Abstract

In 2013, the UK Government announced a major £3.8 billion healthcare initiative, the Better Care Fund. This funding was intended to be used within local health and care systems to drive closer integration, create new service efficiencies, support technological innovation and most importantly, improve outcomes for patients and people with care and support needs. The research described in this paper uses the lens of systems integration to investigate how health and social care delivery, through the Better Care initiative, is currently being transformed in a major UK city. An action research approach is being used to determine the key issues and challenges that need to be addressed if new models of integrated health and social care are to be successful. Early findings indicate that a systems or sociotechnical approach can facilitate a better understanding of the potential challenges for integrating health and social care information systems.

Keywords

Healthcare, Social Care, Information Systems, Health Information Systems, Integration, NHS

Introduction

In June 2013, the UK Government announced a major £3.8 billion healthcare initiative known as the Integration Transformation Fund, later to be renamed the Better Care Fund (Bennett and Humphries, 2014). This funding was intended to be used within local health and care systems to drive closer integration and improve outcomes for patients and people with care and support needs. As further details emerged, it became clear that most of the money would come from existing English National Health System (NHS) budgets – it was not new money and this is equivalent to an average reduction in allocations to English NHS Clinical Commissioning Groups (CCGs) of around £17 million, with potential knock-on consequences for acute and community health services. One further issue around the Better Care Fund was that the government proposed to transfer nearly £2 billion of the English NHS funding to
social care in a bid to reduce hospital admissions, especially as a response to a worrying upward trend in acute Accident and Emergency (A&E) admissions, a growing elderly population with increased patient demand, and a lack of hospital acute care capacity. It should be noted that there are 211 CCGs in England and that they are large organisations responsible for commissioning and procuring healthcare services from provider organisations (community nursing care and clinical services, hospital services etc) with defined regional coverage across England.

The research described in this paper uses the lens of systems integration to investigate how health and social care delivery, through the Better Care initiative, is currently being transformed in the main city for the North East of England, Newcastle upon Tyne (population approximately 284,000). The North East of England includes Northumberland which is one of the most rural and least populated areas of England and borders Scotland to the North with the North Sea coastline to the East. The demographics are particularly important, as the city and surrounding localities show sharply contrasting health morbidity and mortality statistics with some worrying lower than average levels of life expectancy and high prevalence of obesity, cancer, heart disease and diabetes. This represents a significant challenge in terms of planning for the efficient use of increasingly expensive health care resources, especially social care provision for the frail, infirm and elderly populations. Newcastle City Council have also suffered disproportionately from government cuts to local authority budgets, facing in excess of £100m reduction, due to high regional unemployment and therefore low revenues from local tax returns. Contrasting with this however, the city has world class hospital provision linked to advanced medical research based at the Newcastle upon Tyne hospitals NHS trust (NuTH) and local universities. A traditional focus has therefore been on excellent primary and secondary medical/clinical care, whilst social care services are seen more in a low profile support role.

The paper begins with a short overview of a new project (Integration Ready), involving key stakeholders from Health and Social Care, led by Newcastle City Council based on their localized government funded Better Care strategy. This provides the context to identify the serious integration challenges and issues that partner organizations will face due to their current lack of IT systems integration planning and foresight, despite massive investment within the English NHS over the last decade. The next section describes the action research methodology that the researchers are using to explore the integration challenges followed by a summary description of key findings to date. This is then discussed utilizing a model of systems integration to analyse where integration efforts should be strengthened if the strategic vision of a ‘health and social care integrated partnership’ is to be realized. The conclusions detail some early recommendations, and current implications for health and social care organizations. Finally, future research plans are outlined.

