QORU | quality and outcomes of person-centred care policy research unit

A system-level evaluation of the Better Care Fund: Final Report

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Plain English Summary

The Better Care Fund (BCF) is a new policy concerning payment for care and services for people that use both NHS health services and local council social care. Social care includes care home and home help/care services. The BCF is intended to help the NHS and social care work more closely together, by creating a shared budget and a joint planning process for services that help people to leave hospital in a timely way, and to prevent people going into hospital in the first place when it could be avoided.

The Policy Research Unit on Quality and Outcomes (QORU) was commissioned to study: how the BCF was being used across the country; what people on the ground thought about progress with setting up the BCF; and whether there is evidence that the BCF is reducing (a) the delays that some people experience in leaving hospital – called 'delayed transfers'; and (b) people going into hospital in an emergency – called 'emergency admissions'.

The BCF started in April 2015 across England. In its first year there was £5.34 billion in the BCF, which was used to pay of a wide range of local activities and services (over 4000 identified). We found that a third of the money was used for services that help people to move between hospital and social care or help them avoid an emergency admission (called 'intermediate care'). A quarter of the money was used so that social care services could continue to be available for people leaving hospital. The remaining money was used in different ways; some was spent to help people better live with their health condition and prevent the need for more services.

The BCF is a complex and wide-ranging policy and inevitably some areas got further than others in putting plans into action locally. People participating in the study said the BCF had prompted them to go further in working with partners, to put in new services or to expand existing arrangements. They also identified what had helped – e.g. good prior working relationships – and what had hindered– e.g. money pressures and juggling other government policies to improve joint working.

To see how well the BCF worked, we looked at the amount spent in the BCF against the number of delayed transfers, and against emergency admissions. We found that the areas that spent more BCF money per person had fewer delays than areas with low spending; but, no difference was found for emergency admissions. Statistical methods were used. Since estimates are subject to 'error', statisticians report results with different levels of confidence that those results indicate 'true' effects. We tried different types of statistical analysis to compare the results. In the main, we can conclude that the BCF reduced delayed transfers with the usual (statistical) confidence, although for some results this conclusion would come at a slightly lower confidence level. We cannot give an exact figure for the size of the effect, but instead a range of likely estimates, the centre of which is that the BCF reduced delays by around either 7% or 9% (depending on how it was measured).

Looking in more detail, we found that intermediate care and prevention were more effective than other ways to use the BCF in reducing delayed transfers *due to the NHS*. But BCF expenditure on social care was more effective at reducing delays that were recorded as being due to social care.

The BCF is not a straightforward policy to study and inevitably our results come with 'health warnings'. But we can draw tentative conclusions: whilst we found no evidence that the BCF improved emergency hospital admissions rates, it did appear that it helped with people leaving hospital into social care in a more timely way.

Executive summary

Introduction

1. The Better Care Fund (BCF) was introduced as a new approach to the national funding of care and services for people that use both NHS health care and local authority (LA) social care.
2. The Policy Research Unit on Quality and Outcomes (QORU) was commissioned to carry out a system level evaluation of the BCF, starting in 2016.
3. The main aims of the study were to, first, describe how Health and Wellbeing Board sites were planning to configure and spend their BCF; second to assess the views of people on the ground about the progress of implementation and expected impact of the BCF; and third, to examine the effect of the BCF on two types of outcomes: delayed transfers of care (DTOCs) and non-elective emergency admissions.
4. Our focus was on the BCF as a policy programme in this analysis. The BCF is a planning and funding mechanism to promote and facilitate joint working between health and social care sectors. It was envisioned that localities would deploy a whole range of specific initiatives and activities that would be funded by the BCF. For example, activities such as intermediate care (reablement and rehabilitation, admission avoidance, rapid response, etc.), coordination (e.g. joint planning, risk assessment and commissioning), improved access to services and re-engineered care pathways, additional services focused on (secondary) prevention (of hospital admission) and supported hospital discharge.
5. Our intention was to evaluate the overall BCF policy. All areas have implemented the BCF, but they differ: in scale – amount of BCF-supported expenditure per person – and in what kinds of activity the BCF funded. We assessed the impact of the BCF by looking at whether areas with more activity overall - i.e. greater BCF supported expenditure per person – produced better outcomes than areas with less BCF activity. If the data supported this hypothesis – that greater BCF supported expenditure per person was associated with better outcomes – then we can infer the BCF had an effect overall (on that outcome).
6. We also sought to refine this analysis by considering the effects of BCF spending on different kinds of activity.

Study design and methodology

7. Three work packages were included in the evaluation.

Work package 1: Typology analysis

8. We classified the BCF plans of each local health and wellbeing board site using a standardised framework that we developed for the purpose. Key primary activities supported by the BCF included intermediate care, prevention, coordination and care planning, access, care pathways, and protection of social care; and also some relevant characteristics (e.g. client group, infrastructure vs service, location etc.).

Work package 2: Process evaluation

9. The process evaluation involved in-depth, semi-structured interviews with organisational

representatives involved with the BCF. The interviews were conducted over 12-month between January 2017 and January 2018. A qualitative analysis of the interview data was undertaken.

Work package 3: Comparative evaluation

10. We constructed a dataset consisting of 16 quarter-years of data, with eight quarters of data prior to the implementation of BCF and eight after the implementation date. This included data on actual BCF expenditure from NHS England quarterly BCF progress reports. DTOC data were provided in these reports and this was supplemented with Department of Health and Social Care monthly DTOC data returns. Non-elective emergency/unplanned admission variables were created using NHS England quarterly data for emergency admissions by NHS Trusts.
11. We compared differences in outcome indicators between BCF sites against differences in the size of their BCF expenditure per person. Statistical methods were used to infer whether the BCF caused changes in outcomes.

Findings

12. The £5.34bn national (planned) expenditure for the BCF in 2015/16 was reported as comprising 4,216 BCF activities/schemes across England, corresponding to a mean spend of £1,267,000 per scheme. We were able to account for 86% of the BCF planned expenditure.
13. Around 30% of spend was on *intermediate care* and 25% on the *protection of social care*. *Integrated care* schemes and *coordinated care* were the next biggest expenditure items, following by expenditure on *prevention*-focused schemes. The majority of BCF schemes (81%) were not targeting a specific client group; they were focussing on services rather than infrastructure.
14. It was important to identify as far as possible how much of that activity was new – i.e. prompted by the BCF as a policy – and also whether and how far the mix of local planned activity was expected to have impact on key outcomes. Given the data available and the sheer scale and diversity of activity, this proved to be a challenging goal, and we could not comprehensively identify originality or scheme aim.
15. The extent and nature of progress with the implementation of the BCF programme across local sites was mixed. The majority of sites attempted to develop their existing joint services through the BCF programme, and felt that was achieved. Participants reported that the BCF had prompted sites to extend and build on what they were already doing in partnership. Some sites reported that the BCF provided the opportunity to be more innovative in their approach.
16. The process evaluation highlighted some common areas where the BCF had prompted relevant activity, including: helping to facilitate communication, joined-up working and collaboration between health and social care providers in some areas; and increasing opportunities to jointly commission services for some areas.
17. Collaborative working, such as using multi-disciplinary teams and introducing single assessment processes was perceived to improve the patient experience.
18. A number of challenges were reported by sites, including:
    - Financial pressures – managing the budget and negotiating spending could be a source of tension;

- Concurrent, overlapping policy initiatives with the 'overall aim' of increasing integration were sometimes viewed as in competition for local resources;
- National metrics were viewed as limited indicators with which to measure the overall impact of the BCF. They did not capture outcomes such as improved patient experience, working relationships and understanding across health and social care on the ground.

19. Sites identified a number of factors for successful implementation of the BCF programme. Some of these are familiar from the wider change management literature and previous policy evaluations, such as personal health budgets:
    - Strong local leadership, project management and governance;
    - Good interpersonal relationships and communication;
    - Engaging key stakeholders early on;
    - Having a supportive organisational culture;
    - Having resources and capacity for implementation.
20. As noted a wide range of local initiatives were supported by the BCF. This study set out to assess the overall effect of the BCF, not look at the effectiveness of individual schemes. Accordingly, we measured the BCF in terms of the sum of activity it supported locally – that is, the amount of total expenditure on schemes funded from the BCF per head of population in the locality.
21. We found that DTOC (delayed days) rates per head were negatively related to BCF expenditure per person (especially where that expenditure was recorded in the quarter before the effect on DTOCs). No such relationship was found for emergency admissions.
22. The BCF is a complex policy to evaluate and estimates of its effect come with statistical uncertainty (error margins), and entail making some statistical modelling assumptions (with reference to what would have happened in the absence of the BCF). We tried a number of approaches in our statistical analysis to see how sensitive the results were to the statistical assumptions we needed to make.
23. In statistics there is (always) a possibility that effects we observe are by chance rather than some actual underlying effect, and it is a question of deciding at what level of probability we are confident to draw conclusions – called the confidence level.
24. In the main, we can conclude that the BCF reduced delayed transfers with the usual (statistical) confidence (95%), although for some results this conclusion would come at a slightly lower confidence level (90%). We assess effects at these confidence levels in awareness of the distinct paucity of evidence in this area for policy makers to use. We were unable to conclude that the BCF affected emergency admissions.
25. The size of the effect of the BCF on DTOCs varied for a number of reasons. Importantly, we found that the relationship between BCF expenditure and reduced DTOCs, other things equal, showed a strongly diminishing effect i.e. the first pounds of expenditure from the BCF were more effective at reducing delays than spending the same additional amount on top of current spend. Accordingly, effect sizes depend on what we compare.
26. To begin with, we can consider the effect of making a small change to the current level of funding of the BCF. For a **1%** increase in BCF expenditure per capita (from the mean value of £145 per

capita 65+ per quarter), our central estimates indicate that this would result in a **0.073%** reduction in delays – this is called the incremental or marginal change. A larger change in BCF expenditure would not produce a proportional change in delays, but if it did – say a 100% change in BCF expenditure, this would be equivalent to a 7.3% reduction in delays.

27. An alternative is to consider the *total* effect of BCF expenditure, that is, comparing what is currently spent, in total, from what might have happened if there had been zero BCF expenditure.
28. Total effects are difficult to estimate because statistical models compare sites according to their current level of BCF expenditure, not the effects of small or zero levels of expenditure. Nonetheless, there is variation between sites, so some tentative estimates can be made, but noting these cautions. A good basis for estimating this total effect is to triangulate using estimated incremental changes for both high- and low- spending sites.
29. On this basis the total effect of BCF expenditure is centrally estimated to be a reduction of delayed days of **9.3%**. This is still likely to be an under-estimate, so a more pragmatic position would be to expect the actual total effect to be higher, e.g. over 10%.
30. Our results are based on statistical analyses and are therefore subject to statistical error i.e. the estimated effect might differ from the 'actual' effect. In particular, the analysis gives us a range of estimated effects that can be considered as being equally likely to be the true effect – called a *confidence interval*. Since it is easier to work with a single estimate, conventionally people use of the centre of this range, as above, but it is important to appreciate size of the confidence intervals that we found.
31. For the above results for a +1% increase in BCF expenditure per capita, this range (at the 90% confidence level) is -0.138% to -0.008% (where the point estimate is -0.073%).
32. Our work with sites, and also our analysis of the academic evidence base, suggested that some types of expenditure would be more or less effective than other BCF spending. It was not possible to assess the effects of individual schemes, but the classification analysis suggested that many schemes could be grouped into broader categories, and we could differentiate to some extent on this basis.
33. Our results suggest that intermediate care and prevention activities (as classified) are more effective than other forms of BCF funded activity (excluding protecting social care) at reducing delays that are *due to the NHS*. However, BCF expenditure on protecting social care activity was no more effective than other BCF spending at reducing these delays.
34. As regards delays *due to social care*, the contrasting result was found. Expenditure on protecting social care was more effective than other types of BCF funded activity (excluding intermediate care and prevention activities). At the same time, intermediate care and prevention activities were no more effective than other BCF spending at reducing these delays.
35. These results are in keeping with our hypotheses about BCF change mechanisms. They can guide policy decisions. For example, if the aim is to reduce delays that are the responsibility of local authorities, then the BCF should focus on protecting social care.
36. We did not find a statistically different level of effectiveness of BCF expenditure over time on delays. Central estimates were slightly greater (more reduction in delays) in year two of operation compared to year one, but there was insufficient data to determine whether this was a trend or

just a chance result. We did find that BCF expenditure made in previous quarters showed impact on current delays, a result that may indicate that implementation of this activity was in progress during this period.

Summary

37. The study was designed to investigate the system-level impact of the BCF, assessing the national policy framework as a means to facilitate closer working between health and social care systems. We found evidence of an effect on 'step-down' transitions out of hospital, as reflected by improvements in DTOC rates. No effect was found in this analysis on 'step up' transitions in terms of the avoidance of emergency hospital admissions.
38. The effects of the BCF on delayed transfers is indicative of improved integrated working between health and social care. The effects were measured as reduced DTOC rates but the benefits are likely to go beyond net cost savings. We might reasonably expect that the quality of life of people who leave hospital in a timely way is improved. Moreover, negative impacts, such as the creation of dependency for people cared for in hospital, are likely to be avoided. We lack the evidence (and data) to quantify these effects, but any comprehensive assessment of policies to improve integration would need to account for the full range of impacts.

1 Introduction

The Better Care Fund (BCF) 2015/16 was introduced as a new approach to the national funding of care and services for people that use both National Health Service (NHS) health care and local authority (LA) social care (long- term care). The integration of health and social care sectors has been a recurrent aim of government policy and the BCF was implemented as a means to promote and facilitate better integrated and joint working between the sectors.

In England, health and significant elements of long-term care are separately funded and organised, being the responsibility of the NHS and LAs respectively. Long-term care is a major part of a suite of services called *social care* in England. Social care covers personal care and practical support for adults with physical disabilities, learning disabilities, or physical or mental illness, as well as support for informal carers (National Audit Office, 2014). Local authorities are primary responsible for public funding of social care and use a common framework to determine eligibility for individual care packages of services, based on severity of need and the financial means of individuals. As a result of the financial eligibility criteria, a significant proportion of funding for social care comes from private sources, in addition to any care provided informally by family members and friends. Unlike social care, the NHS provides health care, free of charge to the patient at the point of use, which comes from general taxation. There are some exceptions such as charges for prescriptions, optical and dental services.

The BCF comprises: (a) a fund to be used to pay for services involving both health and social care, with money provided by the NHS and LAs with national conditions for access, (b) approved plans for how the Fund will be used, (c) funding made partially conditional on performance, and (d) a central support package available to help local sites. Many local BCF programmes involve a mix of initiatives designed to improve the joint working of the NHS and social care. Subsequently, the 2017-19 Integration and Better Care Fund Policy Framework covers two financial years with the aim of aligning with the NHS planning timetable and to provide an opportunity for areas to plan more strategically (Department of Health and the Department for Communities and Local Government, 2017).

The Better Care Fund (BCF) takes the form of a local, single pooled budget that aims 'to fund ways that the NHS and local government throughout England can work more closely together' (NHS England 2015). The total BCF was £5.3bn in its first year, 2015/16. The bulk of the Fund is provided by a formula based allocation to all Clinical Commissioning Groups (CCGs) of £3.46bn (with another £220m from the DFG and £134m Social Care Capital Grant) (for 2015/16), 'top sliced' from the national NHS allocation, to which CCGs and local authorities may add further sums. The latter 'top ups' amounted to £1.5bn in the first full year of the BCF (2015/16).

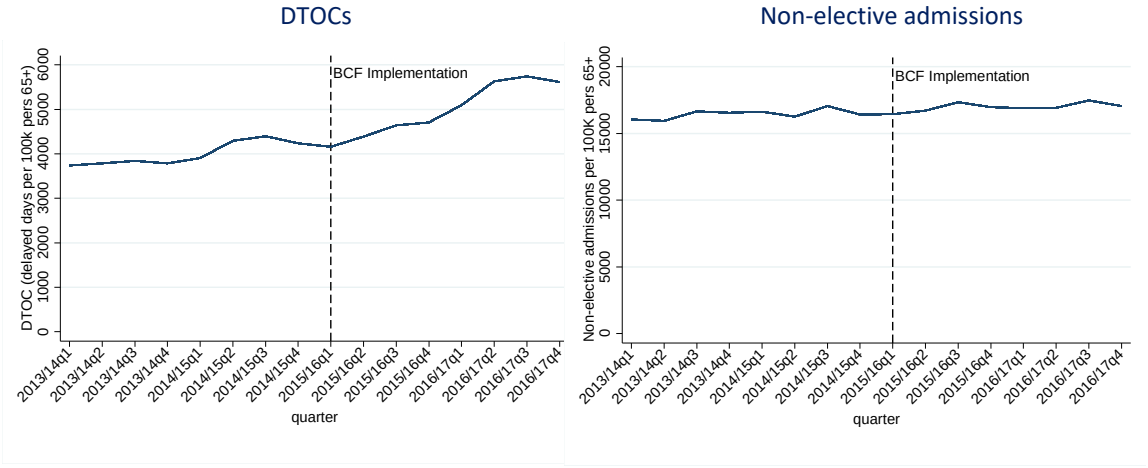
The Mandate to NHS England for 2017-18 required £3.582bn to be ring-fenced within its overall allocation to CCGs in 2017-18, increasing to £3.65bn for 2018-19 (Department of Health and the Department for Communities and Local Government, 2017).

The Integrated and Better Care Fund Policy Framework (2017-2019) highlights that as in 2015-16 and 2016-17, local areas are asked to report on four areas (Department of Health and the Department of Communities and Local Government, 2017):

- Delayed transfers of care;
- Non-elective admissions (General and Acute);
- Admissions to residential and care homes; and
- Effectiveness of reablement.

As regards the first two indicators, the rate of delayed transfers of care for people in hospital needing on-going long-term care has increased notably in recent years – see Figure 1. The chart also shows the trend in non-elective admissions to hospital.

Figure 1. Delayed transfers of care and non-elective admissions to hospital – recent trends



1.1 Aims and objectives

The Policy Research Unit on Quality and Outcomes (QORU) was commissioned to carry out a system level evaluation of the BCF, starting in 2016.

The overall aim of the study is to:

1. Determine the range of activities being funded by the BCF, including the scale of the various schemes covered by the Fund.
2. Assess the implementation and potential outcomes of the BCF based on the processes and mechanisms being put in place, given local circumstances. This assessment would include identifying enablers and inhibitors to implementation.
3. Estimate the impact of different levels and types of BCF expenditure on system-level outcome indicators.

Our focus is on the BCF as a policy programme in this analysis. The BCF is a planning and funding mechanism to promote and facilitate joint working between health and social care sectors. It was envisioned that localities would deploy a whole range of specific initiatives and activities that would be funded by the BCF.

We can consider the change process that might lead to impact: the BCF promotes and facilitates the implementation of various forms of activity that in turn should lead to better joint working between sites, and improved outcomes for patients and service users. The 'activity' could include a range of a specific schemes, for example, intermediate care (reablement and rehabilitation, admission avoidance, rapid response, etc.), coordination (e.g. joint planning, risk assessment and commissioning), improved access to services and re-engineered care pathways, and additional services focused on (secondary) prevention (of hospital admission) and supported hospital discharge. Multi-disciplinary teams (MDTs) might also deliver these activities. There are also a range of technology options that could be funded from the BCF (e.g. IT systems with sharing of health and care records).

Sites were encouraged to develop innovative plans in this respect. Our intention was to evaluate the overall BCF policy, not specific integration schemes or initiatives. Primarily, we focused on differences in the scale of the BCF as indicated by the level of expenditure made from the BCF. Nonetheless, we also sought to use the results of the classification analysis to take a further step. We cannot fully unpack the 'black box' of local BCF scheme configurations, but we can think about different types of BCF programmes. In particular, we used sub-group analysis for this purpose, identifying clusters of schemes into typologies and using those in the analysis.

Three work packages have been included in the evaluation.

Work package WP1 – the typology analysis – aims to: classify the main features of BCF programmes in terms of the integration schemes being put in place and the mechanisms and processes being implemented by the site to achieve local policy objectives.

Work package WP2 is the process evaluation. The aim is to improve our understanding of how the BCF policy works, how it was implemented, and its potential to improve outcomes. We aim to identify challenges that sites encountered in implementing the policy as well as strategies that were put in place to mitigate or overcome these.

Work package WP3 seeks to conduct a comparative systems analysis to better understand the (causal) association between different configurations of the BCF at the Health and Wellbeing board level and key progress indicators, specifically, delayed transfers of care and unplanned (emergency) admissions to hospital.

We also aim to give an account of the development of the BCF policy in this report. This analysis provides a basis for the development of the three work packages.

1.2 BCF funded activity

We discuss the evolution of the BCF policy in the Section 2 below. It is useful to reflect on the BCF as a mechanism to promote and facilitate the provision of a wide range of activities aimed at improved integrated working between health and social care organisations. Table 1 has some examples of the kinds of activity that the BCF was expected to support.

Table 1. Example of BCF supported schemes

Category of activity	Specific examples
Intermediate care (IC)	Services at the transition points between conventional service areas e.g. between hospital and social care, aimed at reducing inappropriate or avoidable referrals or delays in transitioning. Examples are step-up and step-down services (e.g. reablement, rapid response), short-term provision, various forms of secondary and tertiary prevention aimed at reducing referrals/transitions to more intensive service options.
Prevention, low level	Services that are generally provided in the community aimed at reducing people's underlying need for more intensive services (as opposed to IC, which is about managing need and transitions). This might include wellbeing (e.g. social isolation) services; self-care/management support; signposting; information and care navigators etc. It would also include public health and related programmes aimed at reducing risk factors etc.
Coordination, assessment, care planning	Services aimed at improving people's use of services and support, given their needs/conditions, and within care settings/stages of the care pathway. For example, services that better assess people's needs and support care planning (e.g. psychiatric liaison, case management); risk adjustment and case finding (e.g. PARR tools) etc.
Assistive technology and community equipment	Technology and equipment that helps with the management and monitoring of people's condition. This category includes telehealth, telecare, aids and adaptations.
Seven day working /access	Access to services outside of normal hours might also facilitate better partnership working.
Changes/implementing new care pathways	This activity covers schemes that are about changing or redesigning care pathways in terms of main service blocks, not just the introduction of intermediate care. It includes schemes that are about moving activity out of hospital or other institutions, e.g. hospital at home services, or where parts of the care pathway are displaced or replaced e.g. GP-based surgery rather than in-patient care, or where service had become multi-disciplinary (e.g. combining nursing and social work providers).
Core/General services, including protecting social care	The BCF was also a vehicle to protect or extend existing core services, mainly relating to protection of funding for mainstream social care services e.g. continued home care, day care, care home placements, but potentially also health services such as district nursing.
Implementing the Care Act (the new duties)	The 2014 Care Act required a range of new duties including care assessment of self-payers and carers if requested; access to new financing arrangements (deferred payments); provision of information and advice; market shaping duties and some changes to safeguarding responsibilities; and also new care eligibility and care planning arrangements. The BCF could be used to fund these activities.
Palliative care/end-of-life	We can also note the range of specific services that the BCF could fund. Palliative care/end-of-life services are a particular example.

1.3 Ethics

The National Research Ethics Service (NRES) Committee (reference 16/IEC08/0011) conferred a favourable ethical opinion for the study and subsequently obtained HRA Approval (Reference 200256). The study also received Research Governance/Research & Development management authorisation to commence the study in the relevant Local Authority and Clinical Commissioning Group for each participating BCF programme.

2 Development of BCF policy

2.1 Introduction

A number of policies have been implemented over the years to encourage and accommodate closer working between health and social care systems. An account of these previous policies is important in understanding the context in which the BCF was developed, and in which it currently operates. In particular, a number of key policies have been previously put in place to transfer funding across the health and local authority interface, and to develop governance arrangements to promote greater coordination. The initial financial transfer mechanism – known as Joint Finance – was introduced in 1976 to provide what the then Secretary of State called 'collaboration money'.[1] Its purpose was to incentivise local joint planning by earmarking NHS resources to provide time-limited funding for (primarily) local authority social services that supported NHS priorities and activities. Local authorities were expected to take up the long-term funding of joint finance projects as its payments tapered away over five to seven years. This pump-priming programme was subsequently complemented by powers enabling the NHS to make longer-term transfers to local government as part of the 1983 Care in the Community programme. The latter initiative was intended to support the cost of discharging patients from long-stay hospitals to community settings and, thus, the closure of beds and entire hospitals.

Some of these long–term funding arrangements, and their successors, were incorporated into later resource sharing programmes and remain in place today. Those measures stemmed from the 1998 green paper 'Partnership in Action'[2] and were enacted through Section 31 of the subsequent 1999 Health Act. This legislation aimed to introduce more 'flexibilities' into the legal frameworks governing joint commissioning, integrated service delivery and budget pooling. One indication of the effectiveness of these provisions was that by 2009/10, the NHS was funding £1.2bn of the £17.5bn gross ASC expenditure through formal agreements under Section 75 of the 2006 NHS Act.[3] [4]

By 2010, therefore, mechanisms had existed over more than three decades for the NHS to fund social care activities that supported its own goals and activities. When that year's spending review

[1] G Wistow (1987) "Joint Finance: Promoting a New Balance of Care in England?" *International Journal of Social Psychiatry*, Vol 33, No 2, pp 83-91

[2] Department of Health, 'Partnership in Action: new opportunities for joint working between health and social services; a discussion document'. Great Britain: Department of Health 1998.

[3] National Audit Office, 'Department of Health, Health Resource Allocation: Briefing for the House of Commons Health Committee'. London: National Audit Office 2010.

[4] Section 31 of the Health Act 1999 was replaced in identical terms by Section 75 of the National Health Service Act 2006.

(the Coalition government's first) announced a new programme under which NHS resources would be earmarked for transfer to social care, this national policy initiative by no means unprecedented in its conception and its local implementation was building on different local histories and experiences of pooling resources, especially to support NHS priorities. However, it represented a substantial increase in the scale of such transfers – almost a doubling of the £1.2bn spent jointly up to that point in time as a result of local discretion. Thus, the 2010 spending review required £800m to be transferred in the 2011/12 financial year rising to £1bn in 2014/15. In what follows, and in the light of this early policy background, we outline the more immediate origins of the BCF, the framework within which its implementation was to be conducted and the conditions with which payments were to comply.

2.2 The Beginnings of the BCF: NHS transfers to Local Government 2010

Although the BCF did not come into full operation until the financial year 2015/16, its origins are to be found in the Coalition Government's first Spending Review[5] of October 2010. This review began to implement Conservative manifesto commitments to protect growth in NHS spending while constraining public expenditure overall in order to reduce public borrowing. NHS growth was set at historically low levels,[6] which meant that the NHS would need to make efficiency gains of £15 - £20bn over the four-year review period to meet rising demand and improve quality. Real cuts were to be made in other areas of spending, including a reduction of 27% over the four years in the central government grant to councils. To the extent that these cuts were reflected in adult social care (ASC) budgets, the opportunities for cost improvements in the NHS through more integrated care systems would be at risk. If improved integration might help release efficiency savings, such benefits depended on investment in social care services:

> *'most examples we heard involved additional spend on the social care side to realise cost savings on the healthcare side...As Nigel Edwards of the NHS Confederation noted: 'the most cost-effective way, often, of preventing that admission and moving patients on are well-designed packages of social care'. This was supported by Sir David Nicholson, who told us 'at the end of the day, the people that social care are providing services to are the very people we have in our hospital beds' (Health Committee 2010 para. 40).*

Against this background, the 2010 Spending Review aimed both to mitigate the impact on adult social care (ASC) of overall local authority cuts and to build closer links across health and social care (HM Treasury 2010 p.2). Consequently, the Spending Review stated that it was 'making available sufficient resources for local authorities so that they do not need to reduce access to services, and can fund new approaches that improve outcomes for those receiving social care' (ibid. para.2.14). These resources were to be provided in two ways. First, the Department of Health (DH) grant to local authorities for social care would be increased by £1 billion pounds in real terms by 2014-15 (though it would be included in the general local government grant and, thus, could not be ring-fenced for ASC). Second, NHS funds growing to £1 billion in 2014-15 would be transferred to ASC 'to fund new

[5] HM Treasury, Spending Review 2010, Cm 7942, October 2010

[6] Rising to 1.3% in 2014/15 compared with an annual average of 3.9% over the previous four decades (Health Committee 2010 para.52).

ways of providing services, including reablement services provided by the NHS. This will help to break down the long-standing barriers between health and social care, leading to benefits across the health and social care system' (ibid.).

The Secretary of State for Health told the Health Committee (2010) that, in addition to support for reablement, the funds were to be spent on 'a much wider range of activity' which was 'fundamentally…(of) a preventative character' and would be transferred 'on the basis of an agreed plan'. Subsequently (in December 2012), Clinical Commissioning Groups (CCGs) were advised that they should ensure the use of transferred funds met the following conditions:[7]

- Funding must be used to support adult social care services that 'they also have a health benefit'.
- Each local authority must agree with its local health partners (the Health and Wellbeing Boards (HWB) being the 'natural' place) how the funding is best used within social care, and 'the outcomes expected from this investment as part of wider discussions on the use of total health and care resources'.
- Local authorities and Clinical Commissioning Groups 'should have regard to the Joint Strategic Needs Assessment for their local population, and existing commissioning plans for both health and social care'.
- Local authorities demonstrate how the funding transfer 'will make a positive difference to social care services, and outcomes for service users, compared to service plans in the absence of the funding transfer'.

2.3 The Birth of the BCF 2013

The BCF, itself, was a development of the transfer initiative and sought to reinforce some aspects of the former in the light of implementation experience. In addition, we recognise that the BCF has continued to evolve since it was first announced in 2013. Indeed, some modifications were introduced even before the main programme of spending began in 2015/16 and an 'improved' BCF has been announced for 2017/18. Understanding these elements of the developing shape of the programme is the subject of ongoing data collection at national and local levels and they are not considered here.

Although the Health Committee heard a number of criticisms of the NHS transfer programme, it formed a broadly positive view of its implementation up to 2012.

> *'Early reports from the Health Service are that the transfer of money from the NHS to be spent on social care has been effective. That effectiveness may be because there was a very straightforward control mechanism: the money had to be spent by agreement…but the fact remains that it represents just 1% of annual funding for the NHS. Clearly there is scope to extend transfers of this kind. The Committee believes that, as a matter of urgency, the Department of Health should investigate the practicalities of greater passporting of NHS funding to social care' (para.101)*

[3] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213223/Funding- transfer-from-the-NHS-to-social- care-in-2013-14.pdf Accessed 2nd May 2016.

The government adopted a similar approach in the following year's spending review when it announced an expanded and refined joint funding initiative, the Integration Transformation Fund (subsequently re-named the Better Care Fund). Importantly, this was part of a wider approach to public service reform based on 'whole place' pilots that had apparently demonstrated the potential for significant efficiency savings through more integrated working.

Thus, it was announced in the 2013 spending review that £3.8bn would be placed:

> *'in a single pooled budget for health and social care services to work more closely together in local areas, based on a plan agreed between the NHS and local authorities…This shared pot includes an additional £2 billion from the NHS and builds on the existing contribution of around £1 billion in 2014-15, with the aim of delivering better, more joined-up services to older and disabled people, to keep them out of hospital and to avoid long hospital stays' (HM Treasury 2013 para.1.30).*

This announcement contained several differences from the original programme in what can be seen as an intention to increase the specificity of its intended outcomes and reinforce the pathways through which its impacts were expected to be achieved:

- The resources included in the Fund for 2015/16 were some three times greater than the £1bn planned transfer for 2014-15 (and both CCGs and local authorities were encouraged to add to the Fund). Though still small as a proportion of NHS spending, they signalled an acceptance that the initial pot was too limited in relation to the scale of the interface between services and the expected (but unspecified) gains to be secured from closer joint working.
- The arrangements included more formalized and structured components: all the relevant resources would be held within a single, statutorily based pooled budget and could be released only subject to the submission and approval of a jointly agreed plan, which met pre-specified conditions for spending the funds.
- The headline objective for spending was to link it more specifically to meeting pressures on acute hospital services, though other areas of expenditure were highlighted in the more comprehensive list of conditions (see below).

Nonetheless, the BCF was - like its predecessor - designed to improve outcomes for patients and users in a climate of financial austerity by reinforcing integrated care, with the objective of securing efficiencies across the boundaries of health and social care services. Further details of its intended operation and impact were contained in Joint letters to from NHS England and the Local Government Association, who had been asked by the Departments of Health and of Communities and Local Government to create guidance and support jointly for Councils and CCGs[8]. The initial joint

[8] National Audit Office, Planning for the Better Care Fund, HC 781, Session 2014-15. 11 November 2014. Para. 1.6. https://www.nao.org.uk/wp-content/uploads/2014/11/Planning-for-the-better-care-fund.pdf.

letter included eight 'national conditions' to be addressed in local BCF plans[9] in addition to the four conditions communicated in December 2012 (see above)[10]:

- Plans to be jointly agreed;
- protection for social care services (not spending);
- as part of agreed local plans, seven day working in health and social care to support patients being discharged and prevent unnecessary admissions at weekends;
- better data sharing between health and social care, based on the NHS number (it is recognised that progress on this issue will require the resolution of some Information Governance issues by the Department of Health);
- ensure a joint approach to assessments and care planning;
- ensure that, where funding is used for integrated packages of care, there will be an accountable professional;
- risk-sharing principles and contingency plans if targets are not met – including redeployment of the funding if local agreement is not reached; and
- agreement on the consequential impact of changes in the acute sector[11].

£1bn of the Fund would be held back and be payable on the basis of local performance against a number of performance indicators covering, for example, delayed transfers of care, avoidable emergency admissions, effectiveness of 'reablement', admissions of older people to residential and nursing care, and patient and service user experience. In 2014/15, £200m was transferred from the NHS to social care in addition to the £900m transfer previously planned in order to enable localities to prepare for the full implementation of the BCF in 2015/16.[12]

As a 2014 report from the National Audit Office (NAO) highlighted, neither the 2013 Spending Round nor the initial BCF guidance set a target for the scale of savings expected from the Fund.[13] There was a planning assumption that the Fund would deliver £1bn savings in 2015. Guidance issued to local areas asked them to identify how they would make savings and the risk of not securing them. When the initial local plans were submitted for approval in April 2014, they were reviewed by NHS England and the Local Government Association against nationally determined criteria, which did not include a

[9] NHS England and Local Government Association (2013) 'Statement on the health and social care Integration Transformation Fund'. Para.13. http://webarchive.nationalarchives.gov.uk/20161104042512/https://www.england.nhs.uk/wp-content/uploads/2013/08/itf-aug13.pdf

[10] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213223/Funding- transfer-from-the-NHS-to-social- care-in-2013-14.pdf. Accessed 2 May 2016.

[11] NHS England and Local Government Association (2013) 'Statement on the health and social care Integration Transformation Fund'. Para.13. http://webarchive.nationalarchives.gov.uk/20161104042512/https://www.england.nhs.uk/wp-content/uploads/2013/08/itf-aug13.pdf

[12] Department of Health (2014) The National Health Service Commissioning Board (Payments to Local Authorities). Directions 2014 – Explanatory note. 1, para. 2 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/300807/NHS_transfer_Directions_-_Explanatory_note.pdf.

[13] National Audit Office, Planning for the Better Care Fund, HC 781, Session 2014-15. 11 November 2014. https://www.nao.org.uk/wp-content/uploads/2014/11/Planning-for-the-better-care-fund.pdf

target of £1bn savings (or any other such target). This assurance process identified that 90% (136) of the 151 plans were ready for sign off, or would be after minor issues were resolved locally. The majority of plans provided details of savings expected from the implementation of the local plan but 53 did not.[14]

In May 2014, NHS England's new chief executive asked for extra work to show whether the Fund would make £1 billion of savings by reducing emergency admissions and delayed discharges from hospitals in 2015-16. It concluded that the April 2014 plans were biased towards over-optimism and that only £55 millions of deliverable financial savings could be relied on compared with the £700m estimated by local areas[15]. At this point, the NAO reported that 'Ministers paused (BCF)…planning while targets and incentives were redesigned'[16]. As a result, both its governance and the conditions that had been attached to the £1 billion pay-for-performance part of the Fund were revised.

Areas were asked to aim for at least a 3.5% reduction on 2014 levels, representing £300m of savings to NHS commissioners. To share the risk that savings would not be made between the NHS and local authorities an equivalent sum would be held back from the original pay for performance pot and would be used to pay hospitals for the costs of continuing admissions if targets were missed. The rest of the £1 billion remained in the Fund for 2015/16, but was now to be spent on NHS-commissioned out-of-hospital services, which must be agreed by the health and wellbeing board. Local areas to submit revised plans to meet the new expectations by 19 September 2014.

The NAO Report also highlighted local government's disagreement with the changes. It noted the LGA's public statement that the revisions undermined the core purpose of promoting locally led integrated care reduced the resources available locally to protect social care and prevention initiatives. It concluded that the delays and changes to the Fund had eroded local goodwill and reported that the LGA had told them that the amendments to the BCF had in their view moved the integration agenda backwards and not forwards.[17]

2.4 Developing the BCF 2016-2019

Since this study was commissioned, the BCF has continued to evolve, as have the wider policy and organisational frameworks for integrating the NHS and local government. In essence, it has remained a mandatory mechanism under which Clinical Commissioning Groups (CCGs) and Local Authorities throughout England are required to establish pooled budgets and develop integrated spending plans for the CCG's minimum BCF, which are consistent with national payment conditions and subject both to local agreement and national approval. In addition, the BCF framework of pooled budgets managed through agreed local plans and national assurance processes has been

[14] ibid.

[15] National Audit Office, Planning for the Better Care Fund, HC 781, Session 2014-15. 11 November 2014. Para. 2.2. https://www.nao.org.uk/wp-content/uploads/2014/11/Planning-for-the-better-care-fund.pdf.

[16] National Audit Office, Planning for the Better Care Fund, HC 781, Session 2014-15. 11 November 2014. Para.2.5. https://www.nao.org.uk/wp-content/uploads/2014/11/Planning-for-the-better-care-fund.pdf

[17] ibid.

extended to include a further direct grant to local government as well as an earmarked allocation for CCG commissioning.

The planning and approval processes, themselves, proved to be overly bureaucratic in the experience of local stakeholders[18] and central government has sought to streamline them. For example, the 2016/17 Policy Framework maintained it had taken account of 'strong (local) feedback…to reduce the burden and bureaucracy' associated with the BCF by simplifying its planning and assurance processes, including removing the £1 billion payment for performance framework. The latter was replaced by national conditions requiring each area to fund NHS commissioned out-of-hospital services and to develop an action plan for managing delayed transfers of care (DTOCs), including locally agreed targets.[19] In effect, the £1bn continued to be reserved for CCGs to commission 'out of hospital' services but this 'wide range of services' now explicitly included social care provision.[20] The 2006 Act (see above) had enabled NHS and local authorities to agree to commission on behalf of each other (as 'lead commissioners' for services) and this new provision brought this 'flexibility' in commissioning arrangements to the fore.

In March 2017, a policy framework was published for the years 2017-19.[21] Its principal change was the inclusion of a direct grant to local government to support adult social care funding. First announced in the 2015 Spending Review as a response to pressures on such care, the grant amounted to £1.115bn in 2017/18 and £1.499bn in 2018/19. This new grant, known as the 'Improved BCF', brought the Fund to a minimum of £5.128bn for 2017/18 and £5.617bn for 2018/19 and local areas continued to be free to add local resources to it. The purpose of the new BCF was three-fold:

- Meeting adult social care needs;
- Reducing pressures on the NHS, including supporting more people to be discharged from hospital when they are ready; and
- Ensuring that the local social care provider market is supported.

Although the grant was paid directly to local authorities by the DCLG, each council had to pool it in the local BCF and work with the CCG and providers to meet the national BCF condition covering transfers of care. This was one of four conditions laid down for BCF payments (a halving of the previous year's conditions, in the interests of further streamline the processes around planning and assurance). The four conditions required:

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[18] See for example B. Erens, G. Wistow, S. Mounier-Jack, N. Douglas, L. Jones, T. Manacorda and N. Mays (2016) *Early evaluation of the Integrated Care and Support Pioneers Programme: Final Report*. London: Policy Innovation Research Unit.

