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Online Supplementary Document

Schroder et al. Evaluation of a comprehensive program model to increasing coverage of pediatric diarrhea treatment in high-burden countries

Contents

Figure S1. Program theory of change	2
Appendix S1. Public facility audit and private outlet survey methodology	3
Appendix S2. Diarrhea deaths averted	4
Table S1. Lives saved estimates 2012-2016	5
Figure S2. Availability of ORS from public sources	6
Figure S3. Availability of zinc from public sources	6
Figure S4. Availability of ORS in private outlets	7
Figure S5. Availability of zinc in private outlets	7
Figure S6. Cost of full treatment with ORS and zinc (in USD)	8
Table S2. Cost of full treatment with ORS and zinc by end of program (in USD)	8

Figure S1. Program theory of change

	Program activities	Outputs	Primary outcomes	Impact
Build demand	 Change private provider practices at scale through targeted detailing, CMEs Leverage existing platforms (mentorship, CMEs) to change public provider practices Launch large-scale demand generation based on best practices from consumer goods industry 	 Improve public & private provider knowledge of correct treatment Improve caregivers' knowledge of correct treatment 	 Improve public/private provider dispensing practices Improve caregivers' intention to use zinc/ORS for pediatric diarrhea 	 Increase in % of children who receive zinc/ORS for diarrhea Ultimately, reduce child mortality related to diarrhea by increasing the number of
Expand supply of high quality products	 In private sector, incentivize expanded distribution Engage suppliers to ensure availability of affordable products Optimize packaging & presentation of products In public sector, improve quantification & procurement of optimal zinc/ORS 	 Increase sales of zinc/ ORS in private sector Increase # of outlets stocking zinc/ORS Improve quality of products in public sector Increase volumes procured in pubic sector 	 Increase availability of zinc/ORS at private and public facilities (with a particular focus on rural areas which see the majority of cases) Additional resources dedicated to scale of up zinc/ORS 	children receiving the correct treatment
Leverage additional resources	 Assist in coordinating government and partner efforts on diarrhea treatment scale up to optimize impact Mobilize additional resources for scale up 	 Improve coordination of scale up efforts Increase # of funding sources 		5

Appendix S1. Public facility audit and private outlet survey methodology

In India, Nigeria, and Uganda, public facility audit surveys and private outlet surveys were conducted at baseline, midline, and endline of the program. In Kenya, only private outlet surveys were conducted at two periods: baseline and midline.

Public facilities and private outlets were sampled using two-stage cluster randomized selection. The clusters were census enumeration areas in India, Nigeria, and Uganda, while in Kenya, the clusters were ward administrative areas. In the first stage, the study used the most recent census as the sampling frame (i.e. the 2011 Indian national census, 2002 Ugandan national census, and 2006 Nigerian national census). In the second stage, trained enumerators visited each cluster and interviewed community members to identify all public and private sources of care. Public sources of care included community health workers, dispensaries, health centers, and hospitals. Private outlets included any private source where community members living in the cluster could obtain medicines and most often included pharmacies, registered and unregistered drug shops, and formal and informal private healthcare practitioners. Once an exhaustive list of public facilities and private outlets which serve the community living in the cluster was developed, the trained enumerators visited each facility and outlet to conduct an audit to determine whether ORS and zinc were stocked at the outlet on the day of the survey. In private outlets, enumerators also asked about the prices of ORS and zinc.

Appendix S2. Diarrhea deaths averted

We use the Lives Saved Tool in Spectrum version 5.51 to estimate the number of diarrhea deaths averted due to ORS and zinc scale-up between 2012 and 2016 in each of the program geographies. We first generate population projections for the program years. For Kenya and Uganda, we use the default national population projections. For Nigeria, we downloaded the state population projections for the 8 program states from the Lives Saved website¹. For India, we generated population projections for Gujarat, Madhya Pradesh, and Uttar Pradesh using the 2011 Indian national census and the 2015-16 NFHS state results.

We enter ORS and zinc coverage estimates obtained from the household surveys in the year the survey was conducted and linearly interpolate coverage estimates between the baseline and endline survey years. Where possible, we also updated all other intervention coverage estimates (e.g. vaccinations, bed net coverage, etc.) though this was only possible in India and Uganda where the NFHS and DHS results were available at the end of the program and contained coverage estimates for other interventions. In these instances, we update those coverage estimates for the year the survey was conducted and interpolate coverage figures between the previous survey and the most recent NFHS and DHS. Otherwise, we kept other intervention coverage estimates at default values.

Finally, we generate additional lives saved using 2012 as the reference period and sum all diarrheal deaths averted between 2012 and 2016.

¹ Nigeria state population projections downloaded from http://livessavedtool.org/index.php/all-downloads-tools#Subnational on June 23, 2017.

