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TRANSFORMING THE DELIVERY OF HEALTH CARE: FROM INNOVATION TO ACTION TO LEADERSHIP

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Abstract
Major progress has been made in improving the health care delivery system across the in the past decade. However, the current health care and social care delivery system have failed to keep in touch with needs of the ageing population, changing burden of disease, raising awareness of public and patients in particular.

Innovation is often regarded as uniformly positive. Role of innovation in quality improvement is more complicated. Experts identify three known paradoxes of innovation in healthcare. First, some innovations diffuse rapidly, yet are of unproven value or limited value, or pose risks, while other innovations that could potentially deliver benefits to patients remain slow to achieve uptake. Second, participatory, cooperative approaches may be the best way of achieving sustainable, positive innovation, yet relying solely on such approaches may disrupt positive innovation. Third, improvement clearly depends upon change, but change always generates new challenges. Evaluation of innovation is often too narrowly focused for the system-wide effects of new practices or technologies to be understood. A need for new recognition of the problems of innovation is proposed and it is argued that new approaches to addressing them are needed.

Change is now considered to be the biggest challenge for virtually all kinds of organisations: public and private, large and small - but especially for large, well established, vertically as well as horizontally integrated 'complex adaptive' organisations. We see Change everywhere and the rate and pace of it is almost universally reckoned to be increasing. Today's buzz word is 'Change or perish'. An environmental scan of peer-reviewed and grey literature in the field of healthcare innovation and change was conducted to prepare this paper.

Key Words: Delivery of Healthcare, Changing Burden of Disease, Paradoxes of Innovation, Sustainable Positive Innovation, Change Leadership.

INTRODUCTION

Hospitals and health systems are creating new pathways to explore and exploit non- traditional solutions to a wide band-width of healthcare delivery challenges. Many experts in India and global level say the innovation efforts have sprung from a growing voice that health care's status quo is no longer tenable and that fundamental rapid change is necessary if the system needs to survive and prosper in the years to come. Practitioners as well as academics have considered the management of change in organisation ever since management has emerged as a discipline, at the beginning of the twentieth century. The emergence of large and complex organisation after the Second World War has created new found interest in the subject.

A major problem in this field is the dominance of gurus who prescribe courses of action without proper basis in evidence. The recourse to such prescriptions should be seen as part of the problem, not the solution. Articles based on empirical research are, however, relatively rare and are predominantly single-site case reports, often conducted by a member of the target organisation

Sometimes change is deliberate, a product of conscious reasoning and actions. This type of change is called **planned change**. In contrast, change sometimes unfolds in an apparently spontaneous and unplanned way. This type of change is known as **Emergent Change**.

Change can be emergent rather than planned in two ways.

1. Managers make a number of decisions apparently unrelated to the change that emerges. The change is therefore not planned. However, these decisions, may be based on unspoken, and sometimes unconscious, assumptions about the organisation, its environment and the future (Mintzberg, 1989) and are, therefore, not as unrelated as they first seem. Such implicit assumptions dictate the direction of the seemingly disparate and unrelated decisions, thereby shaping the change process by 'drift' rather than by design.
2. External factors (such as the economy, competitors' behaviour, and political climate) or internal features (such as the relative power of different interest groups, distribution of knowledge, and uncertainty) influence the change in directions outside the control of managers. Even the most carefully planned and executed change programme will have some emergent impacts.

Change can also be understood in relation to its extent and scope. Ackerman (1997) has distinguished between three types of change: **developmental, transitional** and t**ransformational (ref fig. 1)**

1. **Developmental change** may be either planned or emergent; it is first order, or incremental. It is change that enhances or corrects existing aspects of an organisation, often focusing on the improvement of a skill or process.
2. **Transitional change** seeks to achieve a known desired state that is different from the existing one. It is episodic, planned and second order, or radical. The model of transitional change is the basis of much of the organisational change literature (see for example Kanter, 1983; Beckhard and Harris, 1987; Nadler and Tushman, 1989). It has its foundations in the work of Lewin (1951) who conceptualised change as a three-stage process involving:
   • ***Unfreezing*** the existing organisational equilibrium
   • ***Moving*** to a new position
   • ***Refreezing*** in a new equilibrium position.

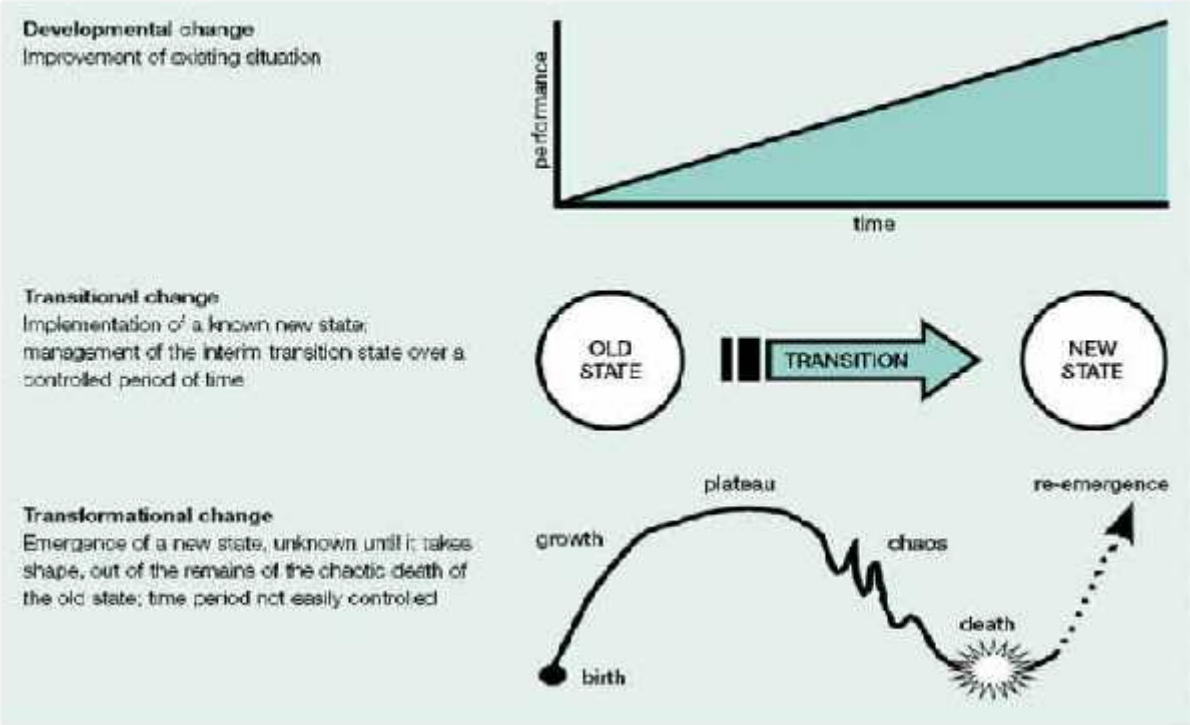
Schein in 1987 further explored these three stages. He suggested that unfreezing involves:
• Disconfirmation of expectations
• Creation of guilt or anxiety
• Provision of psychological safety that converts anxiety into motivation to change.

