

Evaluation of a public sector childhood diarrhea management program with zinc and ORS in the Indian state of Bihar

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Presentation Outline

- Burden of diarrhea among children under-five
- Diarrhea treatment with ORS and zinc
- Program and evaluation objectives
- Program overview
- Evaluation
 - Design
 - Household coverage surveys
 - Provider assessment
- Summary of key findings
- Lessons learned

Burden of diarrhea among children under-five: Mortality

- Diarrhea is a leading cause of death among children under five years of age globally
 - 0.578 million deaths in 2013¹
- More under-five deaths attributable to diarrhea in India than in any other country
 - 0.140 million deaths in 2013¹
- Bihar is 2nd highest burden state in India²

1. Liu L, et al: Global, regional, and national causes of child mortality in 2000-13, with projections to inform post-2015 priorities: an updated systematic analysis. *Lancet* 2014, 385(9966):430-40.

2. Lahariya C, Paul VK: Burden, differentials, and causes of child deaths in India. *Indian J Pediatr* 2010, 77(11):1312-1321.

Burden of diarrhea among children under-five: Morbidity

- Diarrhea is a leading cause of morbidity among young children in low- and middle-income countries
- ~1.73 billion diarrheal episodes/yr in children under-five¹
- In India, children under-five experience ~2-4 episodes/yr²

1. Fischer Walker C et al: Global burden of childhood pneumonia and diarrhoea. *Lancet* 2013, 381(9875): 1405-16.

2. Fischer Walker C et al: Diarrhea incidence in low- and middle-income countries in 1990 and 2010: a systematic review. *BMC Public Health* 2012, 12:220.

Diarrhea Treatment with ORS & Zinc

- Government of India and Indian Academy of Pediatrics diarrhea treatment guidelines in line with WHO/Unicef
- Oral rehydration salts (ORS)
- Therapeutic zinc supplementation
 - 14 days; 20 mg/d ages 6-59 mos; 10mg/d ages 2-5 mos
- Low coverage of ORS and zinc at national and state levels

Program and Evaluation Objectives

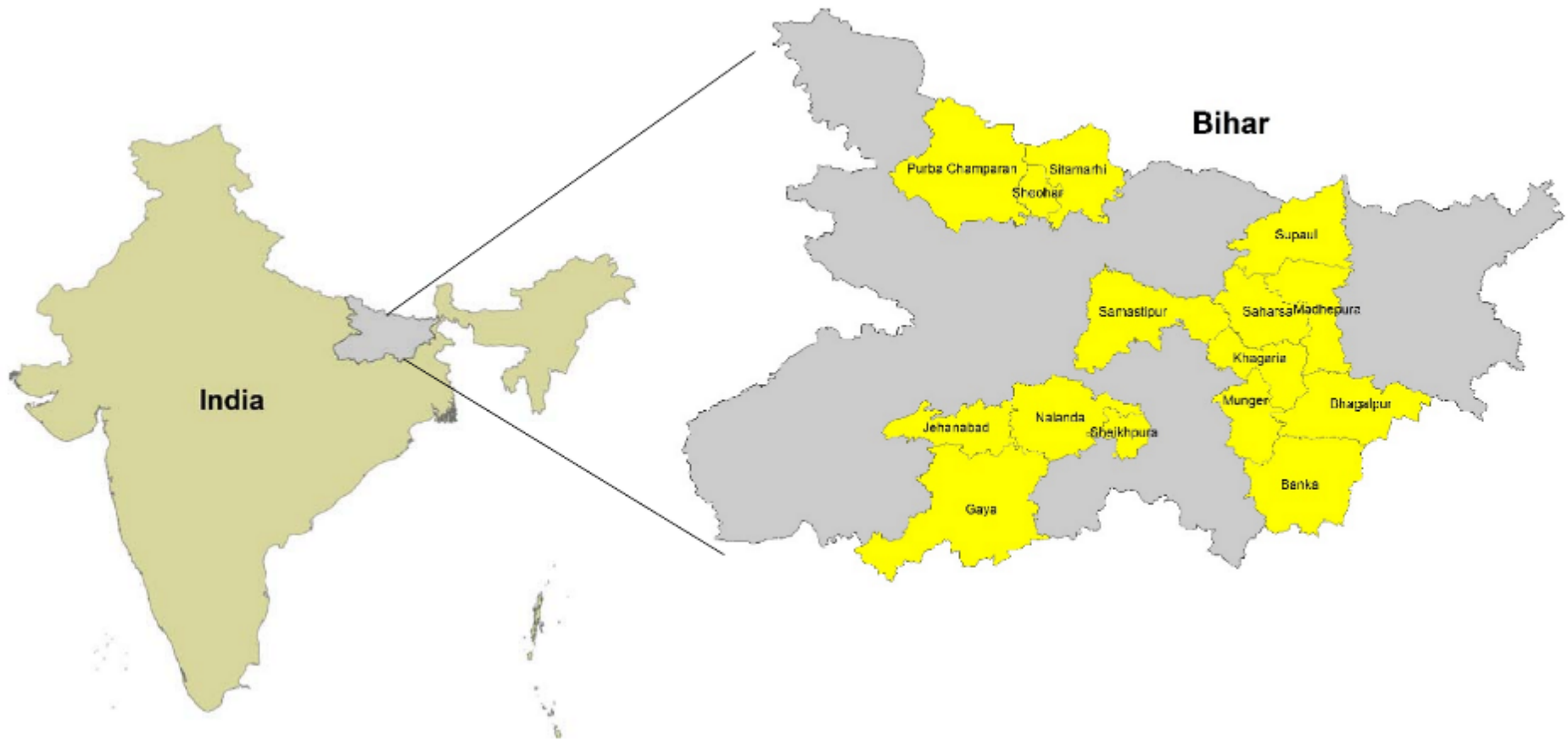
Purpose of the Overall Project:

- ▣ To reduce morbidity and mortality related to diarrheal disease among children under five through deployment of enhanced public sector delivery of zinc and ORS for the treatment of diarrhea in Bihar, India.

Purpose of the External Evaluation Arm of the Project

- ▣ To evaluate the coverage and quality of public sector zinc and ORS delivery strategies in the target areas of Bihar, India.

Program and Evaluation Objectives



Program Overview

- **Training public sector providers**
 - **Facility-based providers**
 - Medical officers at Primary Health Centers (PHCs)
 - Auxiliary Nurse Midwives (ANMs)
 - **Community-based providers**
 - Accredited Social Health Activists (ASHAs)
 - Anganwadi Workers (AWWs)

- **Procurement of ORS and zinc stocks**

Timeline of implementation

September 2010	MI and CIFF sign agreement
March 2011	Program rolls out in 5 demonstration districts
June 2011	Procurement & distribution of initial seed supplies
2012-2013	Incorporation of budgets for procurement of zinc and ORS under NHM PIP
May 2013	Incorporation of indicators into HMIS
May 2013	Scale-up to entire state

Evaluation Design

- **Baseline and post-intervention household coverage surveys** to assess diarrhea treatment practices in intervention areas
 - Collected data on knowledge, care-seeking for episodes in the last 14 days, and awareness of zinc and ORS
 - May-Jun 2011 and Sep–Dec 2013

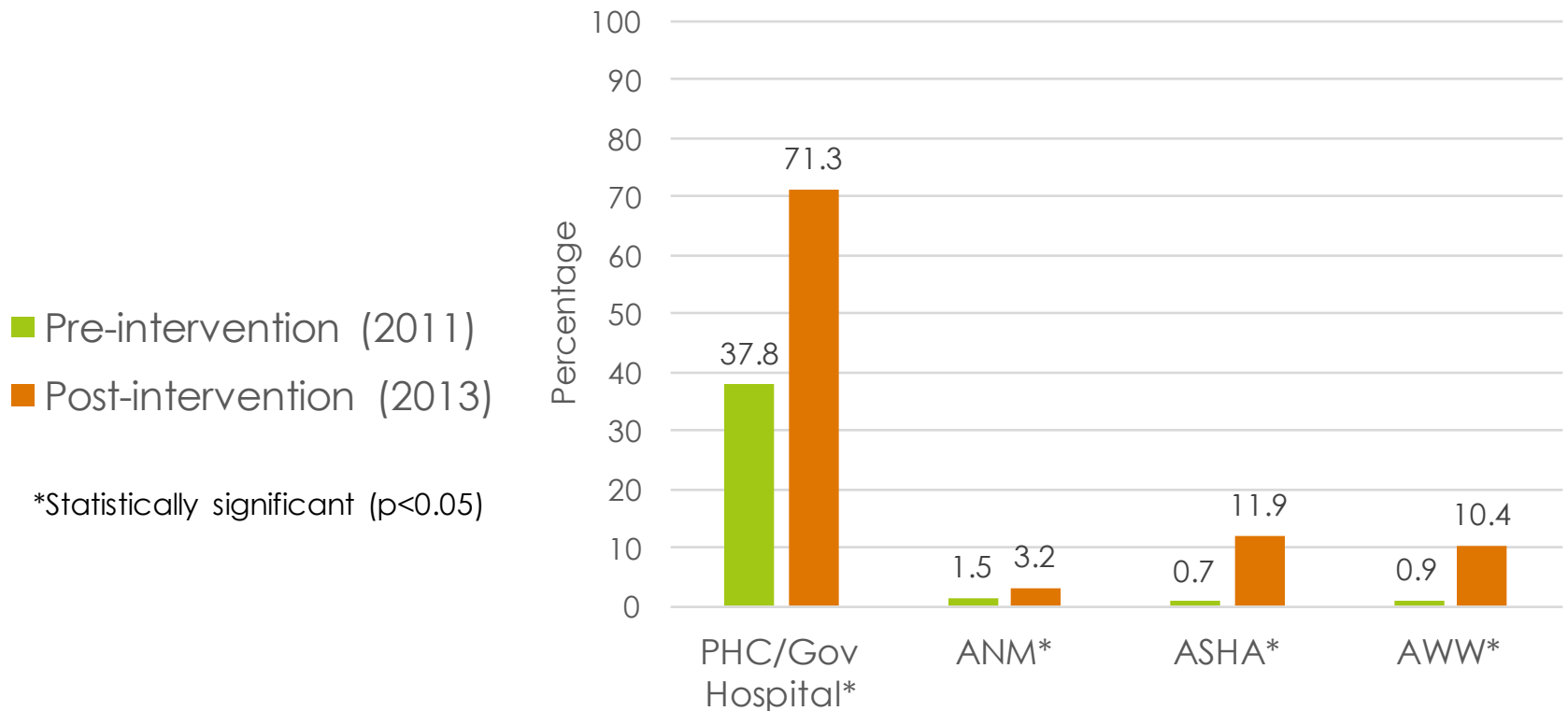
- **Two rounds of provider assessments**
 - Early assessment several months after training completed and supplies in place (Oct–Nov 2011)
 - Midline of project (Dec 2012 & Feb–March, 2013)
 - Interview and observations to assess quality of care and prescribing practices of public sector health care workers

