Version control table

Version	Date	Authors	Rationale
1.0	February 2022	Applicant team	Protocol submitted with funding application.
2.0	July 2022	Applicant team	Protocol updated in response to reviewers feedback.
3.0	January 2023	Applicant team	Protocol updated with personal details removed.
4.0	May 2023	Applicant team	Final protocol post NIHR review.

1. Title

Integrated Palliative Care in Oncology: a Realist Synthesis

2. SUMMARY OF RESEARCH

Background

Cancer is the second leading cause of death globally and accounted for nearly 10 million deaths in 2020. There are currently 2.5 million people living with cancer in the UK and by the year 2030, this figure may be as high as four million. Cancer is predominantly a disease of older age, the peak rate of cancer cases between 2015-2017 in the UK were in persons aged 85-89. Disease burden is considerable with profound holistic impacts across biopsychosocial domains which affect persons with cancer as well as their family caregivers. This puts considerable burden on health service resources, with approximately 5 % of the NHS budget spent on cancer, estimated at £13 billion for England in 2020/2021.

Emerging evidence demonstrates improved quality of life (QoL), reduced symptom burden, and lower health services costs when integrated palliative care and cancer care are implemented. Integrated palliative care aims to achieve continuity of care by integrating administrative, organizational, and clinical services that make up the patients care network. However, integrated palliative care for cancer is not common practice. It is over a decade since the first national strategy for end-of-life care in England, 2008, closely followed by other nation specific strategies for Scotland, 2008, Northern Ireland, 2010 and Wales, 2013 emphasizing an integrated approach to palliative care which is responsive to patients' needs. However, adopting such a model in cancer services remains unactualized and symptom burden continues to be a significant issue for persons with cancer, particularly near the end-of-life. This realist synthesis is particularly timely given the 2022 revised recommendations on standards and norms for palliative care in Europe from the European Association of Palliative Care (EAPC). The findings from this study highlight the need to advocate for better integration of palliative care. The programme theory this realist synthesis seeks to develop will positively contribute to this by providing clarity in relation to the optimal delivery of palliative care for adults with cancer.

Aim

To understand how integrated palliative care and cancer care works in different healthcare settings (inpatient/outpatient), and for which groups of people (at what stage of cancer journey), so we can develop guidance for optimal delivery.

Objectives

1. Conduct a realist synthesis to develop a programme theory of how integrated palliative care in cancer works, for whom and in what contexts to achieve improved symptom management and increased quality of life for patients and their families.
2. Use the programme theory to co-produce, with stakeholders (e.g., patient/caregivers, local, national, international content experts and multidisciplinary practitioners), guidance to inform delivery of best practice and guide future research.

Methods

A realist synthesis is the best approach to synthesising the evidence as successful implementation of integrated palliative care and cancer is complex, depending on the context and people involved. Our synthesis of the literature will follow Pawson's five iterative stages: 1) locating existing theories; 2) searching for evidence; 3) article selection; 4) extracting and organising data; 5) synthesising the evidence and drawing conclusions. We will recruit a UK wide stakeholder group, including NHS Management, and healthcare professionals (HCPs) involved in the delivery of palliative care and cancer management, Public Health Agency Northern Ireland, Palliative Care Policy Groups, Community Groups, plus members of the public and patients, to advise and give us feedback throughout the project. We will also follow RAMESES quality standards for conducting a realist synthesis, developed by one of the research team.

Outputs and dissemination

We will collaborate closely with our stakeholder group to ensure our findings are developed into user friendly guides tailored to the needs of key audiences: the National Cancer Research Institute, All Ireland Institute of Hospice and Palliative Care, and the National Institute of Health Research will also help us disseminate through their well-established channels. Findings will help inform further research in the field of palliative care and cancer. Additional funding will be sought for further research once this synthesis is completed.

3. BACKGROUND AND RATIONALE

Internationally, cancer is a major public health and economic issue with over 18 million cases in 2018. This figure is expected to rise to 29 million cases by 2040 due to the aging and growth of the population (1). Cancer is predominantly a disease of older age. The peak rate of cancer cases (both males and females) between 2015-2017 in the UK were in persons aged 85-89 and on average each year more than a third of new cases (36%) were in persons aged 75 and over (2). Disease burden is considerable with profound holistic impacts across biopsychosocial domains which affect persons with cancer and their family caregivers. This puts considerable burden on health service resources, with approximately 5 % of the NHS budget spent on cancer (3), estimated at £13 billion pounds in England for 2020/2021 (4).

It is over a decade since the first national strategy for end-of-life care in England, 2008, closely followed by other nation specific strategies for Scotland, 2008, Northern Ireland, 2010 and Wales, 2013 emphasising an integrated approach to palliative care which is responsive to patients' needs. However, adopting such a model in cancer services remains unactualized and symptom burden continues to be a significant issue for persons with cancer, particularly near the end-of-life (5). Additionally, the European society for medical oncology (cancer) strongly endorse integrating oncology and palliative care. However, a consensus on what constitutes integration is currently lacking (6) and there is a requirement to better understand what integration entails.

Integration is vital considering emerging evidence demonstrating improved QoL, reduced symptom burden, less exhaustive care, and lower healthcare costs when integrated palliative care and cancer care interventions are implemented (7). The World Health Organisation (WHO) defines palliative care as a care approach that "*improves the quality of life of patients and that of their families who are facing challenges associated with life-threatening illness, whether physical, psychological, social or spiritual. The quality of life of caregivers improves as well*". Additionally, they define integrated health services as "*health services that are managed and delivered so that people receive a continuum of health promotion, disease prevention, diagnosis, treatment, disease-management, rehabilitation and palliative care services, coordinated across the different levels and sites of care within and beyond the health sector, and according to their needs throughout the life course*." (8). In its simplest terms, integrated care is "appropriate people and services working together to provide appropriate quality care, in a timely manner, across all settings and appropriate to the needs of the person being cared for" (Definition co-produced by our Project PPI Group). To achieve Universal Health Coverage, a core component of the United Nation's sustainable development goal (SDG) 3, 'Ensure healthy lives and promote well-being for all at all ages', palliative care is a pre-requisite (9-10). Several randomized trials in cancer populations have demonstrated that access to palliative care has significant benefits: for patients in terms of symptom burden, quality of life, end-of-life care (11-15); for the health care system in terms of reduced financial burden for both patients and the health system (16); and for informal family caregivers in terms of stress burden and depression (17).

Integrated care is viewed as an important framework and organising principle, enhancing quality for care delivery with the aim of achieving improved patient care through better coordination of services.

As early as the new millennium there was a call for the emerging specialty of palliative medicine to become incorporated into cancer care (18). However, the complexity of integrating palliative care and oncology is well documented (19) and there is as yet no integrative oncology palliative care model (20) to optimise the delivery of high-quality comprehensive care for patients. A recent Cochrane Review concluded that, compared to usual care, early access to palliative care within oncology may have beneficial effects on both quality of life and intensity of symptom experiences in persons with advanced cancer, but also further raised the challenge of complexity in relation to integrating care (15). There was heterogeneity within the research in this area in relation to location (United States, Australia, Italy), cancer diagnosis (both heterogenous tumour entities, and homogeneous non-small cell lung / pancreatic cancer), participants (3 studies included patients alone, 4 included caregivers and patients), setting (outpatient, inpatient and home care), care models (3 studies used a co-ordinated care model and 4 studies used an integrated care model) delivery by a heterogeneous mix of staff (advanced practice nurses, multi-disciplinary team), and outcome measures used.