Moving to a new position is achieved through cognitive restructuring, often through:
• identifying with a new role model or mentor
• scanning the environment for new relevant information.

Refreezing occurs when the new point of view is integrated into:
• The total personality and concept of self
• Significant relationships.

3. **Transformational change** is radical or second order in nature. It requires a shift in assumptions made by the organisation and its members. Transformation can result in an organisation that differs significantly in terms of structure, processes, culture and strategy. It may, therefore, result in the creation of an organisation that operates in developmental mode – one that continuously learns, adapts and improves.

Figure 1: Perspectives on change *Adapted from Ackerman (1997)*



UNDERSTANDING SYSTEMS

Systems thinking originated in the 1920s within several disciplines, notably biology and engineering, and grew out of the observation that there were many aspects which scientific analysis could not explore. Whereas scientific method –

summarised by Popper (1972) as the three Rs: reduction, repeatability and refutation – increases our knowledge and understanding by breaking things down into their constituent parts and exploring the properties of these parts, systems thinking explores the properties which exist once the parts have been combined into a whole.

A **system** is a set of elements connected together which form a whole, thereby possessing properties of the whole rather than of its component parts (Checkland, 1981). Activity within a system is the result of the influence of one element on another. This influence is called feedback and can be positive (amplifying) or negative (balancing) in nature. Systems are not chains of linear cause-and-effect relationships but complex networks of interrelationships (Senge, 1990).
Within the NHS the term **whole systems thinking** is now routinely used by managers and clinicians. This widespread usage reflects an increase in:

- Awareness of the multifactorial issues involved in health care, which mean that complex health and social problems lie beyond the ability of any one practitioner, team or agency to 'fix'.
- Interest in designing, planning and managing organisations as living,interdependent systems committed to providing 'seamless care' for patients.
- Recognition of the need to develop shared values, purposes and practices within the organisation and between organisations.
- Use of large group interventions to bring together the perspectives of a wide range of stakeholders across a wider system.

A key consideration for many in the NHS and other public sector organisations is that much of the literature concerned with organisational change is derived from the private sector. They often ask to what extent knowledge, theories and models developed in a private sector context can be successfully transferred to and implemented in their own complex and dynamic organisations.

To respond to ever changing healthcare environment, hospitals are looking for innovative ways of delivering low-cost and high quality healthcare. This means healthcare leaders understand that innovation is more about cultural change and implementation than technology or innovation itself.

As a result of changes contained in the health and social care Act 2012, the NHS is implementing one of the most radical organisations in the history. These changes are dominated by abolition of old organisation such as primary care trusts and strategic health authorities, and creation of new structures such as clinical commissioning groups and health and wellbeing boards.

Innovation in healthcare continues to be a driving force in the quest to balance cost containment and health care quality. Innovation is considered to be a critical component of business productivity and competitive survival. Technological innovations present vast opportunities for 1) product innovation – the introduction of new types of goods and services for the external market and 2) process innovation – enhancement of internal production processes for goods and services. Product innovations are essential to the life of any organization since they provide the most obvious means for generating incremental revenues. Similarly, process innovation is concerned with improving internal capabilities and safeguarding and improving quality.

In 2005, industryweek.com did a study about the effects of innovation on a company and they found that, ―overall revenue growth (78%), customer satisfaction (76%), growth in revenue from new products or services (74%), increased productivity (71%), and earnings/profit margins (68%)‖ were a result of the impact of innovation efforts.

Medical science has advanced exponentially during the last half a century. Yet, the paper system has stymied the ability of care givers to access the information vital to the delivery of care. Patient information is routinely held in static paper storage systems and managed with a silo mentality. Of the $600 billion spent on lab tests each year in the U.S., 70 percent of that money pays for paperwork, says Shanker S. Sastry, Engineering Dean at the University of California, Berkeley, and Director Emeritus of the Center for Information Technology Research in the Interest of Society (CITRIS). Paperwork is prone to costly errors. Sastry argues that huge savings can be realized by more and better use of electronic recordkeeping, employing software that can detect mistakes and issue prompts [Grose, 2008]. When healthcare providers have to rely on paper records, the sharing of information and the delivery of care become challenging and often impossible. Without full and secure access to patient records, healthcare services providers would give up the vital insight provided by the patients' health history. The healthcare industry sits on the hinge of a future in which physicians can instantly share imaging and test results with colleagues in the same building or across the country or continent. Patients should be able to have immediate access to their own records and be able to transmit or carry it from one healthcare provider to another.

