



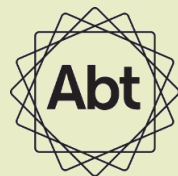
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Increasing use of zinc in the treatment of pediatric diarrhea in Benin: Lessons learned for global programs

Emily Sanders (Presenter), Kathryn Banke, Julie Williams, and Vicki MacDonald (Presenter)

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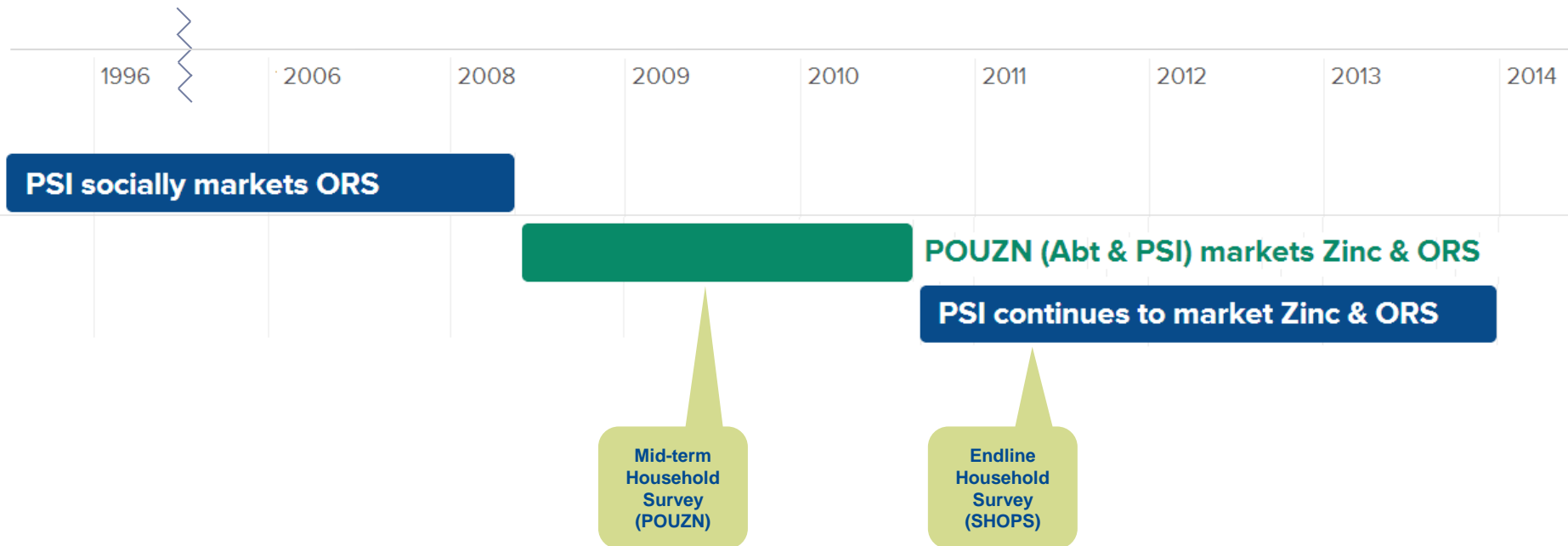
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Pediatric diarrhea in Benin

- Diarrhea is the second-leading cause of death among children under five worldwide and in Benin
 - 13% of all childhood deaths in Benin are diarrhea-related
 - Diarrhea prevalence of 6% among children under five (DHS 2011-12)
- WHO/UNICEF (2004): use zinc plus oral rehydration solution (ORS) to manage acute diarrhea in children under five
 - Benin MOH adopted policy in 2007



Timeline



Unique Context

- Baseline = No local manufacturer of either zinc or ORS. PSI marketing ORS (Orasel)
- Abt/PSI (POUZN) imported products and co-packaged two ORS sachets with ten tablet blister of zinc and built the market for Orasel Zinc on its established market for Orasel.
- Ministry of Health purchased its supplies from POUZN and sold the co-pack at the same retail price (CFA 450 = \$0.90)
- Program reaching 70% of the population by 2011



