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ANALYSIS & COMMENTARY

Lessons From Eight Countries On Diffusing Innovation In Health Care

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ABSTRACT Health care systems are under increasing pressure to cope with shifting demographics, the threat of chronic and noncommunicable disease, and rising health care costs. The uptake of innovations to meet these challenges and to advance medicine and health care delivery is not as rapid as the pace of change. Greater emphasis on the diffusion of innovation and greater understanding of the structural and organizational levers that can be used to facilitate systemwide improvement are essential. This article describes the results of a qualitative and quantitative study to assess the factors and behaviors that foster the adoption of health care innovation in eight countries: Australia, Brazil, England, India, Qatar, South Africa, Spain, and the United States. It describes the front-line cultural dynamics that must be fostered to achieve cost-effective and high-impact transformation of health care, and it argues that there is a necessity for greater focus on vital, yet currently underused, organizational action to support the adoption of innovation.

The science fiction writer William Gibson once said, “The future is already here—it’s just not very evenly distributed.”¹ In the context of health care, this statement celebrates the countless examples of innovative practices, policies, and products that have improved the quality and cost-effectiveness of health care provision around the globe. But it also draws attention to the enormous inequalities that exist within and between nations.

As health care systems and organizational leaders attempt to tackle these inequalities, it is clear that there must be a greater understanding of and emphasis on how to successfully embed innovations and eliminate old and redundant practices to transform systems of care. One consequence of the failure to do so is the creation of layers of often concurrent and competing complexity within a system—a paleonto-

logical stratification of practices that undermines attempts to tackle the inequalities and variation.²

Unlocking the full and timely benefits of health care innovation almost always requires significant change in the practices of health care systems. Reducing the lag between the identification of innovation through research and development and its successful implementation into everyday practice can mean lives saved and enormous financial savings.

To achieve a reduction in what has been shown to be a seventeen-year delay in the spread of innovation, professionals and organizations must renew their focus on the adoption of new ways of working.³ This in turn will require education and support, the engagement of relevant stakeholders, and the alteration of clinical and organizational protocols.

There is a great wealth of analysis and inter-

pretation of the key elements of health care systems that determine and influence the ease with which innovation can be both fostered and diffused. Historically, these notable frameworks have rested upon defining relatively macro-level system characteristics and confirming the suite of enablers, such as information technology infrastructure and funding, that can support impressive, but relatively slow, transformation.⁴

In contrast, there is a paucity of literature that explores the more pliant front-line human behaviors or cultural dynamics that can play a significant role in fostering immediate transformational impact.⁵ Studies that have explored the science of innovation implementation and dissemination in health care have identified the need for more precise and universal definitions for these cultural dynamics and new, more robust frameworks upon which organizational appraisal can be achieved.^{6,7} By exploring these dynamics, their interdependent nature, and the prevalence with which they are developed across international settings, it is possible to reveal key areas on which health care providers and organizations can focus to promote the timely and successful adoption of innovation.

This article reports on a study that developed and tested a framework for the diffusion of health care innovation across a range of established and emerging economies. The study sought to document expert consensus among front-line staff and industry professionals—representatives from the pharmaceutical, medical, and digital technology sectors—before comparing the relative importance and prevalence of key enablers and the prevalence of seven cultural dynamics. The study provides a basis for learning and dialogue, so that others can consider the relevance of these countries' experiences and translate successful practices into their own health care organizations and policy making.

Study Data And Methods

Findings of the Global Diffusion of Healthcare Innovation (GDHI) study were first presented at the World Innovation Summit for Health in Doha, Qatar, in December 2013.⁸ The study was commissioned by Qatar Foundation and designed by the Institute of Global Health Innovation, Imperial College London, in partnership with the independent research agency Ipsos MORI.

