Report prepared by: **Gabbi Frith MSc, Dr Simon Nichols, Dr Lindsey Reece, Professor Rob Copeland**

Rotherham

ACTIVE FOR HEALTH

A Local Evaluation Report

SPORT ENGLAND LOTTERY FUNDED
NHS Rotherham Clinical Commissioning Group
Rotherham Metropolitan Borough Council
Sheffield Hallam University | Centre for Sport and Exercise Science
Functional Fitness
Places Leisure Part of Places for People
Speakup

Abbreviations

CCG	Clinical Commissioning Group
CHD	Coronary Heart Disease
CHF	Chronic Heart Failure
COPD	Chronic Obstructive Pulmonary Disease
CUA	Cost-Utility Analysis
ERS	Exercise Referral Schemes
GP	General Practitioner
HCP	Health Care Professionals
IPAQ	International Physical Activity Questionnaire
IPAQ - E	International Physical Activity Questionnaire - Elderly
LTC	Long-Term Condition
MSK	Musculoskeletal
MVPA	Moderate to Vigorous Physical Activity
NHS	National Health Service
PA	Physical Activity
PAM	Patient Activation Measure
RMBC	Rotherham Metropolitan Borough Council
UK	United Kingdom
QALY	Quality Adjusted Life Years
QoL	Quality of Life
VAS	Visual Analogue Scale

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1 Executive Summary

This report presents the findings from an independent evaluation of the 'Active for Health' programme conducted by Sheffield Hallam University between November 2015 and July 2018. The evaluation set out to understand how effective Active for Health was in providing condition specific support via Physical Activity (PA) pathways for seven long-term conditions (LTC). The evaluation also explored the cost effectiveness, and the process of delivering the programme. Specifically, the evaluation aimed to:

i. **Understand how Active for Health influenced PA behaviour across seven long-term conditions.**
ii. **Assess the impact of the programme on quality of life.**
iii. **Understand what works for each pathway and why.**
iv. **Explore the delivery experiences of health care professionals, providers and the project management team.**
v. **Explore the participation experiences and understand activation levels from patients.**
vi. **Assess the cost effectiveness of the programme.**

Evaluation methodology

The evaluation adopted a quasi-experimental research design with mixed methods used to obtain qualitative and quantitative data to explore the impact of Active for Health on physical activity (PA) and quality of life (QoL). It also included a formal process evaluation that explored the experiences of professionals and patients as they engaged in the programme. Data was collected through validated questionnaires, interviews and observations. Data presented in this report are from those who consented to be part of the Active for Health evaluation.

Active for Health - an integrated physical activity pathway for people with long-term conditions

Active for Health followed an integrated physical activity PA healthcare model for seven long-term condition (LTC) pathways, supported by a multi-agency collaboration between local government, public health, the National Health Service (NHS), and leisure providers.

The objective of Active for Health was to enable system-wide coordination of evidence-based PA provision whilst raising awareness of the physical, psychological and social benefits of PA to all key stakeholders locally. The seven long-term condition pathways include; Cardiac Phase IV, Chronic Heart Failure (CHF), Stroke, Cancer, Lower Back Pain (Musculoskeletal; MSK), Chronic Obstructive Pulmonary Disease (COPD) and Falls Prevention. All pathways followed the same 3-step process;

1) rehabilitation,

2) moving on and

3) keeping active (Figure 1.0).

Figure 1.0 - The 3-step model for Active for Health.

Summary of main findings

- **Active for Health increased the proportion of patients who undertook one 30 minute bout of moderate to vigorous physical activity (MVPA), from 30% to 90.5%.** For definitions of outcome measures and further detail of the results (see Sections 6.5 and 7).
- **Perceptions of Quality of Life (QoL) improved throughout the first three months of Active for Health measured by a Visual Analogue Scale (VAS). Health status improved on average from 65 to 75.** This was when support received from instructors was at its peak. **A decline in QoL was observed after six months, suggesting that specialist Level 4 instructors could be critical in helping people to maintain QoL.** However, **health status improvement scores remained significantly higher after 12 months**, compared to baseline scores (see Section 7.1.3).
- **All patients** involved in the qualitative interviews were **positive about their engagement with the Active for Health programme**. Social interaction, suitability of exercise, session structure, and instructor competency were key mechanisms for a successful physical activity (PA) programme (see Section 8.1).

  Patient's knowledge, skills, and confidence for managing their health and healthcare, were discussed as part of the qualitative interviews using questions based on the Patient Activation Measure (PAM). **Patients in the Stroke pathway were considered the least activated in their own health and those in the Cancer and Musculoskeletal (MSK) pathway were highly activated in their own health, demonstrating increased skills, knowledge and confidence in managing their condition**. This provides important information for future programme design, suggesting certain long-term condition (LTC) groups require greater support and additional mechanisms to manage their condition (see Sections 6.5.3 and 8.1).
- **At baseline, 15% of patients reported losing at least one day of work due to ill health within the previous 12 months. This decreased to 6.3% among patients who engaged with Active for Health for 12 months**. All patients, including those who were retired, were included for analysis because some patients retired during the programme (Section 7.1.3).
- **The study observed a reduction in health service use across all chronic disease pathways and in all aspects of health care, including GP use, specialist visits, admissions, A&E attendance and impatient bed days** (see Sections 7.1.2 and 7.2).
- Referral is associated with reductions in NHS costs and improvements in health as measured by Quality Adjusted Life Years (QALYs). **There is a 93% chance that the intervention is cost saving and a 99% chance that it improves health.** When considered together, there is a 99% chance that it is cost-effective at a threshold of £20,000 per QALY gained (see Sections 6.6 and 7.2).
- **Dropouts from the evaluation across the long-term condition (LTC) pathways was high. Approximately 20% of patients remained in the evaluation after 12 months** (Figure 5.0). Drop-out reasons collected on a sample of patients revealed that ill-health and taking part in other physical activity were the main causes. Future evaluations of similar programmes should explore attrition in more detail. This was out of the scope of this evaluation (see Section 7.1.1).
- As a result of Active for Health, professionals across the health care system endorse the programme and the promotion of physical activity (PA) in all stages of care (see Section 8.6).
- Trust and communication between all stakeholders was deemed essential for a successfully commissioned PA model of care.
- Universal stakeholder engagement was essential for the effective referral of patients to the programme. The process for the long term continuation of referrals should be addressed at the end of the Active for Health funding.

Conclusions

- **A key objective of the Active for Health programme was to develop an integrated pathway of referral to long-term exercise training for patients who have heart disease, chronic heart failure (CHF), stroke, Chronic Obstructive Pulmonary Disease (COPD), cancer, Musculoskeletal (MSK) problems, and have had a fall. Active for Health achieved this objective.**
- **The Active for Health programme increased physical activity (PA) levels among patients who remained in the evaluation. Increases in PA behaviour were accompanied by improvements in Quality of Life (QoL).**
- **During the Active for Health evaluation (November 2015 to July 2018), results from the professional interviews demonstrated how the Active for Health programme created a culture where physical activity is perceived as an important component of enabling patient self-management across Rotherham.**
- **Referral is associated with reductions in NHS costs and improvements in health, measured by Quality of Life Years (QALYs). The future sustainability of this service should be assessed for this reason.**

2 Introduction

2.1 Report overview

2.1.1 The aim of the report

This report presents the findings of an independent evaluation of the Active for Health programme. Findings are supported by empirical evidence, with key interpretations and recommendations highlighted to inform the design of future community based physical activity (PA) programmes that wish to integrate PA into chronic disease healthcare pathways.

The report provides the following:

- An overview of the Active for Health programme and its solution-focused approach to tackling physical inactivity and self-management of long-term conditions (LTCs).
- An outline of the evaluation approach.
- Findings from the formal process evaluation, including the experiences of patients and professionals assessed through surveys and stakeholder interviews.
- Recommendations for commissioners, practitioners and the academic community working to promote the health and wellbeing of individuals living with chronic diseases.

2.1.2 How to read this report

This is a large document and it is unrealistic to expect all stakeholders to read the report in its entirety. With the intention of making it easier for the reader, we propose three ways of reading this evaluation report:

1. **Executive summary** - If you want a brief overview of the evaluation findings - read the executive summary in section 1.
2. **Headlines only** - If you would like a more detailed overview of the evaluation findings - read the executive summary in section 1, plus sections 7.3, 8.2, 8.4, 8.8, 8.10 and 9.7.
3. **Read all sections in sequence** - If you have time, you can read each section as it appears in the document, including the appended disease cards. This will give you a full understanding of the Active for Health programme and its evaluation.

3 Background to Active for Health

3.1 Long-term conditions (LTCs) and the impact of inactivity

LTC's are a global and national healthcare challenge (The Kings Fund, 2010). LTCs can be defined as "a health problem that cannot currently be cured but can be managed through medication, therapy and/or lifestyle modification" (Department of Health, 2012). **In the last 10 years, the number of people diagnosed with a LTC has increased from 1.9 to 2.9 million.** In England, more than 15 million people now have at least one LTC (Department of Health, 2012).

Physical activity (PA) is defined as 'any bodily movement produced by skeletal muscles that requires energy expenditure' (World Health Organisation, 2011; WHO). **Physical inactivity has been identified as the fourth leading risk factor for global mortality (World Health Organisation, 2018)**. The Chief Medical Officer in the United Kingdom (UK) provides clear PA guidelines which aim to reduce the healthcare burden of LTCs. **Adults and older people should participate in 150 minutes of moderate intensity PA per week. Additionally, strength exercises should be conducted on two or more days of the week (Department of Health, 2011)**. Despite this, 40% of adults in the UK do not meet these guidelines and only 20% of individuals with a LTC achieve the recommendations (Public Health England, 2018).

Increasing PA is a key public health objective (World Health Organisation, 2018) and data suggests that insufficient participation in it costs the UK £7.4 billion per year (Public Health England, 2014). **A 1% reduction in physical inactivity could save £1.2 billion per year (Cabinet Office, 2014).**

Improvements in health, as a result of taking part in regular PA are greater when undertaken by those who are the least active (UK Active, 2013). The benefits of PA for those with a LTC are well documented and include improvements in wellbeing, a reduction in depression and anxiety, enhancement of cognitive function and improvements in overall Quality of Life (QoL) (Bize, Johnson & Plotnikoff, 2007; Gillison et al., 2009; Rebar et al., 2015). In addition, increased PA improves patient survival (, 2011) and reduces NHS healthcare service utilisation (Rahl, 2010).

While not all inactive people are NHS patients, the increased prevalence of LTCs means that the NHS is a key environment for the promotion of PA. Approximately 70% of the primary care budgets in England are spent on health care and treatment costs of people living with a LTC (National Institute for Health and Care Excellence, 2015). With an increasing demand on the NHS to manage population health needs and the operation on tighter budgets, this is a critical juncture to reduce costs associated with NHS service use (House of Lords, 2017).

Paradoxically, while the evidence base for the importance and positive benefit associated with integrating PA in chronic disease pathways has been rising, evidence on how best to implement it within the real-world setting remains low. Exploring the impact of programmes such as Active for Health is therefore essential to add to the evidence base of pragmatic community-based PA interventions and to embed effective components within chronic disease care.

3.2 The challenge of physical activity promotion in Rotherham

Physical activity (PA) and health are heavily influenced by social characteristics such as age, gender and ethnicity. **Individuals living in areas of deprivation are more likely to be physically inactive and have a long-term condition (LTC).**

Rotherham is in the highest 20% for deprivation (Indices of Deprivation, 2007), has a population of over 260,000; of which 12,000 are economically inactive (neither in work nor looking for a job or available to work) due to long-term sickness (Public Health England, 2017). The main drivers of excess year's life lost in Rotherham are problems of the circulation (principally stroke and ischaemic heart disease), respiratory disease and cancer. Individuals living in Rotherham are less likely to participate in PA, compared to those nationally (Public Health Outcomes Framework, 2014). **This is why increasing PA in adults in Rotherham is a priority (Public Health England, 2017).**

Rotherham's joint needs assessment forms a key evidence base for the health and wellbeing strategy and deems regular PA a priority in managing chronic conditions in Rotherham.

> "Rotherham will be a place where people feel good, are healthy and active, and enjoy life to the full."
>
> **Rotherham Joint Strategic Needs Assessment**

3.3 Finding a solution to physical inactivity

3.3.1 Physical activity and self-management

Empowering and supporting people living with LTCs to develop their knowledge, skills and confidence to manage their own health is a key strategic objective for health providers (Spijker & MacInnes, 2013). Supported self-management optimises the quality, effectiveness and efficiency of care for people living with a LTC. Self-management has the potential to improve health outcomes and help patients make better, more informed use of available healthcare support (The Kings Fund, 2013).

Increasing a patient's ability to 'self-manage' their condition has the potential to reduce the burden that LTCs place on healthcare systems. The Department of Health (2010) included self- management in their strategic framework for improving the health status of individuals with multiple LTCs. For patients with a LTC, PA has become a core focus of this 'self-management' strategy (Booth, Roberts and Laye, 2012). Supporting and empowering patients through condition-specific PA, could enhance their capability in managing their own health needs and reduce their reliance on health care provision. In primary and secondary care, the evidence is clear; there is a lack of action taken to integrate recommended PA as part of LTC treatment and management.

3.3.2 Health care service integration for long-term condition management

Healthcare funding systems have traditionally focused on isolated episodes of care, rather than the patient journey and the needs of the individual. Improvements in communication between primary, secondary and community care are needed. This could be one solution for ensuring an efficient patient journey (The King's Fund, 2013).

Creating a seamless pathway across a number of healthcare providers for different LTCs makes service provision more efficient and effective (Kings Fund, 2012). By doing so, patients may use healthcare services to their full potential. A 'joined-up' approach to healthcare, where health care professionals (HCPs) and allied health professionals can refer for non-medicalised treatment solutions is recommended. **Doing so may increase PA, reduce hospital resource use and,** General Practitioner (GP) visits (Kimberlee, 2016; Dayson & Bashir, 2013; Kimberlee, Ward & Jones, 2014).

When a pathway integrates treatment, rehabilitation and exercise maintenance, there is a greater likelihood of patient's sustained engagement in PA and or independent exercise.

3.3.3 An integrated physical activity pathway

A statement by the International Olympic Committee calls for health services to unite, collaborate and communicate with the entire of the health, sport and fitness industry (Matherson et al., 2013). Yet, the reality is community PA programmes frequently work in isolation to clinical care services.

Current evidence focuses on the implementation of Exercise Referral Schemes (ERS), a structured, supervised programme, typically delivered over a 10 to 12 week period. The effectiveness of sustaining PA behaviour post programme completion, in the LTC population remains mixed (NICE, 2014).

This presents an opportunity to enhance patient care, through the integration of healthcare with community PA provision (Trappenburg et al., 2013). Maintaining PA levels can be challenging in patients with LTCs (Poltawski et al., 2015; Blanchard et al., 2003), the focus of pathway design should be on relapse prevention and sustainability, prioritising programme adherence strategies and long-term maintenance.

The Public Health Advisory Committee put forward a number of recommendations for the development and delivery of rehabilitation schemes. This includes the importance of the referral mechanism and the qualifications of Exercise Specialists, which both encourage the uptake of and adherence to PA programmes. Other evidenced based guidelines identify support from providers (accessibility, cost, location session timing, and session content), as well as support from peer networks, as crucial for PA attendance and adherence (Morgan et al., 2016).

In Rotherham, an integrated PA pathway coupled with community based PA provision does not exist across a range of LTCs. The Active for Health programme was designed to close this provision gap.

4 Active for Health - a physical activity pathway

4.1 Active for Health pilot

Active for Health included a multi-agency collaboration between local government, public health, the NHS, and leisure providers. The objective was to enable system-wide coordination of evidence based PA provision whilst raising awareness of the physical, psychological and social benefits of PA to all key stakeholders.

The design of Active for Health was informed using pilot data from a local falls rehabilitation pathway (a more detailed review is available, Hawley-Hague & Roden, 2017). This work identified that after 12 weeks, the majority of patients improved their function, confidence and one third of patients were at a lower risk of falling. The continuity of delivery, the role of the Exercise Specialist, engagement of health care professionals (HCPs), and social and physical outcomes were essential for maintenance. Using pilot findings, stakeholder knowledge and insights, Public Health Rotherham designed seven PA pathways, specifically for priority LTC groups.

Active for Health was designed as a PA care model for seven LTC pathways, these include; Cardiac Phase IV, CHF, Stroke, Cancer, Musculoskeletal (lower back pain; MSK), Chronic Obstructive Pulmonary Disease (COPD) and Falls Prevention. There is compelling evidence across each of these pathways to highlight the benefits of PA, details of which can be found in Appendix 1.a to 1.e.

