



Issue BRIEF

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Promising Findings from the Frontline Health Worker Team-Based Goals and Incentives Intervention in Bihar

The Team-Based Goals and Performance-Based Incentives (TBGI, conceptualized, designed and implemented by CARE) intervention leverages both the power of incentives and lessons from motivational theory on teamwork and goal-setting. The intervention aims to improve health outcomes by motivating frontline health workers through (1) incorporating information on the value of cooperation and a motivational pledge into meetings to foster a sense of collective team responsibility, solidarity, and teamwork; (2) defining seven specific goals for teams related to household birth preparedness, antenatal and newborn care, child nutrition, immunization, and family planning; and (3) providing small nonmonetary incentives each quarter to FLWs if their team meets the collective goals.

The Bill & Melinda Gates Foundation created the Ananya program in 2011 to address some of the important family health challenges in Bihar, one of India's most populous and poorest states (see Figure I). By bundling services and delivery mechanisms supported by the Foundation's global health strategies, the initiative takes an integrated approach to improving service coverage and uptake across the continuum of family health outcomes, which include maternal, neonatal, and child health (MNCH); reproductive health; and nutrition.

This issue brief explores the effect of adding the Team-Based Goals and Performance-Based Incentives (TBGI, see left) intervention to the Ananya program (see above). To better understand the potential impacts of TBGI in this context, we conducted a clustered randomized controlled trial (RCT) of this pilot program in 76 subcenters in Begusarai district, Bihar.

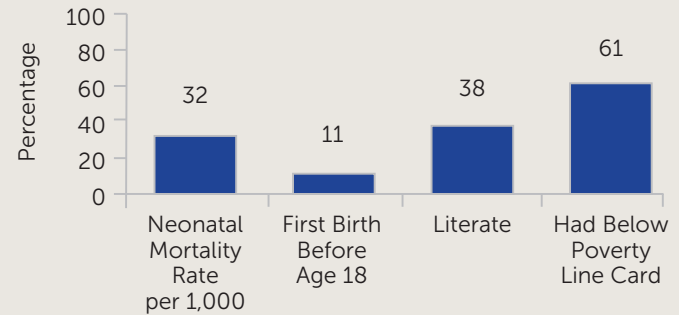
Using data from surveys of frontline health workers (FLWs, including Anganwadi workers (AWWs), accredited social health activists (ASHAs), and auxiliary-nurse midwives (ANMs), who supervise the other workers) 12 months after implementation began, we found that the introduction of TBGI led FLWs to work more cooperatively, and attend and participate



An ANM advises ASHAs and AWWs at subcenter meetings.



Health and Socioeconomic Status Indicators for Bihar (Women Who Recently Gave Birth)



Source: Ananya baseline survey (2011–2012).

Figure 1

in more subcenter meetings. Similarly, surveys with beneficiaries who had recently given birth indicate that those in TBGI treatment areas were more likely to receive home visits from FLWs during their pregnancies and after delivery, as well as visits related to child feeding and reproductive health, compared with those in control areas. Changes in beneficiaries' incentivized and nonincentivized health behaviors were generally more modest; our data suggests that TBGI led to improvements in outcomes related to immunization, complementary feeding, and family planning.

THE TBGI INTERVENTION INCREASED THE TEAMWORK AND COORDINATION OF FLWS.

Subcenter meetings are an important forum for FLWs to interact and learn new strategies and techniques. We found that although 82 percent of ASHAs and AWWs in control subcenters attended these monthly meetings in the three months before our survey, 94 percent of treatment subcenter ASHAs and AWWs did so, a statistically significant 12 percentage point difference. The TBGI intervention also led to increased collaboration among FLWs in the course of their work outside of meetings. For example, 53 percent of ASHAs and AWWs in treatment areas reported that their ANM is likely to give helpful advice, compared with only 41 percent of ASHAs and AWWs in control areas. We also found a difference in the share of ANMs who had ever conducted joint visits with an ASHA (95 percent of treatment- and 84 percent of control-subcenter ANMs) or AWW (93 versus 78 percent of ANMs, respectively). Though our sample of ANMs is quite small, both differences are significant.