This article provides analysis of and commentary about an ongoing program of work to assess the factors and behaviors that foster the adoption of health care innovation across international settings. The results presented here are the culmination of a two-phase international

qualitative and quantitative study in eight countries: Australia, Brazil, England, India, Qatar, South Africa, Spain, and the United States. An overview of the methodology of this study is presented in this article. More information, including the details of expert interviews, can be found in the World Innovation Summit for Health report and on the GDHI website.^{8,9}

PHASE 1: DEVELOPING THE FRAMEWORK Phase 1 of this study aimed to identify the system and organizational factors and behaviors that drive the diffusion of health care innovation and system transformation. It consisted of three strands of research: a literature review, the compilation of detailed case studies of innovative practices, and qualitative interviews of twenty international health system leaders.

From an examination of published indices of health care innovation and delivery, supplemented by observations of the international experts, it was possible to develop an explorative framework for the diffusion of innovation, which could be used for further in-depth country analysis. The framework identified three levels of influence on the pace and spread of health care innovation: systems characteristics, enablers, and front-line cultural dynamics (see online Appendix Exhibit 1).¹⁰

PHASE 2: TESTING THE FRAMEWORK Phase 2 of this study examined the perceptions of over 2,200 health care and industry professionals to determine the importance and prevalence of the enablers and cultural dynamics that were identified in eight countries. The countries were chosen to represent both developed and emerging economies and a diverse range of health care systems in terms of finance and structure (for more details on each study country, see Appendix Exhibit 2).¹⁰

First, additional qualitative information on systemwide enablers was acquired through in-depth standardized interviews of 103 health care experts between August and October 2013. Interviews lasted 30–45 minutes, on average. Ipsos MORI coordinated the study, with interviews conducted in local languages by research teams based in each country.

Second, quantitative data were drawn at the organizational level from online surveys of 1,521 front-line health care professionals and 772 industry professionals. A breakdown of the number of interviews in each country is provided in Appendix Exhibit 3.¹⁰

Study Results

PHASE 1: DEVELOPING THE FRAMEWORK Three broad and interdependent groups of system and organizational factors are included in the frame-

work for diffusion of health care innovation (Appendix Exhibit 1).¹⁰

First, the overarching system characteristics of macro-level influencers are environmental and structural features of a health care landscape, which can be modified over time, but not quickly. These characteristics include the political and legal constraints of the health care system, the macroeconomic environment and local fiscal policies, the size and structure of the system, the research environment, and information and communication technology capabilities. These system characteristics set the broad context within which health care innovators can either succeed or struggle.

The second group consists of enablers: those factors that facilitate diffusion and that governments or organizations can initiate or modify comparatively quickly through collective or corporate collaboration. The enablers for innovation identified in the framework are a clear vision and strategy of what health care innovation aims to achieve; incentives and reward systems that support positive behaviors; the availability of funding and grants for research, development, and diffusion; the transparency of data and research findings demonstrating success; information technology and informatics capabilities; specific resources to identify and promote innovation; communication channels across and beyond health care; and the development and renewal of standards and protocols.

The third group of factors consists of essential cultural dynamics, which are the behaviors, beliefs, and practices of health care organizations and their workforces. These dynamics, which are perhaps the most amenable to rapid development and change, include the seven factors presented in the subsections below.

►**EMPOWERING PATIENTS:** As increasingly empowered and knowledgeable consumers of health care, patients can be a formidable driver of change across health care systems. Many recent patient-centered innovations share the goal of creating opportunities for patients to manage their own health, access their health information, and interact with health care services in convenient and varied settings.

For example, the Jönköping region in Sweden successfully engaged patients as partners in their care in a pioneering training scheme to promote self-dialysis for patients with renal failure. The concept has been formalized into a systemwide training program for staff and patients that now sees over 50 percent of hospital dialysis performed by patients.¹¹

►**ENGAGING HEALTH CARE PROFESSIONALS:** Gaining acceptance of innovations and new practices and models of working among health

care professionals requires efforts to address the concerns of staff and their legitimate propensity to doubt. Contextualizing innovations for front-line staff, with respect to their experiences and needs, can support the emotional and pragmatic investment of key stakeholders and support the adoption of innovation.