[19] Department of Health and the Department for Communities and Local Government, '2016/17 Better Care Fund Policy Framework', January 2016. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/490559/BCF_Policy_Framework_2016-17.pdf

[20] ibid

[21] Department of Health and Department for Communities and Local Government 2017-19 Integration and Better Care Fund: Policy Framework https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/607754/Integration_and_BCF_policy_framework_2017-19.pdf

- A BCF Plan, including at least the minimum contribution to the pooled fund specified in the BCF allocations, must be signed off by the HWB, and by the constituent LAs and CCGs;
- A demonstration of how the area will maintain in real terms the level of spending on social care services from the CCG minimum contribution to the Fund in line with inflation;
- That a specific proportion of the area's allocation is invested in NHS-commissioned out-of-hospital services, or retained pending release as part of a local risk sharing agreement; and
- All areas to implement the High Impact Change Model for Managing Transfer of Care to support system-wide improvements in transfers of care.[22]

When the Secretary of State announced the full package of measures for managing transfers of care in July 2014, he made clear that local authorities would be expected to deliver half the target of freeing up 2,500 hospital beds and that he was "[c]onsidering a review, in November, of 2018/19 allocations of the social care funding provided at Spring Budget 2017 for areas that are poorly performing. This funding will all remain with local government, to be used for adult social care." [23] The statement led the Local Government Association (LGA), which had worked closely with NHS England on BCF implementation since the Fund's inception, to withdraw its cooperation on the grounds that prioritising delayed transfers over other aspects of the social care system represented a "sudden shift in focus" that was "extremely disappointing".[24] The LGA claimed the "NHS wanted more money and thought [it] should have gone to them. There was resentment that it came to us and they want to control how it is spent."[25] However well or ill-founded such claims were in practice, they are significant for contributing to an adversarial tone in national NHS and local government relationships which potentially added to the difficulties of extending integration at local level.

In this context, it is significant that the BCF had become the principal vehicle for fulfilling the government's commitment that the NHS and local government should become more fully integrated by 2020.[26] Thus, in addition to dealing with BCF spending, each local plan was required to set out how CCGs and local authorities were working towards fuller integration and better co-ordinated care across local whole systems within a joint vision and approach for integration. The plan was also expected to align the BCF with other core local developments including the direction set in the Next Steps on the NHS Five Year Forward View, the development of Sustainability and Transformation Partnerships (STPs), the requirements of the Care Act (2014) and wider local government transformation objectives. Finally, as part of the move towards 'integration 2020', local areas will be able to apply for 'graduate' from the BCF's programme management processes by providing evidence of having successfully developed more mature systems of health and social care

[22] Department of Health, Department for Communities and Local Government and NHS England, 'Integration and Better Care Fund planning requirements for 2017-19' https://www.england.nhs.uk/wp-content/uploads/2017/07/integration-better-care-fund-planning-requirements.pdf

[23] https://www.parliament.uk/business/publications/written-questions-answers-statements/written-statement/Commons/2017-07-03/HCWS24/

[24] J. Bunn 'LGA withdraws support for 'disappointing' BCF guidance 'Local Government Chronicle' 5 July, 2017. https://www.lgcplus.com/services/health-and-care/lga-withdraws-support-for-disappointing-bcf-guidance/7019334.article

[25] ibid

[26] HM Treasury 'Spending Review and Autumn Statement 2015', cm9162 November 2015. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/479749/52229_Blue_Book_PU1865_Web_Accessible.pdf

integration. Graduation will mean more devolution in the relationships between central government and local areas that succeed in their applications for 'earned autonomy' with reduced planning and reporting requirements and greater local freedoms.

3 Integrated care literature overview

Although the specific BCF integration schemes and arrangements vary in their activities and funding level across local areas, they focus overall on joining up health and social care services in order to improve outcomes for service users and carers and to reduce pressures on the acute sector, for instance by reducing avoidable hospital or emergency admissions or length of hospital stay. This section provides a brief overview of the evidence regarding the impact on costs and effectiveness of 'integration-related' interventions related to some of the schemes incentivised by BCF resources.

The goal was to briefly summarise international evidence regarding the (cost) effectiveness of integrated care, drawing together evidence from published reviews of this literature. Narrative, systematic reviews and meta-analyses were identified in the Cochrane Library of Systematic Reviews, google scholar, google, and PubMed; academic and research reviews were included. The searches were not restricted by publication date or country and included documents published in English between 2006 and 2016.

Key phrases used in searches included a combination of key words from the following three areas. First, keywords about the policy area, e.g. long-term care, health and social care, aged care. Second, keywords about the nature of the interventions, such as: integration; coordination; collaboration, integrated commissioning; multidisciplinary teams; case management, integrated budgets/integrated funding, integrated information systems, data sharing. Third, keywords about the consequences of the interventions: cost; resources; cost-effectiveness; efficiency; savings; effects; effectiveness; outcomes; outputs; wellbeing; satisfaction; quality of life. The reviews identified in this way include those about interventions delivered across social and health care settings.

The characteristics of reviews on which this literature review is based are presented in Annex 5. The reviews often combine evidence on interventions crossing the boundary between two health settings and/or social care settings, and it is impossible to isolate evidence relating only to joint working across health and social care. Moreover, reviews of evidence rarely provide an explicit definition of integrated care and they often covered a wide range of varied interventions and care approaches of diverse complexity that are frequently incorporated under a broad label such as, for example, case management (CM) or multidisciplinary teams (MDT). Studies tend to be characterized by heterogeneity in the definition and description of the intervention and components of care under study. Reporting of outcome measures and costs was also often inconsistent in the individual evaluations, findings were often based on a small number of original studies, and the quality of the evidence was frequently low, which makes it challenging to interpret the evidence (Nolte and Pitchforth 2014; Martinez-Gonzalez et al. 2014; Goddard and Mason 2017). The section below summarises the evidence in regard to a number of outcome indicators and costs.

3.1 Findings

3.1.1 Avoiding (re) admission to acute or residential care, health care use

Reviews frequently highlight limited and mixed results, depending on the type of intervention and population (see also Goddard and Mason 2017). For example, 11 out of 21 reviews across five joint interventions[27] reported significantly reduced emergency hospital admissions (ranging from 15-50%). The most effective interventions were based on the chronic care model (CCM), an organisational framework for improving chronic disease management, for which four out of five reviews showed statistically significant reductions in emergency admissions. Multiple component strategies and MDTs were also shown to be effective, while CM were largely ineffective (Damery, Flanagan, and Combes 2016). Another review also showed mixed findings (Nolte and Pitchforth 2014), for example out of six included randomised control trials (RCT) of CM and MDT for people with two or more chronic conditions, two studies showed decreased admissions, three showed no change, and one showed increased admissions (Nolte and Pitchforth 2014). The review also reported that a meta-analysis of ten RCTs on 'hospital at home' services for the general population did not find a change in hospital admissions, although it showed a significant reduction in mortality at six months (Nolte and Pitchforth 2014).

A review of three different integration programmes in Germany, UK and the Netherlands showed mixed results: interventions in Germany increased admissions; across England's integrated care pilots (ICPs), emergency hospital admissions increased, but planned admissions and outpatient appointments with specialists declined; bundled payments in the Netherlands decreased use of hospital-based specialist care (Busse and Stahl 2014). There is some evidence from small scale UK-based studies that joint intermediate care rapid response teams in the community reduce the risk of admission to care home or hospital. Conversely, other studies in the review found no significant difference in outcomes between integrated and more traditional services. Moreover, co- location between health and social care services did not appear to improve the likelihood of living in the community for longer (Cameron et al. 2015).

3.1.2 Quality and outcomes

A number of reviews suggest that integrated care is related to improved outcomes for service users and carers. In a review of integrated schemes for palliative care, 10 out of 11 studies demonstrated positive outcomes including better symptom control and better quality of life (QoL), as well as better communication between personnel, patients and caregiver (Siouta et al. 2016). Similarly, other reviews reported improved QoL, wellbeing, patient satisfaction and adherence to treatment; some studies showed reduced mortality and improved quality of care and users' experiences, although some results were mixed (Martinez-Gonzalez et al. 2014; Cameron et al. 2015; Nolte and Pitchforth 2014; Damery, Flanagan, and Combes 2016; Mason et al. 2015). It was noted that studies which included large pooled health and social care budgets[28] were more likely to show improved health

[27] Case management (CM), multidisciplinary teams (MDT), chronic case model (CCM), complex interventions and self-management.

[28] E.g. merging budgets for Medicare and Medicaid in US, or pooling budgets from all major providers in Australia.

outcomes relative to small joint budgets (Mason et al. 2015).

3.1.3 A&E and ED use

The evidence on the reduction of A&E attendances tends to be mixed and/or weak. For example, in an umbrella review by Damery, Flanagan, and Combes (2016), 5 reviews on A&E use for patients with chronic disease showed either mixed findings or no association between the intervention and A&E visits, while 4 reviews for chronic obstructive pulmonary disease (COPD) and 1 for patients with heart failure showed significant reduction in A&E use (Damery, Flanagan, and Combes 2016). The umbrella review showed that CM and self-management interventions were ineffective; while effective interventions related to CCM, complex interventions, and MDT for heart failure where it contained condition-specific specialist expertise (Damery, Flanagan, and Combes 2016). In a meta-review, 2 out of 3 reviews reported that integrated care for congestive heart failure (CHF) and COPD reduced emergency room (ED) visits (Martinez-Gonzalez et al. 2014). Nolte et al. (2014) found the assessment of the size of possible effects problematic and evidence lacking robustness: although 6 of 8 studies reported a significant reduction in ED use, the studies lacked a controlled design (Nolte and Pitchforth 2014).

3.1.4 Length of hospital stay (LoS)

There is some evidence that joint interventions could reduce length of hospital stays (LoS). However, the reported effects tend to be moderate. A meta-review of early supported discharge for stroke patients included in Nolte and Pitchford rapid review (2014) reported a reduction of eight days on average in LoS; although another meta-analysis included in the rapid review did not demonstrate significant change in LoS with comprehensive discharge planning for CHF (Nolte and Pitchforth 2014). In an umbrella review, nine out of 16 reviews reported positive findings; e.g. two CCM interventions were associated with a reduced mean LoS for COPD (of 2.51 and 3.78 days respectively). However, CM and self-management interventions did not show evidence of effectiveness. Pooled results from an early supported discharge meta-analysis suggested a mean LoS reduction of 7.7 days for stroke patients, the reduction was 28 days for the most severely impaired, but only four days for moderately impaired individuals (Damery, Flanagan, and Combes 2016).

3.1.5 Costs

Some UK small scale studies included in Cameron et al. (2015) review suggested that integrated services have similar costs with standard care. The literature also suggests that costs can fall disproportionately on social care in integrated schemes, particularly if such areas focus on community services to reduce the cost of acute care. One review suggested that joint intermediate care can be cost-saving if used as hospital discharge or hospital avoidance schemes; however, authors noted that many individuals who received such care would have either gone home straight from hospital or never attended hospital, and that such services were additional rather than alternative to hospital care (Cameron et al. 2015). An international evidence review highlighted that integrated schemes and pooled budgets are likely to improve access to care and to reveal unmet need, therefore the total costs of such programmes increase (Mason et al. 2015). The evaluation of population-based approach in Germany, and England's ICPs illustrated cost savings, while bundled payments in the Netherlands showed a considerable increase in costs (Busse and Stahl 2014). In a

meta-review only three out of 17 studies, reported cost-savings (Martinez-Gonzalez et al. 2014). In another umbrella evidence review, 10 reviews reported cost savings, 11 showed mixed findings and four reported no difference in costs between intervention and control groups. Most cost-saving interventions were based on CCM[29] (Damery, Flanagan, and Combes 2016). Reviews noted the importance of context and health care settings for costs, and the need for evaluations to be sufficiently long to demonstrate economic gain. For example, in a community-based nursing programme for individuals with Parkinson's disease, costs initially increased, but over two years costs were lower in the intervention group (Nolte and Pitchforth 2014).

3.1.6 Cost-effectiveness

The evidence on cost-effectiveness is very limited, of poor quality and mixed results, and it is difficult to make comparisons across reviews and individual studies (Cameron et al. 2015; Nolte and Pitchforth 2014). Cameron et al. (2015) found no studies that met their inclusion criteria and reported evidence on cost-effectiveness. The majority of studies on cost-effectiveness in the Nolte et al. (2014) review adopted health service perspectives and covered condition specific approaches.[30] One study reported in Nolte et al. (2014) concluded that disease management for COPD could be cost-effective (assuming a willingness to pay €30 000 per QALY) if incremental cost per client did not exceed €7680 over their lifetime. A trial on CM approaches targeting frequent hospital ED users found the intervention to be cost-effective as it led to improved clinical and social outcomes at a similar cost to usual care. Regarding non-condition specific interventions, one study reported on the cost-effectiveness of medication management as part of continuous care for patients in transition between ambulatory and hospital care (€13 000 per QALY) (Nolte and Pitchforth 2014).

3.2 Conclusions

We might draw the following lessons from the review:

- There is some evidence that integrated care programmes can have a positive effect on service quality and users' outcomes, and there is emerging evidence suggesting the potential for service efficiencies; however relatively few studies have so far evaluated the economic impact of integrated care models.
- The evidence appears to be strongest for the effectiveness of the chronic care model, which showed some promising results in reducing A&E visits, hospital emergency admissions and length of hospital stay as well as cost-savings, whereas case management tend not to show positive effects (Damery, Flanagan, and Combes 2016; Nolte and Pitchforth 2014; Goddard and Mason 2017).
- There is also some evidence that large pooled budgets may be more effective in improving health compared to small budgets, and overall pooled budgets may uncover unmet need (Mason et al., 2015). However, the overall international evidence base is somewhat mixed.
- The lack of a single definition of integrated care, and the range of interventions, processes and models it encompasses makes it challenging methodologically to compare evidence-

[29] Three reviews reported significantly reduced costs; one review reported cost savings of between 34% and 70% for CCM interventions however no further details were given on the nature of these savings.

[30] Depression (four reviews), health failure (one review), COPD (two reviews), diabetes (one review).

base and to draw firm conclusions across them (Nolte and Pitchforth 2014; Martinez-Gonzalez et al. 2014; Goddard and Mason 2017; Shaw, Rosen, and Rumbold 2011).

4 Insights for the evaluation of the BCF

4.1 Classification

The literature suggests that the 'integration' landscape can be divided up in a number of ways, including:

- First, in terms of whether integration initiatives are about (i) primary and secondary prevention measures that occur upstream along the care pathway (e.g. underlying social and economic determinants of health, low-level support for independent living, dementia support etc.); or (ii) seek to work in close proximity to the key interfaces between social care and health care services (e.g. rapid response or reablement services), which we generally regard as intermediate care. The latter includes measures to ensure that these services are available at all times, not just during normal working times.
- Second, according to whether the measures put in place are services that are in direct contact with the patient/service user or whether they are broadly about the development of the infrastructure.
- Third, whether measures are targeted to particular groups of people or care pathways.
- Fourth, how the organisation, management and accountability structures relating to the 'integrated' activity is configured. Partnership working can range from organisationally separate entities working together under agreement, to fully unified organisations delivering care. For example, health and social care teams can work together but still be separately managed by NHS and local authority organisations. Alternatively, one organisation can assume all the relevant functions and service components to provide a unified solution.

Taken together these elements can be used to develop a classification framework. We describe this process in Section 5.

4.2 Impact

The proposed evaluation was to compare the impact of the different local BCF programmes planned across the country. As a national policy implemented at the same point in time, our approach was to compare different configurations of BCF programmes, distinguished by the size of local pooled budgets (specifically the level of planned expenditure) and by the broad mix of (integration and related) schemes planned in the local area.

As outlined above, a number of initiatives and policies have been implemented in the past that have sought to increase integrated working between health and social care. In the main, the BCF does not bring new money to the system, but the size of the Fund (i.e. level of planned expenditure) reflects the amount of resource that CCGs and local authorities have agreed to plan and manage in a joint way, recognising that while each CCG must pool at least a minimum earmarked sum specified by NHS England, both they and their partner council are free to top up the fund from other resources. Whilst it was an explicit aim of the BCF to provide resource to protect social care – which might be considered a continuation of current activity – a key purpose was to promote better integration.

Consequently, we expect much of the planned BCF activity to be integration activities as well as the protection of social care. This is an assumption we test with our typology analysis.

Moreover, since the use of BCF money is jointly planned between the CCG and the local authority (at least to some extent), we would expect that even additional funding of social care would be focused in areas that support partnership working. Other research has shown that 'mainstream' social care and health care services are inter-dependent and better coordination of those services might be expected to improve outcomes (Forder, 2009; Gaughan et al., 2015).

The minimum BCF allocation was determined by a combination of the NHS (CCG) and LA funding formulas – see Box 1. In that these formulas were designed for need adjustment of mainstream expenditure, not for the BCF-specific population, we would expect to see remaining variation between HWB areas in per capita (e.g. per adult population) expenditure (even after need adjustment). This variation would be further exacerbated by the significant additional funding that was allocated to the BCF in some localities beyond the minimum.

Box 1. Allocation system for the BCF

The BCF comprises a number of funding elements. The minimum allocation (£3.8bn in 2015/16) was made up primarily of contributions from CCG recurrent allocations (£2.36bn in 2015/16) and from an existing transfer from health to social care (of £1.1bn in 2015/16). Additional small elements of the minimum allocation included the social care capital grant and the Disabled Facilities Grant. Local authorities were also able to top-up the BCF using local authority funds.

The minimum amount was allocated using a combination of the CCG programme allocations formula and the social care relative need formula (RNF). In both cases, allocation of funding are made to local areas in proportion to the size of the local population weighted for different levels of need per person. The CCG formula primarily uses age as a need indicator, with some additional need adjustments. The RNF also uses age and disability indicators but also (given the means-tested nature of social care) has an affluence component. Both formulas use unit cost adjustors.

The CCG recurrent allocations were made using the CCG formula and the transfer was made using the social care RNF. Overall, therefore, minimum BCF allocations are influenced by need, with higher allocations to BCF in high need areas compared to low need areas. Other things equal, we might expect a positive relationship between DTOCs and need, and the same for EAs. We consider the implications of this characteristic for our findings in the discussion.

Our main hypothesis is as follows. It is predicated on two key arguments: (a) that the BCF is effective at driving the implementation of new integrated and related activity – and the amount of money in the Fund is an indicator of the extent of this (new) activity – and (b) that this activity is effective at producing better system outcomes. In this case, we would expect to see areas with higher levels of BCF expenditure achieving better outcomes than areas with lower BCF expenditure, other things equal.

With regards to the first argument, the BCF was certainly designed for this purpose, as outlined in section 2, but we also noting that the policy builds on a history of integrated care initiatives and so activity in the BCF need not always be new activity. Also, this account suggests that the pace of implementation of the BCF will differ between areas. As to the second argument, the review of the literature suggests that integration activity can be effective at achieving better outcomes, but that the evidence is somewhat is mixed.

A second hypothesis is that some types of integration activity will be more effective or have different impacts than other types of activity. Accordingly, we can compare areas not only in terms of their total BCF expenditure, but also using a breakdown of how that total is spent between the main types of BCF activity (using the classification results). A key distinction is between the level of expenditure funded by the BCF that is directed to integrated care activity (e.g. intermediate care and preventative activity) as opposed to being used to (continue to) fund social care services. In particular, we would expect that intermediate care and preventative activity would be most effective at reducing delays due the NHS than other types of activity. Similarly, BCF resources focussed to supporting social care services should be more effective than other BCF activity at reducing delays due to social care. Indeed, we might even consider that activity that is effective at reducing NHS-related delays might possibly increase the pressure on social care causes of delay.

Ultimately, we would seek to assess the impact of different integration policies on the quality of life of people using these services. We do not, however, have sufficiently granular data on quality of life using suitable quality of life indicators (such as the Adult Social Care Outcome Tool, ASCOT, or the Long-term Conditions Questionnaire, LTCQ). Rather, we rely on 'process' indicators which are, in turn, expected to be highly correlated with outcomes for people using services. In particular, two of the four main impact indicators were explored in this study: delayed transfers of care rates (DTOC) and non-elective admission rates to hospital (NEA).

5 Classification of the BCF

5.1 Aims and methods

The typology analysis was conducted using two approaches, the first involving the coding of BCF scheme activity according to a pre-defined classification framework as based on the interpretation of documentation and descriptive accounts, and the second using a freer-form classification based on keyword coding of separate scheme title descriptions.

One of the first tasks was to identify a key set of dimensions characterising the goals and implementation of BCF programmes - where 'programme' refers to the configuration at the health and wellbeing board level. We populated a classification matrix that includes the following primary activities developed theoretically, as based on previous integration literature:

- Intermediate care
- Prevention, low-level
- Coordination, assessment, care planning
- Assistive technology

- Seven days working
- Changes/implementing new care pathway
- Core/General (incl. social care) services
- Implementing the Care Act (the new duties)
- Palliative care
- Carers support

Each category is defined by the types of activities it includes and the full classification coding framework can be found in Annex 1 of this report. We aimed to establish a framework within which all schemes could be classified and coded by primary activity using descriptions of the titles and the material provided in Annex 1 of the BCF plans template. Secondary and tertiary activity were also coded where the data available to us suggested this was appropriate.

Once an initial framework had been established this was subjected to three iterative rounds of testing. The research team independently coded schemes using data from BCF plans (specifically plans attached in annex 1 of the plans template, which was an account of the main schemes being proposed). The team coded the BCF plan from up to 10 random BCF sites each and convened to discuss findings. Each round of coding was focused on the functionality of the framework to establish: can we classify schemes using the current framework; do we need to merge current categories; do we need to split current categories; do we need to create new categories; are any other adaptations required.

We populated the classification matrix following two methods: 1) classification coding framework and; 2) a keyword classification of the BCF scheme title.

5.1.1 Classification coding framework

After the initial development of the coding framework, all available BCF plans were coded manually, with individual team members being allocated a sample of those plans. In each case, the research team coded up to three main activities as outlined above. In addition, we identified five further dimensions to determine the essential characteristics of each scheme using information from BCF plans (mostly from BCF plan annex 1s):

- Client group – e.g. people with learning disabilities, carers, older people, people with mental health problems or dementia, young adults with physical disabilities, condition specific (such as diabetes).
- Infrastructure vs service – e.g. schemes to produce data or enhance communication such as IT vs schemes that involve patients/users such as a falls prevention programme, home care service etc.
- Location – i.e. where is the service delivered or where do staff operate? In the community, in institutions (primarily hospitals but includes care homes and hospices) or both?
- Innovation – i.e. is the scheme new, modified (as a result of BCF), or already existing.
- Integrated (between health and social care) – i.e. does the scheme involve NHS and local authority joint working?

5.1.2 Keyword classification

Using the BCF scheme titles included in the planned expenditure spreadsheet provided by NHS England, scheme titles were classified into the above primary activities using keywords (e.g. discharge, acute care, step up/down, reablement, out of hospital). The research team used the BCF scheme titles included in the planned expenditure template that BCF programmes are required to submit to NHS England. Overall, 173 keywords were used to classify the scheme titles using the classification matrix (i.e. primary activity) outlined above. An algorithm was applied using these keywords (the algorithm also allowed variants of the keyword, such as plurals, case etc., and multiple keywords). Four additional main activities were classified including information and communication technology, Disabled Facilities Grant, Capital Grant, Section 256 or 75. The full list of keywords can be found in Table 25 of this report.

5.2 Data

Each HWB submitted details of their BCF plan including a descriptive account in 'part 1' and a breakdown of planned expenditure in 'part 2'. The classification analysis used data from the collated set of part 2 spreadsheets. Table 2 summaries the results. Some 4216 line items were identified[31], with a mean planned spend of £1,267,000 per scheme, corresponding to £5.34bn nationally.

Table 2. Planned BCF expenditure 2015/16 – by region

Region	Number of schemes	Mean planned expenditure (£000s)	Total planned expenditure (£000s)
East Midlands	332	1463	485559
East of England	413	1376	568161
London	725	1164	843717
North East	352	1019	358598
North West	715	953	681306
South East	679	1027	697174
South West	282	1408	397180
West Midlands	316	2167	684876
Yorkshire and The Humber	402	1559	626526
Total	**4,216**	**1,267**	**5,343,099**

5.3 Results

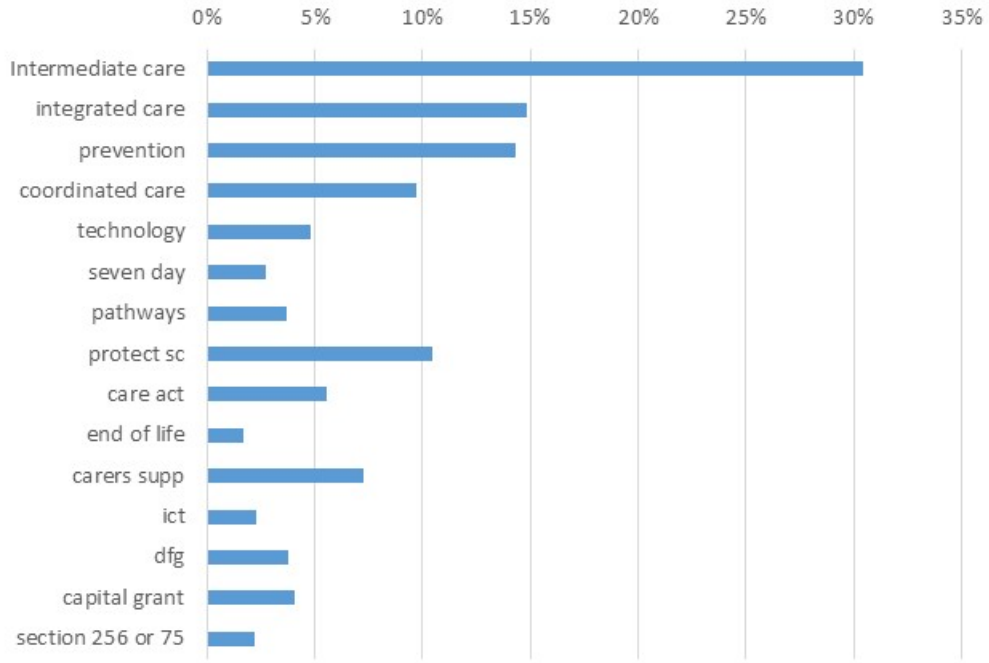
Overall, 4,216 schemes were listed within the planned expenditure spreadsheets provided by NHS England. Of these, 1,176 BCF schemes were classified manually using the framework approach and

[31] Line items do not correspond one-to-one with the number of schemes.

3,296 were classified using the keyword classification approach.[32] [33] Both approaches were followed to ensure capturing all available BCF data.

Figure 2 shows the number of schemes classified under each primary activity using the keyword approach. Keywords were grouped and allocated to each primary activity in the framework classification. Just under a third of schemes were classified as *intermediate care* on this basis, with around half that proportion being *integrated care* or *prevention* schemes. Around 10% of schemes were recorded as being about the *protection and support of social care services*.

Figure 2. Classification of BCF schemes – proportion of schemes classified, keyword coding

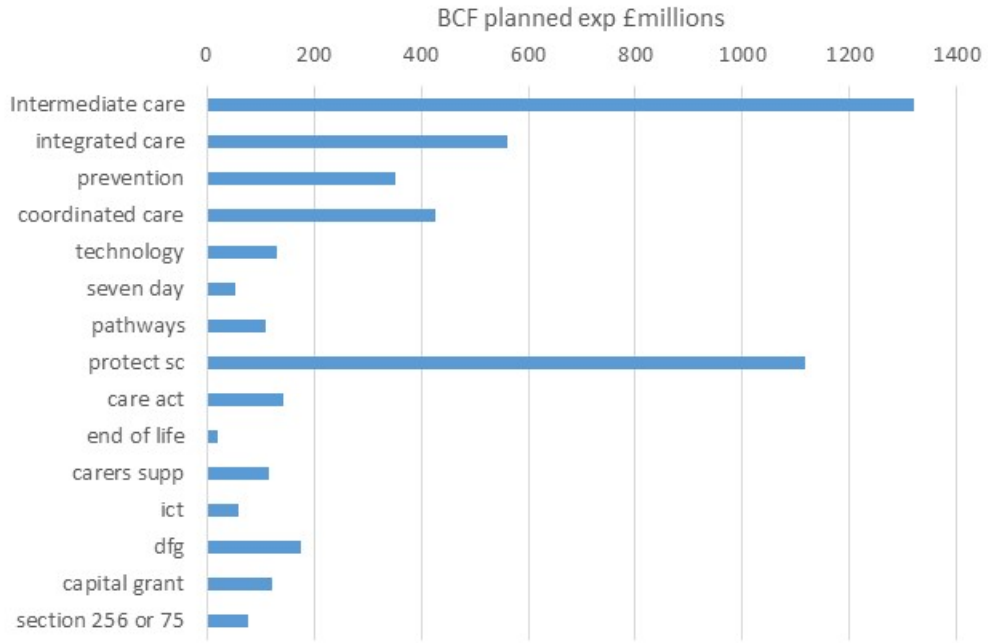


The amount of planned expenditure per scheme type varies considerably. Figure 3 shows the planned expenditure allocated to the scheme activity. Intermediate care accounts for around 30% of classified spend, but the next most significant activity is the protection of social care, at just under 25%. The keyword approach was used to classify 86% of BCF planned expenditure.

[32] We coded fewer schemes manually because (a) available data from BCF plans did not always list all expenditure items, particularly where these were already established, such as protecting social care, disabled facilities grants etc., (b) not all plans were available and (c) pragmatically to best use resources within the project.

[33] Line items do not correspond one-to-one with the number of schemes.

Figure 3. Classification of BCF schemes by planned expenditure, keyword coding



The framework classification was used to classify around 29% of total BCF planned expenditure. In this case, the focus was on classifying specific schemes identified by sites in their BCF plans. In some cases, protection of social care, certain grants and other activities were not explicitly identified in plan descriptions (Plan annex 1s) but this activity was allocated a budget in part 2 spreadsheets. In the main, these activities correspond to a continuation of regular activity that was now to be funded from the BCF. We did, nonetheless, identify some schemes as protecting social care in the framework classification where this was a component of the particular scheme.

Figure 4 reports the proportion of schemes classified by framework coding. Figure 5 gives the data as planned expenditure to scheme. In the main, the framework coding identified a large proportion of schemes as being intermediate care. In this case, however, coordinated care was the largest activity group. In practice, the distinction between coordinated care and intermediate care is a fine one. Intermediate care covers services that help manage people transitioning between health and social care. Coordinated care covers activities that help to better align health and care services to support better transition – see Figure 4. Figure 5 also shows the planned expenditure when coordinated care and intermediate care are combined.[34]

[34] Schemes could be classified into more the one activity.

Figure 4. Classification of BCF schemes – proportion of schemes classified, framework coding

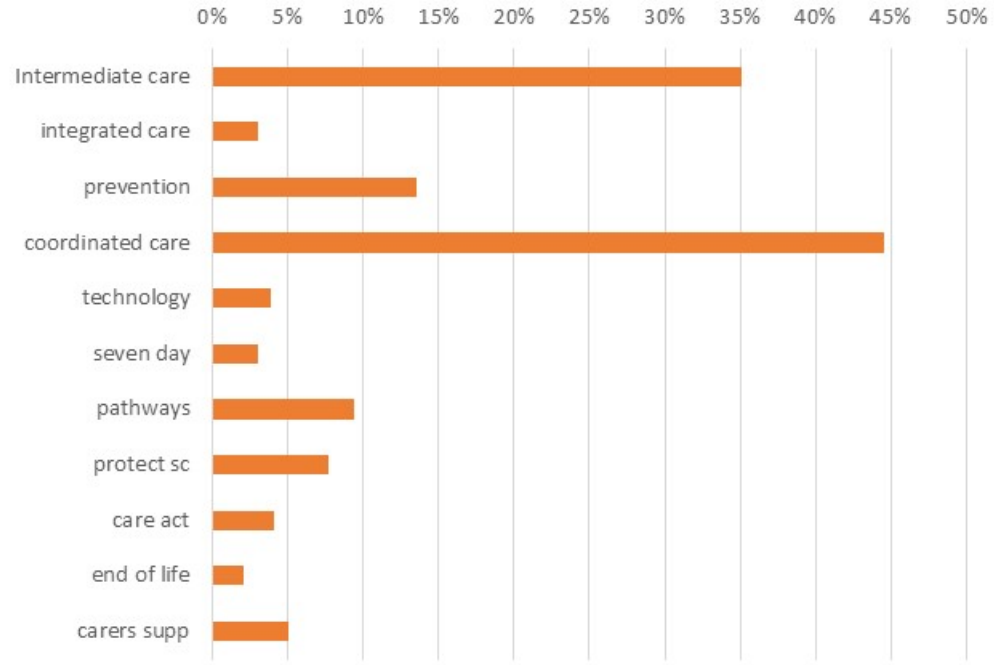
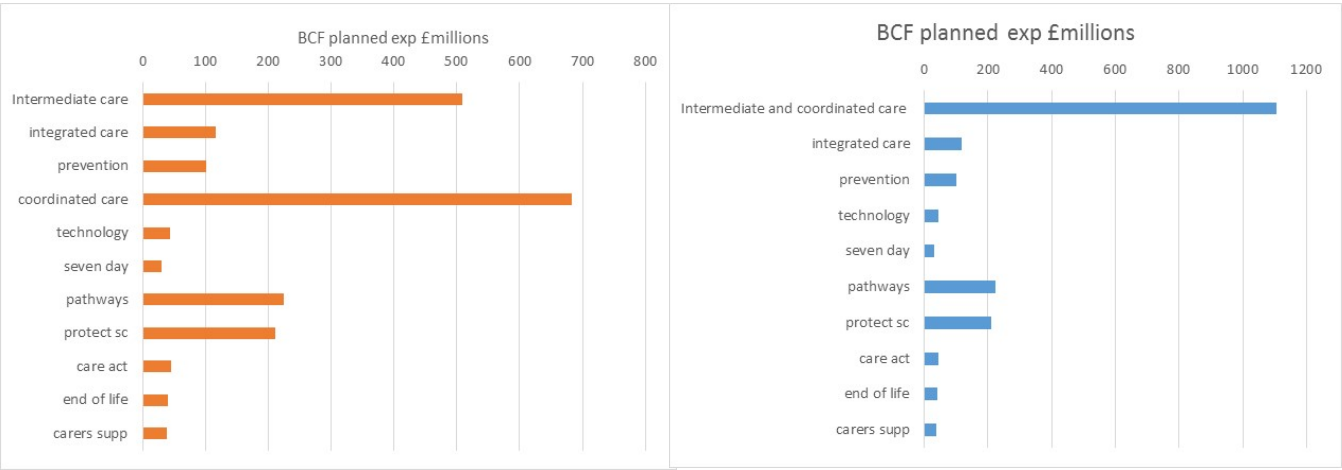


Figure 5. Classification of BCF schemes by planned expenditure, framework coding

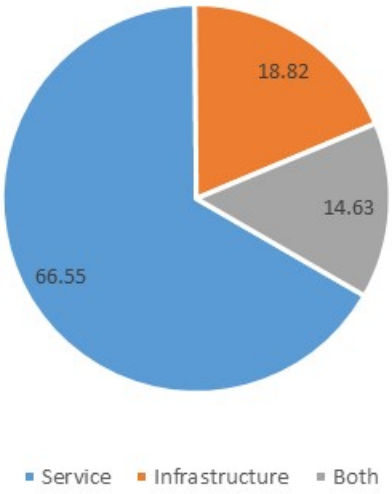


Using the framework classification, we found that the majority of BCF schemes (81%) were not targeting a specific client group (Table 3) and were focussing on services rather than infrastructure (Figure 6).

Table 3. Classification by client group

Client group	Percentage of schemes
Carers	5%
Condition specific	5%
Generic	81%
Mental health or Dementia	7%
Others	2%

Figure 6. Classification by scheme organisation



As noted, we would not expect the two methods to produce the same distributions across the full breadth of BCF activity. However, we can test the degree of correspondence between keyword and framework coded activity for the subset of activity that is framework coded. In particular, we used data from the BCF plan part 2 spreadsheets, including the keyword coding and other categorisation data, to predict the proportion of framework coded activity that was classed as (a) intermediate care and (b) prevention and (c) protecting social care. Regression models were used. We found R-squared statistics of 0.68 for the intermediate care model, 0.36 for the prevention model and 0.55 for the protecting social care model. There are no definitive thresholds for judging these results, although we might surmise that classifying intermediate care is more straightforward. Other activity, however, is difficult to isolate and those results indicate the challenges with trying to classify complex and multifaceted activity retrospectively.

Overall, there were specific challenges in classification of schemes. Scheme titles could also be somewhat misleading or based around some local context and therefore difficult to ascertain the purpose. Another important aspect of the BCF planning documents to note is that they were not designed or completed with this classification purpose in mind. Plans were often large documents encompassing varying aspects of other activity, individual sites approaches, background information and existing evidence for selecting schemes. In many cases, the context-specificity and developmental nature of scheme planning and subsequent reporting undermined our ability to classify activity in a consistent fashion on a retrospective basis.

6 Process evaluation

6.1 Aims and methods

The overarching aim of the in-depth evaluation was to identify implementation processes and contextual factors that might help in understanding the impact of the BCF. The aim was also to identify factors that could facilitate and inhibit the implementation process and develop recommendations for future implementation. In order to develop a working theory on the effectiveness of the BCF we aimed to collect qualitative data on three main aspects of local BCF implementation:

1. Local implementers' logics about what processes (e.g. budget arrangements, networks/relationships, types of integrated working) need to be in place to achieve set outcomes.
2. Indicators of how far the planned processes – or mechanisms – have been implemented in each locality (and any required changes made during implementation).
3. Indicators of whether various processes/mechanisms that have been implemented, given the local context, are observed to be operating as expected, according to the specific outcomes they are designed to achieve.

Central to this was to build up a working understanding about what BCF programmes were doing and achieving. Interviewees' views on the effects of specific mechanisms, according to their experience, as well as their accounts of the mechanisms/process that have been implemented along with relevant contextual factors were therefore particularly relevant. We collected data on individual views and experiences of national and local management of the BCF, factors which helped or hindered progress towards closer integration between health and social care locally, and lessons learned and best practice recommendations in relation to integrated working.

Specifically, the evaluation team sought views on:

1. Background and existing partnership arrangements;
2. Main goals and programme development;
3. Progress with implementation;
4. Barriers and enablers to progress, and possible challenges with interagency collaboration/coordination;
5. The nature of risks and dependencies for the projects (schemes) delivering their aims;
6. The longer-term impact of the BCF and its contribution to the integration of health and social care.

The process evaluation involved in-depth, semi-structured interviews among organisational representatives with a role in implementing the BCF programme and shaping integrated working in practice within local health and social care systems in England. Interviews were conducted in a 12-month timeframe between January 2017 and January 2018. Participants interviewed toward the latter part of the recruitment period may have had a different perception of progress but many of the questions contained in the interview schedule concerned the setting up of the BCF and related issues throughout the course of the implementation period. While the historic implementation

experiences would not have changed for participants, those taking part at a later stage may have been able to comment more fully on subsequent developments and progress. All interviews were audio-recorded and recordings were transcribed verbatim by a professional transcriber. All returned transcripts were checked against their recording by a researcher. Consent was inferred by participants' willingness to take part. All participants were asked again prior to beginning the interview if they were happy to take part and if they were happy for the interview to be recorded.

Most interviews were carried out by telephone with five being carried out face-to-face. Six researchers carried out the interviews, although the majority (n=23) were conducted by two researchers. The interviews were intended to be individual, but some sites asked for a group interview. These requests were granted for pragmatic reasons to be able to capture the views of participants (for example directors / chief executives) who were already present at a pre-arranged meeting and who may otherwise not have been able to take part. In these cases the semi-structured interview schedule was followed (as opposed to developing/adopting a focus group schedule) to maintain consistency with the method of data collection. Three group interviews were conducted which included 15 people in total (two groups of three and one group of nine).

6.1.1 Recruitment

There were recruitment challenges and delays during the process evaluation. Feedback from potential respondents indicated that lack of time and capacity was the primary reason for non-participation, and that other policy developments had taken priority over the BCF programme. Participation was voluntary, and given the financial context that the evaluation was carried out in, and the senior managerial level of the participants we were asking to take part, securing a date/time proved challenging, and was often done some weeks or months after making initial contact. A number of interviews were then subsequently cancelled and re-scheduled at the request of participants.

A number of delays were also experienced due to the process for gaining approval from the Health Research Authority (HRA) alongside local (NHS) research and development and (Local Authority) research governance approvals. The evaluation team experienced significant delays with regard to gaining HRA approval caused in part, by the implementation issues surrounding the introduction of this new process which was rolled out in 2016. This initial delay changed the evaluation timescale. However, the subsequent amendments received very quick approvals from the HRA. The evaluation team experienced some confusion among organisational representatives when gaining local (NHS) research and development approval due to uncertainties around the new HRA process. In addition, there were delays within the Local Authority research governance approval process caused by a number of factors, including locating the relevant organisational representative and the timescale required to complete a local governance application and wait for its approval.

