Public Health England

Protecting and improving the nation's health

The older adults' NHS and social care return on investment tool

Final report

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Executive summary

1. Introduction

The number of older people with social care needs in England is rising sharply, with growing life expectancy bringing additional age-related disabilities and frailty. Furthermore, healthy life expectancy is not growing at the same rate, leading to a longer proportion of life lived with disability. As the level of need in older people increases, there are greater pressures on the health and social care system to deliver, against a backdrop of constrained resources. Economic evidence is particularly useful in this context to inform decision makers about which services it is worth investing in.

At present there is no single resource to compare the return on investment of services targeted specifically at older people, to improve their quality of life and/or reduce their need for local authority (LA) funded social care. There are several published resources that we would encourage be used for this purpose, e.g. return on investment tools on the prevention of falls, cardiovascular disease, and mental ill-health, as well as the Health Evidence Economic Resource (HEER). This project aimed to address the gaps in evidence not covered by existing resources, and make additional evidence available in a tool that commissioners can use to inform local decision making. York Health Economics Consortium (YHEC) was commissioned to develop the tool in spring/summer 2019. The aim of the project was to provide a return on investment (ROI) tool, to allow stakeholders and decision-makers to compare the return on investment of interventions to improve older people's health and reduce their need for NHS and social care services.

Based on evidence from the literature review, and informed through discussion with expert Steering Group members, the following 9 interventions are included in the ROI tool:

- community singing
- a help at home scheme
- a befriending service
- the WHELD intervention for people living with dementia in nursing home
- the INTERCOM intervention providing hospital discharge support for COPD patients
- bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions, using social prescribing and other approaches to put patients in touch with services
- health coaching delivered by inter-professional health and social care services
- the BELLA intervention providing self-management support for COPD patients
- a home care reablement service

A description of the interventions is provided in Section 1.4 of the report. The interventions did not necessarily take place in a social care setting.

This Project Report contains the summary of the methods used, and discussion of the key results of the ROI modelling. Further detail of the literature review process, selection of the interventions for inclusion in the tool and the modelling methods, can be found in the accompanying technical report.

2. Methods

The project work was led by a Project Team at Public Health England (PHE) and overseen by a multi-disciplinary Steering Group. The project took place in 2 phases:

- Phase 1 consisted of a literature review and feasibility study to consider the evidence required to develop an ROI tool.
- Phase 2 used the outcomes of the first phase to develop a user-friendly ROI tool.

2.1 Literature review

A literature review protocol was developed which included the proposed eligibility criteria, the search stages and the process for study selection and data extraction. Several rounds of targeted, pragmatic searches were conducted, to prioritise finding a manageable number of highly relevant papers, rather than attempting to provide 'comprehensive' retrieval of all of the relevant literature. The resulting records were screened using title and abstract against the agreed eligibility criteria. The literature review produced 5,441 records, of which 150 contained potentially relevant information. In order to arrive at the final set of interventions to be included in the tool, an iterative process of examining the literature was followed, which included the assessment and prioritisation stages below (described in brief in Section 2.2 and in detail in the Technical Report):

- preliminary data extraction
- stakeholder/expert workshop
- confidence in the evidence of cost effectiveness
- assessment of where benefits fall
- full data extraction
- assessment of population information and UK relevance
- assessment of modelling assumptions
- additional targeted literature searching
- final assessment

Where interventions only showed improvements in health for older people, but no social care savings were quantified, the interventions were included, as there is evidence that health gains among older people lead to social care savings (see Section

4.1 below). Where only NHS savings were quantified (and no health gains or social care savings), interventions were excluded. Furthermore, whilst it is acknowledged that individuals and families contribute significantly to informal care, these costs were outside the scope of the project.

2.2 Development of the economic tool

The tool was developed in Microsoft Excel to be interactive and user friendly. Stakeholder opinion and engagement helped inform the development of the tool. A summary of tool development can be found in Section 2.4 of this report.

The model presents ROI for 4 different analytical perspectives:

- NHS financial ROI, where benefits are measured exclusively as gross NHS savings for every £1 spent by commissioners on the intervention
- social care financial ROI, where benefits are measured exclusively as gross social care savings for every £1 spent by commissioners on the intervention
- financial ROI, where benefits are measured as gross NHS and social care savings for every £1 spent by commissioners on the intervention
- societal ROI, where benefits include gross NHS and social care savings in addition to monetised QALYs for every £1 spent by commissioners on the intervention

3. Results

The model results for each intervention included in the tool are presented in Section 3. The results describe the financial ROI for each intervention, as well as indicating the population impact of interventions in terms of per person and total intervention costs, NHS savings, social care savings and QALY gain. Information on the size of the population eligible for the analysis is also provided.

For the purposes of the sample analysis, older people were defined as those aged 65+. An arbitrary assumption was applied where uptake of the intervention in the eligible population was set to 30%. This value can be changed by the model user. All other parameters were based upon model inputs obtained from literature sources (i.e. using evidence from the studies underpinning each analysis rather than applying user defined parameters). All outcomes represent incremental differences vs. the comparator included in the underlying study, these typically being defined as 'treatment as usual' or 'no intervention'.

Return on investment was defined as the sum of gross monetised impacts of the interventions divided by the sum of intervention costs.

Due to study heterogeneity, it was not considered appropriate to directly compare the interventions within the tool. Consequently, the tool cannot provide a definitive ranking of social care interventions by their expected ROI. A summary of the financial and societal ROI for each intervention is provided in Table 1.

Table 1: Financial and societal ROI for each intervention in the sample analysis

Intervention	Financial ROI (NHS)	Financial ROI (NHS + Social Care)	Societal ROI
Community Singing	£1.00: -£2.01	£1.00: £0.17	£1.00: £43.99
Help at home scheme	£1.00: £2.65	£1.00: £2.95	£1.00: £5.79
Befriending	£1.00: £0.47	Not available	£1.00: £5.88
WHELD (dementia nursing homes)	Not available	£1.00: £1.75	£1.00: £1.96
INTERCOM (hospital discharge)	£1.00: -£0.44	Not available	£1.00: £3.50
Bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions, using social prescribing and other approaches to put patients in touch with services	£1.00: £0.49	Not available	£1.00: £2.54
Health coaching	£1.00: -£0.90	Not available	£1.00: £13.06
BELLA (self-management COPD)	£1.00: -£0.25	Not available	£1.00: £16.24
Homecare reablement	£1.00: -£0.34	£1.00: £0.81	£1.00: £4.71

The interventions that show a positive financial ROI are contributing to reduced demand on the health and social care system, either by increasing efficiency, achieving similar outcomes with fewer resources, or reducing demand by improving health outcomes. These returns may not yield cash releasing savings, unless capacity of services is reduced in line with the reduced demand. A reduction in demand may however, serve to release capacity and enable people to access services more quickly.

For 7 interventions, the positive societal return on investment appeared to be driven primarily by the beneficial impact of the intervention on people's health: Community singing, befriending, hospital discharge (INTERCOM), bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions using social prescribing and other approaches to put patients in touch with services, health coaching, self-management (BELLA for COPD) and reablement interventions did not have a positive financial return on investment, as the financial ROI's were less than £1 for every £1 spent on the intervention.

For 5 interventions financial ROIs were negative, indicating that each £1 invested would lead to a loss greater than £1, as the evidence showed that service utilisation increased following the intervention, rather than decreased. These interventions were nonetheless included in the tool as there was considerable uncertainty about their effect on service utilisation (the effects were either not statistically significant, or

statistical significance was not reported), and they improved the health of the population.

4. Discussion

The ROI tool has been developed to assess the return on investment for 9 interventions aimed at older people. The tool can be used to demonstrate the impact of the interventions for a geographical population that is specifically relevant to local commissioners, be this a local authority, NHS Clinical Commissioning Group or NHS Sustainability and Transformation Partnership. Return on investment is defined as the sum of all monetised impacts of the intervention, divided by the sum of the intervention costs.

Local commissioners might consider implementing any of the 9 interventions included in the tool, as each has a societal ROI greater than one, meaning their benefits are expected to exceed £1 for every £1 invested in the intervention. However, evidence underlying the interventions is subject to significant uncertainty.

The ROI tool contains the interventions with best economic evidence available at the time of undertaking the project work. The interventions included are therefore not necessarily the most effective interventions available, but are those with sufficient economic evidence to enable ROI calculations to be made and those not covered by other economic resources produced by PHE. Many of the initial records found were excluded due to the paucity of cost information included in the study. However, it is important to note that their exclusion from the tool does not mean that such interventions should not be implemented, as a lack of economic evidence is different from evidence of poor economic outcomes. Furthermore, the tool supports additional analyses for a user defined intervention, should sufficient evidence become available to local commissioners in the future.

In order to retrieve the economic evidence considered to be the most relevant, the literature review searched for studies published from 2010 onwards. The evolving nature of the implementation environment however, means that for some interventions, the academic experts advised that the circumstances had changed sufficiently to render the evidence less relevant in today's context. This was exemplified by extracare housing, which whilst showing potential for inclusion in the tool, was eventually excluded due to the need for more up-to-date economic evidence with a comparator relevant to the current social care criteria for residential care.

There were a number of limitations which had the potential to influence the results and interpretations obtained from the ROI model. These were around study design, heterogeneity in the levels of uncertainty and limitations of the literature search.

Not all impacts of the interventions were statistically significant. It is important to note that lack of statistical significance does not mean the interventions are not effective i.e. lack of evidence of impact is not evidence of no impact, it may simply be due to small sample sizes without sufficient power to show a significant effect. A table summarising the uncertainty of evidence in the modelled interventions is shown below:

Table 2: Level of uncertainty for each intervention

Intervention	NHS		Social care		QALYs	
	Savings	Costs	Savings	Costs	Benefit	Detriment
Community Singing		NR	X		√	
Help at home scheme	NR		NR		NR	
Befriending	NR		Not Available		√	
WHELD (dementia nursing homes)*	√		√		NR	
INTERCOM (hospital discharge)		NR	Not Available		X	
Bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions, using social prescribing and other approaches to put patients in touch with services	NR		Not Available		NR	
Health coaching		X	Not Available		X	
BELLA (self-management COPD)		X	Not Available		NR	
Homecare reablement		NR	NR		√	

*Note WHELD costs not reported individually (i.e. savings for combined NHS and social care budgets only).

Key:

√	Outcome is statistically significant
X	Outcome is not statistically significant
NR	Outcome does not have statistical significance reported
Not Available	Outcome not measured in study
Blank cell	Indicates outcome does not occur in this direction

Please note that due to the quality of evidence available and lack of agreed upon cost-effectiveness threshold in social care, the cost-effectiveness of each intervention was not assessed, and it is up to the user to make an assessment of the cost-effectiveness of these interventions in their area.

5. Recommendations

Users interested in improving the health of older adults in their area should look at existing PHE health economics ROI tools on: mental health, cardiovascular disease, and falls prevention, as well as the Health Evidence Economic Resource (HEER) in the first instance.

The usefulness of the Older Adults' NHS and Social Care ROI Tool in practice should be evaluated, with users being invited to give feedback on changes that could be made for any future versions of the tool.

