccination for children at the <u>health unit</u>

Health unit:…….. UC: …….. District:..……. Province: …… Date of the visit:… /…..…/……
Respondent/responsible officer: ……. Data collected by: ……

	Questions	Name of health facilities included under the UC	Age group	OCT	NOV	Dec	Comments
1	Number of children vaccinated with **<u>Penta 3</u>** recounted from daily register		All ages				
			0-11 months				
2	Number of children vaccinated with **<u>Measles 1</u>** recounted from daily register		All ages				
			0-11 months				
3	Number of children vaccinated with **<u>Penta 3</u>** as reported in the monthly report sent to the district level		All ages				
			0-11 months				
4	Number of children vaccinated with **<u>Measles 1</u>** as reported in the monthly report sent to the district level		All ages				
			0-11 months				
5	Target children aged less than 1 year. If this is not known, please get number of penta1 vaccinations provided to children aged less than 1 year.						

Data collection sheet for Penta3 vaccination at the health unit for children 0-11 months for the period October-December 2015
From the register to the community

Health unit: …… UC: …….. District: ..…… Province: ……
Date of the visit: . . / . . /. . . . Data collected by: ……

Ser.	Data collected from the HU records								Data verified in the community					Comments
	Child's Name	Father's name	Date of birth			Address	Child vaccination registration No.	Date of vaccination	Penta3 Vaccinated		Date of vaccination	Source of data		
			DD	MM	YY				Yes	No		Vaccination card	History	
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														

- Please collect the data from the Health center for 15 children. In the community, please do your best to get maximum of 10 children
- Please collect the data from the daily register for children vaccinated in 2015
- Selection should be in systematic random technique (get every 10^{th} child in the daily register of the same assessment period
- Record your observation in the comment colum

Data collection sheet for accuracy of vaccination data for children 0-11 months for October-December 2015
Verification of Penta3 vaccination at the Districts
Data to be copied from the reports received from the **UC/health units**

District:..…….Province: …… Respondent/responsible officer:
Date of the visit: . . / . . /. . . . Data collected by: ……

Health unit/UC	Oct	Nov	Dec	Comments
Total				

- Please use additional sheets if the number of rows is not sufficient for the number of HU/UCs
- Please ask about the age group of the data collected: Total children vaccinated ( ) less than one year ( )
- If electronic data is available, please get electronic copy and no need to copy the data on the hard copy

Data collection sheet for accuracy of vaccination data for children 0-11 months for October-December 2015

Verification of Measles1 vaccination at the Districts

Data to be copied from the reports received from the **UC/health units**

District:..…….Province: …… Respondent/responsible officer: …….

Date of the visit: . . / . . /. . . . Data collected by: ……

Health unit/UC	Oct	Nov	Dec	Comments
Total				

- Please ask about the age group of the data collected: Total children vaccinated ( ) less than one year ( )
- If electronic data is available, please get electronic copy and no need to copy the data on the hard copy

Data collection sheet for accuracy of vaccination data for children 0-11 months for October-December 2015
Verification of Penta3 vaccinations at the Districts
Data to be copied from the tabulation at the district

District:..…….Province: …… Respondent/responsible officer: …….
Date of the visit: . . / . . /. . . . Data collected by: ……

Health unit/UC	Oct	Nov	Dec	Comments
Total				

- Please use additional sheets if the number of rows is not sufficient for the number of HU/UCs
- Please ask about the age group of the data collected: Total children vaccinated ( ) 0-11 months ( )
- If electronic data is available, please get electronic copy and no need to copy the data on the hard copy

Data collection sheet for accuracy of vaccination data for the period October-December 2015

Verification of Measles1 vaccinations at the Districts

Data to be copied from the tabulation at the district

District:..……Province: …… Respondent/responsible officer: …….

Date of the visit: . . / . . /. . . . Data collected by: ……

Health unit	Oct	Nov	Dec	Comments
Total				

- Please use additional sheets if the number of rows is not sufficient for the number of HU/UCs
- Please ask about the age group of the data collected: Total children vaccinated ( ) 0-11 months ( )
- If electronic data is available, please get electronic copy and no need to copy the data on the hard copy

Data collection sheet for accuracy of vaccination data for the period October-December 2015

Verification of Penta3 for children below one year at the Province

Data to be copied from the reports received from the districts

Province: …… Respondent/responsible officer:……

Date of the visit: . . / . . /. . . . Data collected by: ……

District	Oct	Nov	Dec	Comments
Total				

- Please ask about the age group of the data collected: Total children vaccinated ( ) 0-11 months ( )
- If electronic data is available, please get electronic copy and no need to copy the data on the hard copy

Data collection sheet for accuracy of vaccination data for children 0-11 months for October-December 2015

Verification of Measles1 for children below one year at the Province

Data to be copied from the reports received from the districts

Province: …… Respondent/responsible officer:……..