The evaluation team took additional steps to improve recruitment, including:

- Initially, a purposive sampling approach was employed to select a range of BCF programmes and geographical locations. More pragmatically however, and given the commitment required from sites and the current resource pressures they face, the evaluation team worked with areas that were willing to support the evaluation.
- The evaluation team amended the recruitment process and an amendment to the

recruitment protocol was submitted to HRA. Initially BCF programme leads were asked to nominate appropriate individual(s) for interview. Nominated individuals were then asked by the BCF programme lead to make contact with the research team to register their interest in taking part. Once nominated individuals had registered their interest they were contacted by the research team to arrange a convenient date and time to be interviewed. This proved a slow method for recruitment. The protocol was amended to allow the evaluation team to make direct contact with nominated potential participants, rather than relying on programme leads passing on contact details and potential participants then making contact with us. To 'snowball' the recruitment process, interviewees were asked at the end of each interview to nominate anyone they thought would be appropriate to take part.

The evaluation was advertised multiple times via:

- The Health and Wellbeing Boards and Local Authority Chief Executives.
- NHS England BCF Regional Managers to local BCF managers.
- The Better Care Exchange.
- The Academy Health Science Network and the Local Government Association.
- The local Clinical Research Network (CRNs) to other CRNs and speciality groups.

6.1.2 Sample

Given the BCF programme's key aim of supporting the integration of health and social care, we sought to conduct interviews in a range of different organisations across the fieldwork sites: Clinical Commissioning Groups (CCGs); Local Authorities (LAs); other NHS organisations (such as foundation trusts); and charities or voluntary organisations. In total 30 separate organisations took part in the in-depth evaluation (Table 4).

Table 4. Number of organisations that took part in the evaluation

Organisations	N
CCG	12
Local Authority	13
Other NHS (e.g. foundation trust)	3
Charity or voluntary organisation	2
Total	30

Twenty-one sites were recruited (agreed in principle that they were willing to take part) to the in-depth evaluation. Sixteen sites took part and participated in interviews. In total 40 participants took part in 29 interviews. Interviews typically lasted approximately one hour with some lasting up to one and a half hours.

The number of participants per site varied from one to fourteen but typically two to three people took part from any given site. The intention was to include up to five participants per site. This was to ensure that different perspectives on the progress of BCF from the participating sites were represented.

All interviewees were classified as one of six 'types' based on job title, role and level. These include: Director / Chief Executive; BCF Lead; Senior Manager; Middle Manager; Clinician (e.g. GP, Nurse, OT);

Commissioner. Interviewees were additionally classified by employer: Clinical Commissioning Group (CCG); Local Authority (LA); Other NHS (e.g. acute trust, community trust, foundation trust); and joint post.

The sample included key individuals involved in the delivery of the BCF policy and responsible for the implementation of the BCF at senior or middle management level. Participants were involved either in managing the implementation process or as field level staff working with users of BCF funded services. Participants' roles and levels of involvement were varied, and people had been in post for different lengths of time. This may have influenced the level of detail they were able to provide as part of the interview process – see Table 5.

Table 5. Number of participants by role type / managerial level

Participants by role / level	N
BCF Leads	9
Commissioners	9
Directors / Chief executives	6
Senior Managers	12
Clinicians	3
Middle managers	1

6.1.3 Interview schedule

The interview schedule was developed by all members of the evaluation team. Specific research questions were informed by a preparatory review and synthesis of the academic and policy literature on integration, as well as a typology analysis of the schemes and services put in place across local sites in England as a result of the BCF. This sensitised us to wider key issues with regard to integrated working between health and social care, and to the approaches adopted by local sites in relation to the BCF.

A provisional interview schedule (version one) was developed by researchers at the University of Kent and presented to the wider research team as part of a planning meeting. The schedule was then modified based on comments by the wider research team and an amended version (two) sent to colleagues for further comment and revision. The schedule was again revised (version three) based on these comments and again presented to the wider research team in a subsequent planning meeting. This version underwent minor amendments at the planning meeting and a final version (four) was agreed by the wider research team and used to collect the data.

6.1.4 Analysis

Interview data were transcribed verbatim. Three transcripts were initially coded separately by a sub-team of six qualitative researchers who met to discuss the coding framework to be used in the analysis. Key themes were identified by the sub-team within the over-arching structure provided by the research questions and the coding framework agreed.

Six interview transcripts were double coded by two researchers to ensure that transcripts were coded consistently and within the identified themes and sub-themes. Themes and sub-themes were subsequently further refined and the final coding framework agreed. Coding of data was then carried

out separately by two members of the research team using NVivo software and the agreed framework was used to interpret the data.

6.1.5 Limitations

We encountered significant difficulty and delays with recruiting participants from local health and social care systems (BCF programme sites) to be interviewed and this limited the breadth of our evaluation. Nonetheless the sample achieved enabled us to gain insight into the issues surrounding the implementation of the BCF and its effectiveness from a variety of perspectives.

In seeking to recruit participants who had experience or were currently involved with the implementation of the BCF programme within local systems, we included commissioners with a role in relation to integration; local health and social care leaders, senior clinicians, and project or programme managers with a role in relation to integration and/or BCF. This was a deliberate sampling strategy intended to draw on the perspectives and experiences of those with a 'take on' as well as possibly a 'stake in' the BCF. Results will therefore be different to what might have been expected had we pursued a sampling strategy in which we were blinded to this information, and there is a potential for self-selection bias.

6.2 Results

6.2.1 Introduction

The aim was to improve our understanding of how BCF programmes were implemented in practice, and identify challenges that sites encountered in implementing the policy as well as 'enablers' – factors which appeared to facilitate progress with implementation of BCF programmes.

We found that there was mixed progress with implementing BCF programmes across the sites. Some challenges were experienced in relation to the BCF programme itself and aspects of its administration and management (both nationally and locally), while other challenges related more generally to integrated working between health and social care. Many of the challenges are not specific to the BCF programme and they are consistent with the implementation of other new policy initiatives such as personal health budgets (Forder et al. 2012), the Integrated Personal Commissioning programme (SQW, 2017) and the Integrated Pioneer programme (Erens et al. 2016). They include organisational, cultural / professional, and contextual issues. Overall, there was a great deal of variation in participants' definitions and understandings of how the BCF programme was to be implemented and the mix of schemes that were included in local plans.

6.2.2 Setting up the BCF Programme

Background and existing partnership arrangements

In the majority of sites formal arrangements were already in place to support joint working between health and social care prior to the establishment of the BCF programme (pre-2014). In addition to the statutorily required Health and Wellbeing boards, these most commonly included Integrated or Joint Commissioning posts and teams, and joint budget arrangements. These were concentrated around services where there was most interconnect between the NHS and local authorities and often included intermediate care, reablement services, Continuing Health Care, mental health services, and services for older and disabled adults with complex needs.

Participants described that joint budget arrangements took the form of Section 75 or Section 256 agreements (under the NHS Act 2006), and consisted mainly of transfers from the NHS to local authorities for social care to support health outcomes, with some shared governance arrangements. Participants explained that many of these agreements had been set up historically under Primary Care Trusts (PCTs), though some had been set up more recently under CCGs. A minority of sites had also implemented, or were in the process of implementing, other formal integration (pilot) programmes, including the Pioneers programme and Integrated Personal Commissioning, and Vanguards. These sites were described by participants to be further along in their journey towards integrated working. A very small number of sites reported that there was less than previous progress towards joint working (bar a small number of minor joint commissioning arrangements) for some specific services. All sites were at different starting points in terms of integrated working prior to the implementation of the BCF programme.

Main goals and BCF programme development

Local sites reported a range of goals for their BCF programmes, broadly aligned to the national BCF Policy Framework. The most common goals were improving integrated working between health and social care and reducing non-elective admissions. Other common goals stated by participants were improving prevention services, improving discharge processes, protecting current levels of (social care) provision, improved outcomes for service users and patients, and reducing the costs of health and social care in the long term.

The majority of sites attempted to develop their existing joint services through the BCF programme. In particular, many participants reported that the BCF programme had prompted sites to extend and build on what they were already doing in partnership to reduce non-elective hospital admissions and delayed discharges. There was a strong focus across the sites on developing key areas of provision that contributed towards these aims including discharge to assess schemes, case management and care coordination, and intermediate care services. For example, many sites were using the BCF programme as an opportunity to develop their current step-down services (for people leaving hospital) to include multidisciplinary care teams and a greater range of reablement options:

> *"Before we just had step down facilities where people would go from hospital before they went home, just because there were a number of issues that meant they couldn't go directly home. Often that step down facility would be just silted up and people would be stuck there for quite a long time, so we then did a transformation programme about how we improve that and now we've got some reablement flats and then people go there, they have a period of reablement and then they're able to go into their next destination which is often home, and that's proved really successful and it's having much more of a through put than we had before. And the difference being we put a multidisciplinary team in there so that it's helping people with their physio, occupational health [therapy], all of that sort of stuff, which is making an impact. And we've also got some actual nursing beds as well for people who are a bit more complex, that need that support to get out of hospital."* [CCG Commissioner, Site 13]

Approximately half of participants reported that BCF planning provided an opportunity to be innovative and think differently about their current arrangements for integrated working and the nature of their current provision. One site [CCG Clinician, Site 9] for example was using the BCF programme as an opportunity to engage and plan new commissioning opportunities with their local

third sector for a range of community and social prescribing services that would support people to stay in their own home. Another site [LA Senior Manager, Site 5] was using the BCF programme to redesign and remodel their social care teams to align and be coterminous with healthcare teams, such as district nursing, so that day-to-day delivery of services was more integrated. Other sites undertook actions that ranged from auditing hospital and community bed allocation; introducing a combined health, wellbeing and welfare assessment; trialling multidisciplinary team meetings at GP practices for service users and patients with complex needs; redesigning a housing support scheme to integrate with health and social care; redesigning a reablement hospital-to-home service; and collocating teams to improve joint working and communication. Some participants also reported that they were using the BCF programme to look at developing areas of provision that had been delivered 'in silos' before, such as Continuing Healthcare schemes:

> *"[it's] about how we bring health and social care together for the right outcome for the person. Now CHC predominantly uses a medical model to place their patients on, and I think there's some work to be done there... And I think the BCF is allowing us to do that, and allowing us to look at where we can align and put commissioning capacity maybe, even putting staffing capacity to look at those areas we couldn't touch in the first place."* [LA Director, Site 11]

A small number of sites were using the Fund to develop new, additional services to be funded and delivered jointly. One site for example had implemented a new Wellbeing service for older people based in a local community healthcare Hub, and another site had used the BCF Programme to identify the needs of carers in their area and offer new signposting and support services to carers (CCG Clinician, Site 9). However, participants explained that sites were limited in how far they could invest in additional services as the BCF was not a new resource. Therefore these new services tended to be developed by reconfiguring existing financial arrangements for current services, or where CCGs and Local Authorities agreed to make additional financial contributions for specific schemes they wanted to put in place.

Just under half of participants also reported using the BCF Programme to maintain and protect existing services and had reallocated some of their current funding for these services to the BCF. Services reallocated under the BCF Programme often included social care services (such as prevention and community services) that were helping sites reduce non-elective admissions and maintain people's independence. Participants explained that many of these services were threatened by the financial difficulties of CCGs and Local Authorities because it was generally harder to evidence their impact, or they were not connected to ring fenced programmes of funding. A small number of participants also reported using the BCF to maintain what were described as existing core services, such as residential and nursing placements for older people with long term complex needs.

> *"We have a program locally called Sure Start in Later Life which is based around keeping people independent, maintaining independence…and that was enabled to be continued and actually be built on through the Better Care Fund. Whereas if it stands alone and isn't linked into any specific delivery, that actually becomes quite, it's quite a risky place to be particularly for local authority funding."* [CCG Clinician, Site 9]

Many sites also aspired to develop their infrastructure for integrated working through the BCF Programme. There was a particular focus on establishing or building on existing data-sharing processes between health and social care. These sites directed some investment towards the

development of shared care records or other shared tools, however the majority subsequently experienced problems with implementation and these are discussed below.

The submission and assurance process

A common theme expressed by participants was the perception of unnecessary delays in the release of national guidance for submissions of local BCF plans, and subsequently in getting BCF activities started. Some of the practicalities of submitting BCF plans - in particular, timeframes for submission – were reported to have caused difficulties for some sites who needed to organise resources (including coordinating finance teams, partners and dedicated personnel), and in some cases change planned arrangements in response to altered timescales. The assurance process for submissions was perceived to be cumbersome by a number of participants, and many sites reported having to provide a 'disproportionate' amount of information to get plans approved.

> *"I think it's been very bureaucratic the process… I think the amount of effort that's gone in to the assurance process, the plans etc., has been disproportionate to the funding."* [CCG Commissioner, Site 1]

> *"It felt like an awful lot of planning requirements, an awful lot of hoops to jump through, so whenever we have to rewrite our annual plan, it's been a huge, huge labour-intensive task to make sure that we have ticked every single box and answered every single question."* [Joint post Commissioner, Site 11]

A small number of participants considered/suggested that a lack of coordination between regional and national bodies during the assurance process had hampered progress in their respective sites and led to substantial delays in getting plans approved. In one case, for example, a participant explained that the BCF plan for their site was rejected during the initial submission process because the CCG was in severe financial difficulty and there was concern it could not make its financial contribution. A local resolution was therefore reached with the local authority to make up the short fall in order to meet national conditions for minimum financial contributions from partners. However, the subsequent revised plan was rejected at the next stage of the assurance process on the grounds that the CCG had not met its minimum financial contribution, and the submission was escalated.

Once initial plans had been approved, ongoing BCF reporting was also reported to have caused issues for some sites who struggled to devote resources to monitoring and reporting activity on a subsequent basis. In these cases participants felt that timeframes for required reporting were insufficient to allow for BCF scheme development and implementation, and this distorted national perceptions of their performance. Several participants also expressed frustration that timeframes and required information for BCF reporting were subject to change and this influenced the information they were able to collect and provide. In addition, participants remarked that required reporting for BCF was not aligned to other reporting processes and timeframes that were in place (such as for Health and Wellbeing Boards, local government, and other NHS planning processes), and this caused an additional administrative burden which hampered progress.

6.2.3 Progress with implementation

Progress with implementation of the BCF appeared to be quite variable in our study sites, according to the general perceptions of participants. They pointed to a range of specific factors which helped or hindered implementation of the BCF Programme in their respective sites, as well as a number of wider contextual issues which more indirectly influenced progress.

Relational factors affecting implementation

BCF 'champions', leadership and project management

Progress with BCF implementation appeared greatest where there was strong project management. Over half of sites had appointed a project manager or lead for BCF, who was responsible to an existing executive governance structure (often for example a senior Commissioning Team or executive Health and Social Care Board). In these sites the role of the project manager/BCF lead was key in coordinating BCF planning and reporting, managing stakeholder relationships, and mobilising and sustaining support and engagement with the process at both strategic and operational level. For example, a BCF lead in one site spent significant time building support among frontline staff through informal conversations and interactions, as well putting formal structures and mechanisms in place (such as attending staff meetings) to move progress forward. BCF leads were also able to align BCF to other broader transformation initiatives by linking with wider networks. In one site for example the BCF lead attended STP planning meetings, and in another site the BCF lead attended regional commissioning meetings.

Clear and established governance processes for BCF were also said to be important for progress. Some sites adopted governance systems that comprised a programme executive made up of the CCG, Local Authority and provider chief executives, respective commissioning teams in health and social care, and a series of operational groups including for example IT and finance. In this way the governance structure was designed to include a wide range of stakeholders and thereby mitigate against potential challenge or loss of momentum to BCF.

A few participants identified either themselves or others within their respective sites as 'champions' of integrated working: someone who reminded colleagues of the benefits of integration and provided sustained motivation. Sometimes this role was held by the BCF lead/project manager, but senior leadership appeared the most critical to success in many sites. This was because of their ability to establish an ethos and direction at system and organisational level which then filtered down to staff. Clinical leadership was also important because of the ability of clinicians to engage with and motivate their professional peer group.

> *"Our higher level do recognise and understand the work that is done and is needed in order to keep this kind of presence going, and I think that's important to recognise, because sometimes us people sitting down in that middle management type place can deliver these programmes, but sometimes if you've not got your senior buy-in then it's relentless and sometime it's soulless. But we know if there's a problem or an issue, or if there's an idea that might change it and make it better, that can be put forward."* [CCG Senior manager 2, Site 11]

> *"I have had buy-in and support completely from the higher management in [de-identified], both CCG and local authority and [de-identified]…it started off as a project and I was the project manager, so it has developed and changed all the way along, and obviously I had to*

adapt it for different hospitals as well. So, you know, if I needed additional support, additional funding that I could give a business case for, that's been forthcoming, which has been really helpful. And also, you know, some of the issues that we have had perhaps with the higher management in the acute trusts, where they're not playing ball as they should be, I have been able to go to our management, who are on the A&E boards and that sort of thing." [CCG BCF Lead, Site 11]

"I would argue that a lot of the things that stop integrated working is when people don't have the same vision of what they're trying to deliver…Now I think from the very start from the first day I arrived here, what I picked up was the ability of the organisations to share a vision, work together, they'd made it very clear and some of that came from the clinical chair and the chief officer we have, that they'd made a decision that they weren't having any of this "It's their fault, it's your fault", any of that nonsense." [CCG Clinician, Site 9]

Creating shared beliefs about the benefits of integrated working was described as critical to progress. In sites where most progress had been made, participants explained that leaders expressed strong support for and belief in the aims of integration, and viewed the BCF as contributing to their overall efforts towards integration. Fostering a sense of shared ownership of BCF between partners was a significant factor that contributed to progress. Participants explained that this did not mean that disagreements did not occur between partners about where BCF money should be spent, but rather that partners were agreed on the shared responsibility for decision-making. This often meant relinquishing some control and avoiding a 'blame culture'.

"Yes, so where those schemes have succeeded, and I think this probably isn't-- well, it is about the BCF, because these are BCF schemes, but none the less, it's not about the BCF in the sense that this is what generally makes those integrated pieces of work succeed for us, is where we can genuinely get shared ownership of the problem…People accept that it is a problem for everybody. Yeah. And rather than a problem for one or other party…There are still problems with it, but that gets us to a much better place, but the only way that was possible were the different people accepting that they couldn't both achieve the outcome and retain control, and I include us in that." [Other NHS Commissioner, Site 5]

The importance of having a shared vision among frontline staff was also stressed by participants. Developing shared priorities around the patient or user of services was seen as helpful for facilitating teamwork in multi-disciplinary services. Sustaining engagement from frontline staff was reported to be easier where senior staff fostered positive relationships between partners at organisational level, and where staff felt confident and enabled to make decisions, ask each other and senior staff for information, and go beyond the traditional boundaries of their role to achieve shared objectives.

Senior system and operational-level leadership were viewed as crucial factors for progress by those we interviewed. Some identified that there was a lack of senior or system leadership and as such a lack of shared vision about what the BCF was trying to achieve, and this meant a wider paucity of engagement from partner organisations. A few sites also experienced multiple changes in leadership across partner organisations during the implementation period and this had hampered progress as momentum was lost. In a small number of areas, perceived poor operational-level/middle management leadership was reported to be an issue and meant that shared ambitions failed to be driven through organisations and sustained by staff on the ground. In addition, it was common for operational and organisational issues to end up taking priority over shared aspirations:

> *"It's made people get around the table, and people can nod their heads and say yes we agree with what we want to do at a high level, but I think as soon as they go back to their organisations each provider has got its own priorities and its own direction and its own methods for its survival."* [CCG BCF Lead, Site 2]

In some areas, engagement from partners was reported to have reduced, after the initial enthusiasm for the BCF where other agendas, pressures and priorities became more significant.

> *"There seems to be a bit of a disconnect between where we were and that level of engagement and opportunity a couple of years ago to sort of where we are now. It seems to be a bit more fragmented and whether that's down to the BCF or just down to the national agendas moving, I think everyone's not on the same page anywhere whereas they might have been a couple of years ago."* [CCG Senior Manager, Site 2]

Finally, some participants felt that engagement needed to be broadened beyond typical health and social care partner organisations to include the wider care market, local users of services and carers. In particular it was felt by local authority participants that social care involved a much wider range of (external) providers than health and that these groups were often not engaged during planning processes, yet crucial for many integration initiatives which were focused on services in the community or preventative services.

Relationships and communication

Where the most progress had been made, participants unequivocally attributed this to good working relationships between health and social care partners at both individual and organisational level. Trust was an important issue, and where this was absent sites were struggling to make progress and were becoming bogged down by financial, contractual or legal issues. Successful BCF planning and implementation tended to occur where there was confidence that leaders and other senior staff were committed to working with each other and to implementing lasting change, and where leaders were open and willing to share information. In addition, strong existing partnership arrangements meant that some sites already had some understanding of each other's pressures and positions and this was helpful in negotiating BCF plans.

> *"And the thing that we've found has been most important has been developing those relationships and values. A lot of people get fixated on the contractual and legal structures, and is it integrated or partially integrated, or an alliance contract or what's your provider/alliance structure…That's what all the noise is about, but the reality is the people at the heads of organisations have to get on with each other and then tell their staff to get on with each other."* [CCG Senior Manager, Site 11]

Similarly at operational level, willingness to collaborate and work together was vital for success of delivering BCF schemes and services on the ground. Coming together in the interests of service users and patients was a key driver for good working relationships (also at system level), and clear communication from managers to frontline staff about the benefits of proposed BCF initiatives and schemes.

> *"Well, we've had some good staff working together across from the different partners. So we had an operational group and then a steering group for a lot of the schemes, and they really worked together on working on the service specifications and how these things might work and what we want to deliver. And so some real good working. And then—so for example, the*

person from the acute hospital, the manager there that's in charge of discharges, has been out and sat in forums of nursing home managers to talk to the nursing home managers about the problems they face with discharges. So it's been down to a lot of individuals working well together." [CCG Senior Manager, Site 3]

A small number of sites had set up joint posts under the BCF, often project manager roles, to coordinate BCF planning and implementation, or to oversee specific BCF schemes and services. These joint posts allowed the appointed staff to gain a better understanding of the nature of other individuals' and organisations' work, and engendered a sense of shared ownership over integration plans. Those who were employed in joint posts also reported a heightened awareness of issues such as how the use of professional language use could influence the success of working relationships. In addition, co-locating services (for example multi-disciplinary teams) was generally seen to facilitate better relationships between staff. Working together face-to-face in the same building improved the quality and frequency of communication, allowed staff to develop their understanding and awareness of each other's role, and could accelerate problem solving. However, participants also stressed that co-location was often seen as 'the answer' to integrated working, but difficulties due to separate governance systems and professional processes could still ensue.

Several sites reported that developing relationships with wider stakeholders had also contributed to progress. One site for example had spent considerable time improving and building relations with their local voluntary sector and involving them in developing more innovative integrated services and schemes under BCF (Other NHS Commissioner, Site 4). Another site had strengthened their engagement with public health colleagues in BCF planning and closely aligned plans to their existing JSNA (Joint Strategic Needs Assessment) [CCG Senior Manager, Site 9]. Recognising and valuing the different kinds of professional knowledge and skills held by different stakeholders was seen as important in developing relationships and making progress with integrated working.

In areas were historic relationships between health and social care organisations locally were poor, as participants in a small number of sites reported, progress with implementation of the BCF was perceived to be adversely affected. Difficulties with planning could occur where there was a culture of 'blame' and distrust between organisations, leading to a lack of openness and willingness to share information. In these sites participants explained that significant tensions had arisen over organisations' respective financial contributions and how money should be spent, and BCF negotiations had strained existing relationships further.

"This really strained them and I had to spend a huge amount of time trying to keep those relationships going, trying to keep the conversations going, trying to keep the projects going. And I suppose at a middle manager level, we were all still very keen to keep delivering the projects, even though we knew that at the high level the finance directors might be falling out over it. And we've had lots of conversations, chair to chair conversations, between the CCG and the local authority and all of that sort of thing. But my experience is the Better Care Fund has definitely made things worse in terms of partnership working here." [CCG Senior Manager, Site 3]

Even in sites where relationships were perceived as good, participants reported the challenges of having to negotiate about financial arrangements for the BCF. Reflecting generally, some participants

also stressed that inherent system dynamics, such as the purchaser – provider split, hampered progress with creating a joint working culture necessary for integrated working.

Relationships were complicated where CCGs were working with more than one local authority in an area, or where BCF initiatives were up-scaled and involved multiple partners (for example at sub-regional level). Joint posts at senior or middle-management level helped manage a range of relationships and 'build bridges' in some sites, but in a few cases were also viewed with mistrust by some individual partner organisations who were unclear where their loyalties and accountabilities lay. Relationships also suffered where circumstances changed and senior discussions failed to reflect changing organisational issues for partners. This was sometimes due to poor communication about developments, but was also sometimes due to a reluctance to share organisational and corporate information with 'competitors'.

At operational level, some schemes and initiatives suffered from poor relationships between staff. This was often attributed to lack of understanding about the working arrangements, responsibilities, protocols and governance processes of other teams and partner roles:

> *"We had what we called a community rapid response team--Which basically was a team of nurses that would deal with some of the, erm, lower category ambulance calls. So we were commissioning a team of nurses from our local [organisation] community services providers and then, erm, trying to develop a relationship between that team of nurses and the ambulance service. And it just got tied up in a whole host of knots to be honest with you about things like lone working policies, clinical governance arrangements, risk assessments….But, yeah, that didn't--, that didn't turn out in a way that we'd originally planned…I think from a [organisation] perspective we were--, we were dealing with two organisations who seemed to find it difficult to work together--…And, you know, the ambulance service, erm, probably had a different view of the world from us."* [Other NHS, Commissioner, Site 4]

Overcoming these challenges was said to involve clear communication about the contributions required from different organisations and their staff, and the rules governing how such partnerships and initiatives should work. For example, participants from one site explained that senior leaders had worked to create a culture whereby frontline staff and middle management could approach senior managers with concerns regarding BCF services or suggestions for improvements.

Cultural, organisational and working differences

A key challenge of integrated working is to be able to reconcile different cultural and professional perspectives on care, an issue with a long history in the English care system (Lewis, 2001; Glendinning, 2003). We also found that progress was limited where there were entrenched professional and organisational practices, and cultural differences. This was major barrier to progress for many sites.

> *"I mean one of the biggest barriers is buy-in and getting cultural change. So by its very nature, erm, systems that are influenced by a range of professionals, all of whom have a slight idea about what's--, different idea about what's right, is a--, as much a marketing campaign as it is about a doing campaign, if you like…getting the cultural and hearts and minds challenge met. That's the first thing."* [LA Commissioner, Site 14]

Some of the schemes and services implemented under BCF required professional boundaries, roles and responsibilities to be renegotiated as staff found themselves working as part of wider multi-disciplinary teams with different management structures. Difference in approach created challenges among staff in a small number of sites where traditional ways of working were perceived to be threatened, and where staff were accustomed to working with, and being accountable to, only others of the same profession and training. In one site for example, professional differences were apparent between social work staff and nursing and occupational therapy staff about a palliative care scheme for a patient to die in their place of choice (at home) and the issue of medical risk.

In other cases, schemes had failed because staff were either reluctant to adopt new practices, lacked training in the skills required, or were unaware of new procedures. For example, in one site [LA Director, Site 16] GPs were not referring older people to a new multi-disciplinary assessment scheme to have their care needs assessed and managed. In another site [LA Senior Manager, Site 1], care home staff were not using digital health equipment that was installed by the CCG/local authority as part of the BCF plans.

Although the aim was patient-centred care in many new schemes, participants reported that staff in some sites struggled to move away from their traditional task-based, 'siloed' patterns of working.

Difficulties in aligning organisational processes for schemes were also discussed by some interviewees (for example, aligning processes for a single assessment process for discharge). One site explained that they had attempted to develop a joint brokerage service for their Continuing Health Care users but that funding arrangements and payment processes were too complex and the scheme was currently being revised. Some interviewees meanwhile stressed that more radical, far-reaching changes were needed to health and social care structures in order to achieve full integration, particularly at the level of governance, legislation and policy.

> *"What we didn't have before were integrated discharge team and integrated discharge pathways, and we're sort of in the process of implementing those. So it has--, it has enabled us to move those things forward, but we do still have, you know, we do still have health providers and social care providers in separate organisations and while they're all in separate organisations with separate management structures and different sort of drivers, you know, political drivers for us, national drivers for the NHS, it doesn't feel to me as if it would be truly integrated till it was all in one organisation."* [LA Senior Manager 2, Site 1]

Engagement from all partner organisations was seen as important in the implementation of the BCF. Experience of engagement – and perceptions thereof – appeared to differ between professional groups:

> *"I guess in our minds we were very clear what we meant, we had a model, we proudly showed the model off, and diagrams and had everything… But clinicians are being clinicians and colleagues being as they are didn't buy into it at all, not once…you've got to engage clinicians right off, we all knew it was almost barn door obvious, you know what I mean, but if they hadn't been in the same room or hadn't had the opportunity to have the conversation -- think they would have got to the same place, but they hadn't been on the journey with us, so we revamp it, we regrow it, okay…So I think that--, we ought to go back and say, could have done that differently."* [LA BCF Lead, Site 8]

Several sites experienced difficulties in engaging clinicians, particularly GPs, due to work and time pressures and a perceived 'cynicism' or 'fatigue' about integration initiatives.

> *"Unfortunately the GPs were not referring sufficient patients to this service, they all had patients that they thought would benefit from the service in terms of admissions avoidance but then they weren't proactively referring them into it. So it became a victim of an NHS tendency that 'if it isn't working within three or four months let's stop and do something else'. I think it's a real shame as insufficient time is given to testing transformation properly."* [LA, Director, Site 16]

Participants also stressed the importance of engaging finance directors and managers early on in BCF planning to address issues of financial accounting in pooled budget arrangements. This was seen as particularly important as schemes and services evolved to avoid concerns about financial risk, which could otherwise derail the process.

A small number of sites also experienced different levels of engagement from other professional groups within services or schemes set up under the BCF (for example social workers and occupational therapists). This was attributed mainly to professional differences, existing work pressures, and different views about the merits of integration activities. Clear guidance regarding new role responsibilities and flexibilities were said to be vital for frontline staff to feel confident about BCF schemes and initiatives, particularly where traditional professional identities or roles were perceived as threatened.

Organisational factors

Budget arrangements

Budget arrangements and processes could create challenges for local sites, and negotiations about financial arrangements were a major influence on progress with BCF implementation. Again, these issues were expected to be challenges for BCF sites to address, and indeed this accords with international experience (Mason et al., 2015). Sites were legally required to spend the BCF through a pooled budget with specified governance arrangements and could combine existing pooled monies with the BCF. However, sites experienced a number of practical issues in operating pooled budgets due to the separate governance and financial regulation arrangements in place for spending across health and social care organisations, meaning aligning spending programmes was complex. For example, managing funds for the BCF was complicated where contributions to the BCF involved drawing money down from organisations' other spending plans or finance streams, and where money was tied up in different budget cycles. In one site for example, a participant (Other NHS Commissioner, Site 5) explained that the BCF was managed as a finance stream under existing pooled budget arrangements, rather than as a completely separate budget. However, this meant that monitoring and reporting of BCF activity and attribution of outcomes was more difficult as integration activity was measured as a whole in the context of the overall pooled budget.

These issues were described as a source of tension, particularly among finance teams who were concerned about having to (re)balance budgets. Arrangements for sharing financial risk also became a political issue for some areas and were subject to lengthy and time consuming negotiations where organisations were concerned about financial accountability for joint BCF schemes and initiatives.

> *"There's some debate as to longer term whether that will even continue to be a pooled budget because of the challenges. And some of the decisions the [organisation] have taken in the last couple of years, the last year particularly, in trying to bring in a financial recovery plan, that will almost, you know, destabilis[e] the pool…it caused a lot of angst in negotiating, agreeing that."* [LA Senior Manager, Site 5]

Tensions about how and where money should be spent also arose in some sites, and differences of opinion were felt in a number of sites over organisations' respective financial contributions. With a few exceptions, difficulties tended to occur in sites where CCGs and local authorities were facing particularly intense financial pressures and where relationships were already strained. A small number of participants suggested that a lack of shared expectations about the aims of BCF in local sites hindered progress. Participants reported that health organisations in some sites saw the BCF as a means to 'prop up' social care that diverted resources from health; meanwhile some social care organisations perceived that the BCF framework was too concentrated on relieving pressure on acute care providers.

> *"To some extent it put the money more at the forefront. In a way where--, where--, money was obviously always important here, without a shadow of a doubt, but it became about how much money is mine and how much money is yours, rather than the idea of actually this is just money in the locality. And certainly for us here it probably--, it probably, by the second year of the BCF, set us off track a bit while we went back and worked through the complexities of understanding of what was in that £10,500 million, the classic BCF money."* [CCG Senior Manager, Site 9]

Geography and non-overlap of health and social care institutions

Where organisational footprints and geographical boundaries were not coterminous, the implementation of BCF plans was more complicated. In almost three quarters of sites acute trusts provided care across several different geographical areas for other CCGs and local authorities, and were in the process of reconfiguring services for their Sustainability and Transformation Plans (STPs). This could cause problems for implementing BCF initiatives that required staff to be transferred from other services, or processes to be reconfigured in one particular area.

> *"Because of our geography we have a bit of a complication because the LA works coterminous with the CCG but not coterminous with the acute FT and obviously the FT wants to have the same processes across its footprint… because the hospital, if they're going to change the way they do it, they want to do it the same across their footprint. So we've got this knife at the core in the middle of [place name] but basically we're in the corner of everybody else's footprint and that goes in all different directions."* [LA BCF Lead, Site 1]

In order to address this, one site we spoke to (CCG Clinician, Site 11) had collaborated with the three other local authorities that worked with the acute trust to develop a discharge 'passport' for patients requiring a social care assessment. The passport comprised the same paperwork to be completed by the acute trust so that hospital staff could follow the same process for patients being discharged for assessment by all four different local authorities.

In some areas, CCGs were working with several different local authorities, and vice versa, often with different financial positions, local priorities and population needs. Balancing the priorities of different

partners could be difficult, however, these sites attempted to develop shared aspirations regarding BCF programmes across partners at the strategic level, while reflecting more specific local needs:

> *"We were able to just get some common agreements around, you know, a vision for the populations across [place name] and [place name]. But then when it came more into the detail, it then had to be divided into their own localities, just because of the different, I suppose competing priorities, for the local authorities."* [CCG Commissioner, Site 1]

Interviewees suggested that another challenge was driving and maintaining the pace of progress across multiple partners with different capabilities, and configuring plans to meet the specific delivery requirements of different partner organisations. Progress with different BCF schemes was therefore often mixed within individual sites. Where BCF schemes involved a greater number of partners from primary, secondary and social care, more time and resources needed to be devoted to communicating, project managing and coordinating changes so that pace and progress was aligned.

> *"The second thing is that the solutions aren't--, because of the scale of [place name], the solutions aren't always the same because everyone starts from a slightly different point and you're trying to tailor what you're doing to make it relevant, but at the same time, you're trying to achieve the same end goal. So different bits of the system are running at different degrees of heat."* [LA Director, Site 16]

IT systems and structures

Many sites attempted to develop processes and tools for data sharing as part of their BCF Programme. However the majority of sites experienced difficulties in implementing these tools. Difficulties related to differences in the nature of data collected and required by partner organisations, differences in protocols for data collection and also for releasing data to allow these to flow across organisations, and differences in systems to access and use data. One local site for example had developed a local care record for patients which included primary care information regarding diagnoses, main medications, allergies, as well as their social care plan and main contacts.

However, the site explained that they were not using the care records proactively in developing comprehensive care plans and that secondary care information was limited due to issues in data sharing between primary care and secondary care. The site also wished to develop the care record to inform local commissioning, but data protection issues prevented them from sharing the record with commissioners. This in turn made it difficult to track and evidence the success of interventions and services.

Systems configuration in some sites also meant that effort was duplicated rather than reduced among staff:

> *"If we need to update somebody's records because we're working with them on their OT, we can't. We've got to update somebody else who will update the record"* [LA BCF Lead, Site 1].

Other sites meanwhile had not anticipated the additional approvals and resources required, for example, for physical installation of IT systems:

> *"There are some system difficulties, I mean even down to can we put a line into a NHS building to give access to a council system. You know that whole sort of very physical barrier if you like.*

We did, we got there in the end but it's heavy going, beyond what it ought to be really." [LA BCF Lead, Site 1]

Sometimes challenges in data sharing were reported to be due to privacy and security concerns, meaning that some partner organisations were reluctant to release data. This was a particular issue among GP practices:

"I think for us locally at [place name], it's been very, very difficult to achieve some of those national conditions particularly around data sharing. That's one big issue that I think few areas have conquered, if any really, and it's the sharing of patient data between health and social care, basically between the GPs and the social workers. Because of the information governance issues largely, I don't really think there's a technical barrier to it… by far the greatest factor I think is the risk averseness on the part of GPs to actually allow it to happen really and to share their data, share patient data with social workers. That seems to be one of the major issues that we're yet to conquer really." [CCG BCF Lead, Site 12]

Wider contextual factors

In addition to the factors reported above, participants discussed wider issues and pressures which were an important part of the context in which BCF implementation was taking place. These included challenges with workforce recruitment and retention (particularly in the domiciliary care and care home sectors), broader market capacity and sustainability issues, and the changing national policy context and financial austerity. These issues were seen as a risk to progress for many sites, and had an indirect influence on the pace of implementation of the BCF.

Workforce recruitment and retention

Many sites reported experiencing significant workforce shortages and struggling to attract enough staff to meet demands for care locally, especially in the domiciliary care and care home sectors. Local authority participants in some of these sites reported this in-turn had a knock on effect on the availability of care services to people, and staff's ability to source care packages and place people quickly into suitable schemes and services. Both local authority and NHS participants stressed that difficulties with recruiting nursing staff in the care sector meanwhile affected sites' ability to provide high-level and complex care out-of-hospital, on which many BCF schemes relied.

"Also in terms of staffing, I think we've got huge workforce challenges as well, which really has been challenging, particularly in terms of nursing, so the ability to recruit kind of band sixes, band fives, there's just a national shortage as well as healthcare assistants, so domiciliary care market is incredibly challenging at the moment. And I think it's the workforce model, that if we absolutely don't get it right it's going to impede what we do around integration because you can't deliver an integrated model without the right staff from the ground." [CCG Commissioner, Site 14]

Market capacity and sustainability

Related to the issue of workforce recruitment and retention were fears about longer term market capacity and sustainability, and short term resilience to cope with proposed changes set out in BCF plans. Several participants remarked that the care sector was struggling to cope with the increased demand for short-term beds and intermediate care packages as sites faced pressure to place people quickly on discharge from hospital in their latest BCF plans. This seemed to be a particular issue for smaller sites and rural areas who explained they had a limited number of care providers.

Local authority participants stressed that capacity to provide for people with long-term care needs was affected. Local authority participants also described that the care home sector was shrinking in their area as investment was being (re)directed into community based services under wider strategic commissioning plans. Retaining a holistic view of the market and its capacity to respond to changes under BCF plans was seen as important by these participants.

To address these challenges a few sites were developing their most recent IBCF (Improved Better Care Fund) plans to 'transform' their local care home sector. Examples discussed by participants included introducing pharmacists in care homes, working in partnership with NHS staff to deliver care, and supporting care providers to build their workforce through training and up-skilling. A small number of sites were also looking to rationalise and re-procure their nursing, residential and domiciliary care provision to a small number of providers who could offer a comprehensive range of care services as well as carry out needs assessments.

> *"So you know, getting people out of hospital's great if you've got a community sector and a care sector that can cope with that, but actually shipping them out from the hospitals and getting them out, you've got to have that sector resilience there to be able to have them coming home, coming to care homes, coming to wherever you like. And I think one of our big risks in [de-identified] is our geography and our demographics. It can take you an hour and a half to get from one end of [de-identified] to the other. We're right on the seaside, which attracts an elderly population so we've got very, very much an ageing population, and our care market, our care homes are running at 96% occupancy at any one time. So we've got a big drain on our care market if you like, and because we're so rural, getting domiciliary care providers out to do care at home is a challenge, and that's why again we're using our IBCF money to do a lot of work with our care homes and our care sector."* [CCG BCF Lead, Site 15]

Several participants also expressed concern that in the financially constrained context, efficiency improvements and the mitigation of financial risk were, in general, continuing to drive commissioning and procurement practice. This was seen to be at odds with the principles of joint working, innovation, and long term development of relationships with providers required by integration initiatives such as BCF. There was particular concern that current contracting processes and fee negotiations with providers hindered attention to longer-term issues of market shaping.

The wider policy context and financial austerity

A common challenge reported by the majority of participants was about the complex and changing wider policy context in which the BCF was being implemented. A key finding was that, at the time of the evaluation, the majority of sites were starting to redirect and focus resources on STP proposals, which significantly affected the degree of priority given to BCF planning. Many sites were considering how to align BCF plans with emerging STP plans, but this was a struggle for sites who felt that STPs were more health oriented. STP planning also affected existing relationships between local authorities and CCGs. In a few cases, local authorities felt they had not been consulted or engaged appropriately with STP plans, and this in turn created difficulties for joint working on BCF planning. Uncertainty regarding future structures of (acute) care as a result of STP planning appeared to further complicate BCF progress.

