

Cost of integrated care

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It is now over ten years since Dennis Kodner noted that 'integrated care has become an international health care buzzword' (Kodner & Spreeuwenberg, 2002). In the UK that buzz is as loud as ever, with talk of integration featuring at all levels of the health and care system. A high-profile recent manifestation is the 'Pioneer programme' where 14 sites have been selected and are 'leading the way for health and care reform' (Department of Health, 2013). Expectations for these projects are high, as Norman Lamb the Health and Care minister noted: 'We have heard people talk about integration before, but it has never truly taken hold across the NHS. These pioneers are a starting gun for the NHS and social care to achieve a common goal – to get local health and care services working together, not separately, in the interests of the people that they all serve.'

One of the challenges in talking about integrated care is the range of different things that can fall under the heading. As Nick Goodwin observed, at its heart is a very simple idea 'combining parts so that they work to form a whole', but the process for doing that can take many forms (Goodwin, 2013). These approaches can be categorised in many different ways according to a range of possible attributes: for example, either vertical or horizontal, professional, organisation, virtual, cultural etc. (Shaw et al., 2011). This complexity makes both design and evaluation difficult. Moreover, making judgements about the success or otherwise of integrated care initiatives is also sensitive to wider contextual factors.

An understanding of the costs of integrated care is important for those involved in planning or implementing integrated care initiatives, as well as from a research perspective. In times of financial constraint, difficult choices have to be made about disinvestments if there is to be investment in setting up or re-configuring new services. Good information about likely costs now and in the future is therefore important. Yet because information is not always very clear or reliable, it makes it difficult to estimate potential implications of improved integration.

A review of integrated working between health and social care described the evidence base as 'less than compelling. It largely consists of small-scale evaluations of local initiatives which are often of poor quality and poorly reported. No evaluation studied for the purpose of this briefing included an analysis of cost-effectiveness' (Cameron et al., 2012). Mason & colleagues (2014) recently published their systematic review of schemes involving financial integration that reported an impact on secondary care use. Of the 38 schemes reviewed, for half (19) the impacts were mixed or unclear (Mason et al., 2014).

Nolte & Pitchforth (2014) commented that 'evidence that is available points to a positive impact of integrated care programmes on the quality of patient care and improved health or patient satisfaction outcomes. However, uncertainty remains about the relative effectiveness of different approaches and their impacts on costs'. Despite the lack of evidence, it is still the case that cost savings are often cited as a benefit of integration.

One of the implications of integration is that services are delivered in ways that are different from traditional organisation. Yet the financial systems to support care are often rooted in a specific organisation – so, by definition, studies to look at cost impacts have to span care sectors. The costs can be considered under two headings. First, the direct costs of the integrated service model itself. Second, the impact of integration on subsequent services use and costs – usually in the form of reduced hospitalisation though there are some descriptions of wider service use..

The following sections describe some examples under both headings.

Approaches to estimating the direct costs for integrated care

If integrated care is seen as a distinct intervention, and one additional to existing activities, then the process of direct costing is reasonably straightforward. Staff consumables and capital can be directly attributed to the new service model. Yet the division between new and old care models is rarely clear-cut and often the new model is phased in. This makes it difficult to determine the associated costs. Nevertheless, there are two studies that have sought to estimate the direct costs of some different models of integration.

Example (1) Virtual wards

One approach to integrating care services is called 'the virtual ward'. This model uses the staffing, systems and daily routines of a hospital ward to deliver preventive care to patients in their own homes, the aim being to reduce the risk of unplanned hospitalisation. While virtual wards have been introduced in many parts of the UK and overseas, their efficacy and cost-effectiveness have yet to be determined. One study of three different models of virtual wards (Lewis et al., 2013) attempted some crude costing of the interventions themselves. Costs were calculated on the basis of estimates of the

proportion of nursing and clerical staff time dedicated to running the virtual ward and the actual expenditure on ancillary items such as travel, stationery and rent.