4.2 Programme overview

The aim of the Active for Health programme was to support individuals with long term conditions to become and stay more physically active. The programme aimed to link NHS clinical rehabilitation services to community physical activity programmes. All pathways follow the same **3-step process; 1) rehabilitation, 2) moving on and 3) keeping active.** Initial referrals to Step 2 are from rehabilitation services or a GP / HCP. These steps can be seen below in Figure 2.0.

Figure 2.0 - The 3-step model for Active for Health.

5 The Evaluation Approach

5.1 Standard evaluation framework

The Active for Health evaluation was conducted in line with the National Obesity Observatory Standard Evaluation Framework for PA interventions (Cavill, Roberts & Rutter, 2012) which guides the design and implementation of evaluations.

5.2 Aims and objectives of the evaluation

The aim of the evaluation of Active for Health was to answer the following questions:

Primary research question:

To what extent is Active for Health effective and cost effective in supporting and sustaining inactive individuals into physical activity opportunities/sport?

Secondary research questions:

- **What is the impact of Active for Health on quality of life and patient activation?**
- **What is the feasibility and acceptability from the patients and practitioner perspective?**
- **How cost effective is the Active for Health programme?**

5.3 Evaluation caveats

When interpreting the findings of the Active for Health data, it is important to be mindful of the following caveats:

- The report only provides information from the patients who engaged and / or completed the evaluation which could lead to self-selection bias.
- Self-reported findings coupled with qualitative data should be used together to consider the success of this project.
- The Active for Health evaluation was pragmatic and because it was conducted in the 'real world', absent of experimental conditions.
- All data presented was accurate at the time of reporting (November 2015 - July 2018). Any subsequent delivery and/or changes to programme delivery or pathway are not reflected here.

6.1 Evaluation structure

This complex programme evaluation was embedded into a pragmatic framework that was mindful of 'real world' context. Adapting to the organic nature of the project was important. A quasi- experimental research design with mixed methods was used to obtain qualitative and quantitative data which explored the impact and implementation of Active for Health. Methods included self - reported outcome measures (PA, QoL and NHS service use) and semi structured interviews which explored the experiences of all key stakeholders.

The following evaluation methods were implemented to help deliver a comprehensive evaluation of the Active for Health programme, using three evaluation approaches; formative, outcome and process evaluation:

6 Evaluation Methods

1. Formative evaluation:

A formative evaluation collated information to help improve and strengthen the implementation of Active for Health. The formative aspects of the evaluation sought to provide ongoing feedback on key aspects of learning or good practice. This included piloting surveys with individuals who were involved with, as well as unconnected to, the project. This process helped to design, develop and test programme materials before the implementation of the programme.

2. Outcome evaluation:

The outcome evaluation measured if the programme achieved its outcomes; asking specifically, 'Are the patients more active, or have they sustained their activity as a result of taking part in Active for Health?'. Findings from patient questionnaires were used to determine if the Active for Health programme successfully achieved its primary and secondary outcome measures. Pathway specific case studies based on patient interviews are also provided in the outcome evaluation to provide context, and enrich the quantitative data.

3. Process evaluation:

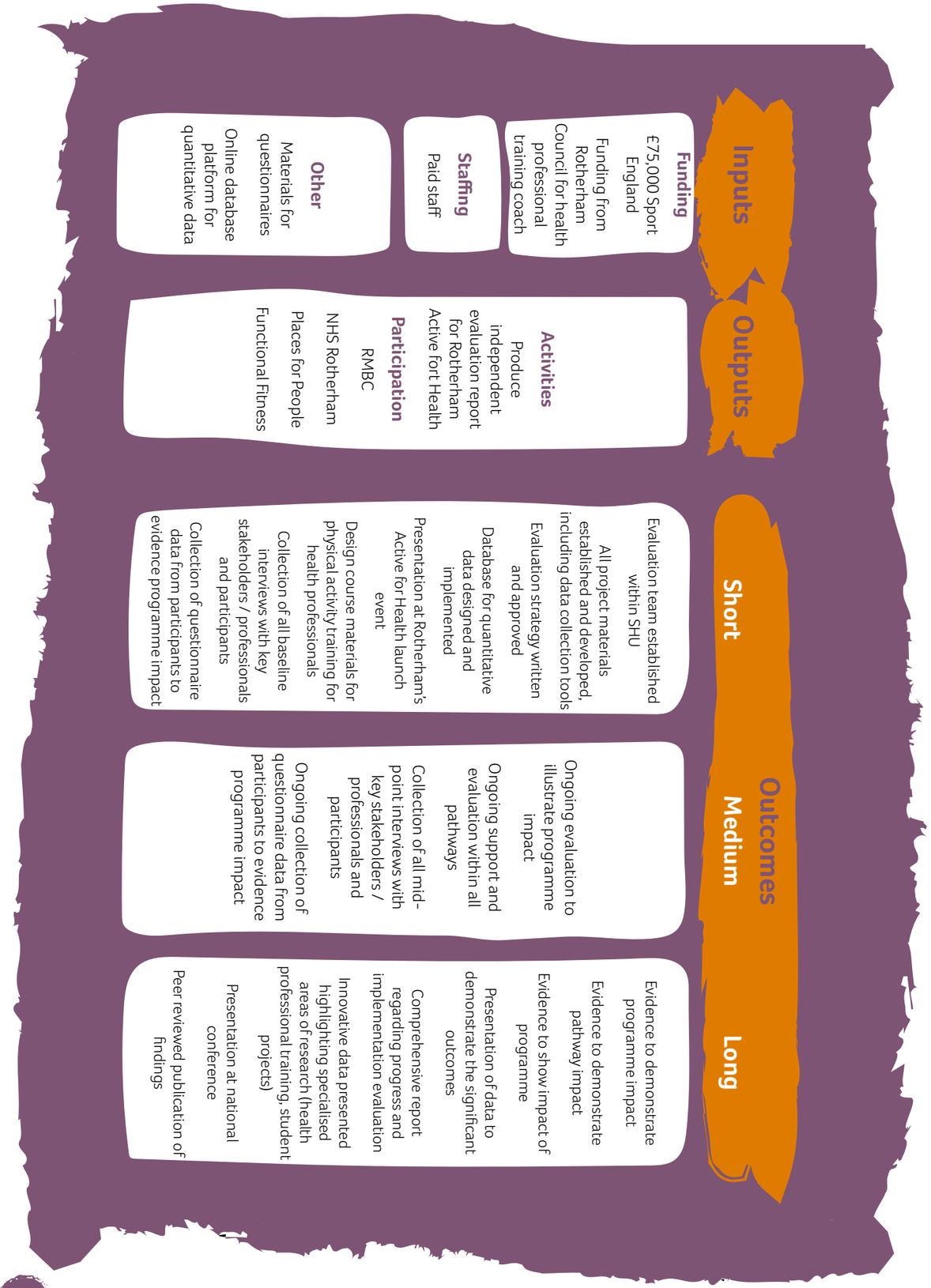
The process evaluation was implemented to understand Active for Health in relation to project delivery, and to understand if and how the processes involved were appropriately aligned to achieve anticipated outcomes. Simply, it enabled us to understand 'what works and what doesn't?'. This was incorporated into the qualitative interviews with patients, professionals and project management staff to identify the activities designed to assess the success of the programme.

The summative aspects of the evaluation answered questions about whether the Active for Health initiative worked or not, for whom and why.

Evaluation team logic model

It is recommended by the Standard Evaluation Framework (Cavill, Roberts & Rutter, 2012) that a logic model is implemented by the evaluation team to identify the outcome measures of a project. See Figure 3.0 for the Active for Health evaluation team logic model.

Figure 3.0 Active for Health evaluation team logic model.



6.3 Patient pathway allocation and data collection for the outcome evaluation

- Patients were given an information sheet before written informed consent was obtained by an Exercise Specialist. Consent was obtained prior to any data being collected.
- Patients were assigned a condition specific pathway by a HCP and Exercise Instructor at their first exercise session. Patients were also asked to record any other health condition or disability.
- Outcome data were collected from service users through a questionnaire booklet at baseline, three, six and 12 months.
- Demographics including, age, gender, employment status and postcode were collected for each patient, in order to understand the representation of the sample in the evaluation; these were collected at baseline only.

6.4 Ethical approval

This project was granted ethical approval from the NHS Research Ethics Committee. Informed consent was attained from all patients, HCPs, leisure providers and the project management team who were included in the evaluation. All data generated within the report was anonymised and treated confidentially. All data has been stored in accordance with the Data Protection Act (2018) and in line with the General Data Protection Regulation (2018).

6.5 Measures used to inform the outcome evaluation

A range of outcome measures were used to evaluate the impact of Active for Health as outlined below.

6.5.1 Physical activity and sport participation

PA was determined by the self-administered short form version of the International Physical Activity Questionnaire (IPAQ; Craig et al., 2003). This version and the International Physical Activity Questionnaire - Elderly (IPAQ-E; Hurtig-Wennlöf, Hagströmer, & Olsson, 2010) contains 9 items relating to activity level over the last seven days and refers to the number of days and time spent doing PA at either moderate or vigorous intensity.

Additional questions on time spent walking and time spent sitting are included. The median values of each activity category were calculated in minutes per week and days per week. Sports participation was measured using a single item. Patients were asked 'On how many days during the last week did you take part in sport?'. They were then asked to state the amount of time they usually spent doing sport on one of those days.

6.5.2 Quality of life (QoL)

The EuroQol index (EQ-5D-3L) and the EuroQol Visual Analogue Scale (VAS) are widely implemented measures of health status and health-related QoL retrospectively. The EQ-5D index assesses a patient's health state across five dimensions (self-care, mobility, anxiety / depression, usual activities and pain/ discomfort). The VAS is measured on a continuous scale from zero to 100 (with 100 representing full health). Patients were asked how they would rate their health on that day; with higher scores representing better health.

6.5.3 Patient activation

The Patient Activation Measure (PAM) measures patient's engagement and self-management competency.
The PAM has been designed to assess an individual's knowledge skills and confidence in managing their health and health care (for a full review see Hibbard et al., 2004). The PAM assesses patient activation, which refers to the knowledge, skills and confidence an individual has in managing their condition. This emphasises an individual's willingness and ability to take independent action to manage their health care.

Individuals are categorized into four levels of activation, with level one representing the least activated and level four the most. The score incorporates responses to thirteen statements about beliefs, confidence in managing health-related tasks, and self-assessed knowledge.

For the purpose of this evaluation, the questions from the PAM were used to inform the interview schedule with patients. There is evidence that links better patient outcomes with more engaged and activated patients (The Kings Fund, 2014). This is a novel and innovative approach to this evaluation and provides a measure of engagement and empowerment and the emphasis on patient engagement; activation and self- management. It provides a useful insight into patient engagement and activation across each LTC pathway. Implementing the PAM through qualitative interviews provides greater detail and understanding around patient's knowledge, skills in managing their own health and healthcare.

6.6 Economic evaluation

Respondents were asked to select their employment status (e.g., full-time paid employment, part- time paid employment, self-employed, retired etc.) along with; 1) the number of days lost to sickness if applicable and 2) the number of times they have accessed NHS services in the last 12 months. NHS service use included; the number of times they had contact with their GP, specialist appointments, A&E attendance and inpatient days. Patients were asked this question at baseline and 12 months.

Using this information, a Health Economist performed a cost-utility analysis (CUA), which calculates the costs and quality-adjusted life-years (QALYs) for two courses of action. In this study, the two courses of action are 'no referral scheme' and 'exercise referral scheme'; these are proxied by pre-referral and post-referral for the same patients. The CUA estimated the costs and health consequences from referral to the 12 month follow-up point. The longer-term effects of any change in activity were not modelled.

National unit costs for each of the items of resource use have been identified and are shown in Table 1. The costs are at 2015/16 price levels, which is consistent with the start of the referrals and also represents the most recent year for which NHS Reference Costs are available.

Table 1 - Unit costs for economic analysis

Item	Unit cost	Source	Note
Exercise programme	£105	Sheffield Hallam University	This is the tariff paid for all referrals
GP attendance	£27	Unit Costs of Health and Social Care 2016	GP surgery consultation, excluding direct care staff costs and qualification costs
Specialist attendance	£62.61	NHS Reference Costs 2015/16	Community Health Services, Specialist Nursing, activity weighted average cost of adult services
Emergency department attendance	£137.74	NHS Reference Costs 2015/16	Emergency Medicine, activity weighted average cost
Inpatient admission	£3242.03	NHS Reference Costs 2015/16	Elective and non-elective inpatients stays, activity weighted average cost
Inpatient day	£650.89	NHS Reference Costs 2015/16	Elective and non-elective inpatients stays, activity weighted average cost

6.7 Recruitment and sampling for the process evaluation

The process evaluation qualitatively explored the experiences of stakeholders as they engaged with the Active for Health programme. The process evaluation covered two discrete groups; Patients and Professionals (including the project management team). All interviews that comprised the process evaluation were conducted by the same researcher and took place via telephone or face to face. The researcher conducting the interviews followed a pre-defined semi-structured interview schedule to minimise the potential bias. All interviews were audio recorded and transcribed verbatim. Table 2 provides a breakdown of the total number of interviews undertaken by role type.

6.7.1 Patients

The evaluation team contacted patients by telephone at random from each of the seven pathways to gauge their willingness to participate in the process. If willing, an interview was scheduled at a convenient time for the patient. The recruitment period was January 2017 to July 2018. Interviews were carried out at one-time point throughout the patient's journey across all seven pathways, with 35 interviews conducted in total (5 per pathway), including a mixture of males (n=18) and females (n=17). The patient interviews were informed by a topic guide based on an adapted version of PAM (see section 6.5.3). An activation level was also provided for each patient (1= not activated, 4 = highly activated). Interviews lasted between 15 and 30 minutes. See sections 8.1 -8.2 for more details.

6.7.2 Professionals and project management staff

Project management staff based in Rotherham Metropolitan Borough Council (RMBC; n=2), two leisure providers (n=4) and Health Care Professionals working for the NHS (n=17) were invited to take part in the process evaluation. The interviews took place at three-time points; baseline, 18 months and project close. Interviews lasted between 30 and 45 minutes and were informed by a topic guide. The interviews with HCPs purposefully included those working across primary and secondary care and across all seven pathways to obtain a broad exploration of the programme experience. The sample size of HCPs reduced over time (18 months, n=14, project close, n=11).

Table 2 - A breakdown of all professional interviews per role type

Stakeholder type		Roles interviewed
Project management RMBC		• Project Lead • Project Coordinator
Leisure providers	**Site 1** - Responsible for stroke, COPD, MSK, falls and cancer	• Programme Manager and Lead Exercise Specialist • Lead Exercise Specialist
	Site 2 - Responsible for Cardiac phase IV and heart failure	• Health and Wellbeing Programme Manager • Contract Health and Wellbeing Manager
Healthcare professionals	Cancer	• Macmillan Clinical Nurse Specialist • Macmillan Project Manager
	COPD	• Clinical Specialist Physiotherapist • Rehabilitation Assistant Practitioner
	Falls	• Therapy Practitioner
	MSK	• Clinical Specialist and Team Leader • MSK and Orthopaedic Clinical Lead
	Stroke	• Team Leader and Speech and Language Therapist • Psychologist
	Cardiac phase IV	• Cardiac Rehabilitation Physiotherapist
	Heart failure	• Heart Failure Specialist Nurse

6.8 Transcription, data management and analysis

6.8.1 Qualitative Data Analysis

All audio recordings of patients, HCPs, leisure providers and the project management team were transcribed verbatim for analysis. This was carried out by an external transcription company and all processed data was stored securely under the Data Protection Act (2018). Data was transcribed verbatim and examined using thematic analysis. The approach involved the development of an initial coding index based on the interview guide. The coding index was then implemented to organise the data into themes. Three researchers independently read the transcriptions and coded the data to identify emerging concepts. These concepts formed themes that are presented in results section 8. The data of each patient was considered separately for each pathway and then emergent themes for each pathway were collated to provide an overview of the opinions within that subgroup. After coding, a consensus process was used to allocate concepts into sub-themes. During these discussions, the researchers considered whether a theme or subtheme represented the views of all pathways and descriptions were used to exemplify this.

6.9 Evaluation time line

Figure 4.0 illustrates the evaluation activities and the data collected at each time point. Data collection points varied across all stakeholder groups. Baseline data collection took place before a patient or professionals engaged with the Active for Health programme, in all LTC groups.

Figure 4.0 Evaluation activities and data collection time points.

Baseline

- Baseline interview with local authority (n=4)
- Baseline interviews with leisure providers (n=4)
- Logic models developed with local authority and leisure providers
- Baseline interviews with identified clinicians for each pathway (n=17)

18 months

- Interview with local authority (n=2)
- Interviews with leisure providers (n=4)
- Logic models reviewed with local authority and leisure providers
- Interviews with identified clinicians for each pathway (n=14)

Year 3 project end

- Close interview with local authority (n=2)
- Close interviews with leisure providers (n=4)
- Logic models reviewed with local authority and leisure providers
- Interview with identified clinicians for each pathway (n=11)
- Economic analysis by Health Economist

The programme offers people with a long term condition the opportunity to participate in physical activity and have access to a trained exercise specialist.