> *"But I think there's a sense there that STP has pretty well blown it out of the water. We were saying only this morning that we know the BCF--, we're expecting the guidance to say the BCF*

will align with STP priorities so I think we're… hoping that it fits…but we simply none of us have got the resource to think STP, BCF are two different things. They've got--, they've got to flow, but it still feels like two quite separate initiatives, two quite separate reporting and policy…streams." [LA Commissioner, Site 3]

"Actually the STP is kind of almost trumping it, and with different monitoring, different planning arrangements…And it's been very noticeable in the last 12 months that attendance at the BCF board has reduced significantly to the extent that there is no representation, or there hasn't been from the acute hospital [hospital]… So I think definitely in the last, since STP was announced a lot of our partners just see BCF as being irrelevant." [CCG Senior Manager, Site 2]

In addition to STP planning, several participants reported the many other integration initiatives which required resources. Some sites were implementing Vanguard, Pioneer or Integrated Personal Commissioning (IPC) programmes alongside the BCF. While this had benefits in terms of strengthening relationships and a culture of integration in sites, participants also noted the number of meetings that needed to be attended and often experienced a duplication of effort and workload to develop strategies and meet various performance management requirements for different initiatives. Allocating financial and human resources across different programmes was problematic for many sites who were already constrained by financial pressures on the NHS and social care:

"I think how it feels is for the majority of colleagues I work with is chaotic. It's like there's so many initiatives going on and I don't think we're being probably as effective as we could…and that's where it gets messy really because of competing agendas across a number of system changes that are trying to be put in place really. And it feels the STP is very health-focused and I think it needs to bring in that social care element too really, because you can't underestimate, I suppose, how big a challenge that is…because of the resources and the cuts as well across the NHS and most of us are doing two or three jobs that would have been done by two or three people in the past. It just can feel that there's a will and a vision and everyone can see what needs to be done but it's just we waste so much of like the workforce's time duplicating. It's requests for information, different meetings…" [CCG Commissioner, Site 1]

"And it also means that the same folks have been called to attend many things in different places all the time. 'Cause we're all short of bodies. Particularly in the local authority side because of cuts and all the rest of that and you really have to pick and choose and you start to think 'why are we doing that', there's a definite sense of initiative overload. Yeah, without a doubt, there are too many. It ought to be focussed in one area." [LA BCF Lead, Site 1]

A common theme among sites was the difficulty of having multiple policy initiatives operational concurrently. Overlapping geographic boundaries had the potential to cause confusion and disruption to planning for each respective policy and resource allocation. Participants explained that resource spent tackling some of these issues could be more valuably spent on the implementation of those policies. Participants stated whilst they understood policies such as STPs, Vanguards, New models of care, and IPC, were part of a larger step towards 'overall integration', that these also sometimes had the unforeseen consequence of coming into conflict with each other.

"So bringing all those together trying to get some agreement in an STP footprint whilst simultaneously trying to have a better care fund plan that relates to one small part of that footprint but having relevance across the acute provider that's common to both, the complexity just became ridiculous really. It felt like policy overlaid upon policy and no one had

really thought through how these were going to work in practice. And I think we're still there in that place." [LA, Commissioner, Site 3]

Many participants expressed uncertainty about the impact of other national-level changes and policies on BCF. For example, several NHS participants discussed the implications of the NHS Five Year Forward View for the reconfiguration of primary care and new care models, and were uncertain about how far sites would be able to clarify and align BCF initiatives with any changes. Several NHS participants also discussed changes in wider NHS performance targets which were felt to direct the system in a way that diverged from implementation plans and targets for BCF.

The wider context of austerity was a clear imperative to improve integrated working for many of the participants in our evaluation. Here participants reported that financial pressures had prompted partners to seek collaborative solutions to the shared problems of meeting increasingly complex care needs in a financially restrained context. However, severe financial pressures could also inhibit progress in some cases, as it prevented the dedication of resources and personnel to expensive implementation processes, and the majority of participants perceived that ongoing financial pressures posed a risk to progress.

"At the moment it's the financial situation that's constraining us, the problems across health and the council, and they will have to be resolved at a national level, as we heard on the news this morning…, saying it's unsustainable and provider trusts owing millions of pounds and councils having to save millions of pounds. It is a very challenging time at the moment." [Other NHS, BCF Lead, Site 4]

Support and capacity for BCF

National support arrangements for BCF and learning from other areas

A small number of sites noted that they had found the national directives and policy framework around BCF helpful for focusing activity. Participants in these sites explained that where integrated working was at early stages or where relationships were still maturing, the BCF policy framework provided a clear steer for lead partners to facilitate discussions to improve joint working. This was especially important in the absence of alternative mechanisms and levers to induce reluctant partners to collaborate.

"It probably has been a glue that has kept us going on a lot of the more difficult things…if we ever find ourselves in a position with any of our key partners where they say, well, you can't work with us like that, you say, well we have to because it's the Better Care Fund, you know, that's our--, that's--, we're required to work with you in this way. And, you know, i.e. with our acute partners, we're required to work with you to try and reduce your elective admissions, we're required to try and disinvest in you and reinvest in the community, that's--, you know, that's what it's all about. So, I think from that point of view it's--, it can't have been anything other than helpful." [Joint post Commissioner, Site 11]

A small number of participants also reported that the BCF framework and associated metrics had helped them to 'sense check' their own progress towards integrated working by enabling sites to identify some key areas for improvement, or offering reassurance on aspects of their performance. In doing so however participants reflected on the balance needed between local flexibility to develop approaches to integration for specific local contexts, and national mandates which could drive the process and in some instances provide helpful guidance. It was also generally felt that learning from

other areas could be helpful in developing schemes and services, particularly where sites were adopting common approaches – in the use of multi-disciplinary teams or discharge schemes for example. Again, however, the importance of recognising specific local dynamics and different 'starting points' was stressed by participants. In determining whether an approach developed in one particular area was transferable, participants stated that issues such as financial position, local workforce, and local provider and market issues were significant.

> *"I suppose you could say then that the request for us to self-assess ourselves and to bring in the high impact change model into the BCF framework meant that we focused, we did the self-assessment, we looked at it, we had conversations about it, we measured ourselves against the model, and then we were able to say well okay this is what we need to do in order to get to where we want to get to. So it has been helpful from that respect."* [CCG Middle manager, Site 11].

> *"So like this impact model, sometimes things like that and saying what are you doing to implement this can be helpful 'cause it can give you some benchmarks to say actually we should be doing a bit more of this. As long as they don't then attach a whole load of consequences to not doing it but, you know, saying actually we want to know what you're doing around this, so I think some of those can be helpful actually 'cause it can focus us rather than wasting time thinking what are we going to do locally. But then again, some of that flexibility is very, very helpful because it allows us to do that more test and learn and what--, because we can't just cut and paste stuff from other areas around the country and think it will work here 'cause we, you know, there's a whole load of factors that will impact on that, you know, that would mean that that wouldn't succeed."* [CCG Commissioner, Site 13]

Approximately a third of participants had accessed support regarding BCF from Better Care Fund Support Teams. The majority of these participants had found the Support Teams helpful in developing BCF plans and dealing with more specific local issues, for example during the submission process or advice regarding meeting national conditions. In terms of the different elements of support on offer to sites, participants expressed particular enthusiasm for digital support and webinars as these could be accessed easily and flexibly, and participants could be selective according to their specific requirements. However online forums were perceived to be more problematic as they relied on people posting in them and having the capacity and willingness to share information. Views were mixed about BCF workshops and events. Participants generally felt that attendance needed to be weighed against time and travel costs, particularly as the content and support on offer was seen to be more generic in nature, and a very small number of participants reported that workshops had not fulfilled their support requirements. There was general enthusiasm for BCF area leads, and several participants stressed the benefits in terms of cross-fertilisation of ideas and learning, and facilitating connections and networks with other integration agendas and initiatives. Finally, some participants felt that whilst the support offered nationally regarding BCF was comprehensive, it was often under-utilised locally due to staff time and capacity pressures, and a very small number of participants questioned the use of resources devoted to BCF support programmes.

Capacity and resources for implementation

Available capacity and resources among organisational representatives to effectively implement the local BCF programme was perceived as a barrier to progress. One key issue described by participants

was that BCF was not new or additional money, but involved reconfiguring existing financial resources. As well as the practical and political challenges this posed, some participants felt that the lack of additional resources limited what could be achieved and hindered progress with developing integrated services and schemes.

One issue reported by several participants was the lack of resources to manage transitions to integrated working, for example to temporarily double-run or manage the closure of existing services while new ones were being implemented under the BCF. Participants also perceived that the lack of additional resources to 'seed fund' integrated services had hampered innovation, as sites were reluctant to commit funds to projects which had not been piloted or trialled, and for which there was less evidence about effectiveness. Participants also reported difficulties with moving money around the system. Several participants for example described that in the context of severe ongoing pressures on acute services, their sites struggled to reconcile and justify budget decisions for reinvestment in community and preventative services with their acute providers, despite the perceived long-term benefits of such an approach.

> *"So the main objective for the BCF programme was intent, to try and do integration, but the problem was there was no money, it was all old money. So you couldn't do anything. The money was effectively rebadged Section 256 money, which basically means it was existing activity, most of it all allocated against people, you know, jobs as opposed to buying widgets. And as such you're very limited in what you can do in terms of changing what is done because, you know, demand is there."* [LA BCF Lead, Site 10]

> *"I think in reality the ability for the local authorities, the CCGs to actually do anything different was hampered by the fact that there was no seed money there…if you wanted to close down an old scheme…there was no money to close that down, you know? Because you can't, you need money to close a scheme down and to transition into a new process. There was no money for that."* [LA BCF Lead, Site 10]

> *"It hasn't been new money so we've had to work with what we've got, that means that we can't even double run, you know, stuff that we might need to, you know, start to shift to new ways of working."* [CCG Commissioner, Site 13]

Several participants also remarked that they had either not anticipated or did not have capacity to meet the extent of resources required for implementation of BCF plans, particularly in terms of human resources. A number of sites had earmarked resources for the delivery and management of BCF, such as designated posts and teams, within BCF plans as part of their financial contribution. Other sites however relied on existing delivery arrangements and governance structures for joint commissioning and integrated working and staff had to complete BCF activities as an extension to their existing role and workloads. Generally, those sites which had established delivery arrangements specifically for BCF implementation were able to make greater progress.

> *"Capacity was a real challenge for us, we're, you know…[a small] local authority…, so we don't have a lot of, erm, it's a bit one man and his dog really. The reason I'm probably involved in everything is because everyone here wears multiple hats 'cause there's so few of us. So actually for us, the capacity literally to sort of take things forward was a real challenge at times. We did appoint a fixed term sort of BCF project manager to support the work, but even--, even with that, I think limited capacity for us and also, you know, to varying extents for the*

different partners was a challenge. Erm, so some--, I think for us maybe investing in that sort of project management capacity earlier or at a more senior level might have been helpful, but finding the right person and creating that capacity is never--, never as easy as it sounds on paper. But yeah, that was a real challenge for us." [LA Senior Manager 2, Site 1]

6.2.4 Outcomes of the BCF Programme

Participants reported a range of outcomes (some positive, some negative) from the BCF programme. Participants also reflected on their experiences of measuring the impact of the BCF programme using the national metrics associated with the BCF policy, as well as their own measures selected locally.

Improved joint working and benefits to patients

Many sites reported that the BCF had encouraged and facilitated individuals from different (but interlinked) organisations (such as CCGs, Local Authority, other NHS trusts, and providers) to make hitherto unmade connections that they felt were important for achieving greater integration. A number of participants reported that it was this 'getting the right people around the table' that was crucial for taking the first steps towards mutually beneficial joint working and collaboration in order to make improvements in the delivery of health and social care.

"I think it's definitely enabled a wider and deeper discussion of some of the challenges that are faced, particularly in adult social care." [Other NHS, BCF Lead, site 4]

"So I guess the BCF kind of put more of a fixed timeframe around it, and certainly it enabled some of those conversations to be kind of expanded out, so you know, on our BCF programme board we had a number of the key kind of providers as well, whereas from a local authority perspective I would have never sat in a meeting with those." [LA Senior Manager, Site 2]

"We've learnt a lot, we actually, you know, got around the table, the relationship's I think improved across the health and social care pathway, because people got around the table that hadn't been there before and we do share some information, certainly it's strengthened some of the relationships, I mean the CCG and council, you know, we're on a good footing anyway but I think we talk more regularly and get around the table, you know, quite a lot." [LA Senior Manager, Site 2]

One participant also credited the BCF as improving networking in general and noted that this formed an initial basis for identifying opportunities to collaborate and improve joint working.

"A good thing has been the regional networking, - the Better Care Fund leads networks – and the engagement that's happened at a regional level, those have been really positive, it's enabled us to identify common issues and come together and share good practice." [CCG, Middle Manager, Site 11]

In sites where a number of these links or discussions had already begun to take place, or where links were already pre-existing, the view here was that the BCF initiative had enhanced and/or accelerated these.

"I think some of the conversations were embryonic and this has probably accelerated them and kind of helped with the process." [LA Senior Manager, Site 2]

"I think the [BCF] has been an absolutely amazing catalyst to get us all talking to each other and working together and creating a joint vision with joint aims and that has been absolutely fantastic…I think it's been absolutely fantastic, an amazing opportunity, great experience and I think without it we definitely would not be where we are now." [LA Senior Manager, Site 1]

"I think from a CCG perspective and coming in from a completely different health economy, what I think it did is it accelerated the engagement between all parties." [CCG Senior Manager, Site 2]

In addition to useful discussions and introductions, participants described how these led to changes that allowed colleagues to collaborate more widely. Here, participants explained how using the BCF helped to create tangible benefits in terms of reducing workloads and increasing efficiencies across organisations. For example one participant described how responsibility for monitoring care homes quality and contracting had been merged into a single team on the understanding that they would represent and feedback to a number of partner organisations. This prevented repetition of tasks because, according to another participant (Other NHS, BCF Lead site 4), people were no longer "*operating in silos*".

"Where we are both jointly commissioning, i.e., through a joint contract. Or we are commissioning the same providers, but from different organisational perspectives. And a classic example is, erm, my team are responsible for monitoring the quality and contract monitoring for our nursing homes in [placename]…And previously that would have been, some of that would have been done in the [(x) organisation]. Most of it would have been done in the [(y) organisation], and a little bit in the [(z) organisation]. But now that it's all done by my team I have, you know one person that goes in and is monitoring and deals with quality stuff or any issues. And the partnership work on behalf of both organisations…It means that you know, when one person is going in there they're acting on behalf of both organisations, and they're feeding back to both organisations." [CCG Commissioner Site 7]

Another example, outlined by one participant, was using the BCF to fund a single assessment process for assessing care needs that could then be shared across CCG and LA organisations. In addition this was perceived as a positive outcome for the patient who was required to go through one single assessment process and avoid 'telling their story' multiple times to different assessors from different organisations.

"So we have several single assessments and multiple single front doors. So that there is shared work on assessments. We haven't yet achieved a completely trusted assessor mark, which is our next aim." [Other NHS, Commissioner, site 5]

A number of participants explained that they had increased the number of services that were being jointly commissioned as a result of BCF and cited the BCF as the 'general catalyst' for increasing opportunities to collaborate and integrate services where possible.

"I think there's just an appetite at the time to actually do things differently, and I think the BCF facilitated those discussions, so it helped with that, that integrated discussion and the openness about actually doing joint audit which I don't think had been done before, and actually sharing the findings in terms of how we utilise the community hospitals as well as the reablement beds, so--, So we reviewed all our Section 256s as well, so did a huge review of all of our 256s, and basically what that helped to do was increase the understanding on both sides

in terms of the services that were provided, and then we did a big review for each one to say actually is it the right service in terms of what's being delivered, are we getting value for money, and out of that we systematically went through and agreed our commissioning, joint commissioning strategies for each of those services. So again it was quite a big bit of work to do." [CCG, Commissioner, Site 14]

When asked about how some of these mechanisms work (beyond agreement in principle) participants described how they established a series of multi-disciplinary teams (MDTs) to bring together a number of professionals involved in patient care to discuss the needs of individuals and agree a plan to meet those needs. Embedding the MDTs as part of a routinized way of addressing needs, especially those with more complex comorbidities, who need multiple levels of support, was also seen a 'smarter' way of using resources to create efficiencies across the health and social care system. One participant described this as investing in capacity to both improve support to vulnerable people, as well as prevent the need of those individuals to access acute or primary care services.

"So what MDTs actually do is they get representations from various agencies which are the GPs, practice nurses, district nurses that work for the local acute trust. These are the community nurses and sometimes the end of life services, voluntary sector services and social workers as well. They come together periodically, typically once every two months but some MDTs take place monthly and they then put together a list of individuals who are often frequent flyers as we term them, frequent users of health and social care services or those that are high risk of an unplanned hospital admission. So we take those case management lists and the MDTs actually discuss the individuals on those lists each time they meet with a view to actually jointly determining an appropriate care plan effectively for those individuals." [CCG, BCF Lead, Site 12]

"We've established the multi-disciplinary teams as well in primary care that social workers are now embedded within so that's been very successful. We've established a primary care commissioning framework as well last year though the BCF plan and that primary care commissioning framework actually is an investment in improving capacity in primary care so that we can improve our support to vulnerable people, particularly those with mental health, learning disabilities and older people that have multiple long-term conditions, they're at high risk really of entering hospital or accessing other primary care and social care services." [CCG, BCF Lead, Site 12]

Participants from a small number of sites pointed to mutual benefits to patients and to sites themselves when asked about the outcomes of utilising the BCF. These participants stated that the BCF had played a key part in reducing non-elective admissions and in one case reduced the number of people dying in hospital rather than at home or in a hospice. A few participants also cited the BCF as contributing to decreased admissions to residential care homes. These participants attributed these changes to a range of factors enabled by using the BCF. These included being able to develop more responsive care packages (drawn up with patients), that account for their preferences, social prescribing, and educating care home staff (particularly around individual preferences for death). According to these participants, as well as improving peoples reported quality of life, this also led to financial savings by keeping people out of hospital and also slowing the growth of people accessing acute services, which for one participant meant "we're starting to do something right." [CCG, Commissioner, Site 1]

"So what that's done is it's strengthened the links with the voluntary sector, the voluntary sector have been able to work with a range of organisations to support people in the community, the client quality of life, their perceptions of their quality of life has improved. Something like 70 percent of people said that actually social prescribing had a significant or major impact on their quality of life." [CCG, Middle manager, Site 11]

"We saw a reduction in the average number of hospital attendances after social prescribing referral, and we demonstrated that this resulted in a financial saving. Non-elective hospital admissions six months after social prescribing reduced, average length of stay in hospital six months after social prescribing also fell, and calls to the ambulance service fell after social prescribing. So that then has resulted in an expansion of social prescribing, funded through the Better Care Fund to now being a whole borough scheme." [CCG, Middle manager, Site 11]

Another aspect raised by participants when discussing outcomes was improvements in the 'patient journey'. One participant described this as providing the right help to enable people to feel more supported.

"People feel more supported because we have those kind of person centred services, the wraparound services that promote a more integrated approach. It actually does improve the customer journey for people." [CCG, Commissioner, Site 1]

Challenges to working relationships and local integration

A small number of sites reported that the BCF had resulted in a number unforeseen consequences for them which were detrimental to their ambition of integrating health and social care provision in their area.

"I think we haven't necessarily been helped and this is reflected in other areas as well, but where we're quite progressive in terms of developing integrated services, the policy itself in some areas has been counter-productive. It may seem a little counter intuitive that a policy that's designed to actually help areas to integrate their services can be counter-productive but in certain areas it has been." [CCG, BCF Lead, Site 12]

One area that a few sites reported had been a challenge was maintaining effective working relationships with partner organisations – something that was reported by other participants as a key driver for the success of integration activities. Managing the budget and negotiating spending, as required by the BCF programme, was a source of tension that resulted in fracturing relationships where previously they had been well established. Where this was reported, it was largely due to financial pressures on individual organisations, in these cases participants explained that colleagues often 'retreated into their silos' to ensure they were not going to lose out on funding for their own CCG or local authority.

"At some levels we've managed to keep a degree of civility--, [Laughs] And decent professional communication--, Yeah. But I mean I'd be lying if I said that there's not been some fairly fraught and raw moments between the council and the CCG--, On the issue of that sum of money." [LA, Commissioner, Site 3]

"People seemed to have kind of taken that more kind of retrenched positions now, things have kind of almost gone backwards." [CCG, Senior manager, Site 2]

As we describe below, good working relationships were seen as vital for integration policies to be successful.

In some cases the BCF policy framework was felt to have diverted or changed local plans for integration that had already been in train, and not necessarily in a positive way.

> *"Because areas--, well areas are mandated aren't they to comply with certain national conditions that's embedded within the BCF policy and in compliance or in pursuit of compliance of those national conditions there were some areas that were actually carrying out their own plans for integration that have been distracted from that in pursuit of satisfying the requirements of the BCF."* [CCG, BCF Lead, Site 12]

6.2.5 Metrics and measuring the impact of the BCF

Sites were asked about the use of metrics on both a national and local level. At a national level many sites expressed concern about the metrics being used to measure the outcomes of the BCF, especially given its complexity. Participants explained that by its nature BCF programmes can include a vast array of activities ranging from system or structural schemes to patient facing schemes designed to provide care in a more direct way. In particular participants expressed concern about the focus on measuring delayed transfers of care (DTOC) numbers and reducing admissions to acute services. While participants accepted that these were in part necessary, participants also took the view that these measures were too cumbersome and felt a degree of frustration that other outcomes were not being captured or were being overlooked. In general participants felt that it was unlikely any change would be seen in these measures as a result of the BCF policy, and that this was an unrealistic objective.

> *"The BCF metric is to reduce any non-elective admissions, full stop--. For me it's not a valuable objective to our work and basically we're never going to hit it through the work that we do."* [LA, BCF Lead, Site 1]

Of great concern was that individual sites would be seen as 'failing' when they felt strongly that this would be a distorted view of reality, as from their perspective they were observing positive (albeit different) outcomes as a result of utilising their BCF. One participant [CCG, Commissioner, Site 13] stated: *"if people are seeing that as the main reason for our being then they're going to see us as a failure, because we're not reducing our overall non electives, whereas actually we're making really positive impacts on some of our other outcomes and performance measures".*

Whilst recognising the importance of national DTOC and admissions data, participants expressed concern that when viewed out of context, these would also present a distorted or skewed picture. For example, one participant explained how pulling together numbers from across multiple CCGs and a Council did not make sense from a monitoring perspective:

> *"We cover five CCGs and we tend to work with our acute providers in terms of how we monitor and measure in terms of achievement, and when you do put it together at a county wide level it doesn't make sense to be individuals working on the ground, it's just a number."* [CCG, Commissioner, Site 14]

Another participant explained that looking for evidence that the BCF had resulted in fewer non-elective admissions or improved DTOC figures was flawed because their reporting figures included

the whole population rather than patients age 65 or over – which was the cohort that the BCF policy was intended to impact upon.

> *"We're not achieving the BCF target on that [non-elective admissions], but actually the biggest growth is in the nought to 19 age group. And the second biggest growth is in 19 to 64s, so actually the work that we're doing around over 65s potentially is having an impact but because that measure is an all age measure, as is the delayed transfer for care measure, then you're not necessarily capturing the impact of the BCF."* [LA, Senior manager 2, Site 1]

In addition, a number of participants expressed a level of cynicism towards attainment trajectories at the outset. In several sites these were viewed as somewhat arbitrary and unobtainable, but many felt a need to 'play along' in order to obtain approval of their plans and secure funding. In one example a participant explained how targets were too prescriptive and static, and did not account for local agreements that had been already made.

> *"So for instance last year our BCF plan, our 16/17 plan, while it was signed up to local and everybody was happy, it had a very well written narrative full of praise from all the local monitoring that went on at a regional level, but because our allocation of social care monies was lower than what NHS England decided it should be, based on a sort of comparative index that they've created, and regardless of the fact that all commissioners on all sides were signed up at the chief exec level to that fact, which included the local authorities saying yeah we're happy, we know that the money coming in is less than what somebody said it should be, but we're happy with the work we're doing and why that is. But still they would not sign off our BCF plan."* [LA, BCF Lead, Site 10]

> *"So regardless, you know, so that was it. And we have had similar behaviours this year around the DTOC trajectories on the 17/19 plan, which I think almost everybody has had. So that is just, you know, a fixed agenda being imposed under the sort of like guise of you make your own choices about what you're going to do but actually we won't sign it off unless... unless you fit the trajectory we tell you to we won't sign it off, but of course you must come up with your own trajectory."* [LA, BCF Lead, Site 10]

Despite concerns, in general sites acknowledged the difficulty of measuring the impact of the BCF and attributing outcomes to it, and admitted grappling themselves with measuring the impact of a wide range of schemes within their BCF programmes. Nonetheless all participants wanted to be able to demonstrate to commissioners that their integrated care services were working. To this end participants described the range of metrics they were using locally and the efforts they were making to capture impact. In some cases these additional metrics were linked to their service level agreement and designed to make a business case for their integrated care pathway.

> *"We're looking at a range of different metrics that aren't necessarily BCF metrics, looking for example at the total ready for discharge list, and showing that there have been significant reductions in the ready for discharge list, compared to previous year. Reduced length of stay as well has been evidenced. And throughput, so we're discharging people sooner than they otherwise would have been. So it's having those kinds of impacts and obviously we've got a dashboard; they're not the national metrics, but they're local metrics to actually monitor the impact of discharge to assess and this links into the work of the [place] delivery board and the work that we're doing through the BCF."* [CCG, Middle Manager, Site 11]

There was also a sense from participants that while measuring impact was a challenge, the work being carried out as part of the BCF was valued by people, and had had a profound impact on some patients' lives and the way they had experienced care.

> *"It's very difficult to quantify the activity that you've managed to avoid. Those are the quantitative challenges really with the BCF but in terms of quality I think there are some success stories really because there has been some really positive feedback from people around the MDTs and people feel more supported because we have those kind of person centred services, the wraparound services that promote a more integrated approach. It actually does improve the customer journey for people."* [CCG, BCF Lead, Site 12]

Contemplating the issue of measuring impact and the use of metrics led some participants to consider whether there was a mismatch between the aims of the BCF and its associated targets, and how far participants were able to meet these. This was a potential source of frustration for participants.

> *"That's where I was seeing that--, obviously delivering something against the metrics but I always felt the metrics were a bit of a mismatch to the actual work […]the evaluation priorities if you like of what success looks like could be more appropriately set aside I think, because we do get irritated with the--, well I certainly get irritated at failing on a metric level I think I've even got within my power to really influence."* [LA, BCF Lead, Site 1]

Further to this a number of participants questioned the appropriateness of using valuable resources to collect data that they felt was not fit for purpose, or furthermore, would actively undermine the work being done to improve integrated care pathways; especially when considering the current financial context, reduced capacity, and that more resources could be used on delivery.

> *"I think where it gets difficult is when you have to do multiple returns, and the goal posts changed slightly so you have to refresh everything, and that's what causes basically some of the challenges. And I think sometimes it's better to actually focus on the delivery than actually refreshing plans on plans, against new guidance, so I think that was some of the challenges that we faced."* [CCG, Commissioner, Site 14]

In relation to this a small number of participants felt that in general they would benefit from increased autonomy, and that this would yield 'better' results because they (local sites) better understand the health and social care landscape and their own local economy. Here participants took the view that in general, all sites would prefer and benefit from increased local control.

> *"Well my view is that actually where we need to get to is actually to have, to have I suppose, what's the word, a flexible approach to take control of our own destiny and trust around being able to deliver on our sort of integrated care,… freedom and the flexibility to do that in a way that suits our locality. And also to be democratically accountable within our own local system, for that, rather than necessarily having to be I suppose straight jacketed into some kind of programme criteria with sort of national--, I suppose a lot of national scrutiny of that."* [CCG Middle Manager, Site 10]

In summary, and notwithstanding the issues with measuring impact, different sites described mixed success with the various schemes that were implemented as part of the BCF. Largely these successes depended on the degree to which they experienced the facilitators, and barriers set out above.

6.2.6 Key lessons from sites' perspectives

As part of the interview process, participants were asked about what lessons they had learned as a result of implementing the BCF in their site. Overwhelmingly sites reported a number of 'relational' themed factors to successful implementation. These included:

- establishing and maintaining good relationships with colleagues, particularly across organisations;
- a shared vision with strong senior leadership;
- open and transparent inter-organisational communication;
- appropriate 'buy-in' from the right people (in the right roles) and engaging key stakeholders early on; and,
- being open to cultural change where required.

All these aspects were reported as key parts of establishing the effective joint working and collaboration required for successful implementation.

> *"The main lesson is that whenever you're going to do anything, if you want everybody to be brought into it then you've got to make sure everybody's engaged, completely engaged, completely brought in. It's all about a shared vision, co-creation and having excellent governance arrangements in place."* [LA Senior Manager, Site 1]

> *"I think it's important about the kind of relationship element, I think at that strategic level, which has been really good in [location], but also it's that kind of also that attitudes, behaviour, culture piece in our provider services as well, I think we're seeing it as being the key."* [CCG Commissioner, Site 13]

> *"It's really reliant on the attitudes, behaviour, culture of those different organisations, for example, trusting the assessments of other organisations and the handovers of some of that working, yeah, just working more in an integrated way. So it's not to underestimate the amount of work that's needed to develop that, you know, how we develop that amongst our organisations, so I think that's a key lesson."* [CCG Commissioner, Site 13]

> *"I think it's the investment in--, in joining up as many components of health and social care as you can that are quite easy to do. But I do think, as we said before, that the importance of the culture, the importance of the relationships across both health and social care is critical in order for this to be a success, and for us to get the most out of it in a time where we've got to be efficient and reduce costs and so on and so forth. But I think that's probably the biggest learning for us, and having agreed priorities."* [CCG Senior Manager, Site 3]

In explaining the importance of people in the process, participants also acknowledged that the BCF policy itself, while promoted in part as a means to an end (integration), was also one of a number of initiatives driving the integration of health and social care, and that other key components also had to align with the policy to produce success. And furthermore that without the right staff in place using the right mechanisms to drive integration, achieving it would be very difficult.

> *"Can any--, I suppose can any one thing like the BCF ensure integration happens? I think not, I think there's lots of other components that need to be there in order for that to happen and I think it goes back to the joined up across CCG and local authorities in terms of sheer vision*

making. You don't need money to drive that, you need to have the right people in the right roles that are able to achieve that at a very high level. And then the BCF and sure, the strategic partnerships and so on and so forth can help deliver it, but you've got to have the--, you've got to have the join up first, the willingness and capability of Senior leads across all parts of the system to drive the change that's needed, and not to be solely concerned about their organisation." [CCG Senior manager, Site 7]

A small number of sites pointed to the mandated pooling of budgets as a fundamental component of being able to use and implement the BCF. This was due to the leverage that this gave organisations, and the necessity of having to use the Fund in this way effectively pressing the need for joint working and collaboration between organisations.

"And I think--, so I think it was the right thing to do, to insist that the Better Care Fund pooled budget is ultimately approved by the Health and Wellbeing Board so that it is a combination of NHS and council governance, and that councillors have a say and have scrutiny on how the money is spent." [LA Director, Site 16]

"I think if I was starting again now from where I am, knowing what's happened over the last couple of years, I would have fought much harder to have a proper pooled fund from the start. I wouldn't have let the finance people get away with just badging things as BCF. That caused a lot of problems. So I think if it had been a proper pooled budget that would have made a big difference. But how you can ever get the local authority and the CCG to actually make it a proper pooled budget, I don't know." [CCG Senior Manager, Site 3]

Around a quarter of sites stated that the need for, and targeting, of financial investment was a key lesson for them in terms of what is required for implementing the BCF policy. A number of priorities for investment and allocation of resources were identified. The first is in setting up the policy itself up and being able to run new schemes in parallel with current service provision (double running) before disinvesting in those services where, for example, it may be possible to make savings.

"I think when you're talking of transformational change to do it at a time of austerity without some kind of investment to enable parallel running so if you want--, to develop new services as alternatives that most people know will deliver the outcome you want but you have no spare investment cash--, And you can't disinvest until you've got that new thing up and running I think that's naïve and it places a burden… So if for instance you think that what you might be able to do is close a hospital ward (a) because the system can't afford them and (b) because you think the care is better provided out in the community then you need to invest. It might be bricks and mortar, it might be recruiting staff and getting them skilled up but these changes don't happen within months. If you need skilled staff, if you need to invest in--, if you need to procure services that are available as an alternative all these things take time to put in place and if you've already got contracts, you've already got buildings you've got to disinvest and change them and you don't do that in the life of one BCF plan within 12 months." [LA Commissioner, Site 3]

A second area identified was intermediate care. Participants here regarded investment in intermediate care as crucial to the aim of reducing acute admissions and then also moving people from hospital to home (reablement), an overall aim of the BCF.

"In terms of intermediate care that would also in my opinion need to stay and it's something we need to improve really because intermediate care is absolutely crucial in helping to regulate that patient flow in and out of hospital so that kind of step up step down approach. So intermediate care or effective intermediate care is absolutely crucial and in a well performing system we would expect local areas to invest heavily in intermediate care in an effort to try and reduce that activity from the acute and to transfer instead into the community." [BCF Lead, Site 12]

A third point is that successful investment requires good understanding of future funding. Here one participant stated the importance of this for long-term planning and allocating resources.

"From a BCF perspective, it's about getting some clarity then around what those arrangements are after the current round of funding that's been committed through the IBCF, you know, getting a real clear understanding of what those resources are going to be, what that looks like, that's going to be really important… Because it enables us to then plan, we've got a two year plan at the moment but actually then, there's ongoing work around delivery of accountable care systems and all the rest of it, and it's about that, I suppose, and the interconnectedness around this as well, so we really do need to sort out what those arrangements are, get some clarity around what those future funding arrangements are going to be." [CCG Middle manager, Site 11]

A related insight was in relation to financial arrangements and incentives on different parts of the system. One participant discussed the potential impact financial incentives have on hospital admissions:

"But it's (BCF) also highlighted to me the folly in a sense of government policy around the BCF and its ambitions to produce such large scale changes in hospital activity without actually incentivising hospitals to reduce that activity. Hospitals are still incentivised to admit folks once they come to hospital via A&E then you might as well forget it because what we have to do is stop people going to hospital in the first place or we start to incentivise hospitals not to admit patients and at the moment, it's in their interest to do so because they get paid on activity. So I think financial incentivisation is something that we really need to encourage policymakers to look at." [CCG BCF lead, Site 3]

7 Comparative system evaluation

7.1 Aims and methods

As outlined above, a key aim of the study is to estimate system level impact of the BCF. A number of defining characteristics of the BCF policy influence what evaluation methods should be used. First, the BCF can be understood at two levels, that is: (a) as a policy programme to promote and facilitate local integration activities through the integration of funding of health and social care, and through the joint arrangements for planning, governance and implementation management of a set of local policy and practice initiatives and (b) a collection of specific integration schemes that implement integrated working on the ground and are funded by the BCF.

Second, the BCF was implemented nationally at the same time point – April 2015. Nonetheless, although the core element of the policy – the pooling of funds and planning of activity – was

common to all local areas, there was a great deal of variation in the definition and understanding of how the BCF programme was implemented and the mix of schemes that were planned.

The evaluation aimed to compare the different BCF programmes planned across the country. As a national, non-experimental policy, we adopted an observational, non-randomised study. In the main our approach was to compare different configurations of BCF programme, distinguished by the size of the fund (specifically the level of planned expenditure) and by the mix of specific BCF schemes planned in the local area.

Furthermore, the method allows us to differentiate impacts not only as arising from different levels of fund size but also in terms of how that money was spent. In particular, using the classification results, we are able to identify the amount of the BCF to be used for particular activities (e.g. intermediate care, protecting social care, low-level prevention etc.). The analysis can compare sites according to both the level of spend and how that spend was to be allocated between main activities. For example, we can compare sites that decided to spend more on intermediate care with those who decided, say, to spend more on protecting social care.

7.1.1 Empirical approach

In the most straightforward terms, a causal effect can be established by comparing the experiences (outcomes) of a group of patients with the intervention (BCF expenditure) with their *counterfactual* experience of not having had the intervention.

A conventional way to establish the counterfactual experience is to use a 'control group' which is a group of people/units that are not using the new intervention/policy (in this case BCF programme) but are otherwise (ideally) the same as the group getting the new intervention. Outcome indicators can then be compared as between the intervention group and the control group. In experimental studies, the control group can be created by randomly selecting people/units from the eligible population. In observational studies, a group of people/units not getting the intervention (or not getting as much, or at different times) can be used to construct a control group. However, in practice there might be important reasons why certain groups do not get the same intervention, which might also affect outcomes. This 'selection' process will generally mean that a simple comparison of outcomes between the two groups is a biased estimate of the effect of the new intervention.

In follow-up studies where outcome indicators are observed before the intervention, one option to tackle selection bias is to subtract any difference in mean outcome indicators between intervention and control group observed at baseline from the difference in these indicators at follow-up, after the intervention is implemented. This is the difference-in-difference approach. An alternative approach is to identify groups of people with different use of the intervention and select sub-samples that most closely match on all other characteristics.

We conducted the analysis at the health and wellbeing board (HWB sites) level since that is the unit of implementation of BCF programmes (even if specific schemes might be implemented more locally). The general approach was to estimate whether differences in outcome indicators between BCF sites were (causally) associated with differences in the size of their BCF budget (planned expenditure) per capita. Other things equal, the BCF is hypothesised to produce a negative relationship between outcome indicators (DTOC and non-elective admissions) and BCF fund size.

Sites with higher BCF expenditure would be hypothesised to show lower DTOCs and non-elective admissions than sites with lower BCF expenditure, again *other things equal*.

Clearly, however when comparing HWB sites, 'other things' may not be equal as there are selection processes - high and low BCF expenditure is not randomly distributed across the country. In particular, the problem is that local factors are likely to influence the choices made by HWBs about their BCF programme. For example, areas with significant underlying issues with high delayed transfer rates might be more inclined to choose more substantial BCF programmes than areas with limited issues. Without accounting for this selection, simple comparisons of DTOC rates and BCF expenditure could show a *positive* relationship between these indicators, suggesting spuriously in this case that BCF worsens DTOC rates.

To be confident that we are seeing a causal effect of BCF expenditure rates on outcomes, we need to establish the counterfactual situation for HWBs where the *only* difference is the difference in BCF funding. In that case, any remaining change/difference in outcomes, e.g. in DTOC rates, must be due to the difference in BCF funding. If we could control for *all* confounding factors, then this requirement could be fully achieved. But in practice, this may not be the case. As such there are generally two ways that we can address selection issues using data in a non-experimental framework (Raine et al. 2016; Jones and Rice 2011; Angrist and Pischke 2009). First, we can control for selection using the factors we can directly observe (i.e. have data about). Second, we can use statistical methods that also allow some control for the influence of unobservable factors on selection.

Our approach was to use two main empirical strategies: first (parametric) panel data regression analysis, and second, synthetic control analysis.

Panel data estimation

As outlined below we constructed a dataset comprising a time series of 16 quarters for each of the 150 HWB areas, running from first quarter 2012/13 to last quarter 2016/17. The 16 quarters time-period represent pre-BCF and the first two years of BCF.

A number of regression approaches were used with DTOCs or non-elective admissions per capita as the dependent variable and BCF expenditure per capita as the main 'indicator' variable. A range of observable control factors were used in each model. Specifically, we included variables to control for socio-economic circumstances and underlying level of need. BCF funding is made-up of CCG and LA contributions. It was important therefore to include control variables representing total CCG healthcare expenditure per capita and total LA social care expenditure per capita.

The planned level of BCF expenditure is in part driven by the minimum funding requirements of the policy, and these were set using the CCG and LA funding formulae – see Box 1 above. Minimum BCF allocations are therefore influenced by need, with higher allocations to the BCF in high need areas compared to low need areas. For this reason, other things equal, we might expect a positive relationship between DTOCs and need/BCF, and the same for emergency admissions. Accounting for this effect, we control for need as far as possible. In any case, our main hypothesis is for a negative relationship between DTOCs/EAs and BCF expenditure. Finding such a relationship would support our hypothesis because it would be despite any residual (positive) need effect working through the minimum BCF requirement.

We can exploit the panel structure of the data to control for time-invariant unobservable factors, and estimate fixed effects panel model as our main approach. With fixed effects models, we subtract the time series mean value of each variable (the dependent and independent variables) from the current value to look at the correlation between the difference in outcomes (DTOC) from the mean value (DTOC) and the difference in BCF expenditure from its mean value. As such, we remove any unobserved (time-invariant) differences between HWBs that might have existed at baseline (as well as controlling for time-variant observed factors).

The fixed effect approach is valid on the assumption that any unobserved effects are time invariant. In that case, using fixed effects with all observable factors will mean that the *counterfactual* outcome (e.g. number of DTOCs) of an area having a different level of BCF expenditure will not be affected by the difference in BCF expenditure between areas. The *counterfactual* outcome would be the same other things equal.