Date of the visit: . . / . . /. . . . Data collected by: ……

District	Oct	Nov	Dec	Comments
Total				

- Please ask about the age group of the data collected: Total children vaccinated ( ) less than one year ( )
- If electronic data is available, please get electronic copy and no need to copy the data on the hard copy

Data collection sheet for accuracy of vaccination data for children 0-11 months for October-December 2015

Verification of Penta3 for children below one year at the Province

Data to be copied from the tabulation at the province

Province: …… Respondent/responsible officer: …….

Date of the visit: . . / . . /. . . . Data collected by: ……

District	Oct	Nov	Dec	Comments
Total				

- Please ask about the age group of the data collected: Total children vaccinated ( ) less than one year ( )
- If electronic data is available, please get electronic copy and no need to copy the data on the hard copy

Data collection sheet for accuracy of vaccination data for children 0-11 months for October-December 2015

Verification of Measles1 for children below one year at the Province

Data to be copied from the tabulation at the province

Province: …… Respondent/responsible officer: …….

Date of the visit: . . / . . /. . . . Data collected by: ……

District	Oct	Nov	Dec	Comments
Total				

- Please ask about the age group of the data collected: Total children vaccinated ( ) less than one year ( )
- If electronic data is available, please get electronic copy and no need to copy the data on the hard copy

Annex 4. Completeness and Timeliness Forms

Completeness/timeliness of reporting of vaccination data to the district level for the period October-December 2015

District: ……. Province: ……

Date: . . / . . / . . . .. Data collected by: …….

Health unit	Oct.	Nov.	Dec.	Total reports received	Total reports received on time	Comments
HU1						
HU2						
HU3						
HU4						
HU5						
HU6						
HU7						
HU8						
HU9						
HU10						
HU 11						
HU12						
HU13						
HU14						
HU15						
Total reports expected (No.)				Total expected for the year=		
Total reports received (No.)				Total received for the year=		
Completeness ratio (Total received/total expected)						
Total received in the district on time (No.)						
Timeliness ratio (total on time/total expected)						

Completeness/timeliness of reporting of vaccination data to the Province level for the period October-December 2015

Province: …… Date: . . / . . / . . . .. Data collected by: …….

Name of the district	Oct.	Nov.	Dec.	Total reports received	Total reports received on time	Comments
D1						
D2						
D3						
D4						
D5						
D6						
D7						
D8						
D9						
D10						
D11						
D12						
D13						
D14						
D16						
D17						
D18						
D19						
D20						
D21						
D22						
D23						
D24						
D25						
D26						
D27						
D28						
D29						
D30						
Total reports expected (No.)				Total expected for the year=		
Total reports received (No.)				Total received for the year=		
Completeness ratio (Total received/total expected)						
Total received in the district on time (No.)						
Timeliness ratio (total on time/total expected)						

Annex 5. DQA training programme

DATA QUALITY ASSESSMENT (DQA) IN PAKISTAN, JUNE 2016

Monday 13 June 2016		
1. Introduction and briefing		
	Briefing, MOHSRC	
	Introduction by the Federal EPI, briefing of the visitor on data flow in PAK	
	Discussion on methodology of the DQA	
	Reviewing the data collection sheets: accuracy component	
	Reviewing the data collection sheets: Quality component	
	Discussion and agreeing on 1. Period to be assessed 2. Antigens to be assessed 3. Levels to be assessed	
	Discussion on Sampling process 4. Random sample 5. Purposive sample 6. Mixed	
2. Workshop on DQA in Pakistan, 14-16 June 2016		
Day 1, Tuesday 14 June 2016		
08:30-09:00	Registration	
09:00-09: 15	Opening Session: • Opening remarks • Introduction of participants	EPI/Pakistan
09:15-10:00	EPI in Pakistan: 7. Overview 8. Overview on the reporting system and data flow 20 minutes presentation and 25 minutes discussion	EPI/Pakistan
10:00-10:50	9. Monitoring and reporting system in the different provinces: oral description, 10 minutes/province 10 minutes per province and 20 minutes discussion	Provincial EPI, PAK