A recent Lancet Oncology Commission focusing on integration of oncology and palliative care (19) also highlighted the heterogeneity in published research focusing on integrating palliative care and oncology. There are variations across countries, systems (quality and access in relation to how countries care for persons with cancer) and settings (In-patient, out-patient, community), which limit the generalisability of findings. This Lancet Oncology Commission (19) confirmed palliative care integrated with oncology is in its infancy as there is no single model of palliative care integration that is tested in clinical studies or used in all health-care systems. Furthermore, it highlighted the urgent need for models that fit different health-care systems.

While research to date has contributed to the evidence base in relation to the benefits of integrated palliative care in oncology, we still do not know which intervention produces the best outcomes for patients and their family caregivers (what works: specialist vs primary care etc.), when best to initiate palliative care (for whom, or at what stage in the disease trajectory), or the optimal delivery method (in what circumstances, required infrastructure, and staff competencies etc.). **To inform evidence in this area, work is required to synthesize a detailed understanding of how integrated palliative care and cancer care may work best, for whom and in what circumstances**. Additionally, the impact of contextual factors such as local organisational, cultural and health policy aspects on models of integration has been outlined in the literature (21). A realist approach addresses this as it acknowledges that interventions are administered within and conditioned by the contexts in which they are embedded. This manifests as an inherent challenge in relation to transferability to other settings because factors within particular contexts enable certain mechanisms to trigger outcomes and therefore interventions cannot simply be transferred from one context to another and be expected to achieve the same results (22). However, realist understandings of ‘what works, for whom and in what settings’ enables the development of transferable, generalisable learning (23).

Capacity to generate new knowledge

From research already conducted the question is no longer whether integration of palliative care is beneficial in an oncology setting. However, questions do remain in relation to its optimal delivery and how it can best be accomplished to develop care which recognises and responds to the needs of persons with a diagnosis of cancer and their family caregivers. In other words, what remains unknown is what types of care should be delivered to whom, how, why and in which contexts. Although there is a comprehensive Lancet Commission report on integrating palliative care within oncology (19) and studies which outline challenges of introducing integrated palliative care (24-25), such studies are largely atheoretical and do not ‘explain’ what works, for whom, and in what circumstances when trying to develop guidance for an optimal integrated palliative care and oncology care pathway.

Emphasis is put on the importance of theory when developing and evaluating complex (i.e., multi-component) interventions, as evidence suggests that theoretically informed interventions lead to better outcomes (26). Theories help us to make sense of complex phenomena by providing tentative explanations for why and under what circumstances behaviours occur, or as importantly do not occur. Theory informed interventions can then be designed or modified to address these myriads of influences (27). A realist approach can also address the heterogeneity of existing research by identifying common mechanisms, contextual features, and outcomes. Therefore, the proposed research will make an empirical contribution to the existing body of knowledge with reference to current health and social care policy and practice as follows:

1. **By developing a programme theory of how integrated palliative care and cancer is supposed to work, for whom and in what contexts, we can develop recommendations to guide best practice and future research for older persons with a diagnosis of cancer.** This is in line with current NHS ambitions to identify and support delivery of best practice interventions for older people with complex health needs. The inextricable link between ageing and cancer is evident given that 9 in 10 cancer cases in the UK are in people aged over 50 (28); and on average each year more than a third of new cases (36%) were in persons aged 75 and over (2). The holistic impact of cancer for both persons affected and their family carers alongside a wide range of context-bound unmet needs is well documented (1,5,7). While research has demonstrated the integration of palliative care has been shown to be effective for alleviating holistic symptoms – determining what works, for whom, and in what circumstances will help address current gaps in the knowledge base to improve patient, caregiver and health service outcomes.
2. **By focusing on the integration of a palliative care approach to cancer management, we can use the findings from the realist synthesis to promote tailored and personalised care planning** which documents peoples' preferences and supports choices about key aspects of care towards the end of life for older people. Additionally, this work will positively contribute towards one of the two key objectives in the NHS cancer plan: improving palliative care services (29); and the United Nation's sustainable development goal 3, in relation to the provision of palliative care.

4. EVIDENCE EXPLAINING WHY THIS RESEARCH IS NEEDED NOW

Although we have some promising examples of integrated palliative care and cancer care (11-17), many have been developed in different countries (the majority in high income countries), in a number of different settings, delivered by a heterogenous mix of multidisciplinary teams, using different modes of delivery and involving different intervention components (15,19). Hence, it is not currently known which model works best, for whom, or in what circumstances. Since March 2020, the role of palliative care has been redefined in response to the enormity of COVID-19 related suffering. From the impact of the pandemic, the lack of integration between public health approaches, cancer care and palliative care became evident internationally (30) and serves as a striking reminder of the need for such integration to ensure the palliative care needs of persons with cancer and their caregivers are met. Furthermore, we need evidence now to develop guidance for the optimal delivery of integrated palliative care and oncology given the upcoming reorganisation in England to Integrated Care Systems. We can then seek input from our stakeholders to help us tailor any guidance for practice for each nation of the UK.

While modern medicine can be proud of the significant gains in life expectancy, it comes with challenges for the NHS now and in the future. The UK population is living longer than ever before, with more than three million people aged ≥ 80. Projections estimate that this figure will almost double by 2030 and reach eight million by 2050 (31). Patients aged 85 years and older with cancer are less likely to be diagnosed at an early stage of disease. Additionally, treating older persons who have cancer is complex because of the higher likelihood of comorbid conditions, and declining health status associated with aging (32). While older people have more unmet needs, they paradoxically have less access to palliative care with calls for more attention to, and research for this vulnerable group in relation to how palliative care may be best operationalised to meet their needs (33).

In light of the 2022 revised recommendations on standards and norms for palliative care from the European Association of Palliative Care (EAPC), which highlight the need for advocacy in relation to better integration of palliative care (34), this realist synthesis is significant and timely. Additionally, there was a strong consensus from our PPI group that this study is important. For example, one PPI member shared that, as a previous nurse and informal carer, she has been advocating for better integration of palliative care and oncology for over 35 years, yet nothing much has changed; and all PPI members felt strongly about the importance of looking at what works from a wide range of literature offering different viewpoints, including the patient and their families/informal carers. By combining and analysing the available evidence we seek to answer the crucial questions set out below.

5. AIMS AND OBJECTIVES

Aim

To understand how integrated palliative care and cancer care works in different healthcare settings (inpatient/outpatient), and for which groups of people (at what stage of cancer journey), so we can develop guidance for optimal delivery.

Objectives

1. Conduct a realist synthesis to develop a programme theory of how integrated palliative care works, for whom and in what contexts to achieve improved symptom management and increased quality of life for patients and their families.
2. Use the programme theory to co-produce, with stakeholders (e.g., patient/caregivers, local, national, international content experts and multidisciplinary practitioners) guidance to inform delivery of best practice and guide future research.

Review Questions

1. What are the mechanisms by which integrated palliative care and cancer care work to produce their intended outcomes?
2. What are the contexts, which determine whether integrated palliative care and cancer care produce their intended or unintended outcomes?
3. In what settings are integrated palliative care and cancer care likely to be effective?

