Accepted Manuscript

Title: Bottleneck analysis and strategic planning using Tanahashi model for childhood diarrhea management in Gujarat, Western India

Author: Mihir Prafulbhai Rupani Narayan T. Gaonkar Gneyaa S. Bhatt

PII: S0149-7189(16)30007-6
DOI: http://dx.doi.org/doi:10.1016/j.evalprogplan.2016.05.017
Reference: EPP 1317

To appear in:

Received date: 11-1-2016
Accepted date: 30-5-2016

Please cite this article as: Rupani, Mihir Prafulbhai., Gaonkar, Narayan T., & Bhatt, Gneyaa S., Bottleneck analysis and strategic planning using Tanahashi model for childhood diarrhea management in Gujarat, Western India. Evaluation and Program Planning http://dx.doi.org/10.1016/j.evalprogplan.2016.05.017

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.
Title: Bottleneck Analysis and Strategic Planning using Tanahashi model for Childhood Diarrhea Management in Gujarat, Western India

Authors:

1. **Name:** Dr. Mihir Prafulbhai Rupani

   **Qualification:** MBBS, M. D Community Medicine

   **Current designation and address:** Assistant Professor, Department of Community Medicine, Government Medical College, Bhavnagar, Gujarat, India. (Address: Government Medical College, Near ST Bus stand, Jail Road, Bhavnagar – 364001, Gujarat, India)

   **Affiliation where work was primarily carried out:** Knowledge Manager, Diarrhea Alleviation through Zinc-ORS Therapy (DAZT), UNICEF State Office for Gujarat, Plot no. 70, Road no. 4th B, Opp. Punit van, Sector 19, Gandhinagar - 382019, Gujarat (India).

   **E-mail address and telephone number:** mihirrupani@gmail.com, +919925222421

2. **Name:** Dr. Narayan T. Gaonkar

   **Qualification:** MBBS, M. D Community Medicine

   **Current designation & Address:** Health Specialist, UNICEF State Office for Gujarat, Plot no. 70, Road no. 4th B, Opp. Punit van, Sector 19, Gandhinagar - 382019, Gujarat (India).

   **Affiliation where work was primarily carried out:** Health Specialist, UNICEF State Office for Gujarat, Plot no. 70, Road no. 4th B, Opp. Punit van, Sector 19, Gandhinagar - 382019, Gujarat (India).

   **E-mail address and telephone number:** ngaonkar@unicef.org, +919879603814

3. **Name:** Dr. Gneyaa S. Bhatt

   **Qualification:** MBBS, M. D Community Medicine
Current designation & Address: Assistant Professor, Department of Community Medicine, GMERS Medical College, Near Gujarat High Court, S.G Highway, Sola village, Ahmedabad - 380060 (Gujarat, India).

Affiliation where work was primarily carried out: Knowledge Manager, Diarrhea Alleviation through Zinc-ORS Therapy (DAZT), UNICEF State Office for Gujarat, Plot no. 70, Road no. 4th B, Opp. Punit van, Sector 19, Gandhinagar - 382019, Gujarat (India).

E-mail address and telephone number: gneyaa@yahoo.co.in, +919427960378

Address of institution where research was carried out: UNICEF State Office for Gujarat, Plot no. 70, Road no. 4th B, Opp. Punit van, Sector 19, Gandhinagar - 382019, Gujarat (India).

Name of Corresponding author: Dr. Mihir Prafulbhai Rupani

Office Address of Corresponding author: Department of Community Medicine, Government Medical College, Near ST Bus Stand, Jail Road, Bhavnagar – 364001, Gujarat, India

Postal address of Corresponding author: B-23, Meghna Society, Opp. Maninagar Society, Manjalpur, Vadodara – 390011, Gujarat, India

E-mail of corresponding author: mihirrupani@gmail.com

Keywords: Bottleneck analysis; Tanahashi model; Childhood diarrhea, Call-To-Action RMNCH+A strategy, Gujarat, High priority districts, Strategic planning

Word count: Approximately 2700

Short running title: Bottleneck Analysis on Childhood Diarrhea in Gujarat

Highlights:

1. National health programs for childhood diarrhea management are being run since many years now in India. It was necessary to pinpoint the bottlenecks in childhood diarrhea management and identify strategies for addressing the same. Evidence-based strategic planning with the existing opportunities currently available in India for addressing the gaps in childhood diarrhea management have now been identified.