7 Results outcome evaluation

7.1 Results overview

The following sections report the key quantitative results from the Active for Health evaluation from all seven LTC pathways as a whole. A more in-depth analysis for each LTC pathway can be found in Appendix 1a to 1e. Section 7.4 includes pathway impact case studies, which add data on outcomes drawn from patient interviews.

The primary outcome measure for the Active for Health evaluation was the proportion of patients who achieved one 30 minute bout of moderate to vigorous physical activity (MVPA). Other variables of interest included the impact of the Active for Health evaluation on sport-specific PA, total weekly PA and QoL (measured using the EQ-5D-3L measurement instrument).

7.1.1 Active for Health patient characteristics

- One-thousand and eighty-two (n=1082) out of a possible 1460 (74.1%) patients were recruited to the Active for Health evaluation (Table 2). Patients were mostly female (56.9%) and had a mean age of 62.9 ± 13.5 years. Patients were youngest in the MSK group, and oldest in the falls and fractures group.
- Five-hundred and sixty-six patients (n=566; 52.3%) remained in the evaluation after three months. This fell to 366 (33.8%) after six months and 191 (17.7%) after 12 months, respectively.
- Patients in the Cardiac Phase IV group had the best programme adherence (28.9%; Figure 5.0), whereas patients in the MSK group had the highest evaluation attrition.
- A small cohort of 80 participants were contacted and asked their reason for dropping out of the programme. The main reasons recorded for dropout of the evaluation across all seven conditions included ill-health (30%), and participation in other PA (28%). The remaining 32% reported their reason for drop-out as; other commitments, back to work, completion of 12 free sessions, and inconvenient session location or time.

7.1.2 Healthcare utilisation

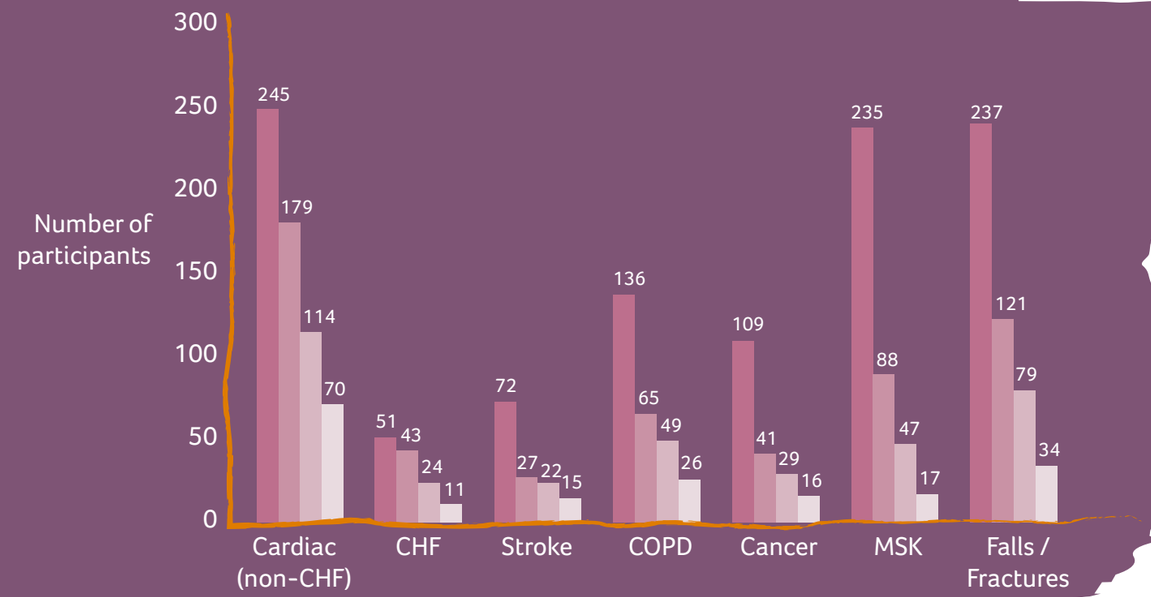
- To explore if the Active for Health program had an effect on how individuals were managing their condition, analysis of the number of interactions with healthcare services over a 12 month period were collected.
- A reduction in health service use was observed across all chronic disease pathways and in all aspects of health care (Figure 6.0).

Table 3 - Participant characteristics at baseline

Characteristic	All	Cardiac (non-CHF)	CHF	Stroke	COPD	Cancer	MSK	Falls / Fractures
Participants (% female)	1082 (56.9)	242 (35.5)	51 (37.3)	72 (43.1)	36 (50.7)	109 (83.5)	235 (60.4)	237 (75.1)
Age (± years)	62.9 ± 13.5	61.8 ±11.0	63.3 ±12.6	68.1 ± 10.0	67.2 ± 7.5	57.8 ± 10.4	50.8 ± 13.0	74.4 ± 9.5
IPAQ / IPAQ-E (*n*)	457 / 622	112 / 130	21 / 30	22 / 50	27 / 109	68 / 41	181 / 54	27 /210
Ethnicity								
Caucasian (%)	1034 (95.6)	221 (91.3)	46 (90.2)	72 (100.0)	135 (99.3)	109 (100.0)	220 (93.6)	231 (97.5)
Asian (%)	29 (2.7)	13 (5.4)	3 (5.9)	0 (0.0)	1 (0.7)	0 (0.0)	8 (3.4)	4 (1.7)
Black (%)	7 (0.7)	2 (0.8)	1 (5.9)	0 (0.0)	0 (0.0)	1 (0.0)	3 (1.3)	1 (0.4)
Arabic (%)	2 (0.2)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.0)	2 (0.9)	0 (0.0)
Mixed Race (%)	0 (0.0)	0 (0.0)	1 (2.0)	0 (0.0)	0 (0.0)	3 (0.0)	1 (0.4)	0 (0.0)
Not stated (%)	8 (0.7)	6 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	4 (0.0)	1 (0.4)	1 (0.4)

CHF = Chronic Heart Failure; **COPD** = Chronic Obstructive Pulmonary Disease; **MSK** = Musculoskeletal; **IPAQ** = International Physical Activity Questionnaire; **IPAQ-E** = International Physical Activity Questionnaire - Elderly.

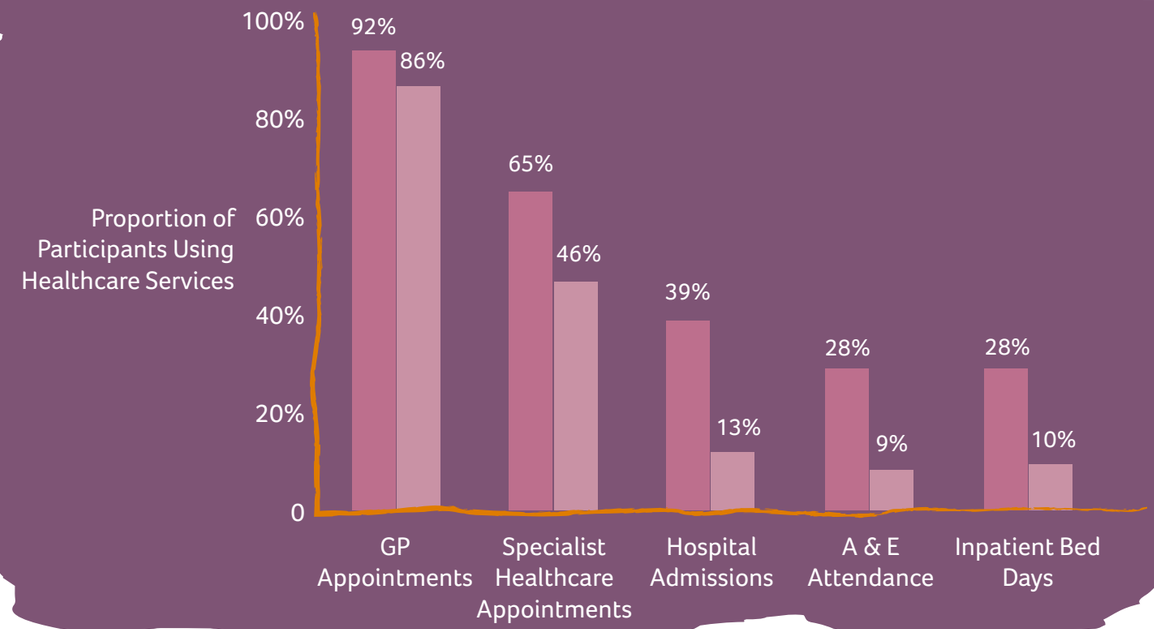
Figure 5.0 - Evaluation attrition by referral pathway.



Dark purple lines indicate baseline assessment. Lighter purple lines indicate three month, six month and twelve month follow-up.

CHF = Chronic Heart Failure; **COPD** = Chronic Obstructive Pulmonary Disease; **MSK** = Musculoskeletal.

Figure 6.0 - Healthcare utilisation within the Active for Health cohort.



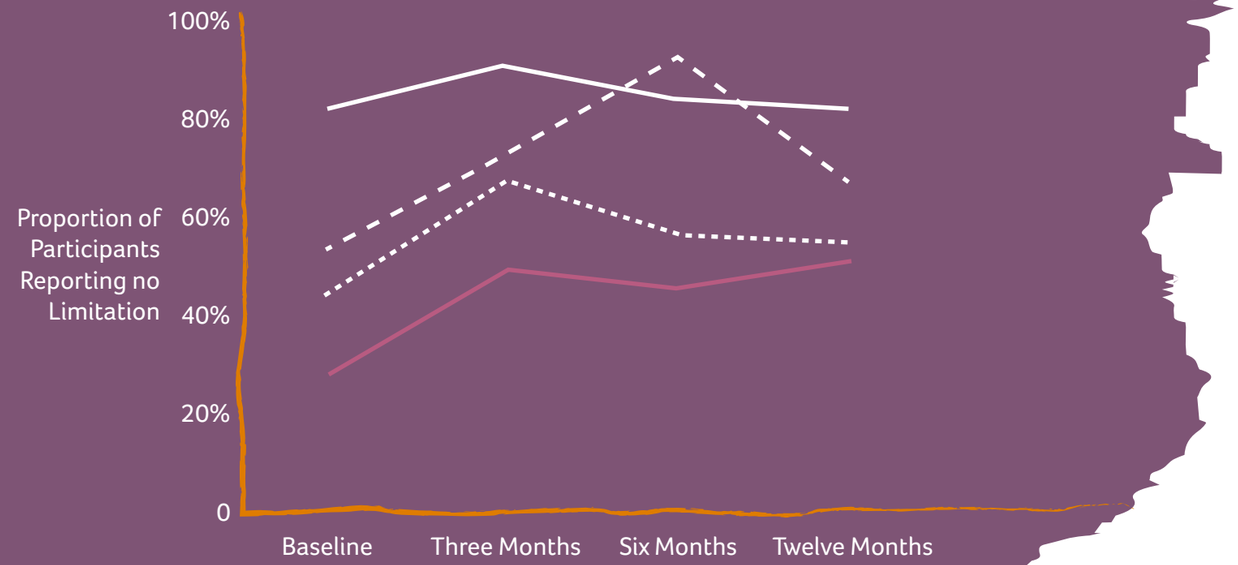
Dark purple bars and light purple bars indicate the proportion of patients who accessed healthcare services at baseline and twelve months, respectively.

G.P = General Practitioner; **A & E** = Accident and Emergency.

7.1.3 Quality of Life (QoL)

- For the purpose of the Active for Health evaluation, quality of life refers to the specific domains of daily living included in the EQ-5D 3L questionnaire.
- Days lost to sickness within the work environment are an important indicator of an individual's ability to manage their condition, but it is also economically beneficial for people to stay in work.
- Upon commencing Active for health, n=702 (64.8%) of patients were retired. Some patients may have retired as a result of developing a LTC, so the number of working days lost to sickness were reported for the whole evaluation population. In total 15% of all patients reported losing at least one day of work to sickness in the 12 months prior to enrolling on the Active for Health programme. After 12 months, this had reduced to 6.3% (n=12).
- It is important to note that without understanding some of the wider influences on a person's life, it is difficult to ascertain exactly the reasons behind these sickness days.
- Perceptions of QoL improved throughout the first three months of Active for Health when support received from Exercise Specialists was at its peak. A decline in QoL is observed after six months, suggesting that maintenance of support could be critical in helping maintain positive wellbeing scores.
- QoL, measured using the VAS rose from 65 to 75 after three months, and remained higher than baseline after 12.
- Changes in specific domains relating to patient QoL are shown in Figure 7.0. Compared to baseline, there were fewer patients who reported difficulties with usual activities and pain after 12 months. Patients did not report any improvements in their ability to perform self-care activities after 12 months.

Figure 7.0 - Proportion of patients reporting no limitation to selected domains of physical health and quality of life.



White solid lines indicate problems with self-care, white dashed lines indicate limitations to usual activities, dotted lines indicate mobility difficulties and purple solid lines indicate the proportion of people who do not suffer from physical pain.

7.1.4 Measurement of physical activity

Single Item Measure

- At baseline, most patients (70.0%) did not participate in at least one, 30 minute bout of moderate intensity PA, per week. This decreased to 9.5% after 12 months.
- Importantly, **77.2% of patients who were engaged after 12 months had initially reported failing to achieve one, 30 minute bout of moderate intensity PA when they were enrolled to the evaluation.**

Walking

- **Patients in the IPAQ and IPAQ-E groups both increased the number of days where walking activities were performed, from four at baseline, to six after three months.**
- The duration of walking activities increased from 30 to 40 minutes in the IPAQ group and the IPAQ-E group.

Moderate Intensity Physical Activity

- **Compared to baseline, patients in the IPAQ and IPAQ-E groups undertook moderate intensity PA on more days of the week after three months (Table 4).** This was accompanied by increased durations of moderate intensity, from zero at baseline, to 60 minutes at three months. The increase in duration was maintained at six and 12 months.
- For patients in the IPAQ group, no further changes in the number of days that moderate intensity PA were reported. However **after 12 months, the number of days where patients reported undertaking moderate intensity PA remained higher than baseline.**
- Despite a reduction, patients in the IPAQ-E group undertook moderate intensity PA on two days of the week after 12 months, compared with zero days at baseline.

Table 4 - Median number of days that patients took part in physical activity (range)

Time Point	IPAQ Group (Range)	IPAQ-E Group (Range)
Baseline	0 (0 to 7) [abc]	0 (0 to 7) [abc]
Three months	2 (0 to 7) [c]	3 (0 to 7) [a]
Six months	2 (0 to 7) [b]	3 (0 to 7) [bd]
Twelve months	2 (0 to 7) [c]	2 (0 to 7) [cd]

PA = Physical Activity;
a = Significant difference between baseline and three month values
b = Significant difference between baseline and six month values
c = Significant difference between baseline and twelve month values
d = Significant difference between six and twelve month values

7.2 Economic analysis

The economic analysis showed that NHS resources and costs reduced in the year after referral to Active for Health. Even after accounting for the cost of the scheme.

Overall health, measured by QALYs (Quality of Life Years) derived from the EQ-5D and the EQ-5D VAS measurement instruments, also improved (Table 5).

Based on the 135 patients where cost and QALY data were available, referral to Active for Health was associated with a reduction in NHS costs and improvements in health, as measured by QALYs generated by the EQ-5D-3L instrument.

In these cases, an incremental cost-effectiveness ratio* has not been produced as there is no trade-off between costs and QALYs. Instead, the intervention is said to dominate the control group.

When sampling uncertainty is considered, there is a 93% chance that Active for Health was cost saving, and over a 99% chance that it improved health.

When considered together, there is a 99% chance that it is cost-effective at a threshold of £20,000 per QALY gained.

This is a key finding, although the small sample size means caution should be used when considered the evidence.

** Incremental cost-effectiveness ratio (ICER) is a measure representing the economic value of an intervention, compared with an alternative form of care. It is usually the main output or result of an economic evaluation. An ICER is calculated by dividing the difference in health care costs (incremental cost), by the difference in the health outcome measure (incremental effect), which in this case was the EQ-RD-3L. This provides a ratio of 'extra cost per extra unit of health effect' for the more expensive therapy vs the alternative.*

Table 5 - NHS costs across the seven referral pathways

	n	NHS costs pre-referral	NHS costs post-referral	Baseline utility	QALY gain	Difference in NHS costs
Cardiac phase IV	56	2406	698	0.739	0.036	-1709
Heart failure	8	2764	1372	0.583	0.042	-1392
Stroke	11	3803	325	0.676	0.036	-3479
COPD	22	961	3527	0.786	0.019	+2565
Cancer	8	3072	691	0.759	0.020	-2382
MSK	10	1506	882	0.674	0.058	-624
Falls/fractures	20	1528	771	0.662	0.030	-757

7.3 Summary of outcome evaluation

The following bullet points summarise the key quantitative findings of the Active for Health programme. A more detailed quantitative analysis for each LTC pathway can be found in Appendix 1a to 1e.