**The Integration Ready Project**

In April 2014, Newcastle City Council (NCC) in collaboration with their two local Clinical Commissioning Groups (CCGs) bid for £21.8m of government Better Care (BC) funding to support a series of key projects aimed at developing joint partnership working between health and social care organizations. The integration of what are traditionally seen to be separate work processes, practices, and information systems was viewed as critical to the success of the chosen initiatives which would act as beacons or pilots for the development of partnership working. This would refocus effort and resources into community settings, placing the emphasis on preventative care and caring for patients in their own homes as a strategy to reduce unnecessary or overlong stays in hospitals and expensive interim care facilities. The Integration Ready Project (IRP) was conceived in July 2014 as a joint research project between the NCC/BC Project Board and Newcastle Business School with a remit to assess the integration requirements of the partner stakeholder organizations and report back with details of the key systems integration issues and challenges for the future BC project roll out. Systems were defined as relating to people, process, information and technology.
The BC Project Board viewed the challenges facing them on three levels:

- **Level 1**: Whole systems opportunities through data sharing. The rationale for this related to enhancement of care and health experiences through seeing the various services as an integrated system with data flowing seamlessly from health to social care and vice versa. There was also the perceived need for professionals in various parts of the system to co-ordinate care packages and support offers to customers.

- **Level 2**: Customer relationship opportunities through a new technological platform: Here the argument was around the ‘preventative’ role of technology where services could be developed that augment existing ‘face to face’ care through the use of for example smart technology. They also perceived a need to push information to people about community based support, health and care information in order that they are able to manage their condition and stay independent for longer.

- **Level 3**: Individual service opportunities through existing and new equipment: Finally they perceive a need to change culture within their organisations in order to gain acceptance of new technology, develop innovative solutions to some of their difficulties and to expand some of the telecare and telehealth applications that are still only embryonic.

### Integrated Information Systems in the English NHS

The publication of the UK National Health Service (NHS) “The Power of Information” Strategy (DoH, 2012a), accompanied by the “Digital First” (http://digital.innovation.nhs.uk/pg/dashboard) Digital Service delivery (DoH, 2012b) philosophy (http://digital.innovation.nhs.uk/dl/cv_content/32200), heralded a new strategic focus for the provision of information systems (IS) support across the English NHS. Unlike its original predecessor, the 1998 “Information for Health” Strategy (Burns, 1998), the 2012 strategy, 15 years later, was a radical move away from a centralised approach to delivering information management and technology across the entire landscape of health services. The latest UK government and health policy, locates the responsibility of delivering the strategy firmly with local healthcare providers (Hospital Trusts, GPs, Clinical Commissioning Groups) with a focus on patient involvement in assisting in removing costs from the overall healthcare system. Between 1998 and 2010 the New Labour government spent over £12.5 billion on a large scale IT project, the National Programme for IT (NPfIT), which spiralled out of control failing to deliver much real substance, or value, and which many academics now believe to have been unachievable and ill conceived (Wainwright and Waring, 2000; Norris, 2002; Sauer and Willcocks, 2007; Brennan, 2007; Eason 2007; Currie, 2012).

Following on from the failed centralized NPfIT strategy, and with the emphasis now back on local autonomy and greater control for health and social care organizations, new information systems and technology projects have a renewed focus on providing support for healthcare workers out in the community. The traditional focus has been on the development of clinical records mainly for the benefit of hospital services and GPs. Patient and citizen demand for home care that includes clinical and also social care support is growing rapidly. The majority of information systems research to date has been on the development and implementation of hospital electronic patient records (Wainwright & Waring, 2000; Currie, 2012), GP patient and clinical reporting systems (Wainwright and Waring, 2007) or the design of effective social care systems (Wastell, 2011). Research that specifically focuses on evaluating projects attempting to integrate health and social care from a systems perspective is scarce. This is not surprising within the UK, as the focus on transforming the delivery of health and social care as a more sustainable ‘joined up system’ is a recent policy innovation from the UK Government (Ham et al., 2011). These new models of integrated care aim to focus more on preventing ill health, support self-care, enhance primary and community care, provide care in people’s homes and increase collaboration, coordination and joint commissioning between Primary Care Teams, Care Providers and Social Care.
Interoperability between IT systems is certainly technically feasible in most cases, and for most combinations of technology in use across the UK health and care system. A record amount of government expenditure has been made to develop new and sophisticated applications for hospital clinical administration and patient record keeping, applications to support specialties such as Pathology (Wainwright & Shaw, 2013), Radiology, Orthopaedics, GP systems, electronic referral systems, electronic discharge summaries and electronic prescribing. A pattern that emerges however, is that the focus is very much on the clinical processes based on episodes of care. This support does not extend much beyond the hospital or GP practice once the patient leaves hospital, and returns to the home and community environment. This is the domain of social care and its complex interface between a mixed economy of local authority commissioned Care Providers and NHS directed and CCG commissioned Community Health Care Support Teams.