6. RESEARCH PLANS

Objective 1: Conduct a realist synthesis to develop a programme theory of why, for whom and in what contexts integrated palliative care and cancer care produces desired outcomes

6.1 Methodology – Realist synthesis

The proposed study is a realist synthesis of literature on integrated palliative care and cancer care. Realist synthesis is a practical methodological approach designed to inform policy and practice. The realist synthesis approach is distinct from other types of literature reviews as it is based on an interpretive and theory driven approach, synthesising evidence from qualitative, quantitative and mixed-methods research. The unique contribution of this approach is that it yields transferable findings that explain how and why context can affect outcomes. It does so by developing realist programme theories that explain how, why, in what contexts, for whom and to what extent interventions 'work' (23).

Realist syntheses are particularly suited to research on integrated palliative care and cancer as they focus on making sense of the contextual factors that determine the outcomes of an intervention. Like other interventions that seek to propagate behavioural change, delivery of integrated palliative care and cancer care is highly context dependent, i.e. delivery of the same intervention will vary in its success depending, for example, on who delivers it and how it is delivered, the characteristics of the health care professionals, the circumstances surrounding it, and the tools and techniques used. Research designs that seek to “strip away” these contexts limit our understanding of “how, when and for whom” the intervention will be effective (23). A realist synthesis takes context as central to any explanation by exploring how an intervention manipulates context to trigger mechanisms that cause behavioural change.

The explanation building will ultimately start with the development of an initial programme theory of “how integrated palliative care and cancer care produce desired outcomes (or not)”. To achieve this, our initial realist programme theory will set out the necessary steps needed to accomplish the final intended outcome(s) from implementation of integrated palliative care and cancer. As the synthesis progresses, how and why each step (or intermediate outcome) can then be 'made' to happen will be explained using a realist logic of analysis - i.e., what relationship between context and mechanism(s) might lead to that outcome (23). This initial programme theory is then challenged and shaped through an iterative process of testing - i.e., parts of it are confirmed, refuted or refined against a range of relevant data from existing literature.

6.2 Plan of investigation

The plan of investigation will follow a detailed realist synthesis protocol, which will be developed by the research team. We have extensive experience in conducting both realist syntheses and systematic reviews. The protocol will be designed based on Pawson’s (2005) five iterative steps in conducting realist synthesis. It will also be informed by the quality and publication standards and training materials for realist synthesis developed by one of the research team members (35) (see www.ramesesproject.org). The protocol will be registered with PROSPERO which is a prospective register of systematic reviews.

Step 1: Locate existing theories
The purpose of this step is to locate existing theories that explain why, how, in what contexts, for whom and to what extent does integrated palliative care and cancer care work. This involves identifying the theories that explain how integrated palliative care and cancer care is supposed to work to bring about improved outcomes for persons with a diagnosis of cancer and their family caregivers. As outlined under the Patient & Public Involvement section (11) of the application, our PPI partners have been involved in shaping this research proposal, including the key outcomes. We considered more narrowly defined outcomes with them, but the consensus was to leave the desired outcomes broad as improved symptom management and increased quality of life means different things to different people depending on their own unique circumstances. PPI members were interested in shaping how we defined ‘integrated care’ to ensure it included the aspects of care that in their experience had the most potential to achieve the desired outcomes; namely "appropriate people and services working together to provide appropriate quality care, in a timely manner, across all settings and appropriate to the needs of the person being cared for". As the review progresses, we will be sharing our emerging findings with our stakeholders (which includes our PPI partner and PPI expert reference group). It may be that as we learn more about the integration of palliative care with oncology, our stakeholders may be able to help us better understand which outcomes matter more to patients and carers – thus allowing us to focus our review on these.

While we have already established there is limited theory underlying integrated palliative care and cancer care, the realist synthesis approach allows for the literature net to be cast wider to include literature from other fields and other professions where potentially shared mechanisms may be in operation. To identify these theories, we shall iteratively: a) consult with key content experts in our stakeholder group (see Table 1 below); b) informally search the literature to identify existing theories;

and c) analyse key policy documents for assumptions made about how and why integrated palliative care and cancer care works. The informal searches conducted in step 1 differ from the more formal searching that will be carried out in step 2 as their purpose is to quickly identify the kinds of theory that may be relevant; thus, exploratory and informal search methods including citation tracking and snowballing based on known existing studies will be used. Once the theories have been identified, we shall build an initial programme theory to test in the synthesis. Programme theory development will necessitate iterative discussions within the research team to bring together the different theories into an initial programme theory.

Table 1: Stakeholder group members

	Group	Members
1	NHS Management and Leadership	- Professor Marie Fallon – University of Edinburgh / St Columba's Hospice Chair of Palliative Medicine. Lead for Edinburgh Palliative and Supportive Care group (EpaS). - Professor Sam H Ahmedzai. Emeritus Professor, The University of Sheffield. NIHR CRN National Specialty Lead for Cancer - Supportive care and community-based research. Co-chair of NCRI Living with and Beyond Cancer Research Group. Chair of NIHR Cancer & Nutrition Collaboration Executive Committee. Chair of British Pain Society Education Committee.
2	Health care professionals involved in the delivery of palliative care and cancer management	- Dr Selina Mellon, Macmillan General Practitioner, Northern Health and Social Care Trust. - Bernie McGreevey; Principal Physiotherapist Northern Ireland Cancer Centre, Belfast Health and Social Care Trust, CSP Northern Ireland Board member; Allied Health Care Professional Palliative Care Forum Northern Ireland co-chair. - Professor Audrey Roulston, Queen's University Belfast, (Co-Chair of The European Association of Palliative Care Social Work Reference Group and The World Hospice and Palliative Care Social Work Network Research Committee).
3	PPI Partners (PPI expert reference group)	- Elspeth Banks; National Cancer Research Institute Consumer Forum and member of its Living With and Beyond Cancer Research Group (also co-applicant). - Peter Buckle; Marie Curie Research Voices. - Sharon Paradine; Marie Curie Research Voices. - Additional membership facilitated though Queen's University Belfast communications team and PPI Working Group
4	National and International Research Clinicians in palliative care and cancer	- Professor Peter Martin – Professor of Communication and End of Life Care, Deakin University, Australia. - Professor Aminah Jatoi, Medical Oncologist, Mayo Clinic, Rochester, USA. - Professor Daniel Kelly OBE, Royal College of Nursing Chair of Nursing Research, Cardiff University. - Professor Jose Andres Calvache, Professor of Pain Management, Anaesthesiology and Epidemiology at the Universidad del Cauca, Colombia.

		- Dr Esther de Vries, Associate Professor and Director of Doctoral Programme in Clinical Epidemiology at Pontificia Universidad Javeriana, Colombia.
5	Policy and Community Groups	- Paul Turley Health and Social Care Board. - Palliative Care in Partnership, Northern Ireland.

Step 2: Search strategy

Formal search

The goal of Step 2 is to find a body of relevant literature in order to further develop and refine the initial programme theory developed in Step 1. The searches will be designed, piloted and carried out by an information specialist with experience of carrying out iterative searches for realist synthesis (CD). We will search academic databases including CINAHL, PsycINFO, MEDLINE, AMED and EMBASE.