2. Use of Zinc tablets for Childhood Diarrhea Management should be scaled up across the globe with emphasis on the importance of compliance of Zinc therapy for 14 days.
3. Inter-sectoral coordination between Water and Sanitation Hygiene (WASH) and Health Department is the need of the hour for addressing the bottlenecks in Childhood Diarrhea Management.

4. Use of appropriate technology like Drug Logistics Information Management System (DLIMS) for Supply Chain Management should be scaled up to entire country for effective distribution of drugs and logistics up to the Front Line Worker (FLW) level.

5. Strategic Planning should be tailored to the needs of the individual districts/states with the existing opportunities available there.

Details of contributors: All the authors contributed to concept, design, definition of intellectual content, literature search, data collection, field visits for data collection, data analysis, statistical analysis, manuscript preparation, manuscript editing and manuscript review. All the authors agree to the final version of this manuscript. The corresponding author will act as the guarantor of this manuscript.

Disclosures: There are no conflicts of interests among the authors for the present research.

Funding: This is not a funded study.

Acknowledgements:

We thank all Collectors, District Development Officers (DDOs), Chief District Health Officers (CDHOs) and Regional Child Survival Officers (RCSOs) for providing administrative and technical support in conduction of this exercise.

TITLE

Bottleneck Analysis and Strategic Planning using Tanahashi model for Childhood Diarrhea Management in Gujarat, Western India

ABSTRACT

In spite of continued efforts, India is still lagging behind in achieving its MDG goals. The objectives of this study were to identify stake-holders who have a role to play in childhood diarrhea management, to identify gaps in childhood diarrhea management and to propose
strategic options for relieving these gaps. Bottleneck analysis exercise was carried out based on the Tanahashi model in six High Priority Districts (HPDs) of Gujarat in period between July-November 2013. The major bottlenecks identified for Childhood Diarrhea management were poor demand generation, unsafe drinking water, poor access to improved sanitation facility and lack of equitable distribution and replenishment mechanisms for Oral Rehydration Solution (ORS) packets and Zinc tablets till the front-line worker level. The main strategic options that were suggested for relieving these bottlenecks were Zinc-ORS roll out in scale-up districts, develop Information Education Communication/Behaviour Change Communication (IEC/BCC) plan for childhood diarrhea management at state/district level, use of Drug Logistics Information Management System (DLIMS) software for supply chain management of Zinc-ORS, strengthening of chlorination activity at household level, monitoring implementation of Nirmal Bharat Abhiyaan (NBA) for constructing improved sanitation facilities at household level and to develop an IEC/BCC plan for hygiene promotion and usage of sanitary latrines. Use of Zinc tablets need to be intensified through an effective scale-up. Adequate demand generation activity is needed. There is need to address safe drinking water and improved sanitation measures at household levels. Multi-sectoral engagements and ownership of Zinc-ORS program is the need of the hour.

**Keywords:** Bottleneck analysis, Tanahashi model, Childhood diarrhea, Call-To-Action RMNCH+A strategy, Gujarat, High priority districts, Strategic planning
INTRODUCTION:

Diarrhea accounted for 9% of the 6.3 million under-five deaths that occurred globally in 2013 (UNICEF, 2014). This means that every 20 seconds, a mother and father lose their young child to one of the two leading (but preventable) causes of death, pneumonia and diarrhea. Diarrhea, the second leading cause of death among the under-five children in India, accounted for 11% of deaths among under-five in India in 2013 (WHO, 2014). The absolute number of deaths due to pneumonia and diarrhea in children under-five in the year 2013 was 318000 (JHSPH, 2014). Only 26% of children under-five suffering from diarrhea received ORS, while only 0.3% received Zinc tablets in 2013 (JHSPH, 2014).