Table S1. Lives saved estimates 2012-2016

Program area	Estimated lives saved
	(sensitivity bounds*)
India (3 states ¹)	48,030
	(38,590 - 56,090)
Kenya	3,340
	(2,670 - 3,920)
Nigeria (8 states ²)	18,160
	(14,810 - 20,920)
Uganda	6,560
	(4,620 - 8,210)
Total	76,090
	(60,690 - 89,140)

^{*}Sensitivity bounds are calculated using the Lives Saved Tool and based upon the highest level of effectiveness reported (upper bound) and the lowest levels of effectiveness reported (lower bound)

Figure S2. Availability of ORS from public sources

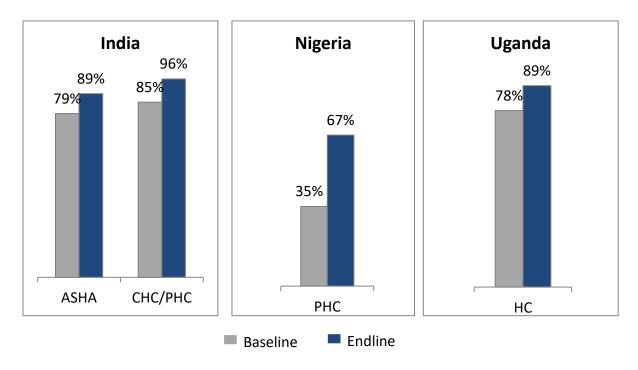


Figure S3. Availability of zinc from public sources

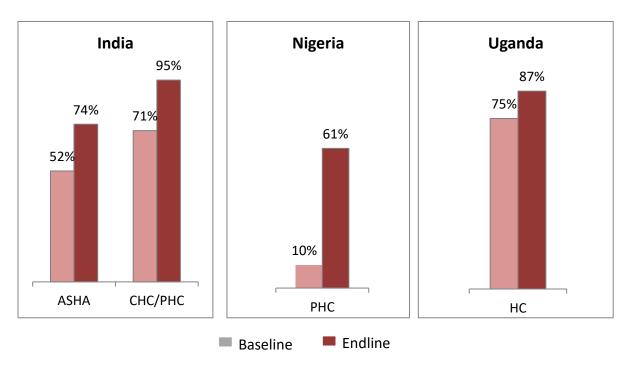


Figure S4. Availability of ORS in private outlets

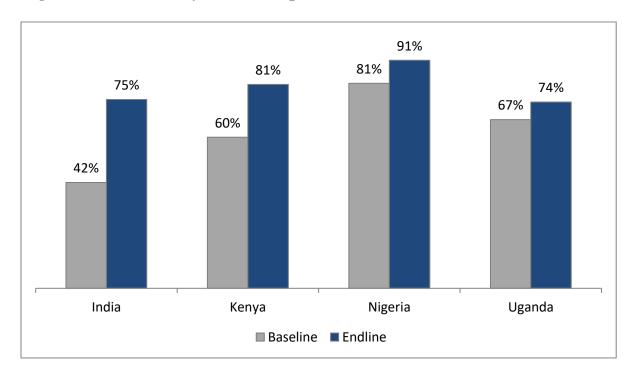
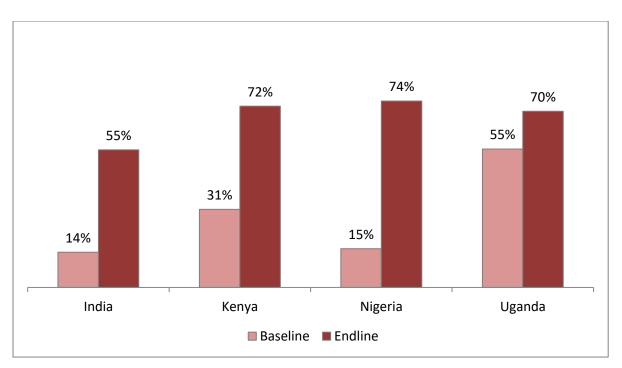


Figure S5. Availability of zinc in private outlets





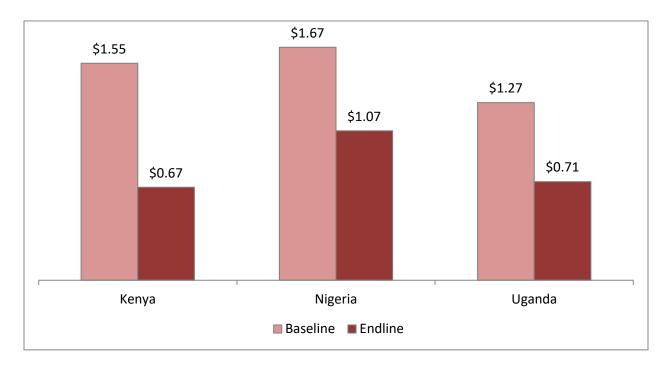


Table S2. Cost of full treatment with ORS and zinc by end of program (in USD)

Country	Single treatments	Co-pack	
	(2L equivalent of ORS	(2L equivalent of ORS and	
	and 10 zinc tablets)	10 zinc tablets)	
Kenya	\$1.55	\$0.67	
Nigeria	\$1.23	\$1.07	
Uganda	\$1.06	\$0.71	