Hamad Medical Corporation in Qatar developed a novel means of supporting transparent communication and knowledge sharing between health care staff and management. By introducing a wider network of staff to new strategies and innovations, the corporation was able to drive diffusion across all levels of the workforce hierarchy and move away from more conventional top-down reforms.

►**ADAPTING INNOVATIONS TO THE LOCAL CONTEXT:** Looking outside the local context to identify proven and established practices can provide an efficient means of system transformation. Yet imported innovations may need to be substantially refined to align with constraints and demands of the local environment, if the innovations are to be successfully diffused there.

Singapore's recent reorganization of its hospital system has avoided uniform prescriptions. Instead, local leaders have been encouraged to identify and adapt solutions that fit local needs (Jason Yap, chief knowledge officer, Agency for Integrated Care, Singapore, interview with Julie McQueen, senior researcher, Institute of Global Health Innovation, Imperial College London, April 24, 2013).

►**IDENTIFYING AND SUPPORTING CHAMPIONS:** Strong leaders in the form of "champions" who believe in a vision of improvement and innovation can be a powerful force in eliciting systemwide social and cultural change. Leaders who use the principles of inclusion and effective communication can catalyze workforce engagement and have an enabling effect on the introduction of new practices and innovations across multiple levels of a system.

The London cancer initiative developed integrated cancer care pathways in part by identifying and recruiting clinical leaders for each pathway. These leaders convened "pathway boards" that were made up of primary care physicians, secondary and tertiary care cancer professionals, and patients. The response to passionate and motivating clinical champions was the front-line staff's engagement in the pathways.¹²

►**PROMOTING LEARNING AND NEW WAYS OF WORKING:** It is important to recognize the unique burdens and disruptions that are associated with adopting innovations for staff and groups within a health care organization. Responding to these challenges with dedicated time, resources, and financial support for the

workforce to explore innovations and novel practices will empower staff to realize their ambitions and adopt and adapt innovations.

The investment of adequate time and space for learning is particularly well documented in the development of Kaiser Permanente's Health Connect electronic health record system (Jack Cochran, executive director, Kaiser Permanente Federation, interview with McQueen, March 13, 2013).

►**ELIMINATING LEGACY PRACTICES:** The uninterrupted introduction of new practices, policies, and products within a health care system can create a paleontological stratification of practices. Layering innovations on top of multiple surviving practices can increase costs, reduce productivity, and undermine quality and outcomes. Recognizing and decommissioning the redundant and incompatible practices and technologies that compete or interfere with innovations can enable cost-effective and efficient diffusion.

MedicallHome in Mexico has eliminated traditional patient referral processes and replaced them with a telephone-based system, which has improved both patient experience and cost-effectiveness (Cochran, interview with McQueen).

►**PROMOTING FUTURE TRANSFORMATION:** To ensure a continuous cycle of effective innovating and diffusion, it is vital to create a dedicated structure of evaluation and communication. This will lay the foundation for a robust framework and will promote improved practice and learning for future cycles.

Geisinger Health System in the United States has developed and refined such a system to formally review any new practices or care models and to reflect upon the process to promote future learning and clinical pathway development.¹³

PHASE 2: TESTING THE FRAMEWORK

►**ENABLING FACTORS:** A key finding in phase 2 of the study with respect to the enabling factors was the significant difference between how important and how prevalent health care professionals—averaged across all eight countries—considered the enablers to be in the professionals' working environments (Exhibit 1).