A Systems View of Integration

Wastell (2011) critically reviews current practice related to the development of UK child care protection systems alongside social care systems and NHS IT systems more generally. He argues that there is no evidence base available, or even being created, to determine what constitutes good process and practice in social care information systems provision. Hence, there are inevitable large scale and very publicly embarrassing failures when quality standards and safety protection principles are breached. Wastell (2011) reviews the literature and argues for managers to embrace systems design, especially sociotechnical methods, in order to develop a core competence for understanding complex systems behaviours and developing management practices that are fit for purpose. This is predicated on better information systems design which takes account of human, social, organizational and political factors as key determinants for implementation and adoption success. Previous empirical work (Waring & Wainwright, 2000; Wainwright & Waring, 2004) investigating large scale enterprise systems adoption both in the private sector and in the NHS also reviewed the integration literature concluding that it was mostly dominated by issues concerning technical interoperability - avoiding more complex issues relating to organizational culture, behaviour, power and politics. A ‘Three domains’ model for information systems integration, Figure 1., was proposed (Wainwright & Waring, 2004) as a tool for analyzing and assessing the areas that should be accommodated if full systems integration was to be successfully achieved. This was where system was defined more broadly in terms of aligning organizational strategy and departmental goals with technology that facilitated new working processes and practices whilst recognizing power and political issues due to crossing traditional structural and professional working boundaries.
This IRP project examines health and social care integration at a strategic level focusing on information systems integration. Previous studies (Waring, 2015; Wainwright & Waring, 2004; Waring & Wainwright, 2002; Waring & Wainwright, 2000) have shown that integration is a complex construct but can be broken down into three interlinked domains comprising; systems and technical, strategic and organizational. Building on previous theories relating to integration of information systems, this research aims to identify how strategy, organizations, people, processes and technology are currently connected in the delivery of complex health and social service provision to patients and citizens as part of the Newcastle Better Care strategy. A Systems view will also be used to explain how complex patterns involving different professional relationships can develop over time and become embedded in information technology adoption and use. It is proposed that systems views of integration, informed by relevant theory, can help facilitate more effective and efficient health and social care delivery.
Research Methodology

The challenge for the Better Care Fund (BCF) plan, currently under development by the Newcastle partnership, was that it was very aspirational and involved many established and powerful professional groupings, diverse technologies and rapidly evolving new forms of organizations with complex governance arrangements. An initial project was conceived in July 2014 termed ‘Integration Ready’, devised as a collaboration between the Newcastle City Council Wellbeing and Care Directorate and the Northumbria University Newcastle Business School. Three levels were to be investigated: Level 1, whole systems opportunities through data sharing; Level 2, customer relationship opportunities through a new technological platform; and Level 3, Individual service opportunities through existing and new equipment.

The research team adopted an action research model (Waring & Alexander, 2015), Figure 2, with stages comprising; diagnosing, planning action, taking action and evaluating action.

