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QUALITATIVE RESEARCH

Optimal healthcare delivery to care homes in the UK: a realist evaluation of what supports effective working to improve healthcare outcomes

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Abstract

Introduction: care home residents have high healthcare needs not fully met by prevailing healthcare models. This study explored how healthcare configuration influences resource use.

Methods: a realist evaluation using qualitative and quantitative data from case studies of three UK health and social care economies selected for differing patterns of healthcare delivery to care homes. Four homes per area (12 in total) were recruited. A total of 239 residents were followed for 12 months to record resource-use. Overall, 181 participants completed 116 interviews and 13 focus groups including residents, relatives, care home staff, community nurses, allied health professionals and General Practitioners.

Results: context-mechanism-outcome configurations were identified explaining what supported effective working between healthcare services and care home staff: (i) investment in care home-specific work that legitimises and values work with care homes; (ii) relational working which over time builds trust between practitioners; (iii) care which ‘wraps around’ care homes; and (iv) access to specialist care for older people with dementia. Resource use was similar between sites despite differing approaches to healthcare. There was greater utilisation of GP resource where this was specifically commissioned but no difference in costs between sites.

Conclusion: activities generating opportunities and an interest in healthcare and care home staff working together are integral to optimal healthcare provision in care homes. Outcomes are likely to be better where: focus and activities legitimise ongoing contact between healthcare staff and care homes at an institutional level; link with a wider system of healthcare; and provide access to dementia-specific expertise.

Keywords: *nursing homes, homes for the aged, health services for the aged, primary care, older people*

Introduction

Providing long-term care for older people living in institutional settings is a global challenge [1], in part because the principles enabling effective healthcare in these settings are poorly understood [2]. In the UK 425,000 people live long-term in care homes, which provide 24 h residential care with or without on-site nursing [3]. Although the variability of nursing input places these institutions somewhat at odds with long-term care facilities in other countries, both categories of institution are included under the consensus definition of nursing homes [2]. Residents in both types receive medical support from visiting primary care physicians and community-based nurses and therapists employed by the National Health Service (NHS). The health profile of residents in those settings with and without nursing is similar. The majority of residents are aged over 85, live with cognitive impairment, multimorbidity, limited mobility and take multiple medications [4].

Our realist review on healthcare provision to UK care home residents [5] proposed that local health services are better placed to meet residents' requirements if they have within them activities that ensure the intervention: is specific to the care home; aligns with the goals and priorities of care home staff; is not adapted from other care settings and patient groups; and fosters development of working relationships between care home staff and visiting healthcare professionals. The theoretical framework for this review was broad, providing sufficient guidance to shape the data collection methods and analysis, but flexible enough to ensure that new ideas could emerge and a candidate theory be refined. This article describes a realist evaluation of healthcare delivery to care homes that tested the findings of the realist review through longitudinal case studies in three different localities, with differing service models, over 12 months. Five key outcomes for the NHS, namely unplanned hospital admissions, length of hospital stay, use of out-of-hours services, medication use and resident, carer and staff satisfaction were considered.

Methods

We defined healthcare provision to care homes as a series of complex social processes involving multiple contributors over extended periods of time, where uptake and use of resources can vary widely depending on residents' needs, organisational structures and local resources. The study protocol has been published [6]. RAMESES-II reporting standards for realist evaluations [7] were used. This realist evaluation did not look at a single intervention, implemented in different contexts, to understand how particular contexts influence the triggering of particular mechanisms. Instead we sought to identify contextual factors whose presence across a range of healthcare interventions to care homes is necessary to trigger the desired mechanisms.

Setting and participants

Based on findings from stakeholder interviews and a review of surveys of healthcare provision to care homes [8, 9], we

identified six localities with different approaches to healthcare for care homes. From these, three were purposively selected to maximise variation in approach to healthcare delivery and opportunities to test, uphold, refute or refine the candidate theory of what works, when and in what circumstances. NHS-led interventions across the three sites had overlapping service models.

