The open source us veterans health administration economics essay

Economics

Abstract

Introduction

Health systems are under pressure as operating costs and rising expectations increase. Health services, drugs and technology have become more effective, resulting in people to expect more without additional cost. The current financial climate has precipitated Governments to move away from ever increasing health budgets. Previously this had promoted greater productivity, but often more as a result of increased activity than any actual removal of cost.[1]Overall there has been little improvement in the overall efficiency of services, despite improvements in measures such as the number of patients treated per bed.[2]Policy solutions that are presented or adopted to tackle this pressure too often operate within an approach which triumphs the primacy of governments and health professionals operating in a closed system. A closed process and lack of real public involvement will undermine the accountability and credibility of policy decisions, and closed policies can result in inflexible, high cost solutions that are unable to meet the rapidly changing demands of healthcare.[1]If we define health care as a complex 'ecosystem' which is unpredictable, containing numerous interacting components and self-organising local control, then we should look to policies which exhibit the same charateristics (p. 22).[2]The opening up of health policy to the public, has the potential to improve relevance and impact. Social groups, external expert, patients and members of the public can bring important knowledge and experiential insights to a raft of problems, suggesting that integrating open innovation pproaches to heath

policy offers the mosy promising polciy approach for tackling complex issues. [3]

Pressures

Health systems around the world are facing severe financial pressures. The English NHS in particular faces a funding gap between the resources available and the demands placed on them of around £21 billion between 2011-14[4]or a four per cent year-on-year efficiency saving after a decade of sustained real-terms increases in spending (p. 47) .[5]Additional projections suggest the NHS will be required to continue savings of anywhere from £16 to £54 billion by 2021/22[6]78as a result of rising demands and increased costs. The situation in the NHS reflects genral problem with health systems. Baumol and Bowen concluded that health care represented a stagnant economy which suffered from a " cost disease" of continuing rises in costs without the increase in productivity expected in market economies.[9]They found that health care prices grew faster than GDP whether publically or privately financed,[10]as increased spend correlated with better health outcomes. Mortality rates at hospitals in England appeared to confirm this cost disease, when it found that often the least financially efficient hospitals had the most effective mortality outcomes.[11]New technologies add to costs as they are often used for previously untreated conditions, alongside a general rise in the cost of drugs rising in line with inflation.[12]In the US it is estimated that technology costs account for anywhere around 27% to 65% of the growth in spending from 1940 to 2007, with price inflation accounting for an additional growth of between 5–19 per cent.[13]Increases in the labour content of services is often correlated positive outcomes, making workforce

costs a key burden on health systems. Whilst wages rise in other economic sectors in line with increased productivity, health care wages rise despite time spent with patients stabilising or increasing.[14]In the NHS 70 per cent of the budget is spent on its 1. 3 million staff, and over half of the additional funding provided after 2002 went towards increasing pay.[15]16Financial challenges faced by health systems increase as populations age, grow and experience more chronic disease.[17]Population growth in itself is not a primary driver of demand. Analysis of the growth in US health care spending between 1940 and 1990 suggest that increasing age is a relatively insignificant factor.[18]The pressure to increase spend is driven more by factors such as the increase of long term conditions. Some commentators have argued that financial problems are often overstated to justify politically motivated change, citing the Department of Health’s accumulated underspend of £5. 5 billion in 2010 and the the NHS’£1. 4 billion underspend in 2011/12[19]20It is also argued that whilst the " cost disease" suffered by the stagnant healthcare sector may cause it to take on a greater share of GDP, more progressive sectors of the economies will grow enough to create resources to fund these services.[21]22Appleby argues that projections of health care in England growing to 12. 4% of GDP could be affordable, despite representing the highest proportion in the OECD, and would still allow increased real spending on other areas of the economy as only their proportion of GDP would need to go down.[23]He notes that in 2009, seven of the EU-15 countries spent over 10% of GDP on healthcare, with the Netherlands spending 12%.[24]