The implementation of the interventions in the tool should be evaluated and information shared in order to add to the evidence base on the topic. Experience of local implementation and evaluation of effectiveness in a real-world setting would be particularly useful.

Evidence of the outcomes of the interventions should be collected for a period beyond one year, so that the time horizon of the tool can be extended based on evidence of the duration of effects.

Further economic study on some social care related interventions would be useful, particularly for those that were shortlisted for inclusion in the tool but were excluded at the final stage due to insufficient evidence (for example extracare housing and telecare).

There is a need to establish an economic evidence-base for newer social care developments (e.g. Shared Lives and similar schemes, modern forms of commissioning such as 'Community Catalysts').

In order to make firm conclusions regarding the cost effectiveness of these types of interventions, it would be necessary to have an estimated marginal cost effectiveness threshold for LA funded social care.

1. Introduction

1.1 Background

The number of older people with social care needs in England is rising sharply, with growing life expectancy bringing additional age-related disabilities and frailty. Furthermore, healthy life expectancy is not growing at the same rate, leading to a longer proportion of life lived with disability. It is anticipated that nearly 3 million over-65s will have social care needs by 2025.[1] Public expenditure on social services for older people is projected to rise under the current funding system from around £7.2 billion in 2015 to £18.7 billion in 2040.[2] The total annual cost of dementia in England in 2015 was estimated to be £24.2 billion, of which £10.2 billion is attributable to social care costs and 10.2 billion is attributable to unpaid care.[3] The preferences for most older people is to remain in their own home for as long as is practical, and it is often a more efficient use of resources to support individuals to do so.[4] [5] [6] A central goal of community-based interventions is to prevent, reduce or delay use of residential and hospital-based care; and to prevent health problems arising and escalating. Such interventions, spanning technological advancements, new models of service delivery, consumer-directed care, and a range of practical, psychological and social innovations, have received significant research attention.[7]

As the level of need in older people increases, there are greater pressures on the health and social care system to deliver, against a backdrop of constrained resources. Economic evidence is particularly useful in this context to inform decision makers about which services it is worth investing in. This requires consideration of the relative benefits and costs of interventions alongside consideration of the opportunity cost or the foregone benefits of not investing in alternative interventions. A system wide approach is also helpful in that the impacts of a service, in terms of its costs, may extend beyond the sector or provider paying for them.[8] For example, interventions within healthcare may lead to a reduction of social care resource, and vice versa. The benefits and outcomes of social care extend beyond social care-related quality of life and wellbeing and include benefits to people's health and consequently to the health system.

Evidence is required to inform local commissioners about the return on investment of interventions to support older people. Organisations such as Public Health England (PHE) have led the development of economic evaluations of health and social care interventions and public health return on investment tools, to assist decision makers in making cost-effective choices. At present there are several economic resources with interventions that affect older people, but no single resource to compare the return on investment of services targeted specifically at older people, to improve their quality of life and/or reduce their need for health and social care services.

PHE commissioned this return on investment (ROI) tool with a view to addressing the gap in evidence between existing resources, to make evidence available in a tool that commissioners can use to inform local decision making. York Health Economics Consortium (YHEC) was commissioned to develop the tool in spring/summer 2019.

This project report contains the summary of the methods used, and discussion of the key results of the ROI modelling. Further detail of the literature review process, selection of the interventions for inclusion in the tool and the modelling methods, can be found in the accompanying Technical Report.

1.2 Objectives of the project

The aim of the project was to provide a return on investment (ROI) tool to allow stakeholders and decision-makers to compare the cost-effectiveness of interventions to reduce the need for services in individuals in older adults. While the focus was particularly on the use of social care services, the project was interested to review interventions which also reduced the need for health services.

The project took place in 2 phases:

- Phase 1 consisted of a literature review and feasibility study to consider the evidence required to develop an ROI tool.
- Phase 2 used the outcomes of the first phase to develop a user-friendly ROI tool.

The output of the project is an ROI tool that considers the costs and benefits of the included interventions across the health and social care spectrum and presents information in a way that is useful to users of the tool.

1.3 Project governance

The project work was led by a Project Team at PHE and overseen by a multi-disciplinary Steering Group, consisting of individuals from the following organisations: PHE, Department of Health and Social care (DHSC), National Institute for Health and Care Excellence (NICE) and representatives from local government. The Steering Group met regularly throughout the project, to sign off key decisions, provide advice on the project approach and give feedback on the ROI tool. A workshop of academic experts was also held towards the end of Phase One, to seek views on the potential interventions being considered for inclusion in the tool. A User Group of potential users of the ROI tool was convened to comment on a prototype of the tool and provide comments to the Steering Group.

1.4 Interventions included in the tool

Based on evidence from the literature review and informed through discussion with expert Steering Group members. The following 9 interventions are included in the ROI tool:

- community singing
- a help at home scheme
- a befriending service
- the WHELD intervention for people living with dementia in nursing home
- the INTERCOM intervention providing hospital discharge support for COPD patients
- bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions, using social prescribing and other approaches to put patients in touch with services
- health coaching delivered by inter-professional health and social care services
- the BELLA intervention providing self-management support for COPD patients
- a home care reablement service

The eligibility criteria for choosing interventions was economic evidence (though not necessarily statistically significant – see Section 4.5 below) of improved health for older people and/or savings to local authority funded social care. The interventions did not necessarily take place in a social care setting.

Where interventions only showed improvements in health for older people, but no social care savings were quantified, the interventions were included, as there is evidence that health gains among older people lead to social care savings (see Section 4.1 below). Where only NHS savings were quantified (and no health gains or social care savings), interventions were excluded. Furthermore, whilst it is acknowledged that individuals and families contribute significantly to informal care, these costs were outside the scope of the project.

Additionally, the papers needed to have sufficient evidence to underpin local level ROI tool calculations. Please note that due to the quality of evidence available and lack of agreed upon cost-effectiveness threshold in social care, the cost-effectiveness of each intervention was not assessed, and it is up to the user to assess the cost-effectiveness of these interventions in their area.

Please note that relevant interventions aimed at older people, covered in other ROI tools published by PHE, were outside the scope of modelling in this tool, to avoid duplication. This tool aims to address the gap in the evidence covered by other resources. There are several resources that commissioners interested in older people's health and social care needs may be interested in looking at in the first instance.

These are:

The Falls Prevention ROI tool
Available here. Falls prevention is very relevant to improving the health of older adults. The Falls Prevention ROI tool looks at 4 interventions, all of which were shown to be cost-effective in comparison with usual care

PHE's Mental Health ROI tool
Available here. This provides evidence for an intervention addressing loneliness in older people and an intervention aiming to improve the mental health of people with long-term physical health problems.

The Health Economics Evidence Resource (HEER)
Available here. This is a compilation of economic evidence of interventions covering the areas in the Public Health Grant and is available here. Some interventions in the HEER are directly targeted at older adults, e.g. a community-based walking programme targeted at sedentary older people to improve the mental wellbeing has an estimated cost/QALY of £7,300

The cardiovascular disease ROI tool
Available here. This is a model that calculates the costs and benefits of secondary prevention of cardiovascular disease.

Additionally, there are resources produced by organisations other than PHE that commissioners may be interested in. NEF consulting has produced a tool analysing the economic impact of interventions aimed to support carers, available here. The ESSENCE compendium produced by LSE compiles evidence on interventions within social care, see section 1.4.10 of this report.

A description of the interventions in the Older Adults NHS and Social Care ROI tool is provided below, as described in the studies underpinning the analysis.

1.41 Community singing

A 14-week 90-minute programme of participative singing for older people, to improve mental health-related quality of life. Community singing groups were led by facilitators over 90-minute sessions. Participants volunteered for the programme on the basis of publicity. The intervention was delivered in 5 centres in East Kent.

For further information see www.ncbi.nlm.nih.gov/pubmed/26089304

1.4.2 Help at home scheme

The help at home intervention package comprised: A volunteer-provided face-to-face and telephone befriending scheme; a practical home help service for gardening, shopping and cleaning; and a welfare benefit advice service. The scheme was funded through the local authority and through charges to clients for using the practical home help service. Whilst personal care was not provided as part of the scheme, people were assessed for and referred elsewhere for this type of support. The scheme worked in close partnership with the local authority to ensure that people eligible for publicly funded care could access the services and support to which they were entitled and those who were not eligible could get help from the scheme.

For further information see www.ncbi.nlm.nih.gov/pubmed/27400985

1.4.3 Befriending

A befriender visited people in their home on a 1:1 basis where the individual had asked/agreed to be "befriended". Visits were 1hr/week or fortnight and unstructured with no formal defined goal. Participants were matched for interests. The intervention was targeted at lonely, isolated individuals over the age of 50.

For further information see http://eprints.lse.ac.uk/32311/

1.4.4 WHELD Intervention for people living with dementia in nursing homes

The WHELD programme (Wellbeing and Health for People with Dementia) combined staff training, social interaction and guidance on use of antipsychotic medications for agitation in people with dementia living in nursing homes. The intervention focused on training in person-centred care for care staff and on promoting tailored person-centred activities and social interactions. The intervention also involved the development of a system for triggering appropriate review of antipsychotic medications by the prescribing physician attached to each home.

For further information see www.ncbi.nlm.nih.gov/pubmed/29408901

1.4.5 The INTERCOM intervention providing hospital discharge support for COPD patients

The INTERCOM programme was an interdisciplinary community-based chronic obstructive pulmonary disease (COPD) management intervention delivered in the Netherlands. The INTERCOM programme consisted of exercise training, education, nutritional therapy and smoking cessation counselling offered by community-based

physiotherapists and dieticians and hospital-based respiratory nurses. During the 4-month standardised, supervised, intensive intervention phase, individual exercise training sessions were given twice a week by physiotherapists in the proximity of the patients' home. Patients were also instructed and motivated to perform the exercises at home and to walk and cycle twice a day. Nutritionally depleted patients were scheduled to visit a local dietician 4 times in the first 4 months. During the less intensive, less-standardised 20-month maintenance phase, patients visited the physiotherapist once a month and also had visits to a respiratory nurse, dietician and could have additional exercise training sessions.

For further information see www.ncbi.nlm.nih.gov/pubmed/19574331

1.4.6 Bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions

The intervention was a bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions in Rotherham, using social prescribing and other approaches to put patients in touch with services and non-medical sources of support within the local community. For example: befriending, arts and crafts groups, exercise classes, complementary therapy and counselling. The evidence analysed the effectiveness of this bundle of services, which were offered to patients through the mechanism social prescribing. The evidence presented here does not aim to evaluate the effectiveness or return on investment of social prescribing itself, but rather the services offered through this mechanism. It is also important to note that this is not the official NHS social prescribing scheme.

For further information see www.instituteofhealthequity.org/resources-reports/the-social-and-economic-impact-of-the-rotherham-social-prescribing-pilot-main-evaluation-report

1.4.7 Health coaching: inter-professional working

Health coaching was introduced as one of several interventions in the Salford Integrated Care Programme which aimed to join together professionals to provide integrated health and social care services. Health coaching involved a regular series of phone calls between patient and professionals to provide support and encouragement to the patient, and promote healthy behaviours such as treatment control, healthy diet, physical activity and mobility, rehabilitation, and good mental health.