1. Each pathway initially reported high levels of physical inactivity at baseline. In total 70.0% of patients did not achieve at least one, 30 minute bout of MVPA. By 12 months, however this had fallen to 9.5%.
2. The frequency and duration of walking activities increased in the Phase IV, CHF, MSK and Falls Prevention group. Patients in the COPD and Cancer pathways were undertaking walking activities on most days of the week throughout the study.
3. With the exception of Stroke and MSK patients, the number of days where moderate intensity PA was performed increased across the different LTC pathways. By six months, patients were typically taking part in moderate intensity PA on two to four days per week.
4. Most LTC pathways showed a trend towards improved QoL (assessed using VAS) after three months. Stroke and COPD patients were the only groups not to report significant improvements in VAS at any time point. Individuals who have had a stroke or have COPD usually deteriorate in health status over time with age, which results in a reduction in QoL. This is concurrent to previous research into LTCs (Ståhlb et al.,2005; Haacke et al., 2006).
5. In summary, most groups reported increased levels of PA throughout the evaluation. Older patients generally reported better outcomes than younger patients, although this may be due to some groups having fewer younger respondents at individual follow-up time points.
6. The intervention was clearly effective at recruiting patients. It was also effective at improving PA levels for the people who were followed up at 12 months.
7. Active for health has provided a potential solution for reducing barriers to participation in PA, although more work is needed to understand how programmes can be designed to increase long-term patient adherence.

Case studies highlighting patient's stories have been presented in section 7.4.

7.4 Participant case studies per condition

Cardiac Phase IV pathway case study

"Back in 2006 I was diagnosed with a heart condition called supraventricular tachycardia and I have had about 47 episodes where I have had to go to the hospital and have my heart stopped and re-started. So I was advised to attend Active for Health for the free 12 weeks of sessions. I loved it that much that I have continued going ever since".

Since attending the Active for Health programme:

- It has increased my confidence in walking
- It has built up the strength in my legs and given me the stamina to go swimming as well
- I don't feel as out of breath
- I don't go to the doctors as much as I used to

"I can now actually do things in everyday life, such as doing things for myself. Obviously it has given me a massive confidence boost and it is a massive social aspect for me now. Before I did this I was a bit of a hermit and I didn't go anywhere, I didn't see anybody. The people that I go to the class with, I have come to love and know. It's a massive comradery and then it's really nice afterwards when we all sit and have a drink in the café. I think that is what makes me go even more than the exercise alone".

Cardiac phase IV patient

Chronic Heart Failure pathway case study

"When I was diagnosed with heart failure it was shock and I lived in fear in doing any kind of activity and wasn't physically active at all. I was unable to walk hills and fearful of doing too much. I haven't been able to do everyday things such as walking to the hair dressers and doing other chores around the house due to fatigue, fear, and breathlessness. I am now exercising in one of the maintenance classes and have recently become a community buddy to support other patients who are now starting their journey in becoming more active whilst living with heart failure and have other heart conditions"

Since attending Active for Health:

- I am much more confident and am doing things I haven't done in years. I walked to the hairdresser for the first time on 2 years to have my hair done
- I didn't exercise before through fear and feeling ill. I'm now exercising 5 times a week
- I have made new friends and even gone onto to a further exercise class at the Rotherham Leisure Complex too
- Reduced my medication
- Reduced the feeling of being breathless

"In the future this can be available for others who have heart failure. The team were fantastic and they have really helped me at this difficult time on my life. The programme has been given me my life back".

Chronic Heart failure patient

Stroke pathway case study

"He suffered a stroke in 2015 which initially affected all his right side, with limited movement in his right arm. He was in a bed downstairs as he didn't have the mobility to get upstairs. He started rehabilitation with the enablement team and Physiotherapy at Park Rehabilitation; he was then referred to the Active for health programme and has been attending for the last 10 months. When he first started the programme he would attend in his wheelchair, and would exercise in his chair. From this he progressed to being out of the chair assisted by the instructor on a 1 to 1 basis with a walking aid, 10 months into the programme he is now talking part in the exercise independently with little instructor support".

Since attending Active for Health

- He is now able to get upstairs to sleep
- Completes the full session with no walking aid/ limited 1 to 1 support.
- He now walks independently around his home
- His right side had improved greatly and his leg movement is more aligned

"When he first attended he was a little nervous, apprehensive and anxious. He was unable to be left alone on a work station due to his strength, balance and control, 10 months into the programme his strength, balance, co-ordination and confidence has improved beyond belief, we no longer support him through the whole class, he can undertake exercise independently. I have seen a difference in not just his physical abilities, but also his interaction and confidence with other group members".

Lead Exercise Specialist of Stroke class and patients wife

COPD pathway case study

"Before attending the Active for Health programme I was very out of breath, I used my mobility scooter regularly and didn't walk far at all. I was very unsteady on my feet and lacked the confidence to go out alone. I relied heavily on my husband and family to take me places. I have now completed 12 weeks Step 2 and now continued into Step 3, as part of the Active for Health programme".

Since attending Active for Health:

- I rarely use my mobility scooter now, and most of the time I now walk
- I have tried skipping for the first time in 70 years
- My breathing is better and I can be active for longer periods of time, including taking part in the full one hour class now

"My family have noticed I am more independent, I am not asking for lifts so often, my family think it's great that I am now doing things myself instead of sitting".

COPD Patient

Cancer pathway case study

"I was diagnosed with breast cancer in May 2015, after both chemotherapy and radiotherapy I had lumpectomy axillary node clearance. I felt very tired, had a low mood/poor self-image, my weight had increased by two and a half stone due to treatment. I wanted to get fitter and move forward this was when my breast cancer nurse referred me to the Active for Health programme. I have now been taking part in the programme for 12 weeks. Since starting on the programme, I am feeling more positive about myself and I am doing something to improve my worry of reoccurrence".

Since attending Active for Health:

- I have lost a stone in weight
- Reduced my fatigue
- I can now run 400 meters and march up hills
- It has improved my mood

"I know the exercise part of the programme is important, but it is also the social aspect which really helps me. I would recommend the programme whole heartedly; the instructors are so knowledgeable in their area and everyone is treated as an individual. This course is amazing. I have no hesitation in continuing into Step 3 and paying for this service".

Cancer patient

MSK pathway case study

"My quality of life prior to the programme was poor due to a car accident 8 years ago which resulted in me having a chronic back problem. I was severely struggling with movement and day to day activities. I lacked motivation in daily life and had lost faith in all prior rehab services. I was referred to this programme by my physiotherapist."

Following the Active for Health programme:

- I rarely leave my house but I have managed to attend nearly every session, this group is not just exercise, it is fun! Attending the classes has given me more confidence to believe I might actually return to work
- I have learned to be able to get up and down from the floor using the aid or furniture if required which now enables me to get on the floor and play with my granddaughter

"These sessions have a wide variety of abilities who attend but the exercise is tailored to suit the individual. I find this is great as I can work to my own level and capabilities and I do as much as I feel is comfortable. The staff who deliver the sessions are highly trained professionals and work with you every step of the way". This programme has given me 12 weeks of tailored exercise which I am able to continue by attending so that I can continue to be more active and improve on the benefits I have already gained. I have seen numerous amounts of physios, pain specialists and psychologists from all over the country but I can honestly say I have found this the most rewarding and the fact that I can continue on this programme for as long as I choose to is great".

MSK Patient

Falls Prevention pathway case study

"Six years ago my mother, suffered a minor stroke, resulting in loss of peripheral vision in left eye and damaging the part of the brain effecting balance, resulting in sporadic episodes of dizziness/ loss of balance. After hospital investigations, loss of balance was due to having a mini-stroke. My mother had a couple of bad falls. These episodes have all had a significant impact on her confidence, making her frightened to leave the house alone. Following my dad's death, she gradually became withdrawn, disinterested in things she used to enjoy and eventually stopped going out alone, fearing she would have another dizzy spell, convincing herself she would fall".

Following the Active for Health programme:

- There is a significant improvement in her confidence, she's more mentally alert, her concentration has improved and she's generally a much happier person
- She is now able to attend the sessions alone
- She has met new friends
- Her confidence has increased and she is less concerned about having another fall

Even though the session in only once a week, it's the highlight of her week and often her main topic of conversation. The family feels more confident and less worried about leaving mum alone now, knowing she's happier, having the sessions to look forward to. This programme has been pivotal and vital in my mum's enhanced quality of life, both physically and mentally, for which I and my family, will be eternally grateful".

Daughter of falls patient

8 Results from the process evaluation

8.1 Key findings across all long-term condition pathways

8.1.1 Themes for all patients

Table 6 represents the main themes and sub themes derived from the qualitative interviews with patients from each pathway. For more detail around the qualitative findings per pathway, refer to condition cards in Appendix 1a to 1e.

Table 6 - Main themes and sub themes for patients

Main themes	Sub themes
1. Active for Health Programme	1a. Social interaction 1b. Exercise session and structure 1c. Exercise Specialists and Health Care Professionals 1d. Impact of physical activity 1e. Referral process
2. Patient activation	2a. Confidence in managing condition 2b. Knowledge and skills to manage condition 2c. Responsibility of health

1. The Active for Health programme

1a. Social interaction

- All patients discussed social interaction as an important part of the Active for Health programme. This included the impact of making friends and having time after the class to socialise.
- Social links and relationships were important to individuals with LTCs. Interacting with people through Active for Health enabled individuals to feel connected.
- Some had struggled with social interaction in the past, feeling isolated or having low confidence. Active for Health provided them with an opportunity to engage with others. Most people believed that there were significant benefits to being in a group of individuals with a similar condition to themselves.

"It is a lovely group, it's nice and relaxed. I think a lot of people come and they don't know what to expect and, as I said, we've got an absolute fantastic group of us and we all gel together lovely"

Stroke patient 2

"Being able to talk to likeminded people. Because as I say you talk to your family, but nobody really understands what you're going through or what you've been through, or your concerns. And sometimes I don't want to worry them if I'm concerned. I can tell my husband, but I wouldn't tell my kids"

Cancer patient 2

1b. Exercise session and structure

- Personalising the session based on the needs of the individual was important. It ensured that patients were challenged where appropriate, but not pushed too hard to cause disengagement in the session.
- The intensity of PA was considered appropriate and tailored for each individual. Perceived effort of the exercise was often referred to, with most patients being cautious not to over exert themselves. Many of the patients were risk adverse, not wanting to worsen their condition.
- Patients discussed the significance of having a scheduled appointment each week, which increased their motivation to attend.
- Patients tended to compare their activity levels to what they think they 'should' be doing, often based on their expectations of what was appropriate for a person of their age. They wanted to be comfortable and safe when being physically active.
- Patients didn't want to engage in activities that made them feel embarrassed or made their symptoms worse. Patients discussed their preference for circuit based exercises. Participants commonly referred to the enjoyment of the type of equipment used (vipr and TRX) and the variation of functional training tools, which differ to typical gym equipment.
- Music choice was deemed important and should be adapted to the group demographics, to enhance engagement with exercises.
- Patients also discussed the benefits of choosing an appropriate location and time to suit their needs.

"I think if you want to push yourself you can, and if you don't then you don't. I mean some of the ladies are probably moving up to 70, you can only do so much, and you don't feel under pressure to do more than you can do"

MSK patient 1

"You're with people that have gone through what you've gone through, and some worse than yourself. And I think it's not too vigorous exercise; you don't feel like you've got lots to prove. I think in a gym I feel like I'd got lots to prove; whereas I enjoy these exercises. I push myself, and I want to, I mean there's a range of ages, and some can't push themselves as hard, or some have just joined. It adapts to everybody..."

Cancer patient 1

1c. Exercise Specialists/ instructor and Health Care Professionals

- Active for Health patients often indicated that they were motivated to engage with and participate with the programme because of the instructors.
- The personality traits of the instructors were considered important, such as being friendly and approachable.
- The camaraderie in the group was often referred to by patients. The instructors were proactive in engaging the patients in the social component of the classes, which emerged as 'banter' between the patients and the instructor.
- Exercise Specialists and HCPSs were considered as important sources of advice on the safety and appropriateness of PA.
- Most respondents had comorbidities and therefore felt the need for instructors to be suitably qualified, and to have experience and expertise with a number of LTCs
- The type of instructor leading the session was very important to patients. Experience, knowledge of exercise, knowledge of condition, spontaneity, empathy and listening skills were all viewed as particularly important.
- A large proportion of patients discussed having a trusting and supportive relationship with their HCPs. This was particularly evident in the cancer group.

"...you can put your trust in the instructors that they're only going to push you as hard as you can go at that point...they were really supportive of just having gradual progression every week. So I felt because they were in control and they were there to support us that I wasn't ever going to overdo it or not do as much as I could"

Cancer patient 3

"The instructors couldn't make the sessions any better... keeping their eye on you"

CHF patient 1

1d. Impact of physical activity

- All patients discussed some form of benefit from attending the programme including physical, social or psychological.
- Having a positive or negative experience of PA in their life, either through the NHS or otherwise, influenced their attitudes and motivation towards PA. Patients discussed past PA and had already 'bought-in' due to past experiences.
- Patients identified a wide-range of benefits from PA, but most emphasize the 'feel good factor'.

"...it makes you get up and got out and be active, instead of just sitting at home feeling sorry for yourself"

COPD Patient 2

"You have to get up, get dressed, get washed and changed and clean your teeth and get out to that place at a particular time, so I like that regime of don't lounge about at home doing nothing and not meeting different people and chatting and talking. I like that"

Falls Patient 1

1e. Referral process

- Patients frequently discussed the ease of the referral process, including the speed at which they were referred and attended their first session. Within the referral process, patients discussed the established trust and relationship with the HCPs.
- The HCP's were seen as an advocate of the programme and patients were therefore willing to try the programme.
- Participants stated that the Active for Health programme was de-medicalised, as the sessions are delivered in a community based or leisure facility away from the hospital.
- Some of the patients from the Cardiac and CHF pathways commented that the referral process took some time; however this didn't negatively impact on their engagement. Originally these two pathways were delivered as cohort programmes, which changed to a rolling programme; this can impact on referral times.

" ...you've still got that support where you can phone your Macmillan nurse up and things like that. But you get better support from the people doing something like Active for Health than phoning your breast care nurse up. You seem to get more out of this Active for Health. It's more of a lifestyle thing rather than the hospital thing"

Cancer patient 4

1f, Long term physical activity

- Instructors promoted additional exercises at home, providing safe and practical options by adapting the exercises learnt within the session.
- Most patients felt disappointed at the prospect of the classes being stopped in the longer- term. They believed that not having a scheduled session to attend would negatively affect their motivation and encourage disengagement.
- Those in the Cancer and MSK pathways were primarily engaged and motivated to carry out alternative PA.
- Patients in all pathways discussed the continuation of PA in the long-term; those in the Stroke and Falls Prevention pathways were more reliant on the continuation of Active for Health. These patients discussed lower confidence in carrying out unsupervised PA and increased dependence on the social support from others.

"I would be miserable and I would also be very cautious about doing exercises myself...if I hadn't been to this class I wouldn't be doing these exercises that we do. I mean they're simple, but there is quite a selection of movements and that. But I think if you're on your own at home, you wouldn't try and do these exercises...you've got the weights and lifting the, the right weights up, you'd think ooh no, would that hurt me, is that detrimental to heart trouble? But when you're there they guide you through these and you think ooh I can do that"

CHF Patient 2

2. Patient Activation

Patient activation scores were given to each patient, based on their comments in the interviews; these can be seen in Table 7. More details can be seen in Appendix 1a to 1e per pathway.

Table 7 - Patient Activation Level for each pathway

Long-term condition pathway	Patient activation			
	Level 1	Level 2	Level 3	Level 4
Cardiac Phase IV	n=0	n=2	n=1	n=2
Chronic Heart Failure	n=0	n =1	n=2	n=2
Stroke	n=0	n=4	n=1	n=0
COPD	n=0	n=0	n=3	n=2
Cancer	n=0	n=0	n=3	n=2
MSK	n=0	n=0	n=3	n=2
Falls	n=0	n=2	n=3	n=0

Level 1 = low level patient activation; Level 4 = high level patient activation

Patients in the MSK and Cancer pathways were considered the most activated in their own health, based on their skills, knowledge and confidence of managing their own condition.