Household Coverage Surveys - Overview

- Conducted in all 15 districts; Pre- and Post-intervention
 - 2011: 2645 children; 437 with diarrhea in last 2-weeks
 - 2013: 5843 children; 750 with diarrhea in last 2-weeks
- Sample size divided equally across districts to ensure equal representation
- A random sample of villages was chosen from within each district and a random sample of households was chosen from within each selected village
- Households screened for the presence of a child 2-59 months of age and consenting mothers were enrolled

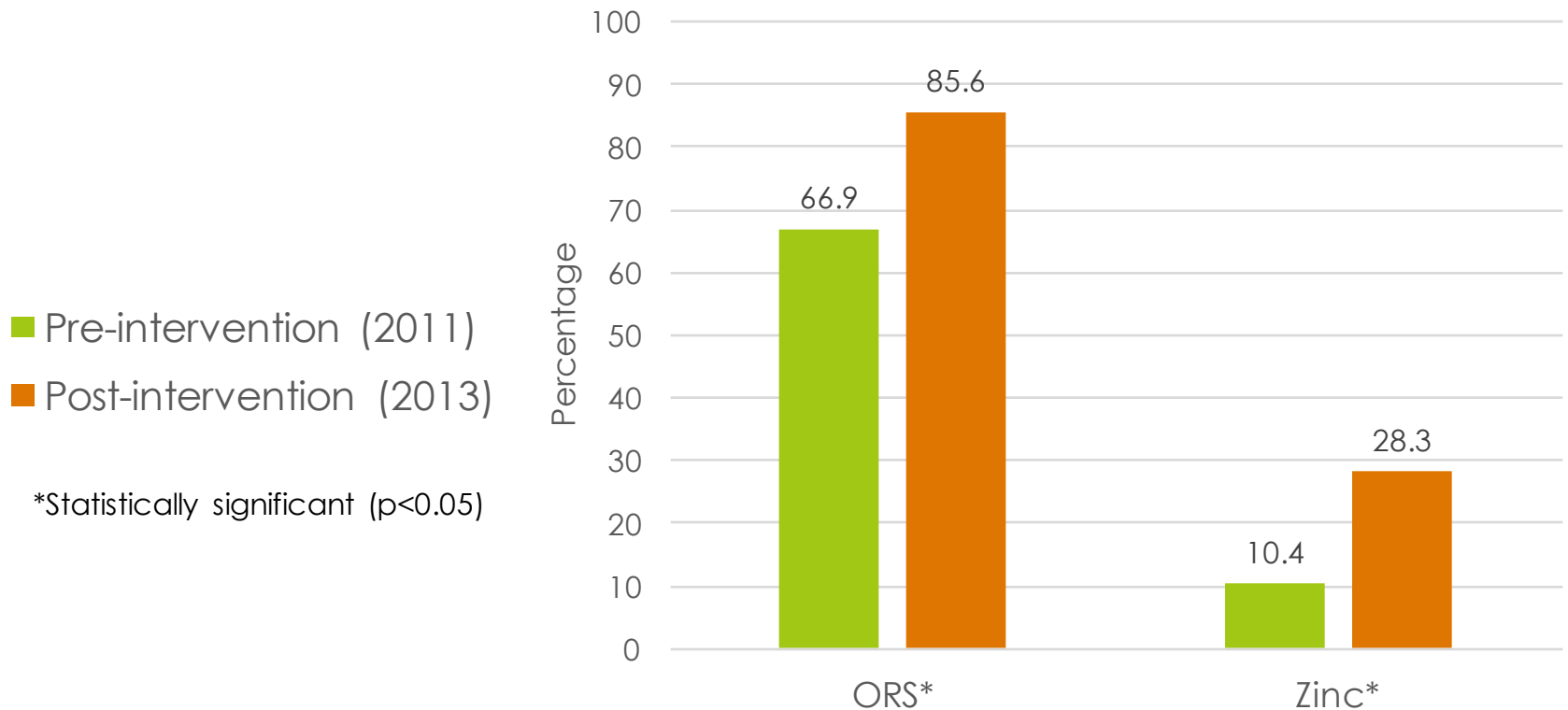
Household Coverage Survey – Results

Reported appropriate sources of diarrhea careseeking



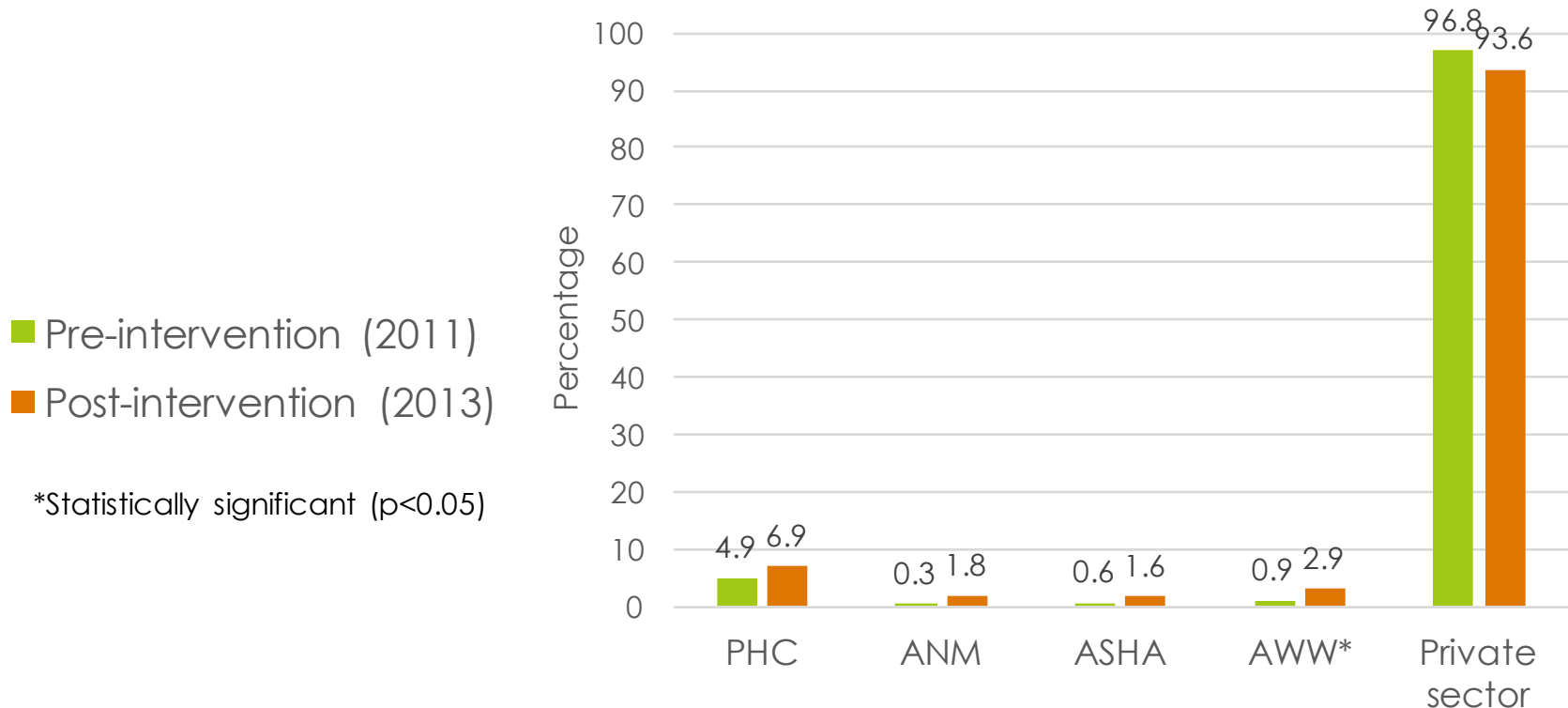
Household Coverage Survey – Results

Awareness of ORS and Zinc for diarrhea treatment



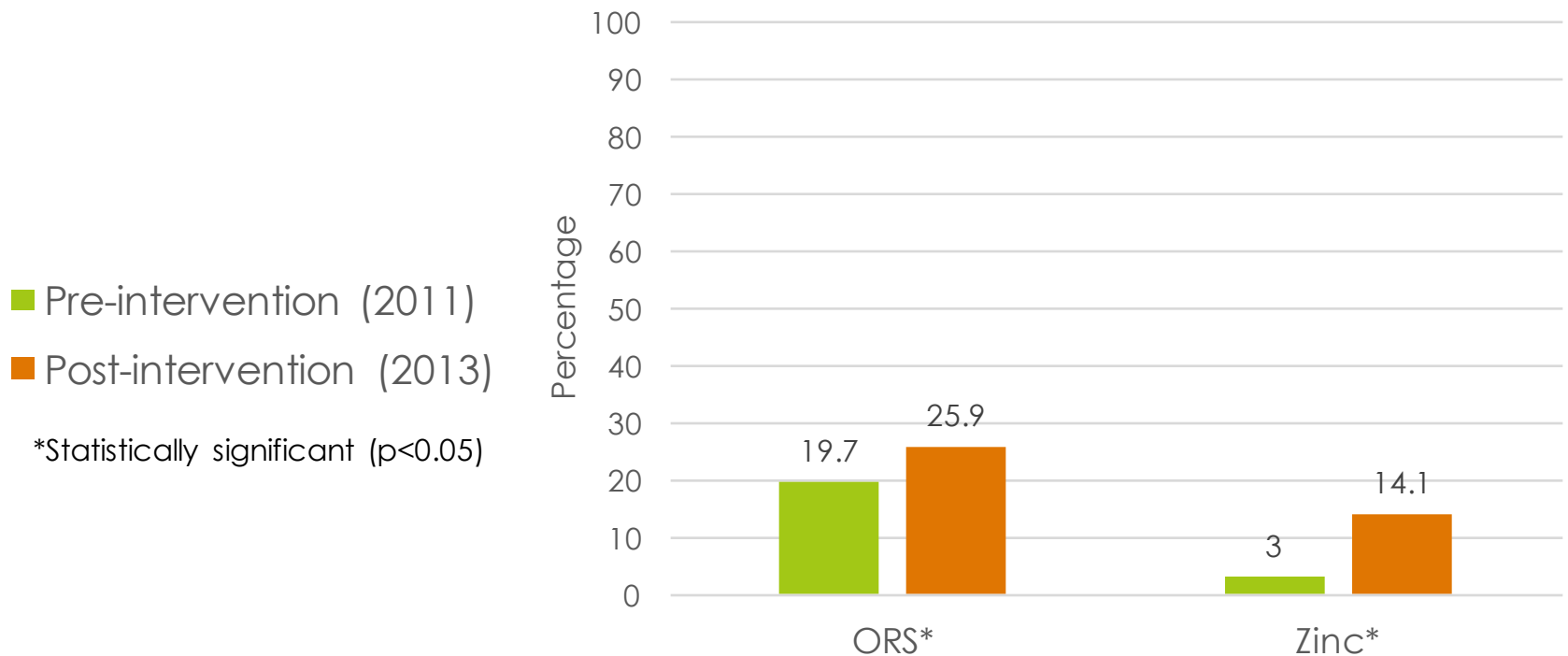
Household Coverage Survey – Results