Figure 2. Action Research Cycle

The initial diagnosis also involved a preliminary phase for defining the context and purpose of the project. The first cycle of AR began in July 2014 with a ‘diagnosis phase’ when the researchers met with the Newcastle Partnership (20 senior managers representative of each service) for a half day work shop to explore the concept of integration, its meaning to stakeholders, issues for the services and the plans going forward. A brief overview was provided by the research team and the spokesperson for the BCF application. This included a vision of how things might be. A breakout session followed with facilitators on each table. Copious notes were made and then this was fed orally back to participants with a more formal report a week later. This report contained suggestions as to how the project could progress. This diagnosis led to a ‘planning action phase’. Through mutual agreement of the Partnership the researchers formally put together a proposal that had a discrete boundary – chronic illness and associated health and social care and the systems that support it. This proposal was scrutinised by the Partnership and after a number of weeks was agreed as the first major data collection activity of the project. The approach comprised audio recorded in-depth interviews with 26 relevant stakeholders, mapping of their systems and exploration of their key issues and challenges. By May 2015, the research team have completed the interviews, demonstrations and fact finding. Stakeholders have ranged from staff in the newly forming (1st April 2015) Newcastle Alliance Clinical Commissioning Group (CCG), GPs, Community Nurses, Social Workers, Social Care Providers, and from the local Acute Hospital Trust. The research team have also had demonstrations of key IT systems such as Care First (Social care IT system) and EMIS (GP system). Each interview, taking approximately 1 to 1.5 hrs has been transcribed. Without exception all interviewees have proved to be supportive and informative. In the latter half of 2015 the project will move into the ‘taking action’ phase which involves a report of key findings, systems maps and a facilitated workshop to disseminate and discuss the key challenges facing the partnership. Actions will focus on highlighting...
priority areas and projects where new service design can be developed alongside integrated information systems, data sharing and new governance procedures.

**Research Findings**

The three domains integration model, Figure 1, is used as a heuristic to structure the preliminary research findings, focusing on the key challenges, problems and issues relating to information systems integration across the multiple stakeholders of the BC project. The IRP has specific aims commissioned by the project partners, but for the purposes of this paper we focus on the systems and information issues that have been identified so far.

A simplified systems and technology map of the main partner organizations involved in the IRP and BC project has been developed, Figure 3, to illustrate the distinct organizational, systems and technical boundaries concerned. The researchers have been placed in a privileged position to gather stakeholder views from all these organizations along with relevant schematics and documents as an aid to drawing up the whole systems view. This is the first time that such a full picture has emerged showing the complex nature of the proposed integration relationships.

![Figure 3. Better Care Project Stakeholder Organizations and IT Systems in Current Use](image)

The Local Authority, Newcastle City Council (NCC), is responsible for all social care and wellbeing planning, commissioning and support within the defined area population. They are an elected body with
distinct administrative departments covering adult, children, elderly services alongside education, infrastructure planning, and housing services. They receive a government funded budget based on population and demographic needs. In terms of health and social care, the main system in use is the Care First application provided by the OLM group. This is a mature system with many installations in similar councils across the UK. Its main purpose is to manage the social care assessment process, maintain records of all client case information whilst providing management information for effective governance of quality processes (protecting the integrity of individual citizen/client information), and budget management for commissioned services. This system runs on an internal secure network with external communications enabled across the gov.uk information network. Access to information is through role based access control and only available to authorized social work and council employees. There is no integration link to external NHS health care organizations – information being shared on specific request only and not via direct access to the Care First system.

For the purposes of this study, only the 2 largest hospital Trusts are examined. The Newcastle upon Tyne Hospitals NHS Trust (NuTH) is the main centre for secondary care services in the city, operating a busy accident and emergency department. It has recently adopted a new Patient Administration System (PAS) and Electronic Patient Record (EPR) system provided by Cerner Millennium. Again, internal access is based on the role based definitions with different authorizations provided on the basis of need. This mainly involves clinical staff such as all grades of medical physicians and nursing staff. External communications are provided through access to the secure nhs.net network. Social workers and non NHS staff do not have authority to access this system electronically, but may view paper notes on request – even if they work as part of integrated teams in hospital and need the information about patients to determine complex social care needs. The lack of information sharing provides barriers to expediting more efficient discharge procedures from hospitals, and can inhibit the development of more accurate care needs assessment for homecare provision of support. Hospital systems can interface with Medical Doctors in their own local practices, but only to send specific summary discharge information or pathology test results (through a gateway system called ICE). General Practitioners do not have electronic access to the Hospital System, either on site or remotely from their own practice, and vice versa for Hospital Medical Staff.