However, unobserved effects might not be just time-invariant with regard to the outcome variable and could also depend directly on past values of the outcome variable. For example, increases in DTOC rates could motivate some local policies (other than BCF) that could affect future DTOC rates.

As such, we also estimated lagged dependent variable models (dynamic panel models - difference and system GMM models) which use a lagged value of the dependent variable on the right-hand side of the regression equation. Again the aim is to account for unobservable factors by including the lagged dependent variable which itself will embody the effects of (lagged) unobservable factors. This is an alternative approach as it cannot be combined with fixed effects approach (Angrist and Pischke, 2009). But it too has its limitations. As noted by Angrist and Pischke (2009), these approaches rely on certain assumptions about the through-time correlation of the dependent variable, which might not apply. Consequently, we use both approaches, fixed effects and lagged dependent variables – which are based on different assumptions to control for the counterfactual – to see if the results agree.

A final option we used is instrumental variable estimation. As outlined above, 'the other things equal' requirement means that we need to control for all (counterfactual) differences between HWB sites i.e. all differences apart from the difference in their BCF expenditure level.

A problem arises if there is some unobserved local (non-stable) time-variant need factor or other characteristic that affects both BCF expenditure and DTOC rates. Relevant examples may not be readily to hand, but one might be where changes in local rates of chronic illness prompt planners to allocate more funding to their BCF compared to other areas in the country, but this illness progression also causes more local admissions and greater DTOCs. This example would be problematic if variables in the analysis to measure chronic illness were insufficiently sensitive to changes through time and it was quite volatile[35].

Instrumental variables approaches work by removing the actual BCF expenditure variable from the analysis and replacing it with its predicted value using a set of explanatory factors that are not (or at least are less likely) to be affected the local unobserved, time-variant factor. To do this we use the observable factors but also need an instrumental variable that is good at predicting BCF expenditure

[35] Using lagged dependent variables might help with this problem, but it is possible that the full effect is not sufficiently accounted for in this way.

but does not have any direct effect on the outcome variable. In practice, this is a demanding requirement, but one approach is to use neighbourhood 'generosity' effects. Local BCF planners are likely to be influenced by the approach taken by neighbours i.e. the generosity of the BCF of neighbours. However, the generosity of neighbouring BCF expenditure decisions is not likely to be affected by the local unobserved, time-variant factor we are trying to account for – that is, not likely to directly affect DTOCs in the area in question.

Full details about these estimation approaches is provided in Annex 2.

Synthetic control

The synthetic control method identifies high- and low- BCF expenditure areas and uses data about all other characteristics to create a 'synthetic control group' from those low-BCF expenditure sites that best match high-BCF expenditure sites. In particular, a synthetic control sample is constructed by weighting together multiple control units (low-BCF expenditure sites) in such a way that the profile of outcomes in the pre-implementation period are as similar as possible for the control and intervention groups. The controls are selected and weighted together using a series of covariates (of 'other' factors) and outcomes of the intervention and control groups prior to implementation. The result is a synthetic control group that has very similar values of the indicator variable at each time point prior to the intervention. Any divergence in values after the intervention is therefore most likely due to the intervention and not the other factors.

In this evaluation of the BCF, all HWBs implemented their BCF programmes at the same time. As such, there were no units in a non-intervention population from which to draw controls. Instead, we divided the population of HWBs into two groups: those with 'high' BCF expenditure per capita and those with 'low' BCF expenditure per capita, primarily defined as HWBs with above-median BCF expenditure per capita and below median respectively.

7.2 Data

The panel dataset comprised 16 quarters and each HWB area, with eight quarters of data prior to the implementation of the BCF and eight quarters after the implementation date of April 2015. A range of variables were used in the analysis and the derivation is outlined in Annex 4. The main outcome variables were:

- The DTOC indicator. Given the significance of DTOCs for older people, we constructed this variable with the number of people aged 65+ as the denominator i.e. delayed days per quarter per 100,000 persons aged 65+. We also constructed variables with total DTOCs and their breakdown by responsible organisation. Population 16+ and 65+ population were used as the denominators.
- Non-elective admissions to hospital, defined as: number of non-elective emergency admissions including type one (major), type two (single specialty), type three and four (other and minor injuries unit) A&E attendances, and other emergency admissions not through A&E. This variable was expressed as the number of admissions per 100,000 persons aged 65+.

Figure 7 gives the distribution of the delayed days data. The distribution is somewhat skewed; a log transformation and a square root transformation each produced a distribution very close to the normal.

Figure 7 . Kernel density: Delayed transfers of care – by population denominator and transformation

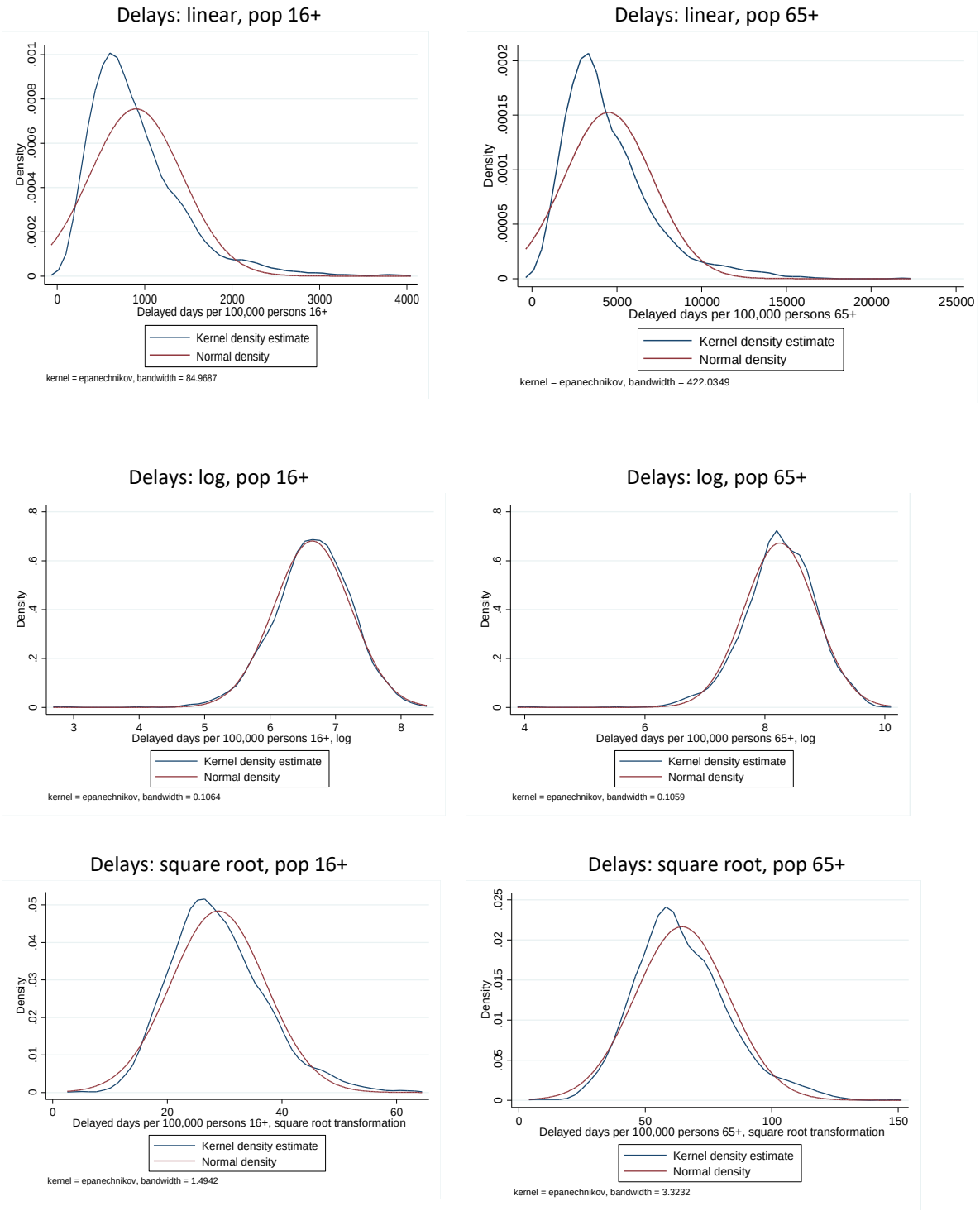
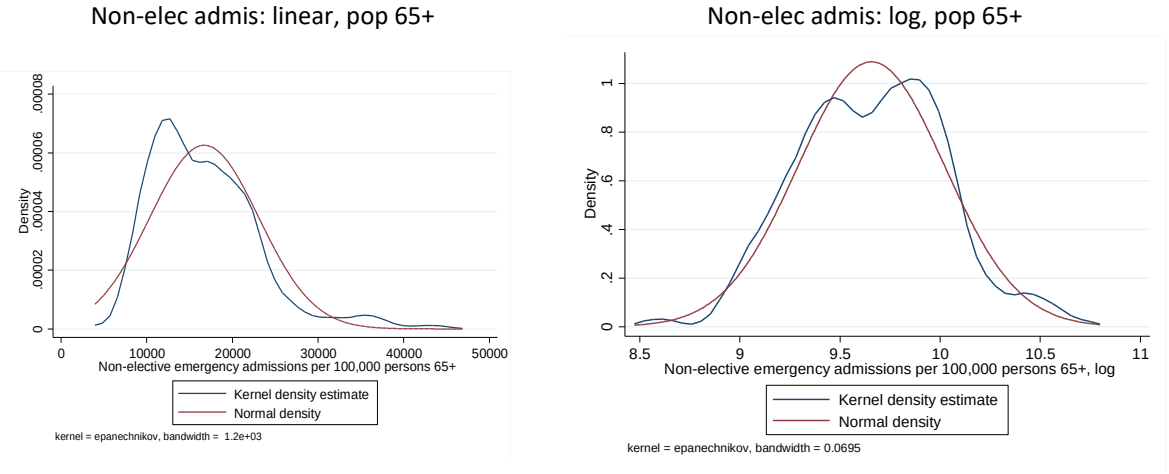


Figure 8 shows the distribution of the non-elective admissions data. Again, although there is a slight suggestion of bi-modality, overall the distribution corresponded closely to the normal, especially on the log-scale.

Figure 8. Kernel density: non-elective admissions



The main indicator variable in the analysis was actual reported BCF expenditure per quarter per person aged 65+. Table 6 reports data for 150 HWBs over eight quarters of available data (e.g. 150 HWB x eight quarters = 1200). We see considerable variation between HWB areas in per capita expenditure totals, and this finding supports our assumption that such variation would exist. Figure 9 shows distributions for this variable and a log-transformed version: $\ln(x_i + 1)$. The log version significantly reduces the rightwards skew of this variable.

Table 6. BCF expenditure per quarter – 2015/16 and 2016/17

Variable	Obs	Mean	Std. Dev.	Min	Max	Sum
BCF expenditure - total per quarter (£s)	1200	£ 9,349,573	£ 13,100,000	£0	£238,000,000	£11,219,487,600
BCF expenditure per quarter per person 65+ (£s)	1200	£167.6	£183	£0	£1,713	

Figure 9. Kernel density: BCF expenditure per person 65 and over - linear and log (post implementation)

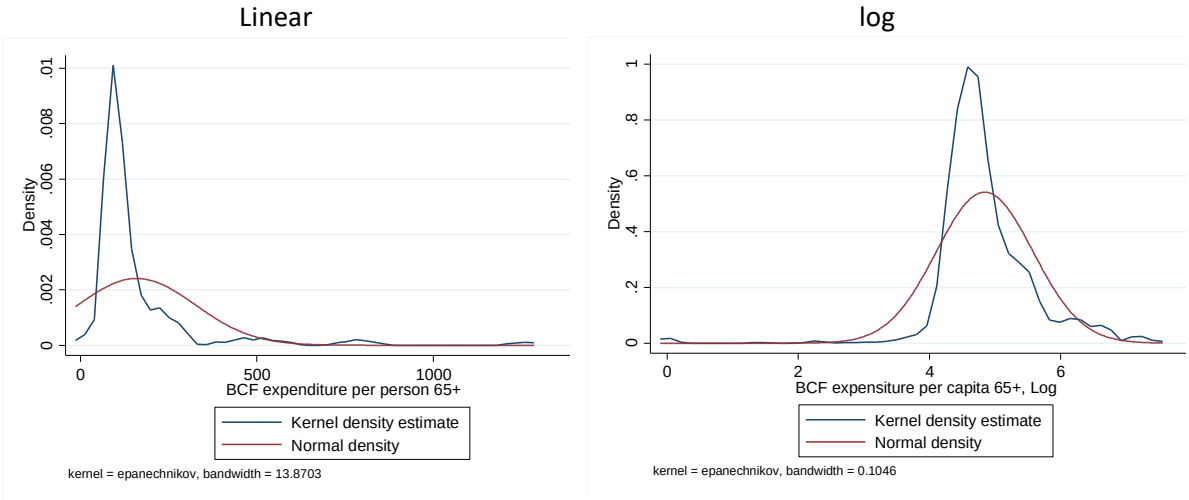


Table 7 reports descriptive statistics for the 2400 cases in the sample (16 quarters x 150 HWBs), covering the outcome indicators (dependent variables), the BCF expenditure indicator variable and a set of control factors. As regards the latter, we included the set of variables according to the following rationale:

- **Need**. The level of both DTOCs and non-elective admissions is likely to be directly correlated with the level of need and ill health in each area, especially in the older population. We used two variables to proxy this effect: Attendance Allowance (AA) claimants per capita and the proportion of people 85 and over in older population (65 and over).
- **Financial**. Patterns of demand for both health and social care are known to be affected by socio-economic factors. We included the number of benefit claimants (job-seekers allowance) per capita as a proxy indicator.
- **Existing provision**. Since the outcome indicators are affected by the full range of activities of the health and care system (not just BCF), it was important to control for the extent of that activity in each HWB area. We therefore included indicators of LA-supported social care expenditure per capita and CCG planned expenditure per capita as controls.
- **Scale effects**. Finally, to allow for the different sizes of HWB areas we included the total population size (all ages) as a factor.

In addition, we include a range of fixed effects, regional dummies and time dummies in various specifications. Spatial lagged dependent variables were also used in main specifications to account for unobserved factors and spillover effects.

Table 7. Descriptive statistics: Outcomes, intervention and controls

	Obs	Mean	Std. Dev.	Min	Max
Outcome indicators					
Delayed days per 100,000 people 65+	2,400	4497.7	2615.2	53.7	21883.7
Delayed days per 100,000 people 16+	2,400	901.9	528.3	16.4	3958.3
Non-elective admissions per 100,000 pers 65+	2,400	16714.0	6374.6	5128.1	45686.7
Intervention indicator					
BCF expenditure per capita 65+	2,400	83.78	154.24	0.00	1713.30
BCF expenditure per capita 65+, lag 1 Q	2,250	77.18	148.10	0.00	1623.58
Control factors					
LA gross social care expenditure per capita 65+	2,400	1.22	0.43	0.55	3.36
CCG planned expenditure per capita 65+	2,400	7.89	2.70	3.94	19.86
AA claimants per 1000 people 65+	2,400	131.92	22.46	72.02	206.34
No. 85+ per 1000 people over 65	2,400	131.99	13.01	98.75	169.22
Job seek allow. claimants per 1000 pers 16-64	2,400	20.89	12.58	2.31	81.04
LA population 65+ (000s)	2,400	64303	57349	1202	305924
LA population 16+ (000s)	2,400	295101	221294	6884	1246247
LA population, all (000s)	2,400	364312	271705	7648	1541893

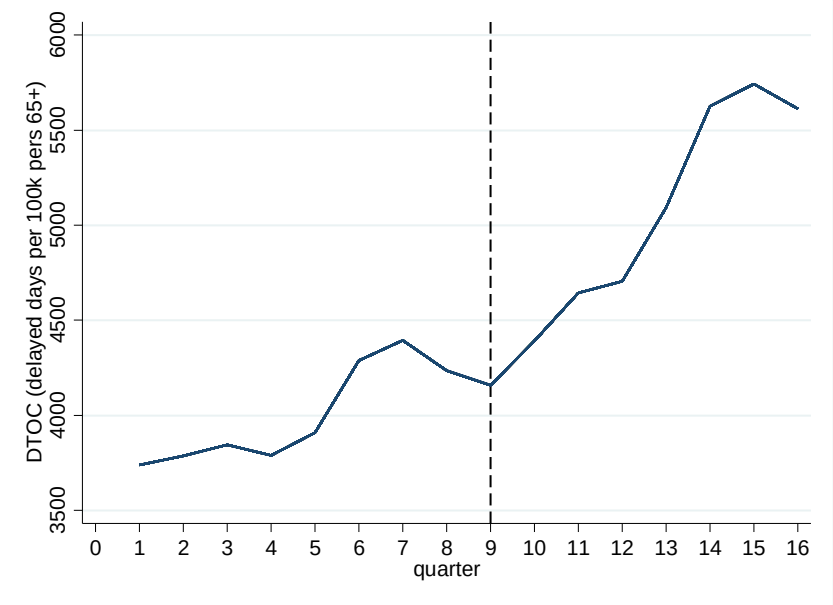
7.3 Results

We consider the two outcome indicators (as outlined above), DTOCs and non-elective admissions.

7.3.1 Delayed transfers for care

Figure 10 shows the increase in delayed days per 100,000 persons aged 65 and over. The chart shows the 16 quarters covered in the analysis, starting in April 2013/14 and ending in March 2016/17.

Figure 10. Delayed days per 100,000 persons 65+



Panel data estimation

Given the shapes of the distributions of the dependent variable and BCF indicator variable, and potentially different assumptions regarding omitted variables, we estimated a number of regression specifications with different transformations of these variables.

The specifications reported are as follows:

- Estimators: Population-averaged Generalised Linear Models (generalised estimating equations) (GEE); fixed effects, random effects, and lagged dependent variable models (system and difference GMM).
- Dependent variable specification: delayed days per quarter per person 65 and over.
- Dependent variable functional form: transformed (e.g. log, cube-root and square-root) and non-transformed (linear).
- BCF indicator variable timing: whether the expected effects of BCF expenditure occur in the current quarter or in the following quarter (i.e. whether the BCF indicator variable is lagged or not)
- BCF indicator variable functional form: log-transformed and non-transformed (linear)
- BCF indicator variable outliers: whether outliers observations were dropped, and if so at the 99^{th} or 95^{th} percentile.

The base specification has:

- a set of time dummies (by quarter)
- region dummies (from the 9 regions of England, with North East as the base), except for the fixed effects model which has HWB level effects
- an interaction between time dummies and a dummy for Southern regions (cf. northern regions)

The standard set of independent variables were:

- LA gross social care expenditure per capita 65+ (log), both with no lag and a one-quarter lag
- CCG planned expenditure per capita 65+ (log), both with no lag and a one-quarter lag
- AA claimants per person 65+
- No. 85+ per person over 65
- Job seek allowance claimants per person aged 16-64
- Population 65+ (log)
- Population - all ages (log)
- Population 16+ (log)

To account for further unobserved factors we also included the spatial (and time-) lagged DTOC per capita of neighbours in a 50 km range.

Table 8 summaries the range of regression results. A full set of regression results are reported in Annex 3. The table shows the regression coefficient (β_2) and the probability that this effect is statistically significantly different from zero (no effect). Finding a statistically significant (negative) coefficient would support our main hypothesis that BCF has an effect.

The various specifications showed significant negative effects at the 10% confidence level or better. In general, the specification with (one-quarter) lagged BCF expenditure per capita achieved higher levels of significance. We also experimented with further time lags. For Spec 1, we found that a two-quarter lag was also significant at the 5% level (p = 0.029) but not at the third quarter (p = 0.622).

Table 8. Panel regression results – DTOC, various models and various specifications

Model	Spec	DV: trans-form	Outliers removed?	Lagged BCF	BCF var spec: Lin or Log	Period	Spatial lag	Coeff	Prob
GEE	1	Log	99th	Lagged	Log	16	Yes	-0.0633**	0.032
	2	Log	99th	No	Log	16	Yes	-0.0426*	0.089
	3	Log	99th	Lagged	Cube root	16	Yes	-0.0378**	0.043
	4	Log	99th	Lagged	Lin	16	Yes	-0.0003*	0.089
	5	Log	No	Lagged	Log	16	Yes	-0.0569*	0.051
	6	Log	99th	Lagged	Log	16	No	-0.0588**	0.043
	7	Log	99th	Lagged	Log	12	Yes	-0.0722**	0.036
	8	Log	99th	Lagged	Log	12	No	-0.0694**	0.036
	9	Log	95th	Lagged	Sqr root	16	Yes	-0.0141***	0.009
Fixed effects	10	Log	99th	Lagged	Log	16	Yes	-0.0625*	0.054
	11	Log	99th	Lagged	Log	12	Yes	-0.0614*	0.056
	12	Log	99th	Lagged	Log	12	No	-0.0579*	0.069
Random effects	13	Log	99th	Lagged	Log	16	Yes	-0.0655**	0.038
	14	Lin	95th	Lagged	Sqr root	16	Yes	-48.6457**	0.030
System GMM	15	Log	99th	Lagged	Log	16	Yes	-0.1379***	0.005
	16	lin	99th	Lagged	Lin	16	Yes	-1.4046**	0.024
Diff GMM	17	Log	99th	Lagged	Log	16	Yes	-0.1147**	0.049
IV - FE	18	Log	99th	Lagged	Log	16	Yes	-0.1004**	0.036
	19	Log	99th	Lagged	Log	16	No	-0.0947*	0.054
GEE - Poly	20	log	99th	Lagged	Cb rt & cubed	16	Yes	-0.0591*	0.066
	21	log	95th	Lagged	Cb rt & cubed	16	Yes	-0.0593*	0.068

*** significant at 1%, ** significant at 5%, * significant at 10%

In line with the high skewness and leptokurtic nature of both the dependent DTOC per capita and BCF expenditure per capita variables, the transformed models (log and root) generally produced results at better significance levels. Similarly, we experimented with removing outliers of the DTOC per capita variable. In the whole sample, DTOC (delayed days per capita 65+) showed a kurtosis of 6.004. When cases were dropped above the 99th percentile of the distribution, this reduced the kurtosis to 4.247. A further option was to drop cases about the 95th percentile, which gave a distribution kurtosis of 2.769. As a comparison, the results showed significance at the 10% rather than 5% level (comparing specs 1 and 5).

In the base specification the (natural) log of BCF expenditure per capita 65+ (plus 1) was used. Linear versions generally showed less good fit (e.g. spec 4).

The lagged dependent variable models (System GMM and Difference GMM) also produced significant results (specs 15 to 17). For system GMM there are options as to how we specify the *a priori* estimate of the covariance matrix of the idiosyncratic errors. There are three main options used in the literature. We report results using the version which replicates Arellano and Bond (1998). The option used by Roodman (2009) produces a quite different result, with no significant effect of BCF expenditure. The third version due to Blundell and Bond (1998) however produces results that are similar to those reported. We should note that this choice has no effect on the difference GMM results.

We used spatial lags of the dependent variable in the base specification but also compared a specification without these variables – spec 6 and spec 19. Little difference was found in the results.

Finally, we estimated cube-power polynomial models to allows for a more flexible functional form. We initially estimated models with cube-root, linear and cubed powers of BCF expenditure. However, a better fit[36] was achieved without the linear component, and so a two-polynomial version was used.

Overall, despite the different assumptions embodied in the various estimation models, the results did not materially differ in their support for our main hypothesis, at the 10% significance level or better.

Changes through time

The above analyses consider the net effect of BCF expenditure after implementation but we can also breakdown the effect by quarter. We re-estimated the base regression model (spec 1 in Table 8) distinguishing, first, the financial year post implementation and, second, the quarter of the year.

Table 9 gives the results. Although the coefficients are slightly more negative (bigger effect) in the second financial year, this was not a statistically significant difference.[37] A longer time trend after implementation would be needed to establish whether effects were increasing or not through time.

[36] A higher correlation of predicted and observed DTOCs.

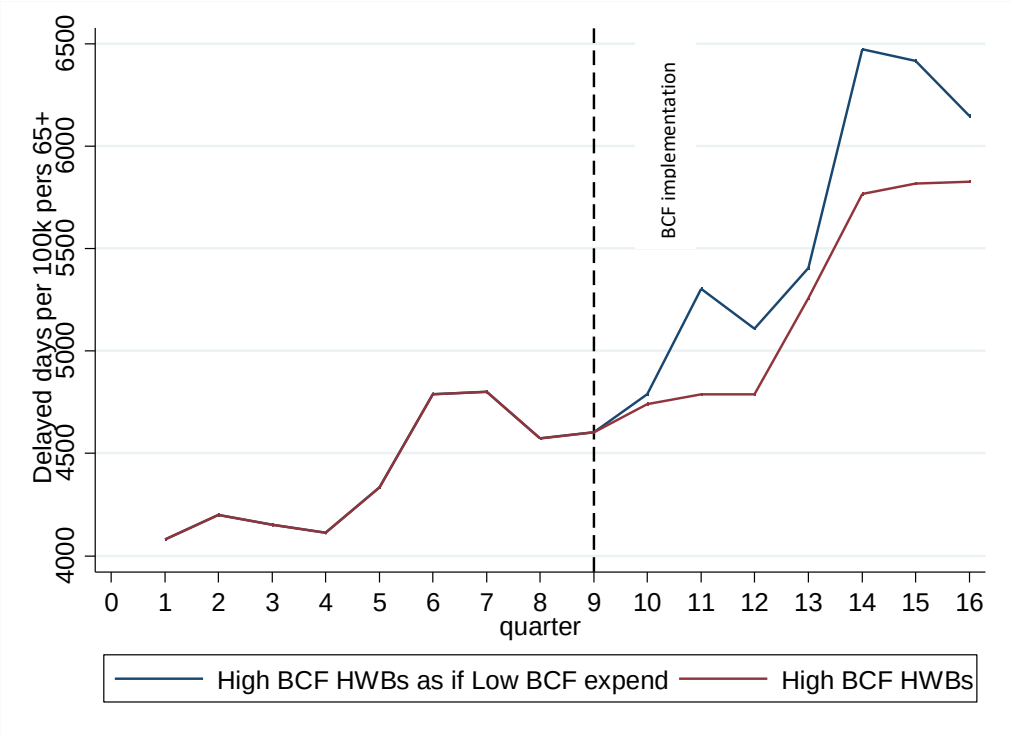
[37] We found that the specification with 1-quarter lagged effects gave a better fit than non-lagged models (better WALD statistics), which means that the 1st implementation quarter has a zero effect.

Table 9. Effects of BCF – by financial year and quarter – GEE model, spec 1 (with lagged BCF expenditure)

Financial year	Quarter	Coefficients	Prob	z
1	**1-4**	-0.052*	0.09	-1.71
2	**5-8**	-0.082**	0.04	-2.06
1	**1**	0		
	2	-0.011	0.78	-0.28
	3	-0.104***	0.01	-2.70
	4	-0.075**	0.03	-2.24
2	**5**	-0.026	0.47	-0.73
	6	-0.111**	0.02	-2.36
	7	-0.097**	0.03	-2.23
	8	-0.052	0.36	-0.92

These results can also be seen graphically.[38] Figure 11 plots the predicted level of DTOCs (delayed days per capita 65+) by quarter for HWBs with more than median BCF expenditure per capita 65+. The graphs show predicted delays for this these HWBs and compares that with the predicted delays if these HWBs had had BCF expenditure at the mean level of the 50% of low-BCF expenditure areas. A seasonal effect (4 peaks) is also evident.

Figure 11. Fixed effects model results (log specification)



[38] This graph was estimated using the predicted values of the log-log specification in Spec 1, for different HWB-average levels of BCF expenditure per capital by quarter (the average of the upper and lower halves of the distribution). See section 7.3.1.3.

Synthetic control results

We compared the trend in the mean number of DTOCs per capita 65+ per quarter in sites with above median BCF expenditure with that of a synthetic sample drawn from the 75 areas with lower-than-median BCF expenditure. The control sites were selected and weighted together using the same base set of control variables as for the panel data analysis. Two analyses were produced in this way; first with the natural log of delayed days per capita 65+, and second with the non-logged version. As in the regression results, the skewness of the DTOC per capita variable suggested that log versions would be the better choice. We also explored the option to remove outliers; in particular, to drop the HWBs that averaged above the 95th percentile of the distribution for the whole period (7 HWBs); and, to account for the skewed nature of BCF expenditure, to drop sites that were above the 95th percentile of the distribution of BCF expenditure per capita (6 HWBs).[39]

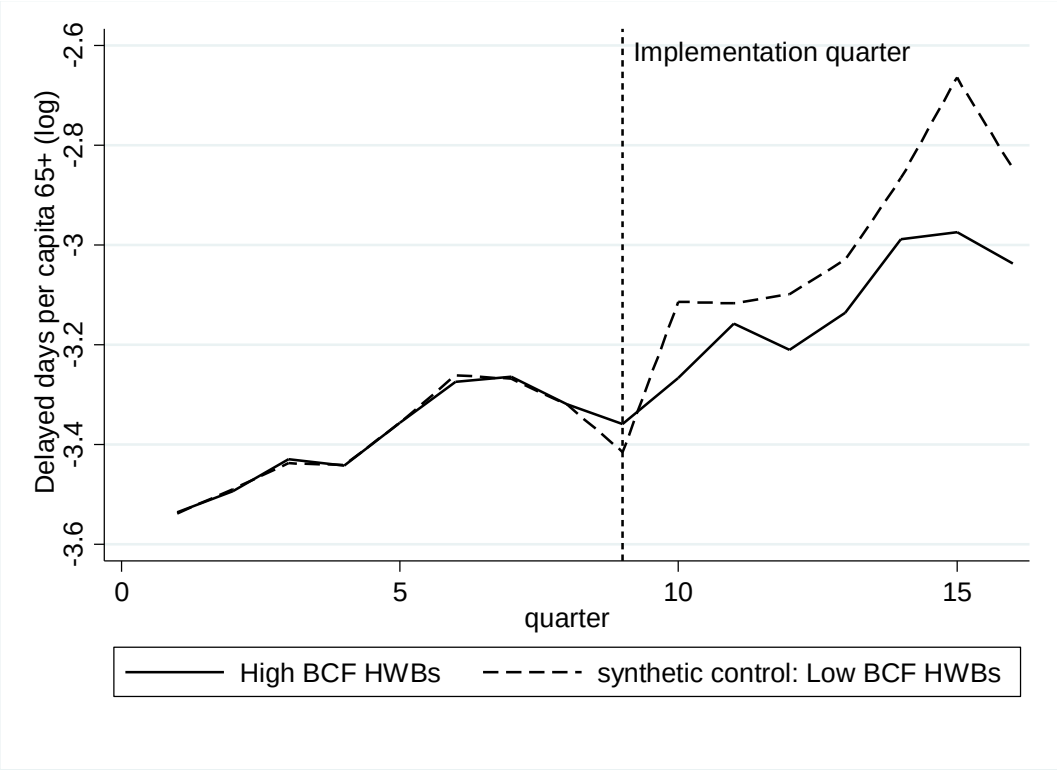
Table 10 gives a summary of the balance achieved for the log model. Figure 12 presents the results. The graph shows the actual number of delayed days per person aged 65 and over in high-BCF areas on average and the corresponding numbers for the synthetic controls (a weighted combination of 11 sites were used to form this control group). Between quarters 1 and 8, the analysis achieved a good level of matching with a very similar trend between the two groups. After BCF implementation (quarter 9 in the chart), the synthetic controls show a higher lower level of DTOCs than the high-BCF sites. A cyclical pattern is also apparent on a 4-quarter (1-year) basis.

Table 10. Synthetic control balance - Delayed days per persons 65 and over (log) (Spec 1)

	High-BCF areas	Synthetic	diff%
CCG planned expenditure per capita 65+ (log)	2.17	1.98	10%
LA gross social care expenditure per capita 65+ (log)	0.26	0.18	42%
AA claimants per cap 65+	144.14	141.93	2%
No. 85+ per people over 65	129.72	130.28	0%
Job seek allow. claimants per person aged 16-64	0.03	0.03	0%
Population 65+ (log)	10.49	10.66	-2%
Population all ages (log)	5.57	5.57	0%
Population 16+ (log)	12.26	12.25	0%
Spatial lag DTOC days per 1000 people 65+	3.89	3.88	0%
Southern regions cf North and Midlands	0.56	0.56	0%
Delayed days per cap 65+, quarter 2 (log)	-3.49	-3.49	0%
Delayed days per cap 65+, quarter 4 (log)	-3.44	-3.44	0%
Delayed days per cap 65+, quarter 5 (log)	-3.36	-3.36	0%
Delayed days per cap 65+, quarter 6 (log)	-3.27	-3.26	0%
Delayed days per cap 65+, quarter 7 (log)	-3.26	-3.27	0%
Delayed days per cap 65+, quarter 8 (log)	-3.32	-3.32	0%

[39] The results below were estimated using the synth routine in Stata 14 (with the 'nested' option).

Figure 12. Synthetic control results – delayed transfers of care: delayed days per person 65+ (log) (Spec 1)

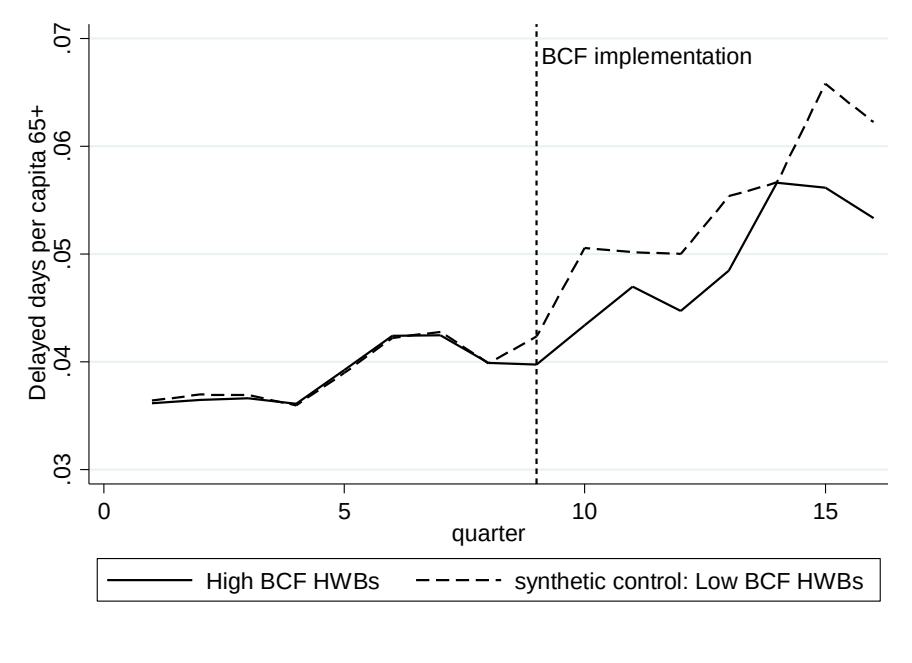


The non-logged version of this analysis gives similar results to the log version – see Table 11 and Figure 13 – with perhaps slightly more volatility in the synthetic control (a composition of 12 control sites, although with some small differences compared to the above case).

Table 11. Synthetic control balance - Delayed days per persons 65 and over

	High-BCF areas	Synthetic	diff%
CCG planned expenditure per capita 65+ (log)	2.17	2.02	8%
LA gross social care expenditure per capita 65+ (log)	0.26	0.11	138%
AA claimants per cap 65+	144.14	138.10	4%
No. 85+ per people over 65	129.72	135.54	-4%
Job seek allow. claimants per person aged 16-64	0.03	0.03	26%
Population 65+ (log)	10.49	10.59	-1%
Population all ages (log)	5.57	5.57	0%
Population 16+ (log)	12.26	12.25	0%
Spatial lag DTOC days per 1000 people 65+	3.89	4.02	-3%
Southern regions cf North and Midlands	0.56	0.40	40%
Delayed days per cap 65+, quarter 2	0.04	0.04	-1%
Delayed days per cap 65+, quarter 4	0.04	0.04	0%
Delayed days per cap 65+, quarter 5	0.04	0.04	1%
Delayed days per cap 65+, quarter 6	0.04	0.04	0%
Delayed days per cap 65+, quarter 7	0.04	0.04	-1%
Delayed days per cap 65+, quarter 8	0.04	0.04	0%

Figure 13. Synthetic control results – delayed transfers of care: delayed days per person 65+



In the above analyses we defined high-BCF expenditure sites as those above the median of the expenditure distribution. The synthetic controls were drawn from the other half of sites. A variant is to define high-BCF expenditure sites as those in the top 25th percentile of the distribution with the other 75% available as potential controls. This analysis is reported below.

Table 12. Synthetic control balance - Delayed days per persons 65 and over (log), defined at 75th percentile of BCF expenditure distribution

	High-BCF areas	Synthetic	diff%
CCG planned expenditure per capita 65+	9.88	8.75	13%
LA gross social care expenditure per capita 65+	1.44	1.18	22%
AA claimants per cap 65+	147.30	144.91	2%
No. 85+ per people over 65	129.08	129.23	0%
Job seek allow. claimants per person aged 16-64	0.03	0.03	20%
Population 65+ (log)	10.58	10.65	-1%
Population all ages (log)	5.70	5.70	0%
Population 16+ (log)	12.39	12.37	0%
Proportion of people 65+ in the population 16+	0.17	0.18	-5%
Spatial lag DTOC days per 1000 people 65+	3.81	3.79	1%
Southern regions cf North and Midlands	0.57	0.42	37%
Delayed days per cap 65+, quarter 1 (log)	-3.49	-3.49	0%
Delayed days per cap 65+, quarter 2 (log)	-3.47	-3.46	0%
Delayed days per cap 65+, quarter 4 (log)	-3.34	-3.34	0%
Delayed days per cap 65+, quarter 5 (log)	-3.40	-3.39	0%
Delayed days per cap 65+, quarter 6 (log)	-3.33	-3.33	0%
Delayed days per cap 65+, quarter 7 (log)	-3.22	-3.22	0%
Delayed days per cap 65+, quarter 8 (log)	-3.22	-3.23	0%

Figure 14. Synthetic control results – delayed transfers of care: delayed days per person 65+, defined at 75th percentile of BCF expenditure distribution

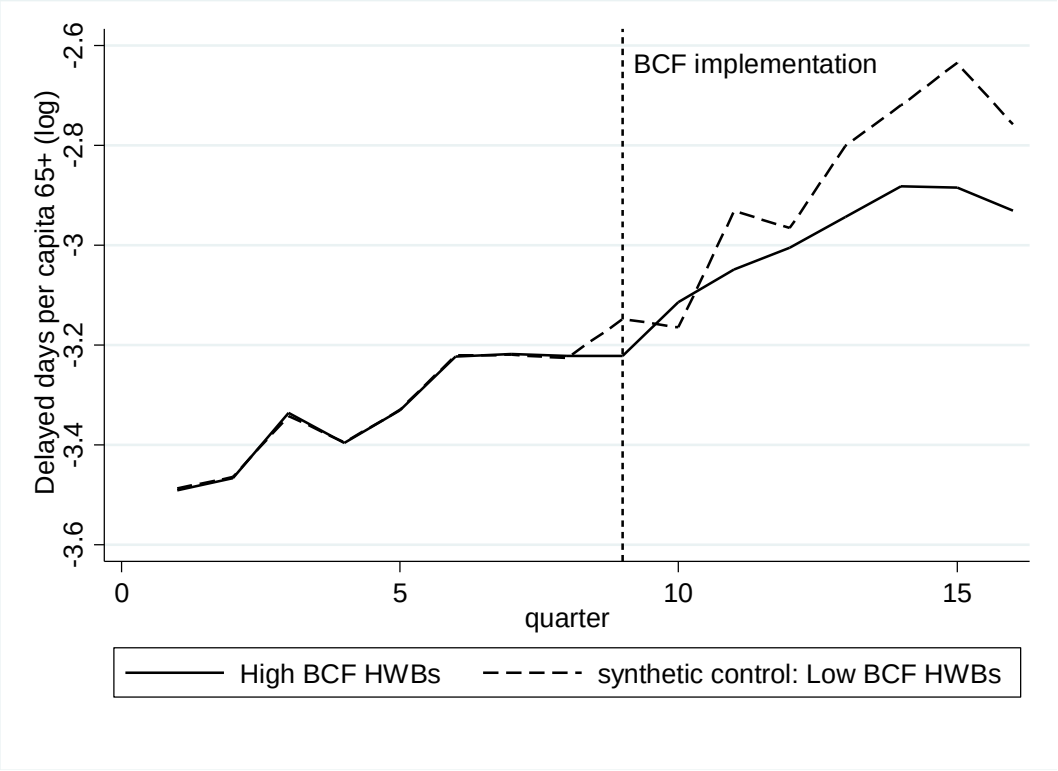
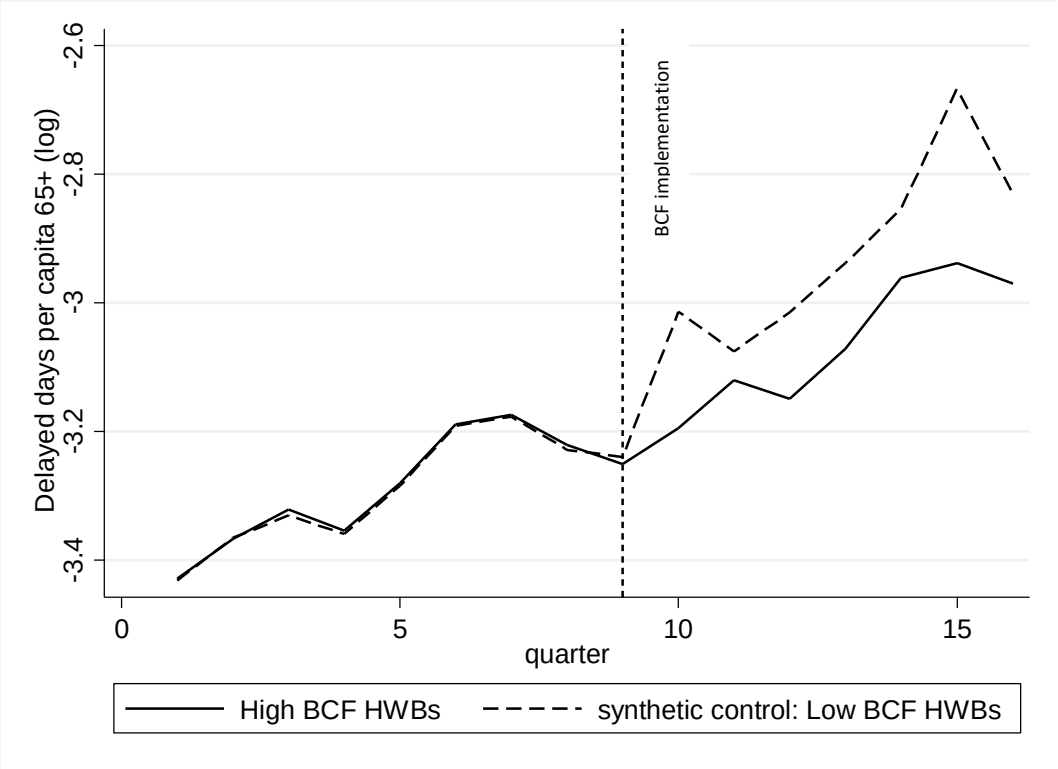


Table 13 reports analysis with cases above the 99th percentile of the (whole period average) distribution removed for DTOC per capita and no outliers removed for the BCF expenditure per capita distribution. The corresponding chart is Figure 15.

