

Rapid evidence review to understand effective frailty care pathways and their components in primary and community care

Juliana Thompson and Glenda Cook

Nursing, Midwifery and Health, Northumbria University, Newcastle upon Tyne, UK

Claire Masterman

Education Centre Library, County Durham and Darlington NHS Foundation Trust, Darlington, UK

Mark Parkinson

Nursing, Midwifery and Health, Northumbria University, Newcastle upon Tyne, UK, and

Lesley Bainbridge

NHS Newcastle Gateshead Clinical Commissioning Group, Newcastle upon Tyne, UK

Abstract

Purpose – Different pathways of frailty care to prevent or delay progression of frailty and enable people to live well with frailty are emerging in primary and community care in the UK. The purpose of the study is to understand effective frailty care pathways and their components to inform future service development and pathway evaluation in primary- and community-care services.

Design/methodology/approach – A rapid evidence review was conducted: 11 research publications met the inclusion criteria and were analysed using narrative thematic synthesis.

Findings – There is strong evidence that resistance-based exercise, self-management support, community geriatric services and hospital at home (HAH) improve patient health and function. In general, evaluation and comparison of frailty care pathways, components and pathway operations is challenging due to weaknesses, inconsistencies and differences in evaluation, but it is essential to include consideration of process, determinant and implementation of pathways in evaluations.

Originality/value – To achieve meaningful evaluations and facilitate comparisons of frailty pathways, a standardised evaluation toolkit that incorporates evaluation of how pathways are operated is required for evaluating the impact of frailty pathways of care.

Keywords Frailty, Primary care, Community care, Older people, Care pathways, Literature review, Rapid evidence assessment

Paper type Research paper

Background

Population ageing is resulting in more people living with multi-morbidity and frailty (Soong *et al.*, 2015; Lansbury *et al.*, 2017). Around 10% of people aged over 65 years have frailty, rising to between a quarter and a half of those aged over 85 (British Geriatrics Society [BGS], 2015a, b). Frailty is not an illness but a syndrome that combines the effects of natural ageing with the outcomes of multiple long-term conditions and a loss of fitness and reserves (Lyndon, 2015). A person with frailty can experience disproportionate serious adverse consequences following even a relatively minor event such as a “minor” fall, urinary tract infection or change in medication. For example, health and functional status can change from independent to dependent, mobility to immobility, stability of posture and gait to falls, lucidity to a delirium and continent to incontinent (Clegg *et al.*, 2013). Frailty can lead to



significant consequences for individuals including disability or moves to institutional care (BGS, 2015a, b).

Timely identification of frailty can help to reduce the likelihood of progression of frailty or poor outcomes and support the long-term management of people's health and well-being. As such, ageing well and supporting people with frailty has moved to the forefront of the health and social care policy agenda in the United Kingdom (UK) (National Health Service (NHS), 2014a, 2019a; National Institute for Health and Care Excellence (NICE), 2015). As part of this agenda, the systematic population-based identification of frailty is promoted on the premise that this could improve access to care and enable the needs of individuals to be met through early, proactive-targeted and appropriate interventions. An initiative in the UK in 2017/2018 has been a change in the general practice (GP) (primary care) contract that introduced routine-frailty identification of patients who are 65 and over (NHS, 2017). Alongside this, policy requires that people with frailty are supported through frailty care pathways (NHS, 2014b, 2019b; NICE, 2015; BGS, 2015a, b). Care pathways are complex interventions for decision-making and organisation of care for a defined group of patients over a defined period of time. Their aim is to enhance the quality of care across the continuum by improving patient outcomes, promoting patient safety, optimising resource use and increasing patient satisfaction (De Bleser *et al.*, 2006). According to Schrijvers *et al.* (2012), care pathways should have explicit goals, facilitate communication within the multi-disciplinary team (MDT), support co-ordination of care processes and monitor and evaluate outcomes.

As part of an ongoing study to identify and compare the effectiveness of frailty care pathways, the authors undertook a scoping exercise of Clinical Commissioning Groups' (CCG) websites for the period 2014–2020 to identify frailty pathways in existence. The identified items included CCG annual reports, governing body reports, inspection reports, briefings and local news bulletins. Of the 203 identified records, 79% were from the period 2017–2019. This suggests that there is an increasing focus on frailty care across the UK. To support the new pathways, roles such as frailty nurses, older person nurse specialists and frailty co-ordinators and services including community integrated teams, specialist frailty clinics and enhanced healthcare in care homes services have emerged.

The scoping exercise indicated that different pathways of frailty care exist but robust evidence of effectiveness of outcomes was limited. The aim of this study was to review research literature to identify effective components and outcomes of frailty care pathways in primary and community care services to inform the future UK service development and pathway evaluation.

Method, search strategy and data sources

To address the aim, a rigorous rapid evidence assessment using a narrative-synthesis approach was undertaken of research literature. A rapid assessment approach is appropriate in situations where study timeframes are restricted. This review was undertaken as part of a wider study to development understanding of methods for evaluating frailty pathways of care. The wider study will be used to inform service evaluation in the near future and as such has a limited timeframe. The rapid assessment approach is systematic and rigorous but takes legitimate steps to limit the review's breadth so that it is achievable within a shorter timeframe. Steps include a literature search that is systematic but focusses explicitly on the review question, restricting or excluding grey literature, and performing a "simple" quality appraisal of the items included (Grant and Booth, 2009).