Site 1 had invested in care home-specific teams with expertise in the care of older people. Site 2 was chosen because of an emphasis on incentives and targets to encourage medical engagement with care homes through payments to GPs. Site 3 had limited care home-specific services and the majority of GPs assimilated care home work into everyday caseloads as part of the General Medical Services contract.

Care homes were excluded from recruitment if they had: specialist registration for alcohol/drug abuse or learning difficulties; a manager in post for <6 months; or involvement in providing NHS-funded intermediate care. We purposively sampled four homes from each site, seeking to include homes: with and without nursing; with and without specialist registration for dementia; and with a mixture of ownership features (large corporate chains, single home providers/small chains, private and not-for-profit businesses). We recruited the four homes for site 1 first and then aimed, as far as possible, to recruit homes for the other sites which matched these in terms of resident population, bed numbers, staffing ratios and proximity to an acute hospital. We aimed to recruit all residents, including those lacking capacity to consent, using a consultee approval process [10].

Data collection

Data were collected over 12 months. Resident baseline health profiles were recorded using a version of the international Resident Assessment Instrument for Assisted Living (interRAI-AL) [11]. Health service use was recorded from care home records. At each study site, audio-recorded, semi-structured interviews and/or focus groups were undertaken with residents, family members, and care home staff, and also with health and social care commissioners, GPs, NHS nurses and allied health professionals.

Interviews and focus groups asked how NHS and care home staff worked together and, informed by the findings of the realist synthesis, focused on the experience of providing and receiving healthcare in care homes. This was to explore if the different participants' understanding of how their interactions informed, expanded or challenged, our theories of what contexts trigger (or not) responses that influenced the outcomes of interest [12].

Analysis

The literature review [5] had posited that residents' access to healthcare, staff satisfaction and resource use (outcomes) should improve where there were activities that create opportunities to learn, work and plan together (context),

creating a sense of common purpose and confidence between participants (mechanism). To test, refine and possibly refute this theory, quantitative analysis explored variations in service use and then qualitative analysis explored potential explanations for how observed and perceived variations in outcomes might occur. Realist analysis of data adheres to a generative explanation for causation and looks for recurrent patterns of outcomes and their associated mechanisms and contexts (see Appendix 1). Once we had established a descriptive account of how the NHS services worked in the sites we focused on recurrent patterns of contexts and outcomes in the data (demi-regularities) and then sought to explain these through the means (mechanisms) by which they occurred across the case study sites. The analytic process also looked for additional and alternative explanations for how NHS and care home staff worked together. For example, mapping of service provision and networks of support around the care homes suggested additional contexts that led, or did not lead, to a sense of common purpose [13].

Unit costs of NHS resources from validated sources [14–17] were multiplied by the frequency of events to establish cost per resource type per resident. These were aggregated over time to generate total cost at the resident level. Resource use items were collected together as eight categories (GP, community, other primary care [i.e. dentist, optician and pharmacist], out-of-hours, emergency department, outpatient, hospital admission and ambulance service) to obtain total costs for each resource type. Two summative total cost variables, including and excluding hospital admissions, were calculated.

Service use variables were analysed by pairwise comparison between sites using chi-squared and Student *t*-tests for categorical and scale variables, respectively. Poisson regression was used to consider association between site, service use and total costs after baseline InterRAI variables were accounted for. Gender, age, bed type (residential/nursing) and payment source (publicly funded/self-funding) were included in regression models based upon *a priori* assumptions about the role they might play in confounding. The main analysis was conducted at 6 months, due to frequent missing data after this time point as a consequence of either death or discharge of residents, or data loss due to care home archiving.

Results

Individual interviews or focus groups were conducted with 181 participants (site 1: 76, site 2: 44 and site 3: 61) including residents, relatives, care home staff and managers, community nurses, allied health professionals and GPs. Of the 116 individual interviews, 35 were with residents, 18 with relative carers, 15 with care home staff and 48 with NHS professionals. The 13 focus groups discussed specific ideas about how the NHS worked by direct reference to examples identified from the case studies in each region (e.g. the

importance of access to specialist dementia services to support residents in the care home) or when individual interviews were not possible due to the limited availability of some participants.