Table 13. Synthetic control balance - Delayed days per persons 65 and over (log) (Spec 2)

	High-BCF areas	Synthetic	diff%
CCG planned expenditure per capita 65+	9.31	7.20	29%
LA gross social care expenditure per capita 65+	1.37	1.20	14%
AA claimants per cap 65+	144.73	136.26	6%
No. 85+ per people over 65	129.80	129.94	0%
Job seek allow. claimants per person aged 16-64	0.03	0.03	0%
Population 65+ (log)	10.52	10.70	-2%
Population all ages (log)	5.61	5.62	0%
Population 16+ (log)	12.30	12.30	0%
Spatial lag DTOC days per 1000 people 65+	3.90	3.94	-1%
Southern regions cf North and Midlands	0.55	0.55	0%
Delayed days per cap 65+, quarter 2 (log)	-3.37	-3.37	0%
Delayed days per cap 65+, quarter 3 (log)	-3.32	-3.33	0%
Delayed days per cap 65+, quarter 4 (log)	-3.35	-3.36	0%
Delayed days per cap 65+, quarter 6 (log)	-3.19	-3.19	0%
Delayed days per cap 65+, quarter 7 (log)	-3.17	-3.18	0%
Delayed days per cap 65+, quarter 8 (log)	-3.22	-3.23	0%

Figure 15. Synthetic control results – delayed transfers of care: delayed days per person 65+ (log) (Spec 2)



Synthetic control analysis, like regression analysis, gives different results depending on specification (including the pre-implementation lag structure used). For this reason, we conducted some sensitivity analysis by using different specifications, as above. Table 14 has these and further results. In addition, we re-ran model 1 with a variety of pre-implementation lags of the dependent variable and found very little difference in the results.

The table shows effect sizes as the number of delayed days per 100,000 persons 65 and over saved as a result £1 extra BCF expenditure per person 65+ in the local population. This calculation is made by dividing the difference in delayed days per capita between high and low (synthetic) HWBs by the difference in BCF expenditure per capita between high and low (synthetic) HWBs. For Spec 1 the latter difference is £203 and £105 i.e. £97 (as based on quarter 16). For Spec 2 that difference is £270 less £105 or £165 per person 65+ per quarter (again in quarter 16).

Table 14. Synthetic control analysis, effect size results: Change in delayed days per 100,000 persons 65 and over for sample mean BCF expenditure per capita

Spec	Function	Definition point	Outliers: DTOC	Outliers: BCF expenditure	Variant	+£1 per person 65+ per quarter: effect on delayed days per 100,000 persons 65+ per quarter
1 (Figure 12)	Log	Median	95th	95th	I	-6.6
2 (Figure 15)	Log	Median	99th	No	I	-4.1
3 (Figure 14)	Log	75th	95th	95th	I	-4.4
4 (Figure 13)	Lin	Median	95th	95th	I	-5.8
5	Log	Median	95th	95th	II	-6.8
6	Lin	Median	99th	No	I	-3.1
7	Log	Median	99th	No	II	-4.5

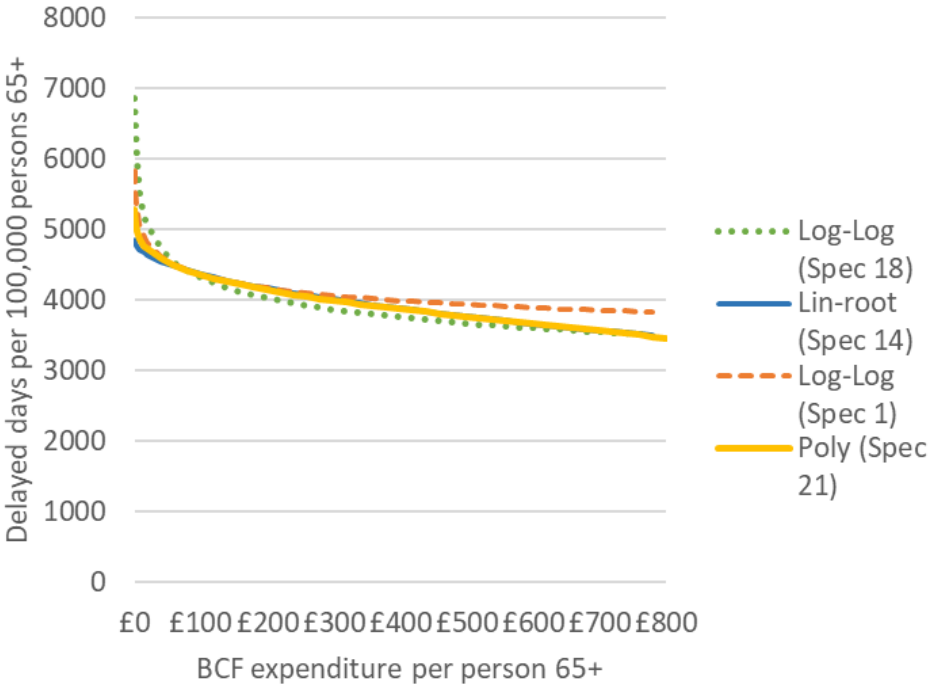
There is also some suggestion in these results of a larger effect in implementation year 2 than in year 1. This finding is consistent with the pattern suggested by regression results. Nonetheless, we should be cautious in drawing strong conclusions give the limited comparability and also the sensitivity of the results to changes in specification.

Effect sizes

The regression results suggested that the relationship between DTOCs and BCF expenditure per capita is not linear. As a general rule we found an (absolute) diminishing effect i.e. small increases in BCF expenditure per capita were more effective at reducing DTOCs from a lower baseline of expenditure than from a higher baseline. For example, average BCF expenditure per capita 65+ (lagged one quarter) was around £144.7 per quarter after implementation. The effect on DTOCs of an additional £1 at, say, £100 per quarter would be greater than the effect of increased in BCF expenditure per capita 65+ by £1 when spending was already £200 per quarter, for example.

Assumptions we make about the 'functional form' of this non-linear relationship will determine to some extent what the average effect sizes of additional BCF expenditure are on reductions in DTOCs. Figure 16 shows the (point estimate) relationship using a number of key specifications. Over the centre of the distribution of BCF expenditure per capita 65+, the results are very similar but they diverge at the very low and very high levels. This highlights the important point that marginal effect results are reliable around the whole-sample mean but become increasingly sensitive to assumptions about functional form the further we move from the mean.

Figure 16. Estimated relationships between delayed days per person 65+ and BCF expenditure per capita 65+, different functional form assumptions



There are a number of different approaches to characterising effect sizes:

- First, what is the point of comparison? Since all sites have implemented the BCF, albeit at different expenditure levels, and the apparent relationship is non-linear, marginal effects will differ according to the baseline chosen. Moreover, any comparison that has more extreme value as the baseline (e.g. £0 BCF expenditure) will have results that are more sensitive to functional form assumptions. A helpful comparison is between high- and low- BCF expenditure sites.
- Second, we use two general approaches for calculating effect sizes: (i) differences in *response* at mean levels of BCF expenditure between high- and low- BCF expenditure sites, and (ii) extrapolation of *marginal effects* calculated at the whole-sample mean over the mean difference in BCF expenditure between high- and low- BCF expenditure sites. As a variant of the latter we also calculate and apply marginal effects at the post-BCF implementation period mean of BCF expenditure per capita. We also compare the synthetic control analysis results.

Accordingly, we interpret the effect of BCF on DTOC as the effect of a change in BCF expenditure per capita 65+ between the mean value for low-BCF expenditure sites (those below median expenditure) and high-BCF expenditure sites (those above the median). The mean values are £78.3 and £211.1 respectively.

Table 15 reports the marginal effect results. As noted, these results provide an estimate of the effect of small changes from the (whole period) mean of BCF expenditure per capita 65+. The table reports the effects of a +1% change and a +£1 change in BCF expenditure per capita 65+ per quarter on DTOC. The point estimates are used as given in Table 8.

Table 15. Marginal effects – point estimates and 90% confidence level ranges, various analysis results

Model	Spec	+1% BCF expend per cap 65+ on % change in delayed days per 100,000 persons 65+ per quarter (Elasticity)	+£1 per person 65+ per quarter: effect on delayed days per person 65+ per quarter	+£1 per person 65+ per quarter: effect on delayed days per 100,000 persons 65+ per quarter		
		Point	Point	Point	Lower CI	Upper CI
		(%)	(£)	(£)	(£)	(£)
GEE	1	-0.062	-3.67E-05	**-3.67**	-6.50	-0.85
	2	-0.042	-2.47E-05	**-2.47**	-4.86	-0.08
	3	-0.053	-3.13E-05	**-3.13**	-5.68	-0.58
	4	-0.020	-1.16E-05	**-1.16**	-2.27	-0.04
	5	-0.056	-3.30E-05	**-3.30**	-6.09	-0.51
	6	-0.058	-3.42E-05	**-3.42**	-6.19	-0.64
	7	-0.071	-4.19E-05	**-4.19**	-7.49	-0.90
	8	-0.069	-4.03E-05	**-4.03**	-7.20	-0.86
	9	-0.061	-3.59E-05	**-3.59**	-5.84	-1.34
Fixed effects	10	-0.062	-3.63E-05	**-3.63**	-6.73	-0.53
	11	-0.061	-3.56E-05	**-3.56**	-6.62	-0.51
	12	-0.057	-3.36E-05	**-3.36**	-6.41	-0.32
Random effects	13	-0.065	-3.80E-05	**-3.80**	-6.81	-0.79
	14	-0.047	-2.78E-05	**-2.78**	-4.89	-0.68
System GMM	15	-0.136	-8.00E-05	**-8.00**	-12.70	-3.31
	16	-0.024	-1.40E-05	**-1.40**	-2.42	-0.38
Diff GMM	17	-0.113	-6.66E-05	**-6.66**	-12.21	-1.11
IV - FE	18	-0.099	-5.83E-05	**-5.83**	-10.38	-1.27
	19	-0.094	-5.50E-05	**-5.50**	-10.20	-0.80
GEE Poly	20	-0.058	-3.43E-05	**-3.43**	-6.51	-0.36
	21	-0.058	-3.44E-05	**-3.44**	-6.54	-0.34

The table also gives effects at the two ends of the 90% confidence interval. Because we are sampling over a certain period of operation of the BCF, there is statistical uncertainty about the results. In particular, we have an estimated effect of the BCF that may differ from the true value (statistical error). Confidence intervals (CI) can give us a sense of the size of that error. In repeated sampled analyses the calculated confidence interval would change. As regard the reported values in the table, we can say that if the true effect of the BCF falls outside the 90% confidence interval, then our analysis (sampling event) has occurred to obtain a point estimate of the effect which had a probability of 10% (or less) of happening by chance. As regards Spec 1 estimates there is a 10% chance or less that we estimate the effect to be between -£6.50 and -£0.85, when this is not the case, or a 5% chance or less that we estimate the effect to be between -£7.04 and -£0.31, when this is not the case. Point estimates are the mid-point of the confidence interval range.

The table reports (point) estimate results in percentage and per £1 terms. For example, if we take Spec 1 result, we estimate that +£1 per person 65+ per quarter of BCF expenditure is associated with

3.67 fewer delayed days per 100,000 persons 65+ per quarter.[40] In other words, with a mean number of delayed days per 100,000 persons 65+ per quarter at 4440.4, this is a -0.083% reduction. It is achieved from a £1 per person 65+ per quarter of BCF expenditure, which is 1.325% (of the mean value of £75.49 per person 65+ per quarter over the whole sample). As a result the elasticity is -0.062 (i.e. -0.083%/1.325%).

As shown in the table, the size of the effect varies with the estimation approach we used. This variation in the results reflects the inherent difficulty of adjusting for the counterfactual, and the different ways this can be done. It also reflect the inherent statistical uncertainty in quantitative analyses using sample data.

Nonetheless, the results do indicate a statistically significant effect, with a range of elasticity estimates of -0.024 to -0.113 in the table (discounting the highest and lower values).

Since all areas implemented the BCF a meaningful comparison of effect is as between 'low' and 'high' expenditure areas. As outlined above, we used mean values of £78.3 and £211.1 respectively, that is a difference of £132.8 per person 65+ per quarter.

Table 16 gives the results where the effect is calculated using extrapolations of marginal effects and with the response difference. In the table we define marginal effects at the post implementation mean (8 quarters). We report a number of representative specifications, including a polynomial specification. The latter allows for a more flexible functional form and so reduces the dependence on the results to assumptions about (single term) functional forms.

Using marginal effects results, the difference between high- and low- BCF expenditure areas is between -540 and -267 days, depending on the specifications as reported in the table. These figures are calculated around the mean value of BCF expenditure post-implementation (£144.7). The response difference results produce slightly smaller differences (in absolute size). In both cases, the synthetic control analysis produces the largest estimated effect, around 60% higher than the polynomial specification.

[40] In this case the model spec (1) is: $ln(y_{it}) = \alpha_i + \beta_1 z_{it} + \beta_2 ln(x_{it} + 1) + \beta_3 t + \epsilon_{it}$. This marginal effect is calculated as $\frac{\beta_2 \bar{y}_{it}}{(\bar{x}_{it}+1)}$ where $\beta_2 = -0.0633$ the point estimated coefficient from the Spec 1 regression, $\bar{y}_{it}$ is delayed days per 100,000 people 65+ per quarter, with $\bar{y}_{it} = 4440.4$ and $\bar{x}_{it}$ is mean BCF expenditure per person 65+ per quarter, lagged 1 quarter, with $\bar{x}_{it} = 75.49$. The elasticity is $\frac{\beta_2 \bar{y}_{it}}{(\bar{x}_{it}+1)} \frac{\bar{x}_{it}}{\bar{y}_{it}} = \frac{\beta_2 \bar{x}_{it}}{(\bar{x}_{it}+1)}$.

Table 16. Effect of BCF as between low and high BCF expenditure areas – marginal effects and response at mean levels, various analysis results

			Polynomial (Spec 21)	Spec 1	Spec 14	Spec 18	Synth
BCF expenditure per capita 65+ (lagged) – mean, post-implementation		£s	144.7	144.7	144.7	144.7	144.7
DTOCs - delayed days per 100,000 people 65+		Days	4997	4997	4997.0	4997.0	4997.0
Marginal effects	+£1 per person 65+ per quarter: effect on delayed days per 100,000 persons 65+ per quarter	Days	-2.52	-2.17	-2.01	-3.44	-4.06
	Predicted difference in delayed days per 100,000 people 65+	Days	-334.7	-288.2	-267.7	-457.3	-539.7
		%	-6.7%	-5.8%	-5.4%	-9.2%	-10.8%
Response difference	Predicted difference in delayed days per 100,000 people 65+	Days	-300.2	-267.3	-276.4	-416.2	-539.7
		%	-6.0%	-5.3%	-5.5%	-8.3%	-10.8%
Elasticity x 100%	Point estimate	%	-7.3%	-6.3%	-5.8%	-10.0%	-11.8%
	lower 10% CI	%	-13.8%	-11.1%	-10.3%	-17.8%	-
	Upper 10% CI	%	-0.8%	-1.5%	-1.4%	-2.2%	-

The mean values of BCF expenditure post implementation is greater than the whole-sample average £144.7 versus £75.5. As a result, the marginal effects per additional £1 of spending are smaller than those values in Table 15.

Overall, the most flexible specification (Spec 21) suggests that high BCF spending areas can expect around 300 to 330 fewer delayed days per 100,000 people 65 and over compared to low-spending areas, other things equal.

The difference comes from the non-linear shape of the response function as can be seen in Figure 17. Here the extrapolation of the marginal effect calculated at the mean expenditure level (£144.7) is below the corresponding full function (response) line for the polynomial function. As noted, when considering expenditure away from the (whole-period) mean value of BCF expenditure per capita, the results are sensitive to assumptions about functional form. In this case, both the polynomial specification (Spec 21) and the log function (Spec 1) give rise to extreme values at expenditures close to zero. This is likely to be an overestimate of effects below £65 BCF expenditure per capita 65+ (i.e. below the 5th percentile of the distribution). Nonetheless, the marginal effect of the BCF is likely to be greater for additional pounds for low-spending areas than for high spending areas. As an approximation we calculate marginal effects at the mean spend for low-BCF expenditure sites (i.e. £106) and high-BCF expenditure sites (£270), as well as at the post-implementation mean (£144.7).

We can see the total marginal effect of a change of £132.8 BCF expenditure per capita for different HWBs, other things equal. The results are reported in Table 17. Low-BCF spend sites (mean of £78.3) would see a reduction of over 500 delayed days (9.7%). The same difference of £32.8 for the mean high-level HWB (mean of £211.1) would see a reduction of around 260 delayed days per quarter (5.4%). In other words, low-spending areas benefit more from additional BCF expenditure than high-spending sites would gain from spending the same additional amount (although this would be on top of reductions achieved to get to this point).

We have been working with a difference of £132.8 but this could be standardised to the average BCF expenditure per capita 65+ (lagged) of £144.7 per quarter per HWB. In that case, for Spec 21 results, low-BCF spend sites would see a 10.6% drop in delayed day; high-spend sites would have a 5.9% drop and for all sites a mean drop of 7.3% (equal to the elasticity value).

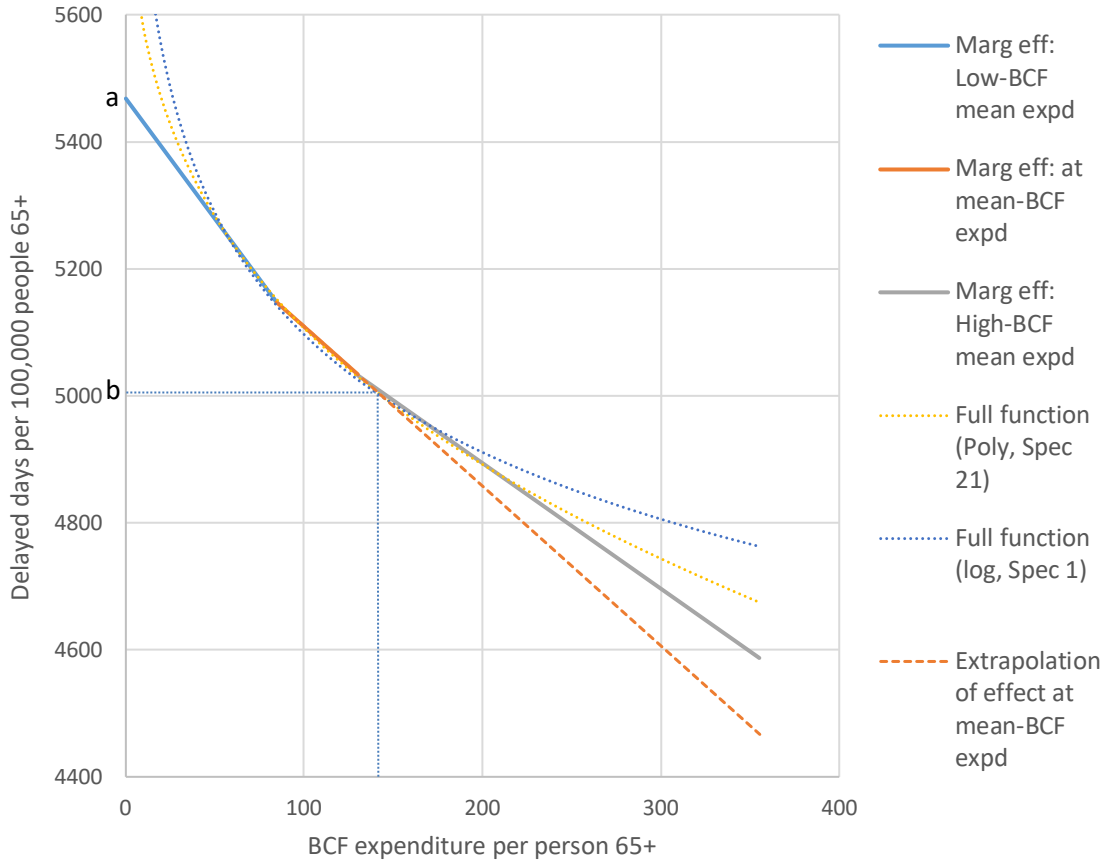
Table 17. Effect of BCF as between low and high BCF expenditure areas – marginal effects and response at mean levels, various analysis results

				Poly function (Spec 21)			Log function (Spec 1)		
BCF expenditure per capita 65+ (mean value)			**£s**	**78.3**	**144.7**	**211.1**	**78.3**	**144.7**	**211.1**
DTOCs - delayed days per 100,000 people 65+ (mean, post implem.)			Days	5173	4997	4873	5164	4997	4897
Diff in expd of £132.8	Marginal effects	+£1 per person 65+ per quarter: effect on delayed days per 100,000 persons 65+ per quarter	Days	-3.78	-2.52	-1.98	-4.12	-2.17	-1.45
		Predicted difference in delayed days per 100,000 people 65+	Days	-501.7	-334.7	-263.0	-547.2	-288.2	-193.0
			%	-9.7%	-6.7%	-5.4%	-10.6%	-5.8%	-4.0%
	Response difference[a]	Predicted difference in delayed days per 100,000 people 65+	Days	-558.2	-300.2	-224.1	-829.3	-313.6	-200.8
			%	-10.8%	-6.0%	-4.6%	-16.1%	-6.3%	-4.1%
Diff in expd of £144.7	Marginal effects	+£1 per person 65+ per quarter: effect on delayed days per 100,000 persons 65+ per quarter	Days	-3.78	-2.52	-1.98	-4.12	-2.17	-1.45
		Predicted difference in delayed days per 100,000 people 65+	Days	-546.6	-364.7	-286.5	-596.1	-313.9	-210.3
			%	-10.6%	-7.3%	-5.9%	-11.5%	-6.3%	-4.3%
	Response difference[a]	Predicted difference in delayed days per 100,000 people 65+	Days	-665.6	-330.3	-245.2	-1073.8	-347.6	-220.2
			%	-12.9%	-6.6%	-5.0%	-20.8%	-7.0%	-4.5%

[a] centred on mean expenditure point

Using the marginal effects results at the three BCF expenditure per capita 65+ values used in the table (£78.3, £144.7, £211.1) linear extrapolations can be combined in three segments (or splines) to give an approximation of the underlying response function – see Figure 17. This linear approximation is likely to be a better guide to the lower-bound of the effect of moving from zero to £144.7 of BCF expenditure per capita 65+. The implied effect is the difference between points *a* and *b*, that is, 464 (9.3%) delayed days saved. In other words, the effect would be at least 464 days saved, and likely to be more.

Figure 17. Estimated relationships between delayed days per person 65+ and BCF expenditure per capita 65+, extrapolations and lower bounds



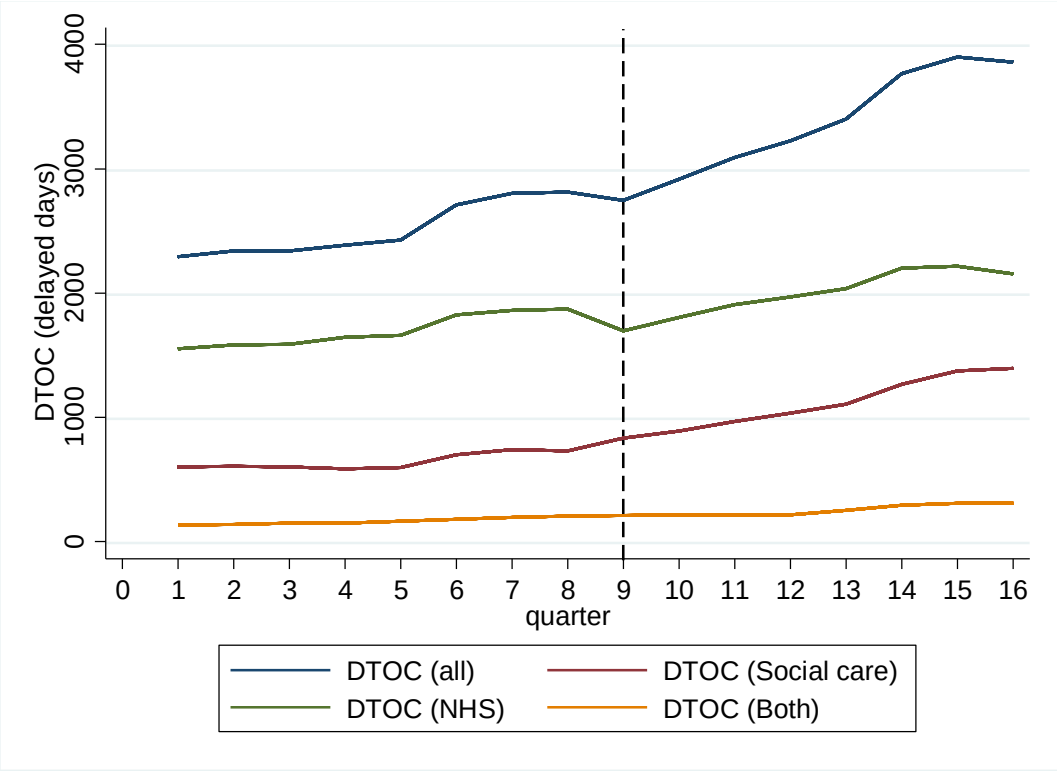
Sub-group analysis (DTOC)

The classification analysis suggests that intermediate care, prevention activity and protection of social care are main types of BCF expenditure. As can be seen in Figure 3 above, intermediate care and protection of social care are the two largest areas of spend.

We can also use more refined indicator variables. The delayed transfers of care data distinguish the organisation responsible for the delayed transfer: either social care, the NHS or both. Figure 18 shows the distribution of delayed days between social care and the NHS. The latter is responsible for more delayed days than the former, although this ratio appear to be reducing.

In general, we might expect intermediate care to be more effective at NHS-related delays (although NHS delays are most likely due to capacity issues within the hospital). Conversely, social care delays are more likely to be tackled where BCF expenditure is focused on protecting social care services.

Figure 18. Delayed transfers of care: delayed days, by responsible organisation



The classification analysis was conducted on year one BCF plans. We report results eight quarters post implementation, noting that plans were revised after year one and so the classification may be less applicable in year two.

We were not able to classify all BCF scheme activity using the keyword coding approach. We assume that un-classified activity that accounts for up to 25% of total expenditure is 'other', and therefore is not either intermediate care, protection of social care or prevention. Cases where more than 25% of spend was not coded – that is 17% of cases – were treated as missing. We used two approaches. First, in these cases we imputed activity into the main categories. Single imputation was used.[41] The second option was to drop these cases. For both approaches, we dropped cases where the sum of main activity type expenditure exceeded 100% (2.4% of cases where missing values were dropped and 1.1% of cases where imputation was used).

Table 18 reports the proportion of year 1 BCF expenditure by main type (after accounting for missing values).

[41] Note that use of single imputation means that estimated standard errors will be biased downwards on related variables. In view of the small proportion of the missing values and the few variables affected, we believe the implications to be minor.

Table 18. BCF classification of activity for sub-group analysis – proportion of spend

Variable	Obs	Mean	Std. Dev.	Min	Max
Impute					
Intermediate care (IC)	2,182	0.29	0.18	0	0.87
Protect social care (SC)	2,182	0.18	0.18	0	0.91
Prevention (PR)	2,182	0.06	0.06	0	0.19
No Impute					
Intermediate care (IC)	1,796	0.29	0.19	0	0.87
Protect social care (SC)	1,796	0.18	0.19	0	0.91
Prevention (PR)	1,796	0.05	0.06	0	0.19

For details of this analysis – see Annex 2. The variables and functional form were as in the base specification (Spec 1). GEE was used to estimate these models. Fixed effects models were also estimated; they gave similar results, although with slightly higher standard errors.

After some experimentation we used both linear and squared activity proportions as interaction terms for intermediate care and prevention. There was no indication of a non-linear effect of the proportion of social care activity – see Table 19.

Table 19. GEE estimations – delayed days per 100,000 people 65+, by cause of delay, BCF expenditure per capita 65+ with interactions

	DTOC – any		DTOC - social care		DTOC - NHS	
	Coeff	Z	Coeff	Z	Coeff	Z
BCF expd per cap 65+ lag 1 Q	-0.05	-1.18	-0.03	-0.33	-0.03	-0.91
BCF expd per cap 65+ lag 1 Q x IC proportion	-0.13	-1.42	-0.11	-0.71	-0.17**	-2.08
BCF expd per cap 65+ lag 1 Q x IC proportion sqrd	0.21	1.64	0.26	1.25	0.25**	2.00
BCF expd per cap 65+ lag 1 Q x SC proportion	-0.04	-1.25	-0.13**	-2.27	1.75E-04	0.00
BCF expd per cap 65+ lag 1 Q x PR proportion	-0.03	-0.08	0.81	1.43	-0.49	-1.46
BCF expd per cap 65+ lag 1 Q x PR proportion sqrd	-0.64	-0.35	-5.27*	-1.72	1.98	1.12

Table 20 reports the results of the sub-group analysis (with the imputed option). To illustrate the effects of BCF activity classification, the table reports scenarios where different proportions of BCF expenditure in each HWB are assumed. The 'Base' scenario is where all BCF spend is on other activity, not intermediate care (IC), social care (SC) or prevention (PR). We then consider main scenarios where the sample mean level of the listed activity is assumed (with the remainder being 'other'). In each case, the effect of a 1% increase in BCF expenditure per capita is reported. We also report whether the corresponding effect is significantly different from the base scenario. In other words, if activity is one of the main classification types, does it make a difference to the size of the effect of a +1% increase in spending.

Table 20. Delayed transfers of care – effects of different types of BCF expenditure, by DTOC-responsible organisation (imputed option results)

	Assumed percentage of spend, by type				+1% increase in BCF expd: % effect (Elasticity)	Coeff	Difference from base	Difference from zero	Prob
	Other	SC	IC	Pr					
Delays due to Social Care									
Base[a]	100%	0%	0%	0%	-0.026%	-0.0266		-0.0266	0.744
Base + all	47%	18%	29%	6%	-0.040%	-0.0405		-0.0405	0.580
Base + SC	82%	18%	0%	0%	-0.048%	-0.0490	-0.0224**		0.023
Base + IC	71%	0%	29%	0%	-0.027%	-0.0276	-0.0010		0.967
Base + PR	94%	0%	0%	6%	-0.017%	-0.0171	0.0095		0.500
Delays due to the NHS									
Base[a]	100%	0%	0%	0%	-0.034%	-0.0347		-0.0347	0.365
Base + all	47%	18%	29%	6%	-0.070%	-0.0710		-0.0710**	0.023
Base + SC	82%	18%	0%	0%	-0.034%	-0.0347	0.00003		0.996
Base + IC	71%	0%	29%	0%	-0.056%	-0.0563	-0.0216*		0.091
Base + PR	94%	0%	0%	6%	-0.049%	-0.0494	-0.0147*		0.098
Delays - any cause									
Base[a]	100%	0%	0%	0%	-0.051%	-0.0516		-0.0516	0.236
Base + all	47%	18%	29%	6%	-0.077%	-0.0783		-0.0783**	0.025
Base + SC	82%	18%	0%	0%	-0.059%	-0.0595	-0.0079		0.210
Base + IC	71%	0%	29%	0%	-0.063%	-0.0640	-0.0124		0.352
Base + PR	94%	0%	0%	6%	-0.057%	-0.0580	-0.0064		0.466

[a] i.e. not IC, SC or Prevention

We can start with delays that are due to social care. We found that the marginal effect of BCF expenditure was stronger (more negative) on DTOCs per capita (due to social care) when a higher proportion of expenditure was on protecting social care services compared to the base scenario (significant at 5%). In particular, the base case effect was -0.026%, but this was significantly larger when the sample mean proportion of 18% of BCF spend was modelled: then the effect of a 1% increase in BCF spend per capita was -0.048%. For social care caused delays, other types of BCF activity did not significantly differentiate the effect of BCF spend (elasticities were not significantly different from the base case). Finally, the effect of BCF spend on these delays at the observed proportion of all four activity types (the 'Base + all' scenario) was not significantly different from zero overall (the effect of SC was watered down by the other activity). If a higher proportion of protecting social care activity than the observed was implemented, we would expect the overall effect to become significant.

As regards NHS caused delays, we found that both intermediate care and prevention activity were slightly more effective at reducing delays than 'other' types of BCF activity. This differential effect compared to the base scenario was significant at the 90% confidence level. The effect of observed combinations of BCF activity overall was also significantly different from zero. In other words,

additional BCF expenditure per capita 65+ with the observed combination of BCF activity is associated with reduced delayed days per capita (-0.07% for a +1% BCF spend). We should also note that both intermediate care and prevention activity appeared to have a non-linear mediating effect. This means that implementing a higher proportion of, say, intermediate care need not yield an even greater savings effect on delayed days per extra overall effectiveness of BCF expenditure.

Finally, in the table we report these scenarios as they affect delays from any cause. These results are effectively a combination of the above results. We did not find that particular activity significantly differentiates the (marginal) effectiveness of BCF expenditure. This result would follow from the contrasting (and so offsetting) effects of the different types of activity on the causes of delay (social care and NHS).

A similar pattern was found for the non-imputed results – see Table 21, although in this analysis prevention activity did not show a significant differential effect on NHS caused delays as compared to the base scenario.

Overall, then, we can infer that protecting social care BCF activity is most effective at reducing delays that are the responsibility of social care. For delays due to the NHS, intermediate care and prevention activity were more effective than 'other' activity at reducing delays, and that overall BCF expenditure shows a significant effect on reducing these delays – at around 0.07% reduction for every +1% BCF expenditure per capita 65+.

This interaction analysis provides insights into what types of activity are leading (or not) to improvements in outcomes. It gives us an indication of *how* the BCF expenditure is having an effect, through different types of BCF activity. The results are in keeping with our hypotheses about the change mechanisms that the BCF has implemented.

Table 21. Delayed transfers of care – effects of different types of BCF expenditure, by DTOC-responsible organisation (non-imputed option results)

	Assumed percentage of spend, by type				+1% increase in BCF expd: % effect (Elasticity)	Coeff	Difference from base	Difference from zero	Prob
	Other	SC	IC	Pr					
Delays due to Social Care									
Base[a]	100%	0%	0%	0%	-0.030%	-0.0306		-0.0306	0.736
Base + all	48%	18%	29%	5%	-0.041%	-0.0418		-0.0418	0.610
Base + SC	82%	18%	0%	0%	-0.054%	-0.0547	-0.0241**		
Base + IC	71%	0%	29%	0%	-0.033%	-0.0332	-0.0026		0.909
Base + PR	95%	0%	0%	5%	-0.015%	-0.0152	0.0154		0.289
Delays due to the NHS									
Base[a]	100%	0%	0%	0%	-0.034%	-0.0344		-0.0344	0.412
Base + all	48%	18%	29%	5%	-0.067%	-0.0679		-0.0679**	0.035
Base + SC	82%	18%	0%	0%	-0.032%	-0.0328	0.00154		0.837
Base + IC	71%	0%	29%	0%	-0.057%	-0.0575	-0.0231*		0.091
Base + PR	95%	0%	0%	5%	-0.046%	-0.0463	-0.0119		0.236
Delays - any cause									
Base[a]	100%	0%	0%	0%	-0.044%	-0.0445		-0.0445	0.350
Base + all	48%	18%	29%	5%	-0.064%	-0.0652		-0.0652*	0.085
Base + SC	82%	18%	0%	0%	-0.051%	-0.0516	-0.0071		0.334
Base + IC	71%	0%	29%	0%	-0.056%	-0.0568	-0.0123		0.376
Base + PR	95%	0%	0%	5%	-0.045%	-0.0457	-0.0012		0.904

[a] i.e. not IC, SC or Prevention

7.3.2 Non-elective admissions

Panel data estimation

As with the DTOC case, a number of specifications were tested with regard to the hypothesis that the BCF has an effect to reduce non-elective admissions. Table 22 summarises the results. In this case, we did not find empirical support for our main or variant hypothesis.

The regression results generally showed negative signs on BCF expenditure but not with values that were significantly different from zero. A fixed effects specification did suggest a positive effect, statistically significant at the 10% level, but this result may have be a consequence of using a linear dependent variable. In the context of the other results, this particular result might be discounted.

Table 22. Panel regression results – Non-elective admissions, various models and various specifications

Model	DV: trans-form	Outliers removed?	Lagged BCF	BCF var spec: Lin or Log	Period	Spatial lag	Coeff[a]	Prob
GEE	Log	No	Lagged	Log	16	Yes	-7.03E-04	0.644
	Log	No	Lagged	Log	12	Yes	-6.98E-04	0.75
	Log	99th	Lagged	Log	16	Yes	-6.13E-04	0.694
	Log	No	Lagged	Log	16	No	-4.17E-04	0.826
Fixed effects	Log	No	Lagged	Lin	16	Yes	-5.19E-06	0.419
	Log	No	Lagged	Log	16	Yes	-5.22E-04	0.718
	Log	No	Lagged	Log	12	Yes	3.68E-05	0.986
	Lin	99th	Lagged	Log	16	Yes	75.03*	0.098
	Lin	99th	Lagged	Log	16	No	80.11	0.128
System GMM	Log	No	Lagged	Log	16	Yes	-1.34E-03	0.716
Difference GMM	Log	No	Lagged	Log	16	Yes	4.37E-03	0.334
IV - GEE	Log	No	Lagged	Log	16	Yes	-4.04E-03	0.281

*** significant at 1%, ** significant at 5%, * significant at 10%

[a] Note that these coefficients only correspond to marginal effects for linear models.

Synthetic control results

The corresponding synthetic control analysis results for non-elective admissions per person 65 and over are given below. As in the DTOC analysis, we also explored the option to remove outliers; in particular, to drop the HWBs that averaged above the 95th percentile of the non-elective admissions distribution for the whole period (7 HWBs); and, to drop sites that were above the 95th percentile of the distribution of BCF expenditure per capita (6 HWBs).

Table 23 and Figure 19 have results for the analysis of non-elective admissions per person 65 and over on the log scale. Table 24 and Figure 20 give the corresponding results for the linear version. Figure 21 gives results where the definition of high versus low BCF expenditure is at the 75th percentile rather than the median, as above.