The narrative-synthesis approach is appropriate for reviews that include data from different study designs including qualitative designs and previous literature reviews. Historically, the perceived primary weakness of the approach was that there was a lack of clarity and guidance about how to conduct the synthesis and appraise the items included

(Mays *et al.*, 2005). However, Ryan (2013) and Popay *et al.* (2006) have provided guidance about conducting narrative synthesis in a transparent and systematic way using a process of grouping studies into clusters, assessing methodological quality, and exploring/identifying relationships between studies to arrive at results and recommendations. In this review, the primary clusters were aims or phenomena of interest. Methodological quality was assessed using the Evidence for Policy and Practice Information Centre (EPPI) approach. According to Popay *et al.* (2006), this is a simple but appropriate approach for narrative-synthesis reviews that include qualitative methodologies as well as quantitative. Studies' trustworthiness, appropriateness of design and relevance to the literature review aims are assessed on a scale of 1 = high, 2 = medium and 3 = low. Overall weight for each item is then calculated. Consistency of results outcomes was investigated via the activities as follows:

- (1) Mapping study results in order to identify common results across studies.
- (2) Methodological triangulation to explore whether studies with different designs had consistent or inconsistent results components. Consistent/common results identified by activities (1) and (2) informed results of the review.
- (3) Textual description to provide a richer, in-depth description of results (Popay *et al.* (2006)).

The search strategy combined searching databases and grey literature. The databases searched by a librarian (CM) were as follows: Allied and Complementary Medicine (AMED), Cumulative Index to Nursing and Allied Health Literature (Nursing and Allied Health), PROQUEST, evidence based medicine Reviews – Cochrane Controlled Trials Register, Cochrane Reviews and Medline. Google and Turning Research into Practice (TRIP) were also searched. Articles published between 1 January 2010 and 31 March 2021 were searched in English and were searched using the MeSH terms and free words as follows:

“older people”, “elderly people”, “geriatric(s)”, “retired”, “retirement”, “senior citizen(s)”, “pensioner(s)”, “residents” (all used to capture the concept of “older people”)
 AND
 “frailty”, “infirmary”, “vulnerable”, “vulnerability”, “multimorbidity”, “comorbidity”, “fragility”
 AND
 “primary care”, “general practice”, “GP”, “primary care network”, “GP federation”,
 OR
 “Community care”, “extracare”, “care plus”, “frailty services”, “services”, “enablement”
 OR
 “community services”,
 OR
 “outreach services”, “transfer of care”
 OR
 “practice nurse”, “frailty nurse”, “nurse practitioner”
 OR
 “community matron”, “older person’s nurse”, “older people’s nurse” “gerontological nurse”, “elderly care nurse”,
 OR
 “team”, “multidisciplinary”
 OR
 “pathway”, “pathway of care”, “integrated care”, “primary care model”, “model”, “shared care”,
 OR

“GiRFT”, “rightcare”
OR
“capabilities”, “capability”, “competency” and “skills”.

Results

Item selection

The research team decided to include international studies as well as the UK-based studies in the literature search to capture a comprehensive range of effective pathways and pathway components. The initial search led to the identification of 328 records. Duplicates and false hits (e.g. secondary care services) were removed leaving 54 items for screening. Titles and abstracts were screened. Items were then excluded if they (1) did not investigate the aim of the evidence assessment; (2) did not include a research method that assessed aspects of frailty care; (3) focussed on single interventions rather than pathways of frailty care and their components; (4) were already reviewed in literature reviews included in this review and (5) not written in English. This process resulted in 15 articles being eligible for full-text assessment. After this assessment, 11 items were selected for the rapid evidence assessment (see [Figure 1](#)).

Methodological quality

Using the EEPI assessment of validity approach, the [McDonald’s \(2020\)](#) meta-analysis was assessed as being of high quality; the literature reviews ([Berntsen et al., 2019](#); [Hendry et al., 2017](#), [Health Improvement Scotland \(HIS\), 2018](#)) were assessed as medium quality, and all other studies included were of low quality (see [Table 1](#)). The activity to investigate consistency of results indicated that whilst there was some consistency across the studies that aimed to identify effective components of frailty pathways, there was low consistency of all other study results (see [Table 2](#)). This suggests that caution should be taken if using these results to inform frailty care pathway planning.

The studies were categorised into three phenomena of interest/aims clusters: identify effective components of frailty pathways; evaluate whole pathway outcomes and evaluate pathway operation.

Identify effective components of frailty pathways

The literature reviews by [Hendry et al. \(2017\)](#) and [HIS \(2018\)](#) and the meta-analysis by [McDonald et al. \(2020\)](#) aimed to identify effective components of community-based or primary care-based frailty pathways.