For quantification and costing of health service use, a total of 242/472 residents were recruited, but three died before baseline data were collected. Thus 239/472 were included in analysis, comprising 90/169 (55%), 92/176 (52%) and 57/127 (45%) for sites 1, 2 and 3, respectively. The numbers of residents who were cognitively intact but declined to participate were 47/169 (28%), 66/176 (38%) and 62/127 (49%) for sites 1, 2 and 3, respectively. Consultees were identified for residents without capacity but felt the resident should not be involved in 29/169 (17%), 18/176 (10%) and 8/127 (6%) for sites 1, 2 and 3, respectively.

Baseline data—site characteristics

Across the sites, although the range of healthcare professionals that visited care homes were similar (GPs, community nurses and therapists), there was variation in how they were organised, their duration of working with care homes, frequency of contact and what their work entailed.

In site 1, several multidisciplinary teams worked exclusively with care homes or with explicit responsibility for care homes. A nurse-led care home service had developed over 15 years to case-manage residents for a fixed time after admission to a home. Consultation with care home managers had led to structured training opportunities for care home staff. Formal and informal systems were in place for team-to-team referrals about residents, including access to a specialist dementia outreach team. Managers of two homes had undertaken a leadership programme funded by a local NHS provider. Financial incentives were in place which paid selected GP practices to work with specific care homes, whilst homes were encouraged to register all residents with their allocated practice.

Site 2 had some specialised services available to care home residents but not restricted to them. These included a palliative care nurse specialist with extensive experience of working with care homes, a rapid-response admission avoidance team of community nurses/therapists, and a dementia advice and support service. Financial incentives for GPs emphasised making regular contact with specified care homes to see individual residents as required. This reflected an overall emphasis on provision of services for individual residents rather than at a care home level.

Site 3 relied principally on primary and community services available to all older people regardless of domicile. Three homes received input from a care home nurse specialist, employed as part of the district nursing team, to prevent inappropriate hospital admissions. A dementia nurse specialist was available to one home. Individual clinical practitioners, for example, tissue viability and cardiac nurse specialists, received referrals through usual routes and saw

residents in all four homes as part of their broader workload. A community dietician had, on her own initiative, developed close relationships with all four care homes on a one-by-one basis in a way that recognised care home staff's contribution to service delivery. The County Council for this site had commissioned a leadership programme for all care home managers as part of a nationally recognised initiative supported by the third-sector [18]—this was the same programme undertaken by two care home managers at site 1.

Baseline data—resident characteristics

Baseline interRAI data were collected for all 239 participants (Table 1). Across the sites, 83 participants (35%) were lost to the study through death and three were transferred to other care settings during 12-month follow-up. There was no difference in age, gender, comorbidities or mean medication count between the three sites. Prevalence of dependency and cognitive impairment was higher in site 2.

Programme theory

The objective of realist enquiry is to develop and refine a programme theory which can be tested with observable data [19]. Using qualitative and quantitative data from the case studies we developed a series of context-mechanism-outcome (CMO) configurations, drawing on the data to explain what needed to be in place to achieve positive outcomes. These were (i) investment in care home-specific work; (ii) relational working which builds over time; (iii) care which 'wraps around' care homes; and (iv) specialist care for older people living and dying with dementia. These are summarised in Table 2 and discussed in greater detail below.

Investment in care home-specific work

We conceptualised funding as a context because it led to visiting healthcare practitioners being allocated time to work in care homes. It could buy additional time for practitioners to work with care home staff, fund staff to work exclusively with care homes or support the addition of care home responsibilities to an existing role. The presence of funding combined with organisational endorsement (resource) triggered a commitment and willingness to work proactively with care home staff. This quote illustrates how funding at an institutional level supported practitioners working with care home staff to find shared healthcare solutions:

‘...because we go into the homes, then it’s not just a trainer delivering a training session, they could come back and say, “You know what you said on the course or could you explain more. I didn’t understand about this and can we go through it again?” So, there’s open communication with them. ...they feel confident that

