

## **Original article**

### **Data Validation of Immunization under RCH Programme among Poor Performing Blocks of Surat District**

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#### **Abstract**

**Introduction:** Effective systems for monitoring progress and outcomes are critical for all programme implementation. Community, District and National levels all require appropriate information for decision-making. Information systems on coverage of interventions can serve as a powerful evidence-based tool for programming.

**Objective:** To assess the availability, accessibility, utilization and effective coverage for Immunization services of Reproductive Child Health programme among poor performing blocks of Surat district.

**Methods:** Cross Sectional study with unit 10 PHCs and from each PHC two sub centre villages were selected randomly in Surat District.

**Results:** All vaccine availability at studied PHCs was 99%. Accessibility of UIP vaccines during monthly Immunization session was 96.4%. First, DPT1 coverage at individual PHC was averaged 112.4%. Adequate coverage of fully vaccinated children at individual PHC was averaged 114%. Effective coverage for immunization at 20 sub center was 88.9%.

**Key Words:** Data Validation, Immunization

#### **Introduction:**

Under RCH-II programme, the Government of Gujarat (GOG) is making every effort to improve the quality of health services in rural areas. Therefore, it becomes essential to understand the current status by evaluating important components of Reproductive Child Health activities. It is with this background, this exercise was carried out to assess the

status of Reproductive Child Health programme among poor performing blocks of Surat district.

This study was carried out to strengthen the RCH activities by validating PHC records. The tool for validation used in this study was based on Modified John Hopkins monitoring steps – Availability, Accessibility, Utilization, Adequate Coverage and Effective Coverage; incorporating the BDCS strategy (Border District Cluster Strategy).<sup>1</sup>

#### **Materials and Methods**

##### **Methodology:**

The study was planned in the poor performing blocks of Surat District as per the 2010 RCH Programme Report of Surat District. Two blocks were poor performing (Full Immunization coverage less than 70%) as per RCH programme report of Surat district. Validation activity was done in 10 poor performing PHCs of Bardoli (6 PHCs) and Mangrol (4 PHCs) block of Surat district.

**Sample Size:** 10 PHCs and from each PHC two sub centre villages were selected randomly from Bardoli and Mangrol block of Surat district.

**a) Data collecting teams:** Each PHC was visited by a team of 4 Members (Assistant Professor as team leader and three faculties/ resident doctors) from the department of Community Medicine, GMC, Surat. Two members validated the PHC data while the other members covered the Sub centre for data validation and collection. Thus, one unit was covered in one day. The field investigators were trained for collection of quality data and adherence to the uniform guidelines for data collection.

**b) Data Collection:** Total 5 teams were formed and they validated one PHC per day. So total 2 days field work was carried out (10 PHCs). Standard prescribed format (Modified Johns Hopkins) was used for data collection. Sub centre and PHC villages were surveyed for data validation. Team picked adequate numbers of beneficiaries (at least 3) for each of the intervention to be verified. Thus, exercise was carried out in 10 PHCs, 20 Sub Centre villages and 60 beneficiaries for each intervention.

**c) Study tool:** Modified Johns Hopkins Module was used for data collection separately at PHC, Sub centre and village level.<sup>1</sup>

**d) Data Analysis:** Reference period for data collection was decided from 1<sup>st</sup> March 2010 to 28<sup>th</sup> February 2011. Data once collected was entered and analyzed in MS Excel as per guidelines of Modified John Hopkins criteria.

**Results:**

This validation exercise was carried out in poor performing 10 PHCs (Primary Health Centre) of two blocks of Surat district to strengthen RCH activities. The data was collected for the reference period 1st March 2010 to 28<sup>th</sup> February 2011. The following indicators of Surat district were used throughout in this exercise:

**Birth Rate-** 16.83 per 1000 live births <sup>3</sup>

**Infant Mortality Rate-** 16.08 per 1000 live births

**Proportion of home deliveries by untrained birth attendant-** 0.45(Factor)

Cumulative number of children born during the reference period in the PHC area was taken as target population for the service of immunization and district Crude Birth Rate (CBR) was used to calculate the target population.

**1. Availability**

This is defined as percentage of week vaccines were available in adequate quantity during the reference period. Thus it is checked for the **periodicity** and

**adequacy** at the place for which the item is supplied, i.e. vaccines were checked when it reached PHC.

Availability of all vaccines including Hepatitis B vaccine and excluding Hepatitis B vaccine was calculated separately, as Surat district is one of the pilot districts in the country where Hepatitis B immunization was introduced as a part of routine immunization.

Availability was calculated for individual PHC by measuring periodicity and adequacy of vaccines at PHC. **Periodicity** was calculated as percentage of weeks when all vaccines were available during the reference period. While **adequacy** was calculated by cumulating the total number of doses received for each of the vaccines and then it was assessed against the required quantity for the reference period. District estimates for availability were calculated by doing average of figures of individual PHCs in percentage.