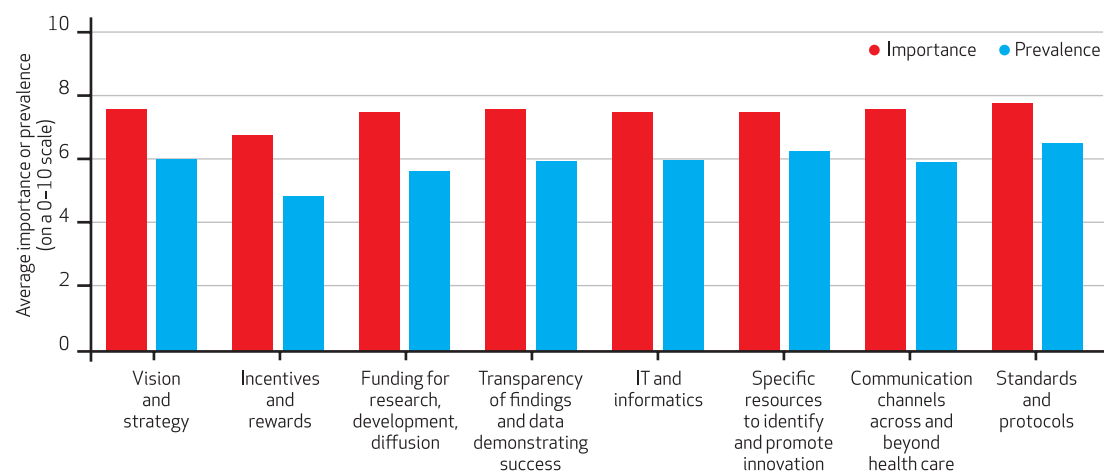
Different countries were reported by experts to employ different enablers to foster the diffusion of health care innovation. For example, incentives and rewards were considered to be highly important during the past five years in the United States, but not in most other countries. The enabling factor "vision and strategy" was highly ranked in India, Qatar, and Spain, but not elsewhere.

Despite these differences, the gap between the reported importance of enablers and their actual prevalence underscores the need for governments and corporate bodies to better examine the support and incentives provided to promote the adoption of innovation in their countries. Experts clearly believe that more is needed.

►**CULTURAL DYNAMICS:** After averaging the reported prevalence of cultural dynamics across all eight countries, we found that three were most prevalent (Exhibit 2): identifying and sup-

EXHIBIT 1

Health Care Professionals' Perceptions Of The Importance And Prevalence Of Enabling Factors For Health Care Innovation



SOURCE Authors' analysis of data from quantitative surveys in phase 2 of the Global Diffusion of Healthcare Innovation study. **NOTES** Health care professionals' perceptions are averaged across the eight countries in the study. Importance or prevalence is ranked on a 0-10 scale, with 0 being "strongly disagree" and 10 being "strongly agree." IT is information technology.

EXHIBIT 2

Health Care Professionals' Ranking Of Cultural Dynamics Relevant To Health Care Innovation, From Most To Least Prevalent

Rank	Cultural dynamic
1	Identifying and supporting champions who embrace and support change
2	Harnessing the efforts of patients and the public as coproducers of well-being
3	Addressing concerns of health care professionals about outcomes and sustainability
4	Delaying old and ineffective ways of working
5	Improving the next journey of system transformation
6	Adapting innovations to suit the local context
7	Creating the time and space for learning and new ways of working

SOURCE Authors' analysis of data from quantitative surveys in phase 2 of the Global Diffusion of Healthcare Innovation study. **NOTE** Health care professionals' rankings are averaged across the eight countries in the study.

porting clinical champions, harnessing the efforts of patients and the public, and addressing the concerns of health care workers. The prevalence of these three dynamics across all eight countries was significantly greater than the prevalence of the remaining dynamics. At least two of the three were rated as most prevalent in all eight countries (Exhibit 3).

Creating time and space for learning, delaying, and adapting innovations to suit the local context were the least prevalent dynamics in the countries studied. India and Brazil were exceptions.

