

Health care service science: The innovation frontier

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Health care facilities function in an environment that is characterised by complex interacting multidisciplinary systems, which tend to produce unexpected circumstances. It is these circumstances and their impact on communities that place health care at the innovation frontier. This is where traditional paradigms are no longer effective in dealing with the complex situations that arise when unexpected events occur.

The circumstances change frequently and it is necessary for stakeholders in the health care industry to re-evaluate their systems and practices. There are trends that could play an important role in shaping the life world of communities and health care institutions. In his book, *The wisdom of crowds* (2005), James Surowiecki states that navigating uncertainty requires “the wisdom of crowds”, as no single person has the answers that are necessary to deal with the uncertainty that unforeseen events create. This truth forms an important part of navigating health care facilities through difficulty.

According to Surowiecki, groups of people are more intelligent under some circumstances than individuals are. Often this wisdom of crowds manifests by a group of people with different experiential backgrounds and insights coming together.

A health care service delivery framework

Figure 1 illustrates the diverse systems that play a role in providing solutions for health care service delivery issues. It is the collective human intelligence that develops from these diverse streams that is crucial to finding the appropriate solutions to problems.

The importance of enabling a collective intelligence to find solutions cannot be overemphasised. In general, individuals have less information, limited foresight and are less capable of finding insightful solutions. Despite these limitations, their collective judgments often produce excellent solutions. Consequently, the collective wisdom of stakeholders in health care service delivery should be used to find innovative solutions to national health care service delivery issues.

These stakeholders include medical practitioners, technologists and economists. The current and

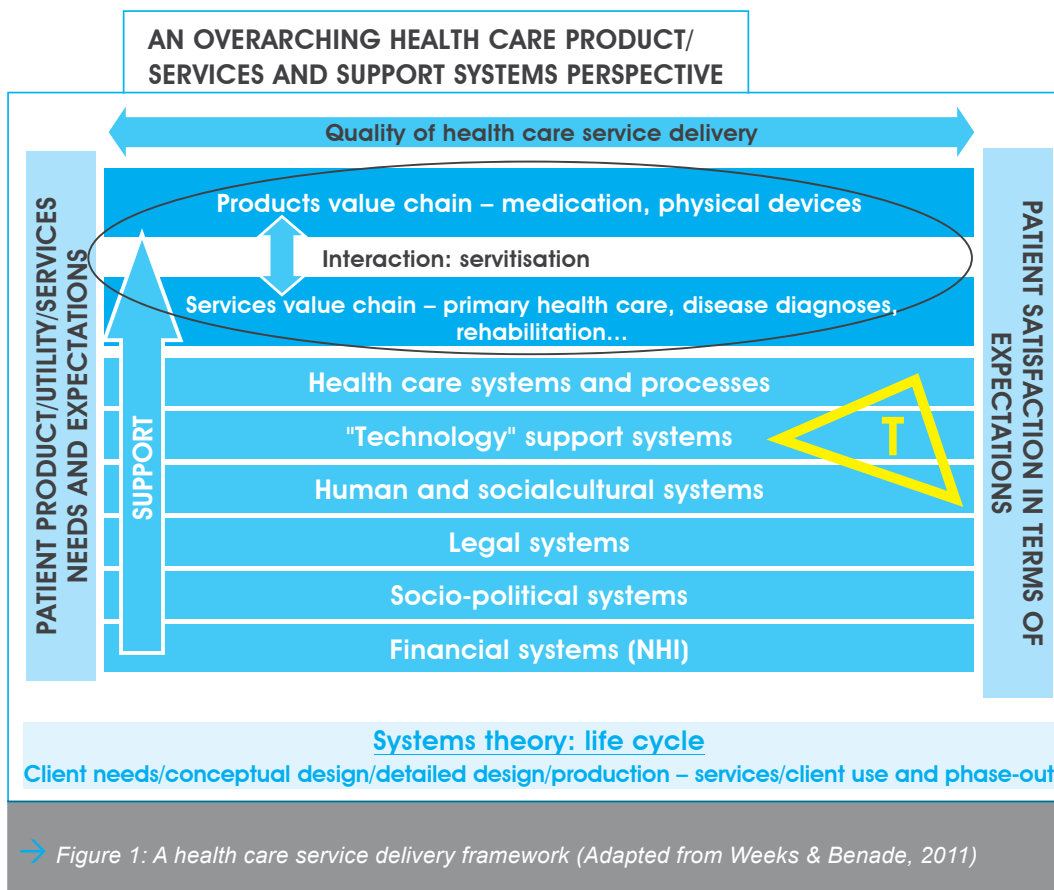
developing frontiers that need to be crossed are defined by the collective thinking of all these stakeholders. The ethical commitment to enhancing health care service delivery to South Africans, as envisaged in the National Health Insurance (NHI) initiative, is also important.