For further information see www.ncbi.nlm.nih.gov/pubmed/30183219

1.4.8 BELLA for self-management of COPD

The Better Living with Long term Airways disease (BELLA) intervention provided training in self-management techniques for moderate-severe COPD delivered by lay people. The BELLA intervention addressed 5 core self-management skills: defining the problem, decision making, finding and using resources, forming partnerships with healthcare providers, and taking action. Each course involved 2 trained lay (peer) tutors (at least one of whom had COPD), who delivered a structured, manualised, 3-hour session once a week for 7 weeks at a local community centre. One of the sessions included input from a respiratory consultant.

For further information see www.ncbi.nlm.nih.gov/pubmed/23265228

1.4.9 Homecare reablement

Homecare reablement is an approach within home care services which aims to help people do things for themselves rather than relying on social support. Participants' criteria for inclusion were: newly referred to adult social care services (or, for existing service users, if they had been referred for a review following a major change in circumstances and needs); they had been accepted as eligible for social care support under local FACS criteria; aged 65 years or older. The intervention was delivered across 5 different sites for a period of up to 6 weeks. A range of interventions were offered including personal care (e.g. assistance with washing and dressing), practical support (e.g. meal preparation), prompting medication, information, psychological and emotional support, increasing social engagements, and advice to reduce the risk of falls.

For further information see https://pure.york.ac.uk/portal/en/publications/home-care-reablement-services(058c2053-3860-4ae3-aa76-0e3347515289)/export.html

1.4.10 Comparison with ESSENCE

The ESSENCE Project, led by the London School of Economics, examines the economic case for a range of adult social care interventions. One of the aims of the ESSENCE Project is to make economic evidence available to decision-makers in England's adult social care system to inform their commissioning decisions. The findings are contained within a compendium of resources, including evidence, case studies and tools for local areas to use. An organisational framework is used to categorise the interventions, and includes those services listed in Figure 1.1 below, although not all contain links to evidence at this point.

The content of the ESSENCE compendium has been compared to the Older Adult's NHS and Social Care ROI Tool, in order to comment on commonalities and differences between the two. This reveals that some interventions are common to both tools, and some are contained within one or the other. The likely reason for any differences noted is the different inclusion criteria being used for the ESSENCE case studies and the ROI tool, as well as differing timelines of literature searches. To be included in the ROI tool, interventions required evidence of economic impact, plus sufficient information on costs to allow local level modelling, using population level data.

Furthermore, interventions had to show an impact on the health of older people, and/or local authority funded social care costs. Some interventions were viewed by the Project Steering Group to be outside the scope of ROI tool e.g. learning disabilities (unless specifically targeted at older adults), employment support, carers services (unless there was evidence for impact on the wellbeing of service users).

The ESSENCE compendium conducted searches looking at publication either in peer-review journals or the grey literature reporting on:

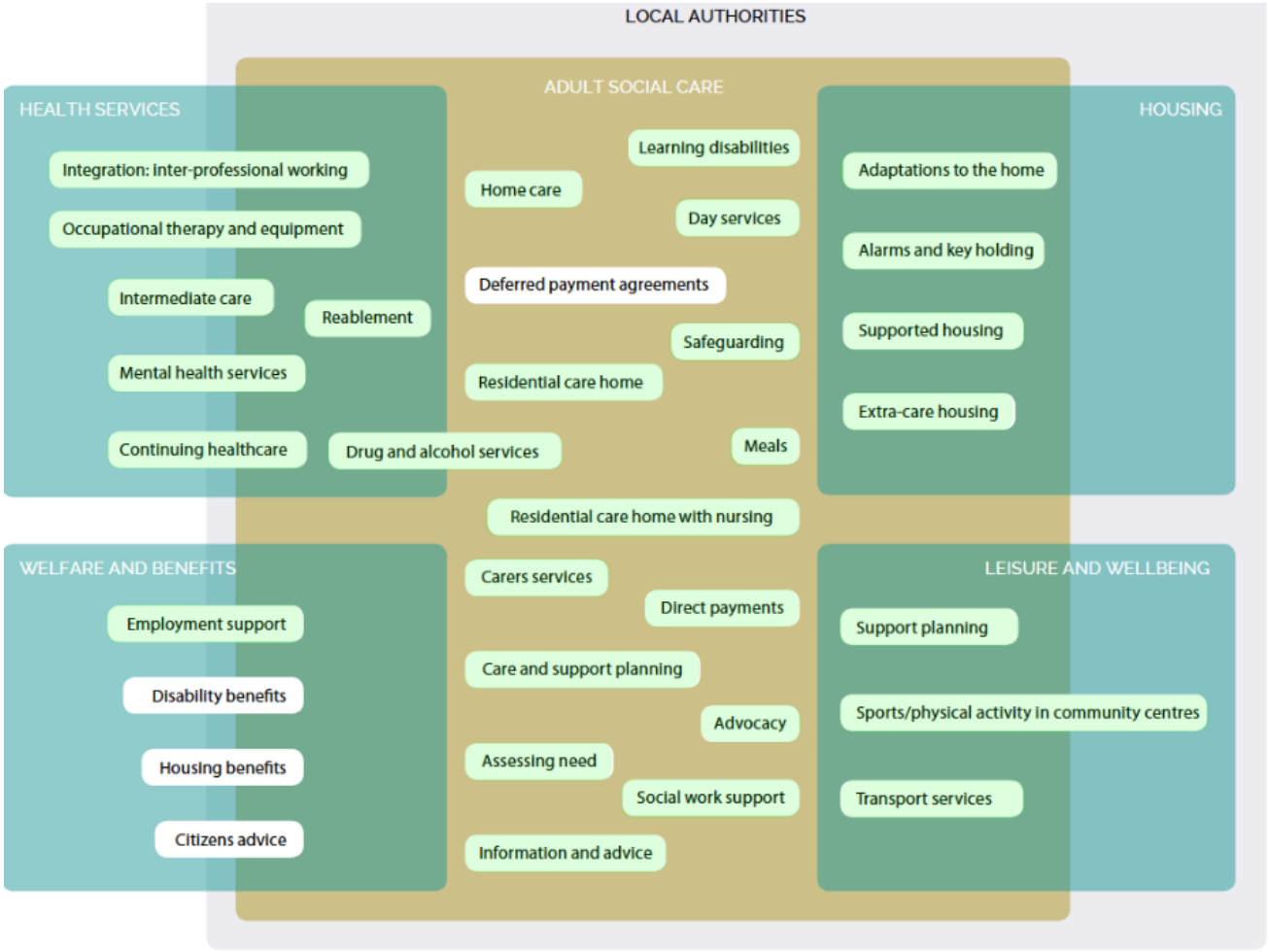
- social care interventions and services *and*
- economic evidence (any type of economic evaluation).

Where they considered the evidence to be sufficiently robust, they produced case studies. It is possible that case studies in the ESSENCE Compendium are based on evidence that has become available since literature searches for the ROI tool were performed in summer 2018, as the ESSENCE project searched the literature until March 2019. As the ESSENCE Compendium is being continually updated, the following comparison between the Older Adults NHS and Social Care ROI tool and ESSENCE reflects the position as of November 2019:

- interventions included in the ROI tool that are also included as ESSENCE case studies
    - help at home scheme
    - WHELD Intervention for People Living with Dementia in Nursing Homes (included in the case study for residential care home with nursing)
    - homecare reablement (part of ESSENCE case study evidence for reablement)
- interventions included in the ROI tool that are included in ESSENCE 'evidence' section but not as full case studies
    - community singing
    - bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions, using social prescribing and other approaches to put patients in touch with services
    - befriending (the study used in the ROI tool is not the same as the study used by ESSENCE, but there is a paper on preventing loneliness and isolation included in 'Evidence')

- interventions included as ESSENCE case studies and considered for inclusion in the ROI tool, which were excluded at the final stage because they didn't have sufficient evidence to input into a local level ROI calculation. Users can refer to the ESSENCE compendium should they want more information about them
  - extracare
- interventions included in the ROI tool that are not included in ESSENCE, due to different inclusion criteria
  - health coaching (inter-professional working)
  - INTERCOM: hospital discharge support for COPD patients
  - BELLA for self-management of COPD

Figure 1.1: List of services covered by ESSENCE



2. Methods

2.1 Literature search and review

A literature review protocol was developed which included the proposed eligibility criteria, the search stages and the process for study selection and data extraction. It was decided to conduct several rounds of targeted, pragmatic searches, an approach which would prioritise finding a manageable number of highly relevant papers, rather than attempting to provide 'comprehensive' retrieval of all of the relevant literature.

The planned rounds of searching were:

1. searches for studies reporting Adult Social Care Outcomes Toolkit (ASCOT) or ICEpop CAPability measure for Older people (ICECAP-O) outcome measures
2. targeted, pragmatic searches for economic evaluations, resource use or health state utility value studies of social care interventions in older people
3. harvesting of studies from relevant studies and reviews
4. targeted web searches
5. analysis of material provided from PHE and topic experts
6. citation searches and / or author searches
7. targeted, gap-filling searches

The resulting records were screened using title and abstract against the agreed eligibility criteria. The literature review produced 5,441 records, of which 150 contained potentially relevant information. In order to arrive at the final set of interventions to be included in the tool, an iterative process of examining the literature was followed, which included the assessment and prioritisation stages below.

2.2 Assessment and prioritisation of interventions

Full details of the assessment and prioritisation stages to identify the best economic evidence are available in the Technical Report. A summary of the key points and results is provided here. The over view of the stages can be seen in Figure 2.1.

Preliminary data extraction

This was carried out to assess the extent and strength of evidence on the different interventions to be included in the ROI tool. Key data on intervention and results was collected. The records judged to have stronger evidence of cost effectiveness were those with strong study design and showing positive results.

Stakeholder/expert workshop

Held to obtain views on the outcome of the preliminary data extraction and advise on the best way to use the evidence. Following the workshop discussion, it was agreed that the next stage of prioritisation should focus on 'confidence in the evidence', ranking the interventions according to this criterion. The attendees at the workshop advised that while the 'hierarchy of evidence' could inform this assessment, evidence based on less robust methods (e.g. case studies) should not be dismissed, due to the difficulty of carrying out studies such as RCTs in a social care context.

Confidence in the evidence of cost effectiveness

A score and comment were allocated based on the number of records for each intervention type showing positive cost effectiveness results, quality of study design and country of evidence.

Assessment of where benefits fall

It was viewed to be important that the interventions included in the tool contributed economic benefit to either social care services and/or societal benefits in the form of improved quality of life (evidenced by QALY measurement). It was decided that those interventions which only showed financial benefits to the NHS and had no impact on social care services or quality/quantity of life, should be dropped as they were not relevant to the scope of the project.

Full data extraction

To review the records for specific details on inputs and outcomes so the most appropriate and robust record (and its data) could be selected upon which to base the ROI calculations in the tool. This stage also included a quality assessment based on the Appraisal Checklist for Economic Evaluations, in Appendix H of the NICE Process and Methods manual.[9] Following discussion with the Steering group, it was agreed that those interventions assessed as 'Yes', plus a small number of the 'Maybes' would be taken forward to the next stage.