Benin POUZN Program

- Co-packaged product distributed through PSI's partner wholesalers to MOH, chemists and FMCG outlets
- Demand creation
 - Community mobilization through partnerships with local NGOs and community radio stations
 - Mass media (radio and television ads)
- Training Providers
 - 460 public health clinics
 - 174 commercial pharmacy staff
 - 60 rural drug shops



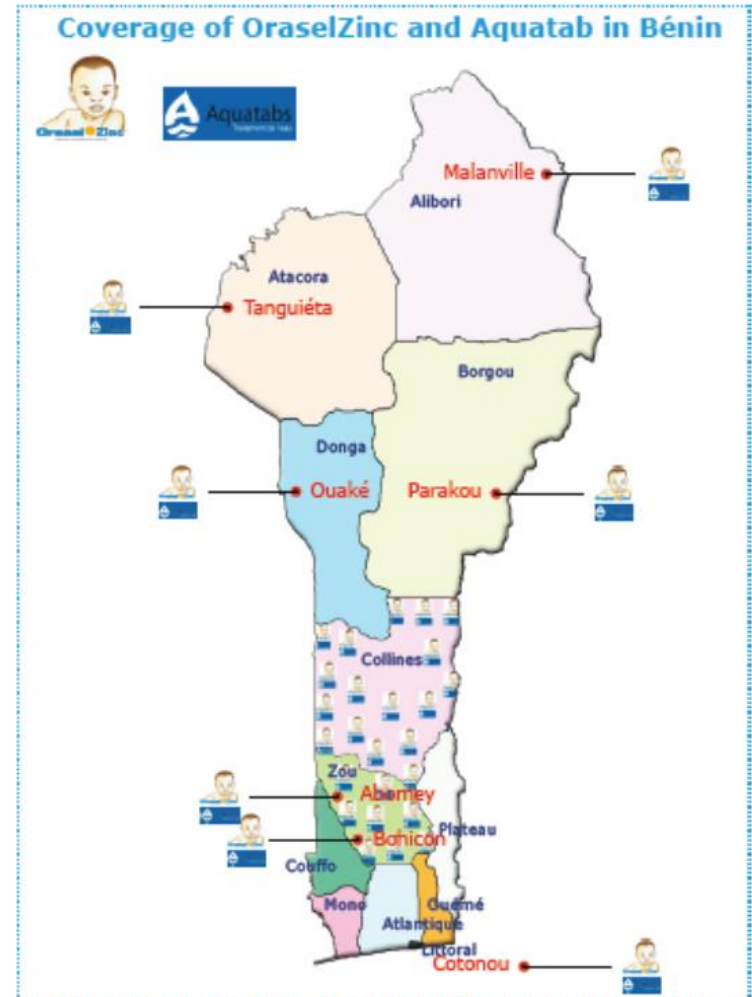
Research objectives

Did caregiver knowledge, attitudes and practices surrounding pediatric diarrhea management, including the correct use of ORS and zinc change over time?

- 2008 Baseline: No zinc
- 2009 (after ~1 year of implementation): measure KAP to inform program interventions
- 2011 (after ~3 years of implementation): determine if KAP changed over time

Methodology

- Quantitative study: Household surveys conducted in 7 urban/peri-urban communes located in 6 targeted departments and in Benin's largest city of Cotonou



Methodology (continued)

- Multi-stage sampling approach used to select female caregivers (mothers) of a child 0-59 months with diarrhea in 2 weeks prior to survey in 2009 (n=294) and 2011 (n=392)
- T-tests and chi-squared tests assessed statistical significance within and between years.
- Logistic regression tested predictors of zinc use