Table 1. Baseline attributes of residents by care home and site

Site ID Care Home IDs	1			2			3			P-value for difference between sites						
	1	2	3	4	1	2	3	4								
Number of residents	11	27	28	24	90	3	27	26	36	19	13	57	–			
Mean age (SD)	89 (5.1)	85 (5.7)	85 (7.5)	85 (5.1)	86 (6.2)	84 (8.5)	89 (5.5)	85 (8.0)	87 (5.9)	87 (6.7)	88 (9.0)	85 (9.1)	87 (7.6)	0.36		
Female residents (%)	100	63	71	75	73	67	81	69	58	68	70	61	79	0.38		
Self-payer %	36	78	14	21	38	33	70	68	54	61	60	27	42	<0.01		
Bed type: %nursing/non-nursing	0/100	0/100	43/57	0/100	13/87	0/100	0/100	0/100	100/0	39/61	0/100	0/100	54/46	12/88	<0.01	
Comorbidities count, median (range)	1.0 (0–5)	1.0 (0–5)	2.0 (0–4)	1.5 (0–3)	1.0 (0–5)	0 (0–1)	2.0 (0–6)	1.0 (0–4)	1.0 (0–4)	1.0 (0–6)	1.0 (0–3)	1.0 (0–3)	2.0 (0–3)	1.0 (0–3)	0.27	
Mean medication count (SD)	6.8 (3.9)	9.6 (3.4)	6.9 (2.9)	8.0 (3.3)	8.0 (3.5)	6.7 (1.5)	6.7 (2.5)	9.9 (4.2)	7.6 (4.0)	8.1 (3.7)	8.4 (2.5)	9.3 (3.4)	9.1 (4.0)	8.8 (3.1)	0.43	
% With Cognitive Impairment	36	67	75	67	66	67	67	96	83	82	47	20	33	35	<0.01	
% With pain	100	74	54	50	65	33	71	77	84	77	80	64	81	0.06		
Clinical syndrome subscales calculated from the interRAI																
ADLSE, mean (SD)	6.8 (5.2)	4.7(4.6)	9.0 (4.8)	6.5 (3.6)	6.8 (4.7)	5.0 (8.7)	5.8 (4.7)	7.5 (6.3)	11.9 (4.0)	8.6 (5.7)	3.5 (4.1)	4.8 (4.7)	3.6 (4.8)	4.1 (4.6)	<0.01	
GPS, mean (SD)	2.3 (2.0)	2.1 (1.9)	2.9 (2.1)	2.1 (1.3)	2.4 (2.0)	3.0 (3.0)	2.2 (1.4)	3.2 (1.9)	3.8 (1.7)	3.2 (1.8)	0.9 (1.6)	0.3 (0.5)	0.6 (0.9)	1.5 (1.8)	<0.01	
Pressure ulcer risk, mean (SD)	1.1 (1.0)	1.4 (1.4)	2.4 (1.6)	2.3 (1.6)	1.9 (1.5)	1.8 (2.1)	2.3 (1.7)	1.8 (1.7)	2.7 (1.3)	2.3 (1.6)	1.0 (1.4)	1.9 (1.6)	1.3 (1.4)	2.6 (2.1)	1.6 (1.7)	0.05

CPS = Cognitive Performance Scale—includes level of arousal, short term memory, decision making, expressive communication and eating (score 0–6; where higher scores indicated greater impairment).
 ADL = InterRAI Activity of Daily Living Short Form—includes personal hygiene, toilet use, locomotion and eating (score 0–16; where higher scores indicate greater impairment).
 Pressure ulcer risk score includes mobility, bed mobility, bowel incontinence, dyspnoea, pain frequency, weight loss and prior pressure ulcer (score 0–8, where higher scores indicated greater risk).

