

ARTICLE

Clinical care in the home and population health management: improving the care of patients with long-term health conditions

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Abstract

Clinical care in the home, utilized, administered and evaluated in terms of its clinical and economic outcomes within a population health management system, can help patients with long term conditions (LTCs) live healthier lives while reducing the costs of care across the system. This model, through the avoidance of emergency hospital admissions, reducing the need for hospitalisation to treat progressive illnesses and activating and empowering patients, supporting good primary care, ensuring continuity of care and providing on-going emotional, psychological and practical support, can greatly increase the overall significance and efficiency of clinical care in the home, delivered as part of a population health management delivery system. This article argues strongly for the innate superiority of home-based care approaches within the modern era, actively recommending such approaches for the good of individual patients and an integrity of the general clinical system. We present hard evidence for the durability of our approach in both clinical and economic terms and advance to the reader the merits thereof.

Keywords

Chronic conditions, clinical homecare, economic benefits, person-centered healthcare, population health

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Accepted for publication: 8 December 2016

Introduction

In September 2016, data were published showing how the National Health Service (NHS) in England could save money, carry out more elective surgery and manage more emergency admissions by adopting a model of care that is clinically safe and effective and that patients value greatly. The Report *There's no place like home* [1] showcased the value of clinical care in the home through analysis of the outcomes of virtual wards used by four English acute NHS Trusts. The individual NHS Trusts saved £490 per inpatient episode, so that, at a national level, the data suggested a potential £120 million could be saved using virtual wards and a 500,000 bed day capacity gained each year. The money saved and the capacity gain could, in theory, be employed in a variety of other ways to benefit the local health economy.

The data to which we refer demonstrate, for the first time and at scale, how clinical care in the home appropriately shifts care from the more expensive acute setting into a less expensive *locus* without compromising care, simultaneously releasing capacity and creating savings. These headline data are exciting for the UK NHS

and, in accordance with the key point made elsewhere in the Report, for patients, given that being cared for in their homes is very much their preferred option.

The current article will argue that, for far too long, the use of clinical care in the home has been underutilised. Attempts to improve the UK NHS usually focus on one discrete part of the system and explore how that part can be improved, made more efficient and delivered at less expense. Rarely, if ever, do structural and economic reforms take into account the whole journey patients travel through the health service and work to improve the entire experience. We will focus on patients and their illness, discussing what the actual causes of problems in acute sector performance and productivity are, rather than providing a simple consideration of the resulting symptoms only. By examining the broader system in which hospitals operate, we will argue that the use of clinical care in the home should be expanded and delivered within a population health management framework, in order to deliver not simply a basic patient-focussed care, but one which is demonstrably *person-centered* and which therefore improves health and wellbeing while also affording indispensable system and economic efficiency.

Population health management and LTCs

We define population health management as an approach to managing health and wellbeing that incorporates total care costs and outcomes, while providing insight and improvement opportunities for both populations and individual citizens. We believe it is suited to the management of patients living with long-term health conditions (LTCs) and would facilitate an expansion of person-centered care for these individuals that in turn would improve the health status of individuals and, by clear extension, populations. For many people living with LTCs, the clinical care they require on a regular basis can be delivered in their own homes. An expansion of clinical homecare is also a springboard from which to better integrate the multiple services that patients with LTCs need, but which within the English system have remained stubbornly siloed.

More than a third of people in England, approximately 20 million, live with at least one long-term condition [2]. LTCs are more prevalent in those aged over 60 and in groups with higher levels of deprivation [3]. This section of the population accounts for 70% of health and social care spend, more than 70% of inpatient bed days, 65% of outpatient appointments and 50% of all general practice appointments [3]. These statistics, however, are not the total picture of a person living with an LTC and fail to reflect the impact such health problems have on individuals, their families and wider Society, or the variation of impact of LTCs based on people's individual circumstances, their care needs, their capability to self-manage their conditions, their lifestyle and personal goals [4]. How these multiple factors combine in any one person creates that person's individual care profile. In population health management programmes, multiple care profiles can be grouped together, segmented and care targetted to different segments.

Dealing with the problem extant

The managers and clinicians within the UK NHS are well aware of the challenge of caring for patients with LTCs [5]. The NHS claims its services should support people living with LTCs to be as independent and healthy as possible, preventing complications and the need for admission into hospital [6]. If these patients do need to be treated in hospital, then services must work in partnership to ensure people are supported to leave hospital and recover within the community setting [5].

In the Report *Five Year Forward View*, the authors, from a range of national level health-focused organisations, note that managing LTCs is a 'central task' of the NHS that requires a partnership between patients over the longer term, rather than a sequence of single, unconnected "episodes" of care [5]. These aims are entirely laudable in theory, but for many people support

and joined up care simply do not materialise in practice. The latest statistics show the highest levels of delayed discharge from English hospitals ever recorded, with 59.1% of all delays in July 2016 attributable to the NHS and 33.1% attributable to social care, with this latter proportion having increased over the preceding year from 30.4% [7]. These statistics suggest that partnerships must extend beyond patient and clinician; healthcare professionals and providers must also extend partnership working beyond their own services and recognise that the demarcation between primary, secondary and community care and between health and social care creates barriers that undermine the person-centered care that could otherwise be given to patients [4].