Key Findings

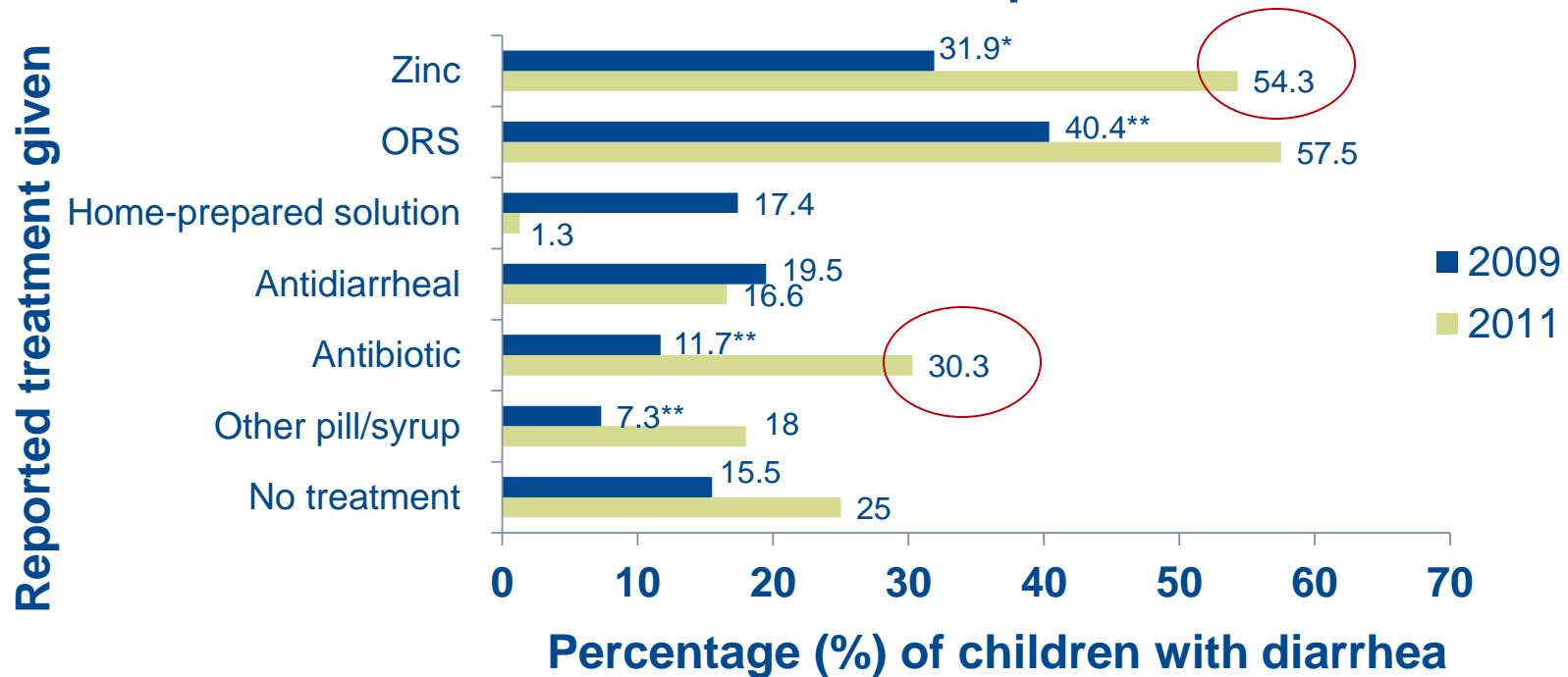


Comparison of 2009 and 2011 samples

- No statistically significant difference in age and sex in 2009 and 2011
 - Plurality of children aged 12-35 months – consistent with DHS data globally on highest prevalence group
- Statistically significant difference in access to improved water and sanitation sources, caregiver's education and wealth quintile indicating wealthier sample in 2011

Use of zinc and ORS is rising

Treatment (reported by caregiver) for diarrhea among children with diarrhea in the past 2 weeks