Government of India launched the Reproductive, Maternal, Newborn, Child + Adolescent Health (RMNCH+A) strategy to remain in the forefront of the global war against child mortality and morbidity. India needed to focus on key high impact interventions, with special emphasis on weakly/poorly performing geographies to attain the MDG-4 goal. These poorly performing areas were identified on the basis of Composite Health index within each state and bottom 25% of the districts were identified as High Priority Districts (HPDs).

As the HPDs are lagging behind in terms of health indicators and possibly most other development indicators, they need special focus and support in terms of planning and implementation based on their geographical and epidemiological profile. In regard to this, a detailed situational analysis, bottleneck analysis and strategic planning exercise was identified as a key step for intensification of RMNCH+A strategy. With this background, we conducted this study to identify stake-holders who have a role to play in childhood diarrhea management, to identify gaps in childhood diarrhea management and to propose strategic options for relieving these gaps.
METHODOLOGY:

This exercise was technically and financially supported by UNICEF as the State lead development partner for Gujarat and Bottleneck Analysis (BA) exercise was carried out in six high priority districts of Gujarat.

Rationale of the bottleneck analysis exercise – The Tanahashi model (Tanahashi, 1978; Piot, 1967):

This analytical method identifies constraints hampering a health system from achieving a desired level of coverage for an intervention or package of interventions. Based upon work by Tanahashi (1978) and Piot (1967), the Tanahashi model defines six core coverage determinants that help describe the capacity of a health system to increase the utilization of effective interventions.

Definition of coverage determinants:

1. Availability of essential commodities: Assesses the availability of critical health system inputs such as drugs, vaccines and supplies. The information is frequently obtained from systemic review of stock registers and/or facility surveys.

2. Availability of human resources: Assesses availability of human resources (e.g. doctors, nurses, community health workers) for the adequate functioning of the health system and specifically the delivery of evidence based interventions. Data is frequently drawn from employment databases and/or facility surveys.

3. Geographical accessibility: Assesses the physical access of health services to the clients, including the number of villages reached regularly served by outreach services (for
population oriented outreach services) and the time taken or distance to reach a facilities providing basic and emergency obstetric and neonatal care services (for clinic based individual care services). Estimates for accessibility are frequently drawn from District-level Health Surveys (DLHS) or similar population based surveys. Often an expert judgment is needed.

4. Initial utilization: Assesses the first use of multi-contact health services, which can also be influenced by the financial accessibility of the services as well as the knowledge on the service (for example, a child suffering of Acute Respiratory Infection taken to the skilled health provider at the health facility). Household surveys and service statistics reported at facilities are the main sources of information on initial utilization. Service records, when used, should be validated before use in the tool.

5. Timely continuous utilization: Assesses the utilization pattern compared to recommended contacts for services. For example, a child treated at facility and receiving antibiotics treatment. This determinant measures continuity and compliance of multiple visits for care, thus sometimes referred to as the continuity determinant or adequate coverage.

6. Effective, quality coverage: Assesses the proportion of the population in need of an intervention who have received all adequate components of an intervention in a timely and complete manner, i.e., the child treated at facility and receiving antibiotics treatment from a Skilled health provider trained on Integrated Management of Neonatal and Childhood Illnesses (IMNCI) or a child having completed the whole Antibiotic course and either cured or referred. Effective coverage are defined as a minimum amount of inputs and processes that are expected to produce desired health effect if used by individuals or applied to the population at large. In some cases, effective coverage is assessed as the proportion of timely continuous utilization delivery with quality inputs. In effect, it measures health system
performance and quality of care. DLHS, facility surveys and expert opinion are frequent sources of this data.