Table 2. Context, Mechanism and Outcome (CMO) relationships underpinning final programme theory

Context	+ Mechanisms	= Outcomes
	Resource	Response
a) Investment in care home-specific work		
NHS services funded to visit care homes on a regular basis	NHS services working for care homes see this as a legitimate use of their time and skills Number of care homes they work with seen as manageable Focus on residents' access to healthcare (not just prevention of admissions or monitoring) Allocation of time and resource and to work in care homes	Healthcare practitioners willing to work with care homes and find ways to provide a package of care that supports residents and care home staff Willingness to engage in proactive care and discuss residents with vague or uncertain symptoms
		Services engage with care homes and residents have access to specialist services Services visit at times that fit with care home routines Care home staff concerns about individual residents are described as being addressed before they become a crisis
b) Relational working which builds over time		
NHS Staff and services know care homes because of length of association and stability of teams or through staff moving between services	Length of time service working with care homes/know particular staff and care home routines.	Staff develop ways of working and communicating with care home staff (both formal and informal) and are willing to be accessible and flexible
		Practitioners are confident they can provide or access services for residents that are wanted by the care home staff. They make appropriate use of urgent care services.
c) Care which 'wraps around' care homes		
Referral network known to care home staff and healthcare professionals, facilitates access to multiple services including those that have dementia-specific expertise	Care home-specific referral systems for commonly used services (e.g. dementia, falls prevention) Staff with responsibilities to other patient groups have capacity to work with care homes Infrastructure supports review and feedback, and opportunities to change patterns of service delivery	Referral systems are understood and seen as services they work with by care home staff Practitioners feel confident they can provide or access services for residents and know the care home staff they work with
		Services engage with care home staff and residents have access to specialist services for the support of people with complex needs Reduced need for hospitalisation
d) Specialist care for older people living and dying with dementia		
Care homes and visiting NHS practitioners have access to dementia expertise Expertise in dementia care a pre-requisite for everyone working with care homes	Ability to provide training and support for the care of people living and dying with dementia Range of resources and skills to anticipate and respond to the signs and symptoms of dementia that cause resident distress, and address care home concerns around risk management and deprivation of liberty	Visiting practitioners and care home staff have a shared commitment to work together to support people living with dementia Visiting healthcare staff are not afraid or reluctant to provide care to people living and dying with dementia
		Reduced prescription rates of antipsychotics Where people living with dementia have behaviours that staff and residents find challenging, their care can be managed within the care home

we've got a two way communication and they feel that they can open up to me and I can open up to them...'
Specialist nurse care homes team S1CH4HP02

In all sites when individual healthcare staff had a remit to work with care homes as well as residents, for example, a dietician in site 3 and palliative care specialist in site 2, they described a similar sense of commitment to work with care homes reporting positive outcomes such as maintaining residents in the care home.

Where investment in a practitioner was used primarily to reduce demand on secondary care or substitute for another service, outcomes were less positive. It could increase the frequency of contact but it did not foster a willingness or sense of common endeavour to improve residents' health-care. For example, one nurse practitioner would, to protect GP time, respond to care home requests for GP consultations from care homes. This could have the unintended

consequence of two visits for a single issue, one from each of the GP and nurse practitioner, to the frustration of care home staff:

'Well if I was phoning the doctor this morning... there's a good chance I'll get a nurse practitioner rather than a doctor but, at the end of the day, if that nurse practitioner doesn't feel happy with who she's seeing, then I'll get a doctor later on.'

S3CH3 care home manager

The previous literature review had not highlighted the centrality of the GP role. GPs were the only visiting health professional consistently referred to by both residents and relatives across the sites as important. Satisfaction depended upon access, continuity of care and the quality of human interaction from GPs. When NHS-funded nursing and therapy services working with care homes were available to

provide support and ongoing advice, this enabled GPs to engage with care homes in ways that both they and care home staff felt was constructive use of their time.

Direct financial incentives generated more GP activity but if this was done without a shared understanding that working with care homes was more than addressing individual resident needs, it could lead to frustration. This GP could not reconcile her GP work with working with in a care home. She did not see it as feasible:

‘I think that it is not good use of my time, care homes are probably one of the only places where the GP is having to do urgent and planned work in the same place and at the same time. When you see other patients it is a booked appointment or an urgent call, there is some planning and anticipation. It is harder to repeat that in care homes.’

