# BOLD DELIVERS

# Research on Maternal, Newborn and Child Health

Abt ASSOCIATES

BOLD THINKERS DRIVING REAL-WORLD IMPACT

**ABT ASSOCIATES** has a strong legacy of incorporating rigorous research, monitoring and evaluation (RME) in our international health projects. We are one of the only organizations working in development that combines skills in in-depth RME and program implementation – always striving to link the two for maximum impact. By regularly conducting research and evaluations, our work is informed by data that helps us continually improve the life-saving programs for which we are responsible.

This document focuses specifically on the research insights from evaluations, literature reviews, needs assessments, and other studies conducted in low- and middle-income countries by Abt's International Health Division. A variety of maternal, newborn and child health (MNCH) topics are covered both on the *demand* side (patients and caregivers) and on the *supply* side (providers).

# Demand:

## Improving Consumer Knowledge of, Access to, and Use of MNCH Services

Abt's International Health Division conducted a number of research studies and evaluations to gain additional intelligence on: treating childhood diarrhea; addressing knowledge gaps; and understanding the impact of financing mechanisms as they relate to delivering MNCH services.

### HOLISTIC APPROACH LEADS TO IMPROVED TREATMENT:

Holistic approaches to encourage correct pediatric diarrhea treatment recommendation of ORS and zinc, showed promise in improving diarrhea treatment behavior among caregivers of children under five.

- A pre-post evaluation of an intervention led by the Strengthening Health Outcomes Through the Private Sector (SHOPS) project in **Ghana** found that caregiver use of zinc to treat pediatric diarrhea rose from 1.8 percent at baseline in 2012 to 29.2 percent at follow up in 2014 in three target regions, Western, Central, and Greater Accra (n=1,505). SHOPS ORS and zinc promotion interventions included a mass media campaign about ORS and zinc use, the release of locally-produced zinc on the commercial market, and provider trainings.

  The study found strong suggestive evidence that SHOPS interventions contributed to these positive changes in caregiver treatment of pediatric diarrhea. Almost all caregivers who used zinc also used ORS, as recommended. Use of antibiotics dropped by half in the same time period. Zinc users perceived zinc as effective and affordable. There was a positive correlation between caregiver recall of SHOPS zinc messages and zinc use *(El-Khoury et al. 2015)*.

- Another SHOPS pre-post study in **Benin** found that caregiver use of ORS and zinc to treat pediatric diarrhea rose between 2009 and 2011 during Point of Use Water Disinfection and Zinc Treatment (POUZN) project interventions. The majority of caregivers surveyed in Benin were willing to pay for zinc and perceived it as effective.

  Interventions in Benin included a mass media campaign, introduction of imported zinc products to the commercial market, provider trainings, and community outreach aimed to increase the use of ORS and zinc to treat pediatric diarrhea.

While caregiver use of ORS and zinc rose during the study period (2009-2011) and is correlated with these interventions, the design of this study makes it difficult to determine whether these interventions caused changes in caregiver behavior. Caregivers, however, often used ORS and zinc in combination with inappropriate treatments, usually antibiotics, antimicrobials, or anti-diarrheals *(Sanders et al. 2012)*.

## RESPONDING TO KNOWLEDGE GAPS LEADS TO BETTER TARGETING:

Abt conducted community needs assessments in **Nigeria** and in **Zambia** to better understand MNCH knowledge gaps, particularly in how certain populations are targeted to improve MNCH services.

- To better understand gaps in knowledge of safe pregnancy practices, researchers from the PATHS2 project conducted a cross-sectional survey among women (n=540) in rural areas of two states in northern **Nigeria**. Before the survey, over half of respondents had poor knowledge of maternal danger signs, and over 80 percent of respondents had low knowledge of the importance of antenatal care (ANC) visits.

  Additionally, more than 90 percent of respondents demonstrated poor knowledge of benefits of delivery at a health facility with a skilled birth attendant. Two factors, having any formal education and attendance at ANC visits, were highly correlated with more knowledge of maternal danger signs. The most common sources of information about maternal care were talks in health facilities, community discussions, and friends or neighbors *(Okereke et al. 2013)*.

- A second study in **Nigeria** demonstrated that mobile phone-based interventions may not reach women who are in the greatest need of maternal health resources in settings where mobile access is unequal. PATHS2 researchers conducted a survey of 3,390 women in five states of northern Nigeria.

  In a comparison of women with and without mobile phone access, women without mobile phone access were significantly less likely to use modern contraception, ANC services, or deliver with a skilled birth attendant. Low knowledge of the importance of ANC care and skilled delivery was also correlated with not having mobile phone access *(Jennings et al. 2015)*.

