

## CASE STUDY

# FRUGAL INNOVATIONS IN HEALTH CARE DELIVERY

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This case study is the first in a series examining health care innovations in low- and middle-income countries that could help address challenges faced by the U.S. health system.

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## Brazil's Family Health Strategy: Using Community Health Workers to Provide Primary Care

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### PROGRAM AT A GLANCE

**KEY FEATURE** Brazil, the world's fifth-largest nation, established a Family Health Strategy in 1994, which uses community health workers (CHWs) to provide basic primary care to families at home, relay information back to health care teams, resolve low-level problems, refer more complex problems to nurses or physicians, and collect data.

**TARGET POPULATION** More than 265,000 CHWs serve nearly 67 percent of Brazil's population. Most of the population served are lower-income.

**WHY IT'S IMPORTANT** Countries around the world, including the United States, are looking to reduce costs and provide greater access to care.

**BENEFITS** The program, which costs \$50 per person each year, has lessened the pressure on more-expensive care providers and led to significant improvements in clinical outcomes nationally—reducing hospitalizations and mortality and improving equity and access.

**LESSONS** The United States has used CHWs on a limited basis, with evidence of cost-effectiveness, but the model could be adopted more broadly. To do so, the U.S. must focus on three core challenges: regulation affecting the training and accreditation of CHWs, ensuring sustainable funding through appropriate payer reimbursement, and integrating CHWs into health care teams.

### BACKGROUND

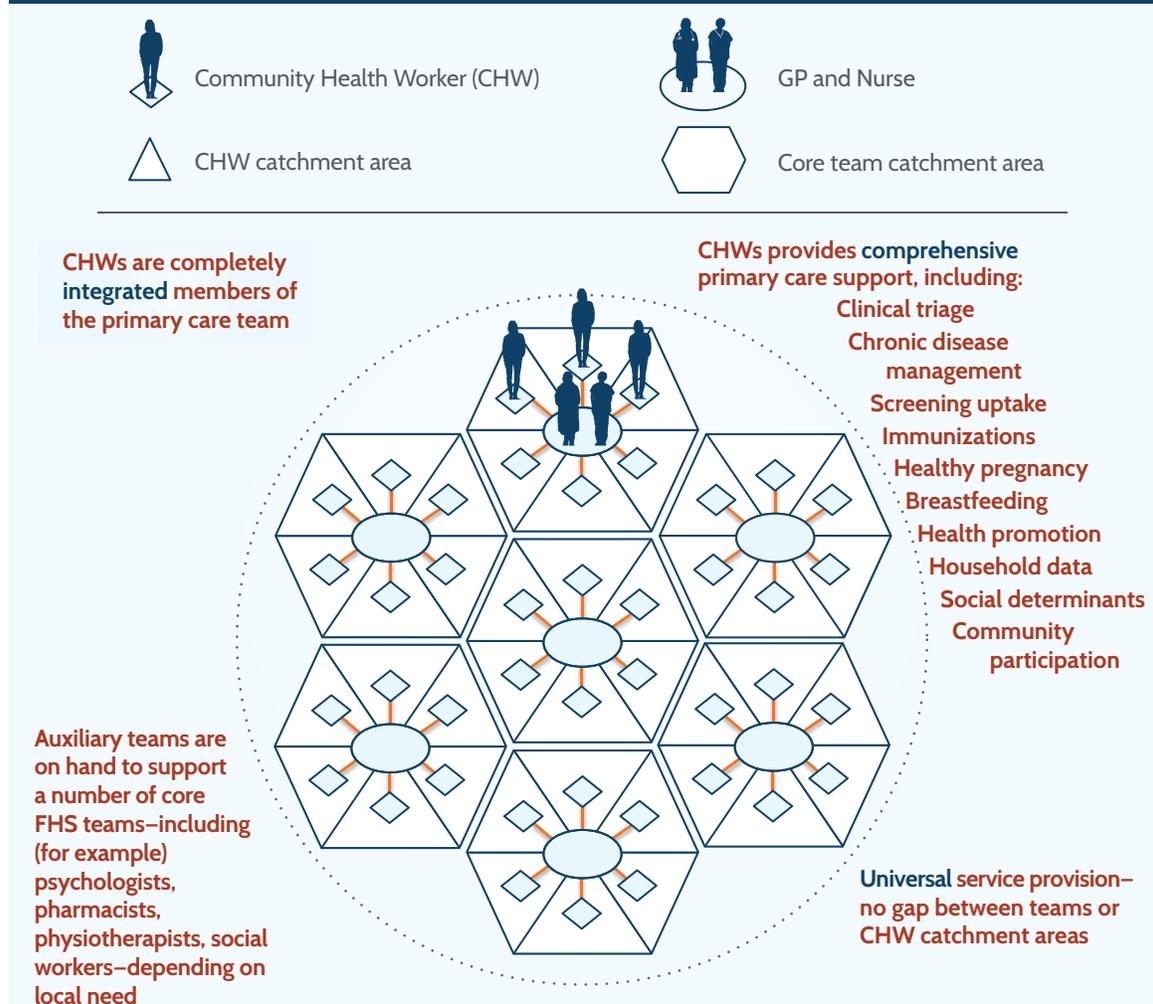
Countries around the world, including the United States, are looking to reduce costly hospital care and at the same time provide greater access to care. Some low- and middle-income countries are using community health workers (CHWs)—frontline public health workers—to provide care, a tested and cost-effective approach. CHWs are often members of the communities in which they work so therefore have valuable knowledge, understanding, and relationships.<sup>1</sup> To date, however, they have not been deployed to the same extent in high-income countries. The use of CHWs is a low-level technical intervention; the greatest benefits occur through scaling the use of CHWs to achieve coverage over a greater geographical area, which requires coordinated, strategic change at regional or national levels.