Options

There are opportunities at every level of health systems to improve efficiency, and decision makers have a wide range of options available to them. Broadly these revolve around stimulating revenue in the system, [25]improving efficiencies, educating their populations, or rationing services. [26]Hsiao sets out a framework of five key means, or 'control knobs' that decision makers can work within to improve a health systems, essentially setting out " what" is available to them: financing, payment, macro-organization of health care delivery, regulations and persuasion (p. 7). [27]This is complemented by numerous other frameworks which in turn set out available policy options. There is a limitation with such frameworks however, as the options available are aimed at select groups of decision makers. They reflect a built in assumption that governments and health care professionals are naturally best placed to determine appropriate health policy solutions, despite a frequent poor level understanding of patients needs or views [28, 29 GET REFERENCE]. Health systems are highly context-specific so there is unlikely going to be a single policy development which has a particularly greater impact over any other in isolation.[28]Therefore, rather than focusing on the promise of one individual policy over another, it is perhaps more effective to look at how such policies are formulated, developed and delivered. The amount spent on health care is a result of decisions and funding prioties. The Organisation for Economic Co-operation and Development 2010 review argued that whilst spending on health may outpace the growth of national income, this reflects the value placed on its benefits by populations.[29]The results of the British Social Attitudes

survey[30]show that trends since 2000 point to this value declining as a public priority,[31]and that investment is unlikely to be prioritised over other sectors such as education and housing in the long term.[32]Beresford argues for greater public and patient involvement, that " the shorter the distance between direct experience and interpretation... then the less distorted, inaccurate and damaging resulting knowledge can be".[33]Weaver argues that in complex systems such as healthcare, tackling and solving difficult challenges is best accomplished by enabling multidisciplinary groups to self-organize and work collaboratively across organizational boundaries (WEAVER, [get this reference) 1948).[34]Health systems need to respond to populations needs and expectations and incorporating citizen participation in policies and processes may assist.[35]Open innovation processes and social networking have already enabled this active participation of wider stakeholder groups in the development of business solutions in a way that mirrors the complexities of the health ecosystem.[36]Whilst health has been slow to catch up (GARNIER 2011) social networks are increasingly used by the medical community to learn about medical cases, and patients have established large online communities.[37]PatientsLikeMe has over 120, 000 members in over 500 different condition groups and there are thousands of small communities clustered around rare diseases. All of these are generating data that is voluntarily and openly shared in order to promote more effective self-care.[38]Increasingly closed, government stored health information is being turned into open data. The Hospital Episode Statistics (HES) stores around 100 million records a year covering outpatient appointments, A&E attendances and hospital admissions, and data on

around 500 million annual primary care prescriptions are released. The use of this open prescription data[39]enabled the identification of local variations in GP prescription patterns, locating where doctors were spending £200m a year more than expected on branded statins.[40]The open innovation approach to this data was able to make deliverable a part of the British Medical Journal research that showed controlling prescription spend could save the NHS £1. 4 billion a year.[41]Crowdsourcing approaches decentralise decision-making and information-gathering by encouraging self-selecting, non specialist individuals from different disciplines to contribute to problems.[42]43The Harvard Clinical and Translational Science Center's InnoCentive program acts as a matchmaker between a those who want problems solved, and a broad community of problem solvers.[44]This approach has enabled advances on issues such as increasing the affordability of polio vaccine in lower-income countries and[45]in developing a glucose-responsive insulin drug.[46]In a similar vein, Foldit made a game out of protein structure prediction to generate scientific results. The shortcomings of traditional approaches to policy implementation appear particularly acute with regard to government related IT projects. Frequently showing a poor return on investment, both clinically and financially,[47]closed system approaches to IT have failed to exploit the potential of electronic health records.[48]The NHS's National Program for IT aimed to provide every patient with an electronic health record, but after spending over £2. 7 billion achieved little more than criticism from the National Audit Office.[49]Similarly, Ontario's auditor reported that its taxpayers had not received value for money for its own $1 billion investment in IT.[50]The private sector has also struggled,