In addition to the increased collaboration with ANMs, ASHAs and AWWs also interacted more with one another in TBGI areas. Those in the treatment subcenters conducted more joint visits (78 percent of treated ASHAs and AWWs reported ever doing so, compared with only 69 percent of the control group). Treatment-subcenter FLWs also reported that they were more commonly expected to meet and plan with their teams. These ASHAs and AWWs met significantly more often to discuss work (an average of 2.1 versus 1.5 times per week for control subcenter FLWs) and were more likely to ask one another for assistance in completing home visits. Beneficiaries' reports suggest similar effects. For example, 27 percent of control-subcenter beneficiaries and 37 percent of treatment-subcenter beneficiaries reported having received a joint visit from an AWW and ASHA, a statistically significant difference.

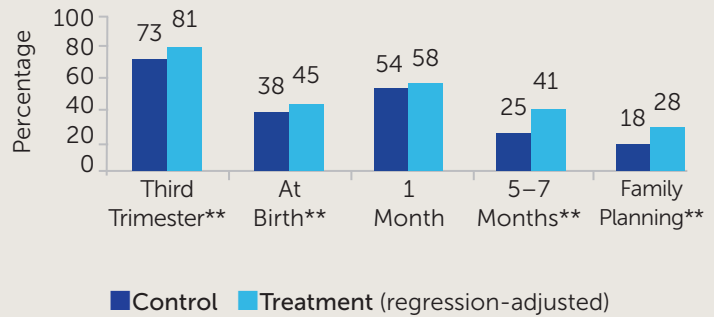
BENEFICIARIES IN TREATMENT AREAS WERE MORE LIKELY TO RECEIVE AN FLW VISIT THAN THOSE FROM CONTROL AREAS.

Figure 2 depicts the share of beneficiaries reporting they received any visit from an FLW at critical times during pregnancy and post-partum. Relative to beneficiaries living in control areas, those in treatment areas are more likely to report receiving visits in their last trimester of pregnancy, within 24 hours of giving birth, and one day to one month after giving birth. They are also substantially more likely to receive a visit on complementary feeding when a child is 5 to 7 months old and to receive a visit during which the FLW provides family planning information. In all but one case, these differences are statistically significant.

This brief is based on Borkum et al. (2014), available at: http://www.mathematica-mpr.com/publications/pdfs/international/TBGI_Bihar.pdf.

All treatment group means and impacts reported in this brief are regression-adjusted to correct for existing differences between treatment and control areas using the TBGI baseline and endline survey. See Borkum et al. (2014) for details.

Share of Households Reporting Any FLW Visits Received, by Visit Type



Note: *p < 0.10, **p < 0.05.

Figure 2

HOME VISITS BY FLWS IN THE TREATMENT GROUP APPEAR TO BE OF HIGHER QUALITY.

In addition to making more visits, the quality of home visits might also have been higher in the treatment group than the control group. Treatment-area beneficiaries report visits that are significantly longer (on average 12.3 versus 10.7 minutes), more likely to involve a woman’s mother-in-law (16 versus 11 percent), and more likely to use informational and teaching tools (examples in photos at left) compared with beneficiaries in the control areas. Treatment-group beneficiaries also report that FLWs are significantly more likely to discuss many key topics during their visits, including those related to the TBGI incentives (for example, 42 percent of treatment and 33 percent of control beneficiaries were advised to identify a facility for delivery) and unrelated to these rewards but part of Ananya’s broader mission (for example, 35 percent of treatment and 26 percent of control beneficiaries had been provided with information on infant danger signs).

BENEFICIARIES’ KNOWLEDGE OF SOME MATERNAL AND CHILD HEALTH PRACTICES IMPROVED, PARTICULARLY RELATED TO BREASTFEEDING.