Assessment of population information and UK relevance

The intention was for the tool to be pre-populated with local data on the population eligible for each intervention. For some interventions, where the population was less well defined, it was not clear if this would be possible as it included specific characteristics other than age e.g. 50+ years in care homes. The next step was to assess in more detail the population information for each of these interventions, and any

information which may be pertinent to 'transferability' (i.e. UK relevance). A desk review exercise was undertaken, plus suggestions on data sources were sought from the Steering Group. As a result of this assessment, interventions were excluded where it would be unlikely to find the information, where specific individual level characteristics would make it difficult for local areas to estimate target populations, and where the evidence was from countries where the health and social care systems differed to the UK.

Assessment of modelling assumptions

Further assessment and critical appraisal of the detail in each study, to understand any assumptions that would be needed for the ROI modelling and also to select the strongest evidence where there was more than one study on similar interventions. The next steps following the modelling assessment are summarised in Table 2.1.

Table 2.1: Next steps following modelling assessment

Include in the ROI tool	Do further targeted searches / assessment	Don't include in the ROI tool
Bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions, using social prescribing and other approaches to put patients in touch with services Befriending Community singing Dementia: nursing home intervention Volunteer help at home scheme Reablement (x2)	Inter-professional working (CIRACT) Self-management for COPD Telecare/assistive technology Hospital discharge support (INTERCOM) Extracare housing	Exercise for depression in care homes Social care – care planning (IBSEN) British Red Cross help at home Dementia early diagnosis

The recommended 'Includes' were all supported to take forward to the ROI tool development stage.

Additional targeted literature searching

For those interventions where the assessment of modelling assumptions found a lack of detail and or equivocal results, it was viewed that some additional targeted searching may yield more suitable evidence.

Final assessment

Following the additional literature searches it was agreed to include self-management for COPD and the new evidence found on inter-professional working in the tool. The remainder of the interventions in 1 were removed from the shortlist. Further information on the rationale for their exclusion is given in Table 2.2.

Table 2.2: Interventions excluded from final shortlist

Intervention	Rationale for exclusion
Extracare housing	Extracare can be described as self-contained accessible housing accommodation, with flexible access to 24-hour care and an emphasis on supporting and maintaining independence. From a policy perspective, extracare housing and sheltered housing is of interest to local authorities as an intervention option when they make local plans (e.g. JSNAs/housing strategies). The review initially found 10 records on extracare housing, comparing it to both residential care and to 'own home'. The Steering Group had expressed interest in including this intervention, albeit with cognisance that the required investment (and hence affordability) was on a larger scale than most of the other interventions being considered. Following full data extraction, the 4 studies with the greatest potential were reviewed in detail for their suitability (Goswell, 2014; Frontier Economics, 2010; Batty, 2017; IPC, 2011). Following detailed assessment, the inclusion of extracare in the ROI tool appeared to present some challenges. For example, the complexity of the inputs, which would require users of the tool to do significant work to derive locally specific model inputs, or use sample costs which may not be representative of their local area e.g. land prices, labour costs etc. This could potentially have been overcome by use of a disclaimer such as 'based on average house prices in the area'. A more significant concern was the fact that the most useable study was based on a cohort from 1995 and 2005, with the latter cohort observing insignificant changes. Expert opinion was therefore sought from academic advisors to the Social Care ROI project. In summary, extracare housing is an enormously varied term, and the level of care available, in addition to other linked facilities, is quite different from scheme to scheme. The evidence-base also goes out of date quite quickly because thresholds for moving into care homes (the nearest alternative) have massively shifted over the last decade or two. Some have found that extracare housing isn't the substitute for care homes that people first thought it would be. For people who have a high risk of falling, or of 'wandering', or can need help at night-time, extracare housing is not often considered a safe alternative - and this accounts - today (but not 20 years ago) - of a huge proportion of care home admissions. For the more modest number for whom it is suitable, there then comes a question of prognosis (e.g. in dementia) - is it worth moving someone into extracare housing, if they will need to move again in 9 months' time?

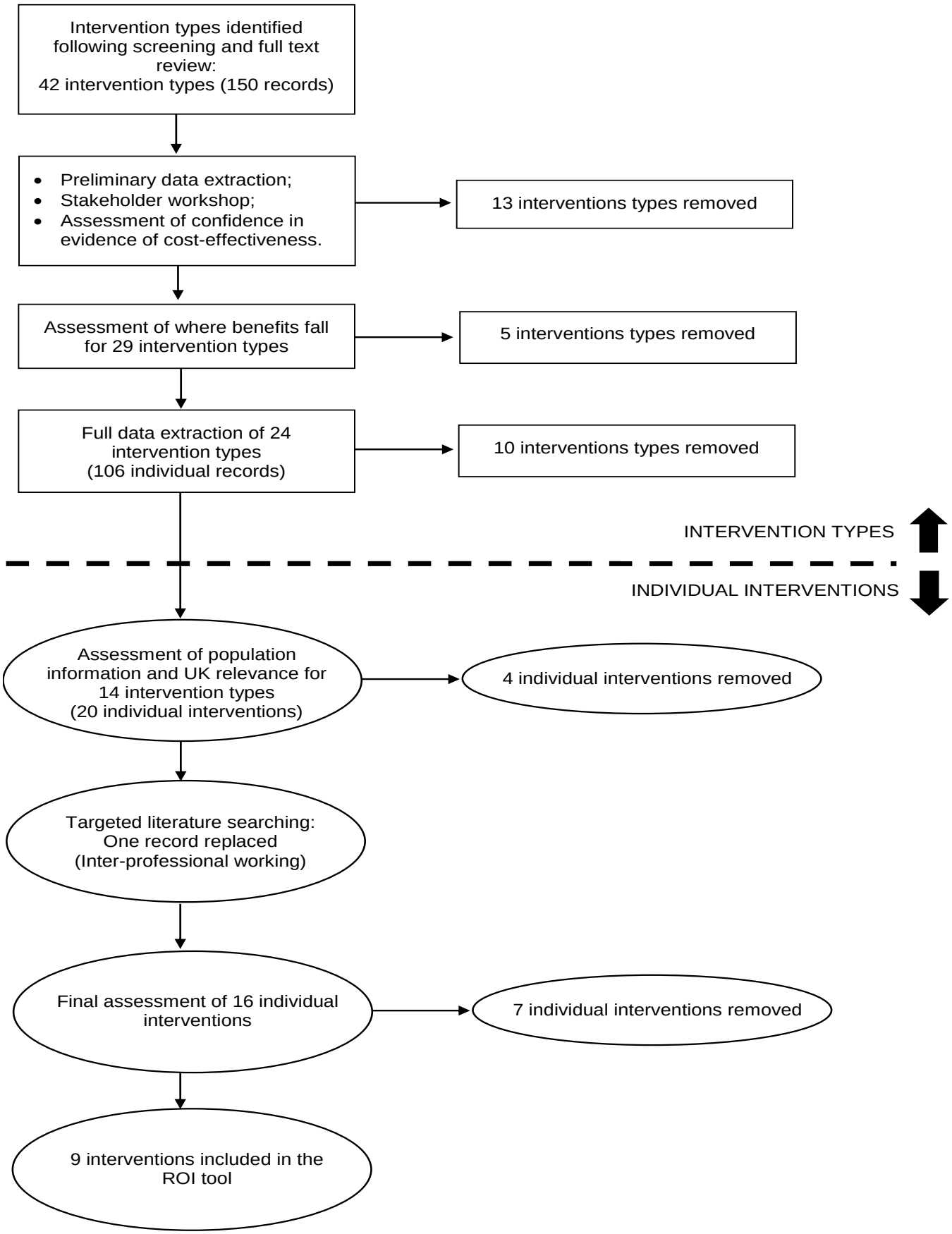
Intervention	Rationale for exclusion
	In conclusion, whilst these studies seem to be the most advanced available in the area, there remain important questions as to whether extracare offers a cost-effective alternative to residential care homes or care in the home. The data on which they are based is dated, the methods are limited and the associated costs in today's world might well look different. In light of this compelling advice, it was agreed with the PHE project team that extracare housing would not be included in the ROI tool.
Telecare	Telecare is briefly described as assistive technology, alarms and 24 hour access to remote telephone assistance in the home to enable elderly and physically less able people to remain living in their own homes. The literature review found mixed evidence (including the Whole Systems Demonstrator studies), and telecare was shortlisted for consideration for inclusion in the ROI tool. While on balance the evidence seemed to be towards positive economic impact, the studies progressing to the final stage of the review (Goodacre et al, 2008; Clifford et al, 2012) did not show strong results and had shortcomings from a modelling perspective, such as, population info that couldn't be easily re-produced in local areas. Additional targeted literature searches were undertaken and no better evidence on telecare was found. Expert opinion was therefore sought from academic advisors on the merits, or otherwise of telecare from a cost impact/cost effectiveness perspective. In their opinion, the most rigorous study to date is the Whole Systems Demonstrator studies, plus a couple of further studies which suggested that telecare didn't produce cost-effective outcomes. A paper which looked at the global case for investment in assistive technology and telecare was not usable for the model as it was based on modelling of hypothetical scenarios and not observed data. Other studies, while not focusing on cost-benefit, have revealed interesting findings as to why technology might not be cost-effective: poor quality training of telecare staff responsible for assessing for telecare, limited range of telecare availability due to LA commissioning behaviour etc. leading to poor matching of need with device, and significant rates of abandonment etc. In light of this advice, plus the earlier consideration of positivity bias (as several papers had been excluded due to not showing evidence of cost effectiveness), it was agreed with the PHE project team that telecare would be excluded from the ROI tool.
Exercise for depression in care homes	A 'whole-home' exercise intervention, consisting of training for care home staff backed up with a twice-weekly, physiotherapist-led exercise group, compared to a depression awareness training programme for care home staff. (Underwood, 2013). The large OPERA trial found no evidence that exercise is effective for depression in care homes with no difference in quality of life or costs compared to depression awareness training for care home staff. It was unclear whether exercise would have been more effective that doing nothing. As the intervention had poor evidence of effectiveness it was recommended that this it was not included in the ROI tool.

