Improving health worker performance through pay-for-performance programs

Last updated: juillet 2022

Pay-for-performance incentive programs for health care workers reward providers based on measurable performance indicators. In many low- and middle-income countries, providing performance-based pay in addition to base pay can help to improve health provider performance on well-chosen targeted indicators relative to providing only base pay.



Photo: Thomas Chupein | J-PAL/IPA

Résumé

Life expectancy varies substantially around the world, with a 2019 estimate showing that people in low-income countries on average die 18 years sooner than their counterparts in high-income countries.[1] Improving access to high-quality health services for underserved populations is crucial, and an important element of this is strengthening health worker capacity and performance. In contexts where health workers are trained but performance remains low, many policymakers have implemented pay-for-performance (P4P) incentive programs to reward providers based on measurable performance indicators. P4P covers programs that provide an incentive, typically paid on top of fixed existing remuneration, for reaching a prespecified goal, such as the number of home visits made, the number of patients seen, or health outcomes of patients. Figure 1 highlights how P4P programs may improve the performance of existing workers by directly incentivizing good performance. Initial evidence suggests performance pay may also attract higher candidates to become health workers, although more research is needed. Improved performance may also translate into improved health outcomes.

While P4P programs are often effective at improving performance and health outcomes, what inputs and outcomes are incentivized requires careful consideration. The goal of these programs is to improve health outcomes, and health workers may not always have information on what inputs to prioritize to achieve these targeted outcomes. While health worker training is

paramount, incentivizing specific inputs or activities may remind workers of this information. From a practical perspective, inputs such as the number of patients seen can be easier to measure and monitor than many health outcomes. However, whether focusing on inputs is adequate for improving health outcomes is a key consideration. P4P may be most impactful in health systems with high levels of transparency and accountability and when accompanied by interventions to generate demand for services,[2], such as cash transfers, and information campaigns.

