Mobile phone messages to improve treatment of childhood diarrhea: evaluation findings

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Context: Pediatric diarrhea

- 2nd leading cause of death in children under 5 years (15%)
- At least 700,000 deaths per year
- Dehydration is most immediate cause of death

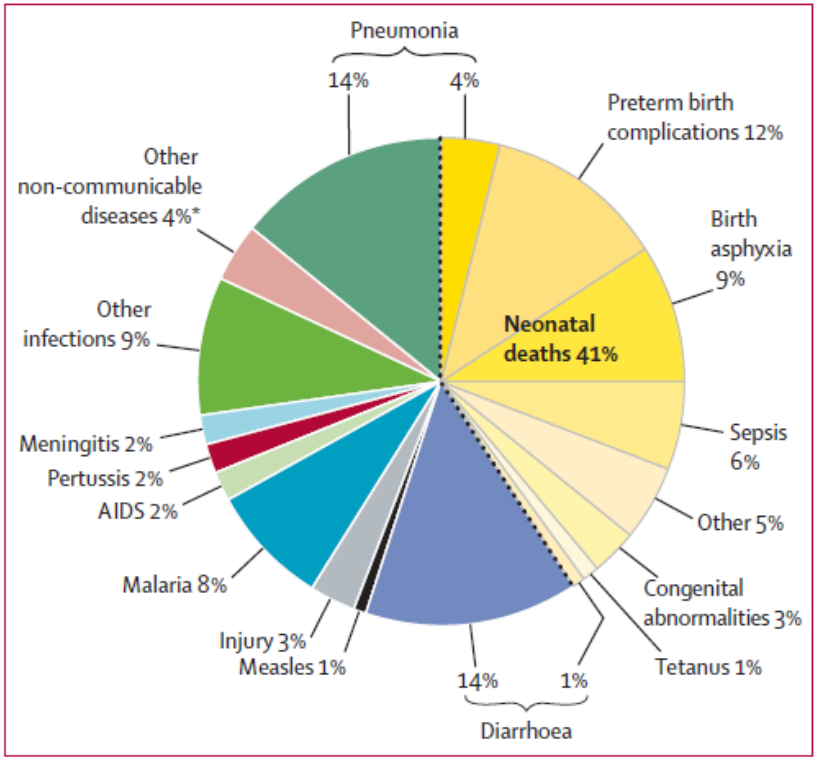


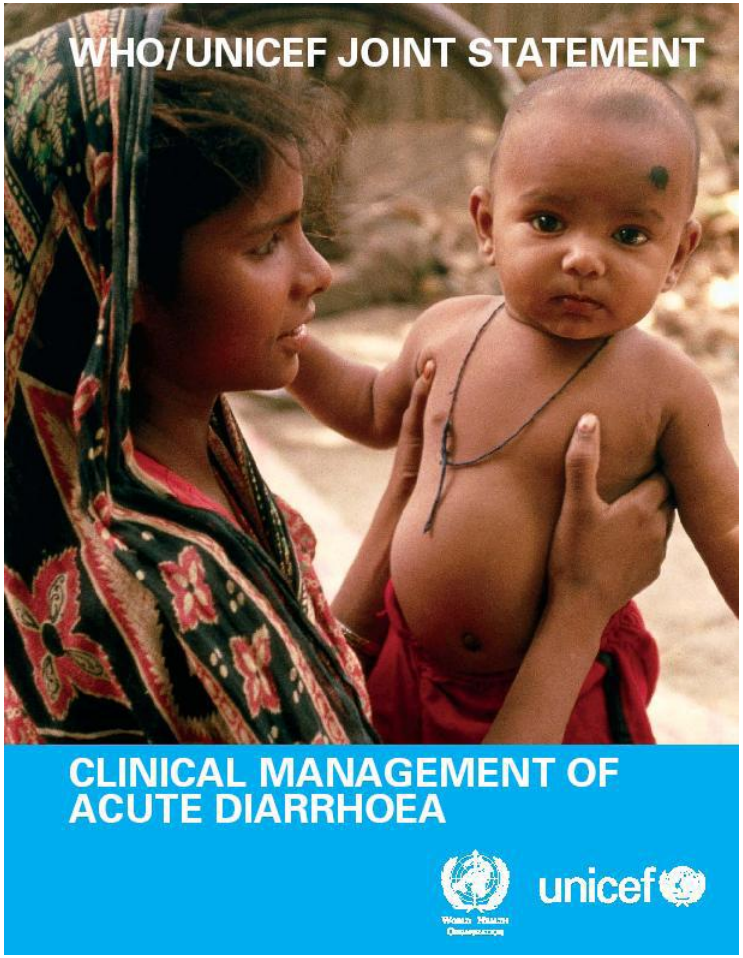
Figure 4: **Global causes of child deaths**
Data are separated into deaths of neonates aged 0–27 days and children aged 1–59 months. Causes that led to less than 1% of deaths are not presented.
*Includes data for congenital abnormalities.

Source: Black et al. Lancet 2010; 375:1969-1987

WHO/UNICEF Joint Statement 2004

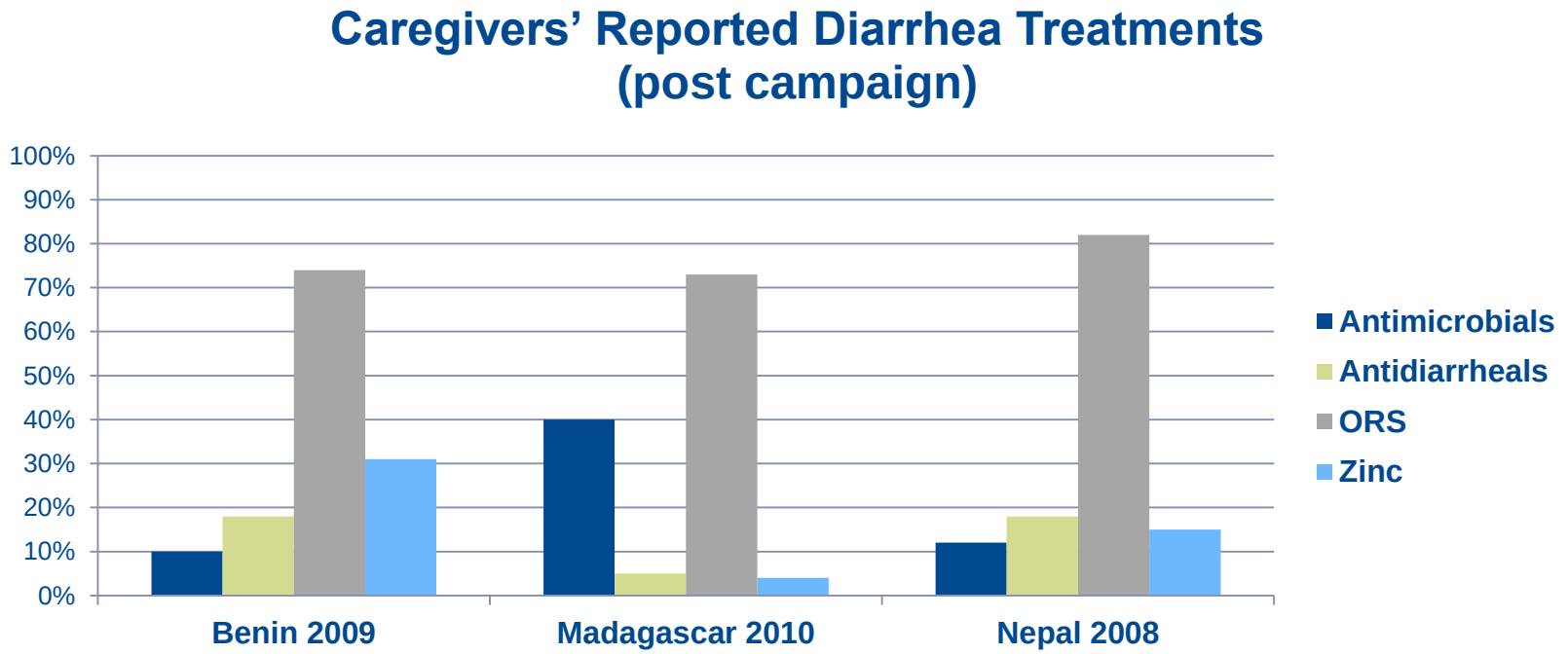
Revised recommendation for the treatment of childhood diarrheas:

- Oral rehydration solution (ORS)
- 10 or 20 mg zinc for 10 days
- Antimicrobials ONLY for complicated diarrhea
- Antidiarrheals-NEVER



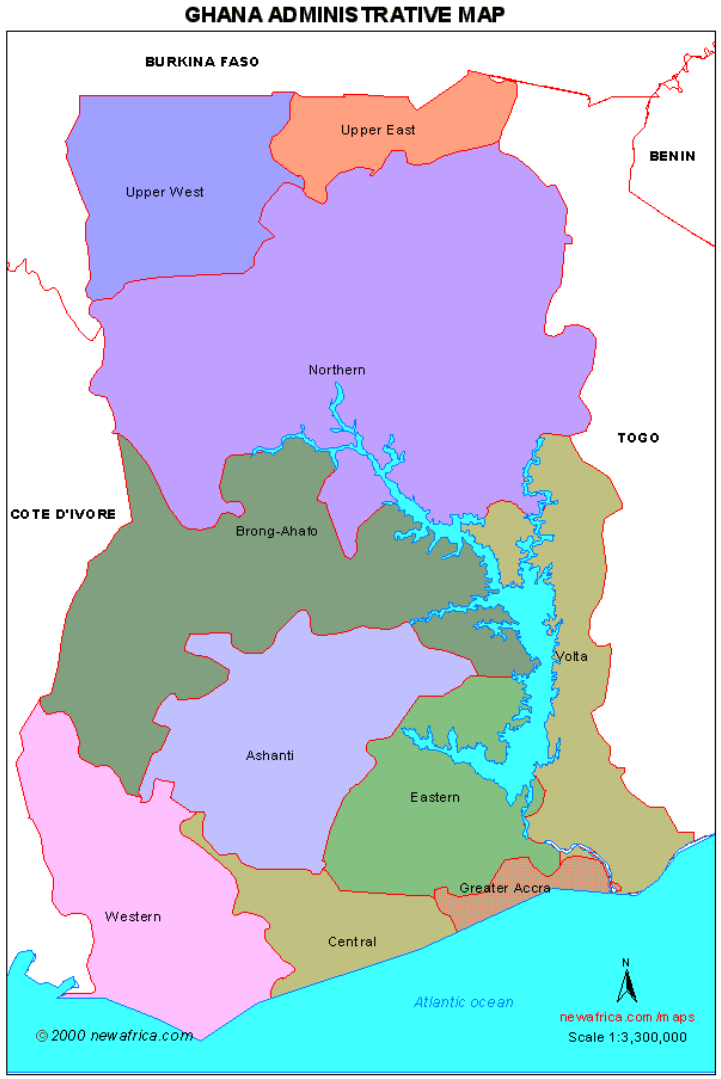
Use of inappropriate treatments persists

- PSP-POUZN and SHOPS have worked to promote the use of zinc and ORS and have successfully increased caregiver use
- Despite increased zinc and ORS use, antimicrobials/antidiarrheals are frequently prescribed



Introduction of zinc in Ghana

- No public or private sector zinc program prior to 2012
- No local pharmaceutical firms manufacturing zinc
- UNICEF and Ghana Health Service ready to introduce zinc into public sector in 2012
- 50% of caregivers seek diarrhea treatment from private sector sources
- USAID invitation to introduce in private sector in 3 target regions