The other large NHS hospital Trust, Northumberland Tyne and Wear (NTW), focuses more on outlying suburban areas and also with mental health services. Their main system is RiO, which was developed as part of the now discontinued NPfIT programme. The same principles apply for this system in terms of limited connectivity and role based access based on defined authority and determined need.

General Practices are situated according to geographic and demographic need based on the health population profile. There are mainly 2 IT systems in use; The EMIS system is mainly used by General Medical Practitioners (GPs) who work South of the River Tyne (Gateshead), and SystmOne is favoured by around half of the GPs who work North of the Tyne in the Newcastle City areas (the other half use EMIS). The 2 systems have different development histories and have not been designed to be integrated. This is technically feasible however, as new developments are moving them to be ‘cloud based’, such as EMIS Web, whereby they can more easily be accessed through mobile working in the community. Third party providers are developing solutions for interoperability of these platforms, such as provided by a Medical Interoperability Gateway (MIG), currently being trialed in some areas. The MIG technology, along with ICE, are the preferred solutions for communication interfaces between GP systems and Hospital Trust organizations. The Care Commissioning Group provides the administrative support to commission and procure health care services for the community and is led by GPs and professional administrative support staff. However, GPs are free to make their own individual choices with regards to selection of IT software – a principle of their own autonomy and clinical freedom – as their funding comes directly from the Department of Health (NHS England).
Discussion

In summary therefore, the integration of health and social care can be seen as extremely challenging due to the diverse information systems in use and the local organizational autonomy that exists for procuring and implementing IT solutions. The cancelled NPfIT project has left a legacy of different IT platforms, technologies, vendors and stakeholders. Hospital Trust IT systems may be viewed as ‘islands’ that cover the core functions of the EPR and PAS. Separate systems are often used within specialties – and they must be linked to the core systems. Role based access is essential to maintain security and privacy of patient records. This complicates access for non NHS professionals and even other NHS professionals working in different specialties or across different hospitals locally and nationally.

GP systems are seen as distinct. Again, these are ‘islands’ based on each practice, although permissions can be given to view subsets of records through new cloud based access solutions. Electronic data sharing within and between Practices is minimal, and also very limited in terms of GP Practices and hospitals – except for electronic booking of referrals, electronic discharge summaries and results reporting.

A third ‘island’ exists, which is the Local Authority NCC. NCC is charged with managing social services care provision. Yet the main professionals (social workers and care providers) are not allowed electronic access to patient information held by medical staff in either hospitals or GP practices. Local authority staff are not NHS employees and different information governance arrangements and legal restrictions apply to their use and sharing of information. Citizens’ rights to secure and confidential information are seen as major hurdles to enabling effective information sharing between professionals engaged in either health or social care services.

Viewing integration of health and social care services from a systems and technical perspective demonstrates that the BC and IRP project will be extremely challenging and complex. Technical interoperability is still a fundamental issue, but there are even more fundamental problems associated with merging work processes and operations based on principles of partnership working and multidisciplinary teams. This is when the core professional staff are unable to legitimately share important patient or client information electronically between them. They must still rely on verbal information sharing and printed or scanned copies of relevant extracts of notes. This becomes even more complex when health and care professionals are visiting patients at home or in the community. Mobile working solutions have not yet been adopted. Hand written notes and forms are still regarded as normal practice. These must then be transposed back into the relevant systems when workers return to base. Patients (the Citizen) retain hand written forms and records in their own homes – and these can be consulted by care staff or family when required. At the moment patients do not have electronic access to their own medical notes – although this may be possible in the future.

