Scaling up ORS and Zinc to treat diarrhea: Lessons from a multi-country program
October 28, 2019
Agenda

Zinc/ORS Program Overview

Program results

Lessons learned and best practices

Next steps and future plans

Q&A
Diarrhea is one of the largest contributors to under-five mortality and 60% of deaths occur in just 10 countries.

Diarrhea is one of the top contributors to childhood mortality

Proportional distribution of cause-specific deaths among children 1-59 months of age, 2010

~700 thousand U5 deaths/year from diarrhea alone

10 countries account for 60% of all diarrhea deaths

Number of diarrhea deaths in children 1-59 months, 2010

*India, Nigeria, Pakistan, Democratic Republic of Congo, Ethiopia, Niger, Bangladesh, United Republic of Tanzania, Uganda, and Kenya

ORS and zinc are the WHO-recommended treatment, but as of 2010, less 1% of children received the optimal combination and about one-third were treated with ORS.

Zinc and ORS are the WHO-recommended treatment for diarrhea in children

Efficacy: ORS can avert 93% of deaths
Zinc reduces the duration of diarrhea

Cost: <US$ 0.50 / course
(10 tablets zinc & 2 sachets of ORS)

The majority of children were getting sub-optimal treatments
Median diarrhea treatment coverage in 10 high-burden countries

Most diarrhea receive care; opportunity to switch to ORS+zinc

100% = ~673 mln cases in 10 countries
<1% 35% 43% 21%

Total cases ORS & Zinc ORS alone Antibiotics, home remedy, other No treatment

In 2012, CHAI started working in four initial focal countries to demonstrate that rapid improvements in zinc/ORS coverage are possible and sustainable at-scale.

Global Diarrhea & Pneumonia Working Group

- **Purpose:** Accelerate treatment scale up across 10 high burden countries globally, accounting for ~60% of total global cases
- **Membership:** Co-chaired by CHAI & UNICEF; 40+ members (donors, NGOs, WHO, etc.)
- **Mechanism:** Technical assistance, resource mobilization; forum to share best practices

CHAI Country Programs*

**India**
- Donor: IKEA Foundation, Bill & Melinda Gates Foundation
- Scope: 3 states (UP, MP, Gujarat) represent >40% of national diarrhea burden

**Nigeria**
- Donor: Norad, Global Affairs Canada, BMGF
- Scope: 8 states (Kano, Lagos, Rivers, Kaduna, Katsina, Bauchi, Niger, Cross-River) represent ~40% of national diarrhea burden

**Kenya**
- Donor: IKEA Foundation
- Scope: Nationwide with 20 (of 47) focal counties

**Uganda**
- Donor: ELMA Foundation, Absolute Return to Kids
- Scope: Nationwide

*In 2015, CHAI launched a program in Ethiopia*
Across focal countries, national scale-up plans were based around four primary intervention areas aimed to break the ‘market trap’ that prevented zinc/ORS uptake.

**Improve provider practices**
- Improve clinical knowledge & practices in public/private sectors
- Leverage routine mentoring, supportive supervision platforms
- Conduct routine detailing of private clinics and drug shops

**Ensure availability of the product**
- Engage manufacturers to expand availability & reduce sourcing costs
- Optimize packaging & branding
- Conduct wholesale activations to promote products at strategic distribution points

**Generate demand**
- Launch caregiver-targeted marketing campaign
- Leverage key influencers and partnerships to expand reach of key messages
- Rigorously monitor; make adjustments to optimize impact

**Secure a conducive policy environment**
- Support govt to update and disseminate treatment guidelines to align with WHO
- Build broad support and assist govt to coordinate & mobilize additional resources
- Ensure over-the-counter status for zinc
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By 2016, combined ORS and zinc coverage had increased across all focal geographies.