The problem of 'lack of integration'

A lack of integration between the various services that a person with LTCs needs is mirrored in the lack of joined up data, which undermines efforts to improve care. Attempts at the national level to integrate data have not been successful [8,9], often floundering around safeguarding and appropriate data sharing. Locally, integration has been undermined because of variations in digital maturity within a locality; for example, the quality of community services' datasets is questionable and the information technology infrastructure is not as far advanced as either the primary or acute sectors [10]. Governance structures across organisations and leadership across a health economy are necessary for integrated care, but are often lacking.

Other aspects that impact on the acute sector include the stability of the NHS workforce and skills shortages. Issues around the balance between staffing and funding are unlikely to be resolved soon against a backdrop of constrained funding and a focus on short-term financial planning. The implications of the UK's exit from the European Union are uncertain and current workforce solutions tend to be short-termist, adding to workforce instability. Limits on the use of agency staff have been unsuccessful, with the majority of NHS Trusts exceeding the cap on a regular basis, suggesting that merely limiting the amount Trusts are allowed to pay agency staff does not address issues around staff shortages and certainly does not achieve cost savings [11]. Additionally, NHS staff productivity is low and is unlikely to improve without changes to better support existing and new staff [12].

The lack of home care services

The lack of home care services - as opposed to clinical homecare - and care home capacity, exerts considerable pressure on acute hospitals. The Care Quality Commission reported in October 2016 that the number of care homes in England had fallen by 8% since 2010 and providers were exiting the sector [13]. This represents a loss of 19,490 care home places. Without this capacity in the Community, many elderly patients are not able to leave hospital,

reducing capacity in the acute sector, which has seen the number of beds available halve since the 80s [14].

The trend to fewer hospital beds is international and reflects medical advances and a move to care closer to home and the beds that remain in the NHS are used far more intensively. Occupancy rates for acute hospital beds have increased to 89.5% in 2014/15 from 87.7% in 2010/11; hospitals that operate at such high occupancy levels risk regular bed shortages, periodic bed crises and increased numbers of healthcare-acquired infections [14].

Finally, a significant factor impacting acute hospitals is the changing nature of the patients cared for in them: patients are older, frailer and have more complex conditions than in previous decades [15]. This shift to older, frailer patients in acute hospitals, changes the way a hospital delivers care and the skills mix needed within the hospital to deliver high quality care that ensures patients can be safely treated and discharged. If the English NHS is to properly care for patients with LTCs, including the rising proportion of frail elderly patients, it must rethink how care is provided, where it is best provided and with whom it needs to work to deliver care that supports this ever increasing group of patients so that they are able to live productive and healthy lives and do not overwhelm the health system.

Clinical care in the home

The Report *There's no place like home* [1] analysed data from more than 9,000 patients who had been treated on a virtual ward, a form of clinical care in the home, between October 2012 and May 2016. The outcomes for these patients were compared to case mix adjusted records of more than 4.2 million patients who had received all of their care in NHS hospitals.

The analysis showed that use of the virtual ward reduced the time spent in a hospital bed and also the time patients were under hospital care, be that actually in hospital or on the virtual ward. Using unplanned re-admissions as a proxy for quality of care, the data showed no difference between the two groups. A useful definition of clinical care in the home is shown in Box 1.

Box 1 Clinical care in the home: a definition

Integrated care, treatment and support that take place in a person's home or place of residence. Clinical care in the home can directly reduce the need for or prevent an overnight or inpatient stay in hospital or a day case or outpatient visit. This can include patients with more severe conditions and those with long-term conditions. Normally, the hospital or NHS provider retains responsibility for patient care.

As beneficial as virtual wards appear to be for the system in *There's no place like home* and their popularity with patients [16], the use of clinical care in the home in England is still a piecemeal affair. Some health economies have explored patient-centered clinical care in the home programmes across a population [17], but it is more usual

for individual NHS Trusts to either develop their own provision or contract with private providers to deliver services. These services tend to care for relatively small numbers of patients. Individual trusts report cost savings and improved patient outcomes flowing from these services [1] and the service is well received by patients [16,18]. But its potential across health economies is underrecognised and what clinical care in the home could achieve when scaled up to benefit an entire health economy should be explored as a way of improving the health and wellbeing of millions of people living with LTCs. The principal findings of *There's no place like home* are set out in Box 2.

Box 2 Principal findings of *There's no place like home*

Virtual wards: shorter stays, greater hospital productivity and same outcomes for patients.

The findings from the report *There's no place like home* [1] showed that across the four trusts:

- 5,164 bed days were potentially saved as patients spent less time under hospital care
- An estimated 62,040 inpatient bed days were released, representing a mean saving of £490 per inpatient spell to the hospital providers, equating at a conservative estimate to cost savings of about £1.1 million a per year to the four trusts.