A search for grey literature will also be carried out using sources including Google, OpenGrey, NICE, and Health Management Information Consortium (HMIC). We acknowledge the potential value that grey literature can add to a realist review project, over and above published research. For example, policy documentation and existing guidance can help to surface the assumptions on which current recommendations and practice rest, while other materials such as evaluations and conference materials can contribute important contextual details. We acknowledge that some sources of grey literature are less stable, thus we will ensure a comprehensive search that will include for example, the King's Fund Library database and relevant palliative care-focused professional and patient-focused websites. In addition, we will search for theses and dissertations via the British Library's EThoS service and the international Proquest Dissertations and Theses Global database, and conference materials via the Conference Proceedings Citation Index (CPCI, via Web of Science).

Citation searching will be undertaken including 'cited by' searches and searches of citations in the reference lists of relevant documents. We shall also ask the research team and stakeholder group to identify any literature they may think is relevant. The databases will be searched using free text keywords and controlled vocabulary where appropriate, using terms such as cancer AND palliative care AND integrated care. The strategy will be informed by our informal scoping searches, search strategies employed in existing reviews and knowledge of the project team. Any literature that is likely to provide conceptually rich data, including grey literature, will be considered for inclusion in the synthesis.

Five existing reviews (including over 100 individual documents with potential relevance for this review) and results of a scoping search in MEDLINE conducted by CD indicate that we will have sufficient material to develop the programme theory. We acknowledge that this review has the potential to include a large volume of diverse material. Although the initial inclusion criteria outlined (in the screening section) below are inclusive, our intention is that these criteria will evolve in response to the development of our programme theory. Realist reviews often employ a strategy of "progressive focusing" to reach an appropriate balance of breadth and depth in analysis, with the aim of ensuring that the project is focused on key issues (Wong et al, 2014*).* In this project, we will draw on the expertise within our project team (including our learning from our previous realist review focused on integrated palliative care for patients with heart failure) and more importantly, of our wider stakeholder groups (specific to oncology and palliative care) to ensure that we prioritise those aspects of our programme theory that are considered most important and potentially 'actionable' or amenable to intervention(s). In practice, we anticipate that this process will influence the early stages of the review by directly informing our formal searches (Step 2) and/or screening and selection processes (Steps 2 and 3), via introducing additional concepts derived from the initial programme theory itself.

We are also aware that our intention to include literature from a variety of international settings introduces another layer of complexity in this review. We are confident that there is value in drawing on learning from a wide range of countries, but we recognise that we must ensure that we are confident in understanding the specifics of diverse settings. Our realist approach to the analysis will facilitate this, as our unit of analysis is the *programme theory* rather than any specific programme(s) or intervention(s) themselves. That is, we will consider data from a variety of settings in relation to relevant contexts and mechanisms in operation, and in doing so, ensure that our analysis speaks to the transferable learning from different countries and services.

Through our work on other realist reviews, we have developed another complementary strategy that we may employ (should the need arise) for managing large volumes of diverse material. We will initially sort all materials using criteria that we judge will help us identify those materials that are likely to contain the most relevant data for programme theory and Context, Mechanism, Outcome Configuration (CMOC) development. For example, in this review we might initially sort our documents by country of origin - e.g. Organisation for Economic Co-operation and Development listed countries (OECD) and others (i.e. newly industrialised or low-middle-income countries). The rationale for doing so was that we are judging that the health care systems from OECD countries are likely to be more similar to those of the NHS in palliative care delivery and availability than the other category (because for example in poorer nations palliative care provision is a scarcity). We will draw on content expertise of the project team and our stakeholder groups to help us identify which of the diverse materials we should analyse initially. This initial narrower focus on the materials will enable us to begin the process of programme theory and CMOC development. As the review progresses and we identify gaps in our programme theory of CMOCs, then we will look into the other documents that we had not initially prioritised for analysis - looking for additional relevant data. This gradual 'onioning out' or 'widening of the net' will help us effectively manage a large volume of diverse materials.

Screening

When screening the identified literature, our initial inclusion and exclusion criteria will be deliberately broad as we seek to identify quantitative, qualitative, mixed-methods and non-empirical documents. The following inclusion criteria will be applied:

- All documents focused on integrated palliative care for persons with a diagnosis of cancer.
- Study design – all study designs
- Non-empirical data (e.g. from opinion/commentary pieces) which help direct/shape theory development
- Types of settings – all documents about inpatient or outpatient or home-based care settings
- Types of participants – all adults (18 years and over) with a diagnosis of cancer, including under-served groups such as those over 75, different ethnic minority groups, LGBTQ+/ sexual orientation, and people living in remote areas (please note this list is not exhaustive, and will include all potentially underserved groups with a diagnosis of cancer)
- Types of intervention – any intervention for patients (and/or informal carers) where palliative care and oncology services are managed and delivered so that people with cancer receive a continuum of disease-management, rehabilitation and palliative care services, coordinated across the different levels and sites of care within and beyond the health sector, and according to their needs from cancer diagnosis to end of life (extending to bereavement support for carers) (with / without family carer)
- Outcome measures – all integrated palliative care and cancer related outcome measures

Our inclusion and exclusion criteria are likely to evolve as the review progresses in response to our initial and developing programme theory. Given the likelihood that our searches will retrieve a significant volume of potentially relevant literature, we may apply additional criteria to progressively focus the review and prioritise those aspects of the programme theory that are most important to stakeholders or likely to provide the most useful findings that can be readily actioned in the NHS (see Step 5 below).

The screening process will be piloted with small samples of documents until agreement on the application of the inclusion criteria is reached within the research team. The Research Fellow (RF – whom we will employ for the project) will screen the title and abstract of all retrieved articles to identify documents that meet the inclusion criteria. A member of the project team (JR) will independently screen a 10% random sub-sample to check for systematic errors. If there are disagreements these will be resolved through discussion between members of the research team. In the event of disagreements remaining, these will be discussed and resolved by majority vote amongst the research team. Documents included after title and abstract screening will then be screened again against inclusion criteria based on the full text using the same process as outlined earlier. The same quality assurance process as described above will be used.

Additional searching

A vital part of conducting a realist synthesis involves searching for additional data to explain particular parts of the programme theory. Therefore, more searches will be conducted if we need more data to develop and test specific areas of the programme theory. Based on our understanding of integrated palliative care and cancer to date, these could include areas such as: healthcare professional/patient/family caregiver attitude towards and understanding of: palliative care; the term ‘early palliative care’; non-specialist palliative care education and training; and having difficult conversations. These additional topics will increase the quantity of relevant data available for us to test the programme theory. The searches will be developed, piloted and refined by the research team with the help of the Information Specialist (CD). These searches will differ from the ‘formal searches’ outlined above through being more exploratory and purposive, and from a range of different disciplines. Each additional search instigated, along with the inclusion and exclusion criteria, will be discussed by the research team to ensure alignment with objectives.

Step 3: Article selection

We are aware that there will be evidence that is of variable quality. However, it is because of this potential challenge that we have chosen to use a realist review approach. Within realist reviews even 'low quality' evidence can provide important insights, but to ensure that our explanatory programme theory is sufficiently plausible and trustworthy, we will follow RAMESES quality standards for realist syntheses. For example, full text documents will be selected based on relevance (whether data can contribute to theory building and/or testing) and rigour (whether methods used to generate the relevant data are credible and trustworthy). Assessments will also be made of plausibility and rigour at the level of the programme theory (23). The Research Fellow (RF) will read the full text of all the included documents and only make a final decision to include them if they are judged to contain data that is relevant and will aid development of some part of the programme theory.