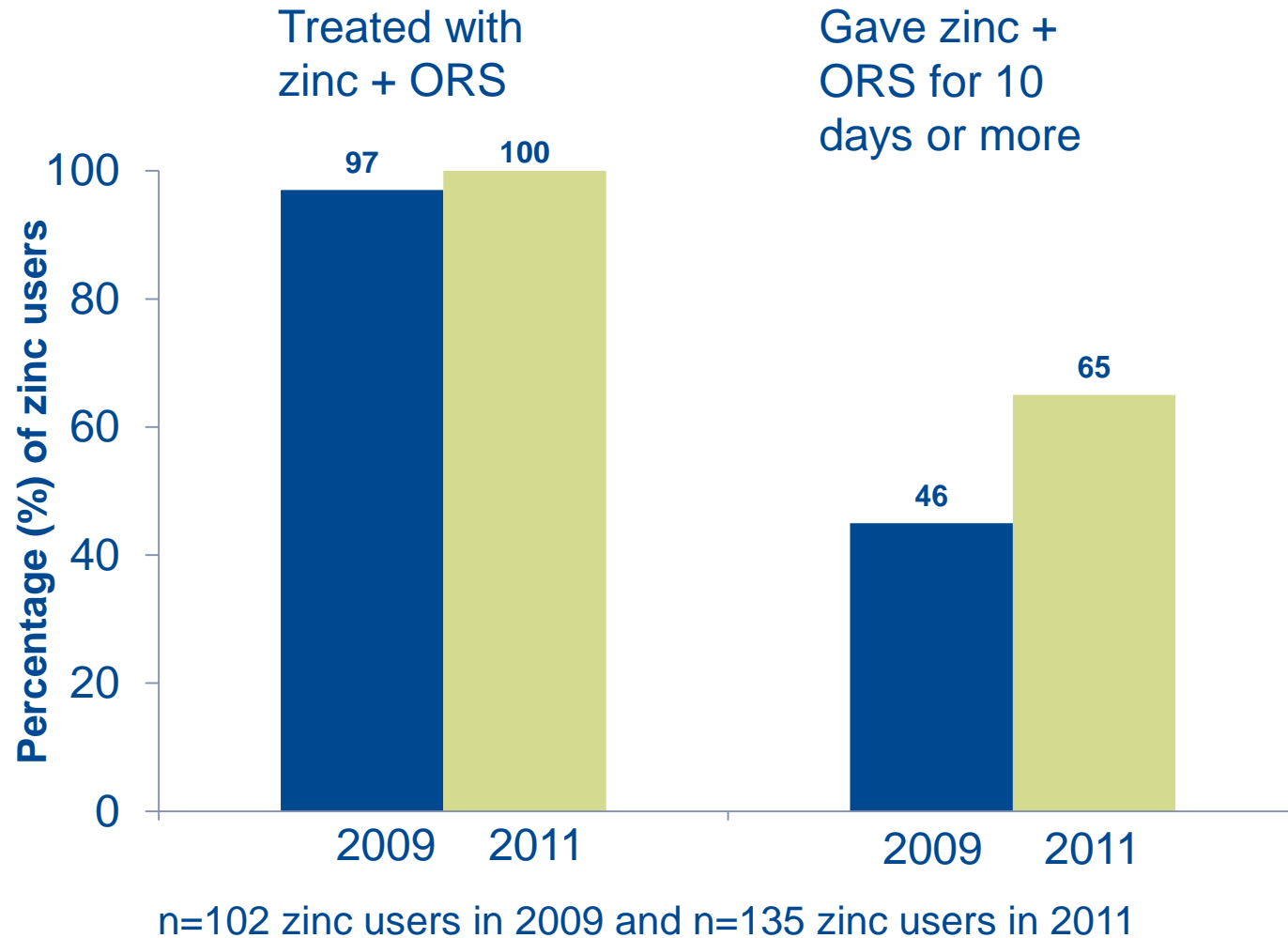


Note: Respondents may report multiple choices so the sum may exceed 100%. N=294 children with diarrhea in 2009 and n=392 children with diarrhea in 2011.