### Percent of diarrhea episodes treated with ORS and zinc

#### India (3 states)

<table>
<thead>
<tr>
<th>ORS+Zinc Coverage</th>
<th>ORS Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>19%</td>
<td>22%</td>
</tr>
</tbody>
</table>

#### Kenya

<table>
<thead>
<tr>
<th>ORS+Zinc Coverage</th>
<th>ORS Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>15%</td>
</tr>
</tbody>
</table>

#### Nigeria (8 states)

<table>
<thead>
<tr>
<th>ORS+Zinc Coverage</th>
<th>ORS Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>4%</td>
<td>30%</td>
</tr>
</tbody>
</table>

#### Uganda

<table>
<thead>
<tr>
<th>ORS+Zinc Coverage</th>
<th>ORS Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td>30%</td>
</tr>
</tbody>
</table>

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[1] Results are weighted, pooled estimates from Madhya Pradesh, Uttar Pradesh, and Gujarat.

[2] Results are weighted, pooled estimates from Bauchi, Cross River, Kaduna, Kano, Katsina, Lagos, Niger, Rivers.
Coverage increases were driven by improved case management practices in both the public and private sectors with greater increases in the public sector.

**Combined ORS+Zinc Coverage – Public vs. Private**

% of children who had diarrhea in the last 2 weeks that sought care in public/private sector and received ORS+Zinc combined

<table>
<thead>
<tr>
<th>Country/States</th>
<th>Public</th>
<th>Private</th>
<th>Public</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>India (3 states)¹</td>
<td>49%</td>
<td>19%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Kenya</td>
<td>26%</td>
<td>16%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Nigeria (8 states)²</td>
<td>52%</td>
<td>33%</td>
<td>7%</td>
<td>3%</td>
</tr>
<tr>
<td>Uganda</td>
<td>53%</td>
<td>33%</td>
<td>2%</td>
<td>1%</td>
</tr>
</tbody>
</table>

[1] Results are weighted, pooled estimates from Madhya Pradesh, Uttar Pradesh, and Gujarat.
[2] Results are weighted, pooled estimates from Bauchi, Cross River, Kaduna, Kano, Katsina, Lagos, Niger, Rivers.
Combined ORS and zinc coverage increased across all wealth groups

Combined ORS+Zinc Coverage – Poorest Quintile vs. Wealthiest Quintile
% of children who had diarrhea in the last 2 weeks that received ORS+Zinc combined

India (3 states)¹

<table>
<thead>
<tr>
<th></th>
<th>Poorest</th>
<th>Wealthiest</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>17%</td>
<td>24%</td>
</tr>
</tbody>
</table>

Kenya

<table>
<thead>
<tr>
<th></th>
<th>Poorest</th>
<th>Wealthiest</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>22%</td>
<td>14%</td>
</tr>
</tbody>
</table>

Nigeria (8 states)²

<table>
<thead>
<tr>
<th></th>
<th>Poorest</th>
<th>Wealthiest</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>25%</td>
<td>47%</td>
</tr>
</tbody>
</table>

Uganda

<table>
<thead>
<tr>
<th></th>
<th>Poorest</th>
<th>Wealthiest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td>28%</td>
<td>31%</td>
</tr>
</tbody>
</table>

[1] Results are weighted, pooled estimates from Madhya Pradesh, Uttar Pradesh, and Gujarat.
[2] Results are weighted, pooled estimates from Bauchi, Cross River, Kaduna, Kano, Katsina, Lagos, Niger, Rivers
For ORS coverage, increases were greater among poorer households than wealthier ones.

ORS Coverage – Poorest Quintile vs. Wealthiest Quintile
% of children who had diarrhea in the last 2 weeks that received ORS

<table>
<thead>
<tr>
<th>Country</th>
<th>Poorest</th>
<th>Wealthiest</th>
<th>Poorest</th>
<th>Wealthiest</th>
<th>Poorest</th>
<th>Wealthiest</th>
<th>Poorest</th>
<th>Wealthiest</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>16%</td>
<td>43%</td>
<td>37%</td>
<td>61%</td>
<td>40%</td>
<td>48%</td>
<td>37%</td>
<td>31%</td>
</tr>
<tr>
<td>Kenya</td>
<td>48%</td>
<td>40%</td>
<td>31%</td>
<td>74%</td>
<td>49%</td>
<td>48%</td>
<td>74%</td>
<td>61%</td>
</tr>
<tr>
<td>Nigeria</td>
<td>43%</td>
<td>48%</td>
<td>48%</td>
<td>74%</td>
<td>49%</td>
<td>48%</td>
<td>74%</td>
<td>61%</td>
</tr>
<tr>
<td>Uganda</td>
<td>43%</td>
<td>48%</td>
<td>48%</td>
<td>74%</td>
<td>49%</td>
<td>48%</td>
<td>74%</td>
<td>61%</td>
</tr>
</tbody>
</table>