The TBGI intervention improved beneficiaries’ knowledge of proper health care in some domains. Figure 3 focuses on five key indicators. Beneficiaries in treatment areas were more likely

to understand the need for both incentivized (for example, clean-cord care, which includes using a new blade and new thread to cut the umbilical cord and applying nothing to the cord) and nonincentivized behaviors (such as exclusive breastfeeding). However, only the differences in knowledge of immediate and exclusive breastfeeding are large and significant. Almost half (49 percent) of treatment group beneficiaries knew to begin breastfeeding within an hour of birth and 83 percent knew to exclusively breastfeed for six months, compared with 41 and 76 percent of the control group, respectively. We also found small and insignificant differences in awareness of most maternal and infant danger signs. Note, however, that levels of understanding are universally low for some indicators, suggesting that there is much scope for improvement in sharing this information with households.

THE TBGI INTERVENTION LED TO MODEST IMPROVEMENTS IN SOME OUTCOMES RELATED TO COMPLEMENTARY FEEDING, IMMUNIZATION, AND FAMILY PLANNING, BUT FEW OTHER BEHAVIORS CHANGED.

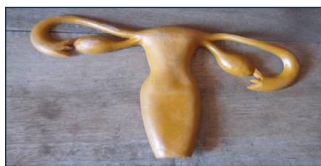
Table 1 highlights differences between treatment and control beneficiaries in key (incentivized and nonincentivized) maternal and child health indicators. Overall, we find that TBGI is associated with statistically insignificant improvements in most outcomes. However, some differences suggest the potential promise of TBGI.



Mobile Kunji Cards (Communication Tool)



Cup (katori) and Spoon (Complementary Feeding)



Model of Uterus (IUD)
Examples of tools used during home visits. The second and third are part of CARE’s job aid kit.

TBGI Targets

FLWs received gifts if their subcenters met predetermined coverage targets per quarter:

1. 70 percent of pregnant women **arranged for transportation for their delivery**.
2. 70 percent of pregnant women received at least 90 IFA tablets.
3. 70 percent of children were **breastfed within an hour of birth**.
4. 70 percent of deliveries included **appropriate umbilical cord care**.
5. 70 percent of children ages 6 to 11 months were **fed age-appropriate and nutritious food**.
6. 30 percent of women (or their partners) used any **modern method of family planning** within six months of delivery.
7. 80 percent of children received a **DPT3 injection** by age 6 months.

Team members also received certificates and an annual bumper prize if they met five of seven goals in each of the four calendar quarters. The total cost per FLW for non-monetary incentives, if she meets all quarterly targets and the annual target, is between Rs. 1500- 1800 or \$25- \$30.

Share of Women Understanding Key Health Behaviors

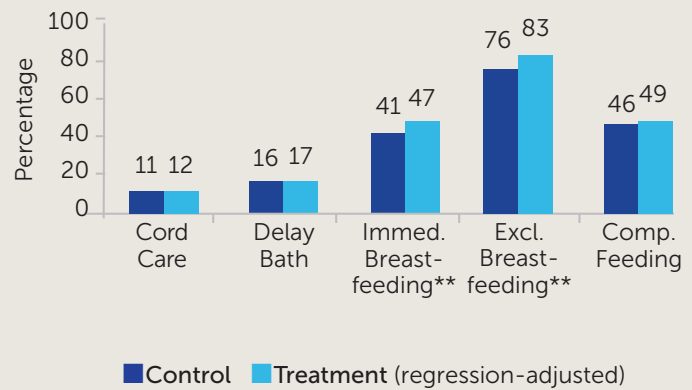


Figure 3

TBGI did not change beneficiaries' behavior during pregnancy in any large or significant manner. For example, 55 percent of beneficiaries in both treatment and control areas obtained contact information for a vehicle to take them to a facility for delivery or in case of an emergency. Similarly, 16 percent of control beneficiaries and 18 percent of treatment-group beneficiaries received the recommended 90 or more iron/folic acid (IFA) tablets. Both differences are small and statistically insignificant. We also saw few significant differences in nonincentivized indicators in the antenatal care and delivery preparation domain (for example, saving money for delivery).