Source of careseeking for diarrheal episodes occurring in the 2-weeks prior to the survey



Household Coverage Survey – Results

ORS and Zinc treatment of diarrheal episodes occurring in the 2-weeks prior to the survey



How coverage of ORS & zinc were assessed

- In the baseline and midline household surveys, data collectors asked caregivers whose children had had an episode of diarrhea in the previous 14 days about the care the child received.
- At baseline (2011) ORS coverage was 19.7%, and zinc coverage was 3.0%, *from either a public or a private sector provider.*
- At baseline, most caregivers reported that they'd given the child a syrup, tablet, or powder but they didn't know if the treatment was zinc or something else.
- At midline, data collectors looked at empty packets and collected packets from caregivers (if available) to determine if the child had received ORS, zinc, antibiotics, etc.
 - Data collectors showed caregivers photos of drug products' packages
 - The products look very similar and were easily confused or mistaken for antibiotics, which are better known than zinc.
 - Caregivers follow providers' advice and give recommended drugs, but many do not remember the name of the drug.
- At midline (2013), ORS coverage was 25.9% and zinc coverage was 14.1% *from either a public or a private sector provider.*
- *At midline, 14.1% of caregivers reported having given a treatment, and the data collector confirmed that the treatment was zinc.*

Provider Assessment - Overview

- Conducted in 5 project districts
- Included 35 PHCs across the 5 districts
- Sample size:
 - 165 ASHAs in round 1; 153 ASHAs in round 2
 - 165 AWWs in round 1; 153 AWWs in round 2
- Interviews and direct observations of ASHAs and AWWs

