

VPD Surveillance

JAN – Mar 2016

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2016

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Highlights:

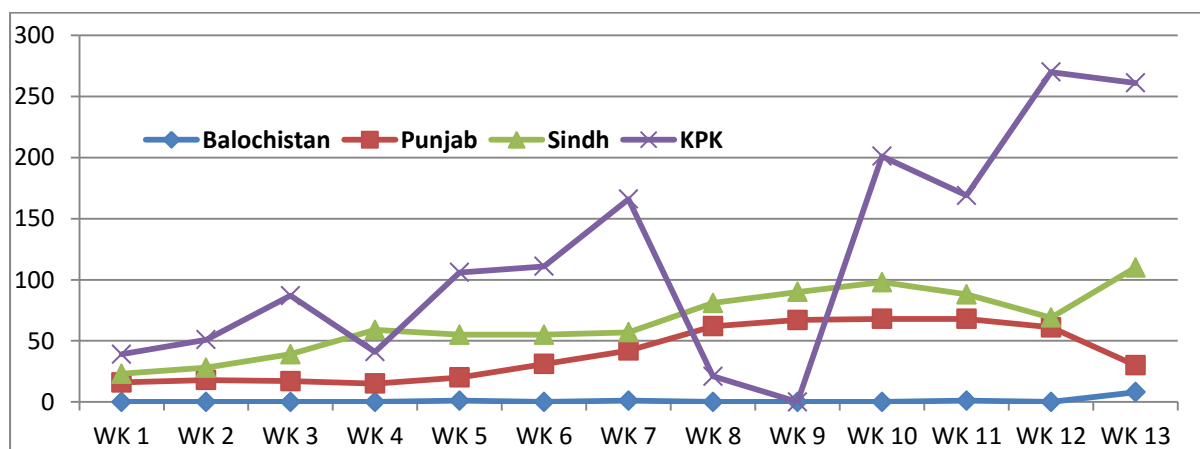
1. Total of 3,380 measles suspected cases reported in first quarter of 2016. Out of these suspected cases 1,151 blood samples were collected for Laboratory confirmation. 415 (36%) samples were found positive.
2. Majority (61%) measles confirmed cases reported from Sindh followed by KPK 37% and ICT 33% respectively.
3. Majority (62%) of lab confirmed measles cases did not receive single dose of measles vaccine.
4. Total of 39 Diphtheria cases notified. Punjab faced Diphtheria outbreaks in the first quarter with 36 cases, 19 throat swabs were sent to lab for testing but none of them came out to be positive.
5. 172 NNT cases reported out of which majority (n=77, 45%) are from KPK.
6. Pertussis seems to be not Public Health issue in Pakistan. Total of 18 suspected cases reported throughout Pakistan.
7. The information on total number of health facilities reported for VPDs is not available as it is not provided by some of the provinces/areas to Federal EPI. Hence, we cannot calculate the proportion of reporting. Although, KPK, Sindh, Balochistan, GB and ICT have shared the information about the number of reporting facilities however the information provided is not sufficient to calculate the VPD surveillance reporting rate.
8. Analysis of the report is based on weekly data received from the provinces/areas. As no weekly data received from the federating areas so they are not included in this report.

Analysis Report Jan-Mar 2016.

Situation of Measles in Pakistan:

The following graph illustrates the weekly trend of the measles suspected cases. The trend line indicates the major outbreak in KPK followed by Sindh.

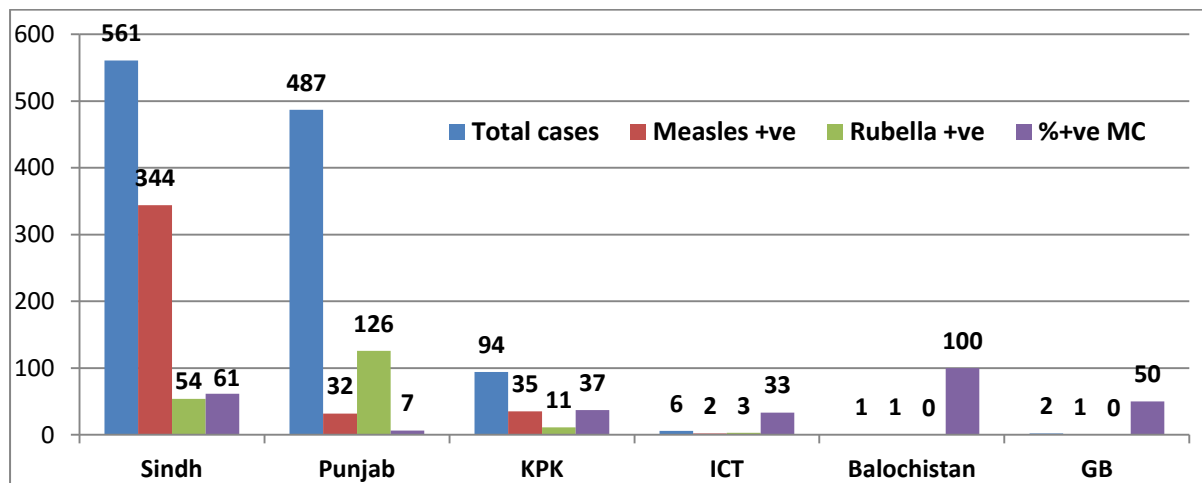
Figure 1: Weekly trend of measles suspected cases



Proportion of Measles positive cases:

Figure 2 demonstrates the number of measles suspected cases reported to lab for confirmation, rubella positive cases and proportion of measles positive cases from Jan- Mar 2016.