Kaiser Permanente spent over $4. 2 billion implementing its own electronic health record system.[51]This pattern of failure suggests fundamental flaws in the approaches taken which share common characteristics of closed, top down development and implementation, and a lock-in of data lead to disintegrated systems.[52]In contrast, open source attempts have had success in exploiting the full potential of electronic systems, possibly due to their bottom up, user driven approach that better reflects the structure of health systems.[53]54The open-source US Veterans Health Administration (VHA) VistA electronic record and health information system is widely credited for enabling substantial gains in quality and cost efficiencies for 1400 facilities with 7 million patients. The VHA now outperforms many other health systems on patient safety and health outcomes despite it previously being one of the worst performing health sectors in the US, its patients being older, having more health problems and lower incomes. From 1991 to 2008 30-day postoperative morbidity rates fell from 17. 4% to 8. 8% and from 3. 16% to 1. 36% respectively (Congressional Budget Office, 2009(GET REFERENCES). This was during an increase of 75% in the numbers treated, and a relatively relatively stable budget.[55]The effective electronic health record system enabled patient-centred care, user led improvement, and system wide analysis.[56]One notable example of this approach enabling measurable clinical improvements was the enactment of barcode medication administration which resulted in the virtual elimination of medication error. It was conceived by a nurse and developed in collaboration with her by the local IT department.[57]The financial value of the overall investment in VistA is estimated at $3. 09 billion. It began as a user-driven, collaborative project

and evolved through an open innovation model. Many of the original architects and developers of VistA are members of an open source community, WorldVistA 7, which now promotes and coordinates the wider adoption of VistA.[58]Bagozzie and Dholaki demonstrate that the social nature of open innovation drives a continued participation in developing open source products.[59]A social identification with the product motivates further participation in its development and the encouragement of others to participate. Other countries have benefitted from this approach. In 2004, the Mexican Government adopted VistA across 40 large hospitals serving 30 million patients in a move that would have cost it more than 40 times more for a commerical product.[60]Other open source communities have had similar success when applying similar processes to healthcare IT. The Belize Health Information System (BHIS) and OSCAR, a primary care electronic health record, have implementation costs much lower than proprietary systems whilst offering enhanced functionality. BHIS is based on open source components and its implementation has been attributed with reducing its health budget costs by as much as 3%, and adverse drug reactions by 90%. [61]It must be remembered that technology is a means to an end, and the advantages of data to detect, diagnose and address cost variations – either by changing practice or improving the costing process – are dependent on how it is used (Lawson, 2005). Whilst open innovation may have had some notable successes, there are problems. Externally developed solutions, whether that is a technology or a policy, may lead to resistance to adoption. Effectively promoting new innovation approaches implies disruptive change as the centre of innovation shifts to external sources.[62]Public involvement

has cost and time implications and it can take substantial effort to create an open environment such as a mass collaborative game or to set up a prize.[63]The possibility of freeriding is therefore a risk. In healthcare, sensitivities around patient data and confidentiality are particularly acute.[64]Open approaches may not be deliver any major change to traditional consultation processes and even result in a less informed dialogue.[65]Freebase concluded that it was more effective to pay people wages for tasks it had been trying to crowdsource and the red tape challenge had a similar experience.[66]Smaller expert groups deliberating on discrete regulations may have offered a more informed response for the red tape challenge.[67]The exercise itself proved costly due to running and monitoring the website, analysing comments and developing responses to various stakeholders. The cost of the internal processes were likely to outweigh any reduction in costs to business.[68]Public involvement also creates tensions between different stakeholder groups; particularly when there are different levels of understanding. The agendas of members of the public, researchers, policy makers, funders and clinicians are different and conflict when making decisions. In healthcare, sensitivities around patient data and confidentiality are particularly acute.[69]The expansion of community groups such as Patients LikeMe into collaborations with external companies raises questions over how patients will react with sharing their personal health information with larger groups that have their own agendas, less centered on the individual patient.[70]

Conclusion

Health services are unlikely to cope with growing financial and health burdens unless users and citizens are enabled to help services do more with less. That involves is more than just looking after health or managing conditions, but being actively involved in the open innovation process, [71]sharing lifestyle and health data.[72]and driving " bottom-up" processes and innovation strategies (PLSEK, 2001). Making use of the public's ‘ experiential’ knowledge, i. e. the personal experience with a disease, symptoms, therapy, and the health care system, should therefore be integrated into health policy processes as far as possible.[73]The fundamental symmetry between open innovation and health systems, with their naturally complex, unpredicatable, self organising components, that makes open innovation one of the most promising policy option to identify solutions to health care problems within a limited public finance budget.[74]