They generally deemed themselves to be the most responsible for their own health, had high confidence in managing their own condition, and their ability to continue with PA. They had good knowledge of their condition and its management. Patients in the Stroke pathway were considered the least activated in their own health and mostly believe that others are responsible for their own health, including loved ones and HCPs. A breakdown of PAM scores per patient and pathway can be seen in Table 7.

2a. Confidence

- Confidence in LTC management varied across all seven conditions, with those in the Stroke group rating their confidence as lower in comparison to the other conditions. These patients feel that they need continual supervision.
- Those in the other pathways rated their confidence in managing their condition as high. Confidence was often referred to on a Likert scale between one to ten, with one being low and ten being maximum.
- Most patients discussed how their overall confidence and confidence to manage their condition in the long-term had increased as a result of Active for Health.
- Across all conditions, patients compare their success based on the ability of others. If they perceive someone less capable or with a higher severity of their condition, it makes them feel more confident and able.

"I'm a lot more confident now in doing things, and doing things on my own as well than what I ever have been. Like I said this keep fit, the Active for Health, that's the first thing I've ever done on my own"

Cancer patient

" It's the best thing you can do because it gets you out, it gets you with other people in the same predicament and that I think being with other people, it helps you long, it gives you the confidence to think well I'm not dying and I'm strong and I can do these exercises like everyone else"

CHF patient

2b. Knowledge and skills

- Those in the Cancer, MSK, Cardiac, CHF, Falls Prevention, COPD pathway, seemed particularly knowledgeable about their condition. Those in the Stroke class seemed less knowledgeable about their condition. This includes knowledge of medication, causes of condition and long-term management.
- Skills were coded based on patients' ability to transfer skills learnt in the session with application into other settings, like a home based activity. Patients in each pathway discussed the importance of transferring exercises from the Active for Health session to home based exercises, and/or adapting exercises learnt in the session to better enable activities of daily living.

"It's about me and if there's anything that I do wrong it's my fault. I don't think that other people can take responsibility for my health in the broad term. The health people the people I've dealt with have always been very supportive and very sensible ant they've always done what I consider to be the right thing"

Cardiac patient 1

"Well, it's my body, so I've never really thought anybody else was responsible for it. It never even entered my head that they were"

Cancer patient 5

"Well because I think if you think there's something wrong with you, whether it's because of what I've gone through, but I think now if there's anything I think is wrong it's up to me to go and find the answer, go and speak to somebody"

MSK patient 4

"I think it was mostly down to my age. That's the explanation. I don't smoke, I drink glasses of wine with my tea and things, and I can't say I don't drink alcohol. But I don't smoke, and they always say that's the worst thing. I'm not overweight"

Cancer patient 1

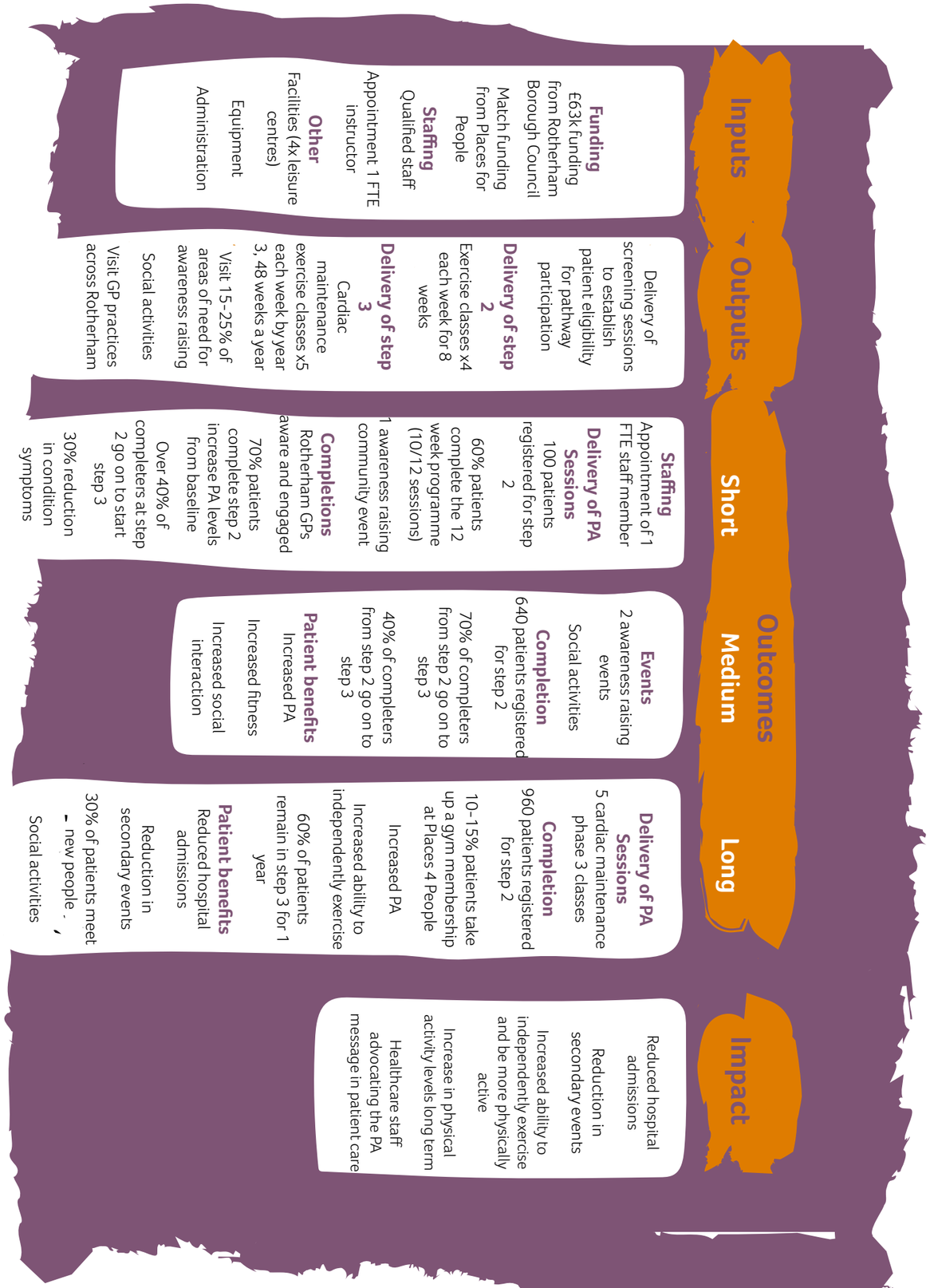
8.2 Summary of patient interviews

- All patients involved in the qualitative interviews were positive about their engagement with the Active for Health programme; it was commonly voiced that the suitability of the exercise was important, to prevent any exacerbation of their LTC.
- Proficiency of exercise professionals, including correcting technique, the suitability of the exercise and reassurance was important. This highlights the need to address patient fears, before engagement in a PA programme, which may ultimately act as a barrier to participation.
- Within each LTC group, patients frequently discussed the importance of type of PA, social support and post session social time. So, an attempt to develop a PA pathway containing these components is important.
- Patient activation levels varied between conditions, with those in the Cancer and MSK pathway to be more highly activated and believed they were the most responsible for their own health.
- Patients in the Stroke pathway were considered the least activated in their own health and mostly believed that others are responsible for their own health, including loved ones and HCPs.

8.3 Insights from exercise providers on delivering Active for Health

The following results are taken from the two leisure providers in Rotherham. Leisure provider 1 was responsible for the Cardiac Phase IV and CHF pathways. Leisure provider 2 was responsible for the COPD, MSK, Cancer, Falls Prevention and Stroke pathways. Figure 8.0 and 9.0 depicts the logic model developed by Leisure Provider 1 and Leisure Provider 2 before the project commenced. This was revisited at 18 months and project close, in order to draw conclusions on the development of the project.

Figure 8.0 Provider 1 logic model for Cardiac Phase IV and Chronic Heart Failure.



8.3.1 What worked well - Leisure provider 1

- Collaborative partnerships with key stakeholders including public health, HCPs, and the evaluation team.
- An approachable and nurturing steering group with clear objectives which supports the needs of the delivery team.
- Marketing and awareness-raising events, including the one year celebration event, international and national conferences.
- Training for exercise providers such as the British Heart Foundation Motivational Interviewing course, enabled exercise providers to assess patients effectively, and deliver a high-quality programme.
- Committed staff who often contributed hours to patients outside of their normal work allocation. Whilst this indicates enthusiasm for the programme, providers should be cognisant about additional staffing needs for high quality exercise provision.
- Social buddies were instrumental in supporting other patients within the exercise classes. They also organised a range of external social activities leading to increased motivation and programme adherence.
- Having patients with similar conditions together in sessions, which enabled concerns and challenges to be discussed with one another.

8.3.2 What's worked well - Leisure provider 2

- Each pathway created its own community through the social support of others with a similar condition. Patients made friends and supported one another.
- The providers observed psychological and physical benefits in patients which exceeded their expectations. This includes reduced medication and improved ability to perform activities of daily living.
- Patients wanted to support the programme and become community buddies. Patients also took on roles in the sessions such as making cups of tea, which provided autonomy and purpose.
- The providers took responsibility and ownership of pathways and did not rely on RMBC.
- The diverse knowledge and skills of delivery staff accommodate patient with complex healthcare needs. Having a number of Level 4 qualifications was beneficial for this.
- Providers were engaged with the Active for Health programme and overall endorsement of the programme.
- More Level 4 instructors were trained and have the skills to deliver classes to multi-morbid individuals.

Figure 9.0 Provider 2 logic model for Stroke, Chronic Obstructive Pulmonary Disease, Cancer, Musculoskeletal and Falls Prevention providers.

Inputs	Outputs	Outcomes: Short	Outcomes: Medium	Outcomes: Long	Impact
Staffing Appointment of 1 FTE instructor per pathway **Other** Facilities (community halls / gyms) Administration Equipment Online referral software	Delivery of step 1 acute services awareness raising activities and including service visits / information about programme (4 hours) Delivery of step 2 exercise classes x 3 sessions each week 48 weeks per year Delivery of step 3 maintenance exercise classes x 5 each week for 48 weeks per year	**Staffing** Appointment of 1 instructor per pathway **Delivery of PA Sessions** 2-4 x step 2 sessions being delivered 6% of completers at step 2 go on to start step 3 2-4 x step 3 sessions being delivered Celebration event **Patient benefits** Improved CV fitness Improved strength Improved resilience Improved wellbeing Better pain management Increased mobility Increased flexibility Increased confidence	**Delivery of PA Sessions** 3 x step 2 session being delivered 3-6 x step 3 sessions being delivered **Patient benefits** Improved CV fitness Improved strength Improved resilience Better pain management Increased mobility Increased flexibility Increased ability and confidence of ADLs Reduction in falls Increase in social activities Increased independence	**Referrals / physical activity sessions** Over 3900 total visits per pathway Over 60% of completers at step 2 go on to step 3 5-8 x step 3 sessions being delivered (10-15 per class) **Patient benefits** Improved CV fitness Improved strength Improved resilience Better pain management Increased mobility Increased flexibility Increased ability and confidence of ADLs Reduction in falls Increase in social activities Increased independence Back to work Reduced medication	Reduced usage of NHS services Increased ability to independently exercise and be more physically active

Please note: this is a combined logic model for all pathways. There was some variance between individual pathways.

8.3.3 What were the challenges - Leisure provider 1

- As pathways developed and numbers of patient referral increased, the delivery staff reported that time constraints led to increased patient waiting lists.
- In some groups, a smaller number of patient referrals meant that providers perceived those groups to be unsustainable.
- Some staff left their post during the programme, resulting in a loss of expertise.
- Patients with unstable and unpredictable health conditions sometimes took longer to complete their exercise programme, and required greater staffing.
- CHF patients were often not ready to engage with Active for Health.
- GPs lacked knowledge and understanding of the referral criteria for identifying suitable cardiac patients.
- Some training courses were cancelled, leading to delays in qualified staff engaging with Active for Health.
- Referral numbers based on Key Performance Indicators (KPIs) were difficult to meet.

8.3.4 What were the challenges - Leisure provider 2

- Sometimes referrals between Step 1 to Step 2 took longer than anticipated.
- Breast cancer referrals constituted most of the referrals to the Cancer pathway, which led to a primarily female group.
- The opt-out referral process in the Cancer group was beneficial for referral numbers. However, some patients were not ready to engage in PA and providers spent time calling patients who were not interested in attending.
- Due to the progressive nature of the disease, COPD patients were often referred back into rehabilitation meaning adherence was low.
- Patients in the MSK group were of working age, and once the 12 free sessions were completed they returned to work and did not have time to attend further sessions.
- Referral numbers based on Key Performance Indicators (KPIs) were difficult to meet and the quality of referrals should take priority.

8.4 Summary and recommendations made by providers

- Targets were often over ambitious and prioritised referral number KPIs and attendance figures. Targets should instead focus on patient specific outcomes and be driven by quality, not quantity.
- A referral criterion needs to be agreed between the HCPs and leisure providers. Open discussions should be had around stakeholder remit. This is to reduce referral of unsuitable patients.
- The importance of continuation of PA should be clearly communicated to MSK patients to ensure long-term activity. More exploration needs to be carried out around MSK patients returning to usual activities.
- Individuals who disengage with the programme should be followed up to ensure they are aware that they can re-engage when the time is right for them.
- The feasibility of merging pathways could be looked at e.g. COPD/CHF, MSK and Cancer, while maintaining patient centred delivery. This is dependent on the nature of the condition, and would require Exercise Specialists to have multiple level 4 specialist qualifications.
- More support is needed from the clinical commissioning group (CCG) to influence GPs to refer appropriate patients.
- The perceptions of some HCPs about exercise professionals' expertise needs to be addressed. Trust and confidence in their ability needed to be affirmed and exercise professionals should be embraced as part of a multidisciplinary team.
- Staff turnover in HCPs and change in job roles across the project management team created difficulty for aligning next steps, future direction and sustainability.
- Communication of the programme's aims, direction and purpose crucial for new starters to ensure that the delivery and the development of Active for Health remains consistent.

8.5 Themes for Health Care Professionals

Table 8 represents the higher and lower order themes which emerged from the qualitative interviews with healthcare professionals (HCPs). These will be discussed in more detail below, alongside some key quotes with HCPs from each condition pathway.

Table 8 - Main themes and sub themes for Health Care Professionals

Main themes	Sub themes
1. Active for Health Programme	1a. Addressing the patient on an individual basis 1b. Beliefs and endorsement of physical activity 1c. Professional responsibility and trust 1d. Integration of physical activity in the care pathway
2. Process	2a. Communication 2b. Referral process

8.6 Insights from healthcare professionals perspectives

The following results are taken from all HCPs from the seven LTC pathways. A summary per pathway will be discussed separately in section 8.7.

1. Active for Health programme:

1a. Addressing the patient on an individual basis

HCPs acknowledged that patients' comorbidities should be considered when advising about PA. HCPs considered the personalisation of PA important for individuals with LTCs. HCPs stated that a 'one size fits all' approach does not exist and PA should be tailored to the individual within a person-centred treatment plan. HCPs suggested that PA in the Active for Health programme should also be personalised on an individual basis within the group setting. Utilising other resources and other HCPs is important for addressing the complexity of patients' comorbidities.

"... it's all individualised as well and they know it's they're not going to go onto a group where they're going to be pushed and pushed. I think that's a bit of a motivator for them isn't it

Falls HCP

"It is about a personalised pathway that we try to develop for someone. It needs to be identified in that first holistic assessment, even at that point where you're breaking bad news, identifying then as part and parcel of what's best for the individual"
Cancer HCP

"Patients don't come to us in isolation, they've often got co-morbidities like stroke, COPD, lots of other conditions, so it's tapping into the resources for the other parts of the pathway, I suppose...we can tap into diabetes specialist nurses, Breathing Space and working as a team is a good way to use everybody's expertise isn't it for that patient"

CHF HCP

1c. Professional responsibility and trust

HCPs believed that it was their professional responsibility to promote PA, but there was a concern about the risks of PA for individual patients and how to assess their suitability for the referral into Step 2. HCPs want to ensure suitable exercise provision is provided in Step 2 and Step 3; this trust and confidence from HCPSs in the providers increased over time.

"We are confident that that it's going to be delivered at a level that's appropriate and it's going to be progressive..."

MSK HCP

"Bringing in exercise instructors that are qualified to work with people with cancer is always very appealing that we know we've got people out there that have done their training, and they understand the condition and they understand the emotional and psychological things that happen to people..."

Cancer HCP

1b. Beliefs and endorsement of physical activity

There was a consensus that PA is important in the care pathway across all conditions. HCPs had a clear understanding of the benefits of PA for LTC management. This includes physical (e.g. mobility, increased muscle mass) psychosocial (e.g. mental health, social isolation) and NHS benefits (e.g. reduced hospitalisation). All HCPs endorsed the role that PA plays and its importance away from the patient's medical treatment, highlighting the importance of community based activity. PA is also deemed essential to prevent a relapse.