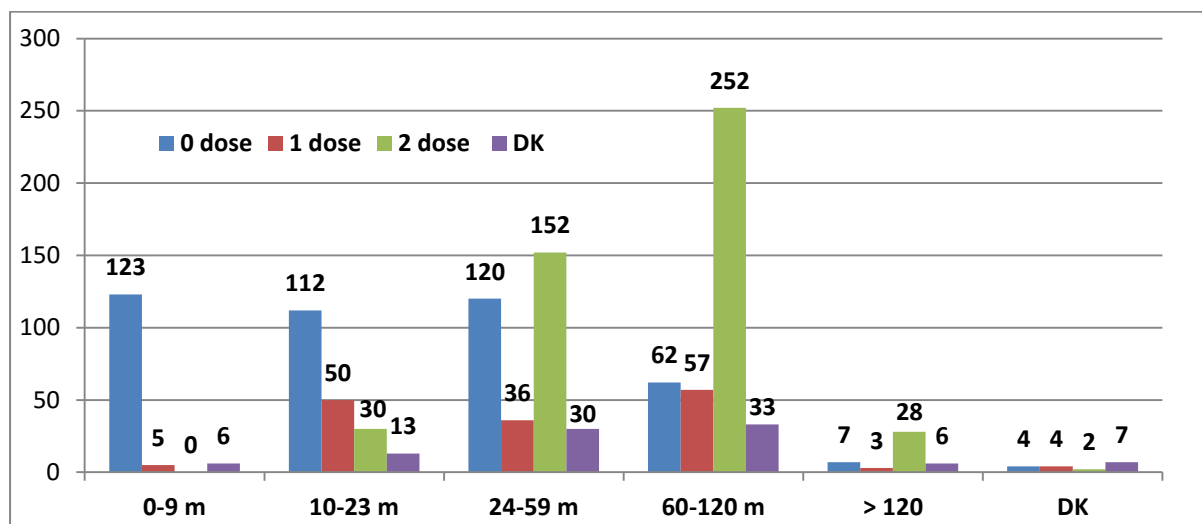
Figure 2: Proportion of Measles positive cases



Vaccination status of the measles cases with their age group

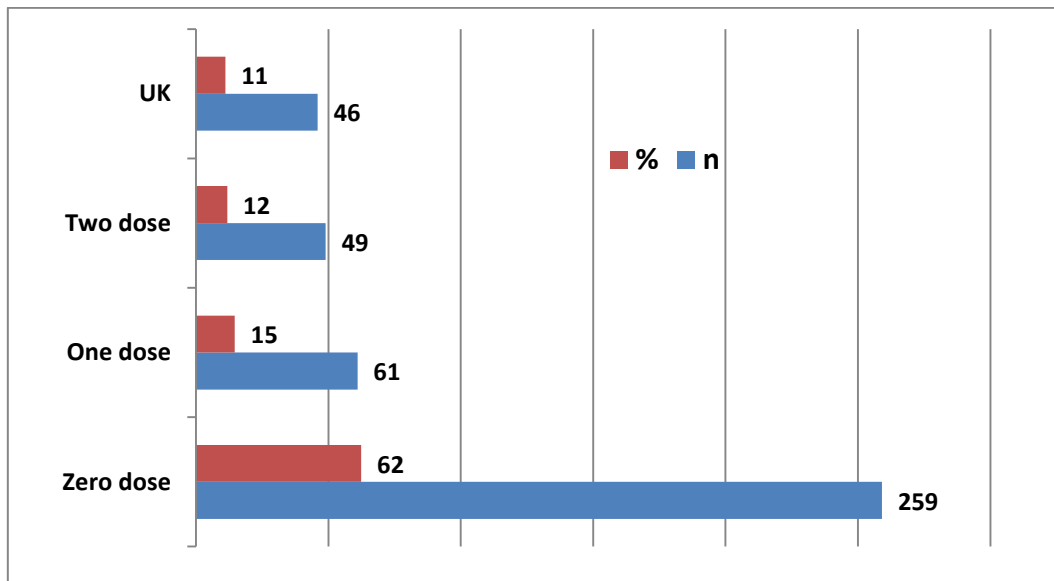
The given below graph shows the vaccination status of the measles suspected cases reported in lab with respect to their age group. Majority (41%) of the cases received both doses of measles vaccine followed by 37% with zero doses.

Figure 3: Vaccination status of measles cases with age group



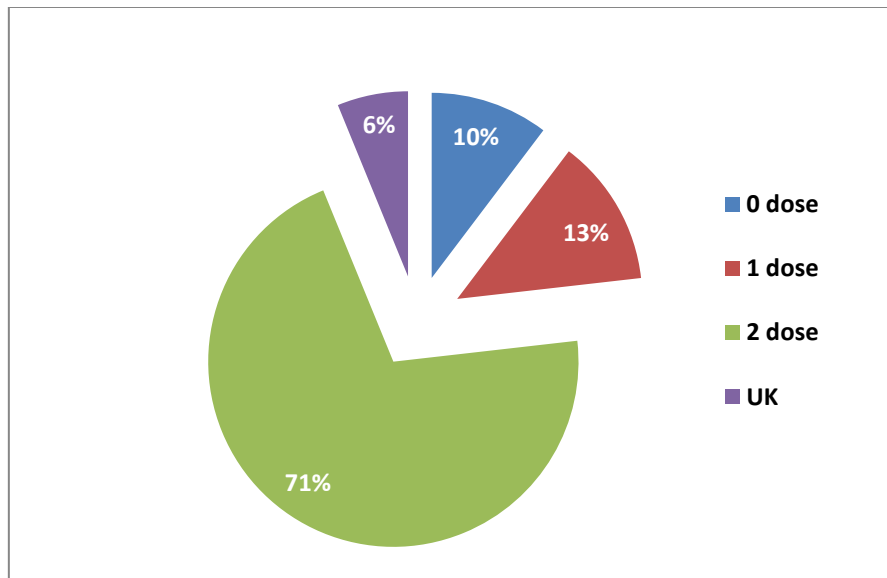
The given below bar graph contradict with the figure 3. It shows the vaccination status of the lab confirmed measles cases. Majority (62%) of cases does not receive a single dose of measles vaccine. However, 12% of cases have received both the doses. Literature revealed that if the child received two doses of measles vaccine so after seroconversion, protection of vaccine would be 99%. However, vaccine failure can be due to passive antibody in the vaccine recipient, damaged vaccine, incorrect records, or possibly other reasons.

Figure 4: Vaccination status of lab confirmed measles cases



The vaccination status of the rubella positive cases is also analysed in order to know the cause of vaccine failure in the vaccinated children. Thus shows the most of the measles vaccinated children were suffering from Rubella. (Figure 5)