10:50-12:00	DQA: overview objective and procedure Presentation and discussion	Dr Nadia Teleb, WHO/EMRO
12:00-12:30	Break	
12:30-13:30	Briefing of the data collection teams on system quality sheets: Provincial level	Dr Ana Morice, WHO Consultant
13:30-14:30	Briefing of the data collection teams on system quality sheets: District level	Dr Kamal Fahmy, WHO/EMRO
14:30-15:30	Briefing of the data collection teams on system quality sheets: Health facility level	Dr Nasrin Musa, WHO/EMRO
15:30-15:45	Wrap-up	
Day 2, Wednesday 15 June 2016		
09:00-10:00	Briefing of the data collection teams on data accuracy sheets	Dr Nadia Teleb, WHO/EMRO
10:00-11:00	Distribution of the groups for field testing of the data collection tools Travel to the field	Dr Quamrul Hassan, WHO ISB EPI PAK
11:00-14:00	Field work: field testing of the data collection sheets	Data collection teams and provincial team leaders
Day 3, Thursday 16 June 2016		
09:00-11:00	Feed back from field testing of the data collection tools	Moderated by: Dr Nadia Teleb and Dr Nasrin Musa, WHO EMRO
11:00-13:00	Briefing on data analysis tools	Dr Kamal Fahmy, WHO EMRO
11:00-13:00	Break	
13:00-15:00	Distribution of the teams and briefing on the procedure of the field work	Dr Quamrul Hassan, WHO ISB
15:00-15:30	Wrap-up	

Annex 6. Summary table of Quality Index: Punjab

Province QI/domain	**Province: Punjab**
Demographics	7,9
Registration	7,8
Reporting and Archiving	7,9
Data analysis and use	8,2
Supervision and Feedback	10,0
Planning and management	10,0
Human resources	7,0
Overall	**82%**

District QI/domain	**District 1: Sahiwal**	**District 2: Narowal**	**District 3: Mandi Bahoudin**	**District 4: Khushab**	**Aggregate**
Demographics	7,9	2,7	7,9	7,3	6,6
Registration	8,7	7,4	8,5	8,7	8,3
Reporting and Archiving	10,0	6,9	10,0	6,1	8,3
Data analysis and use	7,5	1,3	6,2	0,7	3,6
Supervision and Feedback	10,0	0,0	10,0	0,0	4,7
Planning and management	10,0	6,7	6,7	6,7	7,5
Human resources	7,0	9,0	7,0	10,0	8,3
Overall	**86%**	**44%**	**79%**	**47%**	**69%**

UC QI/domain	**HF1**	**HF2**	**HF3**	**HF4**	**HF5**	**HF6**	**HF7**	**HF8**	**HF9**	**HF 10**	**HF 11**	**HF 12**	**Aggregate**
Demographics	3,2	3,2	0,0	0,0	6,3	3,2	8,4	7,4	6,3	4,2	7,4	4,7	4,6
Registration	8,7	9,0	9,0	8,7	8,7	5,2	8,7	9,7	9,6	8,7	7,7	7,7	8,5
Reporting and Archiving	6,8	7,4	6,2	5,4	7,2	6,7	8,5	6,1	7,3	6,2	3,1	5,9	6,4
Data analysis and use	6,0	9,0	9,0	3,0	1,5	1,5	10,0	10,0	4,5	3,0	1,5	1,5	5,0
Supervision and Feedback	0,0	0,0	0,0	0,0	0,0	3,8	0,0	0,0	7,5	0,0	3,8	0,0	1,4
Human resources	0,0	0,0	0,0	0,0	10,0	10,0	10,0	10,0	10,0	10,0	10,0	10,0	6,7
Overall	**57%**	**68%**	**62%**	**43%**	**59%**	**47%**	**82%**	**76%**	**72%**	**56%**	**49%**	**51%**	**60%**