S2GP01

Relational working which builds over time

It took time for NHS services funded to work with care homes to adapt, become embedded and be recognised as a part of healthcare provision to residents. Where there was most evidence of staff having a sense of common purpose, NHS staff with care home experience had either been retained through multiple service iterations to work with care homes or had moved between care home-facing services, ensuring retention of their expertise. This shared learning and persistence generated a sense of common endeavour and willingness to work together. This contrasted with isolated, time-limited care home initiatives, or incentives to encourage staff to change visiting patterns and expand their activities, but did not provide time or space to learn to work together. In some instances staff on one or both sides of the relationship gave up on ideas of shared care because they were unable to find ways of working together that could be accommodated within existing workloads and routines. The need to first learn how communicate was recognised by this commissioner:

‘... ..we’re just at the really early stages of trying to (work with care homes)...we’ve got over 200 care homes and obviously there’s some small independent companies that run homes as well as the bigger common ones, so it’s difficult to make contact with them all, so what we’re starting to do is we are trying to build a list of those that we sort of engage with, but also we’re working very closely with our County Council in terms of they’re setting up some forums.’

Commissioners interview site 3—DS500042

Where patterns of working had evolved over time, practitioners were able to absorb or address what sites with less well-developed relationships described as ‘challenges’. Continuity of healthcare practitioner and team input, and being accessible, responsive and willing to provide education

and training could mitigate the effects of staff turnover in the care homes. Patterns of shared understanding and mutual professional development provided a platform upon which more structured innovations could be introduced (such as facilitating end-of-life care training and nutritional assessment, or guidelines on when to call a GP).

Care which ‘wraps around’ care homes

The way in which resources were allocated and organised around the care homes triggered different responses from staff. The structure of support either brought care homes ‘into’ the economy of healthcare with formal methods for referrals and linking services and practitioners, or provided episodic outreach from the health service to care homes.

An infrastructure around care homes characterised by a network of healthcare teams meant that residents could be supported within a framework of referrals and expertise. In these circumstances, care home staff appeared less likely to seek help on an *ad hoc* basis. The ability to co-ordinate complex care needs within a network of interconnected specialist practitioners mitigated against the tendency to call for help from outside services.

‘I’ll arrange an appointment as usual and I’ll either speak to the manager or a senior carer and we will discuss whatever plan we’ve put in place...then we’ll come back, talk to other members of the team for advice...or we can refer to, because we’re a multidisciplinary team, we’ve got physiotherapists, occupational therapists, support workers and so we can refer...get support from support workers...and we’ve got consultant (doctor) time as well.’

Dementia team specialist nurse S1CH1HP02

The effectiveness with which such networks were used linked to how well referral systems were known and understood by care home staff. If poorly understood, a diversity of providers could trigger multiple parallel referrals or a default referral to the GP. Care home staff could find it difficult to control the number of NHS services visiting them and could perceive this as overwhelming:

‘Different bodies. Different, you know, sometimes we can have three different professionals come in to see one person, you know and it’s a bit too much. I think care home life is like traffic, road traffic, everybody just coming and going, and demanding.’

S1CH1 care home manager

Specialist care for older people living and dying with dementia

Evident across all three sites was the importance of how the NHS responded to the health needs of residents with dementia. Access to dementia-specialist services was seen as a key context that generated staff confidence (both NHS