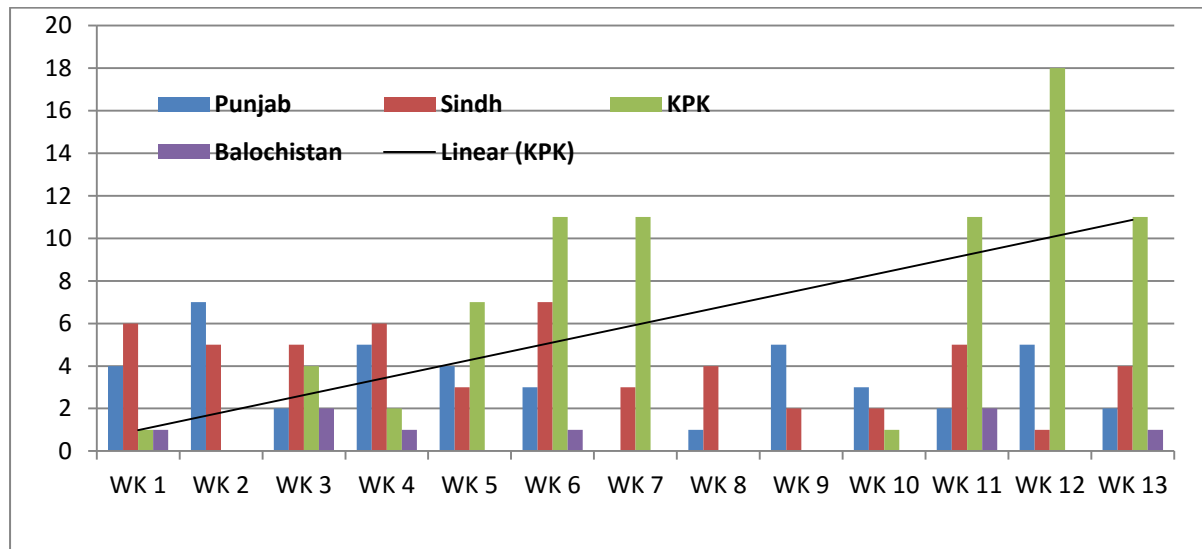
Figure 5: Vaccination status of Rubella positive cases



The situation of Neonatal Tetanus (NNT):

The given below trend line illustrates the weekly cases of NNT reported in all four provinces. KPK shows the highest trend.

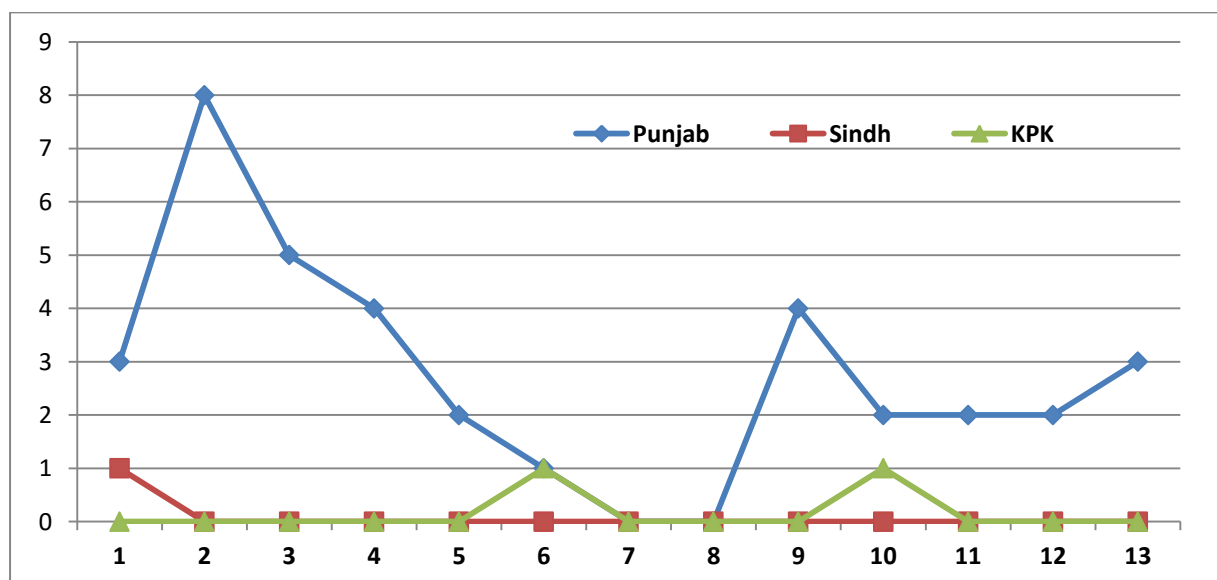
Figure 6: Weekly trend of NNT Cases



The situation of Diphtheria:

Figure 7 shows the weekly trend of diphtheria cases with majority (n=36) of cases reported in Punjab.

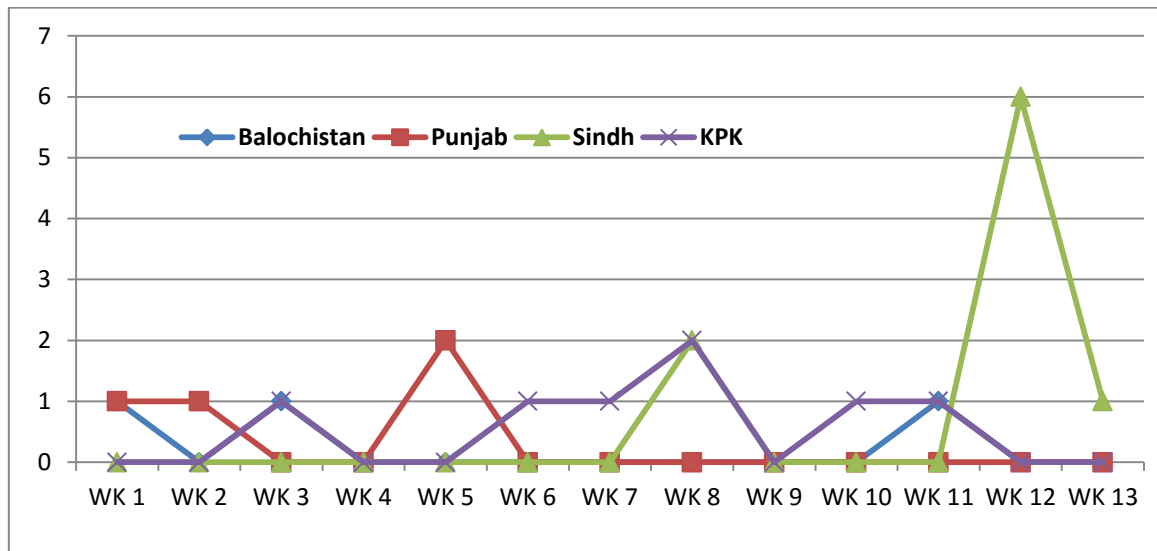
Figure 7: Weekly trend of Diphtheria cases



The Pertussis:

At the moment, Pertussis is not a public health emergency, majority (n=8) of cases are notified from Sindh.

