September 2015

# Pre - emptive Oral Cholera Vaccination in High Risk areas of Nuwakot and Dhading Districts of Nepal

**Final Report**

Epidemiology and Disease Control Division
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Ministry of Health and Population
Teku, Kathmandu

**Supporting Partners:**

unicef

World Health Organization

## Foreword

Cholera outbreaks may occur following natural disasters where there is a breakdown of water and sanitation infrastructure. In parallel with timely case management, access to potable water, food hygiene, adequate sanitation and community engagement, the World Health Organization recommends that oral cholera vaccination should be considered in humanitarian crisis where there is a high risk of cholera or as part of a response to a cholera outbreak (1)

Various interventions on Water, Sanitation and Hygiene (WASH) and health promotion have been implemented in order to address the problem of cholera outbreaks in the country. However, such interventions have not completely succeeded in eliminating the disease as outbreaks of the disease have continued to occur. Bearing in mind that multiple integrated interventions are needed to deal with the problem of cholera outbreaks worldwide, the World Health Organization (WHO) prequalified oral cholera vaccine (OCV) Shanchol is one of the tools at our disposal in the fight against the disease. The vaccine has shown 86.6% effectiveness after 2 doses, and is known to offer 65% protection to an individual for a period of up to 5 years.

To enhance the government of Nepal's effort in the prevention and control of cholera - the International Vaccine Institute (IVI), UNICEF country office – Nepal and Group for Technical Assistance (GTA) supported the Ministry of Health to conduct a mass vaccination campaign administering OCV to people internally displaced by floods living in camps and surrounding communities in Nuwakot and Dhading districts.

This report highlights planning, implementation and the lesson learnt from the OCV campaign that took place in Nuwakot and Dhading districts in August and Sept 2015 targeting a population of 10,084 individuals aged one year and above.

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## Acknowledgements

The oral cholera vaccination campaign was implemented with the assistance of WHO, UNICEF Country Office, Nepal, International Vaccine Institute (IVI), John Hopkins University (JHU) and Group for Technical Assistance (GTA) Nepal through the Epidemiology and Diseases Control Division (EDCD) at the Ministry of Health & Population –Nepal. Above all, the field implementation of this campaign was led by District Health Offices – Nuwakot and Dhading on close coordination with active involvement of all health workers and members of health management committees in targeted villages.

The Department of Health Services would like to express its appreciation for the financial and technical support it has received from UNICEF Country Office, Nepal, International Vaccine Institute (IVI), John Hopkins University (JHU) and Group for Technical Assistance (GTA) Nepal.

The Department would also like to acknowledge the effort and dedication that were shown by the team that worked tirelessly to implement the campaign in the field.

We express our gratitude to honourable Health and Population Minister Khag Raj Adhikari for launching the ocv campaign.

Finally we also acknowledge for the support received from Rotary Club of Nagarjuna, Kathmandu, Nepal for social mobilization activities and Action Contre La Faim (ACF), Nepal for providing support for WASH activities during vaccination campaign.

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## Acronyms

| | |
|---|---|
| AEFI | Adverse Events Following Immunization |
| DoHS | Department of Health Services |
| EDCD | Epidemiology and Disease Control Division |
| GTA | Group for Technical Assistance |
| IEC | Information Education and Communication |
| IVI | International Vaccine Institute |
| JHU | Johns Hopkins University |
| MOHP | Ministry of Health and Population |
| OCV | Oral Cholera Vaccine |
| UNICEF | United Nations Children's Fund |
| WHO | World Health Organization |

## Executive Summary

An oral cholera vaccine (OCV) campaign took place as a complementary measure to improved water, sanitation, and hygiene and health promotion in selected high risk villages for cholera outbreak in Nuwakot and Dhading. The vaccination campaign was conducted in two rounds. The first round started on 8th August through 12th August 2015 (house to house visit: 11th-12th August 2015) and the second round took place between 30th August through 3rd Sept 2015 (mop-up: 2nd - 3rd Sept 2015).

The campaign targeted a population of 10,084 aged one year and above in camps of internally displaced persons (IDPs) due to recent earthquake in one cluter and another cluster of villages considered to be at high risk of possible cholera outbreaks. Given the fact that OCV requires two doses, we utilized 21000 doses which were already in stock with Government of Nepal.

This vaccination campaign was organized with active mobilization of Female Community Health Volunteers (FCHVs) at various vaccination sites. Tally sheets, daily summary sheets and adverse events following immunization (AEFI) reporting forms were used to record data at each vaccination site and respective health facilities.

During the first round 10540 people out of 10,084 targeted were vaccinated (100.5 % coverage). During the second round 10112 people received the vaccine out of 10540 (96 % coverage). In overall, the coverage was satisfactory with percentage of those taking two doses was 95 %. There was no issue with taste of the vaccine and was not considered any barrier to its acceptance in the community.

The campaign will set a basis for future prevention and control plans to eliminate cholera and documentation and publication of the lessons learned.

## 1. Background

Cholera is an acute diarrhoeal disease caused by ingestion of food or water contaminated with the bacterium *Vibrio cholerae*. Every year, there are an estimated 3–5 million cholera cases and 100 000 – 120 000 deaths due to cholera. The short incubation period of two hours to five days, enhances the potentially explosive pattern of outbreaks. Since 1800 A.D., cholera has spread through the world in seven pandemics. The seventh pandemic began in Indonesia in 1961, and reached Africa in 1970. The disease results in significant morbidity and mortality in populations with lack or inadequate access to safe drinking water, and sanitation. Man-made and natural disaster can further aggravate the risk of epidemics considerably. For example, in the aftermath of the Rwanda civil unrest in 1994, outbreaks of cholera caused at least 48,000 cases and 23,800 deaths within a month in the refugee camps in Goma, the Democratic Republic of the Congo. Similarly, there was huge cholera outbreak following the major earthquake in Haiti. This outbreak killed more than 10, 000 people and affected millions of Haiti residents. The cholera outbreak occurred after 9 months following the occurrence of the Earthquake and took years to control the outbreak effectively.

### 1.1 Cholera in Nepal

Cholera has existed in Nepal for a long time. The first recorded cholera epidemic took place in 1823, followed by a series of epidemics occurring in the Kathmandu Valley in 1831, 1843, 1856, 1862, and 1887. After early 1990s, there were increasing numbers of laboratory-based surveillance or outbreak reports published in Nepal. These studies show that *Vibrio cholerae* 01 El Tor Ogawa is endemic in Nepal. It is seasonal in nature with most cases reported during and after the monsoon season, which starts in June and usually ends by October. The largest cholera outbreak reported in Nepal, with more than 30,000 people affected, was in Jajarkot in the Mid-West region in 2009. Tragically, more than 500 people lost their life. More recently, during the 2014 monsoon, a cholera outbreak was reported in Rautahat district in the Terai region adjoining northern states of India. The outbreak, during which more than 600 people were affected, was laboratory confirmed to be cholera. However, it is generally understood

that there is under reporting of cholera because of inadequate or lack of robust surveillance covering all part of the country.

Almost every year, there are reports of cholera outbreaks from rural and urban locales, including parts of the country that are remote and difficult to access, compromised water, sanitation and hygiene condition. There is a pattern of regular outbreak reported from hill districts of the mid-western and far western development regions.. Following natural disasters like flooding, landslide and Earthquake, there can occur destruction and disruption of infrastructure including water supply, sanitation and hygiene with displacement of population to temporary settlements or camps. This situation increases the risk of communicable diseases outbreaks including cholera.

**1.2 Post – earthquake situation 2015 and risk of cholera outbreak**

The recent earthquake on 25th April 2015 and repeated aftershocks therafter severely affected a population of about 5.3 million in 13 districts. According to most updated government figures dated …., 488,579 houses were destroyed and 260,026 damaged. The water resources for about 660,000 to 1.3 million people were damaged and between 850,000 to 1.7 million needed sanitation support. Out of 5.3 million people in these 14 affected districts, 2.7 million were displaced and were at an increased risk for cholera.