Table 1 District estimates for availability of Immunization

Availability	Percentage
All vaccines (Including Hepatitis B vaccine)	99.0%
All vaccines (Excluding Hepatitis B vaccine)	99.0%

**2. Accessibility**

This is defined as the geographical reach of the services for practical purpose. At some point of time one need to start looking at socio-economic consideration of access to services. According to National UIP guidelines, every village should have a monthly immunization session. During this study, for assessment of accessibility three categories of inhabitations (including hamlets) were included in the numerator:

**Category-a:** Inhabitation with more than 1000 population having at least one monthly immunization session.

**Category-b:** Inhabitation with less than 1000 population and within 1 mile distance from monthly immunization site

**Category-c:** Inhabitation with less than 1000 population but more than 1 mile away from monthly immunization site having at least quarterly immunization sessions or four session in succession during the period of easy accessibility.

District estimate for accessibility was calculated by doing average of figures of individual Sub centres in percentage. The value obtained in this exercise was 96.4% for the Surat district.

### 3. Utilization

The initiation of service, i.e. DPT1 was taken as the utilization for immunization.

Adjusted utilization for district was calculated in 3 steps:

- 1) First, DPT1 coverage at individual PHC was averaged. It was 112.4% for immunization.
- 2) Then, Correction factor was calculated in two stages from validation at Sub Centre. First, by validation of entries reported in form-6 for number of children received DPT1 from their registers at Sub Centre and secondly by validation of actual service received in the field. Thus the value of Correction factor during this exercise obtained was 1.0.
- 3) Finally, the averaged DPT1 coverage was multiplied by correction factor to get adjusted utilization for district. The adjusted Utilization for Surat district calculated was 112.4%

### 4. Adequate coverage

It indicates the continuity and complete utilization of services. For immunization, adequate coverage was taken as the percentage of children fully vaccinated by the first birthday.

Adjusted adequate coverage for district was calculated in 3 steps:

- 1) First, coverage of fully vaccinated children at individual PHC was averaged. It was 114% for immunization.
- 2) Then, Correction factor was calculated in two stages from validation at Sub Centre. First, by validation of entries reported in form-6 for number of children fully vaccinated from their registers at Sub Centre and secondly by validation of actual service received in the field. Thus the correction factor obtained was 0.78.

Finally, the averaged coverage for fully vaccinated children was multiplied by correction factor to get adjusted adequate coverage for district. The value obtained was 88.9%.

### 5. Effective coverage

It indicates the quality of services. Quality includes skills of the health worker to do the task in desired way. For monitoring, effective coverage for immunization was taken as the percentage of children fully vaccinated before first birthday by the health workers who maintain cold chain for vaccine and practices injection safety. This was calculated for district level based on assessment of 20 Sub centres.

Adjusted effective coverage for district was calculated by multiplying Correction factor for quality, which was 1 and adjusted adequate coverage which was 88.9% as calculated above. Thus the adjusted effective coverage obtained was 88.9%.

### Discussion

Availability of all vaccines including Hepatitis B vaccine and excluding Hepatitis B vaccine was calculated separately and it was 99.0% for both indicators. Data validation report 2006 reported the availability of all vaccines including Hepatitis B vaccine was 77.0% and excluding Hepatitis B vaccine was 82.5%.<sup>4</sup>

Accessibility estimates by this study was 96.4% as calculated by doing average of figures of individual Sub centres. Previous data validation of Surat District estimated 97.5% accessibility by doing average of figures of individual Sub centres.<sup>4</sup>

DPT1 coverage at individual PHC was averaged 112.44%. After calculation of correction factor 1.0, the adjusted DPT1 coverage was 112.44% in this study. Previous data validation of Surat District reported DPT1 coverage of 115.1 % and with correction factor of 0.84 the adjusted DPT1 coverage of 96.4%.<sup>4</sup> MICS 2006 of Surat District<sup>5</sup> reported DPT1 coverage of 92.3% and MICS 2011 of Surat District<sup>6</sup> 97.0%.

This study showed coverage of fully vaccinated children of 114% at individual PHC. After calculation of correction factor with 0.78 the adjusted adequate coverage for district was 88.92%. Previous data validation of Surat District reported fully vaccinated children at individual PHC was **110.1%** and with correction factor of 0.75 the adjusted adequate coverage was 83.1%.<sup>4</sup> MICS 2006 of Surat District<sup>5</sup> reported fully vaccinated children of 75.8%% and MICS 2011 of Surat District<sup>6</sup> 91.7%.

This study find out the adjusted effective coverage for district was calculated by multiplying Correction factor for quality, which was 1 and adjusted adequate coverage which was 88.92%. Previous data validation of Surat District reported the adjusted adequate coverage of 83.1%.<sup>4</sup> So, Validation of data with the Modified John Hopkins methodology leads to find out the effective coverage of Various RCH indicators.

Effective coverage is the crux of indicator instead of reported coverage. As this study was conducted in poor performing blocks of Surat district in terms of immunization indicator, we found that effective coverage rate of 88.9%.

**Limitation of study :** Surat district indicators like CBR, IMR and Proportion of home deliveries were used as baseline data for calculation of availability, accessibility, utilization, adequate coverage and effective coverage of Immunization for poor performing blocks of Surat district which may not be same for poor performing blocks of Surat district.

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