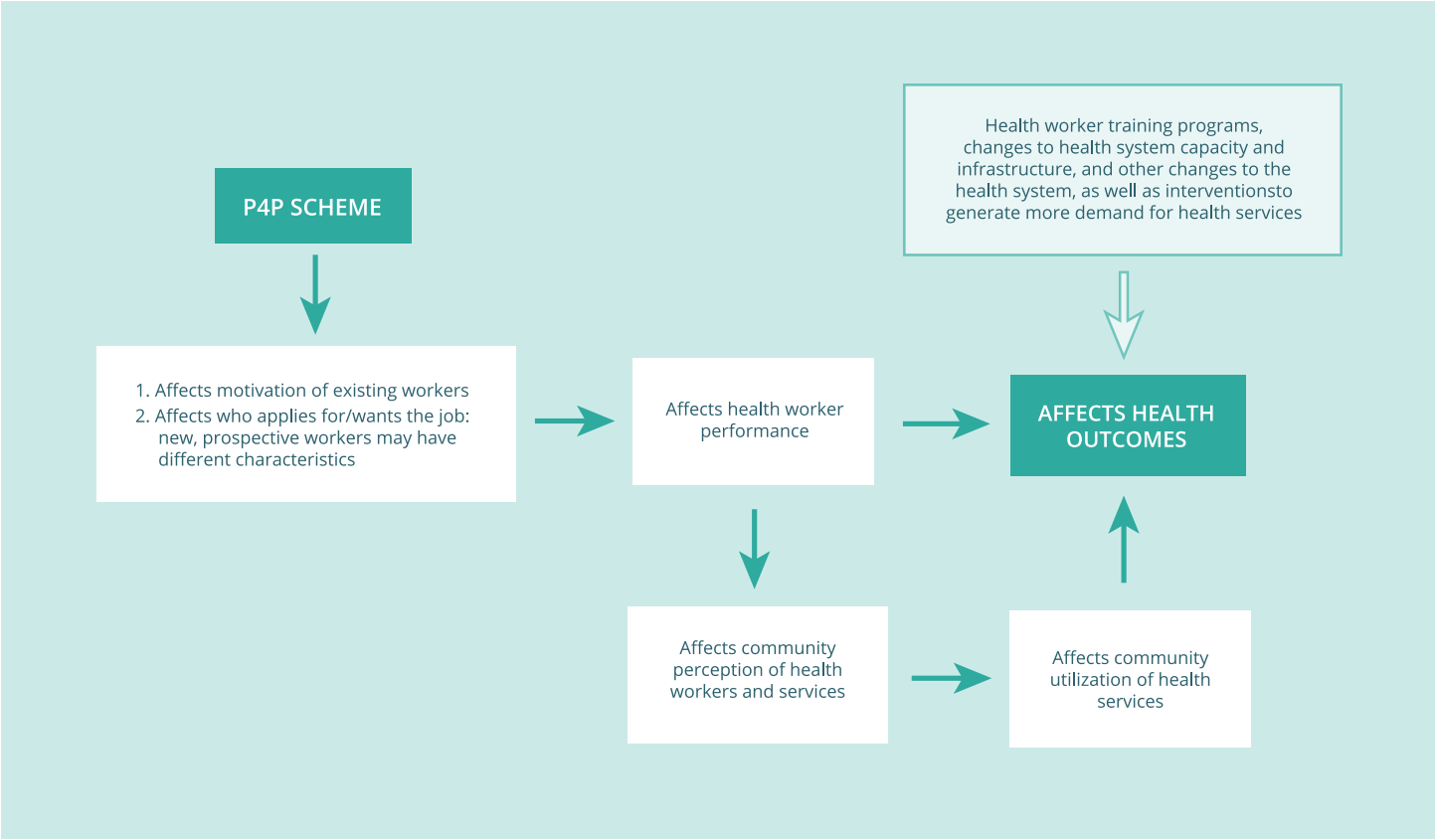

Figure 1. Pay-for-performance (P4P) conceptual framework.

A review of 21 randomized evaluations from 13 low- and middle-income countries shows that health workers typically improve their performance on priority indicators when they receive performance-based pay relative to receiving fixed wages. These studies consider the impact of P4P on health workers at two levels of the health system: formally trained medical professionals such as doctors, nurses, and midwives; and community health workers (CHWs), who are members of local communities that serve as liaisons between individuals and clinical care providers.[3], ,[4] Providing incentives based on metrics within the health worker's control is important for improving performance. Open questions remain on whether health worker performance improves more when incentives are provided based on their individual performance or if based on the performance of all workers in a clinic.

Résultats

Health workers who receive P4P incentives on top of base pay generally improve their performance on targeted outcomes relative to workers receiving fixed wages.

The rationale of P4P programs is that they can incentivize behaviors that facilitate the achievement of targeted outcomes. Seventeen [1], [2], [4], [5], [6], [7], [8], [11], [12], [13], [14], [15], [16], [18], [19], [20], [21] of the 21 studies found that health workers receiving performance-based pay performed better than workers receiving fixed wages on some or all outcomes measured. These outcomes included health outcomes for patients, health service utilization rates by the local community, and

measures of health worker performance such as correct medications being prescribed, reduction in stockouts, and patient satisfaction.

A study in Sierra Leone tested the impact of providing 2,000 leones (US$0.23 at the time of the evaluation) to CHWs per health visit completed on top of their fixed wages relative to simply providing fixed wages. Workers who did not receive the performance-based pay carried out 5.3 visits per household over a six-month period as opposed to 7.4 visits for workers who did receive the performance-based pay, a 40 percent increase.[7]

Another program in Kenya provided performance-based pay to health facilities on correct malaria case management. All health workers in the program received a refresher workshop on malaria case management, with nine of the facilities then receiving pay based on whether their facility achieved specific performance indicators. By the end of the intervention, health workers who received training and worked in facilities receiving performance-based pay were five times less likely to prescribe malaria treatment without a diagnostic test compared with health workers who received the training but worked in facilities receiving no performance-based pay.[12]

Exploring the interactions between workers in different layers of the organization, and the optimal allocation of incentives between them, is important. However, poor monitoring or actions by superiors that undermine the incentive structure can render a P4P program ineffective.

Health systems are often hierarchical, and the behavior of others beyond the health worker may also be important considerations. A program in Sierra Leone studied the effects of introducing a P4P scheme that rewarded the worker and their supervisor for each health visit completed. Health visits increased by 63 percent compared to the control group. This effect was 61 percent larger than when the incentives were offered either to the worker or the supervisor alone, which was explained by complementarities in effort between workers and supervisor.[7]

Ensuring accurate monitoring and that the incentive structure is not undermined are also important. A program in India implemented monitoring systems to track nurse attendance at clinics using time- and date-stamping machines that were locked into a caddy and password protected to prevent tampering. The administration also installed punitive pay incentives in which nurses who were absent more than 50 percent of the time on monitored days would have their pay reduced, and those absent for more than 50 percent of the time on monitored days for a second month would be suspended from government service. While this program initially increased attendance by 15 percentage points, administrators eventually began to excuse absences and nurses may have tampered with the monitoring systems. Eventually, there was minimal difference in attendance between nurses who were and were not monitored.[3]

Ensuring that incentivized activities are within the health worker's direct control may be important.