[1] Results are weighted, pooled estimates from Madhya Pradesh, Uttar Pradesh, and Gujarat.
[2] Results are weighted, pooled estimates from Bauchi, Cross River, Kaduna, Kano, Katsina, Lagos, Niger, Rivers.
Across CHAI focal geographies coverage increased faster than global average; cumulatively, an estimated 76,000 deaths were averted between 2012-16.

- Children treated with zinc/ORS increased from **1.2M to over 55M** in focal geographies
- Cumulative estimated deaths averted: **76,000**

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Monitoring and evaluation: Use simple leading indicators, such as ORS and zinc volumes distributed, to routinely manage performance

**Key takeaway**

- Household surveys provide only a single snapshot in time and are too expensive to conduct routinely
- Leverage/develop other routine sources of data (e.g. public and private distribution volumes, HMIS, etc.)

*Volumes are expressed in terms of “diarrhea treatments”. 1 diarrhea treatment = 1 co-pack or 2L of ORS sachets or 10 zinc tablets*
Co-pack introduction: Carefully plan co-pack switch with govt.; wind-down stock of singles, negotiate competitive prices, and support forecast/ordering

Kenya

Responsibility for quantification and orders of medicines devolved from federal government to counties

Director of Medical Services recommends co-pack as 1st line treatment. Central Medical Store winds-down central stock of single ORS and zinc units.

From 2013-15, work with healthcare facilities to bundle single units into co-packs

Catalytic introduction of co-pack to smooth transition during tendering process. Competitive tendering and negotiation to reduce price from $1.62 for single units to $0.62 for co-pack

KEMSA ORS & Zinc Distribution Volumes*

* Volumes are expressed in terms of “diarrhea treatments”. 1 diarrhea treatment = 1 co-pack or 2L of ORS sachets or 10 zinc tablets
Summary of private sector interventions along supply chain continuum in Nigeria and results

**Private sector:** Comprehensively address supply availability and provider/dispenser practices with multiple layers of interventions along the entire supply chain

<table>
<thead>
<tr>
<th>Regulation</th>
<th>Manufacturers and suppliers</th>
<th>Intermediaries</th>
<th>Providers and dispensers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported NAFDAC to push existing ORS suppliers to switch to the low-osmolarity formulation</td>
<td>Technical support to introduce and register new L-ORS and zinc DT products, including co-pack</td>
<td>Incentive agreements with suppliers to implement a rural salesforce; sold ~2M ORS sachets and 1.9M zinc strips</td>
<td>Incorporated diarrhea management in the mandatory pre-service training of PPMVs and Community Pharmacists.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Place reps at regional wholesale hubs to encourage purchase of ORS and zinc and distribute promotional materials</td>
<td>Worked with NAPPMED to conduct follow-up one-on-one detailing sessions with PPMVs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Private sector ORS volumes**

<table>
<thead>
<tr>
<th>Quarter</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>5,000</td>
<td>10,000</td>
<td>15,000</td>
</tr>
<tr>
<td>Q2</td>
<td>10,000</td>
<td>15,000</td>
<td>20,000</td>
</tr>
<tr>
<td>Q3</td>
<td>15,000</td>
<td>20,000</td>
<td>25,000</td>
</tr>
<tr>
<td>Q4</td>
<td>20,000</td>
<td>25,000</td>
<td>30,000</td>
</tr>
</tbody>
</table>