- In **Zambia**, a quasi-experimental evaluation of Safe Motherhood Action Groups (SMAGs) found that they increased utilization of certain maternal health services. SMAGs are community-based volunteer groups that use interpersonal communication to inform women about and encourage them to use facility-based delivery, ANC, and Post Natal Care (PNC) services.

This study used propensity score matching to compare service utilization at facilities with and without SMAGs. Results showed that SMAGs were positively associated with a 12 percent increase in institutional deliveries. No correlation was found between SMAGs and increased ANC utilization *(Johns et al. 2014)*.

## EVIDENCE ON FINANCING STILL INCONCLUSIVE:

Studies of health financing mechanisms such as user fee exemptions, insurance, and vouchers are inconclusive in determining their effects on patient behavior and health outcomes. For example:

- A literature review of 29 studies on health insurance showed a consistent positive association between health insurance and consumer utilization of maternal health services *(Comfort et al. 2013)*.

- Results were less consistent for another financing mechanism: user fee exemptions. A review of 19 studies found that user fee exemptions might contribute to increased use of facility deliveries and C-sections in certain contexts *(Hatt et al. 2013)*. In both reviews, differences in methodologies and outcome measures made comparisons across studies difficult

- Another study used a quasi-experimental difference-in-difference design to evaluate the effect of vouchers on use of maternal care services in **Bangladesh** (n=2,208). Women could use vouchers for maternal health services at any government facility in the program area. Use of ANC, facility delivery, and PNC services was significantly higher in areas with the voucher program.

WOMEN IN THE VOUCHER PROGRAM
**PAID US $9.43 LESS**
FOR MATERNAL HEALTH SERVICES

In addition, women in the voucher program paid, on average, US$9.43 less for maternal health services. This figure represents 64 percent of the sample's average monthly household income. Despite these successes, the voucher program encountered implementation problems such as delayed reimbursement for providers and difficulties in enforcing voucher eligibility criteria to make sure benefits reached the target population of women *(Nguyen et al. 2012)*.

- A process evaluation of an electronic maternity care savings card in **Kenya** found that although the card met a need among pregnant women, the program's design and implementation prevented it from reaching its target population (n=459). In Kenya, only 43 percent of births occur in facilities, and most women pay for facility services out of pocket as only 7 percent of Kenyan women ages 15-49 have health insurance. Developed by Nairobi-based Changamka, the card was designed to increase the use of facility-

based maternity services by helping women save money for ANC, facility delivery, and PNC at Pumwani Hospital—the largest maternity hospital in Sub-Saharan Africa--in a dedicated savings account accessed through the card.

**MATERNITY CARE SAVINGS CARD HELPS WOMEN SAVE MONEY FOR ANC, FACILITY DELIVERY, AND PNC**

The study found high levels of card uptake, but also identified several challenges: most users used the card only once, and among those who used it, most did so for convenience rather than as savings vehicle. Among those women who did save using the card, most started to do so too late in pregnancy to accumulate sufficient savings.

Many respondents indicated that they did not understand how to use the card, and many were unwilling to use a savings vehicle that could only be redeemed at a single maternity facility. Most importantly, the card was only available at the partner maternity facility, so that only women who were already interested in a facility delivery were exposed to it—presumably missing those women who eschewed a facility delivery because of cost concerns *(van Bastelaer et al. 2013)*.

- An evaluation of an insecticide-treated bed net (ITN) distribution program in **Madagascar** sought to understand how financial incentives for bed net use might affect children. According to the WHO, children under 5 are a priority target group for ITN distribution. This distribution program provided ITNs for free.

**ALMOST 98 PERCENT OF HOUSEHOLDS WITH CHILDREN UNDER 5 HAD HAD MOUNTED THEIR BEDNETS AFTER SIX MONTHS**

In the total sample, ITN use, measured as whether the household had a bed net mounted, increased from 6 to 91 percent over six months (n=560). Yet there were differences in bed net usage depending on whether households had young children. Almost 98 percent of households with children under 5 had mounted their bednets after six months, while only 82 percent of households without children under 5 had mounted their bednets over the same period.

Having a child under 5 years of age was the only factor significantly associated with bed net use. Household education and income levels were not found to make a difference in bed net use *(Krezanoski et al. 2014)*.