In some cases, at least, two studies identified the same components and found strong evidence for their effectiveness. Both [HIS \(2018\)](#) and [McDonald et al. \(2020\)](#) found strong evidence that resistance-based exercise reduces frailty. [Hendry et al.’s \(2017\)](#) and [HIS’s \(2018\)](#) reviews found strong evidence that HAH approaches reduce other healthcare service use, increase patient satisfaction and reduce treatment costs compared with admission to acute hospital when excluding caregiver costs.

In other cases, one study identified a particular component and found strong evidence of its effectiveness. [Hendry et al. \(2017\)](#) found strong evidence that indicated self-management support improves patient health, functional and well-being outcomes. [HIS \(2018\)](#) discussed community geriatric services. These services comprise of a geriatrician-led team that liaises with primary care and involves Comprehensive Geriatric Assessment (CGA) informing a tailored, person-centred plan of treatment. [HIS \(2018\)](#) found strong evidence that indicated community geriatric services improves patient health and function.

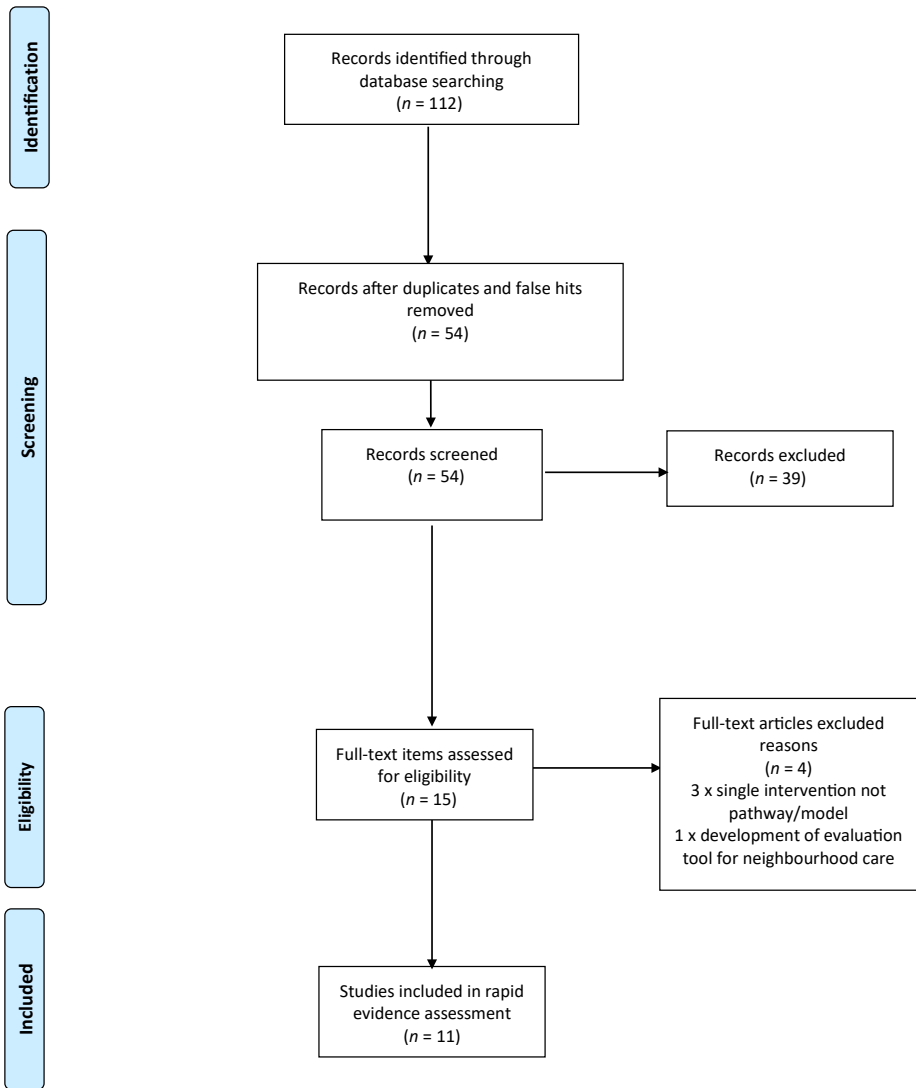


Figure 1.
Item selection process

For some components that were identified by more than one study, results were inconsistent, with one study finding strong evidence for the effectiveness of a component and others finding weak, conflicting or inconsistent evidence. [Hendry *et al.* \(2017\)](#) found strong evidence that the use of frailty screening and assessment identifies people who are most likely to benefit from frailty care pathways. [HIS's \(2018\)](#) found that case-finding via frailty screening may identify people likely to benefit from frailty care pathways but concluded that the value of such interventions is uncertain because of inconsistencies in how frailty is identified, in screening for level of frailty, or whether frailty screening is ongoing. Hendry's review found strong evidence that prevention and enablement interventions improved patient-health outcomes and reduced healthcare service use, although there was no difference in service