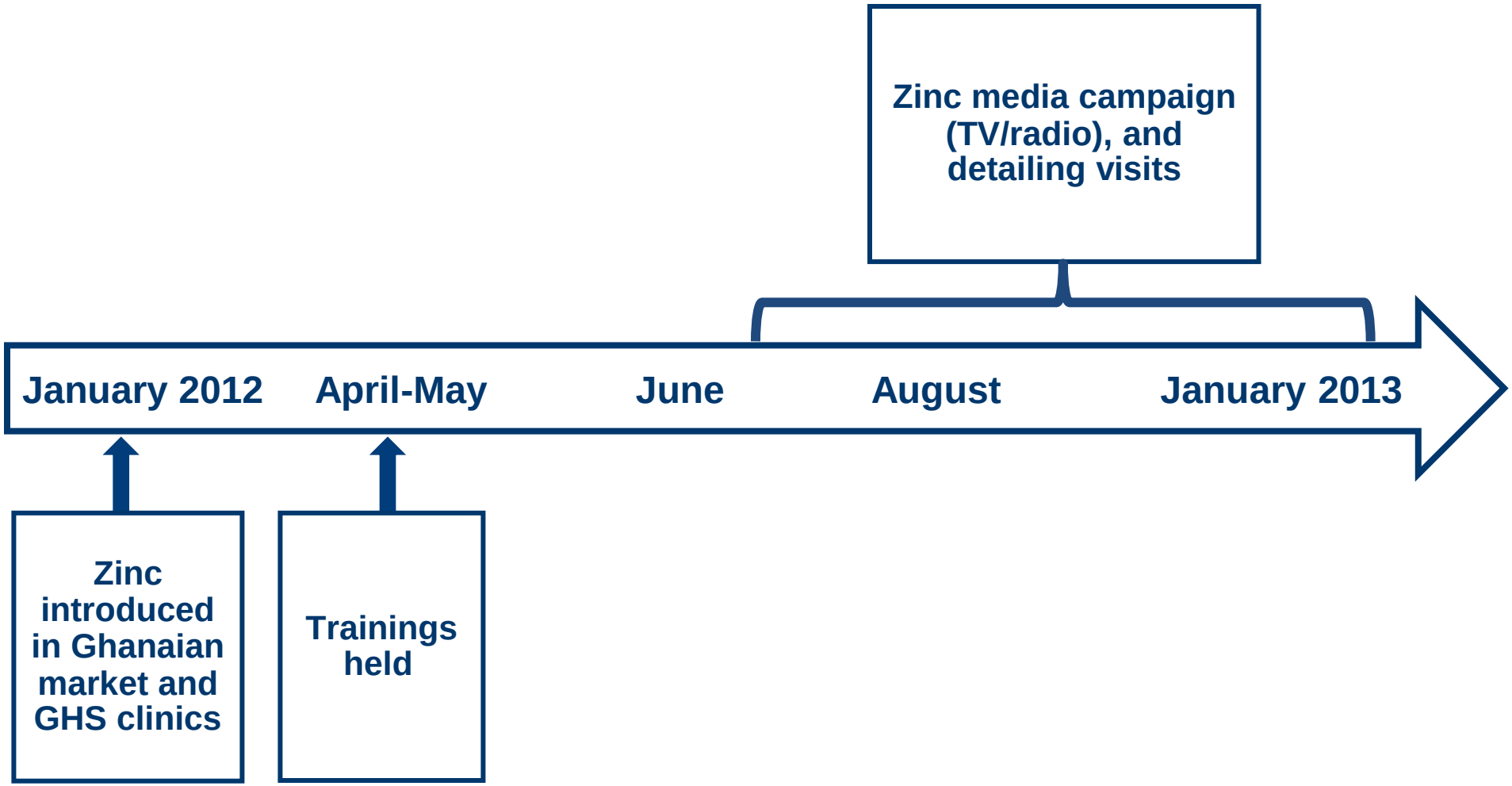
SHOPS standard zinc program introduced in Ghana in 2012

- Public-private partnerships (GHS, UNICEF, Regulatory agencies)
- Facilitated access to quality zinc products through partnership with M&G Pharmaceuticals
  - Only company to register a pediatric zinc product (November 2011)
  - SHOPS signs MOU with M&G (December 2011)
  - M&G introduces Zintab into the commercial market (January 2012)
  - SHOPS grants funds to M&G for marketing support (March 2012)
  - Zintab quality tested and assured by USP

SHOPS standard zinc program in Ghana

- Created overall consumer demand for zinc through national mass media (TV/radio) campaign
- Granted funds to NGOs for community mobilization
- Partnered with Pharmacy Council to train 8600 licensed chemical sellers (LCS) in all 10 regions
- Partnered with professional associations to train 1500 pharmacists and over 500 private clinicians nationwide

Activity timeline



Note: Diarrhea season is April - October

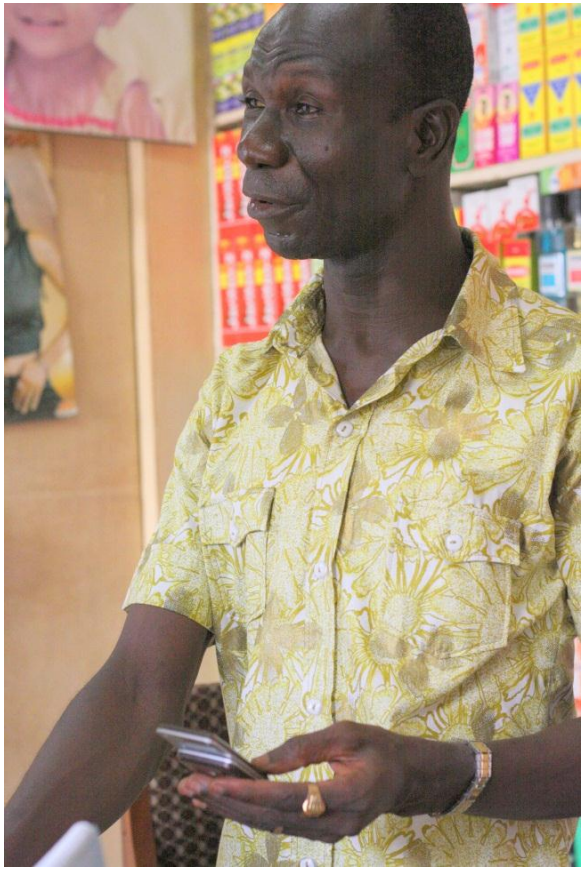
Implementation of SMS intervention to increase knowledge and recommendation of ORS & zinc and decrease inappropriate treatments

Why use SMS?

- All LCS own phones
  - SMS pilot in Uganda showed high user acceptability
- Reinforces training
  - Information distributed over regular intervals (spaced education) increases learning
- Lower cost than in-person detailing visits

SMS intervention overview

- SMS messages started immediately after trainings in June 2012, sent to personal phones
- Informational tips and quizzes sent three times weekly for 8 weeks
- Covered diarrhea and dehydration symptoms, ORS and zinc guidelines, discouraged antimicrobial use



SMS intervention – example of a quiz

- Testing has been shown to increase knowledge retention
- Interactive format ensures messages are read
- Generates data to improve future campaigns