WHO/UNICEF/IOM and Department of Health Services with technical supports from IVI/JHU/Nagasaki University/GTA conducted two separate risk assessments of possible cholera outbreak in 13 highly earth quake affected districts. Based on these assessment findings, Government of Nepal (GON) identified 43 Village Development Committee (VDCs) of 4 districts (Sindhupalchok, Gorkha, Nuwakot and Dhading) as high risk for potential cholera outbreak. The risk is still increased in the background of upcoming monsoon. Based on the above assessments, the national steering committee on control of enteric diseases decided to intensify comprehensive cholera prevention and control program that include improvement of water, sanitation and hygiene status as a primary intervention in high risk villages. The committee also decided to use oral cholera vaccine in high risk villages of highly affected

districts from the existing OCV stockpile (21000 doses) which was leftover from 2014 outbreak response in Rautahat district.

## 2. Prioritization of VDCs for OCV vaccination:

The Government of Nepal (GON) through EDCD and other key departments have put every effort into reaching the communities with Water Sanitation and Hygiene (WASH) strategy along with safe, affordable and efficacious cholera vaccine in high risk areas which fulfil the following criteria:

1. The whole village displaced due to the recent Earthquakes e.g. landslides / crack in the villages
2. No good source of drinking water
3. Poor hygiene and sanitation status
4. Poor access to health facilities and preparedness for service delivery
5. Availability of OCV

Based on the above criteria, three VDCs (Okharpauwa, Chauthe and Okharpauwa) in Okharpauwa cluster were selected. These villages surround the main waste dumping site of whole Kathmandu valley with repeated history of acute watery diarrhea. Another cluster was the Bidur cluster that includes two VDCs (Manakamana and Gerkhu) and ward number one of Bidur Municipality were selected for OCV vaccination in conjunction with WaSH measures. In particular, the Bidur cluster includes temporary settlement from neighbouring villages.

## 3. Target population and vaccination sites

All population above one year living in targeted areas of selected VDCs in Nuwakot and Dhading. The total target population for OCV vaccination was 10486 (Table 1). This target population was identified through the conduct of line listing done by health workers and volunteers before the campaign.

Table 1 Information on targeted wards and villages with target population in Nuwakot and Dhading

| Cluster | District | Village (V)/ Muni (M) | Ward Number | Target pop. |
|---|---|---|---|---|
| Cluster A | Nuwakot | Chhauthe V | 4, 5 | **1,290** |
| | Dhading | Chhatredeurali V | 6, 8, 9 | **1,800** |
| | Nuwakot | Okharpauwa V | 4,5,7,8, 9 | **4243** |
| **Sub-Total 1** | | | | **7333** |
| Cluster B | Nuwakot | Manakamana V | 8, 9 | **1148** |
| | Nuwakot | Bidur M | 1 | **731** |
| | Nuwakot | Gerkhu V | 9 | **1274** |
| **Sub-Total 2** | | | | **3153** |
| **Grand Total(1+2)** | | | | **10486** |

## 4. Date of Vaccination

The first round started on 8th through 12th August 2015 (house to house visit: 11th-12th August 2015) while the second round was started on 30thAugust through 3rd September, 2015 (house to house visit: 2nd - 3rd September, 2015).

## 5. The objectives of the Campaign:

- To vaccinate at least 90 % of targeted population of selected VDCs of Nuwakot and Dhading.
- To document lessons learnt in mass oral cholera vaccination

## 6. Oral Cholera Vaccination Campaign Strategy:

The vaccination campaign was implemented using existing immunization system of Ministry of Health and Population. Based on local micro planning, there was at least one vaccination booth in each ward. If there was only one booth in a ward, the existing routine immunization booth was used for the vaccination, while **i**f there were more than one booth per ward, the previously established polio campaign booth was used. The vaccination was provided by two trained vaccinators (preferably FCHVs) and if number of FCHV is inadequate then local volunteer were

trained and mobilized as a vaccinator. The local health workers provided supervisory support to vaccinators.

At the district level, the cholera vaccination campaign was implemented with the effective leadership of district health office in close coordination with other key district level local partners engaged in the public health activities and technical support from central level.

The vaccination campaign was conducted for five days in each round. The first three days were booth based and the remaining two day were house to house search and vaccination.

## 6. The Oral Cholera Vaccine (ShancholTM):

Shanchol™ is one of the oral cholera vaccines prequalified by WHO. It is a bivalent whole cell killed oral cholera vaccine with an efficacy of 65% at five years (Figure 1).

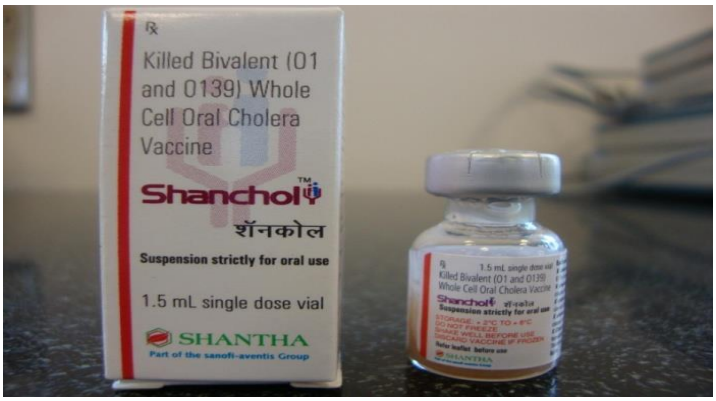



Figure 1 Oral Cholera VaccineShanchol™)

**7.1. Vaccine Schedule:** The vaccine is administered in two doses with an interval between 2 to 6 weeks.

**7.2. Dosage and Administration:** Shanchol$^{TM}$ Cholera vaccine must be administered orally;it should never be given parenterally.

**7.3. Vaccine Presentation:** It is packed in a glass bottle of 1.5ml in single dose.

**7.4. Vaccine Storage and Transport:** Cholera vaccine (Shanchol$^{TM}$) should be kept and transported at 2-8$^{0}$C. Shanchol stability data is classified as VVM type 14 (14 days at 37 degrees Celsius)

## 8. Implementation activities

### 8.1. Preparatory activities:

There were several advocacy, planning and training activities conducted at central, district and village level. Furthermore, a time sheet of events was produced and followed during the preparations of the campaign (Appendix 1)

#### 8.1.1. Central level

a) Meetings of National Steering committee for Enteric Disease control: The meetings were lead by Director General, Department of health services with the participation of relevant stakeholders. Based on the finding of risk assessment of post Earthquake situation for potential cholera outbreak, the committee decided for preventive vaccination in conjunction with WaSH activities in high risk areas of Earthquake affected areas. There was participation in the meeting by all key government officials, WHO, UNICEF, IVI, JHU, GTA and other relevant stakeholders.

b) Central level Planning Meeting: This meeting was conducted with participation of EDCD, DHO, IVI, GTA .The meeting finalized the strategy for vaccination, target population and plan the activities with timelines.

c) Finalization of Guidelines and IEC materials: There was a technical group to develop and finalize the vaccination guideline and also prepare IEC materials required for the successful social mobilization activities.

### 8.1.2. District level

District Micro-planning workshop: This workshop was conducted to develop the micro-plan as in other previous campaigns like in Polio or Measles Rubella (MR) campaign. This meeting focused on the mapping for the villages with all socio - demographic and required information for vaccination micro plan. Based on information available, the detailed micro plan for each target areas was developed using the planning templates in the annexes 2.

District Health cluster meeting: This committee included all the relevant stakeholders like health / WASH and key local development partners. The key responsibility of the cluster was for planning and implementation of post disaster relief activities including disease outbreaks.