Table 1 An example of costs associated with one model of a virtual ward

Direct cost of virtual ward	Average cost per annum	% of total costs
Nursing	£488,087	79.4%
Clerical and admin	£103,960	16.9%
Travel and communication	£9,593	1.6%
Consumables and other	£12,894	2.1%
TOTAL	£614,534	
Cost per day	£1,683.66	
Cost per patient day	£3.26	

Adapted from Lewis et al. (2013)

Generalising from this study is difficult because other models of virtual wards can have very different costs structures. This study found marked differences between the three sites in terms of their resource inputs. In particular, the unit costs were strongly influenced by differences in:

- Level of staffing
- Types of staff used, especially GP versus nursing roles
- Breadth of responsibilities for virtual ward staff
- Length of stay on the virtual ward

To facilitate generalisation, the authors generated a range of potential costs (see Table 2) to guide calculations.

Table 2 Typical direct costs of different configurations of virtual wards

	Configuration	Cost of delivery
Low-cost scenario	Nurse-led, high volume service with a mean length of stay of 180 days	£3 per patient day £510 per patient over six months
High-cost scenario	GP-led service with lower volumes of patients and a mean length of stay of 180 days	£17 per patient day £2,890 per patient over six months

Example 2. A national integrated care pilot

The study of national ICO (Integrated Care Organisation) pilots (RAND, 2012) looked at many different aspects of integrated care including the costs of 16 different initiatives. The researchers asked the organisations to report their own costs under six headings and to distinguish between the initial set-up costs and the subsequent running costs.

Figure 1 summarises the cost from one site which sought to integrate local health and social care teams comprising GPs, community health staff and adult social care staff. This site introduced six 'sub-pilots' spread across a large county. Each integrated team included elements of predictive risk assessment to target patient groups, common assessment processes, and a 'key worker' or case manager as a primary contact point.

Figure 1 Reported costs breakdown for one of the national integrated care pilots (adapted from Department of Health, 2012)

Running costs (non-labour, 12 months)			Estimate of total added cost for 12 months	
Value of good/services carried over		Other		(Set up plus 12 months operation)
£2,368	Meeting room rental for core groups (4 meetings per year, for multiple groups)	£12,798	Staff travel £500 Training £66.50 (Site notes this is a low figure in the first year due to staff taking advantage of courses offered for free, e.g. Health Intelligence for Commission, Excel). Marketing and communications £500 (including stationery/usage of 'Integrating care in Norfolk' logo)	£278,967

Set-up costs (prior to first 12 months of operation)				Running costs (labour, 12 months)			
Labour		Non-labour		New staff		Existing staff	
£0	None reported due to difficulty in separating set-up and implementing periods	£88,787	Meeting room. Room giving in-kind, but value included in costing.	£125,863	Programme director (part-time) Senior project manager Project manager Project officer (part-time)	£51,520	All previously existing staff time devoted to ICP noted to replace previous work by 100% so it is not included in calculations. This number provided represents backfill payments to GPs for attending core group meetings.

RAND, 2012

Understanding resource use in integrated care settings

Some of the most important perceived benefits of integration lie in the promise of improved pathways of care. Often the benefits are presented in terms that suggest integration seeks to:

- reduce the effort that people have to make in finding their way round the health and social care system;
- reduce wasteful duplication;
- provide services in a different location, for example community based;
- invest in preventive or anticipatory care to reduce the need for more expensive treatment.

This means that an important element of the costs is related to wider service use of patients within integrated care programmes. This can be challenging to unravel as it requires activity and cost information across sectors – and often on a population basis.

One way to overcome the organisational problem is through exploiting person-level information systems and using secure data linkage – basically looking at records for the same person drawn from different sectors of care (Roos et al., 2008). This offers huge potential for looking at the impacts of new forms of care – especially those that include a degree of integration. Data linkage allows records to be joined over time to see what happens to patients both before and after care – essential for risk stratification and assessment of outcomes (Dixon & Bardsley, 2012). An increasing number of studies have shown it is possible to abide by stringent information governance requirements and to link data sets across NHS, social care, and primary and community care.

In the absence of data about care delivery across settings, some studies of integrated care focus solely on secondary care use, particularly changes in admission rates (Mason et al., 2014). In England, hospital activity is captured in a common dataset: Hospital Episode Statistics (HES) record information about A&E attendances, outpatient and inpatient activity in ways that allow records for each person to be linked over time. This activity can be costed (or more accurately, activity can be cost-weighted) using either national reference costs or variants of national tariffs. This makes it fairly easy to understand the commissioning costs (i.e. prices) associated with individual patients over a defined period of time. Moreover, as the vast majority of hospital care is funded by the NHS, the system can pick almost all these care inputs wherever a person is treated.