Table 23. Synthetic control balance – Non-elective admissions per person 65 and over (log)

	High-BCF areas	Synthetic	diff%
CCG planned expenditure per capita 65+	8.55	6.99	22%
LA gross social care expenditure per capita 65+	1.28	1.00	29%
AA claimants per cap 65+	142.49	133.09	7%
No. 85+ per people over 65	130.86	131.25	0%
Job seek allow. claimants per person aged 16-64	0.03	0.02	30%
Population 65+	47697.74	50553.21	-6%
Population 65+ (log)	10.58	10.71	-1%
Population all ages (log)	5.61	5.60	0%
Population 16+ (log)	12.29	12.28	0%
Spatial lag NE admissions per 1000 people 65+	18.16	19.53	-7%
Northern regions (cf Midlands)	0.40	0.54	-25%
Southern regions (cf Midlands)	0.31	0.35	-12%
NE admissions per cap 65+, quarter 2 (log)	-1.80	-1.80	0%
NE admissions per cap 65+, quarter 3 (log)	-1.76	-1.75	0%
NE admissions per cap 65+, quarter 5 (log)	-1.76	-1.75	0%
NE admissions per cap 65+, quarter 6 (log)	-1.78	-1.78	0%
NE admissions per cap 65+, quarter 7 (log)	-1.73	-1.73	0%
NE admissions per cap 65+, quarter 8 (log)	-1.77	-1.77	0%

Figure 19. Synthetic control results – Non-elective admissions per person 65+ (log)

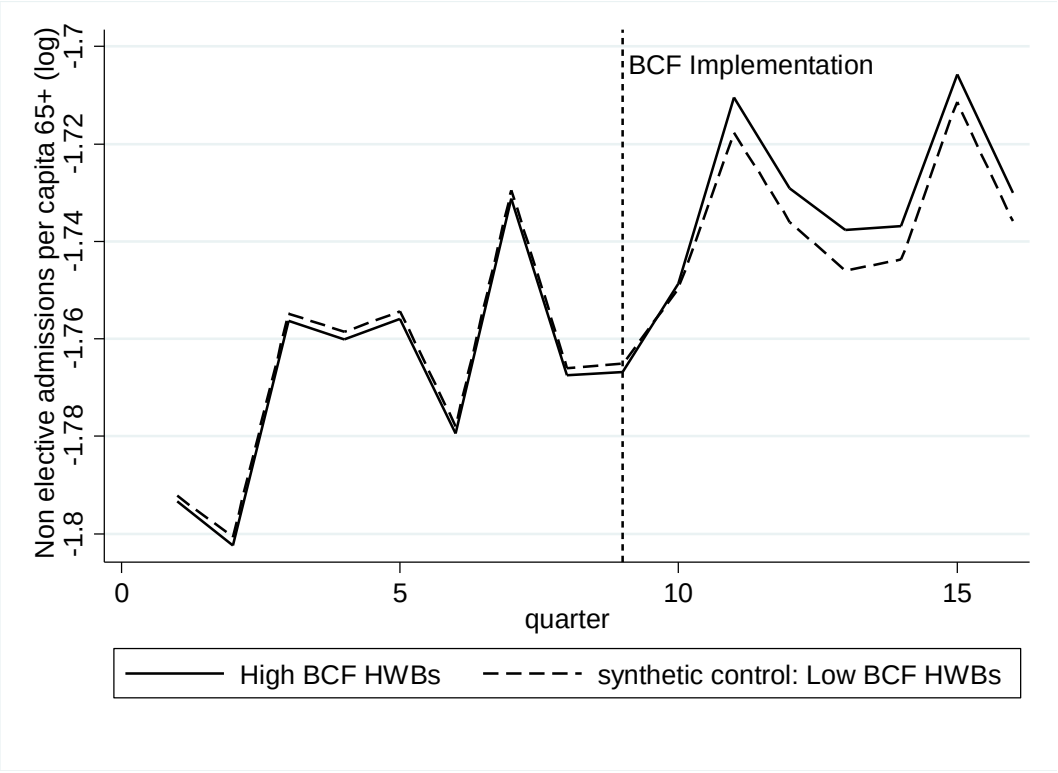


Table 24. Synthetic control balance – Non-elective admissions per person 65 and over

	High-BCF areas	Synthetic	diff%
CCG planned expenditure per capita 65+ (log)	2.12	2.00	6%
LA gross social care expenditure per capita 65+ (log)	0.22	0.11	91%
AA claimants per cap 65+	142.49	138.34	3%
No. 85+ per people over 65	130.86	141.25	-7%
Job seek allow. claimants per person aged 16-64	0.03	0.03	16%
Population 65+	47697.74	54099.47	-12%
Population 65+ (log)	10.58	10.67	-1%
Population all ages (log)	5.61	5.61	0%
Population 16+ (log)	12.29	12.29	0%
Proportion of people 65+ in the population 16+ (log)	-1.71	-1.62	6%
Spatial lag NE admissions per 1000 people 65+	18.16	19.53	-7%
Northern regions (cf Midlands)	0.40	0.57	-29%
Southern regions (cf Midlands)	0.31	0.38	-18%
NE admissions per cap 65+, quarter 2	0.17	0.17	0%
NE admissions per cap 65+, quarter 3	0.18	0.18	0%
NE admissions per cap 65+, quarter 5	0.18	0.18	0%
NE admissions per cap 65+, quarter 6	0.18	0.18	0%
NE admissions per cap 65+, quarter 7	0.19	0.19	0%
NE admissions per cap 65+, quarter 8	0.18	0.18	0%

Figure 20. Synthetic control results – Non-elective admissions per person 65+

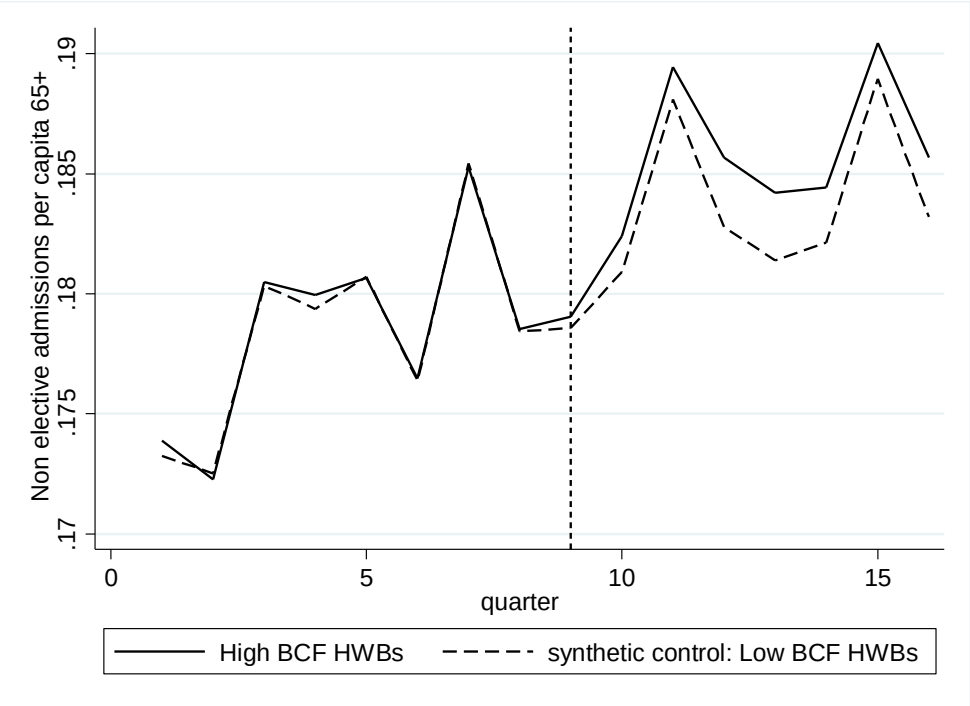
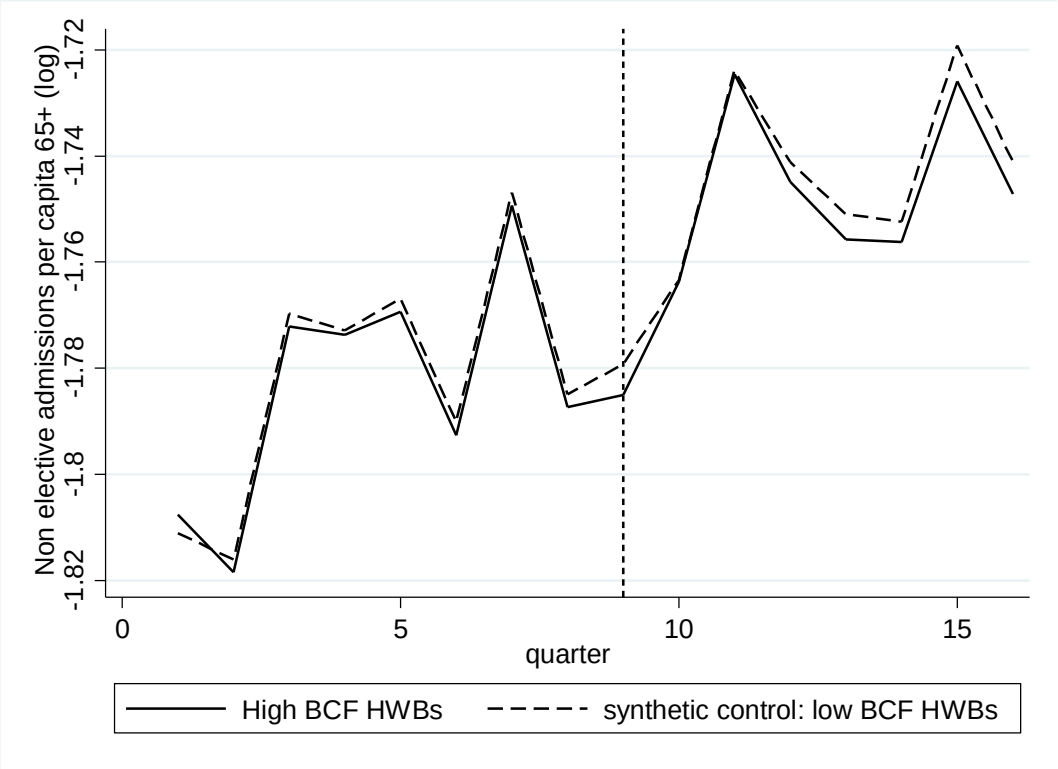


Figure 21. Synthetic control results – Non-elective admissions per person 65+ (log), defined at 75th percentile of BCF expenditure distribution



The results show very little departure after BCF implementation between high BCF expenditure and low BCF expenditure (synthetic control) areas. These average difference corresponds to less than 1.5% of the mean level of non-elective admissions in the linear case and is smaller in the logged versions. As with the regression results, we can infer no significant effect. Furthermore, there is no suggestion that differences are larger in the second year of implementation rather than the first year.

8 Discussion

We hypothesise that BCF expenditure will impact on system-level outcomes, as predicated on two arguments. **First**, the BCF should prompt and facilitate new integrated activity. **Second**, although the evidence base is thin, there is some indication that 'integrated activity' in general can lead to better outcomes. These two arguments are core to our logic model about how the BCF would work to improve system-level outcomes such as delayed transfers and avoidable hospital admissions, and to improve the quality of life of people using services. Refinements to the logical model include an expectation that different types of activity will be more (or less) likely to be effective overall, and that the BCF can affect 'step-up' transitions through prevention measures (e.g. hospital avoidance) and 'step-down' transitions through better coordination of care transfers.

Our overall goal was to test these hypotheses/logic models with the data at our disposal, including scheme descriptions, data from interviews and outcome indicators and expenditure data. In doing

so, we can also estimate the size of the effect of BCF. Together, these results help us make suggestions for the shape of the BCF policy in the future.

8.1 Activity supported by the BCF

The BCF supports a wide range of initiatives and schemes locally. Data we received from sites (via NHS England and DHSC) showed over 4000 specifically identified activities/uses with planned expenditure attached (for 2015/16). We were able to group much of this activity into 15 categories, although noting the challenges of these sorts of classification exercises, particularly given the number of schemes involved.

We found that many areas were planning to implement various forms of intermediate care. Just under a third of total expenditure was allocated this way. This figure increased if the various forms of coordinated care were also included under the general heading of intermediate care due to the fine line between the two activities[42].

Funding to protect social care accounted for around a quarter of planned expenditure, underlining that the BCF was in part a mechanism to maintain social care expenditure.

We sought to identify whether activities or initiatives in the BCF were new or re-purposed from existing activity. This proved to be especially difficult, particularly noting the sheer scale and variety of the activity. Sites were not required to provide this information explicitly as part of the original plan submission and it was therefore difficult to glean from the information provided. As such we were unable to advance specific conclusions about whether particular activities were new or re-purposed. Our interviews with project leads did suggest that there was some re-badging of activity but also that the BCF had prompted further and new activity.

Another challenge related to determining the primary activity or objective of schemes. For instance, many schemes (in the descriptions) cited reducing acute admissions as part of the 'end goal' for the purpose of the scheme, and this is arguably true of the BCF as whole. However, we came across a number of examples where the actual objective was aimed at an alternative, or low level preventative activity, such as home care (still with the overall aim of reducing acute admissions) but meaning that classification was clouded by a 'higher level' aim rather than the specific purpose of the scheme.

8.2 Implementation of the BCF

The extent and nature of progress with implementation of the BCF programme across local sites was mixed. As noted above, the majority of sites attempted to develop their existing joint services through the BCF programme, and felt that was achieved. In particular, many participants reported that the BCF programme had prompted sites to extend and build on what they were already doing in partnership, including discharge to assess schemes, case management and care coordination, and intermediate care services. Some sites reported that the BCF provided the opportunity to be more innovative in their approach.

[42] Intermediate care covers services that help manage people transitioning between health and social care. Coordinated care covers activities that help to better align health and care services to support better transition

Our findings showed the importance of shared vision as a condition for successful implementation of the BCF programme and progress towards integrated working. The nature of pre-existing relationships appeared to influence the pace and progress of BCF implementation, particularly at the early planning stages. Where a shared vision was lacking at the outset or unable to be maintained, implementation and progress was constrained. In some sites we found that the BCF contributed to or was an incentive to creating such a shared vision by bringing partners around the table, for example in sites where integrated working was at an early stage, and/or by enhancing existing efforts towards integration.

Trust appeared to be particularly important for being able to agree, manage and maintain pooled budget arrangements on which implementation of the BCF programme relied. Difficulty in agreeing financial risk-sharing actually threatened to derail the process in a very small number of sites, but more widely we found that trust and open communication was crucial for sites to be able to agree and plan successfully their respective financial contributions to the BCF. In the context of wider financial constraint and pressures on health and social care organisations, we found that managing money associated with the BCF was a significant issue and a potential source of tension for many sites that required careful negotiation. Good pre-existing relationships and a strong shared vision therefore significantly helped this process. Nonetheless, there were challenges in this regard. Differences in culture and professional approach, where entrenched previously, was a significant barrier. Perceptions about the nature, benefits and complexity of integration measures were also relevant and could constrain progress. This was compounded in the (few) sites where there was mistrust about the aims of the BCF and it was perceived to be diverting resources away from health to support social care funding, and vice versa.

Another factor that appeared to influence progress with implementation early on was the experience of the BCF assurance process. Sites noted the delays in national guidance regarding planning which in turn caused some delays in sites being able to plan and get submissions for BCF ready locally. A very small number of sites also experienced inconsistencies during the assurance process regarding the need to meet their minimum financial contributions for BCF and mandates from wider national NHS bodies restricting financial spend, although this experience appeared to be limited to sites who were in extreme financial difficulty.

Further comments from participants suggested that wider financial and resource pressures were a significant challenge to greater progress. There were a number of aspects to this issue. Financial pressures influenced the extent to which sites were able to ‘top up’ their minimum contribution to the BCF, devote resources to the planning and implementation of the BCF programme, and transition from existing service arrangements (for example by ‘double running’ or managing the decommissioning of current provision). In particular, there was a view that because the BCF programme involved reconfiguring existing funding and was not a ‘new’ or additional resource per se, this limited the extent to which sites could invest in new schemes and services, and experiment with alternative ways of working.

An issue raised by participants was the complexity of integrating health and social care and the associated, changing, policy landscape in this regard. A significant development during the time of the qualitative interviews was the introduction of STPs (Sustainability and Transformation Plans), and

this was perceived by a high number of participants to have affected the priority given to BCF planning since its inception.

Based on their experiences, we noted a number of retrospective lessons from participants regarding factors for successful implementation of the BCF programme. Some of these are familiar from wider change management literature:

1. Strong local leadership, project management and governance
2. Interpersonal relationships and communication
3. Engaging key stakeholders early on
4. Supportive organisational culture
5. Resources and capacity for implementation

These factors are consistent with the findings of other evaluations of policy initiatives such as personal health budgets and integrated pioneers (e.g. Forder et al, 2012; Erens et al. 2016).

Our findings revealed a wide range of views and experiences of the implementation of the BCF programme in local areas. To further enhance understanding of the implementation and effectiveness of the BCF we recommend that future research incorporate insights from this study to identify context-mechanism-outcome configurations and pathways to successful implementation and outcomes. This would provide development of the empirical findings presented here and a complement to the methods employed in this evaluation to date.

The findings on implementation are directly relevant to our overall hypothesis about the impact of the BCF, as described above (especially the first argument). Where implementation is slow, expenditure earmarked as being in the BCF is more likely to be for a continuation of pre-existing activities. Conversely, advanced implementation might imply that new BCF-funded measures were in place. With mixed implementation progress, we might expect to see greater effectiveness of BCF expenditure over time.

8.3 Impact of the BCF

A wide range of local initiatives were supported by the BCF, running into thousands of specific schemes and expenditure units across the country. This study set out to assess the overall effect of the BCF, not look at the effectiveness of individual schemes. Accordingly, we measured the BCF in terms of the sum of activity it supported locally – that is, the amount of total expenditure on schemes funded from the BCF per head of population in the locality.

In this analysis, we focused on two outcome indicators, DTOCs and non-elective admissions. These are to some extent pragmatic choices as data are routinely collected on a frequent basis for this indicator. The rate of delayed transfers is a good indicator of the effectiveness of ‘step-down’ transitions of people out of hospital. This indicator is focused on the people most likely to be affected by integrated care. Emergency admission rates is relevant as an indicator of ‘step-up’ transitions, an indicator of the preventative effects of integrated working. Nonetheless, it is a more generalised indicator.

8.3.1 Expected effects

Insights as to the likely impact of the BCF and the mechanisms of change it introduced were explored in the interviews with stakeholders. We sought to gain an understanding of stakeholders' perceptions of the impact and effectiveness of the BCF programme. As we found in the classification analysis, our interviews highlighted a wide range of schemes and services pursued under the BCF programme, comprising different levels of scale and complexity. Much of this activity built on, or involved a reconfiguration of, existing integrated working arrangements, including activity pursued through other integration programmes in some areas. This created difficulties for some participants in disaggregating BCF outcomes from the overall impact of wider integrated working and health and social care arrangements that were being pursued, leading to attribution difficulties. There were further challenges due to the many drivers of DTOC (delayed transfers of care) and non-elective admissions. Participants also reflected on the longevity of implementation and realisation of outcomes, and there was a view that the BCF programme was still early on in its life cycle.

Nevertheless, recognising these issues, participants pointed to a number of benefits of the introduction of the BCF programme, and these are instrumental to effective integration outcomes. These included increased opportunities for collaboration and joint commissioning of services, improved patient experience (particularly of care pathways and avoiding the need to repeat case histories to different practitioners) and, in some cases, increased efficiencies across organisations in terms of streamlining discharge, needs assessment and care monitoring processes (through for example, multi-disciplinary teams and single assessment processes). They were also able to describe those schemes they felt were working particularly well locally, those which were not working so well, and the reasons for this, and we attempted to capture this in our presentation of findings. Given the breadth of schemes implemented, we focused on the reasons for success, and these often reflected the wider facilitators and barriers to progress with integrated working. Some sites also reflected on some negative impacts, such as the BCF leading to worsening relationships between partners, and also that the BCF may have diverted previously-established local plans and progress with regard to integration.

In regard to outcomes, it should also be noted that there was a general feeling that qualitative outcomes (such as improved patient experience, or improved working relationships and understanding across health and social care) were not captured within national metrics for BCF. Some participants therefore expressed that national metrics for BCF were somewhat narrow in their focus (on reductions on non-elective admissions and delayed transfers of care) in contrast to the range and scope of outcomes observed, or anticipated, in practice.

8.3.2 Overall effects on outcome indicators

A main finding was that DTOC rates were negatively related to the size of expenditure per capita funded out of the BCF. The statistical significance of this result was sometimes at the 90% confidence level rather than the conventional 95% level, depending on specification, and therefore we need to be appropriately cautious about whether these results are indicative of a real effect or they are showing a negative relationship by chance. We report results at 90% confidence levels (or better) in awareness of the distinct paucity of evidence in this area for policy makers to use.

Our aim was to establish *causal effects*; a range of methods that controlled as far as possible for 'confounding' factors, were used to this end, improving our confidence that we were estimating causal effect. We would certainly argue that our overall approach to assess and compare the counterfactual statistically is more reliable than a simple comparison of DTOC rates before and after the implementation of the BCF. In the latter case, we would be implicitly assuming that, in the absence of the BCF, DTOC rates would remain unchanged through time, and therefore any observed changes are due to the BCF. This is an extremely unlikely situation. The BCF is a very complex policy to evaluate and our approach to estimating its effect necessarily entail making some assumptions. Nonetheless, we would strongly argue that the assumptions we need to make are far more plausible than assuming that DTOC rates would not have changed through time in the absence of the BCF. Moreover, we estimate a range of statistical models which embody somewhat different identifying assumptions. In the main, these choices do not qualitatively affect our results and conclusion.

Accordingly, our findings can be interpreted as saying, notwithstanding these caveats, that the BCF did have the effect of reducing delayed transfers of care.

This effect of BCF expenditure was particularly evident where we allowed for a time lag between cause and effect (i.e. lagging BCF expenditure by one quarter in the analysis), which again is consistent with what sites were saying about progress with implementation.

We did not find a causal effect of BCF expenditure on non-elective admissions. These results suggest that the BCF was promoting activity aimed at improving 'step-down' transitions out of hospital, but was having no effect as regards 'step up' transitions, at least, in terms of the avoidance of emergency hospital admissions. The findings help us to refine our understanding and hypotheses about the working of the BCF.

Although we might expect BCF to affect step-up transitions, it is perhaps not surprising to see no effect registered on non-elective admissions. As noted above, non-elective admissions is a very broad indicator, affected in many ways within the health and care system, in addition to any effects from the BCF. It may also be the case that the BCF prompted sites to implement new local policies and initiatives but these were not effective at reducing non-elective admissions, or that the BCF only re-badged existing policies aimed at hospital avoidance/prevention. By contrast, the results for DTOC imply that the BCF did prompt new activity and that this was effective at reducing delayed transfers of care.

The BCF was implemented in various ways, at different per capita levels, across the country. We found evidence of diminishing returns to scale, that is, the first pounds of new expenditure from the BCF were more effective at reducing delays than spending the same additional amount on top of current spend. We might expect sites to fund the most effective initiatives first and use the remainder of the fund for, what is expected to be, successively less effective uses.

This finding means that the 'effect size' of BCF expenditure will not be directly proportional to the amount spent from the BCF. As such, there are two ways that we can frame and measure effect sizes. The first is to consider the effect of a small increase in the size of the BCF, for example, a 1% change from the current average expenditure between sites. This interpretation – i.e. looking at *incremental* effects – is most relevant to policy decisions about whether to increase or decrease the scale of the BCF from current levels. For a **1%** increase in BCF expenditure per capita (from the mean

value of £145 per capita 65+ per quarter), our results indicate that this would result in a **0.073%** reduction in delays (central estimates). A larger change in BCF expenditure would not produce a proportional change in delays, *but if it did*, say a 100% change in BCF expenditure, this would be equivalent to a 7.3% reduction in delays.

As noted above, we found that incremental effect sizes get smaller for higher levels of BCF expenditure. Were we to increase the BCF by a small amount in an area where the BCF is relatively small, our results indicate that the reduction in DTOCs in that area would be greater than the effect of the same amount of additional money spent in an area with an already-high level of BCF expenditure.

The second way of interpreting the results is in terms of the *total* effect of BCF expenditure; that is, comparing what is currently spent, in total, from what might have happened if there had been zero BCF expenditure.

Total effects are difficult to estimate because statistical models compare sites according to their current level of BCF expenditure, not the effects of small or zero levels of expenditure. Nonetheless, there is variation between sites, so some tentative estimates can be made, albeit being clear about these cautions.

We can be confident that the total effect will be greater than the effect of the incremental change scaled to 100% i.e. greater than 7.3% (using the above results). One way to move towards an estimate of total effect is to combine the (different) incremental effects that are estimated for high- and low- spending sites. On this basis the total effect of BCF expenditure is estimated to be a reduction of delayed days of **9.3%**. This is still likely to be an under-estimate, so a more pragmatic position would be to expect the actual total effect to be higher, e.g. over 10%.

The above effect sizes are based on central (point) estimates of the 'base case' models. Other models give point estimates that would produce larger effect sizes in terms of delayed days avoided e.g. the instrumental variable models, which gives point estimate effect of -0.100% (reduction) in delayed days for a +1% increase in BCF expenditure per capita (as compared to the -0.073% as in the base case). The synthetic estimation results also imply bigger effect sizes. Other specifications produce smaller effect sizes.

Furthermore, we have discussed the implications of analysis in terms of a certain percentage change e.g. total effects of 9.3%. But it is important to appreciate that the results are based on statistical analyses and are therefore subject to statistical error i.e. the estimated effect might differ from the 'actual' effect.

Our models give results as a range of estimates. These *confidence intervals* give us a sense of size of this statistical uncertainty. Confidence intervals are the range of estimates for which the difference between any estimate in the range and the 'true' effect is not statistically significantly different at the chosen confidence level (i.e. values that have effectively the same statistical likelihood of being the 'true' effect). For the flexible specification results above, for a +1% increase in BCF expenditure per capita this range at the 10% confidence level is -0.138% to -0.008% (where the point estimate is -0.073%). For the main (single variable) model, this confidence interval range is -0.111% to -0.015%. Confidence intervals are wider at the 5% level e.g. for the latter they are -0.120% to -0.005%. It

should be clear that the true effect might be higher or lower than our central estimate. But without more data, we cannot be more specific. What is important here is that we have a good statistical likelihood that there is *an* effect, even if we lack some precision about the actual size.

8.3.3 Impacts of different types and timing of BCF-funded activity

The process evaluation has given us insights as to why the BCF has an effect, that is, through prompting health and social care partners to work more closely to plan and implement a range of integration measures. As outlined above, this is the first underpinning argument about the hypothesised effect of the BCF. The second underpinning argument in the logic model is that integrated activity is effective. We cannot directly assess this argument – it is beyond the scope of this work to evaluate the effectiveness of specific types of integrated care. But we could compare how effective the different broad types of BCF activity were in reducing DTOCs.

As the classification analysis makes clear, the BCF was used to fund a wide range of activity. Some types of integration activity will be more effective or have different impacts than other types of activity. The classification analysis suggested that many schemes could be grouped into broad categories, and we could differentiate on this basis; accordingly, we focused on intermediate care, preventative care and protection of social care. Also we looked at which organisation – the NHS or social care – was recorded as responsible for the delay.

Our logic models would suggest that intermediate care and preventative activity would be most effective at reducing delays due to the NHS than other types of activity. Similarly, BCF resources focussed on supporting social care services should be more effective than other BCF activity at reducing delays due to social care.

Our results suggest that intermediate care and prevention activities (as classified) are more effective than other forms of BCF funded activity (excluding protecting social care) at reducing delays that are *due to the NHS*. However, BCF expenditure on protecting social care activity was no more effective than other BCF spending at reducing these delays.

As regards delays *due to social care*, the contrasting result was found. Expenditure on protecting social care was more effective than other types of BCF funded activity (excluding intermediate care and prevention activities). At the same time, intermediate care and prevention activities were no more effective than other BCF spending at reducing these delays.

The results are in keeping with our hypotheses about the working of the BCF and the underlying logic model. They provide insight into what types of activity are leading (or not) to improvements in DTOCs and how to shape the policy. For example, if the policy objective is to reduce delays that are the responsibility of local authorities, then BCF funds should be used to protect social care. By contrast, reducing delays due to the NHS is more effectively achieved by funding intermediate and preventative care, although it should be noted that these results were more nuanced.

We did not find a statistically different level of effectiveness over time. Point estimates were slightly greater in year two of operation compared to year one, but there was insufficient data to determine whether this was a trend, e.g. as resulting from progress in implementation, or just a chance result. We did find that using a time lag (of one quarter) on BCF expenditure produced results that were statistically significant at a higher level, which would be some support for the hypothesis that

implementation was in progress. This result may indicate a natural time lag for effects to be felt, or that implementation of this activity was in progress during this period.

8.3.4 Wider impact

An important message from sites was about the wider impact of the BCF, going beyond that which might be directly captured from using DTOC and emergency admission metrics. Our initial plan was to also use some quality of life indicators in our analysis but there was insufficient data for this purpose (particularly only annual collection of these data).

There are direct benefits from reducing delays in transfers of care in terms of the net cost savings arising from people being in a social care setting rather than a hospital bed. But we would also expect an improvement of the quality of life of people who leave hospital in a timely way. Moreover, negative impacts such as the creation of dependency for people cared for in hospital would be avoided. Other relevant factors might be the impact of reduced DTOCs on carers and any additional costs of readmissions the person's home (or care home), rather than from the ward, should they occur.

We lack the evidence (and data) to quantify these effects, but any comprehensive assessment of policies to improve integration would need to account for the full range of impacts. Any judgement about the cost-effectiveness of the BCF should include the full range of benefits as well as the cost of the policy, noting that the BCF was largely sourced from transfers, rather than new money.

8.4 Limitations

A number of specific limitations of this analysis should also be noted. First, DTOC and non-elective admission rates are *intermediate* indicators of better integration outcomes, as noted above. Furthermore, we were not able to account for differential mortality rates which could affect both these intermediate outcomes. For example, if BCF activity reduced in-hospital deaths then delayed transfer rates might have been higher, an apparent negative outcome. However, we believe that the effect of the BCF on mortality to be very small. Intermediate care services which are largely about rehabilitation and social care capacity are unlikely to affect in-hospital mortality. We accept nonetheless that this is a limitation of this study.

Second, we used site-reported BCF expenditure data in the comparative analysis as provided by sites via NHS England and have no direct basis to determine the accuracy of this data. This also applies to individual BCF scheme data that were made available. As regards the latter, we were not always able to code schemes due to data paucity.

Third, the comparative analysis was limited to eight quarters worth of data after BCF implementation. As study participants noted, the BCF needs time to be implemented and refined, and may not be at its most effective configuration.

Fourth, there remains the possibility that we did not fully account for the counterfactual, particularly in the choice sites made as to the types of BCF expenditure they were planning to make. Many areas invest in integrated health and social care services, outside of BCF and this also makes the counterfactual more difficult to estimate.

Fifth, due to significant difficulty and delays with recruiting participants from local health and social care systems (BCF programme sites), despite a whole range of measures on our part, we spoke to fewer people than originally planned. The qualitative analysis was not designed to use a representative sample. Rather we intended to draw on the perspectives and experiences of those with a 'take on' as well as possibly a 'stake in' the BCF. Results will therefore be different to what might have been expected had we pursued a sampling strategy in which we were blinded to this information, and there is a potential for self-selection bias.

8.5 Summary conclusion

This study was designed to investigate the system-level impact of the BCF, that is, considering the national BCF policy framework as a means to promote and facilitate closer and more productive working between health and social care systems. Noting the limitations, we found some indication of an effect on 'step-down' transitions out of hospital, as reflected by improvements in delayed transfers of care rates. No effect was found in this analysis on 'step up' transitions in terms, at least, of the avoidance of emergency hospital admissions.

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Annex 1. Coding framework

Key characteristics

The following six key dimensions were used for coding BCF plans

Client Group

Code/Response	Notes/Examples
Generic	Code if specific client/patient group is not mentioned or where scheme targets patients from a range of groups. Code if scheme mentioned 2+ specific LTCs. E.g. Older people, young adults with physical disabilities
People with learning disabilities	
Mental health / dementia	
Carers	
Condition specific	Where the scheme refers to one specific long-term disease (other than MH/dementia) e.g. COPD or long-term condition e.g. obesity, alcohol and drug abuse. If there are more than one LTC mentioned, then code as 'generic'.
Other	Code if there is a specific condition that does not otherwise fit into 'condition specific' e.g. homeless populations.

Infrastructure vs service

Code/Response	Notes/Examples
Infrastructure	Schemes include activities that support or develop service delivery but do not (directly) involve patients or service users. For example: • Schemes to produce data or enhance data processes (e.g. data sharing systems). • Research and development (e.g. analyses and reviews). • Implementation or development of new funding systems (e.g. capitation). • Implementation or development of new commissioning processes and structures (but not the undertaking of commissioning, which is a service activity). • Organisational or contractual process changes and development (e.g. establishment of provider networks, accountable care partnerships/organisations). • Training activities.
Service	
Both	
	We do not expect BCF to include specific capital projects e.g. care home builds, but if they do appear, code as infrastructure. In general, code as a service if indistinct.

Location

Code/Response	Notes/Examples
Community	Generally services delivered in patient/people's homes or in local community facilities e.g. lunch clubs, day centres, as well as home care, home health, hospice at home etc.
Institutional	Generally where services are tied to the location or involve accommodation i.e. care homes, hospices, hospitals. Can include hospital day cases (does not need to be overnight)
Both	
Not Applicable	Infrastructure schemes most likely to be in this category.
Don't know	

Innovation

Code/Response	Notes/Examples
New	Where there is good indication that this is a new (planned) innovation.
Modified	BCF resources have been used to change or extend the scheme e.g. increased access to 7 days; new combination of existing activities; etc.
Existing	Generally where BCF is used to protect the funding of an existing service (esp. social care). Could be coded where there is strong indication that very little substantive change has been planned – that this is really a re-badging of the service.
Don't know	
	Expectation is that the modified category will be most common.

Integration

Code/Response	Notes/Examples
Yes	Where the scheme specifically involves health service and local authority joint working.
No	No evidence of joint working.
Don't know	
	Where services are multi-disciplinary but in the same sector, code as not integrated. • Primary or community health and acute service partnership working etc. does not count as integration for this definition.

Primary activity

Code/Response	Notes/Examples
Intermediate care	• New services at the transition points between conventional service areas e.g. between hospital and social care, aimed at reducing inappropriate or avoidable referrals or delays in transitioning. • Includes: step-up and step-down services (e.g. reablement, rapid response), intermediate care services (e.g. IC bed unit), various forms of secondary and tertiary prevention aimed at reducing referrals/transitions to more intensive service options.

	• Includes services dedicated for this purpose, but not other activity that might also result in better use of services along the care pathway e.g. not care-planning or assessment *per se.*
Prevention, low level	• Services generally provided in the community aimed at reducing people's underlying need for more intensive services (as opposed to IC which is about tackling avoidable need). • Includes: Wellbeing (e.g. social isolation) services; self-care/management support; signposting, information and care navigators; etc. • Includes: Public health and related programmes aimed at reducing risk factors etc.
Coordination, assessment, care planning	• Services aimed at improving people's use of services and support, given their needs/conditions, and within care settings/stages of the care pathway. • Includes: services that better assess people's needs and support care planning (e.g. psychiatric liaison, case management); risk adjustment and case finding (e.g. PARR tools) etc. • Different from intermediate care which is about managing the transitions.
Assistive technology and community equipment	• Technology and equipment that helps with the management and monitoring of people's condition. • Includes: telehealth, telecare, aids and adaptations. • This kit might help with prevention and care assessment and planning, but select this code where the primary activity is the installation and operation of the kit. Might be coded as a secondary component with other codes, as applicable.
7 day working /access	• Code for schemes that are specifically about the extension of access to services. • May be a 2nd component code where extended access is a main part of the scheme, but also where other changes have occurred.
Changes/implementing new care pathways	• Code for schemes that are changing or redesigning care pathways in terms of main service blocks, not just the introduction of intermediate care. • Includes schemes that are moving activity out of hospital or other institutions, e.g. hospital at home services, or where parts of the care pathway are displaced or replaced e.g. GP-based surgery rather than in-patient care, or where service had become multi-disciplinary e.g. combining nursing and social work providers.
Core/General (incl. social care) services (including protecting social care)	• Code for schemes that are simply changing capacity or protecting existing core services. • Mainly relating to protection of funding for mainstream social care services e.g. continued home care, day care, care home placements, but potentially also health services such as district nursing. • Use this code where the main activity of the service is not (just) prevention or transition or care-planning. • Expect to use this code where the **innovation** dimension response is 'existing service'.

	• Likely to be a residual category or for schemes specifically about protecting social care.
Implementing the Care Act (the new duties)	• The Care Act required a range of new duties including care assessment of self-payers and carers if requested; access to new financing arrangements (deferred payments); provision of information and advice; market shaping duties and some changes to safeguarding responsibilities; and also new care eligibility and care planning arrangements. • Use this code for schemes specifically stating this as the implementation of Care Act duties. • There is potential overlap with **Coordination, assessment, care planning** as social care service care planning is a new duty. Use this code where the scheme description states that it is specifically due to the Care Act.
Palliative care/end-of-life	• Schemes that are specifically and exclusively about palliative care/end-of-life services. • Use as a 2nd component code where new palliative care/end-of-life services are part of the activity of the BCF scheme.
Other	Code for any other type of activity.

Keyword classification using scheme titles

Table 25. Keyword classification

3rd sector	complex	fall	learning disabilities	performance pool	services
7 day	contingency	frailty	level service	placement	seven day
access	contracts	funding	Liaison	placements	shared
acsc	coordinated	GP services	liaison	preventative	Short Term Intervention
acute care	coordination	grant	live	prevention	single
adaptation	co-ordination	handy	live at home	primary care	social care
admission	Crisis	health	living	proactive	social care funding
admissions	current funding	Healthy Ageing	long term care	protected long term	social care monies
adult social care	data sharing	help	low	protecting social care	social services
advocacy	demand	home	maintain	protecting social services	step
Ageing	dementia	home care	matrons	protection	stroke
Ambulatory Care	development	homecare	MDT	Psychiat	support
Assessment	DFG	hospital	mental health	re-ablement	support health
Avoid	disabilities facilities	ICT	Multidisciplinary	rapid	supporting
Beds	disabilities facility	improvement	Multi-disciplinary	records	Team
Building	disability facilities	independence	navigation	recovery	technology
Capacity	disabled facilities	independent	navigator	re-design	telecare
Capital	discharge	information	needs	redesign	therapists
Care	domiciliary care	integrate	Neighbourhood teams	reduc	third sector
care act	eligibility	integrated	NEL	reduce	transform
care bill	emergency	integrating	nursing	rehab	Transitional Care
care home	enabler	integration	older people	residential care	voluntary
Carer	Enabling -	intensive	out of hospital	respite	well
Carers	end of life	Intermediate	package	risk	
carer's	enhanced	Intermediate care	packages	s256	
case management	equipment	isolation	palliative	scheme	
commissioned	Existing	join	pathway	section 256	
commissioning	extended	joint	payment	section 75	
Commitments	facilities grant	jointly	performance	self	
Community	Facility Grant	keeping	performance fund	service	

Annex 2. Panel data estimation

We used the following statistical model for our panel data:

$$y_{it} = \alpha_i + \beta_1 z_{it} + \beta_2 x_{it} + \beta_3 t + \epsilon_{it} \quad (1)$$

The subscripts denote HWB (i) and quarters (t). In the equation, y_{it} is the outcome indicator (DTOC or non-elective admission rates per capita), x_{it} is the level of planned BCF expenditure (per capita) and z_{it} is a set of other factors that would impact on outcomes. The term ϵ_{it} is the 'error', the difference between the actual value of the outcome indicator and that value predicted using the factors in the regression equation. Essentially, the error encompasses the remaining unobserved effects.

The term α_i is a time invariant driver of outcomes that is specific to each HWB. It is included to account for baseline differences in outcome indicators between HWBs that are not accounted for by the other factors included in the model. We also included a HWB-invariant time trend ($\beta_3 t$) in the model to capture any cohort effect not picked up by (changes in) the other factors. We included a time trend using dummy variables for each quarter. We should note that the dependent and endogenous variables are specified as rates per capita, and over time we expect population to increase. As well as time trend dummies, we have also included population variables directly in the model.