From a strategic perspective, the joint commissioning and procurement of complex mixed economies of health and social care provision will depend on the quality of information gathered for reporting and decision making purposes. This information is currently acquired through a set of complex reporting arrangements, both locally at the level of the CCGs and also the Local Authority, but also from national reporting requirements to the Department of Health. Integrated services and working arrangements will make these requirements even more vital. The lack of current integration presents a large obstacle to timely and accurate collection even with large professional data and information analytics organizations supporting operations such as Commissioning Support Units. The evidence base to demonstrate that the new integrated health and social care strategies are working depends on the quality of information – and hence the successful integration at a systems and technical level. The systems view is represented in Figure 4, and illustrates the complex nature of interactions that must be considered if the vision of an integrated health and social care ecosystem is to be realized.
Finally, from an organizational perspective, a detailed social/historical and cultural analysis will be needed to fully appreciate how different professions can effectively work in partnership. If this is not addressed there will be unmanageable political and power challenges which will prevent full integration success. Traditionally, the NHS has been viewed as a complex system run by professional bureaucrats and the medical professions. It is always a political tool for each political party as it is a sacred and protected component of British culture and values. Medical practitioners, governed by the Royal Colleges, have always exercised great professional autonomy and freedom. This will not easily be relinquished in terms of more equal working with local authorities and other (non NHS) professional groups. The local authorities and social work do not have equal professional status or power to effect changes, and do not have such significant budgets. Social workers are also seen as the ‘Gatekeepers’ to care service resources and associated with payment for services, whereas healthcare professionals within the NHS are seen as delivering ‘free at the point of access’ medical services on demand. Patient loyalty is therefore disproportionately in favour of doctors and nurses as opposed to social workers. Therefore, the main bulk of IT investment has gone into clinical medical systems at hospital and GP levels. Relatively little investment has gone into social work and community based care support systems. A significant management of change project lies ahead in order to connect health and social care systems for the common good of patients and citizens. The professional and organizational boundaries must be fully appreciated and navigated if this is to be feasible.

**Conclusions**

This is the first study of its kind on the Better Care strategy which is being rapidly rolled out across England. Important insights are already being gained in the first phases of an action research cycle, Figure 2, concerning the problems, issues and challenges for joint working between health and social care. A particular focus relates to the complex nature of professional groups working across traditional health and social care organizations, Figure 3. This also highlights the detailed nature of joint strategic commissioning of health and social care and the need for interoperability and integration of information systems to supply relevant data and information in both a routine and bespoke manner. Information governance, in the context of traditional professional autonomy, cultures and organizational structures
within the NHS and also Local Authorities is being seen as a significant challenge and barrier to effective data sharing. Stakeholders interviewed in this project to date are pro-active and positive about the need for transformational change and new working practices enabled by innovative new technologies such as telehealth, telecare, collaborative portals and business intelligence solutions. Findings to date, indicate that such developments are still in their infancy with best practice still to be identified. Further phases of this project will aim to develop and utilise a more health services contextualised action research model (Kohli and Kettinger (2004) to co-produce new pilot projects for integrative working; a particular aim being to improve care of the elderly and citizens with long term chronic conditions. The first cycle of action research is nearing completion culminating in a workshop with 30 senior Health and Social Care decision makers/managers based across the major organisations involved in the planning and delivery of health and social care services within the Newcastle Region. The aim of this first cycle and phase is to develop, co-produce and agree an action plan and strategy for integrated working across traditional health and social care organizational boundaries. Integral within this, is the role of new technology and its potential to act as a catalyst and enabler for change. This will parallel the roll out of an extensive broadband infrastructure to 30,000 homes by the main provider of Social Housing, combined with the adoption of mobile applications for use both by service workers and service users. Further cycles of action research will then involve a more detailed study of the strategy implementation process focusing on new patterns of integrated working amongst multidisciplinary teams of health and social care professionals using integrated technology platforms, mobile applications and information systems.

References