Innovation has become a critical capability of all healthcare organizations. In addition, new digital information, nanotechnology, semiconductor products, and genetic engineering are revolutionizing health care, making old assumptions invalid and creating unanticipated prospects for innovation and improvement of existing processes. The last century has produced a proliferation of innovations in the health care industry aimed at enhancing life expectancy, quality of life, diagnostic and treatment options, as well as the efficiency and cost effectiveness of the healthcare system these include, but are not limited to innovations in the process of care delivery, medications, and surgical interventions. In a study by Fuchs and Sox (Fuchs and Sox, 2001), medications (e.g., angiotensin-converting enzyme inhibitors, statins, proton pump inhibitors, antidepressants), diagnostic modalities (e.g., magnetic resonance imaging, computerized tomography scanning, mammography), and procedures (e.g., balloon angioplasty, coronary artery bypass graft, cataract extraction) made the list of top 10 medical innovations.

Exhibit 1: India's current status of healthcare

Substantial Healthcare Infrastructure gap: 0.9 per 1000 beds (WHO guideline-3.5 beds per 1000 patients)
Low Healthcare Insurance Coverage: Almost 80% of healthcare expenditure is out-of-pocket (limited insurance cover)
Inadequate Medical Manpower: 600,000 doctors and 1.6million nurses; 1 doctor per 1,800 (WHO guideline-1 doctor per 600)
Source: Accenture, 2014

DEFINITIONS OF INNOVATION

Innovation can be defined as —the intentional introduction and application within a role, group, or organization, of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, or wider society‖ according to West, (1990). This definition is largely accepted among researchers in the field of medicine and business, as it captures the three most important characteristics of innovation: (a) novelty, (b) an application component and (c) an intended benefit . In line with this definition, innovation in healthcare organizations is typically defined as- new services, new ways of working and/or new technologies. From the patient's point of view, the intended benefits are either improved health or reduced suffering due to illness.The Advisory Committee on Measuring Innovation in the 21st Century Economy (2007) defines innovation as —the design, invention, development and/or implementation of new or altered products, services, processes, systems, organizational structures, or business models for the purpose of creating new value for customers and financial returns for the firm.‖ Varkey, et al., in the year 2008 define innovation as the successful implementation of a novel idea in a way that creates compelling value for some or all of the stakeholders. Innovation can be categorized by its impact on stakeholders as nondisruptive or disruptive. Nondisruptive innovations also referred to as incremental, evolutionary, linear, or sustaining, improve on something that already exists but in a way that allows expanded opportunities to be met, or existing problems to be solved. Christenson, et al., (2004) propose a narrower focus of impacting a company: —anything that creates new resources, processes, or values or improves a company's existing resources, processes, or values.‖ It is important in defining innovation that the recognition that something new and hopefully better will emerge.

Figure 2: UNESCO defines four types of innovation

With the dramatic improvements in network security and the ability to transmit images and data globally, the opportunity to revolutionize the healthcare industry has never been greater. **There are four major ways in which Information Technology (IT) will revolutionize health care,**

More offshore services: Outsourcing of diagnostic services are being grown at an exponential pace– particularly imaging, such as X-rays and mammograms and consultations by specialists . Telemedicine has been used by doctors in the U.S. and other countries to provide care to patients in hard-to-reach and underserved locations. The future of tele-medicine lies in its use as a way of distributing work-loads and lowering costs to the end users. An example is Tele-radiology, a process in which X-rays are taken at one location and then transmitted to doctors at another site (this can happen across the globe in a fraction of a second). The factors driving the growth in tele-radiology include a significant shortage of radiologists, aging populations and more of imaging in trauma situations, which in turn has created the need for round-the-clock radiological services in emergency medical specialisation.

Integration of health information systems: Much of today's health information systems were designed to function as silos, with their own rules and regulation, procedures and formats. They often inhibit the opportunity for information to be globally integrated and readily available and sharing. In some cases, a patient's chart in one hospital cannot be read by another hospital because of the different methodology of preparation and interpretation of the chart. In most of the cases not only are different languages and measures used, but conflicts between encryption and other software can make it impossible for systems to exchange data electronically. The goal should be to create medical records that can travel with the patient.

Drug safety monitoring on a global scale: The need for creating international database on drug safety has steady increased, especially as more people travel across the globe. There are programs proposed by global companies and many local governments aimed at addressing the gaps that currently exist; however, more work is required. Medwatch, (an initiative of the U.S. Food and Drug Administration) investigates and reports on adverse drug reactions and other safety issues involving medical products. Gupta, 2008 notes that no agency routinely collects and shares information between countries.

More high quality information to doctors and patients: Websites such as WebMD have become a source of information for patients and doctors. These sites receive contributions of medical materials from doctors and scientists, and are enhanced by the automated search tools. Many such sites draw materials from on-line text books and medical journals.

Innovation in medical care such as new drug discovery, surgical, especially non-invasive surgical procedures and diagnostics techniques, have contributed to improvements in both population health and the outcomes of care.

Conditions that were previously impossible to treat are now curable with medical intervention. This means lives can be saved, quality of live can be improved, like transplant surgery and neonatal care, cataract surgery and hip replacement. Early stage detection of the diseases is a good example of how advances in medical technology support the prevention and not just the treatment of illness.

Medical advances have also enabled care to be delivered in different settings. Much care now being provided in the community. More acute disease conditions are being provided on an outpatient or day-case basis, by doing so lengths of stay for in-patients being cut. These changes have enabled the number of beds in acute care hospitals to be reduced substantially.