Figure 8: Weekly trend of Pertussis cases

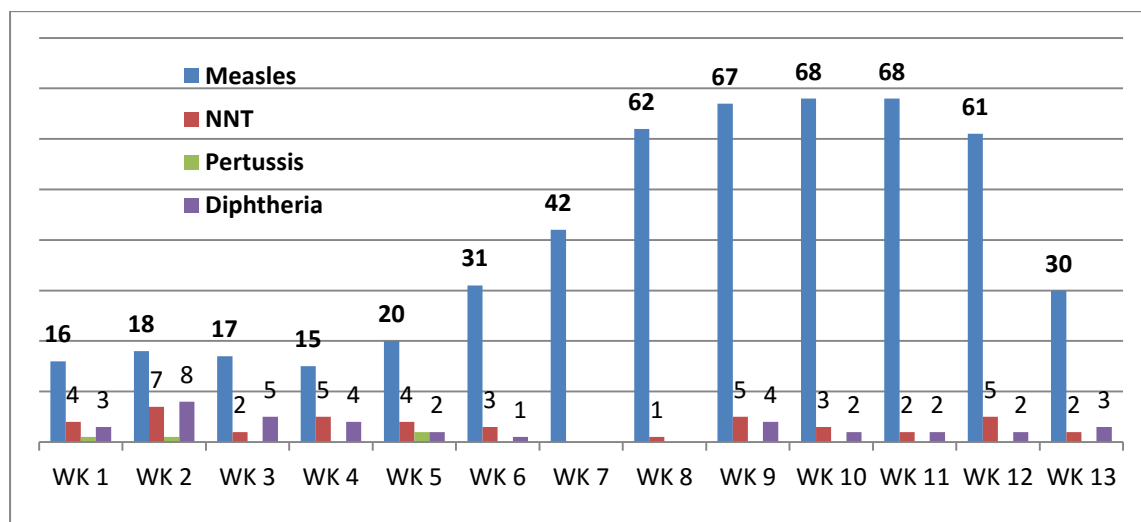


Province Punjab:

All districts of Punjab except Chakwal are reporting on one of the system either on web based software dashboard with real time data or Weekly VPD Surveillance report on excel sheet submitted electronically to the provincial office. Overall reporting on weekly VPD surveillance reporting rate is 70% in the first quarter. The information on number of health facilities reporting is not provided to federal EPI. Moreover, no mechanism for submitting of weekly reports to federal EPI exists. It can only be provided on request by federal EPI.

Figure 9 shows the weekly trend of vaccine preventable diseases showing the higher trend of measles with 529 cases followed by NNT and Diphtheria with 41 and 36 cases respectively.

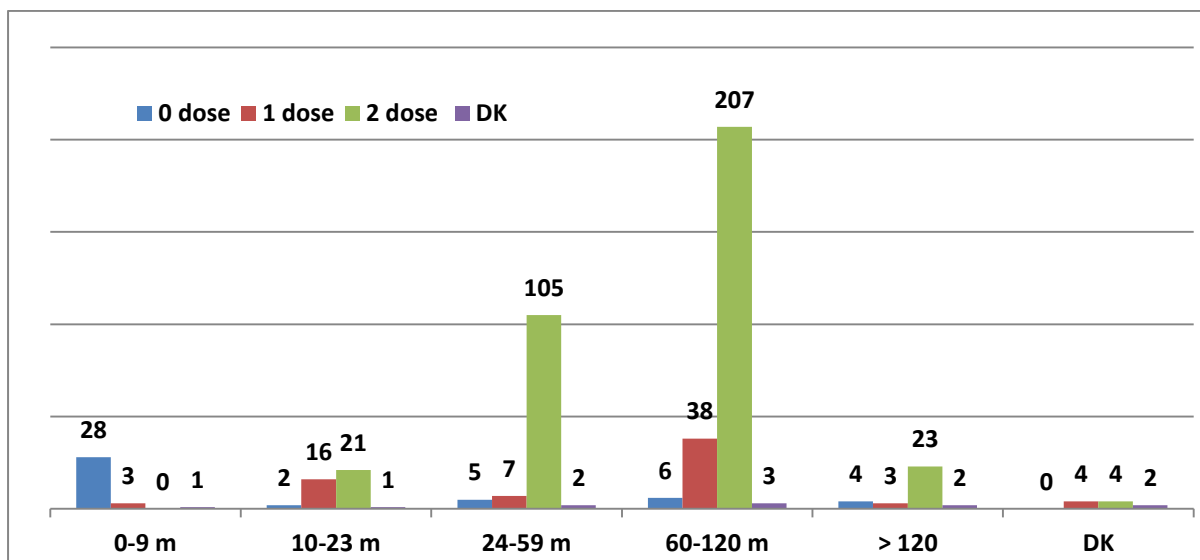
Figure 9: Weekly trend of VPDs in Punjab



Vaccination status of the measles cases with age group

Figure 10 shows the vaccination status of the measles suspected cases received in lab for confirmation. It illustrates that majority (59%) of cases are between the age group of 2 to 10 years with two doses of measles vaccine. However, the vaccination status of all the reported cases shows that the 74% cases had received two doses of measles vaccine and 9% with no vaccination.

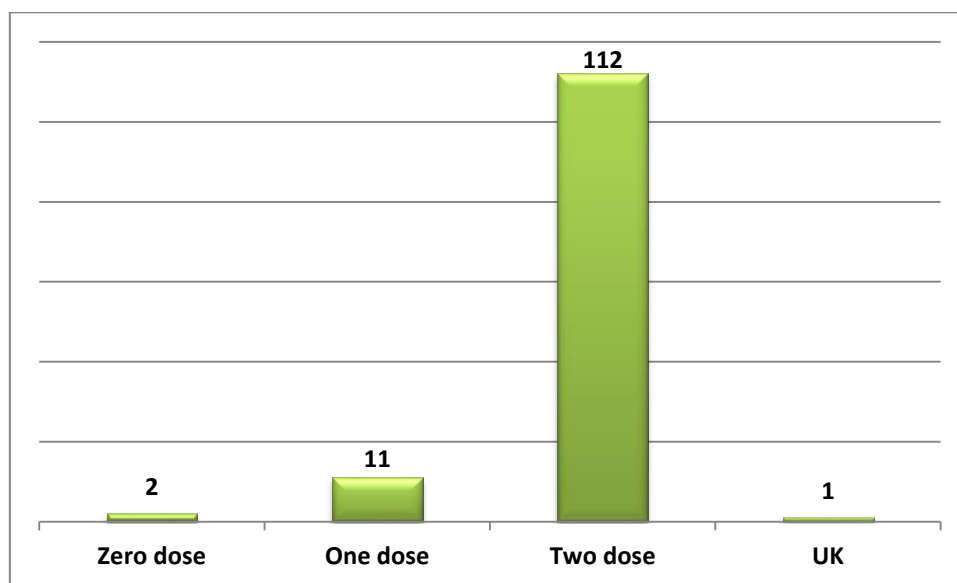
Figure 10: Vaccination status of measles cases with age group



In order to understand the reason for failure of measles vaccine, measles suspected were also tested for rubella. The given below graph illustrates the vaccination status of the rubella positive cases showing that most of the cases vaccinated with two doses of measles vaccine are diagnosed as rubella (German measles). Thus, 26% of the lab tested cases are rubella positive whereas measles confirmed cases are only 7%.