Author(s)	Aim	Method	Sample	Outcome	Evidence for policy and practice information centre (EPPI) scores
<i>Aim: Identify effective components of frailty pathways</i> Hendry <i>et al.</i> (2017)	Identify a pathway of care to prevent or delay progression of frailty and enable people to live well with frailty in the community, and consider effective and transferable components for frailty and the economic impact	Systematic review	43 papers	Requirements for a successful pathway: Target frailty; promote ethos of enablement; support self-management; provide continuity and co-ordination of care; tailor multidimensional interventions; develop workforce skills and competencies on frailty; support adoption and assure implementation: Improve outcomes for people; undertake further research focussing on organisation and delivery of whole pathways rather than clinical components of pathways	Trustworthiness: Medium Appropriateness: High Relevance: High Overall weight: Medium

(continued)

Table 1.
Data extraction from the included studies

Author(s)	Aim	Method	Sample	Outcome	Evidence for policy and practice information centre (EPPi) scores
Health Improvement Scotland (2018)	Identify interventions in frailty that are community based, focussed on the prevention of harms or poor outcomes, and supported by relatively high-level evidence	Systematic review of reviews (systematic reviews, meta-analyses and literature reviews)	85 papers	Strong evidence for exercise interventions and physical activity; primary care interventions with initial assessment, CGA, MDT, key contact, management plan; community geriatrician-led MDT; hospital at home Weaker evidence for: medication review; immunisation; addressing lifestyle factors; nutritional interventions; reablement; bed-based intermediate care and anticipatory care-planning A major problem is drawing conclusions from research across different interventions and populations is challenging, as different studies are using different evaluation methods	Trustworthiness: Medium Appropriateness: High Relevance: High Overall weight: Medium

(continued)

Author(s)	Aim	Method	Sample	Outcome	Evidence for policy and practice information centre (EPPI) scores
McDonald <i>et al.</i> (2020)	Assess effectiveness of primary care interventions for physical frailty amongst community-dwelling older adults. Interventions: CGA, resistance-based exercise; nutrition support	Meta-analysis	31 studies with a total of 4,794 participants	Resistance-based exercise improves frailty Improved nutrition may improve frailty CGA and a subsequent tailored programme (MDT and individualised treatments) reduce frailty but not possible to ascertain the effect of specific components, as there may be a combinatorial effect	Trustworthiness: High Appropriateness: High Relevance: High Overall weight: High
<i>Aim: Evaluate whole pathway outcomes</i> Maiden (2017)	Evaluate iREAP – 8 week MDT rehabilitation programme for frail older people at high risk of falls and with neurodegenerative conditions. A personalised care plan. iREAP involves a comprehensive geriatric assessment; referrals to speech therapy, podiatry, dietetics, occupational therapy, physiotherapy, psychology, hydrotherapy, continence nursing and social workers as required	Evaluation study using pre and post intervention measurements of function, confidence to self-manage, frailty scores, QoL, hospital admissions and patients' knowledge of their condition	12-month data for all 76 patients completing iREAP (35 with falls risk and 41 with neurodegenerative conditions)	Statistically significant improvements for function, confidence to self-manage, falls efficacy reduction. Improvements in frailty scores, QoL and knowledge of condition (though not significant). 10 unnecessary admissions to hospital were avoided	Trustworthiness: low Appropriateness: Medium Relevance: High Overall weight: low

(continued)

Table 1.

Author(s)	Aim	Method	Sample	Outcome	Evidence for policy and practice information centre (EPP) scores
Recio-Saucedo (2018)	Evaluate an integrated working between primary and community care pathway comprising a single point of access hub, step up community hospital beds, "team around the care home", GP visiting service for frail older people, frailty toolkit, MDT, education, medication review and care navigation	Evaluation study of the impact of the intervention on hospital admissions and bed days. Method of evaluation is not provided	Care services in Weymouth and Portland	The approach enhances holistic person-centred care, reduces unplanned hospital admissions and length of stay and facilitates preferred place of care	Trustworthiness: low Appropriateness: low Relevance: High Overall weight: low
Vestjens <i>et al.</i> (2019)	Evaluate the effectiveness on well-being and health-related QoL, and cost-effectiveness of the finding and follow up of frail older persons (FFF) pathway. FFF consists of proactive identification of older people with frailty, MDT consultations and individualised case manager follow-up	Longitudinal evaluation using a matched quasi-experimental design comparing intervention and control groups and pre-(T0) and post-(T1) measurements of effectiveness, processes and cost-effectiveness	250 matched pairs of older people with frailty in each of the intervention and control groups 11 GP practices in the intervention group and 4 GP practices in the control group	No significant differences between the intervention group and control group with respect to well-being and health-related quality of life at 12-months follow-up. There were no significant differences between the groups in total costs over 12 months. However, based on earlier research the authors expect improvements in quality of care to positively influence patient outcomes in the long term	Trustworthiness: low Appropriateness: Medium Relevance: High Overall weight: low

(continued)