Traditional health care tends to assume a curative orientation, while the contemporary trend of social innovation is directed at adopting preventive primary health care (PHC). The latter assumes a multidisciplinary approach, with technology playing an enabling role and the community becoming part of the health care service delivery infrastructure.

With community health care workers using mobile health technology systems, the emphasis is on economical preventative care. It is a multidisciplinary approach, as social workers, psychologists, health care practitioners, nurses and similar community-based knowledge resources can be used. Students from local academic institutions (medical students in particular) are frequently involved at clinics and community centres and bring an increased capacity into the PHC innovation frontier.

There is a shortage of health care professionals and resources, and an innovative, preventive stance within such a setting can play a significant role. The tailoring of services and technologies that enable health care workers to provide specific services to patient groups, such as diabetics, also establishes preventive care to communities. It is the PHC services and the wisdom of the collective service providers that bring innovation to the forefront in facilitating health care service delivery.

Building health care infrastructure in rural South Africa is difficult. Telemedicine solutions are constantly



in the new NHI dispensation, and establishing a culture of learning will be a challenge.

Wolfgang Grulke and Gus Silber, in their book *Lessons in radical innovation: South Africans leading the world* (2010), confirm the fractal nature of extensive innovation because the outcomes are unpredictable. There are sudden divergence points and even small changes that can have unforeseen consequences. The convergence of e-health technologies, applied in a significantly

being researched, tested and implemented. However, South Africa has major connectivity and bandwidth challenges. Technological innovations in the delivery of health care services will require a new or extended infrastructure.

Currently, mobile technology research is making a broad spectrum of new PHC devices and services available to communities. Unfortunately, network connectivity and bandwidth availability has not kept up with new technologies, and this remains a constraint in the application of these technologies. Skills and knowledge transfer is also problematic. Advances made in one sphere enable advances in another sphere. This process allows stakeholders to effectively cross the innovative frontier of health care service delivery.

A new business model

The business model of health care service provision has undergone an improvement-driven transformation that will be motivated by the introduction of the government's NHI initiative. A transformation of health care service

delivery, an overhaul of the health care system and a change of administration will form the foundation of the new business model.

The provision of a comprehensive care package underpinned by re-engineered PHC, as envisaged in the NHI policy document issued by the Department of Health in 2011, is also an integral part of this business model. The current, curative-orientated business model will no longer be effective within this transformed health care dispensation. Instead, the focus will be on preventive PHC. Most of the health care-related support systems contained in Figure 1, as well as the PHC value chain itself, will be scrutinised in the development of this business model.

An important feature of the transformation of the health care business model will be the realignment of skills and knowledge. It is argued that a culture of learning should form the foundation of the new health care business model and it should be determined if such a culture exists within the prevailing health care dispensation. Engendering different mindsets, values, beliefs and methods

transformed NHI dispensation, will hardly follow a well-planned linear path. It will rather reflect points of divergence. These can either create opportunities or negative consequences that should be managed on a complex, adaptive systems basis.