To ensure consistency, team members will independently check a random 10% sub-sample of finally included documents for systematic errors. In the event of any uncertainty, the review team will discuss the relevance or rigour of the articles and any disagreements will be resolved through research team member discussions. A majority vote among the research team will be used to resolve any remaining disagreements.

Step 4: Extracting and organising data

The realist synthesis approach synthesises information through notetaking and annotation. Full texts of the included articles will be imported into NVivo. NVivo is a data management system that has been successfully used by the research team in previous syntheses. The RF will carry out data extraction. The NVivo licence for this project will be provided by the School of Nursing and midwifery, Queen’s University Belfast. If required, NVivo training will be provided for the RF via the Staff Learning and Development Programme at Queen’s University Belfast. Relevant sections of texts relating to one or more parts of the programme theory will be coded in NVivo firstly by conceptual ‘themes’ and then as the synthesis progresses these will be developed into context-mechanism-outcome (CMO) configurations (see Step 5 below) (23). Data on the characteristics of the documents will be extracted separately into an Excel spreadsheet. As a quality assurance process, a random 10% of the coding will be independently checked by members of the research team with any disagreement resolved by discussion within the team.

Step 5: Synthesising evidence and drawing conclusions

A realist logic of analysis will be used to analyse the data from included documents. Interpretive cross-case comparison will be used to understand and explain how and why actual outcomes have happened e.g. by comparing integrated palliative care and cancer care that have been successful against those which have not, in order to understand how context has influenced reported findings (27). The following reasoning processes are typically used in synthesising evidence in realist synthesis:

a) Juxtaposition of sources of evidence e.g. where evidence about behaviour change in one source allows insights into evidence about outcomes in another source
b) Reconciling of sources of evidence – where results differ in similar situations, these will be further examined to find explanations for these differences
c) Adjudication of sources of evidence – centred on methodological strengths or weaknesses
d) Consolidation of sources of evidence – where different outcomes occur in similar contexts, a reason can be developed as to how and why these outcomes happen differently.

Throughout the synthesis, we shall move iteratively between the analysis of examples, refinement of programme theory, and further iterative searching for data (where needed) to test specific parts of the programme theory. The final realist programme theory will be presented in a diagram and through a narrative description of CMO configurations. In all realist reviews there is always a risk that the review team will be inundated by the sheer breadth and detail they could cover. As is usual and expected practice in realist reviews (as seen in Item 3 of the RAMESES quality standards for realist syntheses: https://www.ramesesproject.org/media/RS_qual_standards_researchers.pdf), we will progressively focus the review.

For previous projects we have worked on, progressive focussing has been undertaken to prioritise those aspects of the programme theory and/or CMOCs that are most important to stakeholders and/or provide the most useful findings that can be more readily actioned in the NHS. We have done so in the past by bringing such issues to stakeholder group meetings and combining the feedback and advice we get with the content and methodological expertise of the project team.

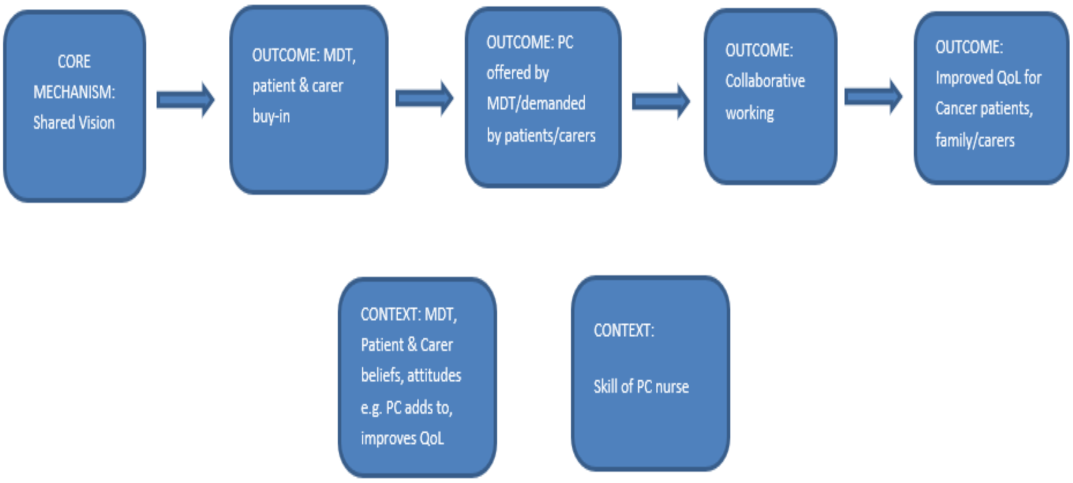
The process for arriving at guidance for optimal configuration of integrated palliative and cancer services will begin month 13-15 and be completed months 16 -18 during the 4th and 5th (final) co-production stakeholder meetings. This process is clarified under Objective 2 on page 12 and further clarified under Section 7 - Dissemination, outputs, and anticipated impact on page 12. We anticipate that co-production stakeholder group meetings will include commissioners, local, national, international content experts, multidisciplinary practitioners, patients, family members and the public who will each bring their unique perspective to data synthesis and what works, for whom, how, why and in what contexts to inform recommendations for the optimal configuration of integrated palliative and cancer services. In the first of these meetings, we will provide the participants with easy-to-understand summaries of our findings as well as drafts of what we would recommend in response. We would facilitate the meetings in such a way as to enable the participants to openly discuss and debate each recommendation. Where relevant and necessary we will revise our recommendations based on their feedback and advice. This may be done during the meeting or after it. If there are stakeholders who are not present in the meeting whose feedback and advice we would value, we will approach them individually and use the same process as described above. We will bring our revised recommendations back to the stakeholders in the second meeting and repeat the process outlined above.

During the review we will seek out data on costs and sustainability. Dr Fiona Lynn will provide guidance on synthesising relevant economic data. This will include assessing full-text records for economic outcomes and extracting, managing, analysing and presenting findings from included studies. The focus will relate to evidence of costs and savings associated with the introduction and scaling up integrative palliative care in oncology from the perspective of the NHS in the first instance. We will also synthesise any economic evidence on costs and savings from a patient/carer perspective and a societal perspective. The economic case for integrative palliative care in oncology will be explored in terms of the efficiency and equity of resource allocations to improve and enhance service delivery, presenting priorities for health service decision makers. Where economic data exist, if possible and relevant we will develop CMOCs for these aspects. Any such findings we develop on costs and sustainability of integrated palliative care and cancer services will be provided at the last two stakeholder meetings (see above) along with recommendations for commissioners and providers.

Example of a preliminary 'initial' programme theory

To provide an indication of what we think a programme theory of integrated palliative care and cancer care might look like in practice, we have developed a preliminary 'initial' programme theory of integrated palliative care and cancer for the purposes of this research proposal (see Figure 1). This theory is based on the research team's content expertise on how integrated palliative care and cancer care could produce its effects. In addition, we have provided details on a CMO configuration to indicate the type of information that a realist synthesis can generate. This CMO configuration is based on a core mechanism: Shared Vision. *"A mechanism is the way in which a programme's resources or opportunities interact with the reasoning of individuals and lead to changes in behaviour"* (35, p.3).