Table 3. NHS resource use and costs by site

Care/Service Type	Contacts (n)/cost (£)	Site 1, N = 77		Site 2, N = 69		Site 3, N = 49		P-value (* = statistically significant)		
		Mean (SD)	Median (range)	Mean (SD)	Median (range)	Mean (SD)	Median (range)	Site 1 vs 2	Site 1 vs 3	Site 2 vs 3
GP Care	Contacts per resident	4.06 (2.97)	4 (0–17)	6.04 (4.49)	5 (3–8)	4.45 (3.98)	4 (0–20)	0.36	0.19	0.20
	Cost per resident	175 (132)	146.31 (90–225)	270 (194)	225 (135–360)	189 (174)	135 (56–270)	<0.01*	0.64	0.02*
Community Care ^a	Contacts per resident	9.74 (22.02)	5 (0–189)	14.39 (51.39)	3 (1–7)	24.10 (76.05)	3 (0–376)	0.49	0.33	0.18
	Cost per resident	224 (384)	143 (44–281)	292 (876)	70 (17–184)	450 (1275)	79 (50–215)	0.56	0.23	0.46
Other Primary Care: dentist, optician, pharmacist ^b	Contacts per resident	0.30 (0.51)	0 (0–2)	0.39 (0.79)	0 (0–1)	0.76 (0.78)	1 (0–3)	0.4	<0.01*	0.01*
	Cost per resident	18 (34)	0 (0–39)	20 (41)	0 (0–39)	40 (60)	39 (0–39)	0.70	0.02*	0.05*
Out-of-Hours Care (GP or nurse)	Contacts per resident	0.25 (0.91)	0 (0–7)	0.35 (0.61)	0 (0–1)	0.31 (0.74)	0 (0–4)	0.08	0.46	0.45
	Cost per resident	17 (62)	0 (0)	23 (40)	0 (0–0)	21 (51)	0 (0–0)	0.50	0.69	0.84
Accident and Emergency visits	Contacts per resident	0.23 (0.79)	0 (0–6)	0.14 (0.49)	0 (0–0)	0.06 (0.24)	0 (0–1)	0.61	0.43	0.68
	Cost per resident	32 (107)	0 (0)	20 (67)	0 (0–0)	8 (33)	0 (0–0)	0.41	0.08	0.23
Secondary care non-admitted	Contacts per resident	0.43 (0.97)	0 (0–5)	0.19 (0.69)	0 (0–0)	0.65 (1.07)	0 (0–5)	0.37	0.42	0.01*
	Cost per resident	88 (231)	0 (0)	42 (225)	0 (0–0)	99 (205)	0 (0–134)	0.23	0.77	0.15
Secondary care admissions	Contacts per resident	0.25 (0.61)	0 (0–3)	0.17 (0.42)	0 (0–0)	0.33 (0.55)	0 (0–2)	0.61	0.22	0.24
	Cost per resident	525 (1888)	0 (0)	519 (1913)	0 (0–0)	1202 (3326)	0 (0–512)	0.99	0.20	0.20
Ambulance use	Contacts per resident	0.35 (0.82)	0 (0–5)	0.28 (0.70)	0 (0–4)	0.35 (0.56)	0 (0–1)	0.19	0.08	0.31
	Cost per resident	81 (190)	0 (0)	64 (163)	0 (0–0)	80 (130)	0 (0–231)	0.55	0.98	0.54
Total cost per resident		1160 (2184)	492 (239–740)	1190 (2250)	439 (257–893)	2069 (3745)	682 (264–1918)	0.94	0.13	0.15
Total cost per resident excluding hospital admissions		634 (687)	458 (239–708)	730 (991)	413 (230–742)	880 (1320)	493 (264–865)	0.51	0.23	0.50

^aCommunity care comprises: District Nurse, Practitioner Nurse, Continence nurse, Diabetes nurse, continuing HC nurse assessor, care home nurse specialist, Parkinson nurse, COPD Nurse specialist, Cardiac Nurse specialist, RMN_CPN, Mental Health team visit, Nutrition specialist nurse, anticoagulant nurse, Best interests team assessment, palliative care team visit, community matron, physiotherapist, occupational therapist, speech and language specialist, dietician, audiologist, psychotherapist, psychologist, social worker, chiropodist, other dementia, other phlebotomy, other falls prevention, other long-term care, other specialist contacts, geriatrician.

^bPrimary care comprises: Dentist, Optician and Pharmacist visits.

and care home) in dealing with resident distress within the care homes. Such services were, however, frequently separated from other care home-focused initiatives.

Health service use and cost outcomes by resident

The quantitative data on health service use are summarised, along with associated costs of care to the NHS, in Table 3.