Intervention	Rationale for exclusion
Social care – care planning (IBSEN)	There were 2 aspects of service delivery- social care services provided as part of a care package for people living in their own home and the care planning approach (NICE, 2015). The NICE model used data from the Personal Budgets evaluation (the IBSEN study) with an intervention that was a combination of a care package and care planning. As care packages funded through personal budgets should be provided by local authorities if people meet eligibility criteria, this is not useful to include in a decision making tool. The effect of 'care planning' – which as an intervention was poorly described in the above economics report – was not separately ascertained in terms of costs and effectiveness. No separate information on social care costs from health care costs were provided. Findings on social care outcomes were based on the receipt or not of home care and not of a care planning approach. As the intervention is poorly defined, the costs for social care and the benefits of care planning cannot be isolated and the evidence is based upon the Personal Budgets evaluation, it was recommended that this intervention was not included in the ROI tool.
British Red Cross help at home	British Red Cross (BRC) Support at Home service: short-term practical and emotional support aimed at developing confidence and independence especially after difficult times such as hospital stay provided by a mix of paid staff and volunteers. (Dixon et al, 2014). The study was not a robust evaluation and was based upon before and after responses from 50 people experiencing 4 different variations of the Support at Home model. The assumptions that were used to arrive at potential cost savings would have to be replicated with the user of the tool having to verify whether they agreed with these assumptions. Given the lack of evidence available on actual effect, the tool could only produce either a threshold analysis or a hypothetical ROI. It was recommended that this intervention was not included in the ROI tool.
Dementia - early diagnosis	The Croydon Memory Service Model provided early diagnosis of dementia as well as information and direct medical, psychological and social help to patients and their families (Banerjee et, 2009). Further consideration of the paper concluded that the findings are based on prospective modelling of scenarios, using evidence from other clinical studies. The effectiveness of the intervention was assumed, and linked to a reduction in admissions and lengths of stay in care homes, savings of which are offset by costs of care if people remain in their own homes. There was no actual effectiveness data in the model and only scenarios were run, so the tool could only produce either a threshold analysis or a hypothetical ROI. It was recommended that this intervention was not included in the ROI tool.
Reablement	The NICE report (2017) reviewed a short-term individualised service designed to promote independence and minimise the need for ongoing support services, for those at home (not post-hospital), modelling a hypothetical group of patients based on study groups from England and Australia. This record was removed in favour of the specific reablement intervention reported in Glendinning et al, 2011).

Figure 2.1 summarises the process that has led to the selection of the interventions included in the tool, and the number of interventions removed at each stage. For practical reasons, in the early stages of the review work, papers were grouped into

'intervention types' e.g. care co-ordination, housing, telecare. Following the full data extraction stage, the interventions included in each paper were no longer grouped and were reported individually as 'individual interventions'. For more detail please see the Technical Report.

Figure 2.1: Overview of the assessment and prioritisation process



2.3 Positivity bias

At the title/abstract screening stage, all records including cost effectiveness/cost impact were selected for further review, regardless of whether the results were positive, negative or neutral. At the full text review stage, papers with no evidence of positive impact were excluded. It is acknowledged that there is an inherent risk of introducing positivity bias to the review at this point. Further details of the excluded records can be found in the Technical Report.

2.4 Development of the economic tool

Full details of the tool development are available in the Technical Report. A summary of the key points is provided here, describing how the different components of the tool work in practice.

The tool was developed in Microsoft Excel to be interactive and user friendly. Stakeholder opinion and engagement helped inform the development of the tool. The initial design was shared with the Steering Group for comments, which focussed on the adopted methodology, structure, perspective, population, calculations and results. The Steering Group also provided feedback on 2 prototype versions, with particular regard to the tool's functionality and how it would be used in practice.

2.4.1 Population

The economic tool focuses on interventions which aim to reduce the need for social care and health services in older adults. Return on investment calculations are obtained for specific geographical areas including nationally for England and for individual local authorities (LAs), NHS Clinical Commissioning Groups (CCGs) and NHS Sustainability and Transformation Partnerships (STPs). Several drop down menus are included allowing users to select the relevant population for their local area, and to define "older people" as being either 65+ or 80+ years old.

The in-built populations are further refined by identifying the percentage of the population who are eligible for the intervention. Each intervention's eligibility criteria represents the underlying study population, for example, only people with dementia living in nursing homes are eligible to receive the WHELD intervention. Therefore, the model includes prevalence estimates to establish the percentage of people with dementia who live in nursing homes for national LA, CCG, and STP populations. For interventions where specific local data are not available, eligibility is assumed to correspond with regional or national rates. Eligibility for the intervention is also refined by age group, as many of the interventions are likely to be available to a higher proportion of people aged 80+ when compared with the 65+ age group.

The model populations are also adjusted to represent the expected uptake of the intervention in the eligible population. There are no in-built modelling assumptions regarding uptake which is defined entirely through user input.

2.4.2 Model inputs

The model's inputs are obtained directly from the published studies identified from the literature review. The model's monetary inputs are split into intervention costs and costs/savings incurred by the NHS and social care budgets as a direct consequence or outcome of the intervention. All monetary inputs have been uprated to 2018/19 prices using the Hospital & Community Health Services Pay & Prices Index.[10]

The model inputs also include the estimated health impact of each intervention in terms quality adjusted life years (QALYs), a measure of health which combines both quality (morbidity) and quantity (length) of life. More specifically, QALYs are derived by estimating a person's health related quality of life (HRQoL) by assigning utility values to different health states, where full health is valued with a utility equal to 1, and death valued with utility equal to 0. QALYs are aggregated by obtaining the subject's HRQoL at different time points and summing these over a person's projected lifetime (or other time period e.g. matching the time horizon of the analysis). HM Treasury and The Department of Health advise that each QALY should be monetised at a value of £60,000.[11]

This value is higher than the cost-effectiveness threshold typically applied by the National Institute of Health and care Excellence (NICE) for the technology appraisals programme (£20,000 to £30,000), as it does not consider the opportunity cost of funding. Applying the societal value of a QALY was seen as the most relevant approach, as no relevant cost-effectiveness threshold exists in the literature for local authority funded social care.

2.4.3 Calculation of ROI

The key result of the model is the return on investment (ROI) associated with each intervention which is calculated using the equation below:

$$ROI = \frac{\sum Total\ discounted\ benefits}{\sum Total\ discounted\ costs}$$

The ROI equation technically estimates a cost benefit ratio, indicating the return on investment for every £1 spent on an intervention. A positive return on investment is indicated by a value above £1, whereas values lower than £1 indicate a net loss. A value lower than £1 indicates that a net loss is greater, the greater the investment. The equation is consistent with methods applied for other ROI tools published by PHE, but

differs from some other approaches used to calculate ROI, where typically total net benefits minus total costs are then divided by total costs.

The model presents ROI for 4 different analytical perspectives:

- NHS financial ROI where benefits are measured exclusively as gross NHS savings for every £1 spent by commissioners on the intervention
- social care financial ROI where benefits are measured exclusively as gross social care savings for every £1 spent by commissioners on the intervention
- financial ROI where benefits are measured as gross NHS and social care savings for every £1 spent by commissioners on the intervention
- societal ROI where benefits include gross NHS and social care savings in addition to monetised QALYs for every £1 spent by commissioners on the intervention

2.4.4 Estimating the overall impact of interventions

The overall cost and the health impact of the intervention in the population of interest is reported as a secondary outcome within the tool. Overall population impacts are estimated by multiplying 'per person' intervention costs, NHS costs, social care costs and QALYs by the size of the population expected to receive and take up the intervention. Estimates of the overall population impact of the intervention were considered important as each intervention has a different eligible population. For example, an intervention could have a positive and large ROI (per person) but may have a relatively modest impact on a commissioner's budget if the intervention is only available to a small portion of the population.

2.4.5 Time periods and discounting

The model makes predictions of costs and benefits over a time period corresponding with the time horizon reported in each study. Therefore intervention time horizons differed ranging from 6-24 months. Discounting is usually applied for outcomes which occur more than one year after the intervention, with DHSC recommended discounts rates equal to 3.5% for costs and 1.5% for benefits (QALYs). Discounting was not applicable for the majority of the interventions where study time horizons were less than or equal to 12 months. Bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions (24 months), hospital discharge support (24 months) and inter-professional working (20 months) had time horizons with outcomes occurring after 12 months.

Discounting was applied at the recommended rates for the bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions and hospital discharge support interventions, by assuming outcomes occurred equally across the study time horizon (e.g. if total costs = £200 it was assumed year 1 costs=

£100 and year 2 costs = £100, the discount factor was then applied to year 2 costs). Costs and QALYs were obtained directly for the inter-professional working intervention as outcomes had already been discounted within the study.

2.4.6 Sensitivity analysis

Deterministic sensitivity analysis is used in economic models to examine the uncertainty associated with model input parameters. Due to the heterogeneous methods of reporting in the studies used to underpin the model, the only consistent input values across all interventions are the composite inputs used to estimate ROI (i.e. total intervention costs, NHS costs/savings, social care costs/savings and QALYs). Therefore, sensitivity analysis is performed by varying the value of each composite input. The model also establishes a threshold for each composite input where the societal ROI would be equal to one (i.e. be cost neutral). For example, a maximum value for intervention costs is identified which would result in an intervention not providing a positive return on investment to society. All sensitivity analyses are plotted on graphs, highlighting when the societal ROI is equal to 1.

2.4.7 Using the tool in practice

A full user guide is built into the tool. The guide describes the different steps required to generate results and walks users through an example intervention where the model is used to calculate the ROI for community singing for people aged 65+, in the York Local Authority area.

In addition to the in-built analyses, the tool can be updated to assess the ROI for a user defined intervention. The additional ROI analysis requires users to enter information on a selected intervention of their choice by including information on intervention costs and the impact of the user defined intervention on NHS costs, social care costs and QALYs. Once all model inputs are updated, the tool automatically calculates the ROI and overall impact of the user defined intervention for the selected population.

3. Results of ROI modelling

The model results for each intervention included in the tool are presented below. The results describe the financial ROI for each intervention, as well as indicating the population impact of interventions in terms of per person and total intervention costs, NHS savings, social care savings and QALY gain. Information on the size of the population eligible for the analysis is also provided.

For the purposes of the sample analysis, the York Local Authority was assumed to be the geographical area of interest. Meanwhile, older people were defined as those aged 65+. An arbitrary assumption was applied where uptake of the intervention in the eligible population was set to 30%. This value can be changed by the model user. All other parameters were based upon model inputs obtained from literature sources (i.e. using evidence from the studies underpinning each analysis rather than applying user defined parameters). All outcomes represent incremental differences vs. the comparator included in the underlying study, these typically being defined as 'treatment as usual' or 'no intervention'.

Further information on the limitations of the analysis and a summary of the level of uncertainty can be found in Section 4.5

3.1 Community singing

The in-built model population assumed 100% of people aged 65+ in the York LA were eligible for the community singing intervention. The total population size included in the analysis was 11,847 after adjusting for uptake (equal to 30%). The results of the analysis for community singing are shown in and . There was a net per person financial cost associated with implementing the intervention: Intervention costs equalled £19.64, NHS costs including general practice visits, social care involvement, inpatient stays and outpatient stays equalled £39.52 exceeding the £3.41 of savings to social care. Increased NHS costs for those who enrolled in community singings may have been due to chance as they were primarily driven by non-significant secondary care costs (mean = £40.69, 95% confidence interval = -£155.12, £236.50). The intervention had a positive and statistically significant impact on health with incremental QALYs equal to 0.015 per person. Given the £60,000 value per QALY, the positive health benefits resulted in a substantial positive societal ROI where every £1 invested in the intervention was estimated to achieve £43.99 in total benefit.

Table 3.1: Cost of health impact of community singing

			95% CI for population	
	Population costs	Costs per person	Lower bound	Upper bound
Cost of intervention delivery	£225,572	£19.64	Not reported	Not reported
NHS costs	£454,014	£39.52	Not reported	Not reported
Social care costs	-£39,168	-£3.41	-£7.40	£0.31
QALY gains	172.31	0.015	0.014	0.016
Value of QALY gains	£10,338,300	£900	£840	£960

Table 3.2: Return on investment of community singing

	ROI
Financial (NHS costs only)	£1.00:-£2.01
Financial (Social care costs only)	£1.00:£0.17
Financial (NHS and social care costs)	£1.00:-£1.84
Societal (NHS costs, social care costs, QALYs)	£1.00:£43.99

3.2 Help at home scheme

The in-built model population assumed 37.5% of people aged 65+ in the York LA were eligible for the help at home intervention. The total population size included in the analysis was 4,311 after adjusting for uptake (equal to 30%).