P4P programs can incentivize health workers based on various indicators. CHWs, whose roles typically focus on liaising between community members and primary care clinics, are often incentivized based on performance and service utilization metrics, such as the number of home visits made or the number of children weighed to track malnutrition. Formally trained health workers, such as doctors and nurses, may also be incentivized according to performance metrics, such as patient satisfaction or the volume of services provided.

Twelve studies [1], [5], [6], [7], [8], [12], [13], [14], [15], [16], [18], [21] provided health worker incentives based in part or wholly on specific metrics of performance within the worker's control, such as accurate diagnosis, meeting predetermined standards of care, and prescription practices. Targeted outcomes improved in all but one study.

Six other studies [2], [4], [9], [10], [11], [17], provided health worker incentives based on service utilization, which is often less directly in the control of the health service provider. Targeted outcomes improved in half of the studies [2], [4], [11], . One study in the Democratic Republic of Congo worsened service utilization rates. Health workers were more present, conducted more outreach activities, and offered lower user fees, yet health visits declined. Additional analysis found that this may have been due

to the community perceiving the services as lower quality due to the extensive outreach. Furthermore, health workers receiving performance pay eventually became less intrinsically motivated with their jobs.[10] This may suggest a need to complement increased outreach with community sensitization activities.

It may be important to directly incentivize patient health outcomes for outcomes to improve.

P4P programs aim to improve patient health. A key question is whether to provide performance pay based on certain inputs or activities, as discussed before, or to do so based on patients' health outcomes. While pay based on outcomes directly incentivizes the goal of the program, pay based on inputs can provide information to health workers on what activities to prioritize.

Health outcomes improved in two [13], [20], of the three studies [13], [19], [20], considered here that paid health workers based on patient health outcomes. However, the studies considered here suggest that health outcomes may be less likely to improve if pay is not directly tied to them. Of seven programs [4], [6], [7], [8], [10], [14], [15], that tracked health outcomes without incentivizing them, three [8], [14], [15] improved health outcomes.

These findings reflect the difficulty of improving health outcomes. Conditions outside of the health worker's direct control, such as the treatability of the illness and the presence of comorbidities, also have direct impacts on health outcomes. The health worker's level of training may be another determinant. One study in India tested the impact of incentivizing based on patients' postpartum hemorrhage rates (a health outcome that may not be in a health provider's direct control) relative to incentives based on adherence to certain clinical standards (something directly within the health worker's control). While both incentives had comparable average effects on patient health outcomes, improvements were driven by better-trained health workers. Health workers incentivized on health outcomes who had more advanced medical training tended to use newer, more novel techniques and produced better health outcomes. On average, well-trained health workers reduced hemorrhage rates by 11 percentage points relative to lower-skilled providers who reduced rates by less than one percentage point.[13]

It is unclear whether it is more effective to provide incentives based on individual health worker performance or based on the performance of a group, such as all the health workers in the clinic.

Some P4P programs reward each health worker according to their performance on prespecified outcomes. Others provide incentive pay to a group of health workers if the full group meets the prespecified target. It is unclear whether one type of incentivization leads to better outcomes as none of the studies considered here test the impact of the two against each other.

Out of 11 programs [1], [2], [5], [7], [8], [13], [14], [15], [16], [19], [20], that provided individual incentives, health worker performance on all or some targeted outcomes improved in 10 [1], [2], [5], [7], [8], [13], [14], [15], [16], [20], . Of the nine programs [4], [6], [9], [10], [11], [12], [17], [18], [21], that provided group-level incentives, performance improved in six [4], [6], [11], [12], [18], [21].

While providing individual incentives may allow health workers to have more control over their performance pay, group-based incentives may lead to overall shifts in behavior that improve targeted outcomes. For instance, a study in Argentina focused on the impact of incentivizing health workers based on early initiation of prenatal care. Health clinics received a 200 percent premium of a woman's first prenatal care visit if the visit occurred before her 13th week of pregnancy. Clinics participating in the program increased early initiation of prenatal care by 34 percent relative to clinics that did not receive this premium. The average number of weeks a woman was pregnant at the time of her first prenatal care visit fell by about 1.5 weeks. Additional analysis found that clinics achieved these improvements by developing specific outreach strategies to find newly pregnant women and encourage them to start care early. The improved performance was maintained even after the premium was removed, consistent with the hypothesis that the one-time barriers to adopting new outreach strategies had prevented their adoption, as opposed to low returns. This suggests that temporary incentives may have been just as effective in that context as permanent incentives would have been to achieve lasting improvements.[4]

On the other hand, a program in the Philippines provided individual bonuses of 100 Philippine pesos (US$2.40 at the time of the evaluation) to medical workers at hospitals based on the quality of care provided. Improvements in staff performance reduced child wasting by nine percentage points [14].