With nurses working alongside doctors to deliver care, much routine management of people with long-term ailment is done at outpatient department. Likewise, the services provided by nurses, allied health professionals and social care staff in the community have the opportunities to strengthen care out of hospital received serious consideration. In India, the under-development of community services may explain why decisions to promote more care 'closer to home' have been slow to gain importance.

Medical innovations and advances have resulted in an explosion of knowledge. This has created a unique challenge for health professionals in keeping update with evidential information on how to treat patients with different conditions. Because of the 'net the nectar called Google', patients now have much easier access to information, and this has changed the relationship between patents and professionals.

HEALTHCARE INNOVATION PROCESS

The process of innovation is dynamic, complex and multi-dimensional regardless of the industry in which it is being applied. Innovation in the healthcare industry has its own unique challenges. Any attempt to understand the process of innovation in healthcare must begin with an in-depth analysis of its challenges.

Several researchers have analysed and suggested that it is very difficult to change the behavior of clinicians, current medical practices, and healthcare organizations irrespective of the country. The adoption of healthcare innovations is often regulated

and governed by laws, making changes more laborious than one could imagine. In healthcare, typical starting points of an innovation process may lead to death, disability, or permanent discomfort. This, together with the clinicians' tendencies to protect their individual autonomy, reputation and secrecy, can promote a culture of blame and secrecy that inhibits organizational learning and the generation of innovations. Furthermore, new practices in patient care are traditionally scrutinized thoroughly in their early development phase so that potentially harmful innovations are not adopted for the public use.

LEADERSHIP AND MANAGEMENT IN HEALTH AND SOCIAL CARE

The duties and roles that healthcare professionals fulfil on a day-to-day basis can be grouped under six key categories, namely:

- Care Interventions (i.e. Direct Patient Care Activities).
- The Organisation and Management of Care.
- Training and Educating Colleagues and Students.
- Teaching and Promoting Health and Wellbeing.
- Using Research and Evidence Based Practice.
- Leadership.

The six categories also apply to social care professionals, although the focus of 'care interventions' is more related to assessment of service user needs and commissioning appropriate care to meet their needs rather than direct care delivery as it is applied to healthcare. Outcomes of effectiveness, safety and patient satisfaction with health and social care services are generally good. However, there are numerous high-profile examples of systemic failures in both health and social care services that have had adverse impact on patient and service user confidence. When such failures occur, effective management and leadership entails learning from such incidents so that appropriate safety measures are instituted to prevent recurrence.

Table 1: Innovation and Technology that Enhanced Healthcare Access to the Poor

Innovative Enterprises	What they did?
Apollo Telemedicine Networking Foundation (ATNF)	A not-for profit, for the purpose of implementing the telemedicine project as a cost-effective method for healthcare delivery for those in areas with little to none medical expertise available. Apollo on some of their telemedicine projects partnered with the Department of Space, Government of India and the Indian Space Research Organization (ISRO) to use VSAT to provide quality healthcare to Indian villages.
Aravind Eye Care Centre (Aravind)	Aravind has pioneered many process innovations that have reduced the cost of eye treatment substantially and has enabled their organization to profitably deliver world-class eye care to both poor and rich alike. Despite, being a not-for-profit organization, sustainability was at the core of Aravind's concept from the onset, whereby the hospital would provide services to paying and non-paying patients, yet be financially self-sustaining.
Narayana Hrudayalaya (NH)	The Bangalore hospital has grown to a 1,000 bed facility with advanced technology and doctors performing an average of 30 surgeries a day and a maximum of 60 surgeries a day in its 24 operating theatres — the highest number of cardiac surgeries performed by any hospital in India. Dr. Shetty and his management team came up with the 'Health City' concept, a 2,000-5,000 bed cluster of multi-specialty hospitals on a single campus.

HOW LEADERSHIP BRING ABOUT THE CHANGE?

The reduction in infections such as Methicillin-resistant Staphylococcus aureus (MRSA) bacteraemias and Clostridium difficile (C. diff) rates provide a positive, authentic and relatively recent example of how leadership in healthcare can make a difference. The approaches used include identifying a figurehead to lead and champion the approach and the cause, to promote a vision of how this will have a positive impact on patients, through surveillance, identifying outcomes, development and agreement of ambitions, benchmarking, incentives and penalties, and publishing and sharing best practice and constantly keeping in touch with the reality.

Leadership can and should be demonstrated by staff at all levels (leadership at all levels) in health and social care and should not be considered exclusively the domain of those in supervisory, middle or top management roles. Focusing on the needs and preferences of patients and taking personal responsibility for meeting those needs is central to good leadership and the achievement of high quality care and patient outcomes.