Licensed Chemical Sellers in Ghana

Research questions

1. Did SHOPS training, mass media, and detailing visits increase provision of zinc by LCS?

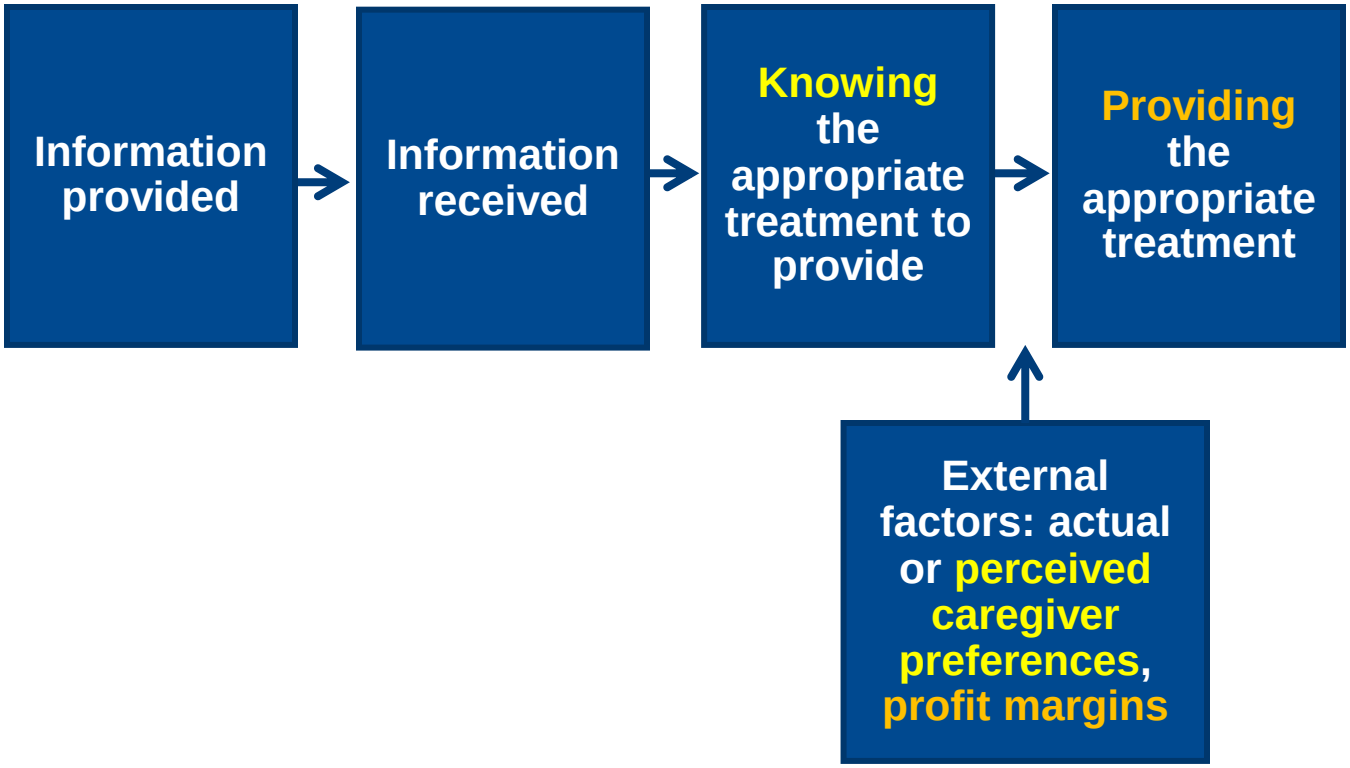
2. Did the SMS intervention lead to a change in:

   a) Knowing the appropriate treatment to provide?

   b) Providing the appropriate treatment?

3. If the SMS intervention is not effective at changing provider behavior, what are some possible explanations?

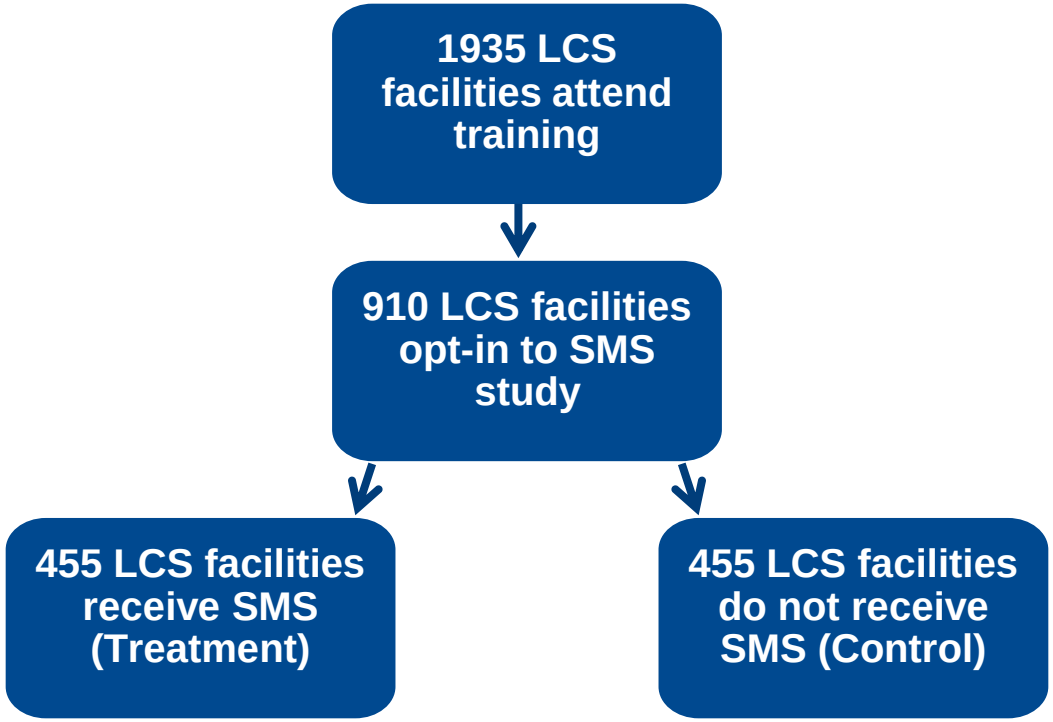
Hypothesized chain of causality



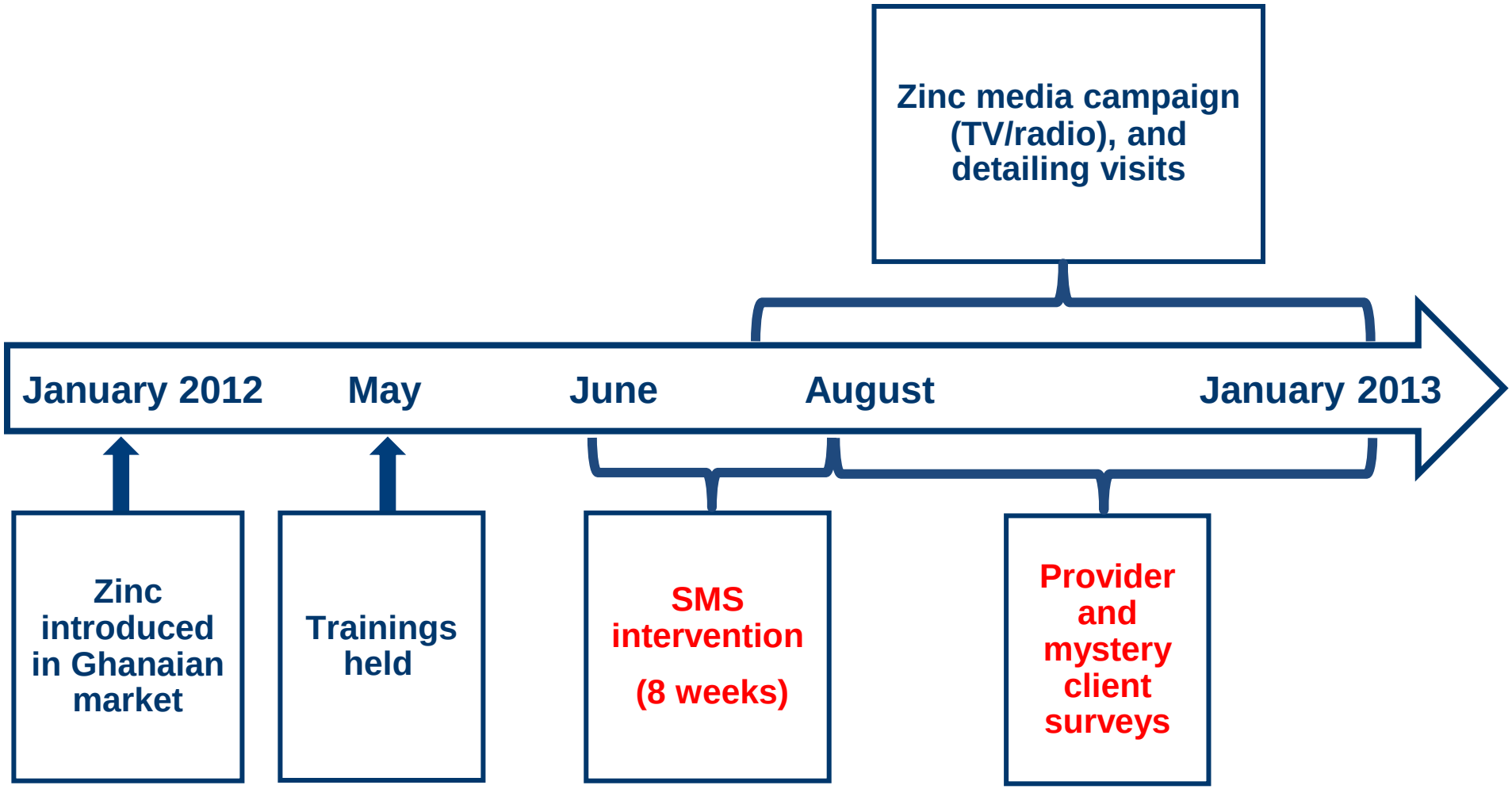
Key:
Indicators in yellow are measured by provider survey; orange by mystery client