Given that both individual- and group-based incentives have improved targeted outcomes, more research comparing the relative impacts of the two design features is important. In the meantime, policymakers could consider implementing the structure that seems most appropriate given their context.

Sector chair(s) or Academic lead(s)

Pascaline Dupas Karen Macours

Insight author(s)

Anupama Dathan

J-PAL Policy Insight. 2022. "Pay for performance incentives for health in low- and middle-income countries." Cambridge, MA: Abdul Latif Jameel Poverty Action Lab.

---

1. WHO. 2019. “Uneven Access to Health Services Drives Life Expectancy Gaps: WHO.” https://www.who.int/news/item/04-04-2019-uneven-access-to-health-services-drives-life-expectancy-gaps-who.

2. De Walque et al. 2022. *Improving Effective Coverage in Health: Do Financial Incentives Work?* Washington, DC: World Bank.

3. WHO. 2022. “Supporting Community-Based Health Workers (CHWs).” https://www.who.int/activities/supporting-community-based-health-workers.

4. The role of CHWs varies greatly by context. They typically work in communities to deliver basic care, often going door-to-door to provide antenatal care to pregnant women or neonatal care to newborns, assess children’s nutritional status, administer vaccines, and more. If a community member has an illness that requires medical care, they may also refer the patient to a primary health center.

---

1. Andreoni, James, Michael Callen, Muhammad Yasir Khan, Karrar Jaffar, and Charles Sprenger. “Using Preference Estimates to Customise Incentives: An Application to Polio Vaccination Drives in Pakistan.” Working Paper, September 2019. Research Paper, | J-PAL Evaluation Summary

2. Ashraf, Nava, Oriana Bandiera, and Kelsey Jack. 2014. “No Margin, No Mission? A Field Experiment on Incentives for Public Service Delivery.” *Journal of Public Economics* 120: 1–17. Research Paper, | J-PAL Evaluation Summary

3. Banerjee, Abhijit, Rachel Glennerster, and Esther Duflo. 2008. “Putting a Band-Aid on a Corpse: Incentives for Nurses in the Indian Public Health Care System.” *Journal of the European Economic Association* 6, no. 2–3: 487–500. Research Paper, | J-PAL Evaluation Summary

4. Celhay, Pablo A., Paul J. Gertler, Paula Giovagnoli, and Christel Vermeersch. 2019. “Long-Run Effects of Temporary Incentives on Medical Care Productivity.” *American Economic Journal: Applied Economics* 11, no. 3: 92–127. Research Paper, | J-PAL Evaluation Summary

5. Chukwuma, A., Chinyere Mbachu, Margaret McConnell, Thomas J. Bossert, and Jessica Cohen. 2019. “The Impact of Monetary Incentives on Referrals by Traditional Birth Attendants for Postnatal Care in Nigeria.” *BMC Pregnancy Childbirth* 19, no. 150. https://doi.org/10.1186/s12884-019-2313-8. Research Paper , | J-PAL Evaluation Summary

6. De Walque, Damien, Paul Jacob Robyn, Hamadou Saidou, Gaston Sorgho, and Maria Steenland. 2021. “Looking into the Performance-Based Financing Black Box: Evidence from an Impact Evaluation in the Health Sector in Cameroon.” *Health Policy and Planning* 36, no. 6: 835–847. https://doi.org/10.1093/heapol/czab002. Research Paper

7. Deserranno, Erika, Stefano Caria, Philipp Kastrau, and Gianmarco León-Ciliotta. “Financial Incentives in Multi-Layered Organizations: An Experiment in the Public Sector.” Working Paper, January 2022. Research Paper, | J-PAL Evaluation Summary

8. Dhaliwal, Iqbal and Rema Hanna. 2017. “The Devil Is in the Details: The Successes and Limitations of Bureaucratic Reform in India.” *Journal of Development Economics* 124: 1–21. Research Paper, | J-PAL Evaluation Summary

9. Engineer, Cyrus, Elina Dale, Anubhav Agarwal, Arunika Agarwal, Olakunle Alonge, Anbrasi Edward, Shivam Gupta et al. 2016. “Effectiveness of a Pay-for-Performance Intervention to Improve Maternal and Child Health Services in Afghanistan: A Cluster-Randomized Trial.” *International Journal of Epidemiology* 45, no. 2 (April): 451–459. https://doi.org/10.1093/ije/dyv362. Research Paper