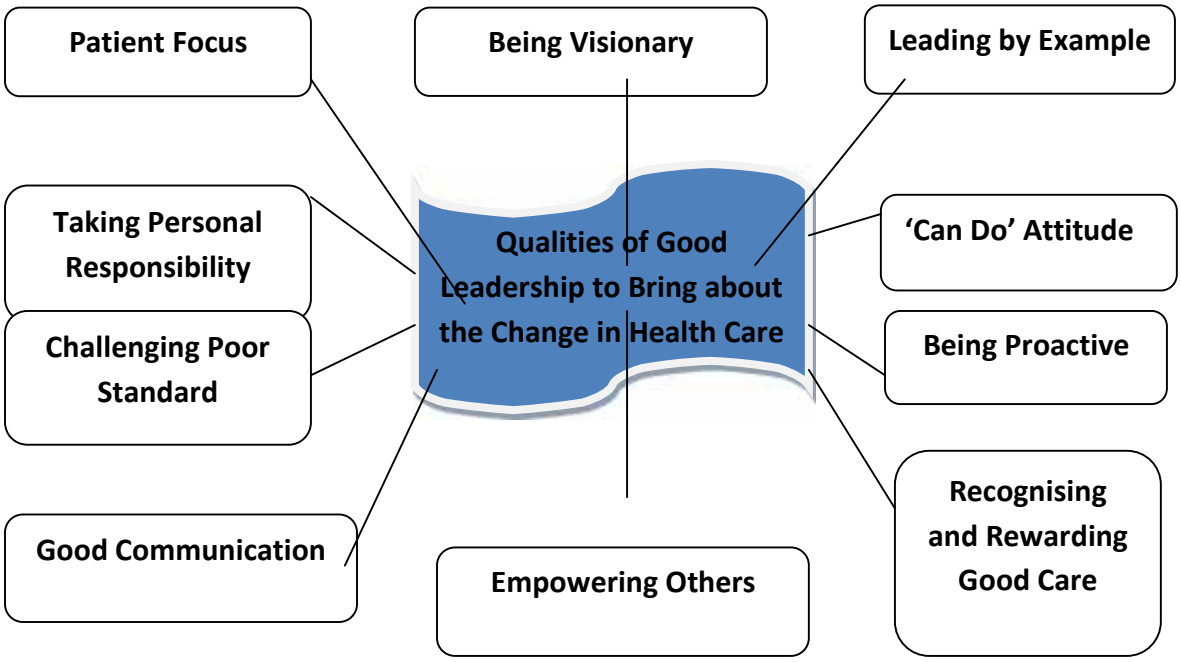


Figure 3: Qualities of good leaders in health and social care transcend in the heirarchy

SELF MANAGEMENT: NEW REGIME: NEW ROLE:

Self-management support is the assistance caregivers or healthcare professionals give patients with chronic disease in order to encourage daily decisions that improve health related behaviors and clinical out-comes. Self-management support can be viewed in two ways: as a portfolio of techniques and tools that help patients choose healthy behaviours; and a fundamental transformation of the patient–caregiver relationship into a collaborative partnership.

Hundreds of systematic reviews randomised controlled trials and large observational studies across the world have examined the impact of supporting self-management for people with long term conditions. Whilst the findings of individual studies are mixed, the totality of evidence suggests that supporting self-management can have benefits for people's attitudes and behaviours, quality of life, clinical symptoms and use of healthcare resources. This has created a huge business opportunity in India.

There are a wide range of initiatives to support self-management. These can be categorised along a continuum of interventions, with passive information provision about healthy behaviours and other 'technical' topics at one end of the scale and initiatives that more actively seek to support behaviour change and increase self-efficacy at the other end of the continuum.

Supporting self-management has the potential to handle the pressure on health and social services fuelled by workforce shortages, rising demand for services, population increases and budgetary constraints. However, implementing one off interventions is unlikely to make a significant impact on the overall health of the population or on the sustainability of health and social care systems. Supporting self-management is not a panacea, and is likely to work best when implemented as part of wider initiatives to improve care through educating practitioners, applying best evidence, and using technology, decision aids and community partnerships effectively.

Different clinical conditions may require innovative approaches to support self-management. For instance, people with conditions such as diabetes may benefit from structured and focussed education about how to diet, exercise and take medications. For conditions such as depression or chronic pain on the other hand, less 'technical' or clinical education may be needed because the service user has less 'technical work' to do. Therefore, evidence about self-management support for these groups tends to focus on cognitive and behavioural interventions.

Knowledge in this area is developing so evidence about the best strategies to support behaviour change may be limited at this stage, though much work suggests that in order to change behaviour, people need to really want to change.

WHY INNOVATION IS SO DIFFICULT IN HEALTHCARE?

Supposedly, everyone working in health care wants the same thing: to help people get and stay healthy. "Everyone" includes primary care doctors, medical specialists, nurses, hospital administrators, health insurance providers, nutritionists, pharmaceutical companies, medical technology manufacturers, fitness gurus, paraprofessionals, public health commissioners, and charities dedicated to a disease.

Innovations always sound good when reflected, after they've worked, and in isolation, when all the surrounding barriers to change don't have to be taken into account. Arguably, the main roadblock to innovation in health care is not the limits of human imagination and creativity; it is our complex system that plays spoilsport. Health establishments fight against germs and also against germs of ideas. It's a classic change management problem.

One way to deal with barriers to change is to build crowds of innovators pushing against the barriers. The strategy of more innovation in more places, at every corner of the system and every level of the organization is needed in today's complex organisational structures. Of course, we must hold innovations to an evidence standard — but without holding them hostage to resistant establishments. In the U.S., this strategy is being encouraged by the Institute of Medicine and the new Medicare Administrator, Dr. Donald Berwick.

Each small innovation pushes at some aspect of the system and ends up triggering greater change. When innovations don't fit neatly into the slots that already exist, innovators must operate by grass root reality, going around the establishment. A pioneer in health IT developed his innovation, later sold to Microsoft, as an emergency department physician, going around the hospital's IT department to produce technology so useful that it spread throughout the hospital and beyond. Cancer Treatment Centres of America set up late-stage treatment facilities bursting with innovation, including alternative and holistic practitioners working in tendem with traditional physicians and paperwork simplification. The U.S. Army's Breast Cancer Unit funds research has lay advocates on the board and will fund innovations the National Cancer Institute won't touch, such as prayer and healing.

Game-changing innovations come along, such as gene therapy, home diagnostics, or foods that reduce obesity, but if too big too soon, they stand up against establishments and interests. That's why one should wish to see a thousand flowers bloom, or maybe a hundred thousand. Innovation at any scale is the way to improve health care.