Distribution of vaccines, IEC materials and other logistics to villages: The most important part of the campaign was the timely and efficient distribution of vaccine along with other logistics at the booth level and was done according to the microplan as in Annexes 2.

Performance review of First round and planning for 2$^{nd}$ round: This meeting was conducted to review the performance of the first round and SWOT analysis was shared by each health facility incharge. This review was very effective to improve the performance of the second round by correcting the gaps in first round.

### 8.1.3. Village level

a) VDC planning and FCHVs/volunteers orientation: The orientation meeting was conducted using the implementation guideline and the micro-planning was conducted using designed templates as in Annex 3. This meeting was participated by FCHVs, Volunteer and local health workers. The FCHV orientation was conducted by practical exercise on how to manage booths, social mobilization activities and recording reporting functions.

b) Health facility management committee (HFMC) orientation and advocacy meetings: This orientation of the campaign was given to HFMC members and implementation modality of the vaccination campaign was shared and a work plan was developed with the clear responsibilities assigned to them especially for social mobilization activities.

c) Advocacy with schools: The orientation of the campaign was given to school teachers of the target areas. The posters were displayed and pamphlets were distributed in the school (Annex 6)

#### 8.1.4. Social mobilization

The messages for social mobilization activities for the OCV campaign were to ensure the target population are fully aware about risk of cholera and the importance of the vaccination. The main messages for campaign were as follows:

| | Messages |
|---|---|
| **Why** | OCV is effective in preventing cholera, when combined with clean water, sanitation, and hygiene interventions, rates of diarrheal disease can be drastically reduced in entire communities. |
| **Who** | Everyone aged 1 year and above |
| **When & Where** | Date, Time and place of designated vaccination booths and needs for 2 doses to be given 2 weeks apart. |

### 8.1.2. Vaccination team and composition

A total of 28 vaccinators in the first round and 32 in the second round were mobilized during this vaccination. Each team comprised of at least 2 members (1 vaccinator, 1 volunteer) plus an area supervisor who was mostly a Health Assistant (HA) or senior auxiliary nursing midwife or senior auxiliary health workers. Table 2 below shows the roles and responsibilities of supervisors, vaccinators and volunteers.

**Table 2: Roles and responsibilities of supervisors, vaccinators and volunteers**

| Phases | Roles of vaccinators / volunteers | Roles of site supervisor |
|---|---|---|
| **Prevaccination** | ➢ Arrive at the vaccination booth in time<br>➢ Prepare and ensure the vaccination booth is well organized in terms of site and arrangement<br>➢ Display the banner in the booth which should be easily visible to clients coming from every direction<br>➢ Assign roles and responsibilities among the vaccinators and other local volunteers<br>➢ Keep all the logistics in proper places so the vaccination activities run smoothly<br>➢ Take local support for control of crowd.<br>➢ Once vaccine is used, put the used vials into plastic bags while the removed aluminium foil into another plastic bag.<br>➢ Ensure tallying after vaccination and ensures that all clients are properly entered in the respective age group of the tally sheet<br>➢ Inform vaccinees and mother / caretaker of children to report to vaccinator at the vaccination booth for immediate AEFIs or to health workers at nearest health facilities if any AEFIs occur later.<br>➢ Remind caretaker and individual to | ➢ Ensures the vaccination booth is well organized in term of site and arrangement<br>➢ Supervises support staff and ensures they are clear on their roles and responsibilities<br>➢ Ensures all required furniture and equipment are in place each day of the campaign including vaccine and logistics<br>➢ Ensures cold chain is maintained and proactive use of Vaccine Vial Monitor (VVM)<br>➢ Ensures that tally sheets are properly entered for each client<br>➢ Calculates daily vaccine wastage and coverage<br>➢ Ensures all equipment, tally sheets and balance of vaccines are returned to the distribution centre after the completion of |

| | | |
|---|---|---|
| | come for the second dose | campaign.<br>➢ Ensures the collected wasters are transported to designated disposal site<br>➢ Answer questions from the waiting clients<br>➢ Review overall performance in daily basis with vaccinators to improve for next day |
| **During Vaccination** | ➢ Checks age of the vaccinee<br>➢ Take out the vaccine vial from the vaccine carrier<br>➢ Ensure cold chain is maintained and also check carefully the Vaccine Vial Monitor (VVM) status, expiry date and physical status. | |
| **Post vaccination** | ➢ Dispose the collected waste with the used vial.<br>➢ Return unused vaccine with proper cold chain maintenance<br>➢ Collect used and remaining tally sheets and forceps for next day<br>➢ Calculate daily coverage and vaccine wastage and report to supervisor<br>➢ Review overall performance in daily basis to improve for next day | |

**8.1.3. Site organization and supervision:**

The supervision and monitoring of the campaign was done at different level using the checklist developed as in Annex 6. At the VDC level, the local health workers supervised vaccinators. The district supervisors also supervised their assigned villages. The supervisors from the central level provided supervisory support to the districts and VDCs. The vaccination teams were supervised on daily basis using a standard checklist and checking the tally sheets (Annex 8) and tracking the daily coverage. Importantly, the local supervisors along with district supervisors conducted evening meetings to review the performance of the day and address challenges / issues identified or reported.

**8.1.4. Vaccine transportation:**

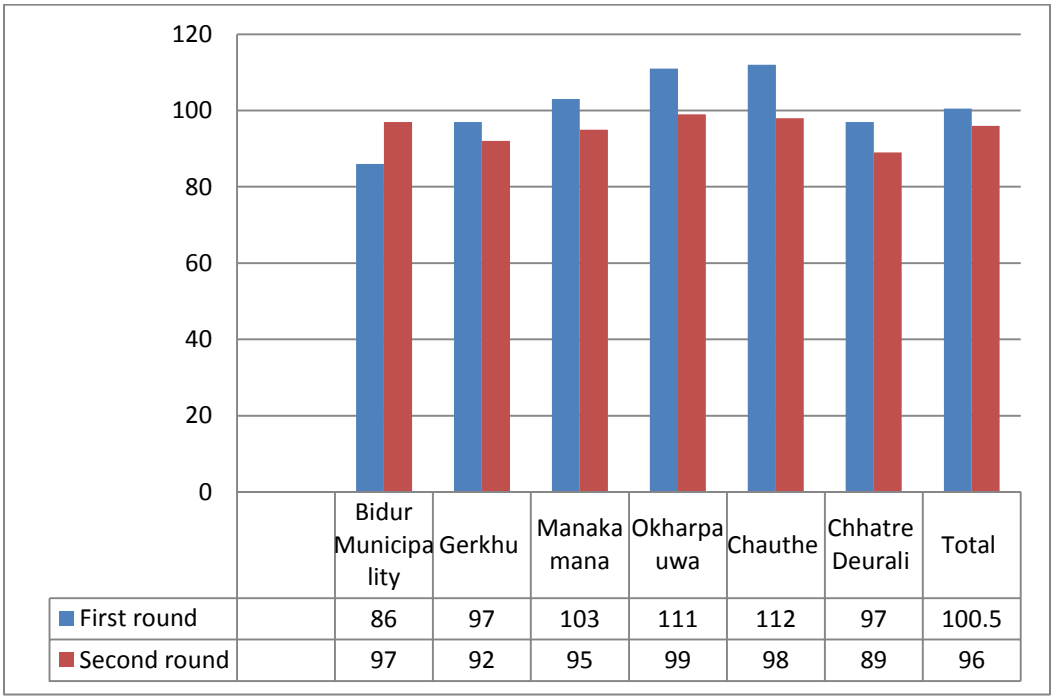
All the vaccine vials were transported using strict cold chain (+2 to +8 degrees Celsius) to maintain its potency. About 21,000 vaccine doses were in stock with EDCD in central cold room. The required vaccine doses as per micro plan for the first round for Nuwakot was sent to the district 2 days before the start of campaign and stored in district cold room for

Bidur cluster. For Okharpauwa cluster, the required doses of OCV were transported on the same day and stored in health facility and distributed to booth sites on daily basis.