Author(s)	Aim	Method	Sample	Outcome	Evidence for policy and practice information centre (EPPI) scores
Yu <i>et al.</i> (2020)	Evaluate the effect of an integrated care model for pre-frail and frail community-dwelling older people. The model involves comprehensive assessment, personalised care-planning (including exercise, dietary support, meds review, key worker, MDT, education representation)	Longitudinal quasi- experiment using a control group. Changes in frailty and health service utilisation over 12 months were measured	453 older people from a community care project: Intervention <i>n</i> = 183, control <i>n</i> = 270	Significant improvement in frailty scores. No change regarding use of health services	Trustworthiness: low Appropriateness: Medium Relevance: High Overall weight: low
<i>Aim: Evaluate pathway operation</i> Bernitsen <i>et al.</i> (2019)	Describe how literature on whole system transformations of frailty pathways reflects (1) operationalisation of intervention, (2) maturity, (3) evaluation methodology and (4) effect on outcomes	Combined scoping and systematic intervention review	10 papers	Common sense belief that Digi-PIP ingredients are key to sustainable care, i.e person-centredness, whole-person-care planning, case management, care coordination and MDT working; self-management, and risk identification but lack of hard evidence due weaknesses in process evaluation of complex systems	Trustworthiness: Medium Appropriateness: Medium Relevance: Medium Overall weight: Medium

(continued)

Table 1.

Author(s)	Aim	Method	Sample	Outcome	Evidence for policy and practice information centre (EPPi) scores
Bryce <i>et al.</i> (2018)	Determine factors that enable or prevent implementation of a whole system, complex intervention for managing frailty (PACT toolkit) in primary care	Mixed-methods evaluation using normalisation process theory (NPT)	All 6 sites within 1 CCG area using the PACT initiative	Embedding PACT into practice requires: Clarity of the pathway to both patients and staff; it requires championing and to be sustainable and expertise in caring for older people as well as evidence-informed toolkits is required to deliver frailty care	Trustworthiness: low Appropriateness: Medium Relevance: High Overall weight: low
Lhussier <i>et al.</i> (2019)	Develop theories explaining the links between the CWT interventions and expected outcomes. CWT consisted of referral via screening, care co-ordination, management plan, MDT preventative services, self-management and risk minimisation	Realist evaluation using the context + mechanism (resource and reasoning) = outcome (CMO) formula. Methods were: a literature review and a focus group	Convenience sample of community wellbeing team (CWT) members (<i>n</i> = 7)	Contributing factors to the CWT's success were: trust development and relationship building; risk minimisation in the home; advice on self-management; referral to preventative services and coordination of services	Trustworthiness: low Appropriateness: low Relevance: Medium Overall weight: low

(continued)

Author(s)	Aim	Method	Sample	Outcome	Evidence for policy and practice information centre (EPPI) scores
Stoop <i>et al.</i> (2019)	Explore improvement plans of the 14 European sustainable tailored integrated care for older people in Europe (SUSTAIN) sites. Sites' services are dementia care, palliative care, home rehab, home nursing and proactive primary care	Content analysis of: baseline reports, projects plans, project flow charts, interviews with older people, carers and professionals using the SUSTAIN services, researcher field notes, workshop meeting minutes; and templates for uniform site and improvement plan description, using the expanded chronic care pathway as a conceptual framework	All 14 SUSTAIN sites across Europe	Facilitators/barriers to integrated working: Coordination and collaboration across organisations and professionals, information sharing between organisations, funding for resources and support, availability of staff, and workforce competence regarding engagement with older people and provision of person-centred care	Trustworthiness: low Appropriateness: Medium Relevance: Medium Overall weight: low

Table 1.

Table 2.
Results of the included studies

Components	Aim: Identify effective components of frailty pathways			Aim: Evaluate whole pathway outcomes				Aim: Evaluate pathway operation			
	Hendry <i>et al.</i> (2017)	Health Improvement Scotland (2018)	McDonald <i>et al.</i> (2020)	Maiden (2017)	Recio-Saucedo (2018)	Vestjens <i>et al.</i> (2019)	Yu <i>et al.</i> (2020)	Berntsen <i>et al.</i> (2019)	Bryce <i>et al.</i> (2018)	Lhussier <i>et al.</i> (2019)	Stoop <i>et al.</i> (2019)
Frailty screening/assessment	S	W				X	X		X	X	X
CGA	W	W	W	X		X	X		X		X
Key contact care	W	W			X	X	X			X	
coordination											
Person-centred management	W	W						X		X	
plan											
MDT	W	S	W			X	X			X	X
Re/enablement	S	W		X				X		X	
Physical exercise	S	S	S				X				
Self-management/education	S						X			X	
support											
Geriatrician led care		S									
Medication review		W			X		X				X
Hospital at home	S	S									
Intermediate care beds		W									X

(continued)

	Aim: Identify effective components of frailty pathways		Aim: Evaluate whole pathway outcomes			Aim: Evaluate pathway operation				
	Health Improvement Scotland (2018)	McDonald <i>et al.</i> (2020)	Maiden (2017)	Recio-Saucedo (2018)	Vestjens <i>et al.</i> (2019)	Yu <i>et al.</i> (2020)	Berntsen <i>et al.</i> (2019)	Bryce <i>et al.</i> (2018)	Lhussier <i>et al.</i> (2019)	Stoop <i>et al.</i> (2019)
Immunisation	w									
Nutrition support	w	w				x				
Lifestyle support	w									
Risk identification and management	w						x		x	
Team in care homes				x						
GP visiting				x						
Frailty tool kit				x				x		
Care navigation				x						
<i>Operational support</i>										
All stakeholders are clear about the pathway								w		
Policies and procedures										w
Access to tailored interventions										
Workforce development								w		w

(continued)

Table 2.