Study design

- All LCS and their assistants in 26 districts in Greater Accra, Central, and Western regions invited to attend training in May 2012



Intervention and evaluation timeline



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Ghana LCS zinc activities

Control

- In-person training
- Media campaign
- Detailing visits

SHOPS Standard Zinc Package

Treatment

- In-person training
- Media campaign
- Detailing visits
- SMS Intervention

Data Collection and Findings

Data: Sales data and provider survey

- Zinc sales data

- Provider survey (n=699)
  - Interview scheduled in advance
  - Assesses whether LCS know the appropriate treatment
  - Obtain information about experiences and perceived caregiver preferences

Data: Mystery client surveys

- Mystery client survey (n=699)
  - Woman poses as mother of child with uncomplicated diarrhea
  - No actual children were used
  - Clients stated that they had a child with diarrhea, additional information (age, symptoms…) only given if asked
  - Measures actual LCS behavior and treatments sold, and prices

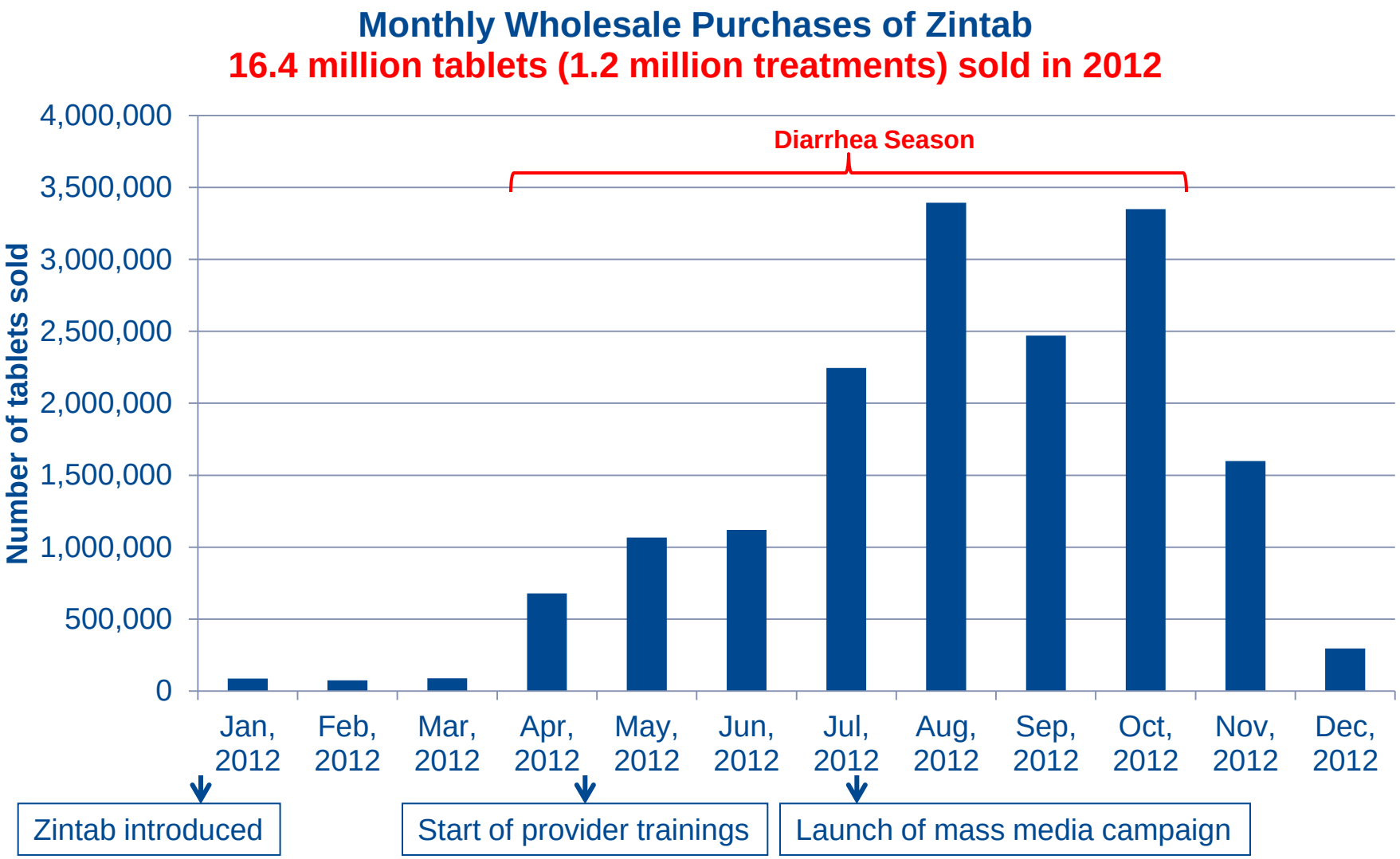
Research questions and data sources

Research question	Data sources
Did SHOPS training, mass media, and detailing visits increase provision of zinc by LCS?	• Sales data • Mystery client survey
Did the SMS intervention lead to a change in knowing the appropriate treatment to provide?	• Provider survey (RCT)
Did the SMS intervention lead to a change in providing the appropriate treatment?	• Mystery client survey (RCT)
If the SMS intervention is not effective at changing provider behavior, what are some possible explanations?	• Provider survey • Mystery client survey

