Designing Contracts for Healthcare Providers in India

Researchers:

Katherine Donato

Grant Miller

Manoj Mohanan

Yulya Truskinovsky

Sector(s): Health, Political Economy and Governance

Fieldwork: Sambodhi, Cohesive India

Location: India

Sample: 140 rural healthcare providers

Target group: Health care providers

Outcome of interest: Sexual and reproductive health Health outcomes Service provider performance

Intervention type: Monetary incentives Performance-based pay

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Research Papers: Personality Traits and Performance Contracts: Evidence from a Field Experiment ...

Partner organization(s): International Initiative for Impact Evaluation (3ie), Government of Karnataka, UK International Development, World Bank

Healthcare systems in many countries reward providers for efforts to improve the quality of care. Researchers evaluated two types of reward contracts—one that rewarded providers for increased use of inputs and one that rewarded providers for improved health outputs—among rural obstetric care providers in India. They found that both contracts reduced post-partum hemorrhage by 20-23 percent. Input incentives improved health outputs independently of providers' skills, while with output incentives, providers with higher skills performed better and used new health delivery strategies. In addition, researchers found that the effect of output incentives was different for providers with different personality traits. These results show the importance of considering providers' skill levels and personality traits when designing performance incentives.

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In order to improve the quality of health services, healthcare systems in many developing countries have implemented performance-based reward systems for healthcare providers. Performance-based reward systems can pay healthcare providers a bonus either for completing certain inputs—such as number of patients seen and adherence to specified guidelines—or for achieving certain outputs—such as reductions in disease and improvements in nutrition.

However, it is unclear which system is generally more effective at increasing health outputs, and it is likely that providers' characteristics matter greatly. For example, if there is a clear and well-understood connection between input and health outputs (e.g. vaccines help prevent child mortality), rewarding input use may be the most efficient use of resources. On the other hand, if the most efficient input combination is very much context or patient specific, incentivizing increased newborn birthweight, for

example, rewarding health outputs directly might be more effective. Little empirical evidence exists on which of these reward systems is more effective at increasing health outputs and on which system is better suited to certain contexts.

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This evaluation took place in rural areas of Karnataka, India. Karnataka has poor levels of maternal and neonatal health: in 2013, Karnataka's maternal mortality rate was 144 deaths per 100,000 live births, and its neonatal and infant mortality rates were 25 and 31 per 1,000 live births, respectively. For comparison, the maternal and infant mortality rates in Kerala, the state just south of Karnataka, were 66 per 100,000 live births and 12 per 1,000 live births, respectively[1]. Despite the fact that over 90 percent of deliveries take place in healthcare facilities, poor maternal and neonatal health persists, presumably due to low quality maternal health care.



Women wait at a rural pregnancy clinic in India

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Researchers conducted a randomized evaluation to test the trade-offs between payment contracts that reward use of health inputs versus health outputs. To do so, they focused on private obstetric care providers in rural Karnataka that conducted at least two deliveries per month and practiced primarily in an OBGYN clinic. Of the 135 providers who participated in the evaluation, 38 providers were assigned to payment contracts that rewarded use of health inputs, 53 were assigned to contracts that rewarded health outputs, and 44 were assigned to the comparison group which did not receive any incentives.

Input contracts provided reward payments for health inputs provided to patients in five categories: pregnancy care, childbirth care, postnatal maternal care, newborn care, and postnatal newborn care. Providers received a financial reward for providing inputs above a pre-established baseline level. Output contracts provided reward payments for decreasing three major causes of maternal mortality, post-partum hemorrhage (PPH), pre-eclampsia, and sepsis, to levels below a pre-established baseline. To prevent providers from diverting efforts away from tasks that would not be rewarded by the program, both incentive contracts included all major inputs and outputs related to maternity care. Providers with output contracts also received a bonus if none of their newborn patients died.

All providers (including those in the comparison group) received guidelines from the World Health Organization (WHO) and Government of India for best practices in maternity care, and signed agreements to participate in the study, including surveys and meetings. Those in the incentive contract groups were also given a copy of their assigned contract (either input or output), explaining the specific basis by which they would be rewarded at the end of the program. The contracts offered providers the potential to earn up to approximately INR 150,000 (US$2,700 at the time of the study), slightly more than 15 percent of a specialist doctor's salary in Karnataka.

About one year after the contracts were signed, researchers conducted surveys of providers and 2,895 mothers who had recently given birth at a participating facility. The surveys covered providers' medical practices and patient health outputs. The provider surveys included a personality test to measure conscientiousness—which is associated with dependability, organizational skills, and perseverance—and neuroticism—which is associated with anxiety, insecurity, and worry.

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Overall, providers with both input and output reward contracts achieved similar improvements in maternal health and used similar strategies to improve quality of care. Input incentives improved health outputs independently of providers' skills, while with output incentives, providers with higher skills performed better and used new health delivery strategies. In addition, researchers found that the effect of output incentives was different for providers with different personality traits.

In both incentive contract groups, PPH rates declined by nearly identical amounts: Providers with input contracts reduced the probability of PPH among their patients by 8.4 percentage points, a 23 percent reduction, and providers with output contracts reduced the probability of PPH by 7.4 percentage points, a 20 percent reduction. One likely reason was that providers in both contract groups used inputs in a similar way, such as increasing their use of medicines to reduce bleeding. Neither contract had an effect on the incidence of sepsis, possibly due to high pre-existing use of gloves (99 percent of providers in the comparison group) and antibiotics, as well as on pre-eclampsia and neonatal death, which are outputs providers have less control over.

High-skilled providers with output contracts seem to have performed better: When comparing results by providers' skill level, the likelihood of PPH fell by 11 percentage points more for providers with advanced medical training (i.e. medical degrees with specific obstetric training) than for less qualified providers in the output contract group. This suggest that high-skilled providers in the output contract seemed to be more likely to implement new strategies in health care relative to providers in the input contract.

The output contract had different impacts depending on healthcare providers' personality traits: Results show that providing output incentives to providers with lower levels of conscientiousness, who usually perform worse, helped reduce the incidence of PPH by 13.3 percentage points (a 37 percent decrease). The contract had no impact on the performance of providers with higher level of conscientiousness. Researchers also found that incentives were more effective at improving health outputs among providers with greater emotional stability, as indicated by low levels of neuroticism, reducing incidence of PPH by 13 percentage points (a 36 percent decrease). The contract had no impact on the performance of providers with higher levels of neuroticism.

Under output contracts, providers' care may have been influenced by their expectations about which outputs they could most likely improve: Despite the bonus for reducing child mortality, there were no changes on this output. Generally, providers felt postnatal mortality was largely out of their control and more related to the actions of caregivers at home. Providers with output contracts may have therefore chosen to focus their efforts on outputs within their control like maternal bleeding. In contrast, postnatal newborn care did not change for providers with input contracts given their incentives were aligned with input use.

Output reward contracts were more expensive than input reward contracts: The average payment to output contract providers was INR56,812 (US$1,033), while the average payment to input contract providers was INR13,850 (US$252). Because both contracts achieved the same level of patient health, rewarding inputs was a more cost-effective contract design than rewarding outputs.

Taken together, these results suggest that incentive contracts can be improved by taking into account both providers' skill levels and personality traits.

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1. NHM. 2016. "Statewise Information: Kerala." Government of Kerala. Accessed December 15, 2016. http://nrhm.gov.in/nrhm-in-state/state-wise-information/kerala.html