### 8.2. Achievement against target:

#### 8.2.1. First and Second Round

Figure 2 First and Second Round Oral Cholera Vaccination administrative coverage data Nuwakot&Dhading – 2015




| | Bidur Municipality | Gerkhu | Manakamana | Okharpauwa | Chauthe | Chhatre Deurali | Total |
|---|---|---|---|---|---|---|---|
| First round | 86 | 97 | 103 | 111 | 112 | 97 | 100.5 |
| Second round | 97 | 92 | 95 | 99 | 98 | 89 | 96 |

In the Figure 2 In the first round, the overall achievement is 100.5 %. The village with highest coverage is Chauthe (112%) and Bidur (86%) is the area with the lowest coverage. While in the second round, the overall achievement is 96 %. Regarding the participation by sex and age, you will notice that there was no marked difference between the age groups by gender (Annexes 10, 11 and 12)

### 8.2.2. Single dose coverage

The total number of individuals who took only single dose equalled 389 in total as shown in Table 3.

Table 3

| (Total Achievement in first round) minus (those who received only 2nd dose in 2nd round) [A] | Those who received only single dose in 2nd round [B] | Total number of those who received only single dose [A +B] |
|---|---|---|
| 278 | 111 | 389 |

### 8.2.3. Rapid Convenience Survey (RCS):

To assess the reported coverage, the RCS was conducted by all supervisors after the completion of 2nd round. The survey was conducted in 10 areas with reported very high and low coverage using the standard form (Annex 9). From this survey as shown in Table 4, we found that 95.32 % have taken both dose while 2.83 % took only single. Also, we looked into those who did not taken even a single dose (1.85 %). The number and percentage are comparable in both clusters except that there was no report of those receiving only single dose in Bidur cluster.

On further inquiry as shown in Table 5, the primary reasons for single or zero doses was uniformly reported that majority of respondent expressed that "they were away from their home". The second most reason that was also uniformly expressed by the respondents was that they were busy in their farms. It is also found that significant portion also expressed that the vaccine may cause harm. Lastly, there was small numbers of people among zero doses who said that they did not know at all about the vaccination.

Table 4 OCV coverage by Rapid Convenience Survey (RCS)

| Vaccinated Area | Total no. of household members | Total members | Taken 2 complete dose | | Taken single dose | | Zero dose | |
|---|---|---|---|---|---|---|---|---|
| | | | n | % | n | % | n | % |
| Okharpauwa Cluster | 120 | 645 | 607 | 94.11 | 26 | 4.03 | 12 | 1.86 |
| Bidur Cluster | 80 | 273 | 268 | 98.17 | 0 | 0 | 5 | 1.83 |
| Both cluster | 200 | 918 | 875 | 95.32 | 26 | 2.83 | 17 | 1.85 |

Table 5 Reason for non or single dose vaccination

| Numeric Code | Reasons for not vaccinated | If single dose, why? | If zero dose, why? |
|---|---|---|---|
| 1 | Did not know about the campaign | 0% | 16.67% |
| 2 | Heard that the vaccine does not work well | 0% | 0% |
| 3 | Heard that the vaccine may cause harm | 22.22% | 16.67% |
| 4 | Booth too far from the house | 0% | 0% |
| 5 | Not in the house during vaccination | 55.56% | 33.33% |
| 6 | Busy in work | 22.22% | 33.33% |
| 7 | Vaccination center closed | 0% | 0% |
| 8 | Others……. | 0% | 0% |

#### 8.2.4. Monitoring of Adverse Events Following Immunization (AEFI):

Adverse Events Following Immunization (AEFI) was monitored at all vaccination sites as well as the respective health facilities. AEFI reporting forms were distributed to all health facilities with the aim of monitoring and reporting any events that could be reported in those facilities. It is pleasing to note that no single minor and serious adverse event was reported against the OCV. However, there were few cases of spitting out and also very few numbers of reported vomiting. More importantly, the taste of the vaccine was not barrier for its acceptance in the community.

#### 8.3. Post vaccination activities:

The following activities as in Table 6 were step wise done to make sure that all documents related to vaccination are collected, stored and secured in a safe place. Another most important task was the collection of cold box, vaccine carrier and handed over to EDCD. In addition, there was debriefing done to EDCD director on performance of OCV vaccination in Nuwakot and Dhading.

## 9. Funding and Technical support:

The technical and financial support for implementation of the vaccination campaign was supported by International Vaccine Institute (IVI), South Korea, UNICEF Country Office, Nepal John Hopkins University (JHU), USA and Group for Technical Assistance (GTA), Nepal. In addition, there were support from Innovative Design and Integrated Manufacturing Lab, School of Mechanical and Aerospace Engineering, Seoul National University, South Korea through

Innovative Design and Integrated Manufacturing Nepal providing WHO prequalified refrigeration in OKharpauwa Health Post during the second round of vaccination. There was also support from Rotary Club of Nagarjuna, Kathmandu, Nepal for social mobilization activities and Action Contre La Faim (ACF), Nepal supported the second round of vaccination for implementing WaSH activities during the campaign.

## 10. Strengths, Challenges and key lessons learnt

### 10.1. Strengths

a) There was strong commitment from Government of Nepal and EDCD leadership
b) Risk assessment for potential cholera outbreaks was very useful to prioritize the high risk areas
c) There was very effective Coordination and Collaborations with partners at central level
d) Strong and dedicated District leadership and participatory planning are key to success of campaign. There was Effective coordination with EPI team, INGOs and local NGO through district health cluster meeting
e) Effective monitoring from the supervisors, daily tracking and monitoring of daily progress in both round (Local Health Worker, DHO, EDCD, IVI, GTA)
f) Effective social mobilization through interpersonal communication through school/FCHVs and health worker, distribution of posters and brochures to schools
g) Vaccination activity was integrated with WASH counselling

### 10.2 Challenges

a) Prioritization of high risk areas was challenging due to limited quantity of vaccine availability
b) There was short preparatory time on background of high risk of possible outbreak in Earthquake affected areas with repeated tremor, rainfall and landslides and other competing public health interventions like MR campaign

### 10.3. Key lessons learnt

a) Oral Cholera Vaccination campaign is feasible through the use of government health structure even in post Earthquake situation
b) The effective collaboration and participation of partners from the beginning of the planning phase is crucial in the successful conduct of OCV campaign
c) Female Community Health Volunteers (FCHV) play a key role to the success of Oral Cholera Vaccination Campaign like in other campaigns like Polio
d) The key to the success of the campaign is quality micro planning and its effective implementation at the community level

## 11. Conclusions

The successful implementation of OCV campaign in targeted villages of Nuwakot and Dhading districts has been a public health milestone in the control of cholera in Nepal. The existing EPI system is capable of delivering high coverage of OCV in the community even in the situation of natural disaster like Earthquake. Since Nepal is a cholera endemic country, OCV vaccination in conjunction with improvement of water, sanitation and hygiene (WASH) is feasible to control potential cholera outbreak in high risk areas. The effective collaboration with relevant partners especially WASH is crucial to control cholera in Nepal. The process and results of the campaign has set a basis for further campaigns of similar nature in the future.