Figure 1: Preliminary 'Initial' Programme Theory



A hypothetical CMO Configuration example: Shared Vision Core Mechanism

A shared healthcare vision is essential for patients who have cancer to get the palliative care they need. Without this, it would be a challenge to achieve the desired behaviour change (collaborative working between palliative care and oncology teams) and therefore improve quality of life for symptomatic cancer patients. A shared vision refers to a common and clearly defined goal for patient care and outcomes that is shared by and meets the collective interests of the multidisciplinary healthcare team (MDT). This enhances buy-in to new ways of working and produces a feeling of being part of a supportive team, which leads to collaborative working. In integrated palliative care and cancer, the concept of a shared vision may well function as a mechanism within some of the CMO configurations we will develop as part of this synthesis. For example, having an appreciation of how palliative care can improve the quality of life of persons with a diagnosis of cancer (context) may trigger a shared vision (mechanism) among the oncology team, patients and their families leading to the offer or demand for integrating palliative care and cancer management (outcome). Additional important contexts may be in operation that influence the possible mechanism of shared vision. For example, we hypothesise that when the clinical oncology team, patients and their families understand that a palliative care approach *adds* to patient's clinical care, and does not mean that clinical care is reduced or stopped (context), and the palliative care nurse that works as part of the team is highly skilled in educating generalist staff, and building their confidence to deliver basic palliative care (context) then a shared vision (mechanism) will be triggered resulting in collaborative working (outcome) and eventually increase the patient's quality of life (outcome). Thus, whilst we are initially speculating that a 'core' mechanism is shared vision, we hypothese that different contexts will influence it in different ways to produce different outcomes (as would be expected in a realist understanding of causation). An initial hypothetical CMO is postulated as: An *intervention* that entails a combined, multidisciplinary oncology and palliative care team engaging in joint assessment and decision-making in relation to patients and their families, can engender a *mechanism* of shared vision and goals of care, leading to *outcomes* of improved symptom management and increased quality of life for patients and their families. These outcomes are more likely in *contexts* where a specialist nurse with knowledge of both services is in a coordinating role; they are less likely in *contexts* where there is an absence of agreed, written protocols for integrated care. If we were to find that this hypothetical CMO configuration were to be confirmed against available data from the literature, then we might recommend that palliative care nurses who work in collaboration with the oncology team would need to be highly skilled in both oncology and palliative care and understand how to trigger a shared vision in the oncology team.

Objective 2: To provide recommendations for commissioners, practitioners, patients and the public

Our programme theory will be used to provide guidance for the optimal configuration and implementation of integrated palliative care and cancer services across NHS organisations currently implementing or wishing to implement an integrated palliative care and cancer intervention. We will co-produce guidance with our key stakeholders (commissioners, local, national, international content experts, multidisciplinary practitioners, patients and the public) as outlined under 6.2, to ensure they are feasible, acceptable, and meaningful in practice. Guidance will also (where possible and needed) be specific to local, national and international professional bodies which recommend an integrated palliative care and cancer approach. It will contain details on what works, for whom, how, why and in what contexts to bring about the desired outcomes. More information is provided in the following section 7.

7. DISSEMINATION, OUTPUTS AND ANTICIPATED IMPACT

Project Outputs

To ensure that the guidance from this project will be useful to the key audiences we have set out below, the Knowledge-To-Action Cycle Framework provided by the Knowledge Transfer Clearinghouse (http://ktclearinghouse.ca)will be used. This framework provides knowledge translation resources funded by the Canadian Institute of Health Research. The Knowledge-to-Action Cycle graphically sets out the three steps necessary in bridging the knowledge-to-action gap. Specifically, this realist synthesis will generate knowledge that will inform the following phases of the Knowledge-To-Action Cycle framework:

1. producing stakeholder relevant knowledge;
2. adapting knowledge to local context and;
3. assessing barriers to knowledge use.

We will operationalise this framework as below:

7.1) Co-producing a practical user guide with key stakeholders

All three phases of the Knowledge-To-Action Cycle will be addressed during co-production of the guidance with key stakeholders. This co-production work will begin during the fourth stakeholder group meeting in month 14 of the project to ensure adequate time for planning both the dissemination formats and channels to optimise impact of the review findings. The guidance will outline practical advice to optimise, tailor and implement interventions designed to integrate palliative care and cancer that takes the local context into consideration.

The guidance will aim to impact on the routine care for persons with a diagnosis of cancer so they can benefit from an evidence-based integrated palliative care approach to oncology management. This document will be of relevance to commissioners of services, along with managers and providers of cancer services. These audiences are predominantly responsible for making the necessary changes at the 'coal face' to influence a change in practice. To gain impact we will make our guidance publication as relevant and feasible as possible - our goal being to avoid bland sweeping statements that are difficult to operationalise in different settings.

Findings from the review will be presented to key stakeholders at the fourth stakeholder group meeting, and their expert feedback will be used to shape the guidance. We envisage broadening the membership of the stakeholder group once we start to develop our outputs and recommendations, to gain a wider representation of both PPI members and service providers. Suggestions made will be noted and discussed in detail to ensure the guidance is acceptable and feasible within different settings i.e. what are the challenges to making this happen and how might they be overcome (if possible). We will ensure that any suggestions made are backed up by evidence from our review. Where there is a discrepancy, we will initiate further discussions about the validity of a suggestion. We will use this iterative dialogue with our stakeholder group to work through our review's findings. We will focus our last stakeholder group meeting (month 17) to confirm and refine our guidance and other outputs for a similar purpose but use email and teleconferencing (as needed) with the group between meetings to continue to work on the guidance publication output. We will augment the membership of this last stakeholder group meeting to ensure we have the relevant content expertise present. This strategy has proved successful in a previous realist synthesis to produce relevant and feasible recommendations (36).

7.2) Co-producing user-friendly summaries of the synthesis findings with key stakeholders that are tailored to the needs of interested audiences

The website that will be developed as part of this project will be done so in consultation with the whole project team. To enhance the understanding, accessibility, impact and reach of our findings to all key audiences mentioned above, along with patients and the public, the website will be built, hosted and maintained by Nathan Conn Freelance Designer and Animator, that houses all project information in one place. Hosting will be held by the Designer to enable controlled access and management as this is more cost-effective. A unique domain for the study will be linked to and from QUB online sites. The website will be publicised by all key stakeholders, for example through Tweets from / about our stakeholder meetings, including our PPI representatives from NCRI and Marie Curie. We fully expect to have ongoing-targeted outputs, which will be informed by discussions with all key stakeholders. For example, we will develop and post blogs on our website after each stakeholder meeting and we will invite our PPI representatives to contribute to these.

We will utilise several methods of engagement on the website. For example, we plan to develop animations / illustrations to creatively convey complex synthesis findings and enhance understanding of complex information from the review. The intended impact of this creative approach is to widen the reach of the 'headline' findings of the realist review to relevant stakeholders in a visually engaging way. These outputs are thus closely linked to our dissemination strategy. We will again draw on the expertise within the research team and stakeholder group to produce creative summaries that are user-friendly and relevant to the audiences we have identified above. Additionally, we will utilise international dissemination channels, for example the All Ireland Institute of Hospice and Palliative Care (AIIHPC). Importantly the AIIHPC is partnership driven involving service users, carers and communities and dissemination from this route will be underpinned by a co-designed communication strategy to promote optimal engagement across all key audiences.

7.3) The synthesis findings will be submitted for publication to a high-impact, open access peer-reviewed journal

The findings paper will be submitted to the Journal of Clinical Oncology. This is a high impact peer-reviewed journal, dedicated to advancing knowledge in the field of cancer care. We anticipate this publication is most likely to impact at an academic level – informing the understanding and theoretical basis of an integrated palliative care and cancer care intervention. There are several integrated palliative care and cancer interventions in place nationally and internationally, thus such a publication will be of relevance to academics and clinicians across the world. Additionally, we plan to submit the protocol paper to a high impact journal, such as BMJ Supportive and Palliative Care.