Newborn care also varied little between treatment and control districts. More than half (56 percent) of both treatment and control-group beneficiaries had nothing applied to their children's umbilical cords. Furthermore, 56 percent of beneficiaries

in control subcenters and 58 percent of those in treatment subcenters breastfed within one hour of birth. Nonincentivized outcomes, such as skin-to-skin care, also did not vary substantially or significantly by TBGI status.

Results for complementary feeding practices suggest the potential for positive impacts in this behavior. Although children over six months of age in treatment communities are not significantly more likely to eat solid or semisolid food, specific feeding practices appear somewhat better in these communities. Children living in treatment areas were significantly more likely to have been fed from a separate bowl (a strategy to ensure the child receives an adequate quantity of food) or fed a cereal-based meal the day before our survey. They also tend to receive a more diverse diet (that is, they are fed foods from a larger number of food groups, such as fruits, vegetables, and proteins). Thus,

Impacts on Beneficiary Outcomes (incentivized behaviors shaded)

	Control	Treatment	Impact
Obtained Number of Vehicle or FLW for Delivery Transportation	55	55	-0.8
At Least 90 IFA Tablets Received	16	18	2.0
Saved Money for Delivery	86	87	0.4
Immediate Breastfeeding	56	58	2.0
Nothing Applied to Cord	56	56	-0.4
Skin-to-Skin Care	50	52	1.5
Child Eats Solid or Semisolid Food†	62	67	5.0
In Previous Day			
Times fed‡	1.2	1.5	0.2*
Fed any meal from separate bowl‡	32	41	9.2**
Fed any cereal-based meal‡	46	55	9.0**
Amount fed (katoris) †	0.35	0.47	0.11**
Exclusive Breastfeeding for 6 Monthst	26	34	8.0
Exclusive Breastfeeding in Past 24 Hourst	61	71	9.2**
Use Modern Contraceptive Method‡	11	10	-0.2
Use Modern Contraceptive Method†	15	26	10.6**
Received DPT3†	67	73	5.4
Received DPT1	88	90	1.5

Note: *p < 0.10, **p < 0.05; †Mothers of children age 6 months and over only; ‡Mothers of children birth to age 5 months only.

Table 1

although the indicator for any complementary feeding does not demonstrate significant effects, there is some evidence that TBGI might lead to improved feeding practices.

Additionally, beneficiaries in TBGI areas are significantly more likely to practice exclusive breastfeeding for six months, a behavior not directly incentivized by TBGI. More than two-thirds (71 percent) of beneficiaries in treatment areas with a child younger than 6 months practiced exclusive breastfeeding in the 24 hours before the interview, compared with only 61 percent of similar control group beneficiaries.

We also see some potential for improvement in the reproductive health domain, though results vary based on the beneficiaries considered. The treatment–control difference in modern contraceptive use is small and insignificant among beneficiaries with children younger than 6 months. However, the TBGI initiative caused substantial improvements in contraceptive uptake for beneficiaries with children 6 to 11 months old. In TBGI areas, 26 percent of such beneficiaries

used modern contraceptive methods, compared with 15 percent of beneficiaries in control areas. The difference is both large (69 percent of the control mean) and statistically significant.

Finally, our results suggest that TBGI might improve immunization-related outcomes. The children of 73 percent of beneficiaries in treatment areas received all three courses of the DPT vaccine, compared with 67 percent coverage in control areas. Although this difference is not statistically significant, it is nontrivial in size.

LOOKING FORWARD

Overall, our results suggest the TBGI intervention led to large changes in FLWs’ behaviors. Compared to those in treatment areas, TBGI FLWs work more cooperatively, visit more households, and provide higher quality services.

The impact of the intervention on beneficiaries’ health-related knowledge and behaviors was more modest in most domains; however, our results suggest the potential for improvements in

TBGI Process Study

CARE conceptualized, designed and implemented the TBGI intervention, introducing the program to subcenters in treatment areas during the summer of 2012. Mathematica conducted a process study to learn about program implementation, gathering information from semistructured interviews with CARE staff, FLWs, and beneficiaries; we also collected quantitative survey data from ASHAs and AWWs. This analysis reveals that our findings on Ananya's impacts are not driven by poor reception of TBGI by FLWs or implementation by CARE staff.