"There needs to be an element of fun away from the patient's medical treatment"

Cancer HCP

"...reducing general deterioration, improving, maintaining mobility, maintaining functional ability, to allow them to do their activities in the day. It improves mood, so if you improve mood, you improve compliance, you reduce hospitalisation, you improve outcomes and patients who are less mobile or are low mood, they generally do much worse"

CHF HCP

1d. Integration of physical activity in the care pathway

HCPs had a clear understanding of the purpose of the Active for Health programme, and how it aligns with the current model of care. They recognised the importance of embedding PA at all stages of the care pathway, including integrated community exercise delivery.

"We need to find a way of supporting [in physical activity] people external to the hospital"

"It's about the instructions in the leisure centre side of the treatment that inform what's happening in the medical side. And the medical side informing what can then happen in the leisure centre side" "So it's about making sure that, again it's this crossover between the medical and the non-medical, but finding a way to emphasise the importance of it"

"Offering a stepped programme of exercise. So somebody with a diagnosis of cancer would have a treatment plan, a medical treatment plan. But the active aspect of it is about making sure that people get involved in exercise that's suitable for their condition"

Cancer HCP

2. Process:

2a. Communication

The HCPs suggested that the purpose and goals of the Active for Health programme were clearly communicated from the start of the programme. Communication also played an important role between providers and HCPs. Effective communication instilled confidence and trust. It was also considered one of the most important factors for running a seamless pathway. Collaboration between the HCPs and providers underpinned the identification of problems, and the ability to resolve them quickly and efficiently. Having a steering group meeting with all stakeholders involved in the programme also enabled problems to be shared.

"I think communication. I think it's been nice to have the meetings... so that we all know what's going on...I mean it's a new project, it's a big thing and there's going to be little tweaking and little teething pains but as long as we're all sort of communicating"
Falls HCP

"Being open and honest you know it's about sort of feeding back negatives that are not working rather than just oh yeah we're all alright"

Stroke HCP

"... it's very much a collaborative approach... There's no heart failure exercise programme in Rotherham, there's a huge gap... They have to be stable; they can't have had any cardiac events within the last six months. But they do take; they do allow patients with devices which is really important"

CHF HCP

2b. Referral process

At the beginning of the project, there was some uncertainty around the referral processes. This may have been a barrier to patient referral. Refinement of patient referral criteria was suggested. These included; severity of illness and co-morbidities and the patient's functional capacity and referral time. Clarification of these criteria improved patient referral. Throughout the project efforts were also made to simplify the referral process for HCPs. After modification to referral processes, HCPs working in secondary care were efficient at enacting patient referrals. Conversely, HCPs working in primary care did not frequently refer to the Active for Health programme. GPs in particular need to be more pro-active in referring to Active for Health. HCPs suggested it would be beneficial to involve GPs to champion the service. However, others believed that the referrals from GPs would not work, due to the process taking too long.

"I don't think there is any barriers to referring because we invest so much time in them don't we 'from the beginning that we'd be cheating ourselves by not"
Falls HCP

"The form is quite complicated and asks for a lot of information. I think it could just be a lot simpler...I think it maybe puts GPs off. If they come and see that form they'll just be like I can't be bothered. Too complicated"

Stroke HCP

8.7 Summary of key insights from Health Care Professionals per pathway

Views expressed about the Active for Health programme were broadly similar across the LTC pathways, however some differences were identified.

8.7.1 Cardiac Phase IV Health Care Professionals

- The Active for Health referral process was considered labour intensive because of staffing constraints. Some of these issues had been resolved by the end of the evaluation.
- The preference in referring motivated patients was highlighted.
- Managing the waiting list for Cardiac Phase IV was challenging due to a high volume of people with heart disease and limited staff. Despite this, the benefits for patients engaging in PA longer term were highlighted.

"The form is very lengthy, about two sides of A4 for every patient and with quite a lot of detail so that's quite onerous really. And it's increased my workload quite a bit really over the time it's been on over the last two or three years, and obviously having more patients wanting to do it as well so it has been fairly time consuming"

"If they can keep it going long term and integrate it into their daily life and that's obviously going to benefit them longer term, heart, health wise as well as general health wise and there's a lot more chance of that happening if they're doing something for 20 weeks rather than just eight weeks"

8.7.2 Chronic Heart Failure and Health Care Professional summary

- The referral criteria was well understood, due to well established referral criteria defined by the British Association for Cardiovascular Prevention and Rehabilitation.

- A gap in exercise provision for patients with CHF was identified in Rotherham. The importance for seamless referral pathway was identified.
- The collaboration between the HCPs and Leisure Provider 1 enabled a clear understanding of the referral process. For CHF patients, a self-referral option was deemed important, due to resource constraints.

"It's very much a collaborative approach... There's no heart failure exercise programme in Rotherham, there's a huge gap... They have to be stable; they can't have had any cardiac events within the last six months. But they do take; they do allow patients with devic-es which is really important"

8.7.3 Stroke Health Care Professionals summary

- At the start of the project, HCPs working with stroke patients were less clear about the referral process and which patients would be suitable for the programme. This uncertainty reduced over the duration of the programme. Regular communications with Leisure Provider 2 and RMBC, plus PA training delivered by Public Health England were important in resolving these uncertainties.
- It was suggested by HCPs that conversations about PA with patients' should be embedded earlier within the healthcare journey of a stroke patient. After year one, HCPs had a good understanding of the pathway and had embedded their own 'Step 1' in the Active for Health pathway. Active for Health has shaped the acute service model in the Stroke pathway, by embedding PA as part of their usual rehabilitation, this didn't exist prior to Active for Health.

"...it's viewed more as part of the pathway now. And since Active for Health started we've developed an independent rehab group which didn't exist before. So since Active for Health has started it prompted us to think we need an exercise group and then that acts as a feeder into referrals into the service"

"I think we could introduce it earlier. I think it's a conversation you have later on when really, like if we had these groups running on ward and the benefits of exercise and activity, if we could introduce it ear-lier then people wouldn't be as kind of shocked by it"

8.7.4 COPD Health Care Professionals summary

- In the COPD pathway, HCPs initially expressed concerns about differences between the type of exercise offered at Step 1, and 2. However, throughout the programme, a strong professional relationship between HCPs and exercise providers developed and concerns were addressed. HCPs in the COPD pathway now view the exercise providers as an integral part of the rehabilitation team.
- HCPs would still like to see similarities between the exercises provided at each stage of the Active for Health programme.
- Due to the progressive nature of COPD, HCPs believed that maintenance of physical function is a successful outcome of the programme. Improvements in physical function were not deemed necessary for a patient to have benefitted from the programme. HCPs considered Step 2 and Step 3 beneficial in decreasing the demand on their resources, because of a reduction in the 'revolving door' scenario.

"...when people access the exercise groups you don't get that revolving door scenario where people just keep getting re-referred and boomeranging back in.... with our group it's about managing physical function, not necessarily increasing it"

"in terms of our role it would affect us, so we'd have nowhere to refer the patients to after they'd completed their maintenance programme, so we'd have to start looking at other options really, which could then prove more challenging. I'm not 100%, I don't know whether gyms would accept, I wouldn't know"

8.7.5 Cancer Health Care Professionals summary

- HCPs working with cancer patients had a clear understanding of the Active for Health programme from the outset. They believed that PA is part of a 'whole person' model of mental, physical and social health. For example, stress, diet, sleep and other lifestyle behaviours.
- PA was strongly endorsed in the Cancer pathway. To increase the referral rate, an opt-out process was implemented after year one.
- Group based sessions were seen as essential for Cancer pathway patients to ensure social support and shared experiences.

- Collaboration between HCPs and leisure providers and reinforcing whole systems collaboration is key.

"It is about the pathway changing so that people look at their whole lifestyle as opposed to just that medical diagnosis...Getting people ready for surgery, getting people ready for the aftermath of treatment that's very radical and debilitating"

"Having people fit enough to do that, there's not enough time really on the medical pathway to do that. So a lot of the emphasis is about what happens during treatment to keep you mobile. When you're having chemotherapy sitting around doing nothing isn't good for you. So it's about making sure that, again it's this crossover between the medical and the non-medical, but finding a way to emphasise the importance of it"

8.7.6 MSK Health Care Professionals summary

- The HCPs viewed those lacking in motivation, confidence and with low mood, to be the most suitable individuals to refer into the Active for Health programme. HCPs believed these patients would accrue the greatest health benefits.
- HCPs working with MSK patients thought that tailored PA was particularly important.
- PA which could be conducted outside of the Active for Health programme was also considered important to reduce relapse.

"...most ideal for me would be the people that come into our week one quite low in mood, low in confi-dence and not wanting to come and then by the end of the 12 weeks they've had such growth you can see they want to maintain that, rather than some-body coming in quite well and not having such a big improvement"

"...because it's all individualised as well and they know it's they're not going to go onto a group where they're going to be pushed and pushed. I think that's a bit of a motivator for them isn't"

8.7.7 Falls Health Care Professionals summary

- The Falls Prevention Pathway is well established and understood by the HCPs. Receiving positive feedback from attending patients motivated HCPs to continue making referrals.
- The continuation of Step 2 and 3 of the referral process were seen as essential for the smooth operating of the Falls Prevention Pathway.
- Less motivated patients who would gain the greatest health benefits were considered the most suitable to refer.
- Falls Prevention HCPs felt the Active for Health programme was most attractive those who have been active in the past.
- The ability of the Active for Health programme to improve the confidence of referred patients in relation to their fear of falling, their overall health status and physical ability to participate in activities of daily living is considered one of the most important factors in programme attendance.

"...we're getting is that patients are beginning to form friendships following on from the pathway and they're keeping in touch with each other and they've got lunch clubs going on. So the feedback that we're getting is really positive. That people are keeping in touch with each other and maintaining that contact..."

"I think just maintaining a higher level of strength and balance, having less falls, having more confidence, being able to do those things that they might have stopped doing because of the falls and they didn't feel as confident"

8.8 Summary and recommendations made by Health Care Professionals

- Making the referral process straightforward is important. For other commissioned service models of PA in the future, this point needs to be seriously considered to ensure HCPs engage.
- Classifying patients by condition can be beneficial for HCPs to manage referral.
- HCPs felt confident to send patients to a session which was specific to their needs, with an Exercise Specialist who was relevantly trained.
- A large proportion of individuals have co-morbidities, therefore it is imperative that Exercise Specialists are proficient across a range of health conditions. Having a Level 4 condition specific qualification instils trust and increases referral numbers across the pathways.
- HCPs need to communicate a positive message of PA and have conversations with patients as early as possible in their journey.
- HCPs and exercise providers need to work closely to ensure quality referrals.
- Quarterly steering group meetings and regular communication is essential.
- Providers and HCPs should be clear on the type of exercise carried out in each step of the pathway to help establish trust and clarity. It is advised that HCPs and providers observe each other's PA sessions.

8.9 Insights from a project management perspective

The results reported in this section are taken from the interviews that were conducted with the project management team from RMBC. Key insights, including what has worked well and what has been challenging are presented below. Figure 10.0 depicts the logic model developed by RMBC before the project commenced. In order to understand the projects development, logic models were revisited at 18 months, and at project close.

Figure 10.0 - Rotherham Metropolitan Borough Council logic model.

8.9.1 What worked well - RMBC?

- Having a clear vision between HCPs, providers and RMBC. This ensured there was a common goal across the multiple pathways. Regular email updates and the quarterly steering group were key factors which contributed to communication of the clear vision.
- Managing relationships between HCPs and leisure providers were important, and RMBC saw themselves as the 'broker' for this activity.
- HCPs in secondary care who referred to the Active for Health programme had a high level of confidence and trust in the quality and knowledge of the commissioned leisure providers. Having Level 4 Exercise Professionals who were qualified to deliver exercise to a specific population of patients appeared essential for ensuring that the referral process was utilised effectively by HCPs.
- The leisure providers and 'buddies' offer a voice to the project patients through social media, for example, sharing video footage of the classes on Twitter, Instagram and Facebook. RMBC believe that this was a powerful marketing tool that raised awareness of the programme, and overall engagement.
- The buddy scheme was also important for engaging with stakeholder groups such as universities, exercise professionals and programme patients across the region.

8.9.2 What were the challenges?

- The project was more expensive to run than anticipated. This was due to the project requiring more management and coordination staff than planned for. Promotion of the project internally and externally, through project engagement initiatives (e.g. conferences), was also costly and time intensive.
- The changing needs and processes of the healthcare pathway meant that the PA referral process was not always up to date, which proved a challenge to embed PA into the pathway.
- GPs lacked confidence in patients' ability to participate in PA due to their health conditions. As such, GP referrals to the Active for Health programme were low.
- Strategic 'buy-in' from the CCG was a challenge to facilitate.
- The ambitious referral targets depicted on the logic model in Figure 10.0 were a challenge to meet. The importance of the 'quality' over 'quantity' of referrals was discussed as a more appropriate target for future projects.
- Long-term sustainability of Active for Health due to funding challenges, CCG engagement and changing remits.
- Training aimed at upskilling HCPs knowledge and confidence in the Active for Health programme was offered. However the initial interest was lower than anticipated and subsequently a superior training programme was identified through Public Health England.

8.10 Summary of recommendations made by RMBC

- Continue to tailor PA services to the needs of specific healthcare pathways.
- Continue to provide training for HCPs to understand the benefits of PA for LTC's so they feel confident in referring patients to services, and understand their role and how it contributes to the whole agenda.
- Ensure the referral criteria are clearly set out in each pathway and simplify the referral process to reduce burden on HCPs workload and ensure suitable patients receive the right referral.
- Project stakeholders should maintain a flexible working partnership to overcome challenges and meet the needs of all parties involved in AFH.
- Build and maintain operational relationships between individuals, organisations and communities who can influence the PA agenda in Rotherham. This includes public health specialists, commissioners, delivers and the voluntary sector.
- Develop a marketing strategy aimed at increasing engagement in the target population with clinical champions delivering consistent messages to the community.
- Empowering the community to establish ownership and inform the delivery of the project has been critical to the success if the programme. Future programmes should consider how to streamline this approach with the use of 'buddies'. These individuals can be from the community, from academic institutions or healthcare settings who have an interest in the area.

9 Overall discussion

9.1 The Impact of Active for Health on physical activity and quality of life

- The primary outcome measure for Active for Health was the proportion of patients who undertook one, 30 minute bout of moderate to vigorous physical activity (MVPA) per week.
- The Active for Health evaluation found an increase in patient's PA levels and QoL, most notably between baseline and three months.
- A small increase in PA levels can lead to important improvements in psychosocial and physical health and Active for Health appears effective for people who remain in the programme.
- Active for Health was delivered to patients once per week. The principal reason for the high proportion of patients achieving one, 30 minute bout of MVPA per week by 12 months is likely due to attendance at Active for Health exercise classes.
- Changes in other PA patterns such as increased regular walking activities were also observed as a result attending the programme. The Active for Health programme may equip patients with the skills to be autonomous exercisers outside of the Active for Health environment.
- Effective community-based condition specific exercise programmes, designed for people with LTCs may help reduce the disease burden and improve health and wellbeing through increased adherence with exercise guidelines.
- The social component of Active for Health may have contributed to the observed improvements in QoL. This relationship was identified through the patient interviews, where the social component of the sessions was important across all seven LTC pathways.

9.3 Participant experience of Active for Health and patient activation

- Patients who took part in Active for Health viewed the programme positively. Irrespective of LTC pathway, qualitative interviews highlighted the importance of socialising during exercise programmes. This was often reported as being more important than exercise itself.
- It is possible that socialising during the programme was only important to the population who remained in the evaluation. Social isolation is linked with poor health outcomes. The possibility that Active for Health may reduce social isolation in selected individuals should not be ignored.
- Taking part in PA with people who have a similar condition was also important to patients, possibly because it provides opportunities to discuss and share similar experiences (Bruunet al., 2014; Luoma et al., 2014).
- Patient 'activation' describes a person's awareness of the important role they play in managing their own health. Previous research has reported varying levels of activation between patients (Bernhardsson, Larsson, Johansson & Öberg, 2017). This agreed with the Active for Health evaluation, which found that patient activation varied between patients and pathways. Those in the MSK and Cancer pathways were most activated with their own health, which is consistent with other research (O'Malley et al., 2018).
- Patient activation appeared to be a key determinant of whether people increased their PA levels. For example, patients in the Cancer LTC pathway believed that their own actions had a central role in their own health outcomes, whereas patients in the stroke group tended to defer this responsibility to third parties, such as their spouse or G.P.
- Previous research suggests that individuals who are considered highly activated are two times more likely to know treatment guidelines for their condition, and seek further health information for it, including PA opportunities (Tabrizi , Wilson, & O'Rourke, 2011; Hibbard et al., 2007; Mosen et al., 2007). So patient activation may underpin the more overt changes in PA levels and QoL observed in certain LTC pathways, such as Cancer.
- Participants in the Cancer and MSK groups were most motivated to continue being active without the Active for Health sessions. These patients may recover from their conditions, and are more likely to return back to everyday activity. Whereas some LTCs, including COPD are associated with disease progression and are incurable. This could link to higher attrition rates in certain pathways and should be further explored.