Provider Assessment– Interview Results

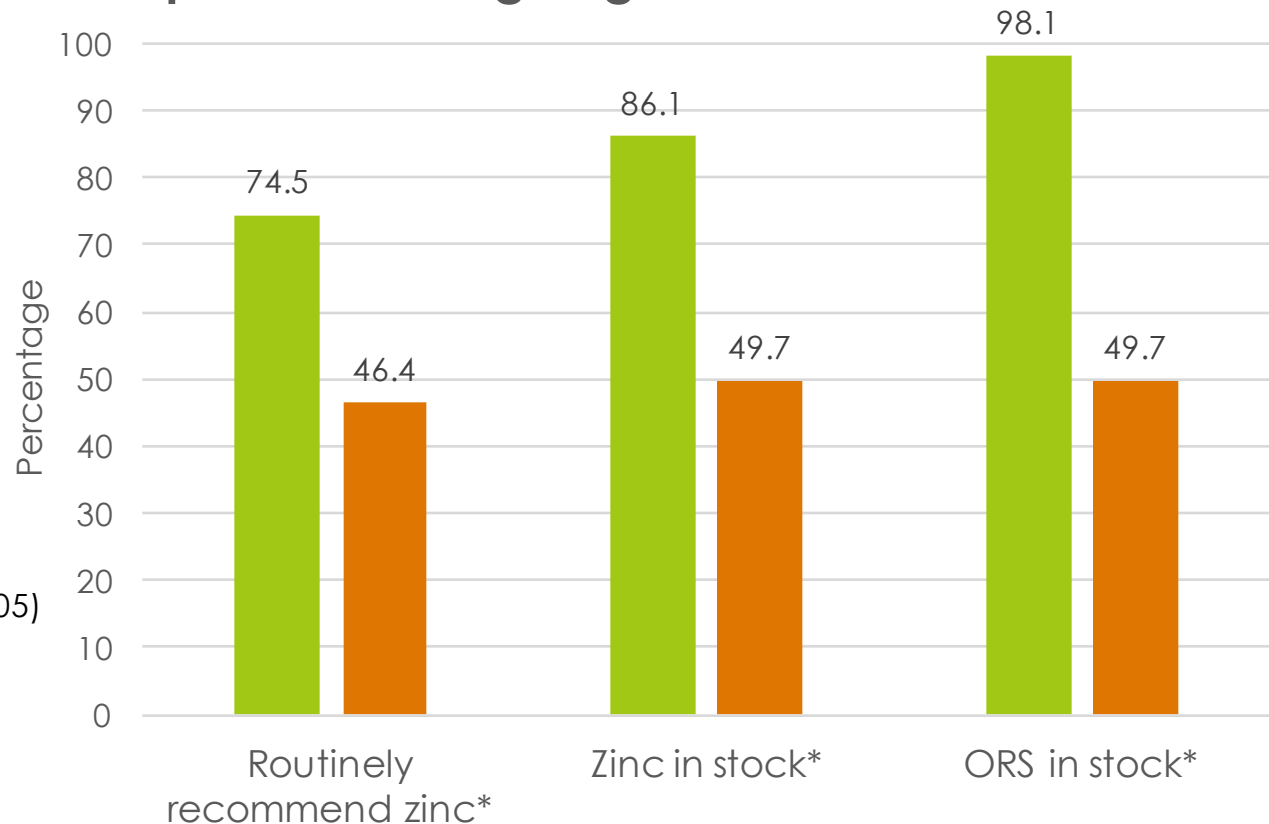
Interview responses among ASHAs



*Statistically significant ($p < 0.05$)

Provider Assessment– Interview Results

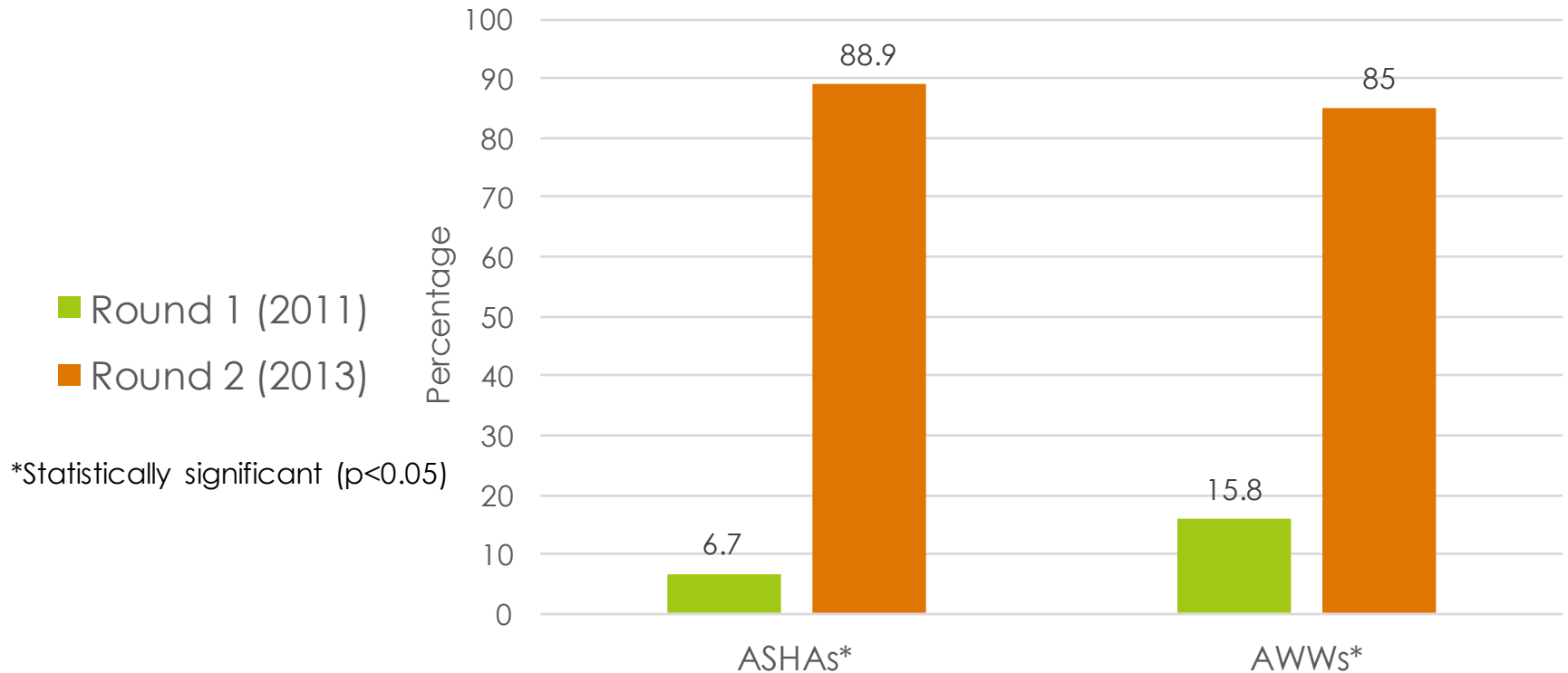
Interview Responses among Anganwadi Workers