Annex 7. Punjab: Summary table of Accurate Ratio (%) Penta3

Province, Districts and Health Facilities	July 2015	August 2015	September 2015	October 2105	November 2015	December 2015	Overall
Province: Punjab	100,0	100,0	100,0	100,0	100,0	100,0	100,0
District 1: Sahiwal	100,0	100,0	100,6	100,0	100,0	100,0	100,1
District 2: Narowal	100,1	107,9	100,5	96,9	104,4	97,5	101,1
District 3: Mandi Bahoudin	98,3	89,1	97,4	101,5	100,0	100,0	97,8
District 4: Khushab	104,3	103,0	101,5	100,9	101,6	98,8	101,6
HF1: TibbJaySingh	92,9	100,0	91,0	100,0	92,0	109,0	97,5
HF2: UC46	101,8	98,1	101,9	109,3	90,6	94,4	99,4
HF3: UC9	107,1	98,2	98,2	85,7	91,1	94,6	95,8
HF4: RHC Qila Ahmad Abd	57,7	82,9	57,7	61,5	79,5	101,7	75,1
HF5: RHC Sankhtra	101,6	97,1	100,0	100,0	100,0	100,0	99,7
HF6: BHU Masroor	45,5	45,1	38,9	33,3	59,6	89,6	51,1
HF7: Dhoul	113,2	101,8	112,0	78,0	100,0	109,4	102,1
HF8: Chack 40	97,2	72,5	102,4	88,2	88,0	100,0	91,5
HF9: Bar Musa	108,8	100,0	109,1	106,7	97,4	119,0	107,1
HF10: THQ Quaidabad	94,7	191,2	86,4	98,0	96,0	100,0	104,9
HF11: RHC Mitha Tiwana	94,0	94,7	101,6	101,4	106,0	101,1	99,4
HF12: BHU BIJJAR	87,8	78,0	75,0	71,7	74,2	73,3	76,8

AR >100% = under-reporting
AR < 100% = over reporting

Annex 8. Punjab: Summary table of Accurate Ratio (%) Measles1

Province, Districts and Health Facilities	July 2015	August 2015	September 2015	October 2015	November 2015	December 2015	Overall
Province: Punjab	100,0	100,0	100,0	100,0	100,0	100,0	100,0
District 1: Sahiwal	100,0	100,0	100,0	100,0	100,0	100,0	100,0
District 2: Narowal	100,0	100,2	101,5	97,2	100,3	99,2	99,6
District 3: Mandi Bahoudin	100,0	99,9	99,9	103,1	100,0	98,3	100,2
District 4: Khushab	101,0	98,6	101,5	100,7	97,8	99,9	99,9
HF1: TibbJaySingh	120,0	138,8	102,9	103,0	111,7	86,0	110,5
HF2: UC46	92,7	86,8	119,2	120,4	62,3	78,2	93,2
HF3: UC9	100,0	98,2	96,5	100,0	94,7	96,5	97,7
HF4: RHC Qila Ahmad Abd	89,4	58,7	79,0	65,7	71,4	103,6	75,5
HF5: RHC Sankhtra	100,0	224,2	100,0	104,3	102,1	94,9	113,9
HF6: BHU Masroor	32,8	63,6	25,5	30,3	63,1	44,4	43,1
HF7: Dhoul	98,2	121,2	75,4	80,0	66,1	78,8	85,8
HF8: Chack 40	120,0	114,5	107,7	88,7	82,0	60,0	95,2
HF9: Bar Musa	95,6	103,9	100,0	124,4	108,9	97,5	105,4
HF10: THQ Quaidabad	95,5	101,7	88,2	84,0	85,1	86,2	89,5
HF11: RHC Mitha Tiwana	97,5	96,1	118,0	94,8	104,6	98,8	101,2
HF12: BHU BIJJAR	73,7	78,7	70,0	69,5	71,2	68,3	72,3

AR >100% = under-reporting
AR < 100% = over reporting

Annex 9. Punjab: Summary table of Quality Index

Province QI/domain	Province: Sindh
Demographics	10,0
Registration	6,1
Reporting and Archiving	5,9
Data analysis and use	2,5
Supervision and Feedback	0,0
Planning and management	3,3
Human resources	3,0
Overall	**47%**