This case study examines Brazil's Family Health Strategy (FHS), which focuses on the use of CHWs. Health care is a universal right in Brazil, authorized by the Alma-Ata Declaration in 1978 and the 1988 constitution.<sup>2</sup> However, during the 1980s and 1990s, the country's population had become dependent on secondary and tertiary care for meeting primary care needs. Primary care became a devalued specialty. Since 1994, CHWs have been at the core of the country's primary health care policy. Although the country is currently undergoing a period of political and economic turmoil, with an uncertain impact on health care, Brazil enjoyed rapid economic and social progress from 2003 to 2013, when 26 million people were lifted out of poverty. It is the fifth-largest country in both population and landmass and strikingly diverse.<sup>3</sup>

## WHAT IS THE FAMILY HEALTH STRATEGY AND HOW DOES IT WORK?

Brazil's Family Health Strategy started as a federal program in 1994 to provide integrated primary care. The strategy aims at providing preventive and basic health care using multidisciplinary professional teams, usually consisting of a physician, a nurse, and about six CHWs (Exhibit 1). This core team also may be supported by a colocated dental team. Each group of four or five health teams also

### Exhibit 1. Family Health Strategy Team Structure



has other professionals like psychologists, community pharmacists, and physiotherapists to provide additional specialist care and support. Each core team is assigned a geographic area covering 3,000 to 4,000 people, with a maximum of 150 families per CHW.

Teams are responsible for registering every family in their area, monitoring living conditions and health status, and providing primary care. CHWs are able to resolve many low-level problems, such as checking to make sure patients are taking their hypertension or diabetes medication correctly, or may refer more complex issues to the appropriate professional.<sup>4</sup> CHWs are fully integrated into the team, speaking regularly with the nurse and physician. Their notes are discussed at team meetings and added to the medical record, which is usually electronic. They also spend time at the clinic, helping to organize the waiting room and appointments, as well as running health education sessions. Each household receives at least one visit every month from a dedicated CHW, regardless of need, which allows for the collection of census-quality data. While patients are not able to choose their CHW, no family who wants a visit is left out.

Today more than 265,000 CHWs serve nearly 67 percent of the population.<sup>5</sup> CHWs are recruited from their own communities and are overwhelmingly young and female (86% are female, 83% are between ages 21 and 49). Secondary education is usually a minimum requirement, but CHWs come from all walks of life, and 67 percent have a professional diploma. Pay and benefits are set locally, although municipalities are funded nationally to pay CHWs the minimum wage. In richer areas, recruitment from within the community is more challenging than in poorer areas.

Multidisciplinary teams—which include physicians, nurses, and community health workers—are responsible for registering every family in their area, monitoring living conditions and health status, and providing primary care.