The results of the analysis for the help at home intervention are shown in Table 3.3 and 3.4. There was a net per person financial saving associated with implementing the intervention as intervention costs (£889.05) were exceeded by the combined savings to the NHS (£2,352.63) and social care (£270.90). The intervention also had a positive impact on health with incremental QALYs equal to 0.042 per person. This resulted in a positive societal ROI where every £1 invested in the intervention was estimated to achieve £5.79 in total benefit.

Table 3.3: Cost and health impact of the help at home scheme

			95% CI for population	
	Population costs	Costs per person	Lower bound	Upper bound
Cost of intervention delivery	£3,832,498	£889.05	Not reported	Not reported
NHS costs	-£10,141,629	-£2,352.63	Not reported	Not reported
Social care costs	-£1,167,786	-£270.90	Not reported	Not reported
QALY gains	181.05	0.042	Not reported	Not reported
Value of QALY gains	£10,863,121	£2,520	Not reported	Not reported

Table 3.4: ROI of the help at home scheme

	ROI
Financial (NHS costs only)	£1.00: £2.65
Financial (Social care costs only)	£1.00: £0.30
Financial (NHS and social care costs)	£1.00: £2.95
Societal (NHS costs, social care costs, QALYs)	£1.00: £5.79

3.3 Befriending

The in-built model population assumed 4.61% of people aged 65+ in the York LA were eligible for the befriending intervention. The total population size included in the analysis was 529 after adjusting for uptake (equal to 30%).

The results of the analysis for befriending are shown in and . There was a net per person financial cost associated with implementing the intervention as intervention costs (£99.84) exceeded the estimated savings to the NHS (£47.00). No social care costs/savings were reported. The intervention had a small positive impact on health with incremental QALYs equal to 0.009 per person. This resulted in a positive societal ROI where every £1 invested in the intervention was estimated to achieve £5.88 in total benefit.

Table 3.5: Cost and health impact of befriending

			95% CI for population	
	Population costs	Costs per person	Lower bound	Upper bound
Cost of intervention delivery	£52,830	£99.84	Not reported	Not reported
NHS costs	-£24,870	-£47.00	Not reported	Not reported
Social care costs	Not reported	Not reported	Not reported	Not reported
QALY gains	4.76	0.009	Not reported	Not reported
Value of QALY gains	£285,737	£540	Not reported	Not reported

Table 3.6: ROI of befriending

	ROI
Financial (NHS costs only)	£1.00: 0.47
Financial (Social care costs only)	N/A
Financial (NHS and social care costs)	N/A
Societal (NHS costs, social care costs, QALYs)	£1.00: £5.88

3.4 WHELD intervention for people living with dementia in nursing homes

The in-built model population assumed 1.10% of people aged 65+ in the York LA were eligible for the WHELD intervention. The total population size included in the analysis was 127 after adjusting for uptake (equal to 30%).

The results of the analysis for the WHELD intervention are shown in and . There was a net per person financial saving associated with implementing the intervention as intervention costs (£2,820.33) were exceeded by the combined savings to the NHS and social care (£4,927.52). The majority of savings occurred due to reductions in care home accommodation costs (-£4,573.03) which were assumed to fall on both NHS and social care budgets. NHS savings excluding care home costs equalled just £354.49 per person. The intervention had a positive and statistically significant impact on health with incremental QALYs equal to 0.010 per person. This resulted in a positive societal ROI where every £1 invested in the intervention was estimated to achieve £1.96 in total benefit.

Table 3.7: Cost and health impact of the WHELD intervention

			95% CI for population	
	Population costs	**Costs per person**	**Lower bound**	**Upper bound**
Cost of intervention delivery	£357,821	£2,820.33	Not reported	Not reported
Care home accommodation costs	-£580,190	-£4,573.03	-£5,951.49	-£3,012.65
NHS costs (excluding care home accommodation costs)	-£44,975	-£354.49	Not reported	Not reported
NHS and social care costs (including care home costs)	-£625,165	-£4,927.52	-£1,345.82	-£364.20
QALY gains	1.27	0.010	0.001	0.018
Value of QALY gains	£76,123	£600	£60	£1,080

Table 3.8: ROI of the WHELD intervention

	ROI
Financial (NHS costs only)	£1.00: £0.13
Financial (Social care costs only)	Not reported
Financial (NHS and social care costs)	£1.00: £1.75
Societal (NHS costs, social care costs, QALYs)	£1.00: £1.96

3.5 INTERCOM: Hospital discharge support for COPD patients

The in-built model population assumed 3.81% of people aged 65+ in the York LA were eligible for the INTERCOM intervention. The total population size included in the analysis was 437 after adjusting for uptake (equal to 30%).

The results of the analysis for the INTERCOM intervention are shown in Table 3.9 and 3.10. There was a net per person financial cost associated with implementing the intervention where intervention costs equalled £1,210.24 and NHS costs equalled £532.38. No social care costs/savings were reported. The intervention had a positive impact on health with incremental QALYs equal to 0.079 per person, however this effect was not statistically significant. Overall the INTERCOM intervention had a positive societal ROI where every £1 invested in the intervention was estimated to achieve £3.50 in total benefit.

Table 3.9: Cost and health impact of the INTERCOM intervention

			95% CI for population	
	Population costs	**Costs per person**	**Lower bound**	**Upper bound**
Cost of intervention delivery	£529,055	£1,210.24	Not reported	Not reported
NHS costs	£232,727	£532.38	Not reported	Not reported
Social care costs	Not reported	Not reported	Not reported	Not reported
QALY gains	34.71	0.079	-0.10	0.179
Value of QALY gains	£2,082,812	£4,765	-£600	£10,800

Table 3.10: ROI of the INTERCOM intervention

	ROI
Financial (NHS costs only)	£1.00: -£0.44
Financial (Social care costs only)	Not reported
Financial (NHS and social care costs)	Not reported
Societal (NHS costs, social care costs, QALYs)	£1.00: £3.50

3.6 Bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions

The in-built model population assumed 5.00% of people aged 65+ in the York LA were eligible for this intervention. The total population size included in the analysis was 574 after adjusting for uptake (equal to 30%).

The results of the analysis for this intervention are shown in and . There was a net per person financial cost associated with implementing the intervention as intervention costs (£708.62) exceeded the expected savings to the NHS (£347.96). No social care costs/savings were reported. The intervention had a positive impact on health with incremental QALYs equal to 0.024 per person. Overall it had a positive societal ROI where every £1 invested in the intervention was estimated to achieve £2.54 in total benefit. It is expected that benefits occurred due to the services that were offered to eligible patients, rather than the fact that these services were offered to patients through social prescribing.

Table 3.11: Cost and health impact of bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions

			95% CI for population	
	Population costs	Costs per person	Lower bound	Upper bound
Cost of intervention delivery	£406,994	£708.62	Not reported	Not reported
NHS costs	-£199,853	-£347.96	Not reported	Not reported
Social care costs	Not reported	Not reported	Not reported	Not reported
QALY gains	13.93	0.024	Not reported	Not reported
Value of QALY gains	£835,775	£1,455	Not reported	Not reported

Table 3.12: ROI of bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions

	ROI
Financial (NHS costs only)	£1.00: £0.49
Financial (Social care costs only)	Not reported
Financial (NHS and social care costs)	Not reported
Societal (NHS costs, social care costs, QALYs)	£1.00: £2.54

3.7 Health coaching (inter-professional working)

The in-built model population assumed 54.00% of people aged 65+ in the York LA were eligible for health coaching. The total population size included in the analysis was 6,203 after adjusting for uptake (equal to 30%).

The results of the analysis for health coaching are shown in and . There was a net per person financial cost associated with implementing the intervention due to intervention costs equal to £81.69 and NHS costs equalling £73.45. No social care costs/savings were reported. The intervention had a positive impact on health with incremental QALYs equal to 0.019 per person, however this effect was not statistically significant. Overall health coaching had a positive societal ROI where every £1 invested in the intervention was estimated to achieve £13.06 in total benefit.

Table 3.13: Cost and health impact of health coaching

			95% CI for population	
	Population costs	Costs per person	Lower bound	Upper bound
Cost of intervention delivery	£506,694	£81.69	Not reported	Not reported
NHS costs	£455,624	£73.45	Not reported	Not reported
Social care costs	Not reported	Not reported	Not reported	Not reported
QALY gains	117.86	0.019	Not reported	Not reported
Value of QALY gains	£7,071,397	£1,140	Not reported	Not reported

Table 3.14: ROI of health coaching

	ROI
Financial (NHS costs only)	£1.00: -£0.90
Financial (Social care costs only)	Not reported
Financial (NHS and social care costs)	Not reported
Societal (NHS costs, social care costs, QALYs)	£1.00: £13.06

3.8 BELLA for self-management of COPD

The in-built model population assumed 3.81% of people aged 65+ in the York LA were eligible for the BELLA intervention. The total population size included in the analysis was 437 after adjusting for uptake (equal to 30%).

The results of the analysis for the BELLA intervention are shown in and . There was a net per person financial cost associated with implementing the intervention due to intervention costs equal to £411.10 and NHS costs equalling £104.09. No social care costs/savings were reported. The intervention had a positive impact on health with incremental QALYs equal to 0.113 per person. Overall the BELLA intervention had a positive societal ROI where every £1 invested in the intervention was estimated to achieve £16.24 in total benefit.

Table 3.15: Cost and health impact of the BELLA intervention

			95% CI for population	
	Population costs	Costs per person	Lower bound	Upper bound
Cost of intervention delivery	£179,713	£411.10	Not reported	Not reported
NHS costs	£45,503	£104.09	Not reported	Not reported
Social care costs	Not reported	Not reported	Not reported	Not reported
QALY gains	49.40	0.113	Not reported	Not reported
Value of QALY gains	£2,963,872	£6,780	Not reported	Not reported

Table 3.16: ROI of the BELLA intervention

	ROI
Financial (NHS costs only)	£1.00: -£0.25
Financial (Social care costs only)	Not reported
Financial (NHS and social care costs)	Not reported
Societal (NHS costs, social care costs, QALYs)	£1.00: £16.24

3.9 Homecare reablement

The in-built model population assumed 37.53% of people aged 65+ in the York LA were eligible for the homecare reablement intervention. The total population size included in the analysis was 4,311 after adjusting for uptake (equal to 30%).

The results of the analysis for homecare reablement are shown in and . There was a net per person financial cost associated with implementing the intervention due to intervention costs (£1,647.88) and NHS costs (£557.66) exceeding the estimated value of savings to social care (£1,897.79). The intervention had a positive impact on health with incremental QALYs equal to 0.107 per person. Overall, homecare reablement had a positive societal ROI where every £1 invested in the intervention was estimated to achieve £4.71 in total benefit.