## References:


1. WHO position paper on Oral Cholera Vaccine (2010)
2. Nepal Earthquake 2015: WHO - UNICEF - IOM Joint Rapid Risk Assessment for possible cholera outbreak in 14 most affected districts (7 May 2015)
3. EDCD - DoHS/IVI/JHU/Nagasaki University/GTA: A Rapid Risk Assessment of possible post – Earthquake cholera outbreak in Nepal (22 May 2015)

## Annexes:

**1. Activities and timeline of OCV vaccination in Nuwakot**

| Activities and timeline of Oral Cholera Vaccination in Nuwakot / Dhading - 2015 | | | |
|---|---|---|---|
| **Activities** | **Resposnibility** | **Timeline** | |
| | | **English date** | **Nepali date** |
| District level staff meeting | DHO | 30-Jul | Shrawan 14, 2072 |
| Vaccinators training (FCHV+health worker) | 6 HP incharges | 3/4 August | Shrawan 18 & 19, 2072 |
| VDC level interaction meeting (HFOMC) | 6 HP incharges | 3/4 August | Shrawan 18 & 19, 2072 |
| Vaccine to DHQ | Center | 6-Aug | Shrawan 21, 2072 |
| Vaccine to reach every VDCs | DHO | 7-Aug | Shrawan 22, 2072 |
| Media (4 fm / 8 weeklies) | DHO | 6-12 August | Shrawan 21 to 27, 2072 |
| Social mobilization (posters, pamphelets) | DHO | 4-12 August | Shrawan 19 to 27, 2072 |
| Home visit + invitation cards + Prior listing | Vaccinators | 6-7 August | Shrawan 21 & 22, 2072 |
| OCV campaign (1st dose) | 6 HP incharges | 8-12 August | Shrawan 23 to 27, 2072 |
| Campaign data compilation and reporting | HP / DHQ | 13/14 August | Shrawan 28 & 29, 2072 |
| Review and planning for second round | DHQ | 25-Aug | Bhadra 08, 2072 |
| Vaccine to DHQ | center | 28-Aug | Bhadra 11, 2072 |
| Media (4 fm / 8 weeklies) | DHO | 28 August to 3 Sept | Bhadra 11 to 18, 2072 |
| Vaccine to reach every VDCs | DHO | 29-Aug | Bhadra 12, 2072 |
| OCV campaign (2nd dose) | 6 HP incharges | 30 Aug to 3 Sept | Bhadra 13 to 17, 2072 |
| Campaign data compilation and reporting | HP / DHQ | 6/7 Sept onwards | Bhadra 18 onwards |
| Review and feedback | Center | 18/9/2015 | Ashwin 01, 2072 |

**2. District level micro planning Forms and formats for OCV vaccination campaign**

| Name of VDC | Total population (a) | Under one year population (b) | Target population (c = a – b) | Number of Booth | High risk areas (settlements/camps/special communities) | Date of Vaccination | No. of vaccinators | Number of Supervisors |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |
| **Total** | | | | | | | | |

## 2.1. District level logistic information required for OCV vaccination

| Vaccine requirements | | | Logistics requirements | | | Forms, formats and guidelines | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1st dose | 2nd dose | Total dose | Zip lock plastic bag | Plastic bags | Forceps | Guideline | Tally sheet | Reporting form | RCS | AEFI reporting form |
| | | | | | | | | | | |

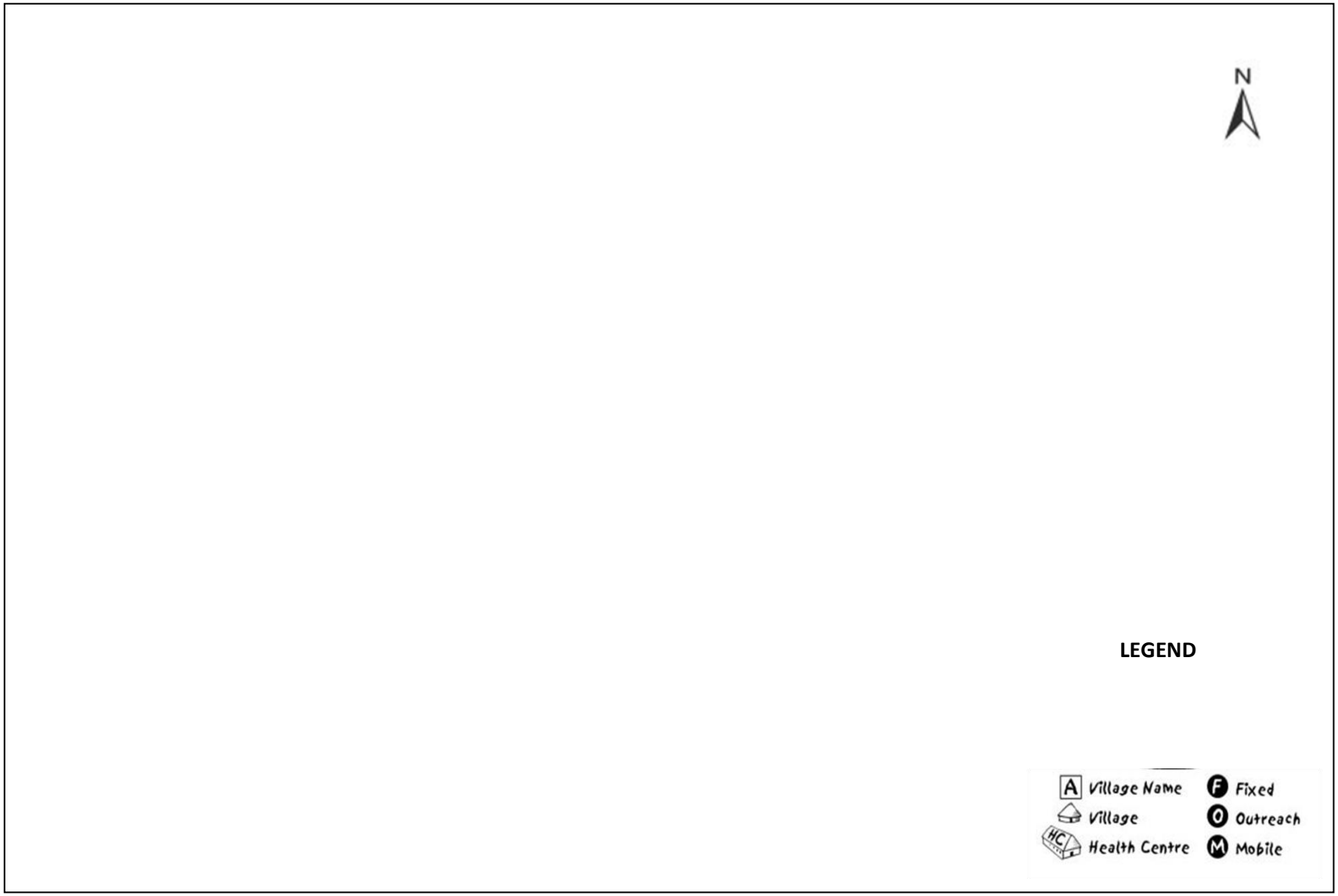
## 2.2. District level requirement of Cold Chain and IEC materials

| Cold chain | | | IEC materials | | |
|---|---|---|---|---|---|
| Vaccine carriers | | | | | |
| Permanent | Temporary | Ice packs | Banner | Posters | Pamphlets |
| | | | | | |

**3. Forms and formats for village level micro planning for OCV vaccination campaign**

| **Ward no** | **Total population (a)** | **Under One year population (b)** | **Target population (c = a – b)** | **Booth Location** | **High risk areas** (settlements/camps/special communities) | **Date of Vaccination** | **Name of vaccinators** | **Supervisor** |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| **Total** | | | | | | | | |

### 3.1. Mapping of the OCV vaccination plan at ward / village level



### 3.2. Village level logistic information required for OCV vaccination

| Vaccine requirement | | | Logistics requirement | | | Forms, formats and guidelines | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1st dose (Target population X 1.05) a | 2nd dose (Target population X 1.05) b | Total dose (a+b) | Zip lock plastic bag | Plastic bags (1 bag for 100 vials) | Forceps (1 forceps for 1 booth) | Guideline (2 guideline for 1 health facility) | Tally sheet (1 tally sheet for 100 population) | Reporting form | RCS (5 per supervisor) | AEFI reporting form (20 per Booth) |
| | | | | | | | | | | |