District QI/domain	District 1: Hyderabad	District 2: Tando Muhammad Khan	District 3: Liaqatabad-Karachi	District 4: N. Nazimabad-Karachi	Aggregate
Demographics	9,3	10,0	0,0	7,1	6,7
Registration	7,4	8,7	4,0	7,4	7,6
Reporting and Archiving	7,9	5,2	4,1	3,1	5,1
Data analysis and use	5,0	2,0	0,7	2,3	2,5
Supervision and Feedback	10,0	5,0	0,0	0,0	3,7
Planning and management	6,7	0,0	0,0	3,3	2,5
Human resources	9,0	10,0	3,0	9,0	7,7
Overall	**71%**	**51%**	**17%**	**43%**	**55%**

UC QI/domain	HF1	HF2	HF3:	HF4:	HF5	HF6	HF7	HF8	HF9	HF10	Aggregate
Demographics	4,2	4,7	8,4	7,4	2,7	1,6	2,6	7,4	7,9	5,7	5,3
Registration	8,7	5,8	8,7	8,7	6,3	7,7	8,0	7,3	7,0	8,0	7,6
Reporting and Archiving	4,9	4,4	6,7	6,7	5,1	6,2	6,9	7,3	7,2	5,2	6,0
Data analysis and use	4,5	5,5	10,0	10,0	1,5	1,0	9,0	7,0	7,0	7,5	6,3
Supervision and Feedback	0,0	0,0	5,0	0,0	0,0	0,0	0,0	4,0	0,0	0,0	0,8
Human resources	10,0	10,0	10,0	10,0	10,0	0,0	10,0	10,0	10,0	10,0	9,0
Overall	**55,0%**	**48,0%**	**80,0%**	**75,0%**	**43,0%**	**45,0%**	**65,0%**	**72,0%**	**70,0%**	**64,0%**	**61,0%**

Annex 10. Sindh: Summary table of Accurate Ratio (%) Penta3

Province, Districts and Health Facilities	October 2015	November 2015	December 2015	Overall
Province: Sindh	100,9	99,0	101,3	100,4
District Hyderabad	72,9	61,9	60,1	64,4
District TM Khan	100,0	100,0	100,0	100,0
Liaqatabad-Karachi Town	92,4	100,7	94,9	96,2
Nazimabad-Karachi Town	99,7	93,3	78,1	93,8
Taluka Hyderabad Rural	50,8	100,0	102,9	82,7
Taluka Tando Gulam Haider	100,0	100,9	100,0	100,3
UC Masu Burghri	74,7	72,4	73,5	73,6
UC Tandu Fazal	103,4	89,7	93,7	94,8
UC TG Haider	90,5	66,3	92,6	82,6
UC Dandu	97,1	97,2	98,5	97,6
UC Dhakana	…	109,0	225,9	139,0
UC Nazimabad	100,0	98,1	97,8	98,5
UC Shaheed Abbas	78,8	104,8	112,5	99,1
UC Mustafabad	…	…	45,1	138,0
UC Kandu Goth	75,0	70,5	72,8	72,6
UC Sakhi Hasan	37,3	35,7	124,0	50,8

AR >100% = under-reporting
AR < 100% = over reporting

Annex 11. Sindh: Summary table of Accurate Ratio (%) Measles1

Province, Districts and Health Facilities	October 2015	November 2015	December 2015	Overall
Province: Sindh	93,2	101,1	104,2	99,3
District Hyderabad	62,3	62,1	62,9	62,4
District TM Khan	100,0	100,0	100,0	100,0
Liaqatabad-Karachi Town	92,5	97,9	95,2	95,3
Nazimabad-Karachi Town	100,0	88,1	94,2	68,5
Taluka Hyderabad Rural	100,0	100,0	100,0	100,0
Taluka Tando Gulam Haider	100,0	100,0	100,0	100,0
UC Masu Burghri	92,3	88,8	72,4	84,5
UC Tandu Fazal	99,0	106,5	116,9	106,5
UC TG Haider	88,0	66,7	81,7	80,5
UC Dandu	98,7	100,0	88,1	95,7
UC Dhakana	…	63,5	227,8	105,7
UC Nazimabad	78,0	85,7	47,6	75,0
UC Shaheed Abbas	69,0	61,2	47,6	60,6
UC Mustafabad	…	…	32,4	119,7
UC Kandu Goth	44,2	68,6	49,6	53,0
UC Sakhi Hasan	18,2	19,7	51,2	26,7