*Statistically significant ($p < 0.05$)

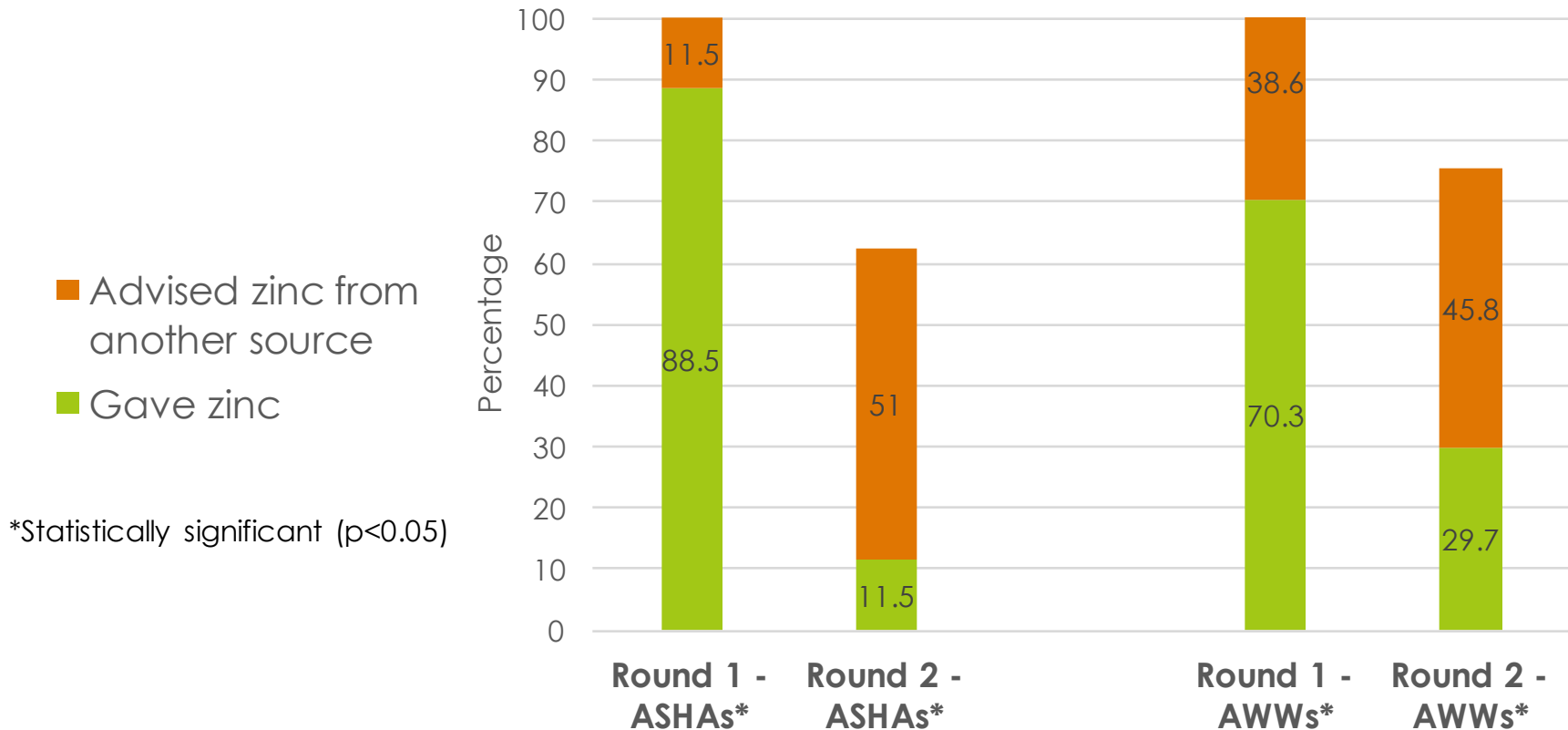
Provider Assessment– Interview Results

Reported zinc stock-outs as the main reason for ever not advising zinc to a child under-five with diarrhea