The national evaluation of ICO pilots described earlier used this approach to look at hospital use and costs before and after the start of the integration programmes. Table 3 summarises the findings for subsets of these programmes that involved case management. Activity in the integrated care sites is compared to a matched control population identified using HES data from other parts of the country. The results suggested that, at least in the short term, though the case management sites had slightly lower hospital costs linked with elective and outpatient activity, non-elective admissions were slightly higher. This was contrary to expectations that the schemes would reduce non-elective activity.

Table 3 Summary of hospital costs for a subset of national integrated care pilots involving case management (from RAND, 2012)

Measure	Cases		Controls		Difference n differences estimate	p-value
	Pre	Post	Pre	Post		
All admissions	£3,001	£2,037	£2,317	£1,510	-157.20	0.06
Elective admissions	£1,046	£499	£743	£525	-328.98	<0.0001
Non-elective admissions	£1,956	£1,538	£1,575	£985	171.78	0.01
Outpatient attendances	£326	£223	£289	£252	-65.58	<0.0001

The virtual ward study used a similar approach but was more ambitious in linking utilisation data from social care, general practice activity and some community care inputs. These data were available at person level, and the activity was costed using PSSRU unit costs.

Table 4 Individual service use costs on the six months before and after starting the intervention (n=989)

	% with a cost (pre or post)	Average cost per person pre (£)	% Total (pre)	Average cost per person post (£)	% total cost Posts
GP	92%	501	8.0%	538	9.0%
Community	62%	401	6.4%	837	14.0%
A&E	60%	136	2.2%	100	1.7%
Elective	26%	757	12.0%	504	8.4%
Emergency	55%	2,433	38.8%	1,867	31.1%
Out patients	78%	561	8.9%	437	7.3%
Social care	32%	1,489	23.7%	1,714	28.6%
Total		6,279	100.0%	5,996	100.0%

A similar approach has been adopted in South Somerset, where details of health and social care utilisation and costs for the local population have been combined into a single patient-level dataset (Kasteridis et al., 2014). The dataset links the utilisation of acute, primary care, community, mental health and social care data together. Costs are assigned according to the type of care received in each setting, and reflect the local prices that commissioners have to pay for each service. Demographic characteristics are available, including age, gender, socio-economic measures, and indicators of morbidity. The data have made it possible to calculate and analyse the annual costs involved in caring for people with particular conditions, according to the different health and social care settings in which they receive care. A video explaining how these data have been used is available here: <http://www.youtube.com/watch?v=Cr7aevRGBqM>.

The data were used to identify which group of patients should be the initial focus of improved integrated care arrangements, and the dataset has made it relatively straightforward to calculate the capitated commissioning budget for this group.

Implications

As the policy interest in integrated care grows, so does the need to establish methods to understand the costs and benefits of these 'new' ways of organising services. Although there are many strong advocates of integration, the supporting evidence base remains poor. Part of the problem lies in the sheer heterogeneity of things that fall under the heading of integration. It also has to be admitted that many of the evaluations are partial or cover a limited time period (Bardsley et al., 2013). There continues to be an important research agenda to understand the impacts of these schemes and their generalisability.

Yet the challenges of costing integrated care illustrate an important area where our information systems, both those recording activity and finances, can be developed and improved. Through population data linkage methods, subject to the necessary data security arrangements, it is possible to develop more sophisticated ways of looking at costs, not just for specific treatments or interventions but for individuals over time.

For those organisations developing integrated care models, a better understanding of activity across sectors is proving to be a challenging but recurring theme. There is a sense that the return on investing in integrated care will be realised through emergency admissions or less costly social care packages. Yet our information systems are not very well established to look at such impacts, and it is difficult to determine whether savings in one sector are offset by costs in another (Forder, 2009). Using population-based and person-level datasets can help tackle these problems, but there remains much practical and research work needed to establish the costs and benefits of integrated care.

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