**Private sector zinc volumes**

<table>
<thead>
<tr>
<th>Quarter</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>0</td>
<td>500</td>
<td>1,000</td>
</tr>
<tr>
<td>Q2</td>
<td>500</td>
<td>1,000</td>
<td>1,500</td>
</tr>
<tr>
<td>Q3</td>
<td>1,000</td>
<td>1,500</td>
<td>2,000</td>
</tr>
<tr>
<td>Q4</td>
<td>1,500</td>
<td>2,000</td>
<td>2,500</td>
</tr>
</tbody>
</table>

**PPMV stocking ORS and zinc**

- ORS & Zinc in-stock
  - **Baseline**: 15%
  - **Endline**: 73%

[1] Volumes are expressed in terms of “diarrhea treatments”. 1 diarrhea treatment = 1 co-pack or 2 ORS sachets or 1 zinc strip. Volumes are estimated based on sales data from partner suppliers.
**Demand generation:** Use consumer-design principles – right message, right place, right time, and right frequency

### Key takeaway

- Align caregiver demand generation activities with provider and supply-side activities; healthcare providers are one of the most influential channels for shaping caregiver demand.
- Ensure messages are appropriate for each communication channel. For mass media, focus on simple messages. Use interpersonal interactions to convey more complex messages on dosing and administration.

### Caregiver Campaign

- 7,000+ spots
- 3,000+ spots
- 4M+ calls
- 200 buses
- 5,000 villages

### Demand generation campaign modified effect of other interventions

<table>
<thead>
<tr>
<th>ORS coverage increases by campaign exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
</tr>
<tr>
<td>Living in focal districts and not exposed to campaign</td>
</tr>
<tr>
<td>Living in focal districts and exposed to campaign</td>
</tr>
<tr>
<td>0%</td>
</tr>
<tr>
<td>20%</td>
</tr>
<tr>
<td>40%</td>
</tr>
<tr>
<td>60%</td>
</tr>
<tr>
<td>30%</td>
</tr>
<tr>
<td>42%</td>
</tr>
<tr>
<td>58%</td>
</tr>
</tbody>
</table>

38M exposed in UP (29M rural); 59% coverage of target audience

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Develop solutions to address the 'know-do' gap, particularly in the private sector

Know-do gap

Percent of private providers/retailers that have heard about ORS vs. stocks ORS vs. recommends ORS vs. percent of children under-five with diarrhea in the last 2 weeks that received ORS

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider knows about ORS (1)</td>
<td>86%</td>
</tr>
<tr>
<td>ORS is available (1)</td>
<td>74%</td>
</tr>
<tr>
<td>Providers recommends ORS (2)</td>
<td>52%</td>
</tr>
<tr>
<td>Patient receives ORS (3)</td>
<td>31%</td>
</tr>
</tbody>
</table>

Hypotheses
- Negative perceptions about ORS (efficacy)
- Lower unit margin vs. other drugs (antibiotics, zinc)

A more targeted approach may be important to continue to make progress, especially with limited resources and in countries where national coverage is high.

ORS coverage by LGA in Kano

ORS coverage by LGA in Kaduna

While significant progress has been made in initial 10 high-burden countries, zinc/ORS coverage is still well below GAPPD target (90%) and other countries are lagging behind.

**ORS coverage – Most recent DHS/MICS 2015-18**

**Combined ORS and zinc coverage – Most recent DHS/MICS 2015-18**


* KNBS/CHAI 2016 household survey
Results and lessons have been documented and disseminated through various channels including in-country meetings, publications, and international conferences.

- **Local stakeholders**: Supported governments to host dissemination meetings and create reports summarizing results
- **Conferences**: Symposium presentation at ASTMH 2018 with the Diarrhea Innovations Group
Acknowledgements

• National governments of India, Kenya, Nigeria, and Uganda
• State governments of Gujarat, Madhya Pradesh, Uttar Pradesh, Bauchi, Cross River, Lagos, Kaduna, Kano, Katsina, Niger, and Rivers
• Funders: Absolute Return for Kids, the Bill and Melinda Gates Foundation, ELMA Foundation, Global Affairs Canada, IKEA Foundation, the International Zinc Association, and the Norwegian Agency for Development Cooperation
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