Co-producing dissemination strategies to increase impact
Our dissemination strategy will build on the co-production approach (involving PPI) that we used in the development of this research proposal (see Section 11) and in the production of the review outputs. It is clear there will be a number of key audiences, which will each need a slightly different approach to engage. For each audience, therefore, once we have consulted with the stakeholder group and clarified the key contacts, we shall contact the organisation directly to seek further advice on their preferred channels and format for optimal dissemination to their members. This will be assisted by the stakeholder group, JR already having established relationships with the All-Ireland Institute of Hospice and Palliative Care (AIIHPC); the European Association for Palliative Care (EAPC); and United Kingdom Oncology Nursing Society (UKONS). TM who has established relationships with hospices through Marie Curie UK; and GP who has established relationships with the National Cancer Research Institute (NCRI). To provide an example of this, GP is a member of the Executive Committee of the National Cancer Research Institute (NCRI) Living with and Beyond Cancer Group. This group has a number of workstreams, one of which is Advanced Disease and End of Life Care. The NCRI has recently created NCRI Networks which are a central hub for people working within the cancer research field – this will provide a direct communication channel for outputs and guidance developed from the project. A further avenue for this will be via the newly formed United Kingdom Association of Supportive Care in Cancer (UKASCC), of which Gillian is Research lead. UKASCC has an ever expanding membership and will be able to cascade the relevant guidelines that have been developed as a result of the project findings. Additionally, we will seek to develop links with additional partners, such as Cancer Research UK.

Audience 1: Policymakers, decision-makers and commissioners of cancer services

This audience is key to implementing the guidance arising from our realist review. We will engage with our stakeholder group to ensure findings reach all relevant bodies. We will develop briefing materials, tailored to different audiences, including Department of Health, NHS England, the Royal College of General Practitioners (RCGP), Royal Society of Medicine (RSM), Royal Society for Public Health (RSPH), and local government bodies: Guidance will be disseminated directly to every Health and Social Care Trust in Northern Ireland, England, Scotland and Wales, and presented at the

Northern Ireland Assembly Knowledge Exchange Seminar Series (KESS), which is well attended by policymakers and commissioners. We envisage the final report from our study will be hosted on relevant websites with relevant links to our project website. We will work with communication and Public Relations teams at QUB, University of Ulster, Oxford University, Marie Curie, AIIHPC and NIHR to enhance readership (as outlined on page 13).

Audience 2: NHS leaders, managers and practitioners involved in palliative care and cancer provision

These audiences are key to the delivery of integrated palliative care and cancer care. We will work with our stakeholder group to reach the relevant individuals and practitioner groups across England, Scotland, Wales and Northern Ireland, and prepare tailored briefing documents targeted at the different provider groups. Additionally, we plan to present the study at conferences and disseminate through peer review publications.

Audience 3: Members of the public, including those impacted by cancer

We will work with our University media, NIHR, AIIHPC, Marie Curie and NCRI communication services to ensure comprehensive dissemination of our findings to both patients and the public. All outputs will be in English and translated into the three most common languages in the UK (Polish, Punjabi and Urdu) to ensure dissemination to underserved populations. We will also provide summaries of our findings to all relevant charities. We will engage with our PPI Stakeholder group to maximise dissemination opportunities to the widest possible public audience, for example through posters/flyers in relevant patient waiting rooms, social media, ensuring our materials meet their needs.

To ensure that the patient voice is heard, we will invite our PPI stakeholder group members to share their own stories of cancer management (both with and without the integration of palliative care if possible). These will be used to strengthen the review findings and may be incorporated into the practical user guides, user-friendly summaries, relevant websites and media in the form of anonymised quotes or vignettes in order to encourage uptake of the recommendations by commissioners and providers. By using effective PPI engagement throughout all stages of this project, we will ensure effective societal valorisation that goes well beyond academic dissemination for the outputs from this project. This project will help overcome barriers to development, implementation and further research in this area as it will produce guidance on the optimal delivery of integrated palliative care and oncology, which will then be subject to evaluation via a further research study using realist evaluation.

8. PLAN OF INVESTIGATION AND TIMETABLE

The key tasks and their timings are outlined in the Gantt chart. Briefly:

MONTHS -3-0

- Recruit RF

MONTHS 0-3

- Brief, recruit and train (where requested) Stakeholder Group
- Set up and run 1st Stakeholder Group meeting
- Submit realist synthesis protocol for publication
- Start Step 1 of realist synthesis – locate existing theories and build initial programme theory

- Start Step 2 of realist synthesis – searching for evidence and screen search results
- Initial website development

MONTHS 4- 6

- Complete Step 1 of realist synthesis
- Complete Step 2 of realist synthesis
- Start Step 3 of realist synthesis – article selection
- Start Step 4 of realist synthesis – extracting and organising data
- Start Step 5 of realist synthesis – synthesising the evidence part only
- Iteratively refine initial programme theory – based on data from initial search and undertake any additional searching as needed and informed by the programme theory
- Run 2nd Stakeholder Group meeting – with updates on progress, findings -focusing specifically on choosing/prioritising IPTs (end of step 1) and expenditure

MONTHS 7-9

- Complete Step 3 of realist synthesis
- Continue with Steps 4 and 5 of realist synthesis
- Iteratively refine initial programme theory

MONTHS 10-12

- Continue with Steps 4 and 5 of realist synthesis
- Iteratively refine initial programme theory
- Run 3rd Stakeholder Group meeting – with updates on progress, gaining feedback and advice on emerging findings and expenditure summary

MONTHS 13-15

- Complete Step 4 of realist synthesis
- Continue with Step 5 of realist synthesis
- Iteratively refine initial programme theory
- Begin to co-produce guidance at 4th Stakeholder Group meeting

MONTHS 16-18

- Complete Step 5 of realist synthesis and guidance part as well
- Finalise programme theory
- Finalise co-produced guidance at 5th and final Stakeholder Group meeting and disseminate outputs
- Finalise and submit academic paper for publication
- Write final report.

Project Timetable

		2023								2024										
		-3-0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
			Ju	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
	Staff recruitment	■																		
Key Review Processes	Establish stakeholder group	■	■																	
	Stakeholder group meetings				■		■						■			■			■	
	Step 1 – locate existing theories (includes building initial programme theory)		■	■	■	■														
	Step 2 – searching for evidence			■	■	■	■													
	Step 3 – article selection					■	■	■	■											
	Step 4 – Extracting and organising data						■	■	■	■	■	■	■	■	■	■	■			
	Step 5 – Synthesising the evidence and drawing conclusions						■	■	■	■	■	■	■	■	■	■	■	■		
	Refine initial programme theory and additional searching as needed						■	■	■	■	■	■	■	■	■	■	■	■		
	Preparation of outputs, academic papers, report and dissemination				■													■	■	■