CHWs are highly respected because they are often the stable and enduring presence in a family's experience with primary care. As a result, turnover is low. CHWs in dangerous areas report that their high social standing also accords them and their health clinic protection from violence.

Delivering a structured educational program for CHWs in a busy health center is challenging. CHWs receive up to a month of initial preparation and additional informal, on-the-job training. CHWs can operate in the community without much supporting technology, although municipalities are increasingly seeing the benefits of equipping CHWs with mobile phones and tablet computers to enable remote diagnoses and real-time communication with the clinic. The extent to which CHWs have access to supporting technology depends on local needs and resources; a national program to deliver smartphones and tablets is being developed.

## Main Activities of a Community Health Worker

### Health

- Supporting chronic disease management
- Triaging conditions like anemia or dehydration
- Managing disease-specific programs, e.g., for tuberculosis
- Providing sexual health advice
- Providing pre- and postnatal care, including breastfeeding assistance
- Child development assessment
- Cancer screening
- Supporting immunization programs
- Health promotion advice

### Administration

- Education
- Planning of health provision
- Community liaison
- Registering families
- Community development and engagement
- Advice to families on navigating the system
- Support with territory definition
- Infectious disease monitoring

The Family Health Strategy is entirely publicly funded. The federal budget for primary care has multiplied sixfold in the past 13 years. Just over half is currently devoted to the FHS. Despite the current economic crisis in Brazil—the economy has been shrinking for the past three years<sup>6</sup>—a national law prevents the federal health budget from decreasing.

To incentivize scaling of the FHS, municipalities only receive full payment for primary care if their service model aligns with the strategy. The program has demonstrated robust progress, scaling up across the country in a sustainable and steady fashion.

The FHS has been instrumental in reducing inequities in access to care,<sup>7</sup> although regional variations in health outcomes, infant mortality, and nutrition remain a problem, with the south of the country faring better than the north. Because of differences in population needs and municipal resources, scaling the program has required continuous local adaptation.<sup>8</sup>

CHWs have been crucial to the Brazilian government's response to the Zika virus, providing health advice and incidence reporting, as they have done for dengue fever and chikungunya, and supporting the military in inspecting houses and public spaces for mosquito breeding sites. CHWs are receiving Zika training and have a toll-free number to call for advice.<sup>9</sup>

## IMPLEMENTATION AND SCALE

The FHS took inspiration from local CHW initiatives in Brazil's northeast, introduced to combat a cholera outbreak in the early 1990s. The program was piloted nationwide in 1994 and adopted as national policy in 2006 with support from the World Bank.<sup>10</sup> Today 39,905 family health teams are active in 5,477 of Brazil's 5,570 municipalities.<sup>11</sup> Although the program did not initially formally target the poor, when it expanded from its original manifestation, there was a goal to improve access to health care for low-income and vulnerable groups. Community members and patients are involved in FHS policymaking and implementation at the federal, state, municipal, and local levels.

Steps to diffuse FHS nationally included:

- legislating a full working week for primary care doctors
- enabling CHWs to be municipal employees with worker rights enshrined in law
- expanding primary care residency programs
- increasing federal primary care funding by 110 percent from 2010 to 2015
- initiating the "More Doctors" program to recruit Brazilian and foreign doctors
- working to better integrate health and education at the federal level.

The expansion of the FHS model has been a story of continuous adaptation and change. External factors, such as the shifting epidemiological profile of the country and advances in technology, have driven some changes. As the strategy moved through initial pilots and early stages of implementation, new approaches have been adopted; for example, pay for performance has recently been introduced to drive quality.



Nearly 67 percent of Brazilians receive their primary care from one of the nation's 265,000 community health workers.

Future plans include:

- expanding the model to the most remote areas
- increasing trainee doctor involvement in primary care, including mandatory residencies
- spreading the model to the middle and upper classes
- adapting the role of the CHW to the changing demographic needs of the population, with a stronger focus on chronic disease.

It is perhaps most important to note that the FHS is not simply a product of national policy: facilitating the innovation were long-term social movements, strong political will, and career-long professional commitment from key individuals.