Table 3.17: Cost and health impact of homecare reablement

			95% CI for population	
	Population costs	**Costs per person**	**Lower bound**	**Upper bound**
Cost of intervention delivery	£7,103,609	£1,647.88	Not reported	Not reported
NHS costs	£2,403,937	£557.66	Not reported	Not reported
Social care costs	-£8,180,911	-£1,897.79	Not reported	Not reported
QALY gains	461.25	0.107	Not reported	Not reported
Value of QALY gains	£27,675,094	£6,420	Not reported	Not reported

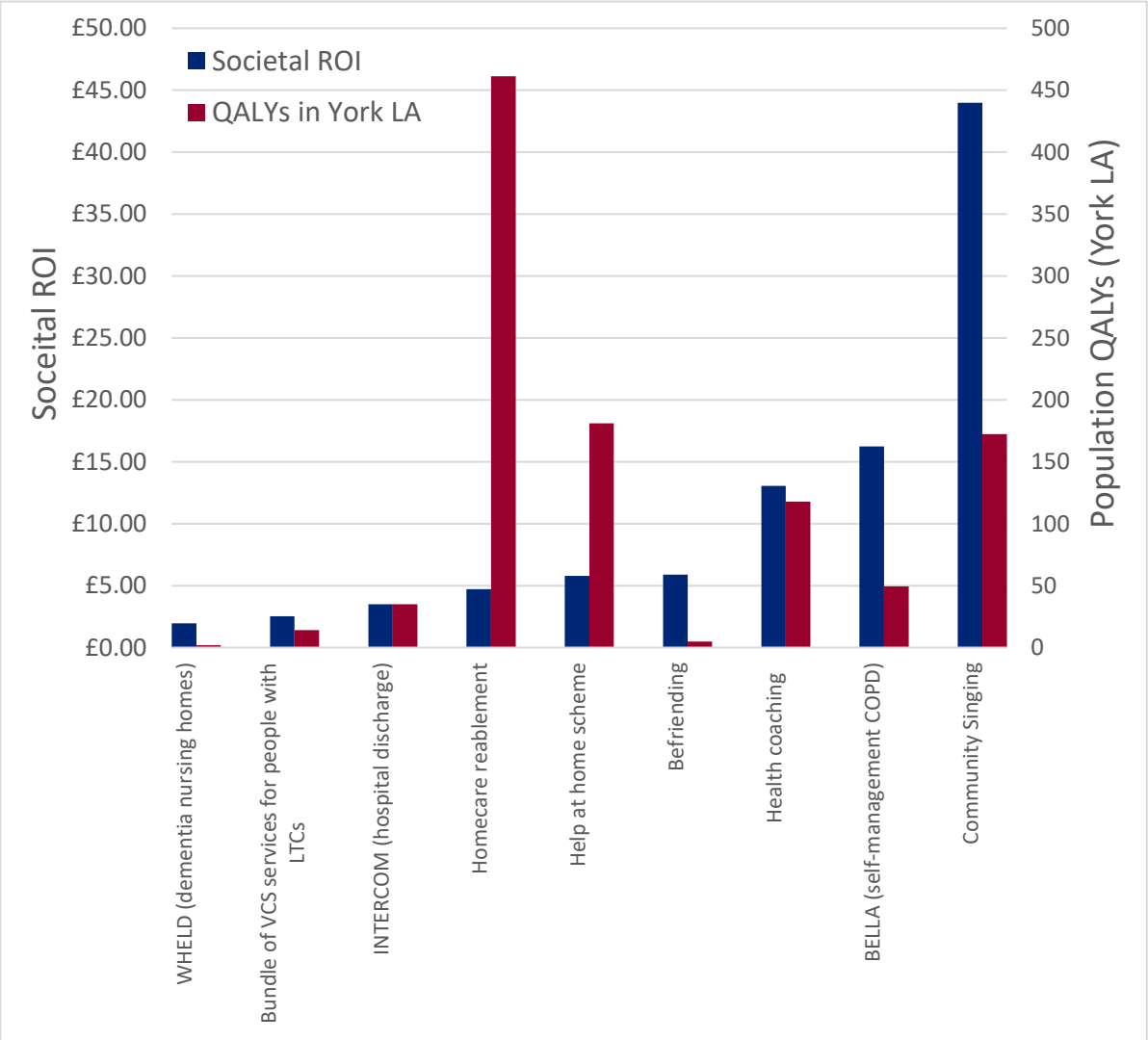
Table 3.18: ROI of homecare reablement

	ROI
Financial (NHS costs only)	£1.00: -£0.34
Financial (Social care costs only)	£1.00: £1.15
Financial (NHS and social care costs)	£1.00: £0.81
Societal (NHS costs, social care costs, QALYs)	£1.00: £4.71

3.10 Summary of results

The societal ROI and the population QALYs for all of the interventions are summarised in Figure 3.1. This shows the potential QALY gains if the interventions were to be implemented with the total eligible population.

Figure 3.1: Summary of societal ROI and population QALYs for all interventions



4. Discussion

4.1 ROI findings

The ROI tool has been developed to assess the return on investment for 9 social care related interventions aimed at older people. The tool can be used to demonstrate the impact of the interventions for a geographical population that is specifically relevant to local commissioners, be this a local authority, NHS Clinical Commissioning Group or NHS Sustainability and Transformation Partnership. Four levels of return on investment analysis have been presented, in recognition of the different perspectives that will be relevant to stakeholders considering commissioning a social care service for older adults. The financial ROI (NHS) and the financial ROI (social care) show the savings to commissioners in healthcare utilisation and social care utilisation respectively. The financial ROI (NHS & social care) combines the two together. The societal ROI also includes the value of quality adjusted life years gained. Users of the tool will wish to consider their local perspective and the relative priority of generating a ROI from a health and social care financial perspective or societal perspective.

Local commissioners can use the tool to establish the likely return on investment for the interventions in their local area. The tool also allows local commissioners to explore the overall impact of each intervention in the local population in terms of the potential cost of implementing the intervention, and the expected financial and health impact. Local commissioners might consider implementing any of the 9 interventions included in the tool, as each has a societal ROI greater than one, meaning their benefits are expected to exceed £1 for every £1 invested in the intervention. A summary of the financial and societal ROI for each intervention is provided in Table 4.1.

Table 4.1: Financial and societal ROI for each intervention in the sample analysis

Intervention	Financial ROI (NHS)	Financial ROI (NHS + Social Care)	Societal ROI
Community Singing	£1.00: -£2.01	£1.00: £0.17	£1.00: £43.99
Help at home scheme	£1.00: £2.65	£1.00: £2.95	£1.00: £5.79
Befriending	£1.00: £0.47	Not available	£1.00: £5.88
WHELD (dementia nursing homes)	Not available	£1.00: £1.75	£1.00: £1.96
INTERCOM (hospital discharge)	£1.00: -£0.44	Not available	£1.00: £3.50
Bundle of VCS services for patients with long-term conditions, using social prescribing and other approaches to put patients in touch with services	£1.00: £0.49	Not available	£1.00: £2.54
Health coaching	£1.00: -£0.90	Not available	£1.00: £13.06
BELLA (self-management COPD)	£1.00: -£0.25	Not available	£1.00: £16.24
Homecare reablement	£1.00: -£0.34	£1.00: £0.81	£1.00: £4.71

Positive financial ROIs were identified for 2 interventions: the WHELD dementia nursing homes intervention had a positive financial ROI when including care home accommodation costs, but the intervention was not cost saving to the NHS when accommodation costs were excluded. The help at home scheme had the most consistent positive return on investment, where the NHS financial ROI, the NHS + social care financial ROI and the societal ROI were greater than £1 for every £1 spent on the intervention.

The interventions that show a positive financial ROI are contributing to reduced demand on the health and social care system, either by increasing efficiency, achieving similar outcomes with fewer resources, or reducing demand by improving health outcomes. These returns may not yield cash releasing savings, unless capacity of services is reduced in line with the reduced demand. A reduction in demand may however, serve to release capacity and enable people to access services more quickly.

For 7 interventions, the positive societal return on investment appeared to be driven primarily by the beneficial impact of the intervention on people's health: Community singing, befriending, hospital discharge (INTERCOM), bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions, health coaching, self-management (BELLA for COPD) and reablement interventions did not have a positive financial return on investment, as the financial ROI's (NHS and social care costs (or NHS costs only if social care costs are unavailable)) were less than £1 for every £1 spent on the intervention.

For 5 interventions financial ROIs were negative, indicating that each £1 invested would lead to a loss greater than £1, as the evidence showed that service utilisation increased following the intervention, rather than decreased. These interventions were nonetheless included in the tool as there was considerable uncertainty about their effect on service utilisation (the effects were either not statistically significant, or statistical significance was not reported), and they improved the health of the population.

The inclusion of interventions showing only QALY gains is warranted, as there is evidence that social care savings tend to flow from increased quality of life among older people.[12] A regression analysis, for people aged 75+, shows that decreasing quality of life is associated with an increased probability of a patient requiring residential social care.

The QALY values included in the ROI tool are those where the study has reported QALYs derived using the EQ-5D measure. Two of the interventions (help at home and reablement) also reported changes in social care related QALYs, derived from the ASCOT (Adult Social Care Outcomes Toolkit) measure. The ASCOT measure contains health states related to health and social care, whereas EQ-5D predominantly measures physical and mental health. As an EQ-5D derived QALY may be missing

some aspects of social care related benefits, and an ASCOT derived QALY may be missing some aspects of health-related benefit, it is possible that the overall QALY gain for these 2 interventions may be slightly underestimated.

However, it was not considered appropriate to add benefits across social care related QALYs and health related QALYs, due to the risk of double counting. EQ-5D derived QALYs have been used in the tool where available, to be consistent across all interventions.

There were some inconsistencies in the availability of evidence from each of the 9 studies underpinning the ROI analysis. Social care savings were identified for 4 interventions (community singing, help at home, WHELD for people with dementia living in nursing homes, and reablement), but were not observed in the remaining 5 studies (befriending, COPD hospital discharge support, bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions, health coaching and COPD self-management). The exclusion of social care costs could have had an impact on the ROI results, as illustrated by the help at home scheme and WHELD intervention, which both had positive financial ROIs which were driven primarily by the observed savings to social care.

Due to study heterogeneity, it was not considered appropriate to directly compare the interventions within the tool. As described above, the studies differed in terms of reported outcomes, design, sample size and location. In addition, the studies were conducted across different time horizons ranging from 6 months to 2 years and applied different comparators (e.g. usual care, no intervention). Consequently, the tool cannot provide a definitive ranking of social care interventions by their expected ROI.