### 3.3. Village level requirement of Cold Chain, IEC materials and others

| Cold chain | | | IEC materials | | |
|---|---|---|---|---|---|
| Vaccine carriers | | | | | |
| Permanent (Assuming the capacity of 100 vial) | Temporary | Ice packs | Banner (1 banner per booth) | Posters (Schools, market places, Health post, Vaccination booth) | Pamphlets |
| | | | | | |

## 4. Reporting form for OCV campaign

Date:

District / PHC/HP: ========== VDC / Ward: M
==========

Total Target population ========== Total no. of Vaccination booth: ==========

| Health Institution [District / VDC level] | Population information related to Vaccination | | | | | | | | | | | OCV vaccine (Single dose Vial) | | Vaccine waste rate (%) | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total target pop | Age wise target Population | | | Total pop. Vaccinated (n / %) | | | | | | | Received (n) | Returned (n) | | |
| | | 1 to 4 yrs (n) | 5 to 14 rs (n) | ≥ 15 yrs (n) | 1 to 4 yrs (n) | 5 to 14 yrs (n) | ≥ 15 yrs (n) | Achievement (%) | | | | | | | |
| | | | | | | | | 1 to 4 yrs (%) | 5 to 14 yrs (%) | ≥ 15 yrs (%) | Total (%) | | | | |
| | | | | | | | | | | | | | | | |

Prepared by:…….. Office Stamp Verified by: ……

Signature:……. Signature:
Date: Date:

Note: After the completion of the vaccination campaign, all the health centers should collect all the vaccination reports from all vaccination booths in the wards and report is compiled and reported to the district (public) health office. Similarly, the district (public) health office should also report the compiled report to Regional health Directorate, Epidemiology and Diseases Control Division and Child Health Division.

## 5. VACCINE ACCOUNTABILITY LOG

From …… to ……

Division: _____ Responsible Staff: _____

| Date | Total doses received | Mode of Transportation | Date | Total doses returned | Mode of Transportation |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

I confirm the above information is correct.

Date: _____

Name: _____ Signature: _____

## 6. Supervision Checklist

| | 1st booth | | 2nd booth | | 3rd booth | | 4th booth | | 5th booth | |
|---|---|---|---|---|---|---|---|---|---|---|
| | yes | no | yes | no | yes | no | yes | no | yes | no |
| **Community participation** | | | | | | | | | | |
| Are there local volunteers involved in vaccination? | | | | | | | | | | |
| **Booth Organization** | | | | | | | | | | |
| Booth is identified by banner | | | | | | | | | | |
| Full vaccination team at Booth | | | | | | | | | | |
| Sufficient vaccine supply at booth | | | | | | | | | | |
| One-way crowd flow is established at booth | | | | | | | | | | |
| Vaccinator shakes the vial gently before opening | | | | | | | | | | |
| All the vaccine in the vial is fed | | | | | | | | | | |
| Vaccinator is informing second dose date | | | | | | | | | | |
| Are tally sheets available and being used? | | | | | | | | | | |
| **Cold Chain** | | | | | | | | | | |
| Is cold chain properly maintained? | | | | | | | | | | |
| Vaccine are kept in cold box or vaccine carrier | | | | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Is condition of the ice packs in cold box satisfactory? | | | | | | | | | | |
| Adequate vaccine and supplies available | | | | | | | | | | |
| Random check vial indicates freezing? (If yes, report immediately to higher level to investigate). | | | | | | | | | | |
| Adequate knowledge of VVM | | | | | | | | | | |
| Is status of VVM 1 or 2? | | | | | | | | | | |
| **Waste Management** | | | | | | | | | | |
| Cap and rubber are collected into waste bag after opening | | | | | | | | | | |
| Vaccine vial is discarded in the waste bag just after empting | | | | | | | | | | |

**Supervisors Name**_____

**Signature**_____

**Date**_____

**7. Posters and pamphlets used for OCV campaign (in Nepali)**

# हैजा (कलेरा) रोग सम्बन्धि जानकारी लिनुहोस् !!

## "हैजा" कस्तो खालको रोग हो ?

**हैजा एक खतरनाक सरुवा रोग हो, जसले बालबालिका र वयस्कको ज्यान लिन सक्छ।**

**हैजा किटाणुबाट हुने रोग हो। यो रोग लागेपछि वान्ता र झाडापखाला हुनु यसको चिन्हहरु हो।**

## "हैजा" रोग लागेको शंका लागेमा के गर्नु पर्छ ?

**हैजाका विरामीलाई तुरुन्त नजिकैको स्वास्थ्य संस्थामा उपचारको लागि लैजानु पर्दछ। यदि उचित उपचार नभएमा, हैजाको विरामी मर्न सक्छन।**

## हैजा रोग बाट बच्न के गर्नु पर्दछ?

**हैजा रोक्थामका लागि यस विरुद्धको खोपका साथै सफा पानी र साबुन पानीले हात धुनु पर्दछ।**

सफा पानी

सफा हातहरु

सफा भाँडाकुँडाहरु

## हैजा विरुद्धको अभियान !!

२ मात्राको खोप कम्तिमा २ हप्ताको फरकमा

नजिकको खोप केन्द्रमा गई खोप लिनु होला

आफ्नो सम्पूर्ण परिवार (१ बर्ष माथिका बालबालिका, महिला, पुरुष, बयेस्क देखि जेष्ठ नागरिक) सबलाई हैजा रोगबाट बचाउनु होला !!

**पहिलो मात्रा: श्रावण २३ देखि २७ सम्म**

**दोस्रो मात्रा : भदौ १३ देखि १७ सम्म**

जिल्ला स्वास्थ्य कार्यालय
नुवाकोट, नेपाल

## 8. Tally Sheet (in Nepali)

**नुवाकोट जिल्लाको छनौटमा परेका गाउँ र वडाहरुमा मौखिक हैजा खोप - २०१५**

**खोप केन्द्रको निम्ती टयालि सिट**

**गाउँको नाम:**..... **वडा नं :**..... **मितिः**.....

**खोप केन्द्रको नामः**.....

**भ्याक्सीनेटरको नामः**

**१** .....

**२** .....

**३** .....

**सुरु गरेको समयः**.....**देखि**.....

**नोट** १. प्रत्येक दिन नयाँ टयालि सिट प्रयोग गर्नुहोस्

२. आवश्यक परेमा दोश्रो सिट प्रयोग गर्नुहोस्

३. खोप लगाएको हरेक व्यक्तिको लागि उपयुक्त चारपाटे कोठामा रेजा √ चिन्ह लगाउनुहोस्

**खोप लगाएको व्यक्तिको संख्या**

**मात्रा: पहिलो मात्रा**

| १-४ बर्ष | | | | | | | | | | ५-१४ बर्ष | | | | | | | | | | ≥१५ बर्ष भन्दा माथि | | | | | | | | | |
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| पुरुष | | | | | महिला | | | | | पुरुष | | | | | महिला | | | | | पुरुष | | | | | महिला | | | | |
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| ६ | ७ | ८ | ९ | १० | ६ | ७ | ८ | ९ | १० | ६ | ७ | ८ | ९ | १० | ६ | ७ | ८ | ९ | १० | ६ | ७ | ८ | ९ | १० | ६ | ७ | ८ | ९ | १० |
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| ४१ | ४२ | ४३ | ४४ | ४५ | ४१ | ४२ | ४३ | ४४ | ४५ | ४१ | ४२ | ४३ | ४४ | ४५ | ४१ | ४२ | ४३ | ४४ | ४५ | ४१ | ४२ | ४३ | ४४ | ४५ | ४१ | ४२ | ४३ | ४४ | ४५ |
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**मात्रा: दोश्रो मात्रा**