**Process of the bottleneck analysis:**

*Planning at state level:* As a first step, taluka-wise colour-coded Health Management Information System (HMIS) score cards for the year 2012-13 were prepared for 6 HPDs of Gujarat namely Valsad, Dangs, Narmada, Kutch, Dahod and Sabarkantha according to the methodology suggested by Ministry of Health and Family Welfare (MoHFW GoI, 2013). A total of 16 indicators were selected (from HMIS 2012-13) across the continuum of care (RMNCH+A) which were distributed under 4 groups, namely pregnancy care, child birth, post-natal and newborn care and reproductive age group. The taluka with minimum and maximum percentage value for each indicator was noted and index value for each taluka was calculated. Thereafter, the talukas were categorized by quartile and scoring was done based on composite index giving colour code to each taluka with green colour (good performing), yellow colour (promising), orange colour (low performing) and red colour (very low performing).

*Planning at district level:* As part of situational analysis, a detailed consultation was held with Taluka Health Officers (THO), Community Health Centre-Medical Officers (CHC-MO), Primary Health Centre-Medical Officers (PHC-MO), District Program Officers (DPO) and Female Health Supervisors (FHS) to orient them about the importance and components of the accelerated efforts under RMNCH+A followed by detailed orientation of score cards.
**Data generation:** These activities formed the foundation for data collection and data cleaning of 9-12 key high impact interventions through an extensive group exercise with district program coordinator, district program assistant and taluka and PHC data assistants with the support from other district officers. Childhood Diarrhea Management was one of the high impact interventions assessed in detail in the bottleneck analysis exercise. The data was collected from HMIS and various other data sources available with the district health department and other departments like Women and Child Development, Education, and Water and Sanitation Management Organization (WASMO). These interventions covered three levels of service delivery platforms namely Facility, Community and Outreach. For facility assessment, the parameters that were assessed were availability, accessibility, HR/infrastructure, utilisation, timeliness, continuity and effective coverage/quality. For community/outreach level assessment, the parameters that were assessed were capacity, commodities & supplies, community outreach and adequacy and quality of services.

In these entire tracer interventions, the Health System level was also assessed where in bottlenecks pertaining to fund availability and timely dissemination, infrastructure management, HR management, supply chain management, capacity building and identification of training load, supportive supervision for facilities and FLWs, HMIS, E-Mamta (Mother and Child Tracking System) and data from other sources and their quality were identified.

**Data used in Bottleneck Analysis exercise:**
Childhood Diarrhea Management in 6 HPDs of Gujarat (using Tanahashi model):

Figure 1 elucidates the Tanahashi model of the 6 HPDs for the childhood diarrhea management tracer for the year 2012-13. Sanitation was thought to be an integral part of childhood diarrhea management, so data for improved sanitation facility was accessed from Census 2011 (Office of the Registrar General and Census Commissioner, 2011) and was included in the Bottleneck Analysis exercise. As seen in figure 2, five districts had poor coverage than state-average, Kutch being the only district having better coverage than state-average because it is a non-tribal district. It was included in the list of HPDs because of its typical geography.

The Bottleneck Analysis (BA) Exercise:

The bottleneck analysis exercise involved desk review, field visits (health facility-based, outreach sessions, community-based) and Focused Group Discussions (FGDs) by the District Program Managers and field functionaries enlisted below:

- District Health Officers (Chief District Health Officer, Reproductive and Child Health Officer, Additional District Health Officer, Chief District Medical Officer)

- District Program Officers (District Program Coordinator, District Urban Program Coordinator, District Quality Assurance Medical Officer, Epidemic Medical Officer, District Malaria Officer, District Training Team-Medical Officer, District Monitoring & Evaluation Officer, District Tuberculosis Officer, District Leprosy Officer, District Information Education Communication Officer, District Public Health Nurse, Program Assistant-Nutrition)

- Taluka Health Officers (High Priority Taluka-THO, Taluka Monitoring & Evaluation Officer)
• Community Health Centre-Medical Officer, Primary Health Centre-Medical Officer