	Aim: Identify effective components of frailty pathways	Aim: Evaluate whole pathway outcomes	Aim: Evaluate pathway operation
	Health Improvement Scotland (2018)	Recio-Saucedo (2018)	Berntsen <i>et al.</i> (2019)
	Hendry <i>et al.</i> (2017)	Maiden (2017)	Bryce <i>et al.</i> (2018)
	McDonald <i>et al.</i> (2020)	Vestjens <i>et al.</i> (2019)	Lhussier <i>et al.</i> (2019)
		Yu <i>et al.</i> (2020)	Stoop <i>et al.</i> (2019)
			W
Rapport/trusting therapeutic relationships			
Assure adoption/implementation			
Champion the pathway		W	W
Information sharing		W	W
Funding for resources			W
Outcomes			
Improved function	W		
Confidence to self-manage	W		
Reduced falls	W		
Improved frailty scores	W		W
Improved QoL	W		
Improved knowledge of condition	W		

(continued)

	Aim: Identify effective components of frailty pathways	Aim: Evaluate whole pathway outcomes	Aim: Evaluate pathway operation
	Health Improvement Scotland (2018)	McDonald <i>et al.</i> (2020)	Maiden (2017)
	Hendry <i>et al.</i> (2017)	Recio-Saucedo (2018)	Yu <i>et al.</i> (2020)
		Vestjens <i>et al.</i> (2019)	Berntsen <i>et al.</i> (2019)
			Bryce <i>et al.</i> (2018)
			Lhussier <i>et al.</i> (2019)
			Stoop <i>et al.</i> (2019)
Reduced unnecessary hospital admissions		w	
Improved holistic PPP		w	
Length of hospital stay		w	
Facilitates preferred place of care		w	
Health service use			
Cost effectiveness			
Comments	Evaluate whole pathways, rather than components. Inconsistency in study findings may arise from differences in evaluation methods	Not possible to ascertain the effect of specific components as there may be a combinatorial effect	No differences between QoL and costs for intervention/control. Expect improvements in quality of care in the long term.

Note(s): s = strong evidence; w = weak evidence; x = component is present

costs between use and non-use of the interventions. [HIS \(2018\)](#) found that minimising risk at home using enablement strategies to support older people returning home from hospital may enable them to remain at home, reduce care needs and improve functional status when compared with usual home care. However, the review indicated that the evidence for this outcome is of low to moderate quality.

For some components that were identified by more than one study, all studies found evidence of effectiveness was weak, conflicting or inconsistent. Some studies in [Hendry *et al.*'s \(2017\)](#) review and [HIS's \(2018\)](#) review showed CGA and person-centred case management that includes a key assessor to co-ordinate care and MDT input, reduced healthcare service utilisation and costs of care and improved health, functional and quality of life (QoL) outcomes. Other studies in the reviews, however, showed no clear benefits of this CGA case-management approach. [Hendry *et al.* \(2017\)](#) concluded that inconsistencies in outcomes may have arisen due to inconsistencies in evaluation methods. Also, [McDonald *et al.* \(2020\)](#) found that pathways that include CGA and MDT input may be beneficial in terms of patient outcomes; but they proposed that when attempting to assess the value of individual components within a pathway, it is not possible to ascertain the effect of some components as many "individual" components/interventions actually consist of "sub-components" which may have a combinatorial effect.

[HIS \(2018\)](#) and [McDonald *et al.* \(2020\)](#) identified further components in their reviews. Both found low-quality evidence to suggest that improved nutrition may improve frailty. [HIS \(2018\)](#) found low-quality evidence that indicated medication reviews, intermediate care beds, immunisation and lifestyle support may improve patient outcomes and reduce service use.

Evaluate whole pathway outcomes

Four studies evaluated the outcomes of entire community-based or primary care-based frailty pathways. Overall, EPPI weighting of these studies was low. All studies evaluated short-term outcomes. [Maiden's \(2017\)](#) Australian study evaluated outcomes of integrated rehabilitation and enablement programme (iREAP) – a pre-crisis early intervention rehabilitation programme that consisted of CGA and an enablement programme. [Recio-Saucedo \(2018\)](#) reported on outcomes of an integrated care hub (ICH) pathway adopted and funded by a CCG in the UK. The pathway consisted of a single point of contact to co-ordinate care, MDT input to support "team around the person" and "team around the care home", supported patient self-management, care navigation and coaching, medication review, intermediate care beds, GP home visiting and a frailty toolkit to guide care delivery. [Vestjens *et al.* \(2019\)](#) evaluated the cost-effectiveness of the "Finding and Follow-up of Frail older persons" (FFF) initiative in the Netherlands, which consisted of proactive frailty screening and MDT support for patients to self-manage their conditions. [Yu *et al.* \(2020\)](#) evaluated an integrated pathway for pre-frail and frail older people in Hong Kong. The pathway consisted of in-depth frailty assessment conducted by health workers skilled in geriatric assessment, CGA and case management involving a key contact to co-ordinate care, MDT input, physical exercise, self-management support, nutrition support and medication review. Of note is that no studies evaluated more than one pathway with the aim of identifying the most effective pathways.