*p<0.05 for statistically significant difference between 2009 and 2011 proportions.

**p<0.01 for statistically significant difference between 2009 and 2011 proportions.

Correct treatment among zinc users rose



Both public and private sectors are important sources of zinc

Source of zinc products reported by caregivers who used zinc for diarrhea treatments in the past 2 weeks

Source of zinc products	2009 Percent of all zinc users	2011 Percent of all zinc users
Public sector		
Health clinic	64.1	56.1
Community worker	7.0	1.5
Private sector		
Private clinic/seller	--	15.1
Pharmacy	23.9	22.3
NGO/FBO	--	0.2
Friend/relative	5	1.0
Number of responses	101	131

*Note, significance testing not possible because the private sector subcategories were different in 2009 and 2011.

Inappropriate treatment with antibiotics persists

- Proportion of zinc users that also gave an antibiotic increased significantly from 11% in 2009 to 39% in 2011
- In 2011, 59% of caregivers who asked for and received a specific treatment said they requested Orasel Zinc
 - Only 6% said they requested an antibiotic

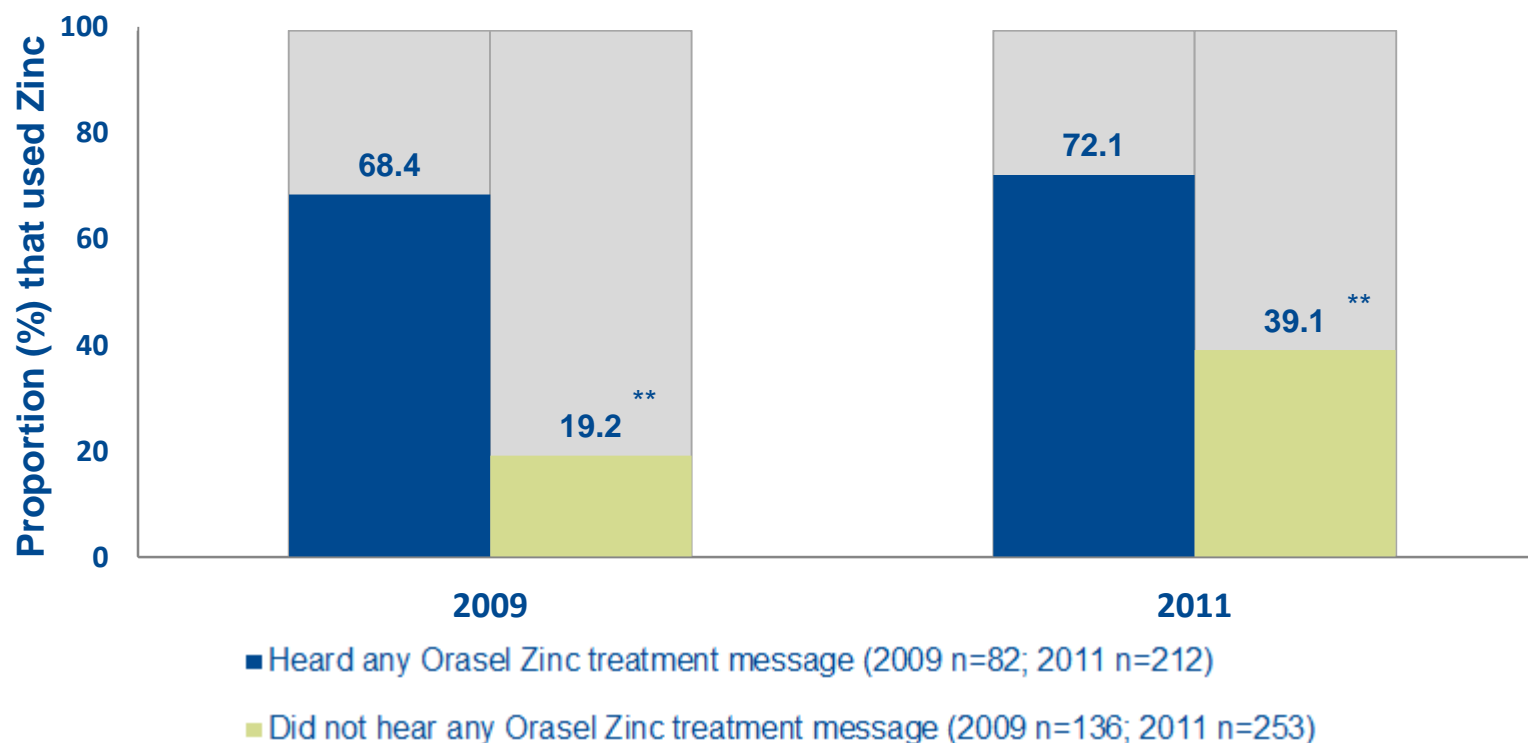
Health providers play an important role in encouraging use of zinc