Scaled to all acute trusts in the English NHS this translates to:

- 500,000 fewer inpatient bed days per year

Savings of more than £120 million

Marrying population health management with clinical care in the home to deliver person-centered care

Person-centered care for people with LTCs should support self-management and 'activate' patients so that they are enabled to manage their health successfully, which is probabilistically determined to lead to better health outcomes and care experiences [4]. To offer this kind of service for the direct benefit of individual patients, care must be coordinated and organised to provide a tailored response for each person [4]. This will necessitate a shift towards integrated services and a better understanding of the needs generated by the possession of and acting upon a whole patient profile, rather than a focus on the condition (or conditions) patients live with in order to maximise the use of resources.

Population health management is an approach that could offer this change. It assesses the need of a population across all levels of care and stratifies patients into risk groups that need different types or approaches to care,

based on each group's needs [19]. It aims to keep a population as healthy as possible, reducing the need for expensive health interventions such as hospitalisations *via* emergency departments, complex hospital-based procedures and numerous tests [19]. Population health management should not only keep the populace healthy, but should also strive to lower the costs in the system by preventing people becoming ill while also improving their quality of life [19].

Population health management can address the personal needs of millions of patients, offering a better experience of care and greater autonomy, while controlling the cost of care, reducing risk, improving use of scarce resources and improving clinical and cost outcomes. Using clinical care in the home as a care model delivered *via* a population health management system is a way to introduce person-centered care across a complete health economy.

Technological and data needs to make population health management and clinical care in the home work

But the model of care suggested in this paper can only be delivered if data on patients are linked across all sectors, to enable the development of care profiles that would allow population profiling, stratification of needs and provide interdependent services. This needs appropriate technology as much as it needs cooperative, partnership working and a vision for the long-term future.

Organising populations into groups based on common types of need is a powerful way of improving productivity. The linking of datasets, particular within the setting of primary care with its rich data about comorbidities and secondary care data, where much of the cost in the health system resides, is a critical step. Risk stratification for a variety of either clinical safety or resource significant events is a valuable way to drive service development or different clinical behaviours. A linked dataset is likely to significantly improve the predictive value of any mathematical model. For example, the addition of social care data has improved the predictive value of the combined predictive tool in determining who is most at risk of acute hospital admission [20].

Using clinical care in the home as a model of care to deliver on population health management will be most effective in certain LTCs. The principal challenges are set out in Box 3.

Box 3 Principal challenges

- Decreased mobility and falls
- Urinary tract infections and complex bladder care
- COPD admissions
- Severe pain
- Palliative care
- Frail patients and those with complex multi-morbidity

Cutting-edge technology-based applications, robust business analytics and data management are needed to enable these insights to be useful for clinical care. The lesson from traditional stratification approaches is that it tells clinicians what they already know or where the information is delivered too late to act on. What is needed is for clinicians to understand the optimal time for interventions in the natural history of conditions and to ensure the maximum benefits in outcomes in the most sustainable way.

Professionals delivering care in the home will need to measure, assess progress and actively share information with other professionals *via* accessible and secure systems. Linked data that flow freely across networks will enable insights from pooled information, while ensuring the correct care of individuals. Individual patient records will need to expand data collected to social and behavioural data that, along with clinical and biological data, can provide preventive, diagnostic and therapeutic options for improving individual and population health [21]. Patients, also, must have access to data about themselves that they understand, so that they can take an active part in any care plan and become auditors of their own care.

The current concept of clinical care in the home rests on professionals visiting patients and how professionals can directly address the very human needs of patients and their families. However, remote monitoring, frequent touch points and feedback through text messaging and emails, together with virtual health services, including remote care bureaux and telemedicine units to triage patients in the community whose health may be breaking down, catching problems early, thus avoiding unnecessary admissions, are all part of clinical care in the home and will be key to scaling this care model within population health management systems. Of this, we are entirely convinced. Finally, the ability to analyse the growing body of data to identify quality, cost, outcome drivers and new trends, will enable a local health economy to understand which therapies produce certain results and which activities lead to patient activation. Improving data collection and access will be critical to this endeavour.

Conclusion

The opportunities for the kinds of insights we have discussed in this paper are significant and include; multi-level reporting, patient engagement and continuous quality improvement by tracking thousands of patients efficiently. Such systems will call for significantly improved granular, local and timely data linkage and analytic capabilities to gather, analyse and model predictive markers and determine appropriate resource allocation. People with LTCs use a significant proportion of healthcare services and their care absorbs 70% of hospital and primary care budgets in England [3].

Clinical care in the home, used within a population health management system, can help this group of patients live healthier lives while reducing the costs of care across the system. Clinical care in the home, through the

avoidance of emergency hospital admissions, reducing the need for hospitalisation to treat progressive illnesses, activating and empowering patients, supporting good primary care, ensuring continuity of care and providing ongoing emotional, psychological and practical support and delivered as part of a population health management delivery system, can offer benefits to individuals, the community and the health service.

Acknowledgements and Conflicts of Interest

The authors thank Dr Maya Anaokar for her input, comments and advice. The authors declare no conflicts of interest.

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