Rubella Positive cases

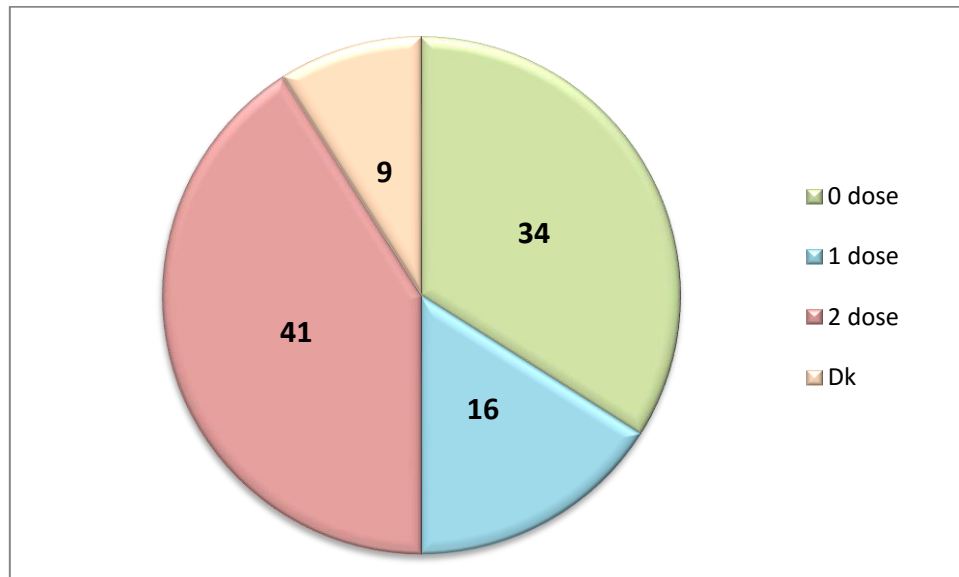
Figure 11: Vaccination status of Rubella Positive cases



Vaccination status of the lab confirmed measles cases in percentage

It is further analysed the vaccination status in laboratory confirmed measles cases. It shows that still majority (41%) of cases received two doses of measles vaccine indicating further testing of these cases for virus characterization.

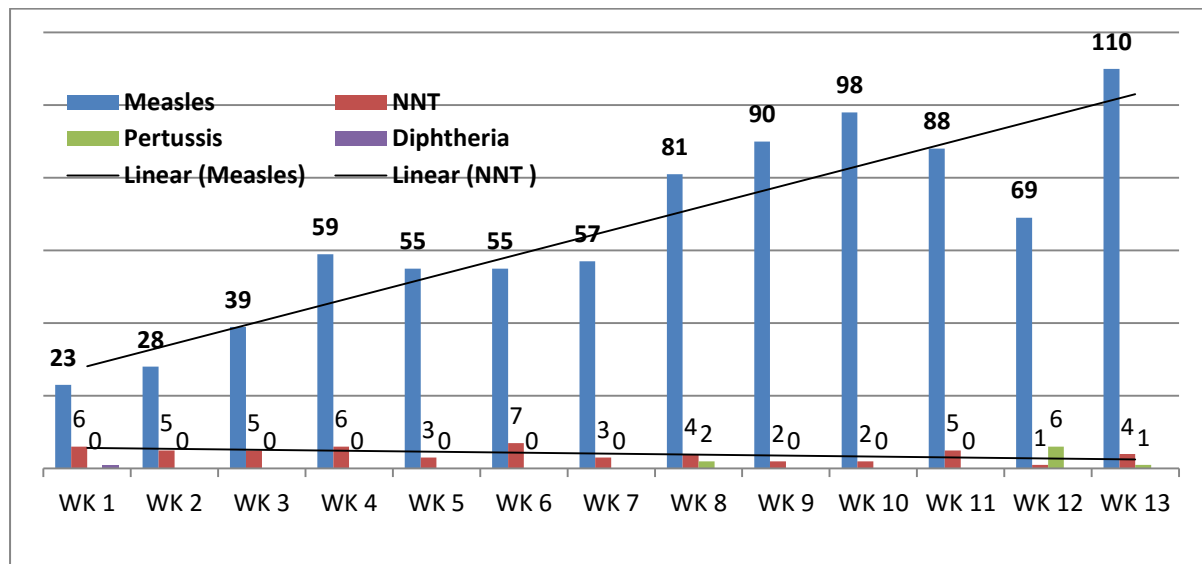
Figure 12: Vaccination status of lab confirmed cases



Province Sindh

Sindh have 1,582 zero reporting sites and 412 active surveillance sites. The weekly reports are received in the provided VPD line list (form B) with 55% timeliness and 89% completeness of reporting. Sindh is facing a measles outbreak despite of measles SIAs just a year back. Following graph shows the trend of VPDs in first quarter of 2016.