Creating time and space for learning was reported as particularly prevalent in India, where—along with rapid growth in information technology capabilities—great strides are being made in the new use of mobile technologies in rural health care (Exhibit 3). Only in Brazil was de-

layering reported as more prevalent than the international average, which may be a sign of the rapid growth and investment in health care provision in that country.

The commonality of the findings regarding front-line cultural dynamics across nations that have very different health care structures, resources, and patient demographics highlights their universal importance in developing a culture of diffusion within health care organizations. However, a contrasting theme arises in regard to the two statistically distinct groups of cultural dynamics: those with relatively high prevalence and those with a lower prevalence, respectively ($p < 0.05$).

The three most prominent dynamics identified in this study can be described as workforce-centric: They pertain to elements of a system that are dependent on people and their relative goodwill, engagement, and relational skills. These “soft” dynamics, which can require adept interpersonal skills, were found to be significantly more prevalent than what could be considered “hard” transactional dynamics, which are dependent on managerial leadership to change practices and introduce mechanisms to create time and space for learning and delaying, for example.

It has been shown that the implementation of new practices within an established organizational structure often must entail the provision of time and space for staff to learn.¹⁴ In fact, the investment of time and resources to support adaptation and to change or eliminate old patterns of working can be associated with a counterintuitive fall in productivity and efficiency, at least in the short term, before later improvements occur.¹⁵ It is difficult but vital to recognize and plan for this pattern of transformation and the likely

EXHIBIT 3

Top Three Cultural Dynamics In Terms Of Prevalence In The Eight Countries In The Global Diffusion Of Healthcare Innovation Study

Cultural dynamic	All countries	Australia	Brazil	England	India	Qatar	South Africa	Spain	US
Harnessing the efforts of patients and the public as coproducers of well-being	2	2	NR	1	3	3	2	2	2
Addressing concerns of health care professionals about outcomes and sustainability	3	3	2	3	NR	NR	3	3	3
Adapting innovations to suit the local context	NR	NR	NR	NR	NR	NR	NR	NR	NR
Identifying and supporting champions who embrace and support change	1	1	1	2	1	2	1	1	1
Creating time and space for learning and new ways of working	NR	NR	NR	NR	2	NR	NR	NR	NR
Delaying old and ineffective ways of working	NR	NR	3	NR	NR	NR	NR	NR	NR
Improving the next journey of system transformation	NR	NR	NR	NR	NR	1	NR	NR	NR

SOURCE Authors' analysis of data from quantitative surveys in phase 2 of the Global Diffusion of Healthcare Innovation study. **NOTE** NR is not ranked by health care professionals among this country's top three cultural dynamics.

need for an initial investment in educational and development resources, before benefits can be achieved.

Despite the challenges that exist in implementing these transactional dynamics, this study identified several successful models. For example, in the United Kingdom the “do not do” list of the National Institute for Health and Care Excellence (NICE) is a set of guidelines that outline a list of procedures and techniques that have been superseded or deemed inappropriate. These guidelines support the planned elimination of old practices through education and an evidence base for abandoning old and redundant practices. By formalizing this knowledge and promoting its dissemination, NICE has enabled the streamlining of practice and created an effective rationale against the continued use of old practices.¹⁶

Adaptation of innovations to the local context requires an intimate understanding of culture and traditions. For example, Apollo Hospitals in India gains access to new products and practices by having its leaders systematically involved in various councils, boards, forums, and associations with the expressed intent of identifying emerging trends and best practices. These are then assessed for their relevance for Apollo, with particular emphasis on learning from smaller venues and scaling up within Apollo (Prathap Reddy, chairman, Apollo Hospitals India, interview with McQueen, April 12, 2013).

The success of making time and space for learning is illustrated by salaUno, a specialist eye treatment provider in Mexico, which has developed a model of task shifting and workforce specialization that demonstrates what can be achieved by providing staff with sufficient time to learn and master new skills. The provider has developed a high-quality, lean, and efficient model of eye care management and surgery.