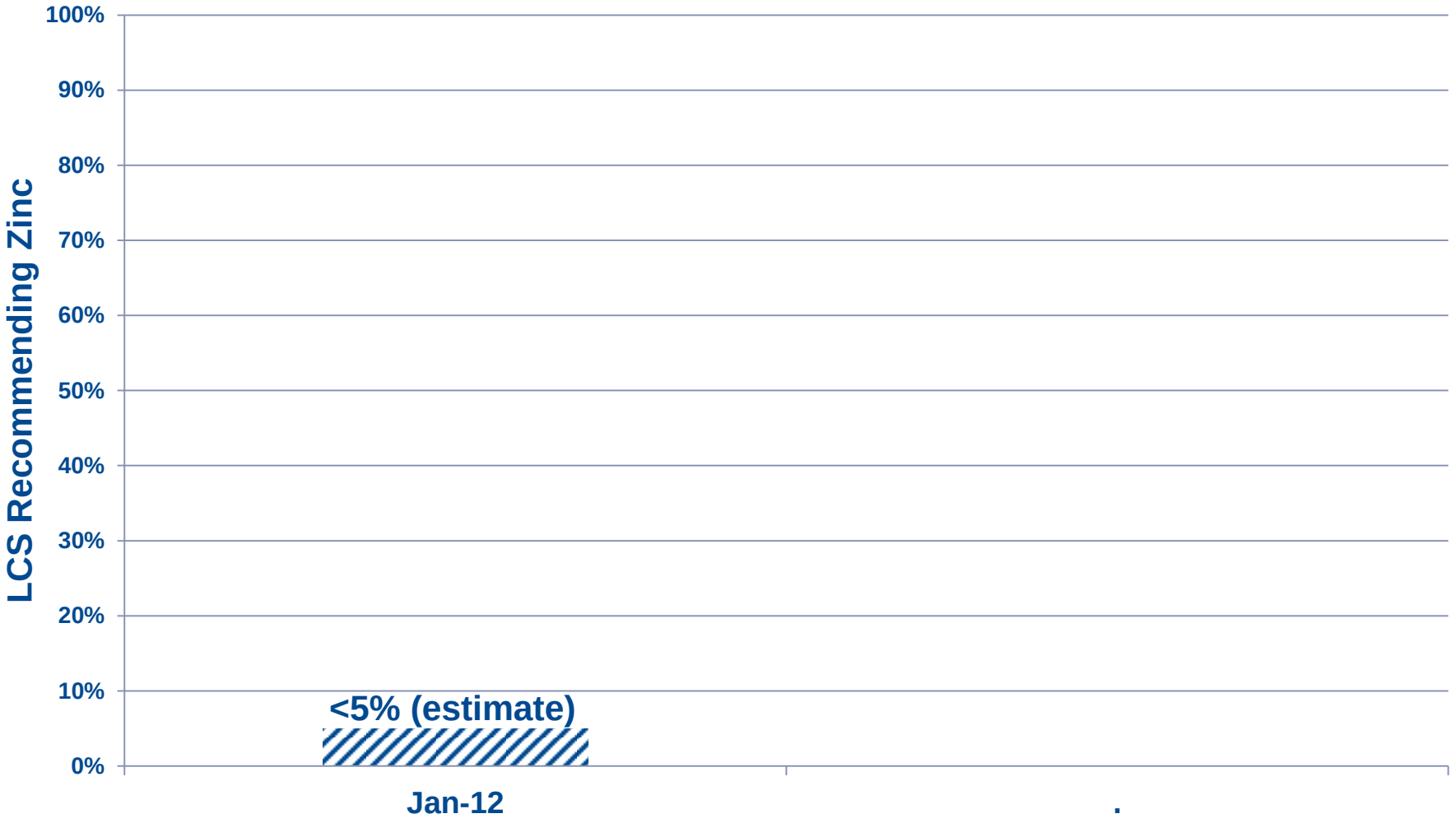
Research question #1

Did the SHOPS standard zinc package increase provision of zinc by LCS?

SHOPS standard zinc package led to increased sales of zinc tablets



Mystery client data suggest high rate of zinc recommendation by LCS



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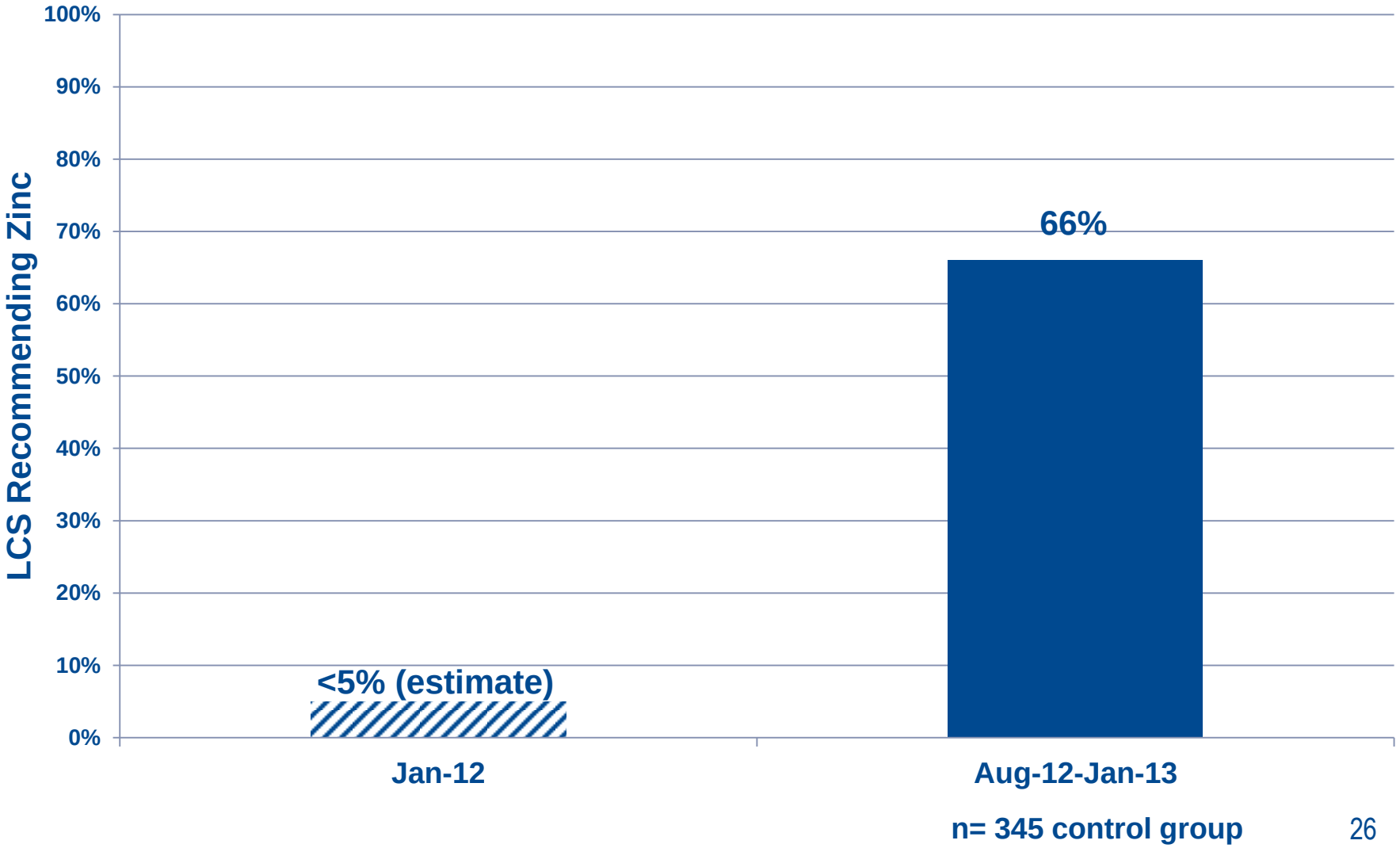