*We register the whole family and log them onto our system—the registration is of the family, because we follow the family, as a whole. From there, we’ll follow them, see what they need, not necessarily only from the health side of things, but also their education, mental health needs, even seeing what they like to do in their spare time.*

Community Health Worker,  
Rio de Janeiro

## CHALLENGES

**Maintaining an adequate supply of primary care doctors.** This continues to be one of the biggest challenges. There is a strong culture of specialization among medical students and doctors, with few choosing to become generalists. Legislation that increased the work week for primary care doctors and allowed entry of more than 13,000 doctors from Cuba and elsewhere has only been partly successful in meeting demand. In many areas, municipalities have used financial incentives to encourage more doctors to take up primary care, and there is now a much greater focus on attracting trainee doctors into primary care through residencies and recruitment campaigns. But there is still a way to go before the primary care supply is well developed and sustainable.

**Expanding the program’s reach beyond lower-income populations.** CHWs now serve two-thirds of the population; however, Brazil’s Constitution states that the provision of health care is the responsibility of the State, and so full expansion of the FHS is the goal. The main barrier to full coverage is the reliance on private health care by the middle and upper classes. Further expansion of coverage may yield diminishing returns.

**Integrating electronic medical records.** Many FHS teams report a poor relationship with secondary care providers. Part of the problem is the lack of integration of electronic patient records. Primary care professionals are unable to see secondary care records and vice versa. The FHS is notable for its ability to capture significant volumes of data. However, these data are poorly utilized and not exploited to inform policy or educate the general public in a meaningful way. The data captured is often about processes—for example, the number of people treated or procedures performed—with little focus on outcomes. There are plans to develop a fully integrated electronic medical record system with interoperability standards for the FHS.

## EVIDENCE OF IMPACT

The FHS marks a shift in the provision of basic health care in Brazil away from higher-cost hospitals and toward cheaper and more effective preventive care. It also employs a holistic approach that looks at many of the wider determinants of health, such as social disadvantages in housing or educational opportunities. Several studies demonstrate that this innovation is a powerful tool for improving individual and population health outcomes. FHS coverage has been linked to:

- more accurate mortality statistics<sup>12</sup>
- improvements in breastfeeding rates<sup>13</sup>
- a decrease in inequality and inequity in health care utilization<sup>14,15</sup>
- immunization uptake at almost 100 percent<sup>16</sup>
- greater reduction in avoidable hospitalizations for certain chronic diseases and other primary care-sensitive conditions.<sup>17</sup>

Compared to families with neither FHS enrollment nor private health plans, adult FHS enrollees are more likely to have a usual source of care, to have visited a doctor or dentist in the past 12 months, to have access to medications, and to be satisfied with the care they receive. These effects are most significant for urban dwellers, females, and the very poorest.<sup>18,19</sup>

There also has been a reduction in mortality across age groups, as well as reduced fertility, improved school enrollment, and increased labor supply.<sup>20</sup> Using data collected from 1990 to 2002, a 10 percent increase in coverage has been associated with a statistically significant 4.5 percent decrease in the infant mortality rate across the population, after controlling for other determinants.<sup>21</sup>

Generally, patient satisfaction is very high, with 85 percent approval rates for CHWs.<sup>22</sup> Of patients who access services regularly, 61 percent consider primary care offered under the FHS to be the best services offered by the public health system.<sup>23</sup>

Finally, at a cost of just \$50 per person per year, FHS is extremely cost-effective and helps lessen pressure on more-expensive hospital providers.<sup>24</sup>



The ultimate goal of Brazil's Family Health Strategy is to have community health workers reach 100 percent of the population.