The organizational investment in learning has been substantially offset by the benefits of an effective patient record system and a newly invigorated and skilled workforce. According to salaUno, staff members also became more open to, and supportive of, systemwide transformation programs going forward, which highlights the reinforcing nature of providing time and space in spreading innovation (Javier Okhuysen, cofounder, salaUno, Mexico, interview with McQueen, April 9, 2013).

In addition to analyzing the prevalence of the dynamics themselves, the GDHI study analyzed the demographic mix and range of responses from participating health care organizations, both within countries and in similar organizations across countries. This analysis provided deeper insights into some of the fundamental

differences in the perception of cultural dynamics across publicly and nonpublicly funded provider organizations.

An initial examination to delineate the influence of age or sex upon the importance and perceived prevalence of the cultural dynamics revealed that neither characteristic significantly influenced responses across all eight countries.

We also looked only at countries with large enough groups of both public- and private-sector health care professionals for us to reliably compare the groups. In those countries, all seven cultural dynamics were significantly more prevalent in private-sector organizations than in public-sector ones. This may indicate an influence from market forces and competitive health care provision on organizations' capability to support and foster the key cultural dynamics.

Lessons Learned: Fostering A Culture Of Innovation

Understanding the external forces that determine the propensity with which an organization can adopt and diffuse innovation is just as vital as understanding the internal cultural dynamics that influence this process. Creating a framework for organization leaders and managers to support systemwide change often requires a significant degree of motivation and the engagement of staff.⁵

Addressing the gap between stakeholders' expectations and standards within a health care system is vital for improving the process by which organizations can support the adoption and diffusion of new practices. To foster a culture of innovation, we need to support the propagation of the dynamics described above through effective management and incentive schemes that create an environment with equal measures of workforce-centered and organizational dynamics. Stellar examples identified in this study illustrate the importance of strong leadership, a shared strategic vision, and creating a framework for supporting the workforce within an organization in achieving these goals.

Staff working within an environment rich in the dynamics that support diffusion are more likely than not to be engaged with the process of system transformation. The interrelated effect of enablers and dynamics is important. A key contributor to an engaged workforce is a strategic framework based on an inspirational vision; transparent values; and clear, achievable performance measures.

Kaiser Permanente is a good example of an organization that has found that developing such a strategic framework provides an opportunity to practice and reinforce the cultural dynam-

ics set out in this study. These include both harnessing staff concerns and engaging the public and patients (Cochran, interview by McQueen).

A supportive organizational culture also includes processes to recognize and incentivize the achievements of workers at all levels, as well as effective channels of communication in all directions within a system. This requires effective senior leaders who can empower front-line staff with a role in the decision-making process of introducing innovation. Introducing innovation can thus be supported by bringing together members of the team to propagate knowledge sharing and the development of a strategic vision, and by creating the time and space to do so. The alternative is having staff feel that change is being done to them.

The example from Kaiser Permanente underscores the relationship between relational and transactional cultural dynamics. Identifying champions of change who can help address concerns of staff, patients, and the public is vital for tackling health care challenges and inequalities. This can succeed only if the hard choices of adaptation—getting rid of old ways of working and planning for the financial and service consequences of dedicated learning and

development—are also made.

The seven cultural dynamics presented in this article are not individual contributors to the diffusion of innovation. Instead, they are integral parts of an entire culture.

Conclusion

A significant amount of research has been directed toward understanding and exploring the structural characteristics and enabling factors that promote the diffusion of innovation across health care systems. This international study has developed a framework highlighting the cultural dynamics that are required on the front lines of care to support innovation and its diffusion.

Through exploring international examples of good practice and diving deeper into areas where organizational change and leadership can support these dynamics, it will be possible to motivate and guide health care organizations to make transformational changes. In doing so, the international health community and related stakeholders can play a role in supporting the diffusion of innovation and realizing the ultimate goal: to more widely distribute the benefits of best health care practice. ■

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NOTES

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