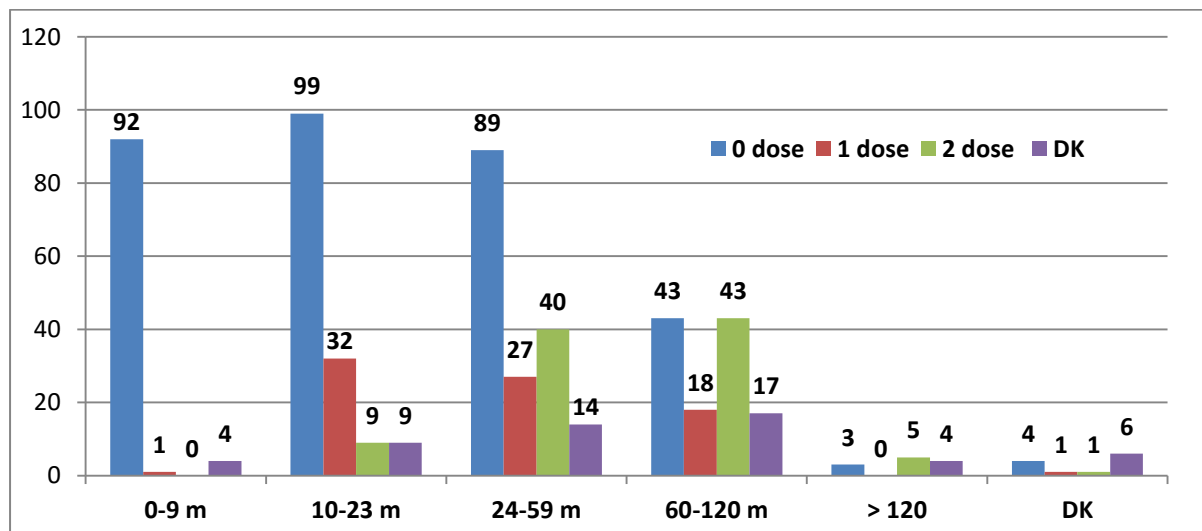
Figure 13: Weekly trend of VPDs in Sindh



Vaccination status of the suspected measles cases with age group

The graph illustrates the vaccination status of the suspected measles cases reported to lab with respect to their age group. It shows that the majority (59%) of cases have not received single dose of measles vaccine and they are between 0-5 years of age.

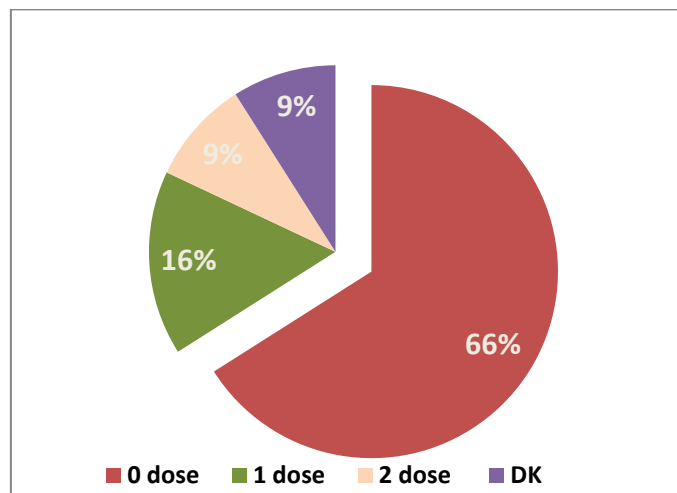
Figure 14: Vaccination status of measles cases with age group



Vaccination status of the lab confirmed measles cases

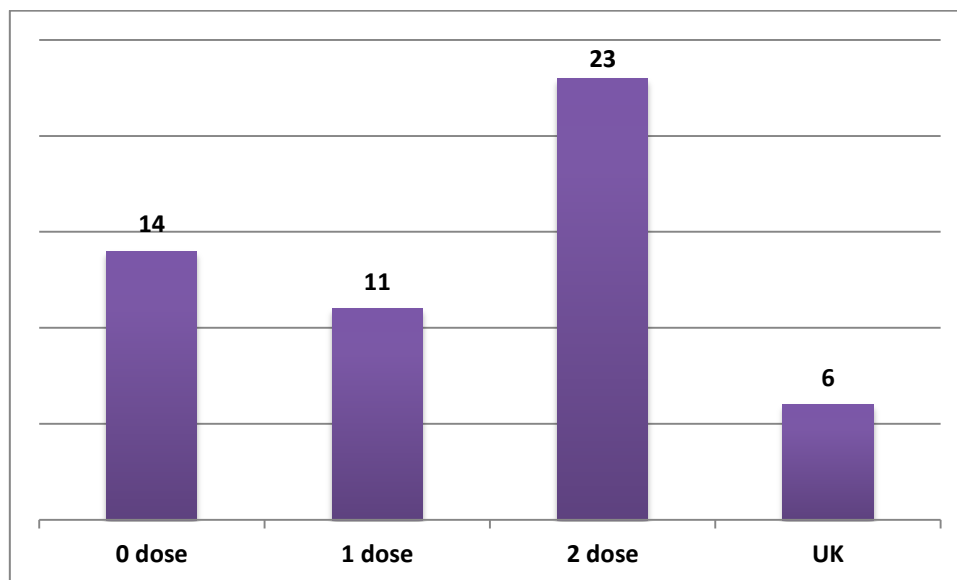
The vaccination status also calculated for the lab confirmed measles cases. It reflects that majority 66% of cases are not vaccinated for measles vaccine.

Figure 15: Vaccination status in lab confirmed cases



Although rubella is not included in routine surveillance, however, those blood samples sent to lab for measles testing were also tested for rubella if measles sample result came out to be negative. The following bar graph shows the vaccination status of the rubella positive cases.

Figure 16: Vaccination status of Rubella Positive cases



The vaccination status of the NNT and Pertussis cases:

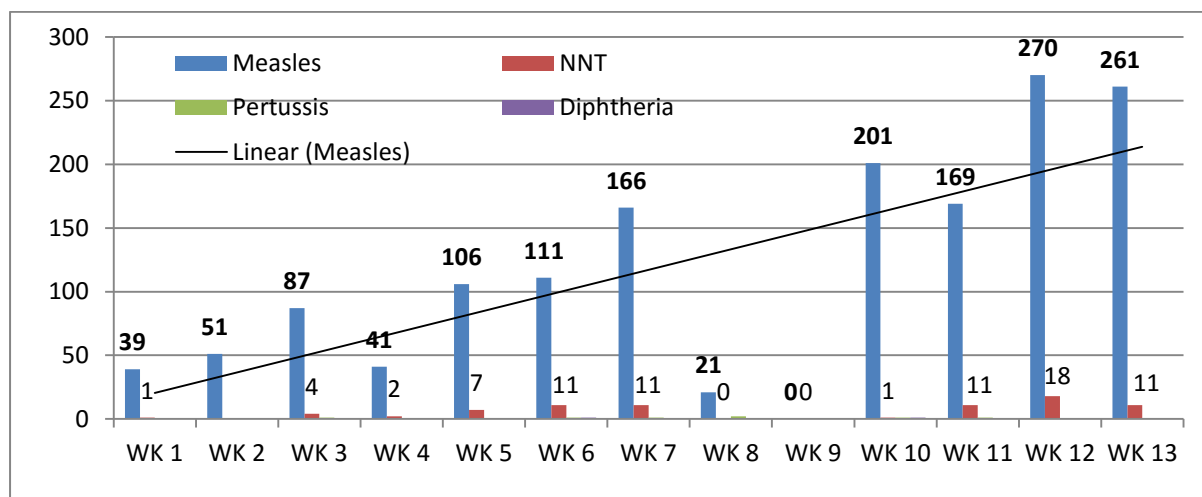
Out of 54 cases of NNT, majority (50%) of the mothers have received two doses of TT vaccine followed by 24% unvaccinated and 17% does not know their vaccination status.