# Supply:

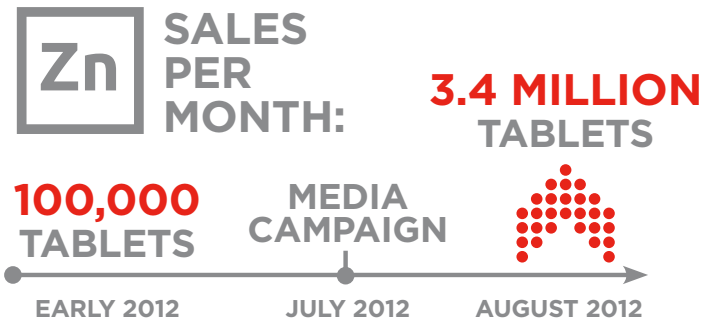
## Improving Availability and Quality of MNCH Services

Studies from Sub-Saharan Africa, Latin America, and Asia explored interventions such as provider training, provider mentoring, resource reallocation, and various financing mechanisms. They looked at the effects of these interventions on outcomes including improving provider behavior, improving provider skills, and institutionalizing quality improvement processes at facilities.

### MASS MEDIA CAMPAIGN LEADS TO INCREASE IN ZINC DISTRIBUTION:

A study in **Ghana** found that a combination of provider training, detailing visits, and a mass media campaign resulted in a large increase in provision of zinc by over the counter medicine sellers (OTCMS) less than one year after zinc was introduced to the Ghanaian market *(Woodman et al. 2014; Friedman et al. 2014)*. SHOPS project researchers used a modified pre-post design to examine changes in provider recommendation of pediatric diarrhea treatments.

When zinc was first introduced in the commercial market in Ghana in early 2012, zinc sales were at approximately 100,000 tablets per month. After provider trainings during April and May 2012, and the start of a mass media campaign in July 2012, sales increased to 3.4 million tablets in August 2012.




Mystery client surveys conducted between August 2012 and January 2013 (n=699) found that 66 percent of OTCMS exposed to SHOPS trainings and mass media followed correct practices and sold zinc to consumers. Yet inappropriate treatment persisted, with 48 percent of OTCMS incorrectly recommending antibiotics and 11 percent incorrectly recommending anti-diarrheals.

SHOPS therefore conducted a randomized controlled trial (RCT) to test whether supplementing provider trainings and its other interventions with text messages about correct treatment would lead to changes in provider knowledge and behavior around diarrhea treatments.

This study found that text messages led to an increase in knowledge of correct diarrhea treatments (i.e. ORS and zinc) among providers, but no increase in provider recommendation of correct treatments *(Friedman et al. 2015)*.


**DETERMINING WHY ORS AND ZINC ARE NOT ALWAYS PRESCRIBED:**

To better understand the provider "know-do" gap, SHOPS conducted a qualitative study in Ghana to examine why OTCMS do not prescribe ORS and zinc even when they know this is the recommended treatment for pediatric diarrhea. 26 focus groups (17 with OTCMS and 9 with customers) were conducted.. This study found several factors that contribute to this gap. *(Rosapep and Sanders et al. 2015)*

- First, as businesspeople, OTCMS need to keep their customers. This means that if a customer requests a certain treatment, such as antibiotics, OTCMS may not want to risk losing income by recommending a new or different treatment, such as ORS and zinc.

- Second, OTCMS may want to recommend treatments with higher retail prices that more profitable for them than zinc or ORS.

- Third, OTCMS are not clinicians, meaning that they may not have sufficient credibility or knowledge to convince customers to switch to a new or unfamiliar treatment.

## Examining the Impact of Resource Allocation on Motivation and Quality

Two literature reviews found inconclusive evidence on how changes in financing and resource allocation affect provider motivation and quality of service in the area of maternal health. This paucity of evidence arose mostly from varied or weak research methods and outcome measures, which limits comparisons across studies and conclusions that can be drawn from them. There are, however, the following **cross-cutting findings**.

## FINANCIAL INCENTIVES FOR PATIENTS TO USE SERVICES CAN CREATE UNINTENDED BURDENS FOR PROVIDERS:

Certain financial mechanisms may create incentives that lower service quality and provider motivation. One way these financing mechanisms may lower service quality is through creating new burdens for providers.

- First, both user fee exemptions and insurance programs at times encountered implementation difficulties that cause delayed reimbursement or lost revenue for providers. Delays or losses were correlated with lower provider motivation or even a decrease in the presence of skilled providers at births *(Hatt et al. 2013, Comfort et al. 2013)*. Additionally, when user fees and insurance resulted in lower treatment costs for consumers, there may have been an increase in patient volume without an accompanying increase in provider births *(Hatt et al. 2013, Comfort et al. 2013)*.