- Interpersonal communication is a key driver of zinc use: proportion of caregivers who spoke to someone about zinc rose from 12 to 32 percent
 - Most of these conversations were with a health provider
- Most (62%) zinc users in 2011 treated with zinc because their provider recommended it



Exposure to Orasel Zinc messages is associated with zinc use

Zinc use by recall of Orasel Zinc messages, 2009 and 2011



** Statistically significant difference within year (2009 or 2011) between groups that heard/did not hear message at $p < 0.01$ level
Note: Statistically significant difference between years (2009 and 2011) among “did not hear orasel zinc message” group at $p < 0.01$ level

Mass media is a key source of zinc messages

- In 2011, 76% of caregivers that heard any message about Orasel Zinc heard this message on television (vs. 20% in 2009)
- Radio continued to be a significant source of zinc messages
 - 56% of caregivers in 2009 and 41% in 2011 that heard any message said they heard it on radio

Positive predictors of zinc use

- Recalled exposure to Orasel Zinc messaging
- Speaking to health personnel
- Seeking diarrhea treatment from a professional health provider
- Proximity to a source of Orasel Zinc kits (2011 only)

Conclusions

1. Over three years of program implementation use of zinc increased dramatically
2. Inappropriate use of antibiotics for diarrhea treatment is a continuing challenge
3. Mass media and interpersonal communication with providers are critical drivers of zinc use

Lessons Learned Overall

- Overall our three pillar program is the right approach
 - Need for **reliable distribution systems** that assure an affordable product is widely available—especially in rural areas
 - **Demand generation** that encompasses both mass media and interpersonal communications
 - **Provider sensitization/training** that is robust with continuing contacts/follow-up

Lessons Learned – Consumer Demand

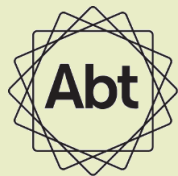
- Demand generation, especially mass media, is critical in reaching both consumers and providers
 - Don't assume that the poor don't see TV
 - Use every channel available
 - Television/radio
 - Community mobilization
 - Focus messaging on a) use of zinc with ORS; b) use of zinc for the full 10 days, c) dangers of overuse of antibiotics

Lessons Learned – Appropriate Treatment

- Antibiotic use is still a major problem. Need continuing efforts to change this behavior.
 - Attempted to improve behaviors with SMS follow-up messaging – conducted RCT trial in Ghana with Licensed Chemical Sellers
 - Conducting qualitative research in Ghana in 2014 to delve further into behavioral motivators and patient-provider interactions
 - Initiation of quarterly supportive supervision to improve counseling skills and treatment-related behaviors
 - Intensified and improved training and follow up marketing visits to reinforce messages

Sanders, Emily, Kathryn Banke, Julie Williams and Vicki MacDonald. 2013. *Introducing zinc through the private sector in Benin: Evaluation of caregiver knowledge, attitudes and practices, 2009 and 2011*. Bethesda, MD: Strengthening Health Outcomes through the Private Sector Project, Abt Associates.

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