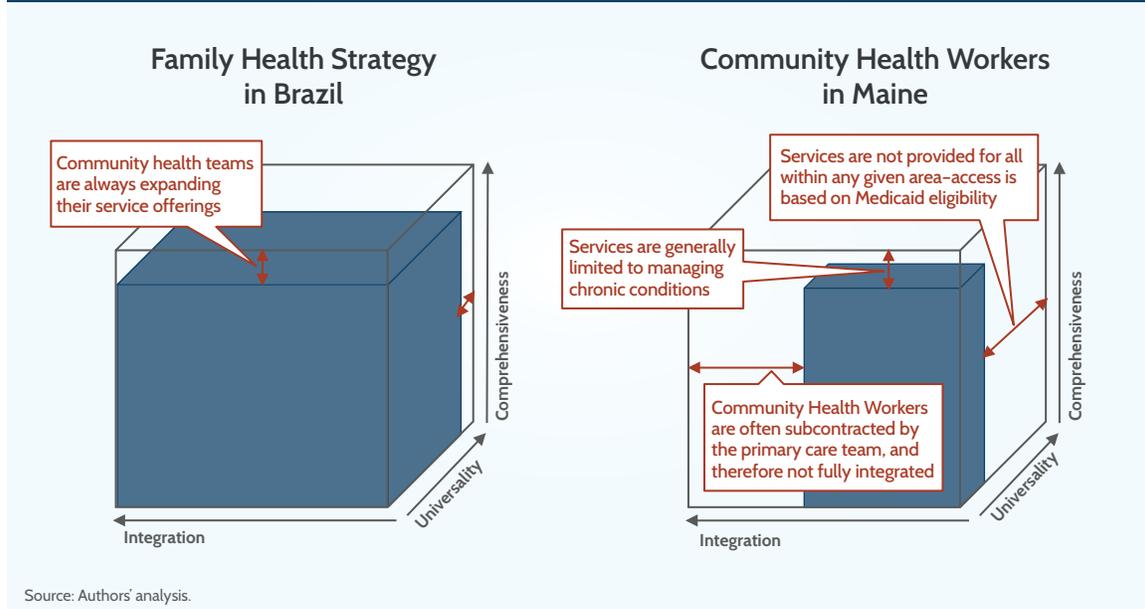
## HOW CAN THE INNOVATION BE ADAPTED TO WORK IN THE UNITED STATES?

### Does the United States Need CHWs?

The United States spends a higher percentage of gross domestic product on health than any other country, but its health coverage and outcomes do not reflect this.<sup>25</sup> Innovative strategies that support improved patient experiences, outcomes, and reduced spending are needed.<sup>26</sup>

The use of CHWs could be adopted more broadly in the U.S. and integrated with primary care physicians and nurses. There are CHW models in the U.S. that have had evidence of cost-effectiveness; policies have been developed in the past 10 years to expand the role of these professionals.<sup>27</sup> However, existing models often fall short of delivering fully on the potential of the Brazilian approach, which offers comprehensive service and universal coverage for the population in a given area, while integrating CHWs fully within the primary care team. In Exhibit 2, we compare a CHW program in Maine to the FHS approach. The progress already made in the U.S. toward a supportive policy and regulatory framework gives a solid foundation for wider and more meaningful adoption of the CHW model. For this to occur, efforts must focus around three core challenges.

### Exhibit 2. How a CHW Model in the United States Compares to Brazil's Family Health Strategy on Universality, Integration, and Comprehensiveness



### Three Core Challenges to Adoption

The first challenge to adoption is regulation, which affects training and accreditation of CHWs. Regulators are well positioned to develop evidence-based approaches to ensure that CHWs are safe and effective. Not only can they draw from the success factors of the FHS model in Brazil, they can also use evidence from other established CHW models to adapt the role to the U.S. health system.<sup>28</sup> Regulators should focus on recruitment to identify individuals with a personal knowledge of the community and an ability to build trust.

Ensuring sustainable funding through appropriate payer reimbursement is the second challenge. Various reimbursement models have been discussed in light of studies showing improvements in diabetes care among Hispanics in the United States.<sup>29</sup> It would be necessary to test pilot projects to evaluate the impact of CHWs on patients' health and on cost-efficiency. Secondary and tertiary providers have the greatest potential to see gains through reduced hospitalization and better chronic care management.

The third challenge is the integration of the new workforce with current care teams. In integrated settings, such as accountable care organizations (ACOs), the CHW role can provide an additional level of screening to prevent hospital admissions. In less-integrated delivery systems, CHWs may take on tasks currently performed by other members of the care team, like nurses.