- **ASHAs and AWWs generally understood the program and were able to properly implement it.** For example, 97 percent of ASHAs and AWWs were able to report the correct number of households (within one beneficiary) that had to arrange for transportation for them to meet this target. More than 90 percent had a TBGI diary to use to create targets and track progress. Two-thirds were able to calculate these numbers themselves, though many reported needing assistance from CARE for this task during our semi-structured interviews.
- **ASHAs and AWWs had varied interpretations of what actions they had to take to achieve targets.** For example, 35 percent reported that the IFA goal was achieved if a woman received the tablets, 52 percent thought they needed to see the empty tablet strips, and 41 percent believed they should ask a woman about the color of her stool.
- **Excitement about the program was high.** During our site visits, ASHAs and AWWs were visibly excited about the program. Team members often discussed the TBGI goals and their progress (70 percent did this a few times per week or more often). FLWs also reported that targets gave their discussions with households more structure and purpose.

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हिलारें जिन्होंने प्रसव के लिए परिवहन योजना बना ली है।	4/5	4	
हिलारें जिन्होंने अपनी अंतिम गर्भावस्था के दौरान कम से कम 10 आईएफए गोलियाँ प्राप्त की हैं।	4/5	0	
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स्त्रियों जिन्हें 6-11 महीने के बीच आयु उपयुक्त आवृत्ति पूरक आहार मिले हैं।	5/6	2	
जिन्होंने प्रसव के 6 महीने के भीतर परिवार नियोजन की एक आधुनिक विधि अपनाई है।	4/6	2	
स्त्रियों जिन्होंने 6 महीने के भीतर डीपीटी-3 प्राप्त किया है।	5/6	2	
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A page of the TBGI diary, used to track goals and monitor progress.

• **ASHAs and AWWs reported reaching out to ANMs for assistance more often.** Both the ASHAs and AWWs indicated that they reached out to the ANMs for assistance in cases in which beneficiaries were reluctant to follow a practice; 60 percent said that the ANMs provided advice on how to meet targets most of the time, whereas 36 percent reported the ANMs sometimes provided this input.

• **Gifts and certificates provided incentives motivating the FLWs to work.** Most FLWs said they were satisfied (19 percent) or very satisfied (73 percent) with the gifts. A majority used their gifts on a daily basis.

contraceptive use, age-appropriate feeding, and immunization.

Several factors could have caused changes in FLWs' actions to fail to translate into changes in outcomes across all domains. First, some of the behaviors targeted are complex and it may take more time and persistence before we see large changes. Social norms might prove to be difficult forces working against behavioral changes (such as clean-cord care or using contraception). Additionally, FLWs might lack the supplies needed to improve some outcomes (such as IFA receipt). Finally, some improvements could also have been too small to statistically detect (for example, as seen for DPT3 coverage). Our study was designed to distinguish changes of 10 percentage points or

more and we cannot identify smaller differences with statistical certainty.

Without further rounds of data collection, we cannot be sure of the longer-term effects of changing FLWs' incentives with TBGI. Similarly, our results do not reflect the effects of TBGI if implemented throughout Bihar as part of a scaled-up Ananya program. Despite these caveats, these results suggest that TBGI has the potential to add value to the existing Ananya interventions and can have large impacts on some important family health behaviors.

For more information on Ananya, visit www.ananya.org.in. For more information on this brief, contact Dana Rotz at drotz@mathematica-mpr.com.

The TBGI intervention was conceptualized, designed, and implemented by CARE and evaluated by Mathematica Policy Research.

Borkum, Evan, Anu Rangarajan, Dana Rotz, Swetha Sridharan, Sukhmani Sethi, and Mercy Manoranjini. (2014). "Evaluation of the Team-Based Goals and Performance Based Incentives Intervention in Bihar." Report submitted to the Bill and Melinda Gates foundation. Mathematica Policy Research: Princeton, NJ.