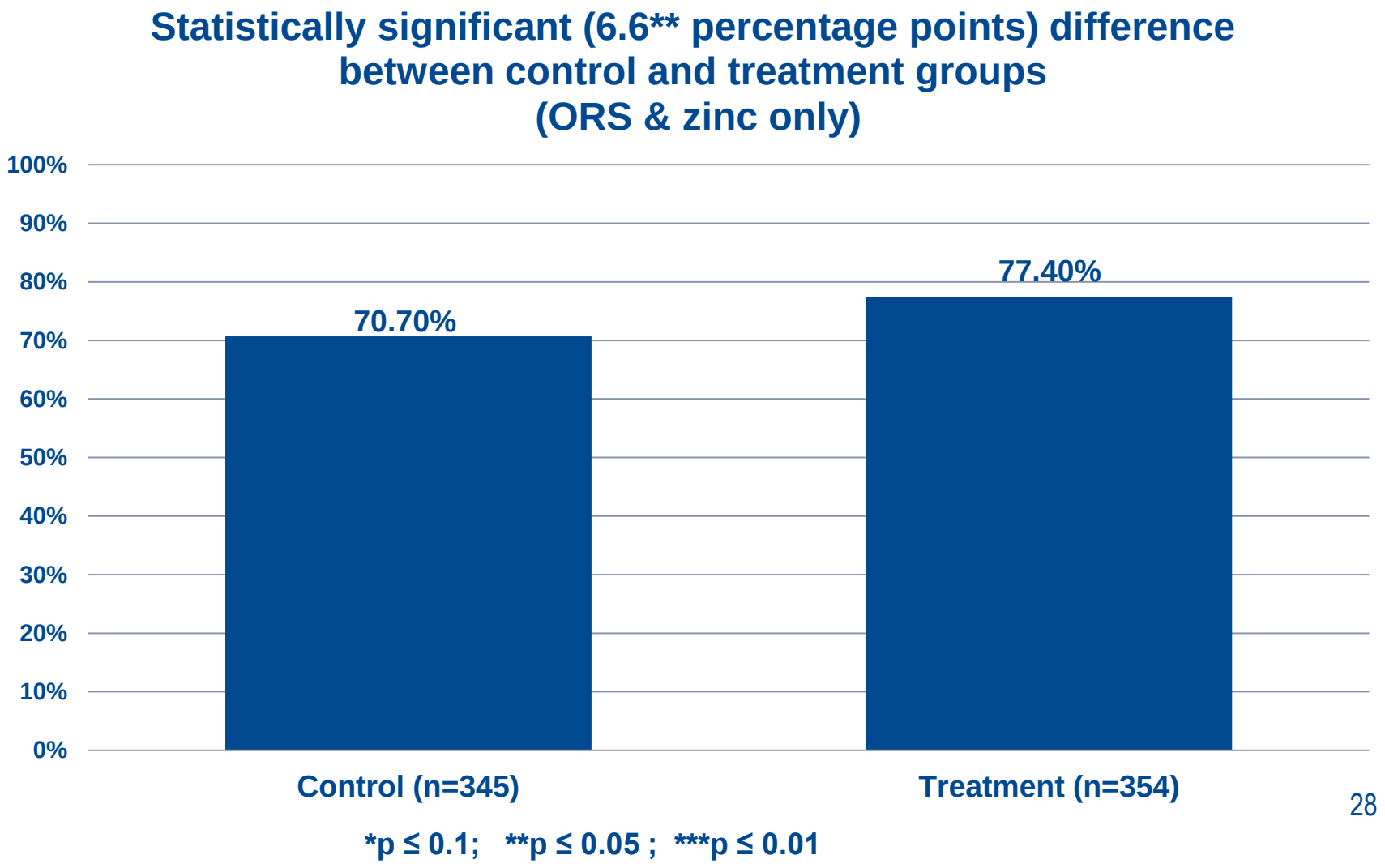
Research question #2

Did the SMS intervention lead to an improvement in:

a) Knowing the appropriate treatment to provide?

b) Providing the appropriate treatment?

SMS has a positive impact on knowing appropriate treatment to provide (provider survey)