As far as pertussis is concerned, total of 9 cases reported in first quarter, out of these cases, 7 are not vaccinated against any antigen and 2 are partially vaccinated.

Province KPK

Out of 25 districts of KPK, 17 (68%) districts have shared VPD weekly reports on provided format with timeliness of reporting is 60% and completeness is 65% respectively. The following graph showing the trend of VPD cases projecting on measles epidemic with 1523 suspected cases followed by NNT with 77 cases. 7 cases of pertussis and 2 cases of Diphtheria are also notified in first quarter of 2016. No VPD report received in week 9.

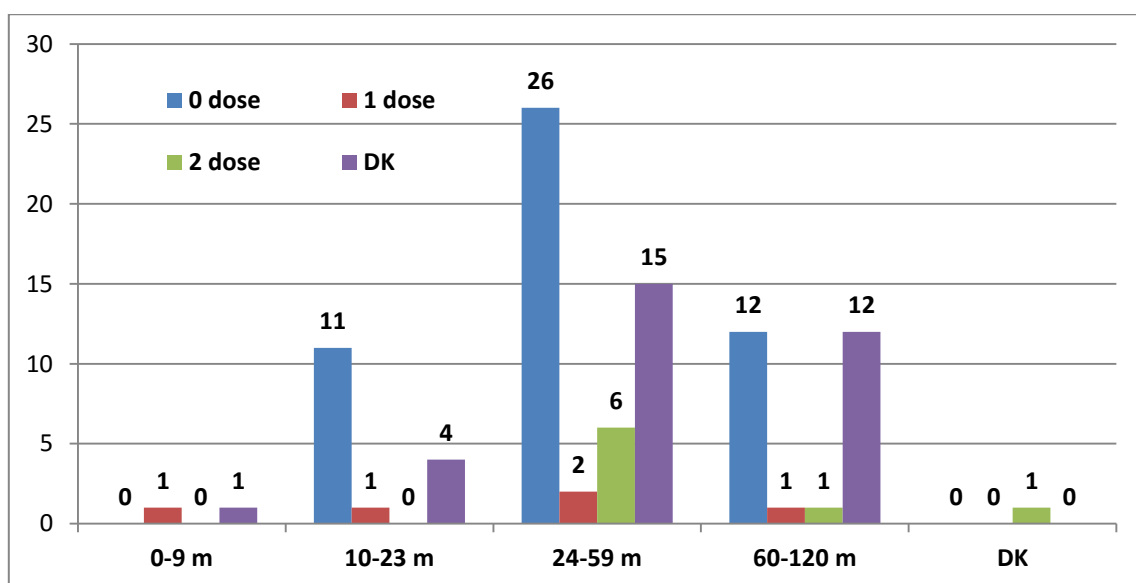
Figure 17: Weekly trend of VPDs in KPK



The vaccination status of measles cases with age group

Figure 18 demonstrates vaccination status of the suspected cases with respect to their age group. These cases are reported in lab for testing. Total of 94 suspected cases reported to lab, out of which 37% of cases are positive. Majority (52%) of the cases did not receive the single dose of measles vaccine followed by 34% who does not know their vaccination status. The most affected age group is 1-10 years of age.

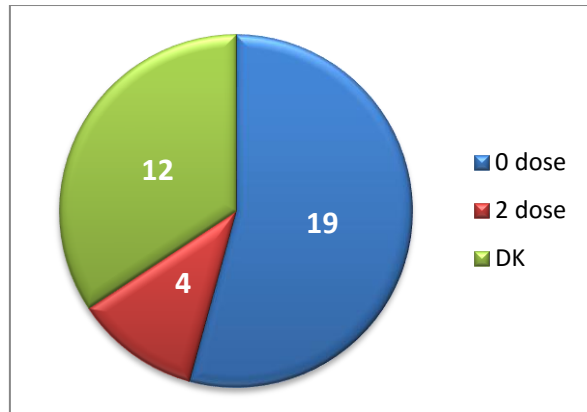
Figure 18: Vaccination status of measles cases with age group



Vaccination status of the lab confirmed cases

It is further analysed the vaccination status in the confirmed measles cases. 19% of confirmed measles cases have zero vaccination status whereas 12% does not know about their vaccination history. Only 4 % of cases have received the 2 doses of measles vaccine. Moreover, 11 rubella confirmed cases are also notified.

Figure 19: Vaccination status of lab confirmed cases



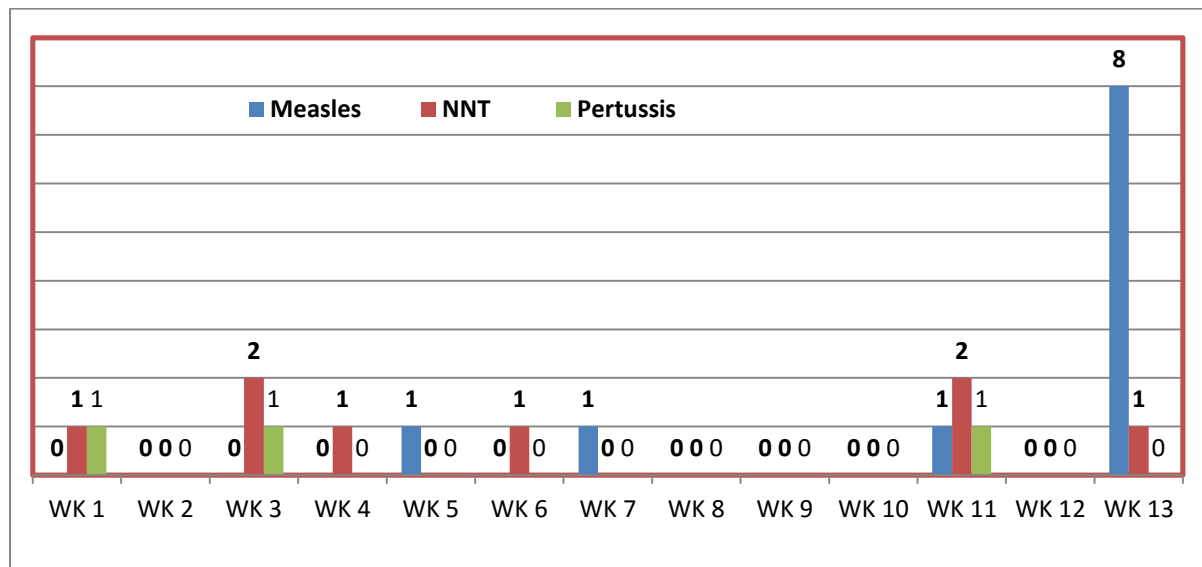
Vaccination status of NNT and Pertussis cases:

The information provided on the vaccination status of NNT in the VPD line list is incomplete. Out of 77 cases, 20 cases have not received any dose of TT vaccine and vaccination status of rest of the cases is not known. The immunization status of Pertussis and Diphtheria is not provided.