| १-४ बर्ष | | | | | | | | | | ५-१४ बर्ष | | | | | | | | | | ≥१५ बर्ष भन्दा माथि | | | | | | | | | |
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| ६ | ७ | ८ | ९ | १० | ६ | ७ | ८ | ९ | १० | ६ | ७ | ८ | ९ | १० | ६ | ७ | ८ | ९ | १० | ६ | ७ | ८ | ९ | १० | ६ | ७ | ८ | ९ | १० |
| ११ | १२ | १३ | १४ | १५ | ११ | १२ | १३ | १४ | १५ | ११ | १२ | १३ | १४ | १५ | ११ | १२ | १३ | १४ | १५ | ११ | १२ | १३ | १४ | १५ | ११ | १२ | १३ | १४ | १५ |
| १६ | १७ | १८ | १९ | २० | १६ | १७ | १८ | १९ | २० | १६ | १७ | १८ | १९ | २० | १६ | १७ | १८ | १९ | २० | १६ | १७ | १८ | १९ | २० | १६ | १७ | १८ | १९ | २० |
| २१ | २२ | २३ | २४ | २५ | २१ | २२ | २३ | २४ | २५ | २१ | २२ | २३ | २४ | २५ | २१ | २२ | २३ | २४ | २५ | २१ | २२ | २३ | २४ | २५ | २१ | २२ | २३ | २४ | २५ |
| २६ | २७ | २८ | २९ | ३० | २६ | २७ | २८ | २९ | ३० | २६ | २७ | २८ | २९ | ३० | २६ | २७ | २८ | २९ | ३० | २६ | २७ | २८ | २९ | ३० | २६ | २७ | २८ | २९ | ३० |
| ३१ | ३२ | ३३ | ३४ | ३५ | ३१ | ३२ | ३३ | ३४ | ३५ | ३१ | ३२ | ३३ | ३४ | ३५ | ३१ | ३२ | ३३ | ३४ | ३५ | ३१ | ३२ | ३३ | ३४ | ३५ | ३१ | ३२ | ३३ | ३४ | ३५ |
| ३६ | ३७ | ३८ | ३९ | ४० | ३६ | ३७ | ३८ | ३९ | ४० | ३६ | ३७ | ३८ | ३९ | ४० | ३६ | ३७ | ३८ | ३९ | ४० | ३६ | ३७ | ३८ | ३९ | ४० | ३६ | ३७ | ३८ | ३९ | ४० |
| ४१ | ४२ | ४३ | ४४ | ४५ | ४१ | ४२ | ४३ | ४४ | ४५ | ४१ | ४२ | ४३ | ४४ | ४५ | ४१ | ४२ | ४३ | ४४ | ४५ | ४१ | ४२ | ४३ | ४४ | ४५ | ४१ | ४२ | ४३ | ४४ | ४५ |
| ४६ | ४७ | ४८ | ४९ | ५० | ४६ | ४७ | ४८ | ४९ | ५० | ४६ | ४७ | ४८ | ४९ | ५० | ४६ | ४७ | ४८ | ४९ | ५० | ४६ | ४७ | ४८ | ४९ | ५० | ४६ | ४७ | ४८ | ४९ | ५० |
| १ | २ | ३ | ४ | ५ | १ | २ | ३ | ४ | ५ | १ | २ | ३ | ४ | ५ | १ | २ | ३ | ४ | ५ | १ | २ | ३ | ४ | ५ | १ | २ | ३ | ४ | ५ |
| ६ | ७ | ८ | ९ | १० | ६ | ७ | ८ | ९ | १० | ६ | ७ | ८ | ९ | १० | ६ | ७ | ८ | ९ | १० | ६ | ७ | ८ | ९ | १० | ६ | ७ | ८ | ९ | १० |
| ११ | १२ | १३ | १४ | १५ | ११ | १२ | १३ | १४ | १५ | ११ | १२ | १३ | १४ | १५ | ११ | १२ | १३ | १४ | १५ | ११ | १२ | १३ | १४ | १५ | ११ | १२ | १३ | १४ | १५ |
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| २१ | २२ | २३ | २४ | २५ | २१ | २२ | २३ | २४ | २५ | २१ | २२ | २३ | २४ | २५ | २१ | २२ | २३ | २४ | २५ | २१ | २२ | २३ | २४ | २५ | २१ | २२ | २३ | २४ | २५ |
| २६ | २७ | २८ | २९ | ३० | २६ | २७ | २८ | २९ | ३० | २६ | २७ | २८ | २९ | ३० | २६ | २७ | २८ | २९ | ३० | २६ | २७ | २८ | २९ | ३० | २६ | २७ | २८ | २९ | ३० |
| ३१ | ३२ | ३३ | ३४ | ३५ | ३१ | ३२ | ३३ | ३४ | ३५ | ३१ | ३२ | ३३ | ३४ | ३५ | ३१ | ३२ | ३३ | ३४ | ३५ | ३१ | ३२ | ३३ | ३४ | ३५ | ३१ | ३२ | ३३ | ३४ | ३५ |
| ३६ | ३७ | ३८ | ३९ | ४० | ३६ | ३७ | ३८ | ३९ | ४० | ३६ | ३७ | ३८ | ३९ | ४० | ३६ | ३७ | ३८ | ३९ | ४० | ३६ | ३७ | ३८ | ३९ | ४० | ३६ | ३७ | ३८ | ३९ | ४० |
| ४१ | ४२ | ४३ | ४४ | ४५ | ४१ | ४२ | ४३ | ४४ | ४५ | ४१ | ४२ | ४३ | ४४ | ४५ | ४१ | ४२ | ४३ | ४४ | ४५ | ४१ | ४२ | ४३ | ४४ | ४५ | ४१ | ४२ | ४३ | ४४ | ४५ |
| ४६ | ४७ | ४८ | ४९ | ५० | ४६ | ४७ | ४८ | ४९ | ५० | ४६ | ४७ | ४८ | ४९ | ५० | ४६ | ४७ | ४८ | ४९ | ५० | ४६ | ४७ | ४८ | ४९ | ५० | ४६ | ४७ | ४८ | ४९ | ५० |
| जम्मा: | | | | | जम्मा: | | | | | जम्मा: | | | | | जम्मा: | | | | | जम्मा: | | | | | जम्मा: | | | | |

**खोप लागाएको व्यक्तिको जम्मा संख्या:**

**खोप केन्द प्रमुखको नाम :** ..... **सुपरिवेक्षकको नाम :** .....

**मिति र समय:** ..... **मिति र समय:** .....

| जम्मा (खोपको) मात्रा प्राप्त | जम्मा (खोपको) मात्रा प्रयोग | मा (खोपको) मात्रा खेरा गए | जम्मा फिर्ता गरेको |
|---|---|---|---|
| | | | |

## 9. Rapid Convenience Survey (RCS)

**RAPID CONVENIENCE SURVEY (RCS)**

DISTRICT:..... VDC/MUNI:..... WARD NO:..... VILLAGE/TOLE:..... DATE:.....