In regression analysis, three differences were significant at the 5% level after adjusting for casemix:

- Higher costs of GP care in site 2, compared to sites 1 and 3.
- Greater use of dentists, opticians and pharmacists in site 3, compared to sites 1 and 2.
- More outpatient secondary care use in site 3, compared to site 2.

These data suggest that the model of care based around GP incentive payments in site 2 was associated with higher rates of GP consultations, without evidence that it modified use of other community or hospital-based services. This supports the finding from the qualitative data that GP visits in this locality, where care was structured around the immediate requirements of individual residents, did not facilitate proactive or shared decision making with the care home staff in a way that might impact upon wider service use. The wrap-around model seen in site 1 was associated with fewer GP contacts than in site 2 but was roughly equivalent to what was seen in site 3 in terms of numbers of visits and associated cost. This supports the finding from the qualitative data that GPs in site 1 saw patients in care homes but for a narrower range of activities.

Discussion

Our starting point for this study was that activities which generate opportunities and legitimise NHS and care home staff working together were integral to optimal healthcare provision in care homes. We were able to iterate this forward by demonstrating that incentive frameworks and educational initiatives were useful where: they normalised contact between NHS staff and care homes at an institutional, as well as individual resident, level; where they supported and were formally linked with a wider system of healthcare which ‘wrapped around’ care homes; and where NHS and care home staff had ongoing access to expertise to support residents with dementia. Further, there was evidence that commissioning services which favoured time-limited, single-issue approaches (such as focussing on hospital admission avoidance), could trigger unintended responses with a narrow focus limiting time spent on activities supporting relational working. Thus the initial programme theory was further augmented and modified.

These findings about delivery of optimal healthcare in care homes align with the policy and practice priorities identified and trialled through the NHS enhanced health in care homes vanguard sites—a national initiative in England to try new models of working in this sector [20]. This addresses one factor—a receptive social and political environment [21]—that

might facilitate implementation of our findings into service commissioning, design and delivery at a regional or national level. Our findings suggest that GP expertise is crucial but that other services can be structured to provide additional support that enables GPs to focus on core medical work. This is important given recent statements by GP organisations about the pressures associated with providing care to the sector [22].

A key strength of this study is in the range of health and social care activity which was described. We took a cautious approach to analysis and interpretation of quantitative data, cross-referencing numerical and qualitative observations to allow fuller understanding of any trends or differences identified. An important limitation is that cost data did not include GP incentive payments but, given that the trend was towards greater costs in site 3 where such payments were not employed, this is unlikely to have significantly influenced the findings.

Our approach, unlike many realist studies, was not to look at a single intervention (e.g. care home specialist teams) implemented in different settings. Instead, we considered the contextual factors that are necessary to trigger the desired mechanisms that support integrated working. Distinguishing between contexts and mechanisms as part of the analytic process was challenging. Over the course of the project we refined our understanding of how processes within the approach to healthcare delivery could be recognised in, and across, the sites. It is a strength of the realist method and how it was applied in this study, that we were able to integrate and interrogate different forms of knowledge, using both primary and secondary sources. A limitation is that although we started from a programme theory generated through realist synthesis of the literature and have clearly described how that was iterated forward through the empirical work described here, evidence of how organisational level changes (proximal outcomes) resulted in changes in clinical practice (distal outcomes) was equivocal. We are, however, exploring this through further ongoing research as part of subsequent studies.

Key points

- Healthcare to care homes should recognise the contribution of care homes and their staff at an institutional level.
 - Healthcare to care homes should formalise and legitimise time spent dealing directly with care home staff and residents.
 - Healthcare to care homes should recognise the importance of dementia-specific expertise and ensure that this is accessible.
 - General practitioners are integral to effective healthcare delivery in care homes within current UK healthcare models.
 - Time-limited and narrow commissioning arrangements which limit opportunities for relationship-building should be avoided.
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Supplementary Data

Supplementary data mentioned in the text are available to subscribers in *Age and Ageing* online.

Conflict of interest

None.

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Ethical approval

Favourable opinion was granted by the UK Social Care Research Ethics Committee (13/IEC08/0048) on 29 January 2014.

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