Province Balochistan:

Balochistan is comprised of 30 districts with 583 VPD surveillance sites. In first quarter of 2016, VPD cases are notified only from 4 districts. The timeliness of reporting is highly compromised however completeness of reporting is 53%. The following graph shows the weekly trend of VPDs. Total of 11 measles cases are notified followed by NNT and Pertussis with 8 and 3 cases respectively.

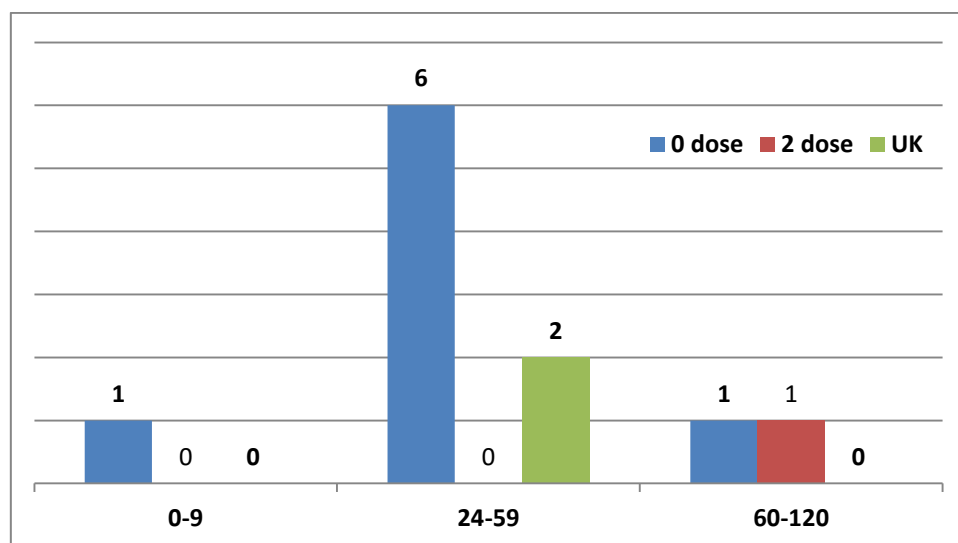
Figure 20: Weekly trend of VPDs in Balochistan



Vaccination status of Suspected Measles cases with respect to the age:

Majority (n=8, 73%) of the cases are not vaccinated against measles. 2 cases did not know their vaccination status and only one case received 2 doses of measles vaccine. No blood sample was collected from the cases. 1 cross notified lab confirmed case was reported from NICH Karachi who went for his treatment from Lasbella, Balochistan.

Figure 21: Vaccination status with age group



Vaccination status of NNT and Pertussis cases:

Mothers of NNT cases were not vaccinated for TT vaccine. 1 out of 3 cases of pertussis was vaccinated.

Sentinel Surveillance (SS)

Surveillance activities were established at 5 surveillance sites in different geographic areas of Pakistan. The sites were chosen to be geographically representative, have the necessary institutional capability, and a mix of public sector and private sector facilities. These surveillance sites are as follows;

- National Institute of Child Health, Karachi (NICH)
- Kharadar General Hospital, Karachi (KGH) – Trust Hospital
- Children’s Hospital, Lahore
- Mayo Hospital Lahore
- Benazir Bhutto Hospital (BBH)

These sites have strong Collaboration with Aga Khan University (AKU), Pakistan EPI, and Pakistan Medical Research Council (PMRC). Initial agreement was made for overall coordination, quality assurance, and molecular characterization by AKU for initial 2 years and then turn-over to Pakistan EPI and NIH.

Following diseases are included to report at the sentinel sites.

- Pneumonia
- Rota virus diarrheal disease
- Meningitis

SS Analysis report of first quarter 2016:

Pneumonia:

Out of 5 SS, only 3 SS shared report for the month of Jan 2016, data for other two months are not received so far by Federal EPI.

Table 1: Proportion of positive Pneumonia cases

Name of SS	No. of suspected cases	Number of samples tested	Number of samples positive	% of positive cases
Children Hospital	18	15	1	7
Mayo hospital	66	66	8	12
NICH	127	0	0	0
Total	211	81	9	11

The CSF of the suspected pneumonia cases were also tested in SS. 21 CSF samples were tested however, none of them found positive.

Rota virus diarrheal disease:

4 out of 5 SS reported for rota virus, 2 SS NICH and Children hospital have shared the complete reports however, RGH shared the report for 2 months whereas Mayo hospital shared report for only one month.

Table 2: Proportion of positive rota virus cases

Name of SS	No. of suspected cases	Number of samples tested	Number of samples positive	% of positive cases
Children Hospital	148	148	35	24
RGH	68	68	28	41
NICH	150	60	10	17
Mayo hospital	15	15	1	7
Total	381	291	74	25

Recommendations:

1. Accuracy and accountability of reporting is mandatory. This could be achieved by regular monitoring visits to VPD reporting sites for validation of reports by District Surveillance Coordinators (DSCs).
2. A proper feedback mechanism should be set up at all levels i.e. District team should provide regular feedback to facility staff, whereas provincial team should send feedback to the District on weekly basis on the provided reports. This would also facilitate in improvement of surveillance indicators.
3. Monthly meetings with DSCs at provincial level.
4. Collection of blood samples and throat swabs from suspected measles cases is recommended for confirmation and virus characterization. At least 5 throat swabs should be collected from each measles outbreak.
5. Coordination with NIH lab to incorporate the confirmed VPD cases while compilation of report.
6. Referred cases should be timely cross notified so field investigation and response should be carried out at parent district.
7. Mop up activities is required for the control of measles and NNT.