9. PROJECT MANAGEMENT

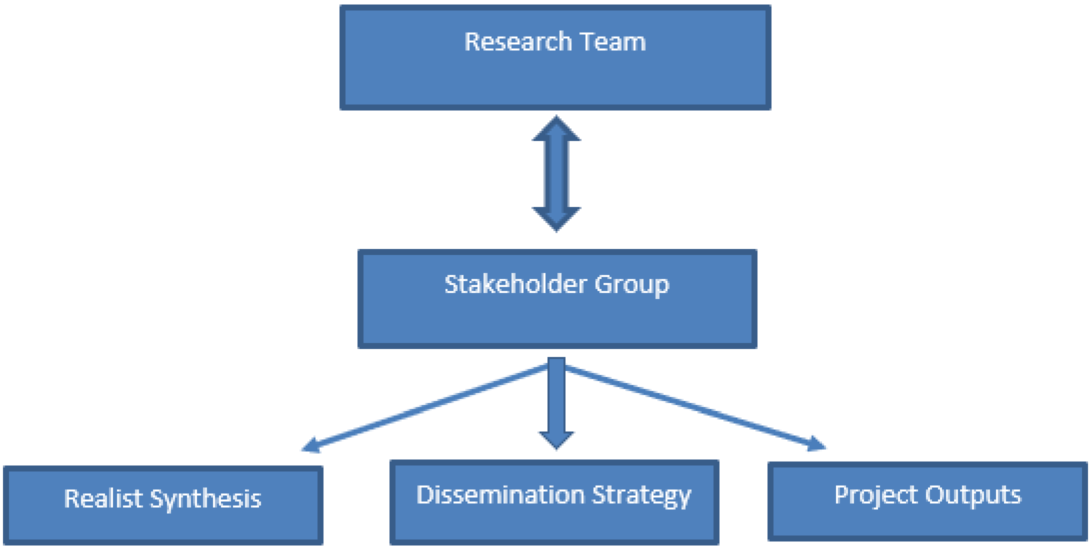
The research team will meet monthly with additional contact as required (e.g. via email, video and tele-conferencing). We shall run five stakeholder group meetings (as set out in the Plan of investigation and timetable section above). We will use a hybrid approach, with all core project team members joining in person for all five stakeholder meetings, and all Stakeholder members joining in person during project set-up and co-producing guidance (first, fourth and fifth meeting). The option to join via an online platform will be offered to ensure participation of our international stakeholder group. We are mindful of the possible ongoing impact of COVID-19 on our project (travel restrictions, social distancing requirements and shielding requirements for PPI members with cancer), and as such we will be flexible and inclusive. If required, we will run all five meetings online via Zoom or MS Teams depending on Stakeholder preference to ensure the study is executed on time and that all key deadlines are met. We have already held Zoom meetings with our PPI stakeholder group members to discuss the aims, objectives, plain English summary and dissemination plan for this proposed research. This mode of communication provided flexibility and was considered convenient and appropriate by our PPI partners.

The research team, co-led by Professor Joanne Reid and Dr Tracey McConnell, will include GP, PO'H, GW, EB, our information specialist (CD) and the RF– to be employed. We shall use QUB's Microsoft Teams as needed to enable us to conduct high-quality remote interaction and file sharing. This team will plan and monitor day to day progress, ensure ongoing communication among team members, review quality and timeliness of outputs, and manage day-to-day risks and issues. The research team will be responsible for undertaking the realist synthesis, producing the project outputs and dissemination.

The stakeholder group (Table 1) will also provide advice, promote the project, and help maximise dissemination and impact of findings. All data will be handled in accordance with the Data Protection Policies of our respective institutions.

Figure 2 below provides an outline of the project's organisational structure.

Figure 2: Project's organisational structure



10. APPROVAL BY ETHICS COMMITTEES

Ethical approval is not required for this project.

11. PATIENT AND PUBLIC INVOLVEMENT

We have involved members of the public in the drafting of this proposal. We sought feedback on the importance of our proposed study, what we should focus on in our review and our Plain English summary during June and July 2021 from: the National Cancer Research Institute Consumer Forum and member of its Living With and Beyond Cancer Research Group; and an established public involvement and engagement group (Marie Curie PPI Research Voices Group London; a large, diverse group who strive for inclusivity of group members). We have secured PPI membership from both groups to join our stakeholder group and Elspeth Banks (National Cancer Research Institute Consumer Forum and member of its Living With and Beyond Cancer Research Group) is a co-applicant on this realist synthesis. We will also seek to ensure diversity of the PPI members by broadening the opportunity for involvement to the general public. Queen's University Belfast have a dedicated communications team and PPI Working Group who will assist us with this public recruitment drive.

During this realist synthesis, we will ask PPI stakeholder group members:
- to help us develop our initial programme theory;
- for their advice and feedback on our programme theory as it evolves;
- to consider our findings and recommendations from their varied perspectives;
- provide input and support into our dissemination strategy and;
- review and contribute to our materials, to ensure they meet the needs of patients and the wider public.

We will establish a PPI expert reference group, made up of PPI members from: Marie Curie PPI voices; National Cancer Research Institute Consumer Forum; and additional members through our QUB PPI working group recruitment drive). We will meet with the PPI expert reference group prior to the larger stakeholder group meetings. These separate meetings will focus on making sure our PPI partners are clear about their role on the project and identify any training needs required to help PPI partners feel comfortable with their role. Where needed we will provide training to the PPI members so that they understand what their roles will be and will be able to meaningfully contribute. . More details may be found in the 'Patient and Public Involvement' Section of our application.

Success criteria and barriers to proposed work.

Our measures of success depend on meeting the key milestones as detailed within Section 8. In order to achieve these milestones, we have built our research team to ensure sufficient expertise to undertake this project (as outlined in Section 12). Additionally, we have confirmed capacity and capability in relation to stakeholders' engagement (as detailed in Table 1) for the duration of the project prior to submission of this application. A further success criterion is ensuring we have sufficient literature to develop our programme theory. However, in preparing for this submission our preliminary search (as detailed in Section 6.2), conducted by CD an information specialist with experience of carrying out iterative searches for realist synthesis, indicates that we will have ample material to develop the programme theory. We are also mindful of the ongoing COVID-19 pandemic. We have robust procedures in the University setting to support the research fellow working within the ongoing pandemic and have built in systems such as conducting meetings via zoom (as detailed in Section 9) to enable agile and inclusive working. Lastly, we acknowledge the success of the project outputs being implemented beyond the confines of this project depend on several factors and we will work in close consultation with out PPI partners (e.g. NCRI, Marie Curie Research Voices) about optimal pathways to impact and how potential barriers can be overcome. We acknowledge, there may be barriers to the implementation of guidance produced in existing healthcare system. For example:

1. Limited financing for wide-scale implementation of guidance produced. However, we hope that through the addition of the health economic aspects of this work that economic outcomes, in particular potential cost savings, of integrative palliative care within oncology could be an argument for investing in its implementation. Additionally, if through our work we demonstrate that integrating palliative care into oncology improves patient outcomes, outputs / guidance from our work could be an important resource to optimise successful integration.

2. Acceptance by health care professionals, patients and their carers in relation to integrated palliative care within oncology. We appreciate that there may be differences in acceptance of palliative care, particularly given the ongoing conflations between palliative care and end of life care that remain for both health care professionals and the general population. The outputs of this study will therefore be important to inform further societal discussions in relation to this acceptance and define the necessary conditions for optimal implementation of use.

12. Funder acknowledgement / disclaimer statement

This study is funded by the NIHR HSDR Programme (Project reference NIHR152115). The views expressed are those of the author(s) and not necessarily those of the NIHR or the Department of Health and Social Care

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