Using a range of disciplinary perspectives (rather than offering an extensive literature review), we identify the trade-off problems associated with innovation, and we challenge practitioners, organisations and institutions to recognise and confront the paradoxes of innovation.

FIRST PARADOX OF INNOVATION: ACCEPTING THE DUBIOUS, REJECTING THE GOOD

The first paradox of innovation is the well-known problem that some new practices enjoy rapid uptake, acceptance and diffusion throughout health systems, even when they are of limited benefit or unproven efficacy, or represent risks to patients, while other innovations that could secure better outcomes for patients never make it to the bedside or light of the day.

The reasons why unproven innovations are sometimes rapidly adopted and implemented are becoming better understood. Some are rather like consumer fads—a new technology or therapy generates the excitement of 'newness' and 'must-have'—even before the evidence base has been firmly established. Some innovations diffuse and accepted rapidly because they offer

hope in otherwise intractable, dead-end or desperate situations where denying an available therapy is difficult. Examples include the use of laetrile for cancer, which, despite its enthusiastic promotion during the 1970s, lacked evidence of effectiveness—and indeed there is some evidence of toxicity. Some innovations are adopted and implemented because they have considerable face validity or intuitive appeal as plausible solutions, but later turn out to be wrong. Well-known

Examples include the use of antiarrhythmic agents in the treatment of myocardial infarction, and human albumin in treatment of critically ill patients. Organisations may also adopt innovations as a defence against anxiety, to guard against criticism from stakeholders that any failing was due to non-adoption. The widespread use of early warning scores and rapid response teams for deteriorating patients, despite only very equivocal evidence of benefit, may be an example of this.

Rapid diffusion of innovation is also driven by profit-seeking behaviour. The engines of innovation may be commercial organisations prepared to resort to inventing 'diseases' (such as social anxiety disorder), repackaging cheap treatments as expensive ones for new markets (for example, using an expensive form of the cheap colon cancer drug Avastin for treating macular degeneration) or bringing to market technologies that offer only limited advantages over existing treatments. Many new devices—particularly diagnostic ones—need do no more than demonstrate that they comply with basic safety standards, and produce no evidence of efficacy. But organisations that stand to profit from the use of a new intervention may use sophisticated and aggressive marketing strategies, often enlisting patient pressure along the way and pressing political buttons to garner support. Clamour for therapies from desperate patients can be difficult to resist, as every health system in the world has discovered. Once institutions have invested in a new intervention, they then have a vested interest in recovering the costs and making quick bucks at shortest possible time as the example of proton beam therapy for prostate cancer shows.

Diffusion of innovation without proven efficacy introduces several threats to quality improvement. Most obviously, such innovation may pose risks to patients. More insidiously, the deflection of effort and investment is a huge opportunity cost for health systems that undermines efforts to improve services. Further, the innovation may disrupt or displace procedures in areas that have been targets of quality improvement.

The appeal of the new and the rejection of the dull or old cannot be explained by focusing solely on individual and organisational behaviours. Complex systemic processes and institutional forces are at work. For example, decisions about which clinical research is done and which is published (and where) are implicated in determining whether an intervention ever comes to attention, what kinds of attention it gets and whether it gets adopted or implemented or at least generate interest . Publication bias, which causes interventions to appear more useful than they really are, is just one of these systemic effects and major cause of misrepresentation of the facts.

SECOND PARADOX OF INNOVATION: THE WISDOM AND DOWNFALL OF DEMOCRACY

The second paradox of innovation is that one of the most effective ways of ensuring the implementation of new technologies, therapies and techniques is by working cooperatively with the professional groups or various other stakeholders expected to engage in implementing it, but relying solely on cooperation may also be the most effective way of killing an innovation.

Theoretical work on participatory governance has drawn on Charles Lindblom's arguments about the 'intelligence of democracy' to emphasise the benefits of involving those likely to be affected by change and with relevant knowledge in decisions about innovation and implementation. Participatory, collaborative forms of decision-making and action may not only enable better informed decisions but also foster social learning and more sustainable outcomes, unite and motivate those with a commitment to solving problems, increase the chances of detecting the potential for innovation, and improve people's willingness to accept change. There is now increasing recognition of, and excitement about, the role of self-organising, self-governing networks in securing desirable outcomes in healthcare and elsewhere, like volunteer groups. Within healthcare, there has been particular interest in using a social movements approach as an alternative to programmatic approaches that emphasise centrally led, planned programmes of change which sometimes wont yield desirable results. Social movements are characterised by their self-directing nature, their use of informal systems and the self-management of change is more effective in bringing desired change.

However, the counter to the 'wisdom of democracy' is the failings of democracy. Group-based, cooperative efforts may be undermined by those who fail to engage with, or commit to, the collaborative activity, and by the risk that individuals will

substitute their own goals for those of the group, so that the collaboration is undermined by individual or group interests, which is the pitfall of group politics. Professional boundaries, particularly between different disciplines and occupational groups, may create barriers to proper collaboration. Social movements can become sites of struggle and contestation, and may never succeed in fully delivering their aims. For instance, the evidence-based medicine (EBM) movement, including the founding of the Cochrane Collaboration, can be understood as a social movement that sought to respond to the problem we identified in Paradox 1: that some treatments known to work are ignored, and other treatments not shown to work get used. Though this particular social movement has enjoyed enormous success, Paradox 1 has not disappeared, and the command of EBM over the hearts and minds of many clinicians has been, at best, partial.