AR >100% = under-reporting
AR < 100% = over reporting

Annex 12. Khyber-Pakhtunkhwa: Summary table of Quality Index

Province QI/domain	Province: Khyber-Pakhtunkhwa
Demographics	7,9
Registration	6,1
Reporting and Archiving	5,4
Data analysis and use	5,8
Supervision and Feedback	6,3
Planning and management	3,3
Human resources	7,0
Overall	**60,0%**

District QI/domain	District 1: Kohat	District 2: Abbottabad	District 3: Mansehra	Aggregate
Demographics	4,3	7,3	9,1	6,7
Registration	3,5	3,5	7,4	4,8
Reporting and Archiving	4,1	5,2	5,9	5,1
Data analysis and use	1,9	3,8	4,4	3,3
Supervision and Feedback	0,0	0,0	2,5	0,8
Planning and management	0,0	3,3	3,3	2,2
Human resources	9,0	9,0	10,0	9,3
Overall	**31,0%**	**44,0%**	**58,0%**	**44,0%**

UC QI/domain	HF1	HF2	HF3	HF4	HF5	HF6	HF7	HF8	HF9	Aggregate
Demographics	4,7	8,9	6,3	6,3	5,8	4,7	8,9	1,6	5,8	5,9
Registration	5,0	7,7	6,5	10,0	8,7	8,7	9,0	2,6	6,1	7,2
Reporting and Archiving	3,3	8,5	4,4	7,9	7,4	9,2	4,4	4,1	4,9	6,0
Data analysis and use	3,0	7,0	2,5	10,0	7,5	8,5	2,5	3,0	0,0	4,9
Supervision and Feedback	0,0	0,0	0,0	10,0	5,0	0,0	0,0	0,0	0,0	1,8
Human resources	0,0	10,0	0,0	10,0	0,0	10,0	10,0	10,0	10,0	6,7
Overall	**37,0 %**	**76,0 %**	**44,0 %**	**86,0 %**	**72,0 %**	**82,0 %**	**61,0 %**	**30,0 %**	**43,0 %**	**59,0%**

Annex 13. Khyber-Pakhtunkhwa: Summary table of Accurate Ratio (%) Penta3

Province, Districts and Health Facilities	October 2015	November 2015	December 2015	Overall
Province: KP	99,1	99,7	98,5	99,1
District 1: Kohat	74,1	77,5	83,9	78,7
District 2: Abbottabad	92,5	101,7	93,3	95,9
District 3: Mansehra	98,6	97,7	94,7	97,0
HF1: CH Shakardara	…	33,7	…	96,7
HF2: RHC Bilitang	100,0	100,0	100,0	100,0
HF3: CD Jangal Kheil	100,0	100,0	73,7	91,4
HF4: CD Nagri Bala, UC Nagribala	100,0	120,3	106,8	109,2
HF5: BHU Jabriyan UC Salhad	95,6	86,7	92,0	91,3
HF6: BHU Barwaal, UC Langra	107,0	92,1	107,0	102,4
HF7: BHU Kotlibala	98,1	69,4	79,6	82,7
HF8: BHU Hangrai	67,7	26,7	31,6	39,5
HF9: GMH Dadar	83,1	100,0	97,8	92,9

AR >100% = under-reporting
AR < 100% = over reporting

Annex 14. Khyber-Pakhtunkhwa: Summary table of Accurate Ratio (%) Measles1

Province, Districts and Health Facilities	October 2015	November 2015	December 2015	Overall
Province: KP	99,9	100,5	99,3	99,9
District 1: Kohat	74,7	86,1	66,9	75,8
District 2: Abbottabad	92,5	101,7	93,3	95,9
District 3: Mansehra	99,6	100,2	99,2	99,7
HF1: CH Shakardara	...	90,1	...	285,9
HF2: RHC Bilitang	100,0	100,0	100,0	100,0
HF3: CD Jangal Kheil	100,0	100,0	100,0	100,0
HF4: CD Nagri Bala, UC Nagribala	98,5	112,7	98,4	102,7
HF5: BHU Jabriyan UC Salhad	85,3	77,5	117,2	91,4
HF6: BHU Barwaal, UC Langra	111,1	89,7	103,2	100,0
HF7: BHU Kotlibala	94,5	117,1	80,6	97,5
HF8: BHU Hangrai	45,7	19,0	25,0	28,9
HF9: GMH Dadar	55,1	39,6	42,9	45,8