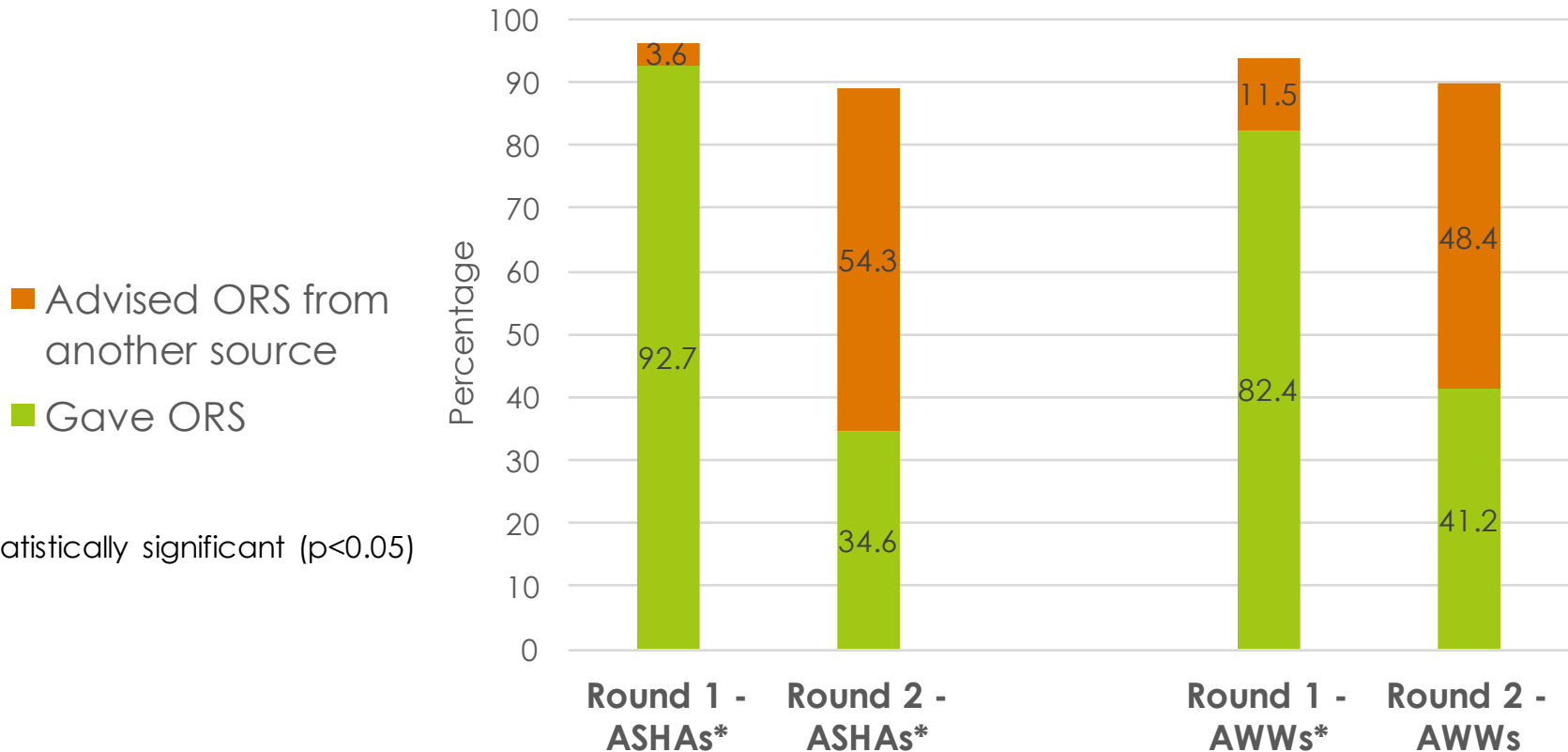
Provider Assessment– Observation Results

Observed zinc prescribing among ASHAs and AWWs



Provider Assessment– Observation Results

Observed ORS prescribing among ASHAs and AWWs



*Statistically significant (p<0.05)

Summary of Key Findings

- Zinc coverage increased from 3.0 to 14.1% and ORS coverage increased from 19.7 to 25.9% in 2.5 years
- Public sector careseeking increased from 6.4% to 13.1%
- Among children who sought care in the public sector, more than 48% received zinc and 50% received ORS
- Routine prescribing of zinc/ORS was less common and stock-outs were more common among ASHAs and AWWs during round 2
- Even during stock-outs, ASHAs and AWWs advised ORS/zinc through other channels

Lessons Learned

- Promising results but demand generation activities may have enhanced increases in public sector careseeking and ORS/zinc awareness among mothers
- Quality training can lead to high levels of ORS and zinc prescribing among community health workers
- Maintaining a steady supply of ORS/zinc stocks is critical
- Frequent stock-outs may jeopardize routine prescribing and lead to diminished confidence in ASHAs and AWWs as acceptable providers for diarrhea treatment