### Moving Forward

Adopting the FHS model in the United States will require political will and momentum. The Affordable Care Act has focused federal efforts on delivering integrated care using primary care medical homes. The law also recognized the value of CHWs in delivering effective care at lower costs.<sup>30,31</sup> Regulations that took effect in January 2014 allow states to reimburse nonlicensed providers—which could include CHWs—for preventive care.<sup>32</sup>

Moreover, the U.S. Department of Labor recommended a standard occupational classification of CHWs in 2009. This classification establishes CHW as a profession, securing workers' rights and professional standards. The involvement of professional associations such as the American Academy of Family Physicians and the American Public Health Association would provide a firmer foundation for wider use of CHWs, providing advocacy for CHWs and helping to integrate them into the workforce. States with Medicare Pioneer ACOs that are primed to adopt CHWs could be an ideal place to pilot the FHS model.



The community health worker program costs about \$50 per resident each year and has lessened the pressure on more-expensive care providers while improving clinical outcomes nationally.

## Ideas for Implementation

There is already a broad, diverse, and well-established pool of CHW models in the United States.<sup>33,34,35</sup> Many CHW models in the U.S. are already performing some of the intelligence-gathering and holistic care tasks seen in Brazil.<sup>36</sup> There is good evidence to suggest that lay CHWs already contribute to positive outcomes in the U.S.—for example in cancer screening uptake, diabetes care, tuberculosis cure rates, and infant mortality reduction.<sup>37,38</sup>

Early implementation efforts towards a more ubiquitous, holistic approach should begin in states that have granted CHWs accredited status and where reimbursement arrangements are in place. Regions with relatively large low-income, disadvantaged populations are likely to reap the greatest benefit, given their levels of unmet need. Pioneer ACOs that take the form of integrated delivery systems or multispecialty groups seem well positioned to adopt CHWs. The explicit inclusion of CHW roles in Medicaid health home programs in Maine, New York, Oregon, South Dakota, Washington, and Wisconsin<sup>39</sup> indicates that these states may be primed for pilot efforts.

Imperfect information about the impact of CHWs is a barrier to their adoption in the United States. Therefore, decisions to expand the CHW model will need to be supported with evaluations of their impact in the U.S. context. These are particularly relevant to payers' decisions to fund CHWs. For instance, reimbursement of CHWs under Medicaid was introduced in 2007 by Minnesota's state legislature on the basis of evidence from an economic evaluation (a predictive budget impact model) of the model there. Further evaluations and extended experiments can lead to evidence for wider implementation in the United States.



## NOTES

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**Greg Parston, Ph.D.**, is executive adviser to Professor the Lord Ara Darzi of Denham. He is responsible for leading global research on diffusion of health care innovation, use of behavioral simulations in policymaking, and citizen engagement in public policy debates. In 1989, he cofounded the Office for Public Management, an organizational development company that he led as chief executive and later established Accenture's global Institute for Health and Public Service Value. Earlier in his career, Dr. Parston was deputy director of the King's Fund College and vice president of SUNY Downstate Medical Center.

**Professor the Lord Ara Darzi of Denham** holds the Paul Hamlyn Chair of Surgery at Imperial College London, the Royal Marsden Hospital and the Institute of Cancer Research. He is director of the Institute of Global Health Innovation at Imperial College London and an honorary consultant surgeon at Imperial College Hospital NHS Trust. Research led by Professor Darzi is directed toward achieving best surgical practice through innovation in surgery and enhancing patient safety and the quality of health care through global health policy. His contribution within these research fields has been outstanding, publishing over 950 peer-reviewed research papers to date. In recognition of his achievements in the research and development of surgical technology and health care innovation, Professor Darzi has been elected as an Honorary Fellow of the Royal Academy of Engineering, a Fellow of the Academy of Medical Sciences and a Fellow of the Royal Society. In 2013 he was elected a foreign associate of the Institute of Medicine.

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The aim of Commonwealth Fund-sponsored case studies of this type is to identify institutions that have achieved results indicating high performance in a particular area of interest, have undertaken innovations designed to reach higher performance, or exemplify attributes that can foster high performance. The studies are intended to enable other institutions to draw lessons from the studied institutions' experience that will be helpful in their own efforts to become high performers. It is important to note, however, that even the best-performing organizations may fall short in some areas; doing well in one dimension of performance does not necessarily mean that the same level of performance will be achieved in other dimensions. Similarly, performance may vary from one year to the next. Thus, it is critical to adopt systematic approaches for improving performance and preventing harm to patients and staff.



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