- Past experiences and previous engagement with exercise-type activities appears to influence patient's behaviour. Patients who remained in the Active for Health programme often reported that they had previously taken part in regular exercise earlier in their life. It is possible that Active for Health was more effective at retaining patients who are more experienced and more comfortable in an exercise environment. The natural selection bias that occurs from interviewing people who remain in the evaluation means that this effectively cannot be explored.
- Patients identified exercise instructor qualifications, perceived competence and instructor personality to be key factors in deciding whether or not they adhere to Active for Health.
- The suitability of a person's exercise programme prescription was also an important consideration. The importance of personalised exercise has previously been highlighted by the Department of Health (2009) and should be encouraged in all PA programmes.
- Whilst the Active for Health programme was not underpinned by a specific behaviour change theory, the programme appears to draw on the components of Self Determination Theory. Self Determination Theory hypothesises that patients are motivated by intrinsic factors (Ryan & Patrick, 2009). A well-documented description is available elsewhere (Deci &Ryan, 2009).

9.4 Stakeholder experience of Active for Health

- HCPs and patients considered Exercise Specialists to be an important consideration when designing an exercise programme for patients with a LTC. HCPs and Exercise Specialists should discuss physical activity content prior to programme delivery, to ensure trust and confidence is embedded between professionals. This could increase programme referrals.
- Professionals working in a range of settings, including primary and secondary health care, tertiary service providers, evaluation partners and the local authority were involved in developing the referral pathways. This strong collaborative approach likely led to the high patient uptake.
- HCPs felt confident to send patients to a session which was specific to their needs, with an Exercise Specialist who was relevantly trained.
- HCPs play a significant part in patient's attitudes about PA and the willingness to maintain PA. Therefore, it is important that HCPs involved are clear of the benefits of PA and are supportive of the programme. The role of the HCP is fundamental to a seamless care pathway.
- A large proportion of individuals had comorbidities, therefore it is imperative that Exercise Specialists are proficient across a range of health conditions. Having a Level 4 condition specific qualification instils trust and increases referral numbers across the pathways.

- Professionals and patients emphasised the importance of a suitable referral pathway that met their needs. In most cases the patients felt that the Active for Heath programme provided an appropriate referral pathway.
- Providers and HCPs should be clear on the type of exercise carried out in each step of the pathway to help establish trust and clarity. It is advised that HCPs and providers observe each other's PA sessions.
- Health care and exercise professionals may need to address patient fears and misconceptions about exercise training. Educating patients during the early phases of recovery (e.g. inpatient phase) about the highly valued role of exercise instructors in our healthcare system may form the basis of future research.

9.5 The cost effectiveness of Active for Health

- Active for Health has been successful in increasing the proportion of patients who undertook one 30 minute bout of MVPA per week. However, in order to set priorities and allocate finite public funds, it is important for policymakers and health funders to know whether the programme is cost effective. The lack of economic evidence for community based PA interventions has been recognised in previous research (Garrett et al., 2011).
- Cost and outcome data for patients within the evaluation cohort were assessed. Data showed a reduction in healthcare costs, and improvements in health in the year following referral to Active for Health, as measured by QALYs.
- Our evaluation cannot conclude to what extent these changes would have occurred if patients had not participated in the Active for Health programme. A controlled trial is required to establish this.

9.6 Methodological strengths and limitations

- The strengths of this evaluation lie in the rigor of the pragmatic approach used to guide the evaluative process. Health promotion interventions are complex and multifaceted (Tariq and Woodman, 2010) requiring a multitude of methods to provide context and meaning to outcome data. Pragmatic evaluation uses mixed-methods and enabled the exploration of a multi- angled view of the Active for Health programme.
- This evaluation of Active for Health draws on some novel data collection methods. Conducting a process evaluation and identifying multiple stakeholders draws on multiple perspectives. In addition, adapting the PAM, to provide qualitative interpretation provided more realistic and meaningful evaluation findings.
- A number of methodological limitations should be considered when interpreting the findings of the Active for Health evaluation. The sample size at each follow-up time point decreased substantially which reduces the likelihood of finding significant differences between our variables of interest, particularly when analysing LTC sub-groups. Caution must be exercised when interpreting data derived from small sample sizes and it may be more appropriate to interpret data trends, rather than statistical significance.
- This evaluation preferentially reports outcomes from patients who are engaged in the Active for Health programme. Readers of the report should be aware of the potential self-selection bias of the data.
- Without an experimental control group it is difficult to distinguish the change brought about by the Active for Health programme, from changes that would occur during usual care. A randomised control trial would provide the most reliable evidence on the effectiveness of the Active for Health programme; however this was out of the scope of this research.

9.7 Concluding remarks

- A key objective of the Active for Health programme was to develop an integrated pathway of referral to long-term exercise training for patients who have heart disease, CHF, stroke, COPD, cancer, MSK problems, and have had a fall; Active for Health achieved this objective.
- Active for Health shaped the acute service model for pathways such as Stroke, by embedding PA as part of their rehabilitation pathway. This didn't exist within the Stroke pathway prior to Active for Health and so the programme should be commended for this.
- The Active for Health evaluation found that PA and QoL increased among patients who adhered to the programme. The evaluation suggests that, like other ERS, many patients drop out over a 12 month period. Based on the dropout reasons which were anecdotally collected as part of this evaluation, ill health (30%) and participation in other PA (28%) made up the majority. Participation in other PA is positive and warrants further exploration. It is possible that Active for Health instils confidence to exercise autonomously. Exploration of this was out of the scope of this evaluation.
- People who remained in the evaluation appear more likely to have had a positive referral experience when commencing the programme. The profile of a patient who remained in Active for Health was one who had high patient activation, enjoyed the delivery format, valued social interaction and, may have participated in previous exercise activities earlier in their life. The latter point is important, as large sectors of society may have engaged in regular exercise at a previous stage of life. Programmes designed to re-engage this population may be a valuable area of future research.
- Active for Health has created a culture where PA is perceived as an important component of enabling patient self-management across Rotherham. Referral to Active for Health is associated with reductions in NHS costs and improvements in health as measured by QALYs, therefore future sustainability of this service should be assessed.

10 Future recommendations

10.1 Public health

- The Active for Health programme provides a pragmatic reference point which other exercise-based public health initiatives should use to estimate referral targets.
- Key performance indicators (KPIs) need to consider the volume of appropriate referrals as well as the total referrals.
- The integrated approach to patient referral was effective, other public health initiatives may wish to adopt this approach.
- As a result of Active for Health, professionals across the health care system endorse the programme and the promotion of PA in all stages of care.
- Active for Health has created a culture where PA is now perceived as an important component of enabling patient self-management across Rotherham. Referral is associated with reductions in NHS costs and improvements in health as measured by QALYs, therefore future sustainability of this service should be considered.

10.2 Leisure Providers

- Level 4 qualifications are an appropriate benchmark for delivering exercise to patients with complex healthcare needs and to instil trust in HCPs and patients.
- Programmes for individuals with LTCs should be designed so that there are opportunities for patients to socialise.

10.3 Health care professionals

- Education about patient referral processes increases the likelihood of it being done appropriately. This should be incorporated into the design of new services.
- Communication between HCPs and providers can help resolve uncertainties in the referral process.

10.4 Evaluators

- Provide training to evaluation personnel to minimise variations in data collection and recording processes.
- When designing and implementing logic models with stakeholders, it is recommended that an initial training session is carried out to ensure understanding of the logic model process e.g. what it is, what it comprises of.

11 What's next?

11.1 Active for health continuation

In order to sustain the 12 week free offer as part of Step 2, the Active for Health programme requires continued funding. Interim delivery options have been sourced for individual LTC pathways. Both the cancer and Falls Prevention pathway have secured funding to deliver Active for Health on a smaller scale. Patients in the Cardiac Phase IV, CHF, Stroke, COPD and MSK pathways will no longer be able to receive Active for Health Step 2 and the free 12 week exercise provision that currently exists. However, patients can still be referred to Active for Health Step 3, where they will receive between one (MSK, COPD, stroke) and three (Phase IV and CHF) free exercise sessions due to the kind actions of the exercise providers. Communications and links with providers, healthcare services, partners and commissioners must continue if the continued provider offer is to be successful.

11.2 Potential funding opportunities

There are several potential opportunities for providers to seek external funding, once the final evaluation results are published. These include local, regional and national funding streams from a variety of organisations.

11.3 Awards and project recognition

Work from the Active for Health project has been acknowledged and disseminated via:

- An article in the British Medical Journal (a full review is available, Atchinson et al., 2017).
- Named a finalist in the Association for Public Service Excellence (APSE), in the Best Health and Wellbeing initiative category, winning through to the final nine in the category.
- An award for the best poster presentation at the National Centre for Sports and Exercise Science Conference.

11.4 Project dissemination

Findings from the Active for Health evaluation have been presented at the following national and international conferences:

- Conference of Behavioural Nutrition and Physical activity - Vancouver, Canada.
- Public Health England Conference - Warwick, UK.
- National Centre for Sports and Exercise Science Conference - Loughborough, UK.
- Health Enhancing Physical Activity Conference - Zagreb, Croatia.
- Yorkshire and Humber Physical Activity Knowledge Exchange - Sheffield, UK.
- The International Society for Physical Activity and Health - London, UK.

The final evaluation findings are also projected to be disseminated further, including international research conferences and publication of evaluation findings in academic journals (to be confirmed).

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14 Appendices

Appendix 1a - Cardiac Phase IV and Heart Failure condition card

About the condition

Heart disease is an umbrella term that describes a structural, mechanical or electrical abnormality in the heart. Examples include coronary heart disease (CHD), defective heart valves, irregular heart rhythms or inefficient heart muscle function (chronic heart failure; CHF). For the Active for Health evaluation, patients with heart disease were grouped as either 1) heart disease or 2) CHF. The heart disease group included all heart disease diagnoses except CHF. This approach was taken because CHF can be a complex condition with markedly different PA and psychological profiles.

The benefits of physical activity

Exercise training and PA interventions are established treatments for heart disease, and form the cornerstone of secondary prevention services (cardiac rehabilitation). Exercise-based cardiac rehabilitation can improve cardiovascular risk factors such as cholesterol and blood pressure and, improve patient's quality of life.

Cardiac IV patient characteristics

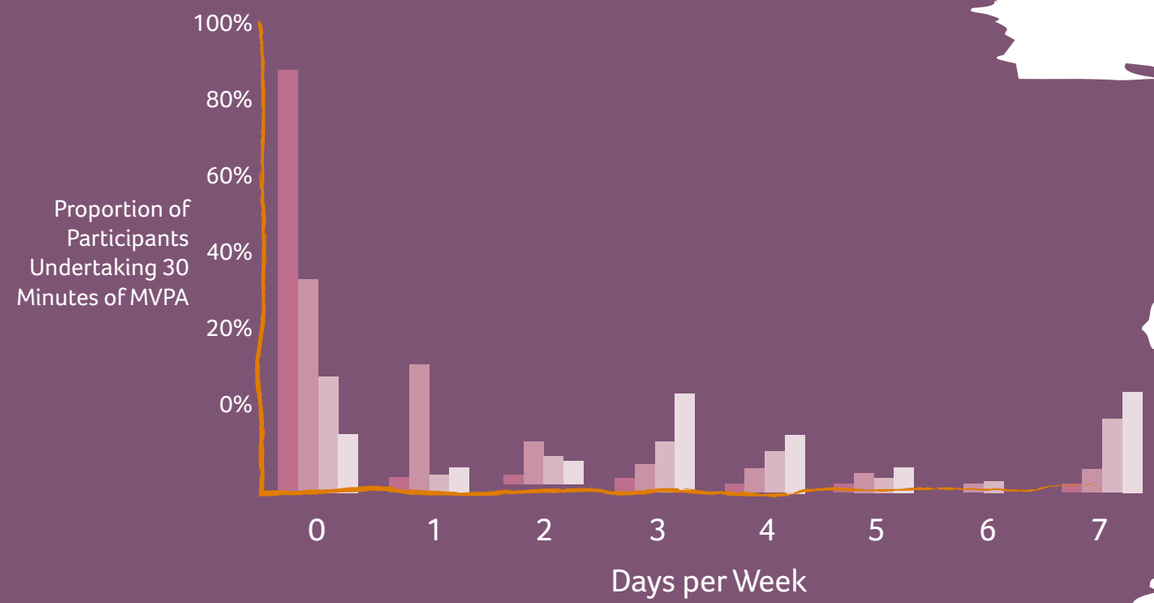
The Cardiac Phase IV pathway had the highest recruitment rate of all LTC pathways. Two-hundred and forty-two (n=242) patients with a mean age of 61.8 ± 11.0 years were enrolled. The majority of patients were Caucasian (90.2%) males (64.4%; n=155). Seventy (n=70) patients (29% of the original cohort) were followed-up at twelve months.

Cardiac IV physical activity results

Single item measure

The proportion of people not participating in at least one, 30 minute bout of MVPA decreased from 88.8% (n=159) at baseline, to 11.4% (n=4) at 12 months (Figure 11a). Importantly, 88.6% (n=62) of people who responded at 12, did not participate in at least one, 30 minute bout of MVPA per week at baseline 11.4% (n=4).

Figure 11a - Number of days participants report MVPA participation



Purple through to light purple lines indicate baseline, three month, six month and twelve month data, respectively.

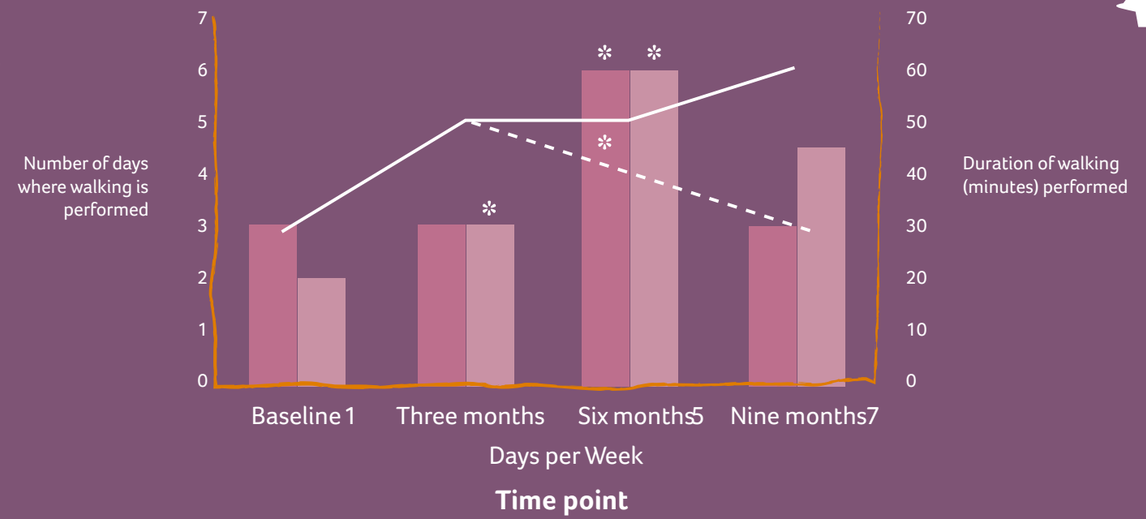
Sport-specific activity

At baseline, seven people (3.9%) participated in sporting activity. The number of patients engaged in sporting activity decreased to three (1.7%) after three months, but increased to 11 (9.6%) after six months. The number of people engaged in moderate physical activity was lower after 12 months (11.4%).

Walking

Patients in the IPAQ and IPAQ groups both increased the number of days where walking activities were performed, from three at baseline, to five after three months. For patients in the IPAQ-E group, this was also accompanied by an additional 10 minutes of walking per day (Figure 11b). By six months, the duration of walking activities increased to 60 minutes for patients in both groups, however only patients in the IPAQ-E group were able to sustain longer walking durations up until 12 months. By six months, the duration of walking activities increased to 60 minutes for patients in both groups, however only patients in the IPAQ-E group were able to sustain longer walking durations up until 12 months.

Figure 11a - Number of days participants report MVPA participation



Where walking was undertaken (lines) and duration of walking activities (bars) for patients in the IPAQ (dotted lines/ dark purple bars) and IPAQ-E groups (solid white lines/light purple).

* Significantly different from baseline.