The four studies used different evaluation methods and/or focussed on different outcomes. [Maiden \(2017\)](#) used a pre- and post-intervention study; [Vestjens *et al.* \(2019\)](#) and [Yu *et al.* \(2020\)](#) used longitudinal quasi-experiments. [Recio-Saucedo \(2018\)](#) did not provide details of the method used in their paper. Outcomes evaluated were changes in patient function ([Maiden, 2017](#)); patient confidence to self-manage conditions ([Maiden, 2017](#)); number of falls ([Maiden, 2017](#)); frailty scores ([Maiden, 2017](#); [Yu *et al.*, 2020](#)); patient QoL ([Maiden, 2017](#); [Vestjens *et al.*, 2019](#)); patient knowledge of their condition ([Maiden, 2017](#)); reduced avoidable hospital admissions ([Maiden, 2017](#); [Recio-Saucedo, 2018](#)); holistic person-centred care ([Recio-](#)

Sauedo, 2018); length of hospital stay (Recio-Sauedo, 2018); preferred place of care (Recio-Sauedo, 2018); cost-effectiveness (Vestjens *et al.*, 2019) and health-service utilisation (Yu *et al.*, 2020). Evaluations showed pathways did improve outcomes in all measured outcomes except cost-effectiveness of the FFF pathway (Vestjens *et al.*, 2019) and health service use in the integrated pathways (Yu *et al.*, 2020). Both the Maiden pathway and FFF pathway measured patient QoL. Maiden (2017) found a significant improvement in QoL in the iREAP model, but Vestjens *et al.* (2019) found no QoL improvement in FFF. However, Vestjens *et al.* (2019) expected improvements would become apparent in the long-term; but due to the short-term nature of their study, improvements had not yet realised.

Evaluate pathway operation

Four studies evaluated the operation of single whole community-based or primary care-based pathways. They evaluated either pathway processes (whether pathways are carried out as planned), pathway determinants (barriers to and enablers of pathway implementation) and/or pathway implementation (reach, adoption, adaptations to, maintenance and sustainability of pathways). Three of these studies had an overall low-EPPI weight (Bryce *et al.*, 2018; Lhussier *et al.*, 2019; Stoop *et al.*, 2019) and one had a medium weight (Berntsen *et al.*, 2019).

Berntsen *et al.*'s (2019) literature review described how literature on whole system transformations of frailty pathways reflects (1) operationalisation of interventions, (2) maturity, (3) evaluation methodology and (4) effect on outcomes. Bryce *et al.*'s (2018) study determined factors that enabled or prevented implementation of the primary care academic collaborative (PACT) toolkit. PACT consists of guidance for primary-care services regarding screening, CGA, person-centred care planning and medication review. Lhussier *et al.*'s (2019) study aimed to develop a theory explaining the links between outcomes and a community wellness team (CWT) pathway consisting of referral to the CWT via screening, care co-ordination, management plans, MDT input, referral to preventative services, advice on self-management and risk minimisation in the home. Stoop *et al.*'s (2019) study explored the improvement plans of the 14 European sustainable tailored integrated care for older people in Europe (SUSTAIN) sites. Sites' services are dementia care, palliative care, home rehabilitation, home nursing and proactive primary care.

The studies used different evaluation methods and focussed on different aspects of pathway operation. Berntsen *et al.* (2019)'s literature review focussed on process. Bryce *et al.* (2018) used a mixed-methods evaluation using normalisation process theory to explore determinants and implementation barriers and enablers. Using a realist evaluation approach, Lhussier *et al.* (2019) used a literature review and focus group to explore determinants of CWT success. Stoop *et al.* (2019) explored determinants by using content analysis of baseline reports, projects plans, project flow charts; interviews with older people, carers and professionals using the SUSTAIN services; researcher field notes; workshop meeting minutes and templates for site and improvement plan descriptions.

The studies identified processes, determinants and implementation requirements to support successful pathway operation. These were all stakeholders including patients need to be clear about the aims of the pathway (Bryce *et al.*, 2018); policies and procedures are required to support implementation of pathways (Stoop *et al.*, 2019); workforce development is required to ensure staff's competency and capacity to effectively implement pathways (Bryce *et al.*, 2018; Stoop *et al.*, 2019); development of rapport and trusting therapeutic relationships between professionals and patients are required to support pathway delivery (Lhussier *et al.*, 2019); pathways need to be championed by effective leaders and early adopters (Berntsen *et al.*, 2019; Bryce *et al.*, 2018); information sharing across professions, organisations and sectors is essential (Berntsen *et al.*, 2019; Stoop *et al.*, 2019) and adequate funding is required to resource pathways (Stoop *et al.*, 2019). However, Berntsen *et al.*'s (2019)

literature review concludes that with regard to championing pathways and information sharing, there is a lack of hard evidence underpinning these results due to weaknesses in process evaluation.