AR >100% = under-reporting
AR < 100% = over reporting

Annex 15. Balochistan: Summary table of Quality Index

Province QI/domain	Province: Balochistan
Demographics	10,0
Registration	10,0
Reporting and Archiving	5,2
Data analysis and use	8,3
Supervision and Feedback	0,0
Planning and management	6,7
Human resources	10,0
Overall	**76,0%**

District QI/domain	District 1: Quetta	District 2: Killa Saifullah	District 3: Harnai	Aggregate
Demographics	7,1	7,9	2,1	5,7
Registration	9,0	6,1	3,5	6,1
Reporting and Archiving	5,8	3,1	4,1	4,3
Data analysis and use	0,7	1,3	0,6	0,9
Supervision and Feedback	0,0	2,0	0,0	0,7
Planning and management	0,0	0,0	0,0	0,0
Human resources	10,0	3,0	6,0	5,8
Overall	**41,0%**	**31,0%**	**22,0%**	**31,0%**

UC QI/domain	HF1	HF2	HF3	HF4	HF5	HF6	HF7	HF8	HF9	Aggregate
Demographics	2,6	1,6	4,2	3,2	5,8	0,0	3,2	0,0	0,0	0,0
Registration	8,0	5,0	4,4	7,0	7,0	9,0	3,8	2,5	5,8	6,0
Reporting and Archiving	7,9	6,7	5,8	7,7	5,4	5,6	6,2	2,6	7,7	0,0
Data analysis and use	8,5	3,0	0,0	0,0	1,5	0,0	7,0	0,0	0,0	0,0
Supervision and Feedback	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Human resources	10,0	10,0	10,0	10,0	0,0	10,0	10,0	10,0	10,0	8,9
Overall	**67,0 %**	**45,0 %**	**38,0 %**	**50,0 %**	**47,0 %**	**45,0 %**	**50,0 %**	**17,0 %**	**42,0 %**	**45,0%**

Annex 16. Balochistan: Summary table of Accurate Ratio (%) Penta3

Province, Districts and Health Facilities	October 2015	November 2015	December 2015	Overall
Province: Balochistan	100,1	98,5	99,3	99,3
District 1: Quetta	99,7	92,3	92,8	94,8
District 2: Killa Saifullah	81,1	83,5	128,0	98,6
District 3: Harnai	25,4	30,7	27,0	27,7
HF1: BHU Wahdat Colony	93,8	103,1	104,8	100,8
HF2: MCH Gawalmandi	52,1	38,3	0,0	30,4
HF3: BHU Gor Colony	50,0	104,2	150,0	87,2
HF4: DHQ Hospital Killa Saifullah	86,4	100,0	100,0	95,3
HC5: BHU Nassai	100,0	104,4	92,9	101,4
HC6: THQ Muslim Bagh	58,3	81,1	91,9	75,4
HF7: RHC Sharag	38,9	42,9	50,0	44,1
HF8: BHU Zardalo	28,0	19,4	25,8	24,1
HF9: DHQ Hospital Harnai	19,7	29,9	19,7	22,9

AR >100% = under-reporting
AR < 100% = over reporting

Annex 17. Balochistan: Summary table of Accurate Ratio (%) Measles1

Province, Districts and Health Facilities	October 2015	November 2015	December 2015	Overall
Province: Balochistan	101,3	98,6	99,3	99,8
District 1: Quetta	92,9	92,3	95,5	93,4
District 2: Killa Saifullah	87,3	80,8	106,1	91,5
District 3: Harnai	78,3	79,0	79,5	79,0
HF1: BHU Wahdat Colony	137,5	81,3	84,1	100,0
HF2: MCH Gawalmandi	45,1	60,0	0,0	37,3
HF3: BHU Gor Colony	54,5	111,1	96,7	82,2
HF4: DHQ Hospital Killa Saifullah	129,4	113,2	104,5	114,3
HC5: BHU Nassai	244,4	100,0	100,0	160,5
HC6: THQ Muslim Bagh	32,1	121,7	71,4	63,6
HF7: RHC Sharag	50,0	39,5	43,8	44,0
HF8: BHU Zardalo	0,0	0,0	5,6	1,6
HF9: DHQ Hospital Harnai	23,5	36,4	31,7	30,4

AR >100% = under-reporting
AR < 100% = over reporting