The above function was estimated using a fixed effects panel model. The fixed effect approach is valid on the assumption that any unobserved effects are time invariant. However, unobserved effects might not be just time invariant with regard to the outcome variable and could also depend directly on past values of the outcome variable. An approach to this issue is to include a lagged dependent variable as a covariate:

$$y_{it} = \rho y_{it-1} + \beta_1 z_{it} + \beta_2 x_{it} + \beta_3 t + \alpha_i + \varepsilon_{it} \quad (2)$$

Fixed effects estimators are likely to be biased in this case. As such, we also estimated difference and system GMM models for (2). Essentially, we use first differences to remove fixed effects and then further lagged values of the dependent variable to remove the correlation between differences in the lagged dependent variable ($y_{it-1} - y_{it-2}$) and the difference in the error. However, as noted by Angrist and Pischke (2009), these approaches rely on certain assumptions about the through-time correlation of the dependent variable[43], which might not apply.

Consequently, we used both fixed and random effects models and lagged dependent variable approaches in this evaluation, and compared the results.

In some specifications, we also included 'spatial lags' in our models to help address the problem of time-variant unobserved factors. We took an average of the value of the dependent variable (e.g. DTOC per capita) across HWBs in the neighbourhood of the HWB area i, not including i. The

[43] That further lagged values of the DV are not correlated with the error difference.

'neighbourhood' is defined as HWBs $j \neq i$ within a given range R_i between the centroids of each HWBs. As a default, we used a range of $R_{ji} = 50\ km$. We also time-lagged this spatially lagged variable. Specifically, this variable is: $S^{y}_{it-1} = \sum_{j \neq i}^{J \in \{d_j i \leq R_{ji}\}} y_{jt-1}$, where d_{ji} is the (straight line) distance between centroids of i and j. Since planners in local sites are likely to be influenced by their neighbours, and also because omitted factors are likely to be correlated between neighbours, the use of these variables should help with omitted variable issues. At the same time, because this variable is constructed over the average of all neighbouring HWBs (and time-lagged), any endogeneity issues are expected to be minor (neighbours themselves have different neighbours and so on).

As a final variant approach, we also estimated instrumental variables models. We need to control for all counterfactual differences between HWB sites; after removing these effects, only differences in the level of BCF expenditure should account for differences in the indicator variable. In terms of equation (1), this means that BCF expenditure x_{it} must be uncorrelated with the error ϵ_{it}; otherwise changes in unobserved, time variant factors captured in ϵ_{it} might lead to changes in BCF expenditure and outcomes (DTOC) that would spuriously suggest a causal effect of the observed changes in BCF expenditure on DTOC.

The problem arises if there is some unobserved local time-variant need factor or other characteristic that affects both BCF expenditure and DTOC rates.

Instrumental variables approaches work by removing the actual BCF expenditure variable from the analysis and replacing it with its predicted value using a set of explanatory factors that are not (or at least are less likely) to be affected the local unobserved, time-variant factor. In this analysis we follow an approach used by Forder et al. (2017) that uses spatial lags of BCF expenditure in local neighbouring areas as instruments. Local BCF planners are likely to be influenced by the approach taken by neighbours i.e. spatial lagged BCF expenditure affects BCF expenditure in the local HWB area. However, the aggregated neighbouring level of BCF expenditure is not likely to be affected by the local unobserved, time-variant factor we are trying to account for. Accordingly, using the instrumental variable approach mitigates (to some extent) this problem.

For this approach we used spatial (and time) lags of BCF expenditure defined in the same way as above: $S^{x}_{it-1} = \sum_{j \neq i}^{J \in \{d_j i \leq R_{ji}\}} x_{jt-1}$, as IVs replacing x_{it} in equation (1) with $\hat{x}_{it}(S^{x}_{it-1})$. This predicted value was derived from a first-stage panel estimation of BCF expenditure: $x_{it} = \gamma_i + \sigma_1 z_{it} + \sigma_2 S^{x}_{it-1} + \beta_3 t + \varepsilon_{it}$ for quarters after BCF implementation. Note that we did not adjust standard errors in the second stage estimate on $\hat{x}_{it}(S^{x}_{it-1})$, so these should be interpreted with due caution.

All estimations were conducted using Stata 14. For the fixed effect specification (equation (1) above), we used population-averaged panel GLM models (or generalised estimating equations, GEE)[44] and standard fixed and random effects estimators. The lagged dependent variable specification (2) was estimated using difference GMM (Arellano-Bond estimator) and system

[44] GLM models address the re-transformation issue in the presence of heteroscedasticity (Manning and Mullahy 2001)

GMM[45]. In all estimations, we accounted for the clustering of observations at the HWB level when estimating standard errors.

The results of these estimates inform our hypotheses. Firstly, finding the coefficient β_2 to be statistically significantly different from zero would support our main (first) hypothesis (1a) i.e. that changes in BCF expenditure is causally-associated with changed outcomes (DTOC and non-elective admissions).

Effect sizes can be measured as the difference in indicator y_{it} as associated with a difference in BCF expenditure. We can measure changes in predicted response: $\hat{y}_{it}(\bar{x}_{it}^{H}, \bar{z}_{it}) - \hat{y}_{it}(\bar{x}_{it}^{L}, \bar{z}_{it})$ and marginal effects $y'(\bar{x}_{it}, \bar{z}_{it})(\bar{x}_{it}^{H} - \bar{x}_{it}^{L})$ as between HWB areas with different levels of BCF expenditure e.g. high (above median) and low (below median) averages of BCF expenditure ($\bar{x}_{it}^{H}$ and $\bar{x}_{it}^{L}$ respectively).

We also tested a variant main hypothesis (1b) that the BCF has a lagged effect on outcomes. This might be due to implementation of planned activity occurring after some delay, or that BCF activity does not have an immediate effect. The former argument appears more relevant in this case.

The classification analysis divided BCF expenditure into $m = 1, \ldots, M$ types (intermediate care, prevention, protection of social care etc…). In theory, in each site $x_{it} = x_{it}^{1} + .. + x_{it}^{M}$. However, we cannot measure the exact level of expenditure by type, each quarter. Rather we have the initial planned activity: $\tilde{x}_{i9} = \tilde{x}_{i9}^{1} + .. + \tilde{x}_{i9}^{M}$, noting that planned expenditure $\tilde{x}_{it}$ might differ from actual expenditure x_{it}. Accordingly, we created a set of proportion variables, $\theta_i^m = \tilde{x}_{i9}^{m} / \tilde{x}_{i9}$, to be used as an approximation of actual BCF expenditure by type. These were used in an interaction model i.e.

$$y_{it} = \alpha_i + \beta_1 z_{it} + \beta_2 x_{it} + \sum_{m=1}^{M-1} \beta_{2m} \theta_i^m x_{it} + \beta_3 t + \epsilon_{it} \quad (3)$$

[45] See Roodman, D. 2009. How to Do xtabond2: An Introduction to "Difference" and "System" GMM in Stata. Stata Journal 9(1): 86-136

Annex 3. Comparative analysis: regression results

Table 26 Comparative regression results with Delayed days per 100,000 people aged 65+ as dependent variable

Model	Dependent variable trans-formation	Outliers removed	Lagged BCF	Explanatory variables spec.	Period	Spatial lag	Coefficient	Table
GEE	Log	Yes, 99th	Yes	Log	16	Yes	-0.0633**	Table 27
GEE	Log	Yes, 99th	No	Log	16	Yes	-0.0426*	28
GEE	Log	Yes, 99th	Yes	Cube root	16	Yes	-0.0378**	29
GEE	Log	Yes, 99th	Yes	Lin	16	Yes	-0.0003*	30
GEE	Log	No	Yes	Log	16	Yes	-0.0569*	Table 30
GEE	Log	Yes, 99th	Yes	Log	16	No	-0.0588**	Table 28
GEE	Log	Yes, 99th	Yes	Log	12	Yes	-0.0722**	Table 29
GEE	Log	Yes, 99th	Yes	Log	12	No	-0.0694**	Table 31
GEE	Log	Yes, 95th	Yes	Sqr root	16	Yes	-0.0141***	Table 32
Fixed effects	Log	Yes, 99th	Yes	Log	16	Yes	-0.0625*	Table 33
Fixed effects	Log	Yes, 99th	Yes	Log	12	Yes	-0.0614*	Table 34
Fixed effects	Log	Yes, 99th	Yes	Log	12	No	-0.0579*	Table 35
Random effects	Lin	Yes, 95th	Yes	Sqr root	16	Yes	-48.6457**	Table 36
System GMM	Log	Yes, 99th	Yes	Log	16	Yes	-0.1379***	Table 37
System GMM	Lin	Yes, 99th	Yes	Lin	16	Yes	-1.4046**	Table 38

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 27. Base GEE model regression – Delayed days per 100,000 people aged 65+

Variable	Coefficient	Std. Err.	Z	P>z
BCF expenditure per capita 65+, lag 1 quarter (Q)	-0.06**	0.030	-2.14	0.032
LA gross social care expenditure per capita 65+ (ln)	-0.22*	0.113	-1.92	0.055
LA gross social care expenditure per capita 65+ (ln) - lag 1 Q	0.13	0.101	1.26	0.206
CCG planned expenditure per capita 65+ (ln)	-3.70E-03	0.358	-0.01	0.992
CCG planned expenditure per capita 65+ (ln) - lag 1Q	7.89E-03	0.366	0.02	0.983
AA claimants per 1000 people 65+	-3.97E-03	0.003	-1.33	0.183
No. 85+ per 1000 people over 65	5.07E-03	0.003	1.46	0.143
Job seek allow. claimants per 1000 people aged 16-64	3.67E-03	0.004	0.82	0.414
Population 65+ (ln)	-1.32***	0.305	-4.33	0
Population - all ages (ln)	-2.25	1.440	-1.56	0.119
Population 16+ (ln)	3.66***	1.406	2.60	0.009
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 1 (lag 1 quarter)	8.44E-05**	0.000	2.51	0.012
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 2 (lag 1 quarter)	7.84E-05***	0.000	3.31	0.001
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 3 (lag 1 quarter)	1.84E-05	0.000	0.51	0.613
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 4 (lag 1 quarter)	2.88E-05	0.000	0.85	0.393
Constant	-9.79	9.457	-1.03	0.301
Regional and time dummies		Yes		
n		2,227		
Wald Chi2		571.32***		

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 28. GEE model regression – Delayed days per 100,000 people aged 65+, no spatial lag

Variable	Coefficient	Std. Err.	Z	P>z
BCF expenditure per capita 65+, lag 1 quarter (Q)	-0.06**	0.029	-2.03	0.043
LA gross social care expenditure per capita 65+ (ln)	-0.23**	0.115	-1.98	0.048
LA gross social care expenditure per capita 65+ (ln) - lag 1 Q	0.13	0.099	1.32	0.187
CCG planned expenditure per capita 65+ (ln)	0.08	0.369	0.21	0.83
CCG planned expenditure per capita 65+ (ln) - lag 1Q	-0.08	0.405	-0.21	0.837
AA claimants per 1000 people 65+	-4.52E-03	0.003	-1.57	0.117
No. 85+ per 1000 people over 65	4.43E-03	0.003	1.29	0.196
Job seek allow. claimants per 1000 people aged 16-64	2.36E-03	0.004	0.55	0.585
Population 65+ (ln)	-1.36***	0.311	-4.38	0
Population - all ages (ln)	-1.91	1.417	-1.35	0.177
Population 16+ (ln)	3.36**	1.392	2.41	0.016
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 1 (lag 1 quarter)	-	-	-	-
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 2 (lag 1 quarter)	-	-	-	-
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 3 (lag 1 quarter)	-	-	-	-
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 4 (lag 1 quarter)	-	-	-	-
Constant	-7.16	9.371	-0.76	0.445
Regional and time dummies	Yes			
n	2,227			
Wald Chi2	546.23***			

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 29. GEE model regression – Delayed days per 100,000 people aged 65+, first 12 quarters only

Variable	Coefficient	Std. Err.	Z	P>z
BCF expenditure per capita 65+, lag 1 quarter (Q)	-0.07**	0.035	-2.09	0.036
LA gross social care expenditure per capita 65+ (ln)	-0.30	0.296	-1.01	0.312
LA gross social care expenditure per capita 65+ (ln) - lag 1 Q	0.39*	0.232	1.68	0.094
CCG planned expenditure per capita 65+ (ln)	0.42	0.319	1.31	0.192
CCG planned expenditure per capita 65+ (ln) - lag 1Q	-4.99E-03	0.391	-0.01	0.99
AA claimants per 1000 people 65+	-6.56E-03***	0.002	-3.08	0.002
No. 85+ per 1000 people over 65	5.96E-03*	0.003	1.73	0.084
Job seek allow. claimants per 1000 people aged 16-64	8.36E-04	0.005	0.18	0.859
Population 65+ (ln)	-0.99**	0.400	-2.46	0.014
Population - all ages (ln)	-1.77	1.619	-1.09	0.276
Population 16+ (ln)	2.86*	1.527	1.87	0.061
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 1 (lag 1 quarter)	6.07E-05**	0.000	2.14	0.033
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 2 (lag 1 quarter)	5.40E-05**	0.000	2.27	0.023
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 3 (lag 1 quarter)	3.18E-06	0.000	0.07	0.941
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 4 (lag 1 quarter)	-	-	-	-
Constant	-6.69	10.783	-0.62	0.535
Regional and time dummies		Yes		
n		1,646		
Wald Chi2		401.74***		

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 30. GEE model regression – Delayed days per 100,000 people aged 65+, no outliers removed

Variable	Coefficient	Std. Err.	Z	P>z
BCF expenditure per capita 65+, lag 1 quarter (Q)	-0.06*	0.029	-1.95	0.051
LA gross social care expenditure per capita 65+ (ln)	-0.21*	0.106	-1.95	0.051
LA gross social care expenditure per capita 65+ (ln) - lag 1 Q	0.11	0.098	1.15	0.251
CCG planned expenditure per capita 65+ (ln)	0.08	0.400	0.19	0.846
CCG planned expenditure per capita 65+ (ln) - lag 1Q	-0.18	0.368	-0.49	0.622
AA claimants per 1000 people 65+	-4.71E-03	0.003	-1.45	0.146
No. 85+ per 1000 people over 65	5.36E-03	0.004	1.40	0.162
Job seek allow. claimants per 1000 people aged 16-64	6.09E-03	0.005	1.26	0.208
Population 65+ (ln)	-1.47***	0.290	-5.06	0
Population - all ages (ln)	-2.27	1.492	-1.52	0.129
Population 16+ (ln)	3.83**	1.494	2.56	0.01
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 1 (lag 1 quarter)	9.67E-05***	0.000	2.64	0.008
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 2 (lag 1 quarter)	9.32E-05***	0.000	3.72	0
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 3 (lag 1 quarter)	2.63E-05	0.000	0.76	0.449
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 4 (lag 1 quarter)	1.23E-05	0.000	0.29	0.775
Constant	-9.82	9.749	-1.01	0.314
Regional and time dummies		Yes		
n		2,250		
Wald Chi2		617.81***		

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 31. GEE model regression – Delayed days per 100,000 people aged 65+, first 12 quarters only, no spatial lag

Variable	Coefficient	Std. Err.	Z	P>z
BCF expenditure per capita 65+, lag 1 quarter (Q)	-0.07**	0.033	-2.09	0.036
LA gross social care expenditure per capita 65+ (ln)	-0.32	0.295	-1.08	0.279
LA gross social care expenditure per capita 65+ (ln) - lag 1 Q	0.38*	0.227	1.69	0.091
CCG planned expenditure per capita 65+ (ln)	0.42	0.314	1.33	0.183
CCG planned expenditure per capita 65+ (ln) - lag 1Q	-0.06	0.401	-0.16	0.872
AA claimants per 1000 people 65+	-6.78E-03***	0.002	-3.24	0.001
No. 85+ per 1000 people over 65	5.42E-03	0.003	1.59	0.112
Job seek allow. claimants per 1000 people aged 16-64	-5.86E-05	0.005	-0.01	0.99
Population 65+ (ln)	-1.08**	0.415	-2.59	0.01
Population - all ages (ln)	-1.45	1.604	-0.91	0.365
Population 16+ (ln)	2.62*	1.530	1.71	0.086
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 1 (lag 1 quarter)	-	-	-	-
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 2 (lag 1 quarter)	-	-	-	-
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 3 (lag 1 quarter)	-	-	-	-
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 4 (lag 1 quarter)	-	-	-	-
Constant	-4.37	10.716	-0.41	0.683
Regional and time dummies	Yes			
n	1,646			
Wald Chi2	391.52***			

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 32. GEE model regression – Delayed days per 100,000 people aged 65+, squared root transformed BCF expenditure, 95th outliers

Variable	Coefficient	Std. Err.	Z	P>z
BCF expenditure per capita 65+, lag 1 quarter (Q) (sqr root)	-0.01***	0.005	-2.62	0.009
LA gross social care expenditure per capita 65+ (ln)	-0.10	0.096	-1.06	0.288
LA gross social care expenditure per capita 65+ (ln) - lag 1 Q	0.06	0.092	0.68	0.498
CCG planned expenditure per capita 65+ (ln)	-0.06	0.339	-0.18	0.854
CCG planned expenditure per capita 65+ (ln) - lag 1Q	-0.19	0.368	-0.52	0.601
AA claimants per 1000 people 65+	-3.46E-03	0.002	-1.44	0.15
No. 85+ per 1000 people over 65	3.82E-03	0.003	1.25	0.213
Job seek allow. claimants per 1000 people aged 16-64	3.49E-03	0.004	0.83	0.408
Population 65+ (ln)	-1.43***	0.285	-5.01	0
Population - all ages (ln)	-0.82	1.080	-0.76	0.449
Population 16+ (ln)	2.38**	1.130	2.10	0.036
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 1 (lag 1 quarter)	6.88E-05**	0.000	2.26	0.024
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 2 (lag 1 quarter)	6.32E-05***	0.000	2.65	0.008
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 3 (lag 1 quarter)	1.42E-05	0.000	0.41	0.68
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 4 (lag 1 quarter)	3.76E-05	0.000	1.38	0.169
Constant	-0.42	7.309	-0.06	0.954
Regional and time dummies		Yes		
n		2,134		
Wald Chi2		565.56***		

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 33. Fixed effects model regression – Delayed days per 100,000 people aged 65+

Variable	Coefficient	Std. Err.	Z	P>z
BCF expenditure per capita 65+, lag 1 quarter (Q)	-0.06*	0.032	-1.94	0.054
LA gross social care expenditure per capita 65+ (ln)	-0.16	0.103	-1.56	0.121
LA gross social care expenditure per capita 65+ (ln) - lag 1 Q	0.08	0.105	0.74	0.459
CCG planned expenditure per capita 65+ (ln)	-0.25	0.346	-0.72	0.471
CCG planned expenditure per capita 65+ (ln) - lag 1Q	-0.07	0.378	-0.20	0.844
AA claimants per 1000 people 65+	-3.69E-03	0.006	-0.62	0.537
No. 85+ per 1000 people over 65	-7.19E-04	0.010	-0.07	0.941
Job seek allow. claimants per 1000 people aged 16-64	3.67E-03	0.005	0.77	0.442
Population 65+ (ln)	-2.88	2.048	-1.41	0.161
Population - all ages (ln)	7.73	10.605	0.73	0.467
Population 16+ (ln)	-8.92	10.436	-0.85	0.394
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 1 (lag 1 quarter)	7.86E-05**	0.000	2.31	0.022
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 2 (lag 1 quarter)	8.26E-05***	0.000	3.01	0.003
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 3 (lag 1 quarter)	3.53E-05	0.000	1.02	0.308
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 4 (lag 1 quarter)	5.50E-05*	0.000	1.66	0.099
Constant	107.21	72.688	1.47	0.142
Regional and time dummies		Yes		
n		2,227		
F		7.87***		

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 34. Fixed effects model regression – Delayed days per 100,000 people aged 65+, first 12 quarters

Variable	Coefficient	Std. Err.	Z	P>z
BCF expenditure per capita 65+, lag 1 quarter (Q)	-0.06*	0.032	-1.93	0.056
LA gross social care expenditure per capita 65+ (ln)	-0.11	0.203	-0.53	0.598
LA gross social care expenditure per capita 65+ (ln) - lag 1 Q	0.30	0.222	1.36	0.177
CCG planned expenditure per capita 65+ (ln)	-0.08	0.417	-0.19	0.85
CCG planned expenditure per capita 65+ (ln) - lag 1Q	0.07	0.360	0.19	0.852
AA claimants per 1000 people 65+	-0.01*	0.006	-1.81	0.072
No. 85+ per 1000 people over 65	4.77E-03	0.011	0.44	0.66
Job seek allow. claimants per 1000 people aged 16-64	7.69E-04	0.005	0.15	0.882
Population 65+ (ln)	-1.15	1.866	-0.62	0.538
Population - all ages (ln)	-3.23	11.473	-0.28	0.779
Population 16+ (ln)	-1.68	11.609	-0.14	0.885
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 1 (lag 1 quarter)	5.04E-05	0.000	1.56	0.122
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 2 (lag 1 quarter)	5.93E-05*	0.000	1.98	0.05
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 3 (lag 1 quarter)	2.07E-05	0.000	0.50	0.616
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 4 (lag 1 quarter)	-	-	-	-
Constant	60.87	85.501	0.71	0.478
Regional and time dummies		Yes		
n		1,646		
F		6.16***		

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 35. Fixed effects model regression – Delayed days per 100,000 people aged 65+, first 12 quarters, no spatial lag

Variable	Coefficient	Std. Err.	Z	P>z
BCF expenditure per capita 65+, lag 1 quarter (Q)	-0.06*	0.032	-1.83	0.069
LA gross social care expenditure per capita 65+ (ln)	-0.12	0.205	-0.57	0.568
LA gross social care expenditure per capita 65+ (ln) - lag 1 Q	0.30	0.223	1.36	0.176
CCG planned expenditure per capita 65+ (ln)	-0.09	0.414	-0.22	0.825
CCG planned expenditure per capita 65+ (ln) - lag 1Q	0.09	0.361	0.25	0.805
AA claimants per 1000 people 65+	-0.01**	0.006	-2.08	0.039
No. 85+ per 1000 people over 65	3.41E-03	0.011	0.31	0.754
Job seek allow. claimants per 1000 people aged 16-64	6.14E-05	0.005	0.01	0.99
Population 65+ (ln)	-1.30	1.803	-0.72	0.471
Population - all ages (ln)	-4.93	11.606	-0.43	0.671
Population 16+ (ln)	-0.14	11.697	-0.01	0.99
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 1 (lag 1 quarter)	-	-	-	-
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 2 (lag 1 quarter)	-	-	-	-
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 3 (lag 1 quarter)	-	-	-	-
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 4 (lag 1 quarter)	-	-	-	-
Constant	53.57	85.972	0.62	0.534
Regional and time dummies		Yes		
n		1,646		
F		6.44***		

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 36. Random effects model regression – Delayed days per 100,000 people aged 65+, lin-transformed, square root transformed BCF expenditure, 95th outliers

Variable	Coefficient	Std. Err.	Z	P>z
BCF expenditure per capita 65+, lag 1 quarter (Q) (sqr root)	-48.65**	22.383	-2.17	0.03
LA gross social care expenditure per capita 65+ (ln)	-355.70	402.853	-0.88	0.377
LA gross social care expenditure per capita 65+ (ln) - lag 1 Q	136.93	366.792	0.37	0.709
CCG planned expenditure per capita 65+ (ln)	-700.25	1371.657	-0.51	0.61
CCG planned expenditure per capita 65+ (ln) - lag 1Q	-681.07	1503.839	-0.45	0.651
AA claimants per 1000 people 65+	-8.03	9.020	-0.89	0.373
No. 85+ per 1000 people over 65	14.67	12.215	1.20	0.23
Job seek allow. claimants per 1000 people aged 16-64	16.67	16.437	1.01	0.311
Population 65+ (ln)	-6,208.52***	1168.751	-5.31	0
Population - all ages (ln)	-6,609.11	4492.921	-1.47	0.141
Population 16+ (ln)	13,343.88***	4832.780	2.76	0.006
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 1 (lag 1 quarter)	0.23*	0.118	1.91	0.056
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 2 (lag 1 quarter)	0.20**	0.099	1.97	0.048
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 3 (lag 1 quarter)	5.27E-03	0.133	0.04	0.968
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 4 (lag 1 quarter)	0.17	0.112	1.48	0.138
Constant	-54,422.21*	30368.150	-1.79	0.073
Regional and time dummies		Yes		
n		2,134		
Wald Chi2		482.31***		

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 37. System GMM model regression – Delayed days per 100,000 people aged 65+

Variable	Coefficient	Std. Err.	Z	P>z
BCF expenditure per capita 65+, lag 1 quarter (Q)	-0.14***	0.049	-2.80	0.005
DTOC per 100k pop 65+ (ln), lag 1	0.45***	0.078	5.80	0
DTOC per 100k pop 65+ (ln), lag 2	-0.01	0.063	-0.18	0.855
LA gross social care expenditure per capita 65+ (ln)	-0.06	0.074	-0.87	0.384
LA gross social care expenditure per capita 65+ (ln) - lag 1 Q	0.12	0.077	1.58	0.113
CCG planned expenditure per capita 65+ (ln)	-0.07	0.290	-0.23	0.815
CCG planned expenditure per capita 65+ (ln) - lag 1Q	-0.20	0.263	-0.75	0.451
AA claimants per 1000 people 65+	-2.94E-03**	0.001	-2.19	0.029
No. 85+ per 1000 people over 65	3.23E-03**	0.001	2.16	0.031
Job seek allow. claimants per 1000 people aged 16-64	4.47E-03	0.003	1.41	0.159
Population 65+ (ln)	-0.97***	0.280	-3.47	0.001
Population - all ages (ln)	-1.09	0.757	-1.44	0.151
Population 16+ (ln)	2.13***	0.813	2.62	0.009
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 1 (lag 1 quarter)	-1.66E-05	0.000	-0.97	0.334
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 2 (lag 1 quarter)	-8.50E-06	0.000	-0.50	0.614
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 3 (lag 1 quarter)	-2.44E-05	0.000	-1.26	0.208
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 4 (lag 1 quarter)	9.01E-08	0.000	0.00	0.996
Constant	-4.85	5.049	-0.96	0.337
Regional and time dummies		Yes		
n		2,072		
Wald Chi2		726.33***		

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 38. System GMM model regression – Delayed days per 100,000 people aged 65+, lin-transformed dependent variable and BCF expenditure

Variable	Coefficient	Std. Err.	Z	P>z
BCF expenditure per capita 65+, lag 1 quarter (Q)	-1.40**	0.620	-2.27	0.024
DTOC per 100k pop 65+ (ln), lag 1	0.30***	0.066	4.54	0
DTOC per 100k pop 65+ (ln), lag 2	0.13**	0.061	2.09	0.037
LA gross social care expenditure per capita 65+ (ln)	-554.01*	310.544	-1.78	0.074
LA gross social care expenditure per capita 65+ (ln) - lag 1 Q	463.51	311.026	1.49	0.136
CCG planned expenditure per capita 65+ (ln)	-315.60	1233.541	-0.26	0.798
CCG planned expenditure per capita 65+ (ln) - lag 1Q	-1,442.24	1187.875	-1.21	0.225
AA claimants per 1000 people 65+	-10.40*	5.503	-1.89	0.059
No. 85+ per 1000 people over 65	15.51**	7.278	2.13	0.033
Job seek allow. claimants per 1000 people aged 16-64	21.41*	11.600	1.85	0.065
Population 65+ (ln)	-5,188.47***	1324.893	-3.92	0
Population - all ages (ln)	-6,166.18*	3684.185	-1.67	0.094
Population 16+ (ln)	11,658.80***	4306.414	2.71	0.007
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 1 (lag 1 quarter)	-7.63E-03	0.064	-0.12	0.905
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 2 (lag 1 quarter)	0.02	0.072	0.27	0.79
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 3 (lag 1 quarter)	-0.10	0.094	-1.08	0.281
DTOC per 100k pop 65+ in other LAs within 50km - Fin year 4 (lag 1 quarter)	0.04	0.097	0.37	0.712
Constant	-49,188.72*	25195.810	-1.95	0.051
Regional and time dummies		Yes		
n		2,078		
Wald Chi2		631.08***		

Note: *** p<0.01, ** p<0.05, * p<0.1

Annex 4. Data sources and construction

This is a panel dataset consisting of 16 yearly quarters of data (*YearQ*), ranging from 2013 April (2013/2014 quarter one) to 2016 March (end of 2016/2017 quarter 4) for 150 Local Authorities[46] in England as identified by NHS England quarterly reports data to track Better Care Fund performance.

The BCF quarterly reports provide data on: Delayed Transfers of Care (*DTOC*) – delayed days from hospital per 100,000 population aged 18 and over; and Non Elective emergency admissions (*NonElective*).

Monthly DTOC data returns (the Unify2 Data Collection) are also provided by the Department of Health/NHS England.[47] These give a further breakdown of the reason for delay and the responsible organisation. We created per capita variables using population 16+ and 65+ (as compared to 18+ in the BCF quarterly reports data), due to availability. These were the preferred measures, although there was very little difference between our construction with the Unify2 data and the BCF report version – the correlation between the DTOC 18+ and 16+ per capita versions was 0.9998.

Non Elective emergency admissions data were not available for the initial quarters in the BCF reports. We therefore re-created non-elective emergency/unplanned admission variables using NHS England quarterly data for emergency admissions by NHS Trusts. These were: *Non_ElectiveI* – composed of type 1 (major), type 2 (single specialty), type 3&4 (other and minor injuries unit) A&E attendances and other emergency admissions not through A&E; *Non_ElectiveII* – the same as previous only excluding other emergency admissions not through A&E; *Non_ElectiveIII* – including only type 1 emergency admissions.

Coding

Unit identifying variables are – *Code* and *LAName*, standing for codes and names of Local Authorities as per 2015 national coding. Two of the units in this dataset are composed of two Local Authorities each: Bournemouth & Poole and Cornwall & Scilly as found in the original BCF dataset by NHS. Variables *Code* and *YearQ* were encoded to produce relevant identity numbers for each Local Authority and quarter, accordingly named: *codeid* and *yearqid*. Additional time indicators were generated: *year1*, *year2*, *year3*, and *year4* – indicating years 2013, 2014, 2015, and 2016 respectively; *winter* – standing for 4th quarter of each tax year (January to March), and *autumn* – indicating 3rd quarter of each tax year in data (October to December); *quarter* – similar to *yearqid* that differentiates between quarters 1 to 12 within dataset. Local Authorities were also grouped by *region*: 1. North East, 2. North West, 3. Yorkshire and The Humber, 4. East Midlands, 5. West Midlands, 6. East of England, 7. London, 8. South East, 9. South West as per national grouping. Dummy variables for each region and each quarter were generated (*region_d1* etc. and *quarter_d1* etc.). The main sources for this compilation of data were NHS England, Nomis (Official Labour Market Statistics),

[46] Bournemouth & Poole and Cornwall & Scilly submitted as one BCF site each.

[47] https://www.england.nhs.uk/statistics/statistical-work-areas/delayed-transfers-of-care/

Since emergency admissions data provided is at NHS trust level, we calculated distances between NHS trusts with reported emergency admissions and LSOAs (Lower Layer Super Output Areas) using Northings and Eastings related to postcodes of NHS Trusts and population centre points of LSOA's. We took a ratio between populations of each LSOA to total population within 50 km radius of each trust (population estimates data taken from the Office of National Statistics (ONS), available at LSOA level at mid-point of each calendar year, for years 2013, 2014, 2015 and 2016) and multiplied it by emergency admissions in each trust. We then summed up emergency admissions across LSOAs and after that at Local Authority level providing the final measures of Non Elective admissions. Our created measures *Non_ElectiveI* and *Non_ElectiveII* were very close to data provided by BCF reports so were chosen as preferred measures since it provided consistent data for all 16 quarters. Table 39 provides correlations between Non Elective variables.

Table 39. Correlations between Non Elective emergency admissions variables: NonElective (BCF data) and Non_ElectiveI & Non_ElectiveII (our distance weighted mapping), number of observations in parentheses

	NonElective (BCF)	*Non_ElectiveI*	*Non_ElectiveII*
NonElective (BCF data)	1.0000		
	(1350)		
Non_ElectiveI (mapping)	0.9611	1.0000	
	(1350)	(1800)	
Non_ElectiveII (mapping)	0.9489	0.9880	**1.0000**
	(1350)	**(1800)**	**(1800)**

Data on BCF spending by Health and Wellbeing Board (which correspond to Local Authorities) was taken from the monitoring data supplied by NHS England. Data were available by quarter. Per capita spend (for the entire population and those over 65) was calculated using the ONS mid-year population estimates.

Healthcare spending allocations by Clinical Commissioning Groups (CCG) were taken from NHS England website and allocated to Local Authorities using mapping provided by the BCF datasets by NHS which indicates how much of each CCG (in %) belongs to which Local Authority. We used revenue allocations for the year 2013/14 onwards. Since data for the year 2014/15 was not published separately, it was taken from 2015/16 report (where year 2014/15 is used as a baseline; so for this variable data for 2014/15 is closing target of allocations). For the years 2015/16 and 2016/17 distinction was made between BCF funds and other healthcare spending so closing target of allocations for 2015/16 was summed up with BCF funding from CCGs. In the modelling we operated with the version with BCF allocations removed.

Social care expenditure data was taken from the Personal Social Services: Expenditure and Unit Costs annual publications provided by the NHS Digital. The data contains information on social care expenditure of Councils with Adult Social Services Responsibilities (CASSRs). We have data on gross total expenditure, total income and net total expenditure for adults aged 18 to 64 and 65 plus for the years 2013/14, 2014/15, 2015/16 and 2016/17. To account for the change in the collection of data from the finance return PSS-EX1 to the Adult Social Care Finance Return (ASC-FR) in 2014/15,

the bridging data for 2013/14 and 2014/15 was used to allow for time series comparisons between years. Since we mainly used gross total expenditure data for our regression analysis, derivatives of this variable were generated: e.g. dividing by population aged 65 plus.

Data about population number estimates in each Local Authority were taken from *Nomis* database. It is available at once a year frequency, so 2013 population estimates were used for 2013/14 tax year, 2014 – for 2014/15, 2015 – for 2015/16, and 2016 – for 2016/17. Data was available for total population, and males and females separately. It was also taken for different age groups (0-15, 16+, 16-65, 16-24, 25-49, 50-64, 65+, 0-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+). These age groups are also available by gender. From the available data additional age groups were created for total population and by gender: 16-39, 40-64, 65-84. Ratios were taken with all available population in each Local Authority for the age groups: 0-15, 16-39, 40-64, 65-84, 85+ for males and females separately and together. Gender ratios were also generated using total number of individuals by gender divided by total population for each Local Authority.

Data for Attendance Allowance, Job Seeker's Allowance, and Pension Credit were taken from ONS through Nomis data tool at quarterly frequency: May, August, November, and February, which is a mid-point of each BCF quarter. Data was available for total population, and males and females separately and for different age groups. The Attendance Allowance variable is the total number of people claiming this benefit, and available for these different age groups separately: 65-69, 70-74, 75-79, 80-84, 85-89, 90+. It is also available by the duration of the claim: less than 12 months, between 1-2 years, between 2-5 years, and over 5 years, and by the rate of claim: low or high. Similarly Job Seeker's Allowance claimants are available for age groups: 16-24, 25-49, 50+.

We also collected data on the availability and occupation of hospital beds and social care beds were also included. To avoid lack of consistency by simply attributing them based on geographical location and it falling into any particular Local Authority territory we employed distance weighting. For hospital beds we measured distances between NHS Trusts providing hospital beds (based on postcode) and population centre points of each LSOA using Northings and Eastings with 1 m accuracy. A multiplier was created – a ration between 10 km (expressed in meters) over the distance between the hospital and LSOA centre, if this ratio was more than 1 (so hospital being within 10 km radius) it was equalized to 1. We also used different cut off points: 100 km, 50 km, and 20 km, so for LSOAs that were further than this distance the multiplier was made equal to 0. Then number of beds in hospital was multiplied by this multiplier for each LSOA providing distance weighted beds, those beds were summed up for each LSOA then an average derived for each Local Authority.

Annex 5. Key characteristics of reviews included

Authors (year)	Review characteristics and data sources	Population included	Countries covered	Studies included
BUSSE et al. 2014	Studies in peer-reviewed as well as in grey literature were included. The review aimed to examine newer evidence on integrated care (published after 2012). The paper included various integrated care approached in Germany, ICPs in England, and bundled payments in the Netherlands.	Varied between countries: a population-based approach that organized care across all health service sectors and indications in a targeted region in Germany for people of all ages and conditions. In England's ICPs which take a range of approaches to care coordination for a variety of populations, and bundled payments in the Netherlands for patients with a single chronic condition.	Germany, UK, Netherlands	The evaluated integrated care approaches included used both control groups and, if possible, measurements before and after the start of the intervention, often combined in a difference- in-differences approach.
CAMERON et al. 2015	Review update on earlier systematic review of interventions which covered mostly: multi-agency teams; placements of individual staff across agency boundaries, co-locations of staff that were not formal teams, SAP, the provision of intermediate care, structurally integrated services, use of pooled budgets. Studies published in peer-reviewed journals were included. Although reviewers undertook additional	The majority of studies (22) evaluated services for older people, 6 examined mental health services and 3 looked at services for both older people and people with mental health problems.	UK	46 papers were included, reporting 30 separate studies.

	steps to identify papers published after 2008, most reviews identified were published before 2007, indicating lack of recent evidence.			
DAMERY et al. 2016	An umbrella review conducted on integrated care interventions across health and/or social care settings. Data sources: MEDLINE, Embase, ASSIA, PsycINFO, HMIC, CINAHL, Cochrane Library (HTA database, DARE, Cochrane Database of Systematic Reviews), EPPI-Centre. Studies published in English since January 2000.	Adults with one or more chronic conditions (e.g. dementia, arthritis, hypertension, diabetes, coronary heart disease, stroke, cancer, heart failure).	UK, US, Canada, Netherlands, Spain, Japan, Switzerland, Norway, Australia, Greece, Denmark, Sweden, Hong Kong, Ireland	50 reviews included: narrative reviews (21), reviews of reviews (3) and meta-analyses (26). A total of 1208 individual primary studies were included. Eligible reviews could include primary studies of any experimental or quasi-experimental study design.
MARTINEZ-GONZALEZ et al. 2014	Meta-review of systematic reviews and meta-analyses. Most included reviews covered comprehensive services across the care continuum or standardization of care through inter-professional teams; organizational culture, governance structure or financial management were rarely assessed. Reviews were identified in Medline (1946–March 2012), Embase (1980–March 2012), CINHAL (1981–March 2012) and the Cochrane Library of Systematic Reviews (2012). Studies	Adult patients with chronic non-communicable diseases, except addiction and mental disorders.	Various geographical coverage- no detailed description of countries provided.	27 systematic reviews were included. Conditions included chronic heart failure (CHF; 12 reviews), diabetes mellitus (DM; 7 reviews), chronic obstructive pulmonary disease (COPD; 7 reviews) and asthma (5 reviews).

	published in English and one in German were included.			
MASON, et al. 2015	The literature review on integrated financing between health and social care found, however none of the included studies isolated the effect of integrated funding; instead, studies assessed the effects of 'integrated financing plus integrated care' (i.e. 'integration') relative to usual care. Searches were carried out in: Medline, ASSIA, HMIC, EconLit, Social Services Abstracts, Conference proceedings Citation index, Zetoc and Index to Theses; published in or after 1999 in English language.	Adults	8 countries (mostly evidence from Australia, Australia, Canada, England, Sweden, US)	38 schemes were included. RCTs (6), quasi-experimental studies (12) typically compared an intervention group with matched controls drawn from another geographical area. Qualitative studies included e.g. semi-structured interviews or focus groups (17). Mixed methods studies (10) usually combed data analysis with qualitative methods. 15 schemes were evaluated using data from uncontrolled studies; analyses of administrative data were used in 10 schemes.
NOLTE et al. 2014	A rapid evidence review which focused on integrated care approaches, chronic care interventions and disease management programmes but excluded those that examined single interventions only, although it included CM approaches where these involved linking two or more different providers. Data sources: PubMed, the National Library of Medicine's Medline	Varied greatly; e.g. adults with chronic conditions (e.g. heart failure, depression, COPD, diabetes, cancer patients), frequent ED users older adults.	Internation al review, but the review does not systematica lly identify countries covered.	19 studies included: 11 systematic reviews; 6 systematic reviews and meta-analyses and 2 'other' reviews.

	and pre-Medline database, Embase and the Cochrane Library. Studies published from 2004-2012 were included.			
Siouta et al. 2016	Qualitative narrative systematic review. Data sources: Cochrane, PubMed, EMBASE, CINAHL, AMED, BNI, Web of Science, NHS Evidence. Search dates included 1995 to 2013 in Europe, languages included: English, French, German, Dutch, Hungarian or Spanish.	Adult patients with advanced cancer/chronic disease.	UK, Norway, Netherlands, France, Spain, Germany, Italy.	14 studies were included in the review: 7 models for chronic disease, 4 for integrated care in oncology, 2 for both cancer and chronic disease and 2 for end-of-life pathways.