10. Huillery, Elise and Juliette Seban. 2021. “Financial Incentives, Efforts, and Performances in the Health Sector: Experimental Evidence from the Democratic Republic of Congo.” *Economic Development and Cultural Change* 69, no. 3: 1115–1164. Research Paper, | J-PAL Evaluation Summary

11. Khanna, Madulika, Benjamin Loevinsohn, Elina Pradhan, Opeyemi Fadeyibi, Kevin McGee, Oluwole Odutolu, Gyorgy Bela Fritsche et al. 2021. “Decentralized Facility Financing versus Performance-Based Payments in Primary Health Care: A Large-Scale Randomized Controlled Trial in Nigeria.” *BMC Medicine* 19, no. 224. https://doi.org/10.1186/s12916-021-02092-4. Research Paper

12. Menya, Diana, Alyssa Platt, Imran Manji, Edna Sang, Rebeccah Wafula, Jing Ren, Olympia Cheruiyot et al., 2015. “Using Pay-for-Performance Incentives (P4P) to Improve Management of Suspected Malaria Fevers in Rural Kenya: A Cluster Randomized Controlled Trial.” *BMC Medicine* 13, no. 268. doi: 10.1186/s12916-015-0497-y. Research Paper

13. Mohanan, Manoj, Katherine Donato, Grant Miller, Yulya Truskinovsky, and Marcos Vera-Hernández. 2021. “Different Strokes for Different Folks? Experimental Evidence on the Effectiveness of Input and Output Incentive Contracts for Health Care Providers with Varying Skills.” *American Economic Journal: Applied Economics* 13, no. 4: 34–69. Research Paper, | J-PAL Evaluation Summary

14. Peabody, John W., Riti Shimkhada, Stella Quimbo, Orville Solon, Xylee Javier, and Charles McCulloch. 2014. “The Impact of Performance Incentives on Child Health Outcomes: Results from a Cluster Randomized Controlled Trial in the Philippines.” *Health Policy and Planning* 29, no. 5: 615–621. doi:10.1093/heapol/czt047. Research Paper

15. Peabody, John W., Stella Quimbo, Jhiedon Florentino, Riti Shimkhada, Xylee Javier, David Paculdo, Dean Jamison, and Orville Solon. 2017. “Comparative Effectiveness of Two Disparate Policies on Child Health: Experimental Evidence from the Philippines.” *Health Policy and Planning* 32, no. 4: 563–571. doi:10.1093/heapol/czw179. Research Paper

16. Quimbo, Stella, Natascha Wagner, Jhiedon Florentino, Orville Solon, and John Peabody. 2015. “Do Health Reforms to Improve Quality Have Long-Term Effects? Results of a Follow-Up on a Randomized Policy Experiment in the Philippines.” *Health Economics* 25, no. 2: 165–177. Research Paper

17. Shapira, Gil, Ina Kalisa, Jeanine Condo, James Humuza, Cathy Mugeni, Denis Nkunda, and Jeanette Walldorf. 2018. “Going beyond Incentivizing Formal Health Providers: Evidence from the Rwanda Community Performance-Based Financing Program.” *Health Economics* 27, no. 12: 2087–2106. Research Paper

18. Sieleunou, Isidore, Manuela De Allegri, Pascal R. E. Bonong, Samiratou Ouédraogo, and Valéry Ridde. 2020. “Does Performance-Based Financing Curb Stock-Outs of Essential Medicines? Results from a Randomised Controlled Trial in Cameroon.” *Tropical Medicine and International Health* 25, no. 8: 944–961. Research Paper

19. Singh, Prakarsh and William A. Masters. 2017. “Impact of Caregiver Incentives on Child Health: Evidence from an Experiment with Anganwadi Workers in India.” *Journal of Health Economics* 55, no. 8: 219–231. Research Paper

20. Singh, Prakarsh and Sandip Mitra. 2017. “Incentives, Information and Malnutrition: Evidence from an Experiment in India.” *European Economic Review* 93: 24–46. Research Paper

21. Yip, Winnie, Timothy Powell-Jackson, Wen Chen, Min Hu, Eduardo Fe, Mu Hu, Weiyan Jian et al. 2014. “Capitation Combined With Pay-for-Performance Improves Antibiotic Prescribing Practices In Rural China.” *Health Affairs* 33, no. 3: 502–510. Research Paper