According to Grulke and Silber, bold and visionary individuals are at the heart of radical innovation strategies. These individuals do not like to be constrained by corporate cultures and perceptions of effective health care service delivery. Technological innovation and its application within the health care services sector are hardly going to wait for South Africa to move into a new health care dispensation. As stated in *Lessons in radical innovation: South Africans leading the world*, the future is no longer tethered to the past. As new technologies converge to open possibilities in PHC and the treatment of chronic diseases, they will need to be explored and integrated into the new health services delivery framework.

As reflected in Figure 1, e-health technology assumes both a technology systems convergence and a human element. In some instances, innovative

mobile health technologies are already being successfully implemented at some health care institutions. The envisaged system undoubtedly embodies a number of human factors that need to be considered. These include the training of health care workers in the use of mobile devices, the capturing of patient information and technology support.

There are concerns at the back-end of the system. These include the securing of patient confidentiality and information security. Patient trust in the system and information confidentiality is important, as even a minor breach can disrupt the system. There are also the issues of technology, knowledge transfer, socio-legal and ethical considerations, PHC processes and other systemic issues that converge within the context of electronic health care records. These factors are vital for effective patient-centred health care service delivery. Consider the number of clinics, wards and health care workers involved, and the challenges associated with a national e-health infrastructure to support PHC becomes a radical frontier to transcend.

Innovative technology is the world of networks, databases, servers, main frames and cloud computing. Some health care practitioners may not understand this jargon, but the health care jargon is equally confusing to information and communication technology (ICT) professionals. Add to this the jargon associated with management, law and politics, and it becomes complex.

The stakeholders have different perspectives of innovative health care service delivery, and it is difficult to consolidate all their ideas. From the preceding discussion, it is clear that finding innovative health care solutions for a future South African health care dispensation requires a new mindset and a multidisciplinary skills base. It could be argued that such a skills base is only possible once a culture of learning has been established.

The transition to a new health care dispensation

As stated above, the different disciplines should effectively interact

with each other in order to deal with the complex challenges in health care institutions. The profile of people required to bring about a new health care dispensation is in essence reflected in *Succeeding through service innovation: A service perspective for education, research, business and government* (2008), published by the Institute for Manufacturing (IfM) of the University of Cambridge, together with International Business Machines Corporation (IBM).

This publication describes T-shaped professionals as being people “who are deep problem-solvers in their home discipline, but also capable of interacting with and understanding specialists from a wide range of disciplines and functional areas”. Perhaps the changing South African health care landscape requires professionals with varied strategic skills and experience in mastering multifaceted challenges. This is exactly what T-shaped people possess.

In an online article, “Strategy by design” (<http://www.fastcompany.com/52795/strategy-design>), Tim Brown states: “We look for people who are so inquisitive about the world that they’re willing to try to do what you do. We call them ‘T-shaped people’. They have a principal skill that describes the vertical leg of the T... But they are so empathetic that they can branch out into other skills... They are able to explore insights... and recognize patterns of behavior that point to a universal human need. That’s what you’re after at this point – patterns that yield ideas.”

Notably, the vertical leg of the “T” would apply equally to health care practitioners and other professionals in the health care industry. The transition to a new health care dispensation that can ensure a healthy life for South Africans will not only require planned strategies and policies. It will demand a change in traditional thinking, a culture of learning, people from diverse disciplines cooperating, and people with a “T-shaped” skills profile. The focus will be on managing unexpected events and the challenges that can occur in a new dispensation.

Undoubtedly, traditional top-down hierarchical management practices will need to make way for multidisciplinary involvement at a grass-roots level. In a volatile transformation, making sense of the situation is complex and traditional management approaches no longer appear effective. Accessing the “wisdom of crowds” is becoming more pertinent. Management structures should be resilient or they will fail when unexpected circumstances occur. This will have an immense impact on the future dispensation. 🌐

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About the author



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