Discussion

Three previous reviews/meta-analyses aimed to identify effective single components of community or primary-care frailty pathways (Hendry *et al.*, 2017; HIS, 2018; McDonald *et al.*, 2020), rather than entire pathways. This may be beneficial, as the approach could identify effective or efficient components of pathways and as such could inform the development of pathways. Together, the reviews show strong evidence that resistance-based exercise reduces frailty and HAH approaches reduce other healthcare service use and treatment costs and increase patient satisfaction. On the basis of results from single reviews, there is strong evidence that self-management support, community geriatric services and prevention/enablement interventions improve patients' health and function. However, it is difficult to draw conclusions about the value of other interventions identified due to inconsistent or conflicting evidence arising from the use of inconsistent evaluation methodologies and/or low-quality studies included in the reviews and meta-analysis. In addition, although the studies aimed to identify effective components of pathways, some components were actually combinations of supportive approaches rather than individual components, e.g. CGA is described in some studies as involving CGA, person-centred case management, key co-ordinators of care and MDT input, whilst community geriatric services includes CGA and person-centred care planning. The combination of components makes it difficult to ascertain the effectiveness of individual components. Also, pathways usually consist of more than one component. These two factors, therefore, question the value of evaluating individual pathway components, and perhaps suggest evaluating entire pathways, rather than individual components might be of more worth.

Four studies did evaluate single whole pathways (Maiden, 2017; Recio-Saucedo, 2018; Vestjens *et al.*, 2019; Yu *et al.*, 2020). They suggested that pathways led to positive outcomes for patients and service use. However, the studies were of low quality, used different evaluation methods and focussed on different outcomes and outcome measures. There are problems of evaluating whole pathways. First, because the pathways consist of many components, it is not possible to identify whether and which aspects of the pathway drive or hinder effectiveness and efficiency, and second, and, perhaps, more importantly, why this might be the case.

Rather than focus on outcome measures, four studies evaluated the operation of single pathways to identify and explore processes, determinants and implementation factors that influence or impact on pathways (Berntsen *et al.*'s 2019; Bryce *et al.*, 2018; Lhussier *et al.*, 2019; Stoop *et al.*, 2019). Understanding how pathways are operated may identify whether, which and why aspects are hindering/enhancing pathways, which, once addressed, could support the pathway to contribute to improved outcomes for patients and service use. However, the three primary research studies were of low quality and used different evaluation methods and focussed on different operational aspects, whilst Berntsen *et al.*'s (2019)'s literature review concluded that weaknesses in evaluation approaches of the studies included in their review undermined results.

The results of the current review highlight three main issues. Whilst it is important to identify effective and efficient community and primary-care pathway components, they are difficult to evaluate because they are often combined or inter-related with others. However, evaluating whole pathways does not identify effective or efficient pathway elements or explain why they are effective/efficient. It is, therefore, essential that evaluations should include consideration of how pathways are operated in terms of process, determinants and

implementation. Also, at present, most evaluations are of low quality and use weak methodologies and methods that undermine their results. Finally, the results of this study show that most of the available research to date evaluates single-frailty pathways of care. There remains little in the way of research and evaluation that compare the impacts of community or primary-care frailty pathways of care. This is essential to ascertain which are the most effective pathways so that decisions can be informed about which are appropriate to be developed at scale across large geographic areas or populations. At present, undertaking such research remains problematic due to inconsistencies and weaknesses in evaluation approaches. Drawing conclusions from research across different pathways and populations is challenging, and challenges are exacerbated by a lack of consistency in evaluation methods.

To achieve meaningful evaluations and facilitate comparisons of pathways, standard evaluation methods that incorporate evaluation of how pathways are operated is required for evaluating the impact of frailty pathways of care. At present, due to the results of this review, the authors are undertaking a Delphi study using an international expert panel to determine the outcomes, operations and evaluation methods required that will inform a robust, standardised evaluation toolkit for frailty pathways of care.

The study identified a need for further research and evaluation including assessment of exploration of the impacts of community-based and primary-care-based frailty pathways of care on older individuals' and their families'/carers' goals and care experiences. It is important that older people and carers contribute to the development of the evaluation methods, as they are experts by experience with regard to what impacts of frailty care pathways are important to them. Evidence of cost effectiveness of frailty services is limited. More research and evaluation is required to evaluate system outcomes and costs. In addition, studies are yet to evaluate the long-term impact of frailty pathways.

Conclusions and implications for practice

The emergence of frailty initiatives have been largely policy driven in response to the prevalence of frailty within the population. Now is the time to carefully consider what frailty pathways are effective to ensure that the community- and primary-care right services are in the right place at the right time to support those with frailty. This requires development of the evidence base for primary- and community-care frailty services, which could be achieved through developing standardised evaluation methods.

Nurses, service managers, GPs, service commissioners and academics can use the results of this review in planning and evaluating community- and primary-care frailty pathways. Consideration should be given to both the clinical build and decision phases, ensuring that the service specification includes effective pathway components. Quality standards should take into consideration process measures of effectiveness as well as short- and long-term outcomes for older people and their carers. In the contexts of ageing populations, and more recently, a global pandemic that is having an inordinate impact on frail older people's health, it is imperative that frailty services are evidence based to optimise the potential for achieving effective outcomes.

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Corresponding author

Juliana Thompson can be contacted at: juliana2.thompson@northumbria.ac.uk

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