- In other cases, new financial mechanisms may lower service quality through incentivizing overprovision of some covered services. For example, six studies found increased rates of caesarean sections (C-sections) in Latin America and Asia after insurance began covering this procedure. There are many possible causes for this rise in C-sections, but the authors found suggestive evidence that insurance contributed to overprovision of C-sections in some contexts to patients that did not require them *(Hatt et al. 2013)*.

## INSURANCE CAN LEAD TO INCREASED SKILLED ATTENDANT ENGAGEMENT:

In other cases, financial mechanisms may contribute to improvements in service provision.

- The review of studies on insurance cited one study that found insurance correlated with an increase in the presence of skilled providers at births in **Brazil** *(Comfort et al. 2013)*. User fee exemptions were also correlated with an increase in facility-based deliveries in **Ghana** and **Burkina Faso** but both studies lacked a comparison group, making it difficult to conclude that user fee exemptions caused these increases *(Hatt et al., 2013)*.

  In some cases, insurance resulted in an increase in provision of certain types of tests. For instance, in **Ghana** patients with National Health Insurance Schemes (NHIS) were more likely to have weight and blood pressure measured, but there was no significant correlation between NHIS coverage and rates of urine or blood testing *(Comfort et al. 2013)*.

### REDUCTIONS IN MALARIA IMPROVE FACILITY AVAILABILITY:

Resource reallocation can also lead to changes in service provision. Two Abt studies found that malaria control interventions can have positive unintended consequences because reductions in malaria make facility and provider resources available for other uses.

- A pre-post study of two hospitals in Zambia found substantial reductions in outpatient visits and hospital admissions for malaria among children under 5 after malaria control interventions were scaled up *(Comfort et al. 2014)*.
  In one hospital, the proportion of total hospital spending dedicated to malaria declined from 11% before the scale-up to less than 1% after the scale-up *(Comfort et al. 2014)*.

- Another study of 13 health facilities in rural Zambia found that extensive malaria control interventions correlated with a 50 percent decrease in pediatric blood transfusions and a 68 percent decrease in pediatric malaria outpatient visits. These studies show that malaria control can contribute to increased availability of facility finances and resources for other conditions *(Comfort et al. 2014-a; Comfort et al. 2014-b)*.

## Customizing Quality Improvement Interventions for Institutionalization

Customized, participant-led quality improvement interventions show promise in institutionalizing MNCH best practices at the facility level. Stakeholder feedback and buy-in are critical to institutionalizing quality improvement as was demonstrated in the two Abt-led studies outlined below.

### BOTTOM-UP APPROACH LEADS TO IMPROVED OUTCOMES:

In the **Dominican Republic**, 10 Maternal and Child Centers of Excellence implemented a health systems strengthening and quality improvement intervention that contributed to reducing maternal deaths by half and neonatal deaths by almost half over a two year period. Based on their own initial assessment and with technical assistance from Abt, change management teams composed of facility staff planned and implemented a variety of improvements, such as biosafety, clinical management of MNCH services, and supply chain management.

This bottom-up approach ensured that facility staff both understood and supported into changes that led to improved MNCH outcomes *(Conklin et al. 2014)*.

### CLINICAL MENTORING EXPANDS SKILLS:

In **Nigeria**, the Jigawa State Health System partnered with the Abt-led Partnership for Transforming Health Systems II (PATHS2) project to develop a quality improvement model that could be effective even in resource-poor settings. A qualitative study examined stakeholder perceptions of one aspect of this model—clinical mentoring—and discovered that there is a lack of skilled health workers being mentored in Jigawa state.

To spread the skills of existing clinicians, clinical mentoring brought obstetricians and pediatricians into five facilities in Jigawa State for one day per week to provide on-the-job training to more junior staff including nurses, midwives, community health officers, and community health extension workers.

Responding to facility needs, mentors helped to introduce a variety of best practices, such as weighing pediatric patients at each visit, using magnesium sulfate for pre-eclampsia, and improving record keeping. Over half of mentored health workers reported that clinical mentoring had a significant effect on their ability to assess patient needs and create a treatment plan.

Over a third of mentored health workers believed that clinical mentoring had a significant impact on overall quality of outpatient clinics. However, both mentors and mentees reported that this intervention could be improved if mentors spent more time at each facility. Despite these limitations, the majority of mentors and clinical staff thought clinical mentoring effectively maximized limited human resources to improve MNCH care *(Okereke et al. 2015)*.

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**Author:** Phoebe Sloane



Thank you to Thierry van Bastelaer and Kathryn Banke for their invaluable guidance and feedback on this synthesis. Thank you to Sarah Armstrong for excellent editing and Marina Kosareva for the designing of this brochure.



For questions, please contact Thierry van Bastelaer, thierry_van_bastelaer@abtassoc.com


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October 2016