Some of the reasons for variable success of participatory, grass-roots approaches lie in the difficulties of creating arenas or platforms and opportunities for clinicians to collaborate and the antagonism or resistance of bureaucratic and professional structures to so doing. These are important problems, since those leading and managing networks must elicit support through building coalitions and forging agreement, sometimes in the face of local opposition or inertia, as well as creating environments where productive, goal-directed relationships and interactions are most likely to occur. They must also be able to manage the changing nature of the collaborative effort over time, and address the risk that collaborations may start out with considerable enthusiasm, but gradually develop less helpful features including competition and rivalry between different members of the network, fragmentation or duplication of effort, emergence of disruptive hierarchies, or diminishing commitment and ability to secure resources. Professional groups are themselves susceptible to persuasion and manipulation by commercial forces—either directly or indirectly—that may undermine their ability to behave in the interests of the public good. If innovation is to be managed appropriately in healthcare, there is an urgent need to find approaches that can combine the benefits of cooperative, participatory approaches with other regulatory techniques.

THIRD PARADOX OF INNOVATION: HEALTH SYSTEMS ARE NEVER ABLE TO KEEP UP WITH THE CHANGE

The third paradox of innovation is that improvement requires change, but change always generates new challenges. Quality improvement systems are rarely able to keep pace with innovation; innovation disrupts. For example, the rise of stenting procedures by cardiologists means that many patients previously managed by cardiothoracic surgeons (bypass surgery) are now being cared for by different personnel in different physical configurations of healthcare settings, and thus a whole new set of quality challenges arises. Further, people improvise, change their habits and reconfigure their work practices in response to new technologies, often in unpredictable ways. By the time quality-assurance systems have caught up with the 'new' modality, things have already moved on yet again. Having a cycle of renewal and reinvention creates ongoing organisational turbulence and may diminish organisational and practitioner enthusiasm for quality improvement. This problem is intensified by the ongoing failure of the dominant evaluation paradigm. This continues to confine evaluation narrowly to the intervention that is the direct focus of the evaluation, rather than considering the systemic effects and unintended consequences of interventions. For instance, a typical evaluation seeking to assess whether a new technique for monitoring patients at risk of critical illness will tend to determine the effects of the technique only for that class of patients. The risks the system introduces elsewhere (such as the impact of prioritising monitoring over other goals of healthcare) thus remain unknown. Social science work is needed alongside intervention studies not only to help assess unintended consequences, but also to provide vital evidence about issues relating to adoption, implementation, diffusion and optimisation in different contexts.

HEALTHCARE EDUCATION: A CALL FOR CHANGE

Health care administration educators are at a crossroads: the health care sector is rife with inefficiencies, erratic quality, unequal access, and sky-high costs, complex problems, inequality in health delivery system which calls for innovative solutions. Our educational systems focus their curricula on isolated, theoretical subjects, such as analytics and quantitative problem solving, rather than the team-oriented, practical problem-solving skills required for innovation.

All too often, when graduates of these programs enter the workforce, they find themselves unequipped to meet the challenges for innovation of 21st century health care. In 2012, Regina Herzlinger worked with Scriplogix to conduct interviews with 58 leading global health care sector CEOs about their future needs. A quarter of these CEOs noted that they were so dissatisfied with traditional health care administration education that they have developed training programs of their own and would rather hire and train good candidates with little health-related education than accept the "ready-made" graduates of most academic programs who are out of sync with latest happenings in the health sector. The following figure (exhibit 2) demonstrates that the CEOs wanted people who could solve problems, work as part of a diverse team, understand and learn from failure, manage change, and innovate through processes, systems, and organizations. The words they used most were leadership, change, and innovation.

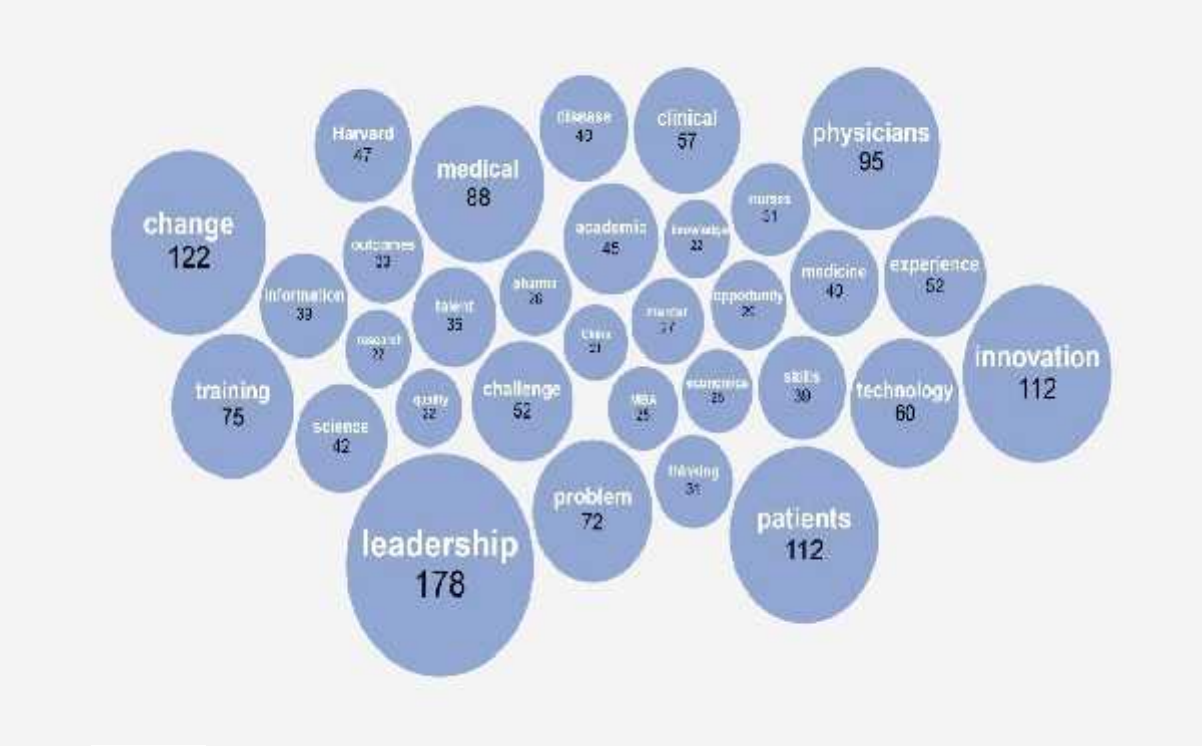


Figure 4: Content Analysis of CEO Interviews (source: http://healthaffairs.org/)