• Front Line Workers (Anganwadi workers, Accredited Social Health Activists, Auxiliary Nurse Midwife)

• Medical College Faculties (Professors of Preventive and Social Medicine, Obstetrics and Gynecology and Pediatrics)

• UNICEF Officers (Health Specialist, Nutrition Specialist, Education Specialist, Communication for Development Officer)

• UNICEF Consultants (Regional Child Survival Officers, Knowledge Manager for Diarrhea, Communication for Development consultant, Infant and young child feeding consultant, nutrition consultant)
RESULTS:

The detailed findings of the Bottleneck Analysis (BA) exercise are elaborated in tables 1-7.

The major bottlenecks identified in all 6 High Priority Districts (HPDs) were:

- Poor health care seeking for childhood diarrhea
- Distribution of Zinc-ORS to public health facilities not based on case load and population, but equally to health facilities
- Unsafe drinking water, at household level
- Very poor access to improved sanitation facility

The major strategic options suggested were:

- Developing a training calendar for district level cascade training for Zinc-ORS roll out in scale-up districts
- Developing Information Education Communication/Behaviour Change Communication (IEC/BCC) plan for childhood diarrhea management at state/district level, keeping the audience in mind
- Drug Logistics Information Management System (DLIMS) software, recently launched in the state of Gujarat, can be used for supply chain management of Zinc-ORS
- Strengthening of chlorination activity at household level by providing chlorine tablets and chlorination testing kits to ASHA, where water is not chlorinated at the source/distribution system
- Monitoring implementation of Nirmal Bharat Abhiyaan (NBA) for constructing improved sanitation facilities at household level

- Developing IEC/BCC plan for hygiene promotion and usage of sanitary latrines

- Behavior Change Communication (BCC) for washing hands after using toilet and before having food
DISCUSSION

Bottleneck Analysis (BA) exercise sensitized the district stake-holders on the importance of prioritizing high-impact interventions like the use of ORS and Zinc tablets for childhood diarrhea management. As an upshot to this exercise, the districts have now prepared a District Action Plan (DAP) for an intensive follow-up of the strategic options suggested to them. Post BA exercise, District Child Survival Officers (DCSOs, supported by UNICEF) are under taking block monitoring of High Priority Talukas (HPTs). Department of Health & Family Welfare (H & FW) has issued an order directing all district officials to carry out compulsory field visits on every Wednesdays and Saturdays for supportive supervision and monitoring the key high impact interventions in their respective districts. Hand washing protocols and hygiene protocols are now being followed in all health facilities by all health care providers. The Female Health Workers (FHWs) have now been distributed ‘Tabs’ for easy and effective IEC dissemination in the community in Sabarkantha and Valsad districts. The norms for recruitment of ASHA have been relaxed for HPDs (1 ASHA per 500 population or as per discretion of State). Multi-sectoral engagement was possible post-bottleneck analysis exercise due to leveraging by District Collectors and District Development Officers. It was possible to include WASMO, Panchayati Raj Institutions (PRIs), Gram Sanjivani Samiti (GSS), education department, forest department, telecommunication department, etc. for addressing the determinants.

India is said to be the land of opportunities. With the launch of various new national health programs, there are several opportunities available for accelerating our efforts towards reducing childhood mortality due to diarrhea. Under National Health Mission, the Government of India has launched Integrated Action Plan for Prevention and Control of
Pneumonia and Diarrhoea (IAPPD) in 2014 to address the gaps and undertake collaborative efforts towards prevention of diarrhoea and Pneumonia related under-five deaths (Press Information Bureau GoI, 2015). IAPPD strengthens the existing approaches towards prevention of diarrhoea and pneumonia to achieve higher coverage of these interventions such as appropriate infant and young child feeding, provision of safe drinking water and improved sanitation, Vitamin A supplementation, measles vaccination, HiB vaccination, hand washing and personal hygiene, provision of ORS, zinc, appropriate antibiotics, availability of oxygen in health facilities, improved case management at community and health facilities, reduction of household pollution, etc.