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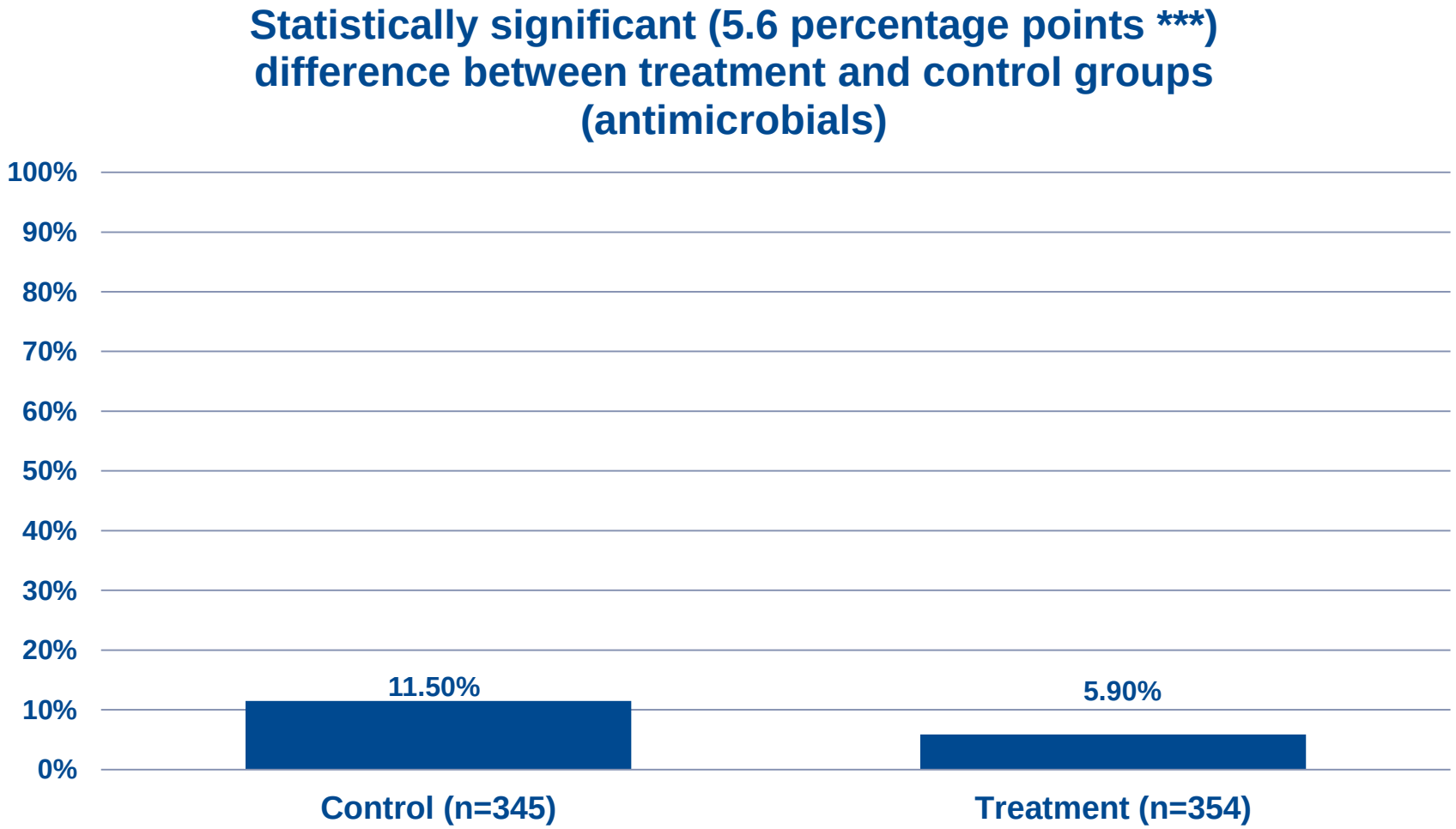


*p ≤ 0.1; **p ≤ 0.05 ; ***p ≤ 0.01

No difference in providing appropriate treatment (mystery client)

Treatment provided by LCS	Treatment	Control	Difference
ORS	80.7%	78.5%	2.2%
Zinc	65.7%	66.0%	-0.3%
Antimicrobials	46.1%	49.5%	-3.4%
Total observations (n)	354	345	

***p≤ 0.1; **p ≤ 0.05 ; ***p ≤ 0.01**

Large differences between *knowing* (provider survey) and *doing* (mystery client)

	Treatment cited in interview	Actual treatment provided
ORS	89.5%	79.6%
Zinc	78.6%	65.9%
Antimicrobials	8.7%	47.8%
Total observations (n)	699 (combined treatment and control groups)	

Research question #3

If the SMS intervention is not effective at changing provider behavior, what are some possible explanations?

LCS report that some caregivers refuse ORS and zinc

	LCS
Have had caregivers refuse ORS when offered	25.3%
Have had caregivers refuse zinc when offered	12.3%
Total observations (n)	699

LCS report variety of reasons caregivers refuse ORS and zinc

Most common reasons for refusing ORS (n=167):

- Tastes bad (47%)
- Prefer treatments they have experience with (17%)
- Takes too long to have effect (16%)

Most common reasons for refusing zinc (n=72):

- Prefer treatments they have experience with (38%)
- Never heard of it (26%)
- Too expensive (11%)

Products most commonly requested by caregivers (as reported by LCSs)

Requested products (multiple responses allowed)	LCSs
Flagyl (metronidazole)	33.4%
ORS	33.2%
Amoxicillin	13.8%
Septrin (cotrimoxazole)	9.7%
ORS & Zinc	4.7%
Zinc	3.5%
Total observations (n)	699

Possible reasons for “know-do gap”

- Perceived caregiver demands, experience with refusals
- Profit motives
  - Antimicrobials are more profitable than zinc or ORS by roughly $ 0.5-1 USD per typical course used
- Zinc is a new product

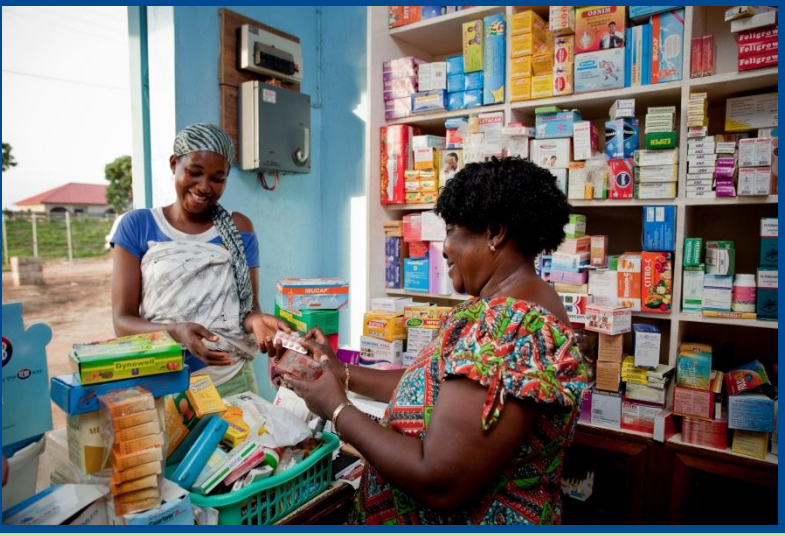
Key findings

- Training, detailing visits, and BCC interventions led to large increase in provision of zinc
- SMS intervention led to improvement in knowing the appropriate treatment
- Improvement in knowledge did not lead to improvement in providing the appropriate treatment
- LCS perceptions of caregiver preferences and/or profit margins may be a contributing factor

Conclusion

- Private sector is an important channel for zinc
- Relatively low intensity and low cost SMS had an impact on knowledge - step in the right direction
- Recent study in Kenya detected impact from more intensive SMS intervention
- Findings relevant to other health interventions to reinforce provider knowledge after training
- Need to figure out how to close the “know-do gap” to maximize effectiveness of existing interventions
- SHOPS qualitative research in Ghana will explore this issue

Contact Information



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