In contrast, when Regina Herzlinger and her research assistant analyzed health care-related curricula or course materials at 26 top U.S. schools, spanning 324 courses and certification courses, incidentally they found the most frequently used words were policy and organization. The words "innovation" and "entrepreneur" were found only 27 times.

Sweeping change in management education has happened before. For example, in the late 1970's, entrepreneurial programs at business schools were almost non-existent and un-heard of. Some foresighted faculty from HBS teamed with a network of entrepreneurs who guest lectured, provided intellectual, financial, and moral support to develop this curriculum.

Entrepreneurship is now a vital component of almost all business administration programs across the globe today. Aided by this education, for example, approximately half of Harvard Business School graduates become entrepreneurs 15 years out of school. Because the number of MBA graduates in the United States topped 156,000 in 2013 and, according to the U.S. Small Business Administration, small businesses have generated 67 percent of net new jobs since 1995, the addition of entrepreneurship to the business administration curricula has played an important role on our economic welfare. In India MSME or SSI sectors' contribution to the GDP is enormous and employment generation opportunity is very high in this sector.

The entrepreneurship curriculum continued to evolve. In 2011, for example, HBS revised its curriculum based on the U.S. Army's "Be-Know-Do" framework, a paradigm that examines the underlying beliefs and values that create a manager's professional identity and view of the world ("being"); assesses the facts, frameworks, and theories taught ("knowing"); and revamps curricula to favour core managerial skills and methods (the "doing" component). This framework has been very successful in creating stream of entrepreneurs as well as entrepreneurs.

This framework served as the basis for a new curriculum which focuses on leadership and innovation (the *being* part), the integration of that learning across the academic year (the *knowing* component), and global immersion in innovative activities sponsored by businesses (the *doing* aspect). Teams of students develop, pitch, and launch a micro business, and, as a class, monitor and discuss its successes and failures. As a capstone to the course, student teams present their plan to experienced business leaders who provide feedback and financial rewards.

To enable a similar partnership like the one that spearheaded the addition of entrepreneurship to the curricula of business schools, Herzlinger formed a group representing global academic institutions, professional organizations, and health care

consultancies called the Global Educators Network for Health Care Innovation Education (GENiE) Group. GENiE includes more than 140 academic members interested in introducing innovation into their curricula, and a number of CEO champions who share these interests, including the CEOs of Johnson & Johnson, the American Medical Association, Bessemer Ventures, and athenahealth Inc, among others.

To further this partnership, the GENiE Group has held two annual conferences with 150 global academic and stakeholder attendees at Harvard Business School and Duke University; launched the Harvard edX MOOC Innovating in Health Care and the HBS Executive Education course Business Innovations in Global Health Care; created an archive of innovative programs and a series of videos on health care innovation, including the importance of health care innovation, businesses that support it, and students who become health care entrepreneurs; and surveyed a wide range of constituents to help develop the competencies necessary in an innovation curriculum.

To date, 18 schools have implemented courses or programs in health care innovation. For example, Arizona State University's W.R. Carey School of Business offers a Master of Health Care Innovation in which students learn how to create and sustain successful cultures of innovation in health care from multiple perspectives. Likewise, the University of Copenhagen and the Copenhagen Business School are jointly launching a two-year, full time Master of Science program in health care innovation. Faculty from health and business disciplines will partner to train a new breed of health care innovators to tackle the challenges facing modern health care. Here collaboration between academia and business is an important catalyst for ideation and innovative ideas to emerge.

CONCLUSION

Implementing the transformational changes will be difficult, not only there is no magic pill, but also there are major challenges in supporting the kinds of innovations that are needed. An eco-system that facilitates new providers to enter the market and also enabling the existing health service providers to try different approaches is essential if the health and social care system is going adapt to the changing times. This may necessitate planned destruction of older service models, or at least reengineering or re-invention of the wheel. Exit or change is the new requirement for entry and definitely for survival.

Leadership at the highest level has to make it happen, leaders of different community across the world should join hands together to face the change, because new-age diseases does not validate whose blood is thicker and its tentacles are spread across the world. Global leadership collectively embrace the change for the good of the society.

Innovation is complex adaptive system should achieved by involving the stakeholders, rather than seeking to mandate to change through an organisational hierarchy and structure. The seminal analysis conducted by the Institute of Medicine suggested that this can be done by setting some 'simple rules' to guide behaviour in the present generation healthcare system.

Potential for reverse innovation should also be explored. Aravinda Eye Care Systems in India demonstrated new ways of using staff to deliver care in emerging market. Learning from experience and adapting innovations that emerges in countries like China and India. There will be some who will contend that much bolder steps needed to deal with present and future challenges. Time-honoured phrase like 'desperate times require desperate measures' applies more aptly today than ever before. There is a need to make a fundamental reform of the health-care delivery system both in India as well as globally.

The work of Govindarajan and Trimble (2010) emphasises on skills of execution as the critical and pivotal in innovation, rather than searching for big idea constantly. Policies and strategies that are poorly designed fail the implementation part of any innovative ideas. Leaders of health and social care system need to match visions to resources, and finding ways to turning those visions into practice.

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