Intensified Diarrhea Control Fortnight (IDCF) (National Health Mission GoI, 2015) was launched in the year 2014 in India to be observed from 28th July to 8th August with an aim to create mass awareness about the most effective and low-cost diarrhoea treatment that is, a combination of Oral Rehydration Salt (ORS) solution and Zinc tablets. Under this campaign in the year 2014 in Gujarat, 19 lakh children were given prophylactic ORS by ASHA, 10 thousand Zinc-ORS corners were established across the state, growth monitoring of 16 lakh children was done and 11 lakh families were counselled on Infant and Young Child Feeding practices.

In addition to these programs, Prime Minister Narendra Modi launched Swachh Bharat Abhiyaan (Ministry of Urban Development GoI, 2015) wherein Clean India Week was observed between 25th September and 2nd October 2014 to create public awareness for sanitation. Urban Development and Urban Housing Department of Government of Gujarat has launched Mahatma Gandhi Swachhata Mission (MGMS) in Gujarat with a vision to make Gujarat open defecation free, zero waste, dust free and green (Urban Development & Urban Housing Department GoG, 2015).
This research highlighted the important district-specific gaps on childhood diarrhea management and strategic options to overcome these gaps were suggested to the district officials. Use of Zinc tablets need to be intensified through an effective scale-up across the state of Gujarat. Adequate demand generation activity through IEC/BCC plan is needed. IEC activities should focus on creating awareness on childhood diarrhea in the community and for hygiene promotion and usage of sanitary latrines.

The following recommendations emerged from our research:

- Multi-sectoral engagements at district-level need to be further strengthened.
- Ownership of the Zinc-ORS program and personal interest of district officials and Front Line Workers (FLWs) in its effective implementation is the need of the hour.
- Data triangulation, data validation and supportive supervision of the Zinc-ORS program should be continued and should be taken up by the districts after scale-up of the program in the entire state.
- State-level review meeting of district officials should discuss the coverage of Zinc and ORS and its reporting.
- District-level review meeting of Medical Officers and Taluka Health Officers should discuss the coverage of Zinc and ORS and its reporting.
- Keeping stock ready till the FLW-level before the start of the district-level trainings for scale-up of Zinc-ORS program in the entire state is required.
- Strengthening HMIS for reporting of Zinc and ORS coverage, instead of having a separate reporting system.
- Educate pharmacist specifically at Primary Health Centre/Community Health Centre/Sub-District Hospital/District Hospital to distribute Zinc for 14 days.
• Adequate demand generation activities at PHC levels by engaging mass media at state and district-level is required.

• District-level and taluka-level officials should carry IEC materials in their mobiles during their field visits for creating awareness among the community and during supportive supervision of the program.

• Compliance of Zinc therapy for a duration of 14 days among care-givers is largely influenced by the time spent by FLWs on explaining the benefits of Zinc and on the follow-up visits by FLWs. Thereby, it is recommended that FLWs regularly follow-up these patients during their home visits.
REFERENCES:


Table 1: Availability of commodities - Zinc-ORS availability in 6 HPDs

<table>
<thead>
<tr>
<th>Indicator used in Gujarat</th>
<th>Bottlenecks</th>
<th>Opportunities</th>
<th>Proposed Strategic Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of FLWs with no stock-outs of ORS and zinc supplements during the past 3 months</td>
<td>• Distribution of Zinc not based on case load /indent or demand from the FLW / PHC</td>
<td>• State level master trainers available following Zinc-ORS capacity building</td>
<td>• Distribution of Zinc-ORS based on population and case load</td>
</tr>
<tr>
<td></td>
<td>• Poor clarity on distribution of Zinc from State to District level</td>
<td>• Pharmacists recruitment happening in many districts</td>
<td>• Timely and plan-based supply of Zinc-ORS</td>
</tr>
<tr>
<td></td>
<td>• Poor replenishment plans and Front Line Workers not asking for stock based on demand</td>
<td>• Drug Logistics Information Management System (DLIMS)</td>
<td>• Maintenance of buffer stock at all health facilities</td>
</tr>
<tr>
<td></td>
<td>• Vacancies of pharmacists and pharmacists having charge of more than 2 PHCs</td>
<td></td>
<td>• Monthly review meeting with pharmacists to see stock-in, stock-out and buffer stock to know how much to supply (medicine supply should be as per demand from field level)</td>
</tr>
<tr>
<td></td>
<td>• Non-functional vehicles for transporting drugs from PHC to sub-centre</td>
<td></td>
<td></td>
</tr>
<tr>
<td>level, in some facilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- ORS buffer stock is not being maintained</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Drug Logistics Information Management System (DLIMS) not adequately utilized for analysis and monitoring of availability of drugs</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Reporting formats for consumption of Zinc-ORS to be introduced |
| DLIMS to be used for demand of drugs and stock position |
Table 2: Human resource trained in childhood diarrhea management in 6 HPDs

<table>
<thead>
<tr>
<th>Indicators used in Gujarat</th>
<th>Bottlenecks</th>
<th>Opportunities</th>
<th>Proposed Strategic Options</th>
</tr>
</thead>
</table>
| Proportion FLWs trained in diarrhea management (module 3, 6-7 and IMNCI+) in place | • Newly recruited ASHA and AWW not trained in Zinc-ORS use  
• No District Training Centre (DTC) in some HPDs, causing delay in trainings  
• Poor supportive supervision and monitoring of the training including IMNCI training  
• Untrained Medical Officers and Taluka Health officers in IMNCI/Zinc-ORS programme | • IMNCI rolled out in all districts  
• Funds available for Training under NHM Program Implementation Plans  
• Zinc-ORS Training of Trainers (ToT) completed and state | • Filling of vacant posts of MOs/THOs/FLWs  
• Formation of team of competent district level trainers for training FLWs  
• Follow-up IMNCI training of 3 days for all health supervisors to strengthen supportive supervision and monitoring of IMNCI  
• Mobility support should be given to ASHA facilitators as villages are far away  
• Introduction of |
| • No/poor quality assurance of trainings | level resource persons available | incentive to ASHA if she follows up children with diarrhoea for 14 days of Zinc therapy |
| • No incentives for ASHA for Zinc-ORS promotion and distribution under National Health Mission | • ASHA facilitators and health supervisors can be trained in supportive supervision |
Table 3: Geographic access in 6 HPDs - community accessibility to trained human resource

<table>
<thead>
<tr>
<th>Indicators used in Gujarat</th>
<th>Bottlenecks</th>
<th>Opportunities</th>
<th>Proposed Strategic Options</th>
</tr>
</thead>
</table>
| Proportion of villages with FLWs trained in diarrhea management (module 3, 6-7, IMNCI+) | Weak/no supportive supervision and monitoring | • IMNCI scaled up in the entire state  
• Zinc-ORS ToT completed and budget available in NHM for FLW training | • Strengthen supportive supervision and monitoring of IMNCI implementation  
• Fast track training of FLWs in Zinc and ORS use for childhood diarrhoea |
Table 4: Acceptability and utilization – community seeking care in 6 HPDs

<table>
<thead>
<tr>
<th>Indicators used in Gujarat</th>
<th>Bottlenecks</th>
<th>Opportunities</th>
<th>Proposed Strategic Options</th>
</tr>
</thead>
</table>
| Proportion of diarrhoea episodes in children 0-59 months who sought care from a health worker | • Poor knowledge on diarrhea causation and its management at family level  
• Poor awareness about danger signs of diarrhea and referral needs in the community  
• Under-reporting of diarrhea cases in Integrated Disease Surveillance Project (IDSP) and HMIS  
• Poor awareness about Zinc-ORS effectiveness  
• Private sector not adequately sensitized to the use of Zinc | • Trained FLWs in the field  
• Integrated Disease Surveillance Project (IDSP) is being strengthened in the state  
• Folk performances like Bhavai shows are popular in tribal areas  
• Department of Information and Field Publicity can play greater role | • Information Education  
• Integrated Disease Surveillance Project (IDSP) is being strengthened in the state  
• Folk performances like Bhavai shows are popular in tribal areas  
• Department of Information and Field Publicity can play greater role |
the benefits of Zinc and avoiding antibiotic abuse
### Table 5: Contact - continuous utilization of care by community in 6 HPDs