NAME & POST OF THE SUPERVISOR:.....

| House no: | Name of household head | 1 year and above | | | | | |
|---|---|---|---|---|---|---|---|
| | | Total no. of household members | Oral Cholera Vaccine | | | | |
| | | | Taken (2 doses) | Taken (single dose) | Not taken (Zero dose) | If single dose, why? | If zero dose, why? |
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |
| 11 | | | | | | | |
| 12 | | | | | | | |
| 13 | | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
| 16 | | | | | | | |
| 17 | | | | | | | |
| 18 | | | | | | | |
| 19 | | | | | | | |
| 20 | | | | | | | |

| Reasons for not vaccinated | | | | | |
|---|---|---|---|---|---|
| 1 | Did not know about the campaign | | 5 | Not in the house during vaccination | |
| 2 | Heard that the vaccine does not work well | | 6 | Busy in work | |
| 3 | Heard that the vaccine may cause harm | | 7 | Vaccination center closed | |
| 4 | Booth too far from the house | | 8 | Others..... | |

10. Results of OCV coverage in 1st Round Oral Cholera Vaccination in Nuwakot/ Dhading District,2015

| Cluster | Village / Muni | Target pop. | 1-4 Years | | | 5-14 Years | | | ≥15 Years and above | | | Total Achievement | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | M | F | Total (M + F) | M | F | Total (M + F) | M | F | Total (M + F) | n | % |
| Cluster A | Chhauthe | **1,290** | 69 | 66 | 135 | 217 | 216 | 433 | 435 | 450 | 885 | 1453 | **112.64** |
| | Chhatredeurali | **1,800** | 76 | 71 | 147 | 238 | 234 | 472 | 456 | 526 | 982 | 1601 | **88.94** |
| | Okharpauwa | **4243** | 193 | 215 | 408 | 712 | 769 | 1481 | 1265 | 1298 | 2563 | 4452 | **104.93** |
| | **Sub-Total 1** | **7333** | 338 | 352 | 690 | 1167 | 1219 | 2386 | 2156 | 2274 | 4430 | 7506 | **102.36** |
| Cluster B | Manakamana | **1148** | 50 | 51 | 101 | 127 | 114 | 241 | 400 | 436 | 836 | 1178 | **102.61** |
| | Bidur | **731** | 39 | 36 | 75 | 85 | 86 | 171 | 174 | 206 | 380 | 626 | **85.64** |
| | Gerkhu | **1274** | 55 | 49 | 104 | 215 | 216 | 431 | 295 | 400 | 695 | 1230 | **96.55** |
| | **Sub-Total 2** | **3153** | 144 | 136 | 280 | 427 | 416 | 843 | 869 | 1042 | 1911 | 3034 | **96.23** |
| | **Grand Total(1+2)** | **10486** | 482 | 488 | 970 | 1594 | 1635 | 3229 | 3025 | 3316 | 6341 | 10540 | **100.51** |

11. Results of OCV coverage in 2nd round Oral Cholera Vaccination in Nuwakot/ Dhading District,2015

| Cluster | Village / Muni | Target pop. | 1-4 Years | | | 5-14 Years | | | ≥15 Years and above | | | Total Achievement | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | M | F | Total (M + F) | M | F | Total (M + F) | M | F | Total (M + F) | n | % |
| Cluster A | Chhauthe | 1453 | 69 | 62 | 131 | 210 | 211 | 421 | 425 | 443 | 868 | 1420 | **97.73** |
| | Chhatredeurali | 1601 | 72 | 64 | 136 | 231 | 226 | 457 | 443 | 509 | 952 | 1545 | **96.50** |
| | Okharpauwa | 4452 | 191 | 215 | 406 | 699 | 767 | 1466 | 1265 | 1297 | 2562 | 4434 | **99.60** |
| **Sub-Total 1** | | 7506 | 332 | 341 | 673 | 1140 | 1204 | 2344 | 2133 | 2240 | 4382 | 7399 | **98.57** |
| Cluster B | Manakamana | 1178 | 50 | 45 | 95 | 125 | 114 | 239 | 360 | 426 | 786 | 1120 | **95.08** |
| | Bidur | 626 | 38 | 32 | 70 | 85 | 81 | 166 | 171 | 206 | 377 | 613 | **97.92** |
| | Gerkhu | 1230 | 52 | 47 | 99 | 215 | 211 | 426 | 260 | 345 | 605 | 1130 | **91.87** |
| **Sub-Total 2** | | 3034 | 140 | 124 | 264 | 425 | 406 | 831 | 791 | 977 | 1768 | 2863 | **94.36** |
| **Grand Total(1+2)** | | 10540 | 472 | 465 | 937 | 1565 | 1610 | 3175 | 2924 | 3217 | 6150 | 10262 | **97.36** |

12. Daily progress report of both first and second round Oral Cholera Vaccination in Nuwakot, Nepal

| Village | First round | | | | Second round | | |
|---|---|---|---|---|---|---|---|
| | Target | Date (Aug) | Total Cumulative Vaccinated (N) | Cumulative (%) | Date (Aug/Sept) | Total Cumulative Vaccinated (N) | Cumulative (%) [denominator taken previous achievement] |
| Okharpauwa | 4243 | 8 | 1020 | 24.04 | 30 | 1245 | 28.19% |
| Ward 4,5,7,8 and 9 | | 9 | 2586 | 60.95 | 31 | 3120 | 70.65% |
| | | 10 | 3416 | 80.51 | 1 | 4137 | 93.68% |
| | | 11 | 4354 | 102.62 | 2 | 4265 | 96.58% |
| | | 12 | 4416 | 104.08 | 3 | 4434 | 100.41% |
| Chauthe | | 8 | 396 | 30.69 | 30 | 565 | 38.97% |
| | | 9 | 729 | 56.51 | 31 | 1032 | 71.17% |
| | | 10 | 1004 | 77.83 | 1 | 1413 | 97.45% |
| | | 11 | 1450 | 112.4 | 2 | 1425 | 98.28% |
| | 1,290 | 12 | 1450 | 112.4 | 3 | 1425 | 98.28% |
| Chhatare | | 8 | 482 | 26.78 | 30 | 789 | 48.55% |
| 6, 8 and 9 | | 9 | 1137 | 63.17 | 31 | 1277 | 78.58% |
| | | 10 | 1252 | 69.56 | 1 | 1454 | 89.48% |
| | | 11 | 1526 | 84.76 | 2 | 1454 | 89.48% |
| | 1,800 | 12 | 1625 | 90.28 | 3 | 1580 | 97.23% |
| Manakamana | 1148 | 8 | 554 | 48.26 | 30 | 479 | 40.66% |
| Ward 8 and 9 | | 9 | 717 | 62.46 | 31 | 882 | 74.87% |
| | | 10 | 952 | 82.93 | 1 | 1000 | 84.89% |
| | | 11 | 1166 | 101.57 | 2 | 1120 | 95.08% |
| | | 12 | 1178 | 102.61 | 3 | 1120 | 95.08% |
| Gerkhu ward no. 9 | 1274 | 8 | 697 | 54.71 | 30 | 522 | 40.37% |
| | | 9 | 1164 | 91.36 | 31 | 1025 | 79.27% |
| | | 10 | 1228 | 96.39 | 1 | 1130 | 87.39% |
| | | 11 | 1293 | 101.49 | 2 | 1130 | 87.39% |
| | | 12 | 1293 | 101.49 | 3 | 1130 | 87.39% |
| Bidur – ward 1 | 731 | 8 | 488 | 66.76 | 30 | 332 | 54.97% |
| | | 9 | 597 | 81.67 | 31 | 492 | 81.46% |
| | | 10 | 604 | 82.63 | 1 | 602 | 99.67% |
| | | 11 | 604 | 82.63 | 2 | 613 | 101.40% |
| | | 12 | 604 | 82.63 | 3 | 613 | 101.49% |
| All targeted villages / wards (TOTAL) | **10486** | 8 | 3637 | 34.68 | 30 | 3932 | 37.21% |
| | | 9 | 6930 | 66.09 | 31 | 7745 | 73.30% |
| | | 10 | 8456 | 80.64 | 1 | 9736 | 92.14% |
| | | 11 | 10393 | 99.11 | 2 | 10007 | 94.71% |
| | | 12 | 10566 | 100.76 | 3 | 10302 | 97.50% |