4.2 Population impacts

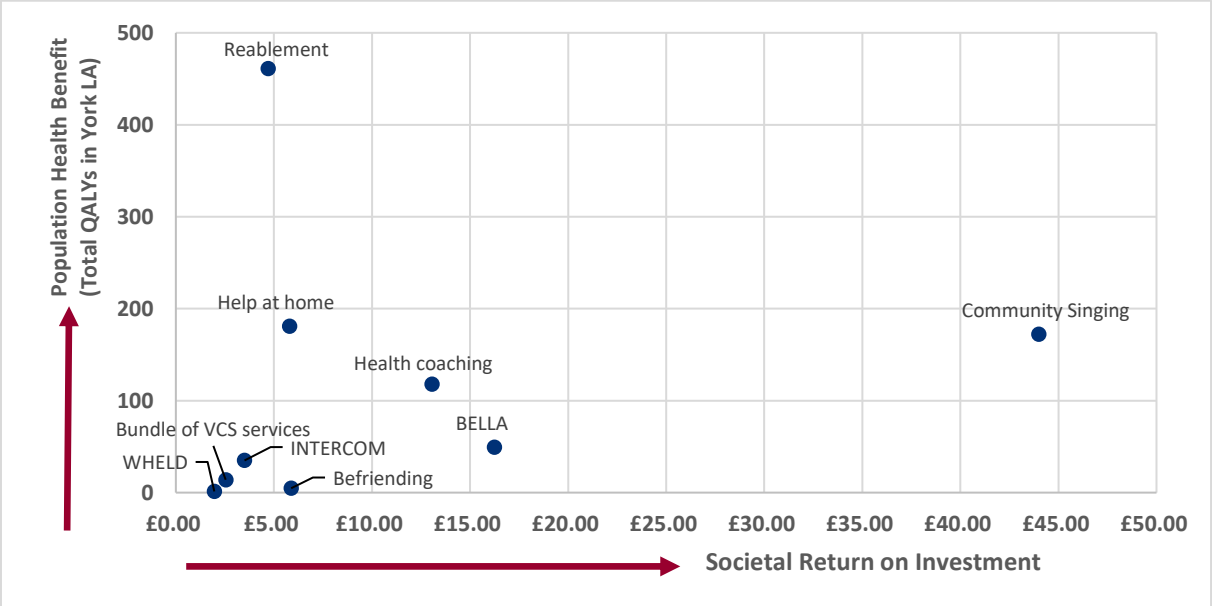
Alongside ROI estimates, it is important for local commissioners to consider actual budgetary and population impacts for each intervention, particularly given heterogeneity in the eligible population. For example, the model results indicated that the help at home scheme and homecare reablement service would be widely available, with 4,311 people in the York LA eligible to uptake the intervention per year. In contrast the WHELD dementia nursing homes intervention appeared likely to produce a financial return on investment but only 127 people per year were considered eligible. Consequently, the overall population impact of the WHELD intervention is likely to be relatively modest (achieving 1.27 total QALYs) when compared with the help at home (181.05 QALYs) and homecare reablement services (461.25 QALYs). A summary of the population eligible to use each intervention and the associated intervention costs and health impact for the sample analysis in the York LA is provided in Table 4.2.

Table 4.2: Budget and population impact of interventions for the York LA analysis

Intervention	Population eligible for the intervention	Intervention costs per population	Health Impact: (QALYs gained per population)
Community Singing	11,847	£225,572	172.31
Help at home scheme	4,311	£3,832,498	181.05
Befriending	529	£52,830	4.76
WHELD (dementia nursing homes)	127	£357,821	1.27
INTERCOM (hospital discharge)	437	£538,154	34.97
Bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions, using social prescribing and other approaches to put patients in touch with services	574	£414,164	14.03
Health coaching	6,203	£506,694	117.86
BELLA (self-management COPD)	437	£179,713	49.40
Homecare reablement	4,311	£7,103,609	461,25

The results from all interventions are also represented in Figure 4.1, which shows the total QALYs gained for the population compared to the societal ROI for each intervention.

Figure 4.1: Population health benefit by ROI



4.3 The economic evidence

The ROI tool contains the interventions with best economic evidence available at the time of undertaking the project work. The interventions included are therefore not necessarily the most effective interventions available but are those with sufficient economic evidence to enable ROI calculations to be made. Many of the initial records found were excluded due to the paucity of cost information included in the study. However, it is important to note that their exclusion from the tool does not mean that such interventions should not be implemented, as a lack of economic evidence is different from evidence of poor economic outcomes. Furthermore, the tool supports additional analyses for a user defined social care intervention, should sufficient evidence become available to local commissioners in the future.

There were some limitations in design, quality and generalisability of data obtained from each of the 9 studies: 5 of studies were RCTs comparing intervention arms with a relevant comparator such as usual care; however some had relatively small sample sizes (e.g. n=78 for COPD self-management) and one was conducted in non-UK based population (INTERCOM COPD hospital discharge support in the Netherlands). One study was an economic model (befriending), meanwhile 3 studies applied non-randomised designs including a cross sectional survey (help at home scheme), an uncontrolled before and after study (bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions) and prospective non-randomised cohort study (reablement). Non-randomised study designs may be prone to bias, while small sample sizes can decrease precision and may not detect small differences between treatment and control arms.

The literature search found economic evidence on a broad range of interventions, which presented a challenge to the project Steering Group in the best approach to prioritise the interventions. There was a notable difference in scale and nature of the interventions, ranging from long term and costly interventions such as extracare housing, to small scale, community-based interventions such as community singing. There was also a plethora of reports which incorporated summaries/case studies based on the same studies, which led to some duplication in the early stages of the literature review.

In order to retrieve the economic evidence considered to be the most relevant, the literature review searched for studies published from 2010 onwards. The evolving nature of the implementation environment however, means that for some interventions, the academic experts advised that the circumstances had changed sufficiently to render the evidence less relevant in today's context. This was exemplified by extracare housing, which whilst showing potential for inclusion in the tool, was eventually excluded due to the need for more up-to-date economic evidence with a comparator relevant to the current social care criteria for residential care.

4.4 Enablers and barriers to implementation of the interventions

The potential for return on investment via increased societal benefit and/or reduced demand on services is one factor which may influence the likelihood of an intervention being implemented in a local area. There are other factors which may be considered and may enable or impede an intervention being successfully embedded into practice.

In this review, there were some examples of intervention categories which had variable, and contradictory, evidence of cost-effectiveness. One such example was telecare, which was eventually excluded from the tool on the basis of the mixed evidence available. Academic experts advised that reasons for the intervention not being successfully implemented in some cases, or achieving its cost saving potential, are poor matching of need to intervention, or poor staff training.

For large complex interventions, the preparatory work required to localise the input costs used in the tool may be a barrier. For example, for extracare housing, the studies available provided an inventory of inputs which would need known costs to calculate the ROI. This was perceived as a potential barrier whereby, if the required cost data were already available, the decision to proceed with the investment may have been already taken.

Other factors influencing implementation are thought to be:

- the intervention, or an intervention perceived to be similar, is already commissioned and embedded in a local area
- the intervention requires large investment and is not perceived to be affordable
- the intervention may not fit with other services in place within the integrated health and social care system locally

The Discovery Workshop held by PHE prior to commencement of the project, gathered stakeholders' views about what would enable better social care commissioning, and which barriers existed. The following factors were mentioned:

Enabling factors	Barriers
Good quality evidence	Lack of integration (funding from one organisation and savings seen in a different organisation)
Integrated commissioning strategy	
Good relationships and understanding of options of available	Political cycle/lack of long term planning
Community engagement	Bureaucracy
Sustainable funding	Lack of range of providers
Funding for prevention	Inadequate funding
Political support	Poor data/evaluation

4.5 Limitations of the analysis

There were a number of limitations which had the potential to influence the results and interpretations obtained from the ROI model. These are as follows:

Study design

As described in Section 4.3, there was variability and some limitations in the design, quality and generalisability of data obtained from each of the 9 studies.

Heterogeneity in the levels of uncertainty

There was heterogeneity in the levels of uncertainty associated with the evidence obtained for the 9 interventions. Most notably, all 9 interventions included health benefits on QALYs, but only 3 interventions reported statistically significant effects (community singing, WHELD for people with dementia living in nursing homes, and homecare reablement). The impact of both health coaching and COPD hospital discharge support on QALYs was not statistically significant, meanwhile no statistical results were reported for the help at home, befriending, bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions and self-management of COPD interventions. Uncertainty around health benefits may be important when interpreting model results, as QALYs were often the primary factor determining the societal ROIs.

Table 4.3 summarises the strength of evidence available and level of uncertainty on the ROI results for each of the included interventions. It is important to note that lack of statistical significance does not necessarily mean the interventions are not effective i.e. lack of evidence of impact is not evidence of no impact. Establishing a statistically significant effect requires large sample sizes in studies.

Table 4.3: Level of uncertainty for each intervention

Intervention	NHS		Social care		QALYs	
	Savings	Costs	Savings	Costs	Benefit	Detriment
Community Singing		NR	X		√	
Help at home scheme	NR		NR		NR	
Befriending	NR		Not Available		√	
WHELD (dementia nursing homes)*	√		√		NR	
INTERCOM (hospital discharge)		NR	Not Available		X	
Bundle of voluntary and community sector (VCS) services aimed at patients with long-term conditions, using social prescribing and other approaches to put patients in touch with services	NR		Not Available		NR	
Health coaching		X	Not Available		X	
BELLA (self-management COPD)		X	Not Available		NR	
Homecare reablement		NR	NR		√	

*Note WHELD costs not reported individually (i.e. savings for combined NHS and social care budgets only).

Key:

√	Outcome is statistically significant
X	Outcome is not statistically significant
NR	Outcome does not have statistical significance reported
Not Available	Outcome not measured in study
Blank cell	Indicates outcome does not occur in this direction

Literature search

The review searched only for studies that referred to economic evaluations, costing reports, systematic reviews of economic evaluations and health technology assessments. This would have therefore excluded effective interventions that did not have a cost-effectiveness analysis. Despite these limitations it is not judged that they have introduced bias into the results. Rather they are common to all such reviews of economic studies and none seriously challenge the validity of the findings. It is important to note that the ROI tool was developed based on the economic evidence available at the time that the literature search was undertaken.

Local application

It should be noted that the results generated by the tool will not necessarily be replicated in each local authority/CCG area if there are differences in implementation

costs. Costs may differ across the country due to different staff costs required. The robustness of the tool relies on interventions being implemented as closely as possible to those reported in the studies used to underpin the analysis. Where this is not possible, the actual effectiveness of the intervention may be different, which may in turn lead to a different return on investment.

4.6 Recommendations

Users interested in improving the health of older adults in their area should look at existing PHE health economics ROI tools on: mental health, cardiovascular disease, and falls prevention, as well as the Health Evidence Economic Resource (HEER) in the first instance.

The usefulness of the Older Adults' NHS and Social Care ROI Tool in practice should be evaluated, with users being invited to give feedback on changes that could be made for any future versions of the tool.

The implementation of the interventions in the tool should be evaluated and information shared in order to add to the evidence base on the topic. Experience of local implementation and evaluation of effectiveness in a real-world setting would be particularly useful.

Evidence of the outcomes of the interventions should be collected for a period beyond one year, so that the time horizon of the tool can be extended based on evidence of the duration of effects.

Further economic study on some social care related interventions would be useful, particularly for those that were shortlisted for inclusion in the tool but were excluded at the final stage due to insufficient evidence (for example extracare housing and telecare).

There is a need to establish an economic evidence-base for newer social care developments (e.g. Shared Lives and similar schemes, modern forms of commissioning such as 'Community Catalysts').

In order to make firm conclusions regarding the cost effectiveness of these types of interventions, it would be helpful to have a cost effectiveness threshold in social care.

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