<table>
<thead>
<tr>
<th>Indicators used in Gujarat</th>
<th>Bottlenecks</th>
<th>Opportunities</th>
<th>Proposed Strategic Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of children 0-59 months with diarrhoea who 1) sought care from the health worker and 2) received ORS packets from the health worker</td>
<td>• Not given as per standard dose (like one ORS packet given, instead of two) • Insufficient stock with health worker</td>
<td>ToT of Zinc-ORS completed</td>
<td>Procurement and distribution of ORS based on population and case load</td>
</tr>
</tbody>
</table>
Table 6: Effectiveness - quality of services in 6 HPDs

<table>
<thead>
<tr>
<th>Indicators used in Gujarat</th>
<th>Bottlenecks</th>
<th>Opportunities</th>
<th>Proposed Strategic Options</th>
</tr>
</thead>
</table>
| Proportion of children 0-59 months with diarrhoea who 1) sought care from the health worker and 2) received ORS packets from the health worker and have provision of safe drinking water | • Unavailability of safe drinking water at household level  
• Poor personal hygiene and prevalent practice of open defecation  
• Inadequate chlorine tablets supply and supply chain management  
• Infrequent chlorination of over-head tanks | • WASMO  
• Village Water Committee (Gram Paani Samiti) formed  
• Communicable Disease Committee formed under Collector | • IEC/BCC activities on use of chlorine tablets  
• Convergence between Department of Rural Development Authority (DRDA) and Village Water Committee with community participation  
• Reports of chlorination should be followed up and action to be taken accordingly  
• Adequate chlorine tablets distribution and testing of water |
<table>
<thead>
<tr>
<th>samples at village level by ASHA (incentivized activity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community monitoring of cleaning and chlorination of overhead tanks by maintaining charts</td>
</tr>
</tbody>
</table>
Table 7: Households with improved sanitation facility in 6 HPDs

<table>
<thead>
<tr>
<th>Indicators used in Gujarat</th>
<th>Bottlenecks</th>
<th>Opportunities</th>
<th>Proposed Strategic Options</th>
</tr>
</thead>
</table>
| Proportion of households with improved sanitation facility | On an average, around 33% households don’t have access to improved sanitation facility | • Department of Rural Department Authority (DRDA) has mandate and funds for provision of safe drinking water and sanitation facilities  
• Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)  
• Village Health Sanitation and Nutrition | • Implementation of Nirmal Bharat Abhiyaan (previously Total Sanitation Campaign) in coordination between DRDA, MGNREGA and Gram Panchayat  
• IEC/BCC activities in local language for usage of improved sanitation facility and practices  
• Utilization of VHSNC/GSS funds for hygiene promotion at village level |
Committee (VHSNC)/Gram Sanjivini Samiti (GSS) funds

Figure 1: Childhood Diarrhea Management in Six HPDs of Gujarat (using Tanahashi model)

Figure 2: Access to improved sanitation facility (Office of the Registrar General and Census Commissioner, 2011)
FIGURE 1: CHILDHOOD DIARRHEA MANAGEMENT IN SIX HPDs OF GUJARAT (USING TANAHASHI MODEL)

- Availability of Zn-ORS: 94%
- Trained FLWs: 88%
- Villages with FLWs: 98%
- Health care seeking: 17%
- Received ORS: 5.1%
- Received ORS with provision of safe drinking water: 2.4%
FIGURE 2: ACCESS TO IMPROVED SANITATION FACILITY (CENSUS 2011)