Moderate intensity physical activity

Patients in the IPAQ and IPAQ-E groups undertook moderate intensity physical activity on more days of the week after three months, compared to baseline (Table 9). For patients in the IPAQ group, no further increases in the number of days that moderate physical activity were reported, however values at six months remained greater than those reported at baseline. For patients in the IPAQ-E group, the number of days where walking was performed was significantly greater than baseline after six months and 12.

Table 9 - Median number of days that patients took part in physical activity (range)

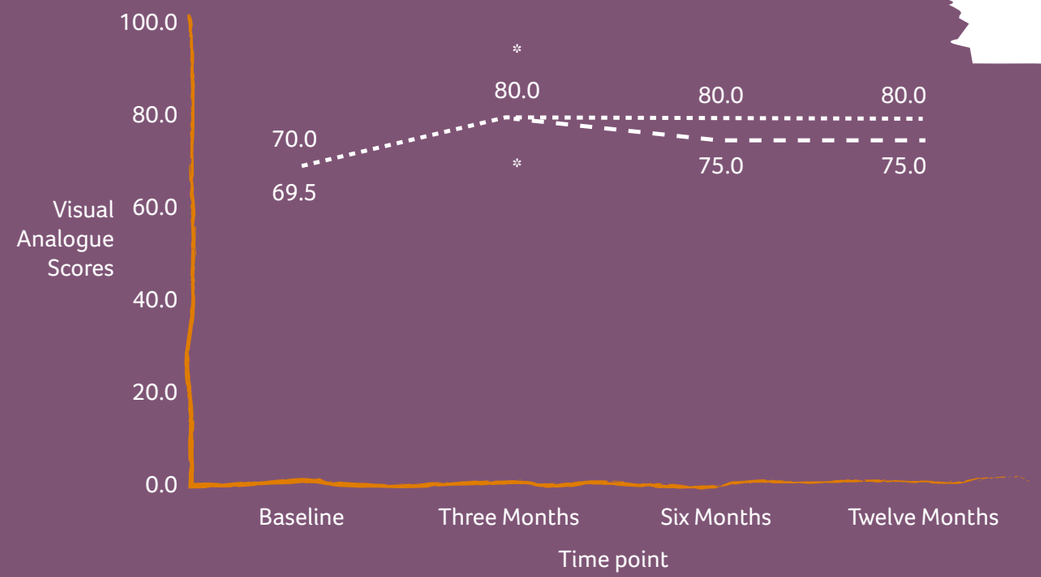
Time Point	IPAQ Group (Range)	IPAQ-E Group (Range)
Baseline	0 (0 to 7)[a]	0 (0 to 5)[ab]
Three Months	1 (0 to 7)[a]	2 (0 to 7)[a]
Six Months	2 (0 to 7)	3 (0 to 7)[bc]
Twelve Months	2 (0 to 7)	2 (0 to 7)[c]

PA = Physical Activity;
a = Significant difference between baseline and three month values.
b = Significant difference between baseline and six month values.
c = Significant difference between six and twelve month values.

Cardiac IV Quality of Life – Visual Analogue Score

Quality of life (assessed using the VAS) was for higher for both groups, compared to baseline (Figure 11c).

Figure 11c – Changes in visual analogue scores during the Active for Health intervention



Dashed lines indicate patients in the IPAQ group and dotted lines represent patients in the IPAQ-E group.
* = Significantly different from baseline.

Qualitative results - Cardiac IV

Active for Health Programme

- Patients engaged with the instructors and felt they were friendly, supportive and empathetic.
- The sessions increased confidence levels due to and improved fitness and quality of life

Patient activation

- All patients interviewed had good knowledge of their condition, including understanding of medication and diagnosis. Some patients suggested they were responsible for their own health (n=3), with others deferring the responsibility of their health to others (GP n=1 and spouse n=1).
- Patients had high confidence in managing their physical activity levels and felt they had learnt skills in the session which they can apply to everyday life. This included carrying out autonomous exercise away from the session.

Patient activation level

- Patient activation levels in heart failure patients were varied, with some patients having lower levels of activation, scoring level 2 (n=1) and some patients scoring high levels of activation at level 3 (n=2) and level 4 (n=1).

Chronic Heart Failure patient's characteristics

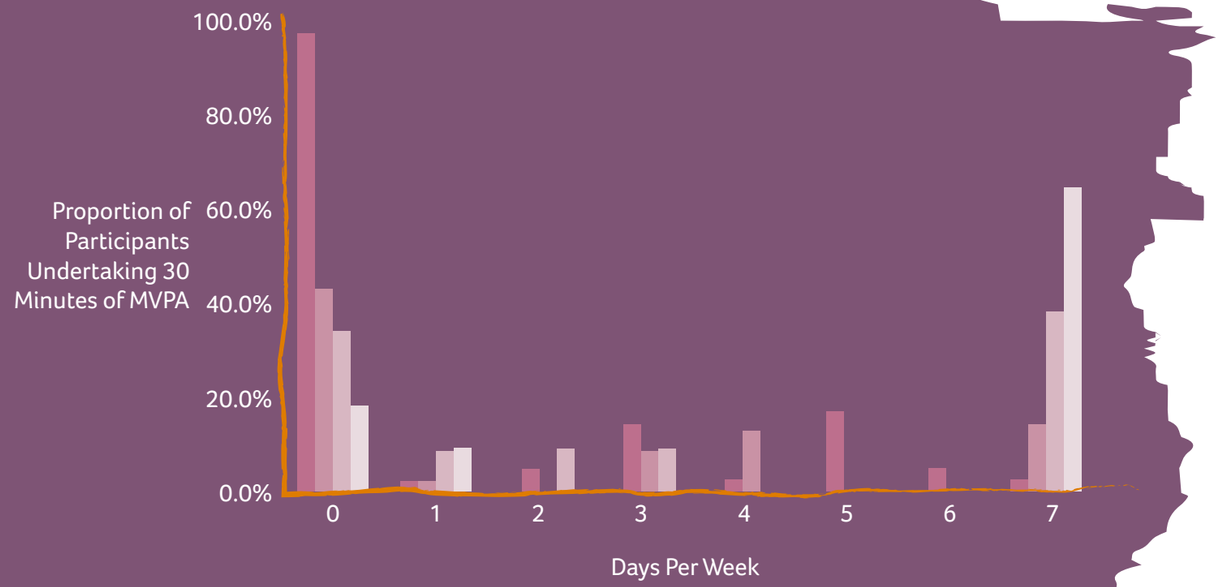
The chronic heart failure pathway (CHF) had the lowest recruitment of all LTC pathways. Fifty-one (n=51) patients with a mean age of 63.3 ± 12.6 years enrolled. The majority of patients were Caucasian (91.3%) males (62.7%; n=32) making it the most diverse LTC pathway. After three months, 15.6% (n=8) patients were lost to follow-up. Eleven (n=11) patients (21.6% of the original cohort) were followed up at 12 months.

Chronic Heart Failure physical activity results

Single item measure

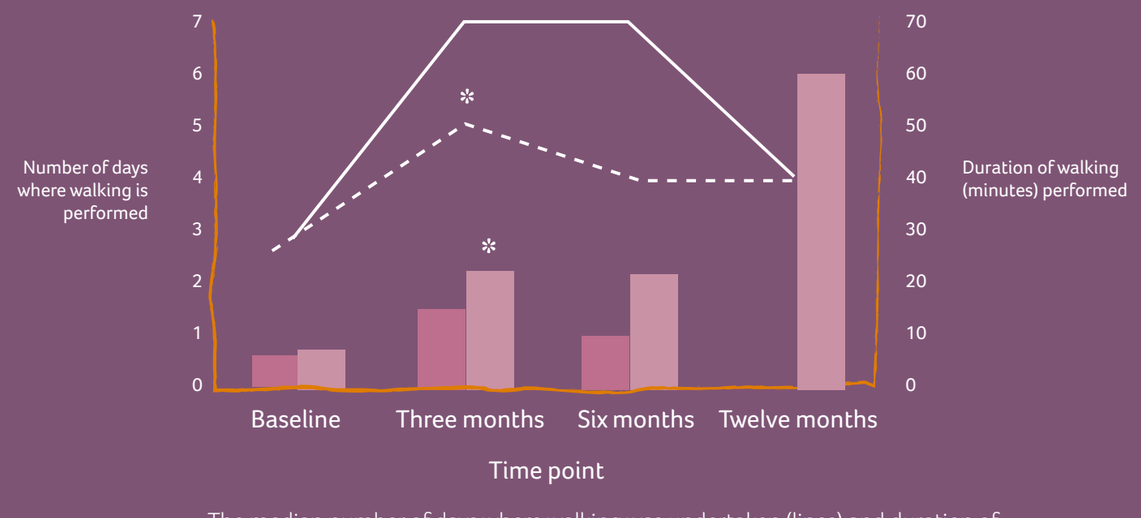
At baseline, 95.3% (n=41) of patients did not undertake at least one, 30 minute bout of MVPA (Figure 12a). After three months, this has reduced to less than half of patients (41.9%; n=18). This trend continued at six (33.3%; n=8) and 12 months (12.2%; n=2). All patients who remained in the evaluation at 12 months (n=12) had reported not participating in at least one, 30 minute bout of MVBA at baseline.

Figure 12a – Number of days that patients report participating in 30 minutes of MVPA.



Purple to light purple indicate baseline, three month, six month and twelve month data, respectively.

Figure 12b – The median number of days where walking was undertaken



The median number of days where walking was undertaken (lines) and duration of walking activities (bars) for patients in the IPAQ (light purple bars / dotted lines) and IPAQ-E groups (dark purple bars / solid lines).

* = Significantly different from baseline.

Sport-specific activity

There were no patients engaged in sporting activity at baseline (0.0%) or three months. After six months, one patient was engaged in sporting activity (4.2%). One person also reported participating in sporting activity after 12 months (9.1%).

Walking

For patients in the IPAQ group, there was no change in the number of days where walking activities were undertaken, or the duration of those activities throughout the evaluation (Figure 12b). Patients in the IPAQ-E group had different outcomes. The duration of walking activities increased from 20 minutes at baseline, to 45 minutes after three months.

The number of days where walking was undertaken also increased, from three days at baseline, to 7 days after six months. By 12 however, this had reduced to four days which was not significantly different from baseline values.

Moderate intensity physical activity

Patients in the IPAQ and IPAQ-E groups undertook moderate intensity physical activity on more days of the week at three months, compared to baseline (Table 10). Patients in the IPAQ-E group also reported more days where moderate intensity physical activity was performed after six months. Importantly, the number of days that moderate intensity exercise was performed on was greater after 12, compared to baseline values.

Table 10 - Median number of days that patients took part in physical activity (range)

Time Point	IPAQ Group (Range)	IPAQ-E Group (Range)
Baseline	0 (0 to 2)[a]	0 (0 to4)[abcd]
Three Months	3 (0 to7)[a]	3 (0 to 7)[ab]
Six Months	1 (0 to 7)	4 (0 to 7)[bc]
Twelve Months	4 (1 to 6)	2 (0 to 7)[cd]

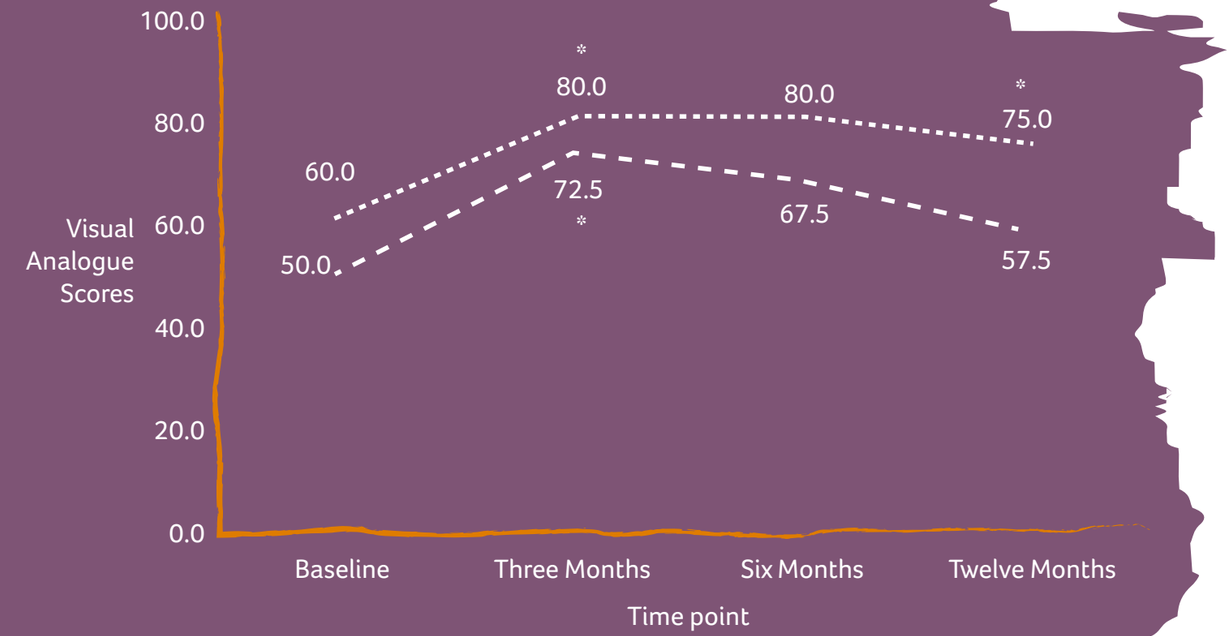
PA = Physical Activity;
a = Significant difference between baseline and three month values.
b = Significant difference between baseline and six month values.
c = Significant difference between six and twelve month values.

Chronic Heart Failure Quality of Life – Visual Analogue Score

Quality of life was assessed using visual analogue scores (VAS) from the EQ-5D questionnaire. Figure 12c shows that in patients with CHF, both the IPAQ (p=0.008) and IPAQ-E groups (p<0.001) had higher VAS scores at three months, compared to baseline.

No further increases were observed in either group. VAS scores were significantly higher than baseline values for patients in the IPAQ-E group (p=0.020) but not for patients in the IPAQ group.

Figure 12c – Changes in visual analogue scores during the Active for Health intervention.



Dashed lines indicate patients in the IPAQ group and dotted lines represent patients in the IPAQ-E group.

* = Significantly different from baseline.

Qualitative results - Heart Failure

Active for Health programme

The referral process was viewed as slow by three of the patients; however it did not impact their engagement with the programme.

Patients discussed how Active for Health was the first activity session they had ever found which was suitable for their condition.

Patient Activation

All patients were knowledgeable about their heart condition. Patients had a good understanding of their health including, knowledge and understanding of condition management. Patients believed that they were responsible for their own health (n=4) as well as the GP (n=1).

Some patients made reference to being overprotected by family members. Patients were able to implement skills learnt in the session to better manage their condition. Participates had high confidence to manage condition and confidence in managing condition, including continuation of physical activity.

Patient activation level

Patient activation levels in Cardiac Phase IV patients were varied, with some patients having lower levels of activation, scoring level 2 (n=2) and some patients scoring high levels of activation at level 3 (n=1) and level 4 (n=2).

Appendix 1b - Stroke condition card

About the condition

A stroke is a term used to describe one of two medical scenarios. One scenario, known as a haemorrhagic stroke, describes the rupture of a blood vessel in the brain leading to significant bleeding. The second scenario is known as an ischaemic stroke, which refers to a blood clot causing a blockage in a blood vessel. The common factor to both situations is the resultant inadequate blood supply to the brain. This can lead to significant physical disability.

The benefits of physical activity

Taking part in exercise training and PA is increasingly acknowledged as a key component of a stroke patient's recovery and rehabilitation. Evidence suggests that exercise may improve survival, cardiovascular risk factors, physical fitness, function and mobility and, quality of life (McGinnis et al., 2013). For the Active for Health evaluation, both types of stroke were included in one pathway.

Stroke patient characteristics

Seventy-two (n=72) patients with a mean age of 68.1 ± 10.0 years enrolled to the Active for Health Stroke pathway. All patients (100.0) were Caucasian. There were 41 (56.9%) males and 31 (43.1%) females. After three months, more than half of the stroke cohort (62.5%; n=45) were lost to follow-up. Twenty-two (n=22) patients (30.5% of the original cohort) were followed up at 12.

Stroke physical activity results

Single item measure

At baseline, most patients did not participate in at least one, 30 minute bout of MVPA (59.3%; n=41; Figure 13a), however, by 12, this had fallen to 13.3%; n=2).Of the patients who remained in the evaluation after 12 months, 60.0% (n=9) had reported not participating in at least one, 30 minute bout of MVBA at baseline.

Figure 13a– Number of days that patients report participating in 30 minutes MVPA.

Purple through to light purple lines indicate baseline, three month, six month and twelve month data, respectively.

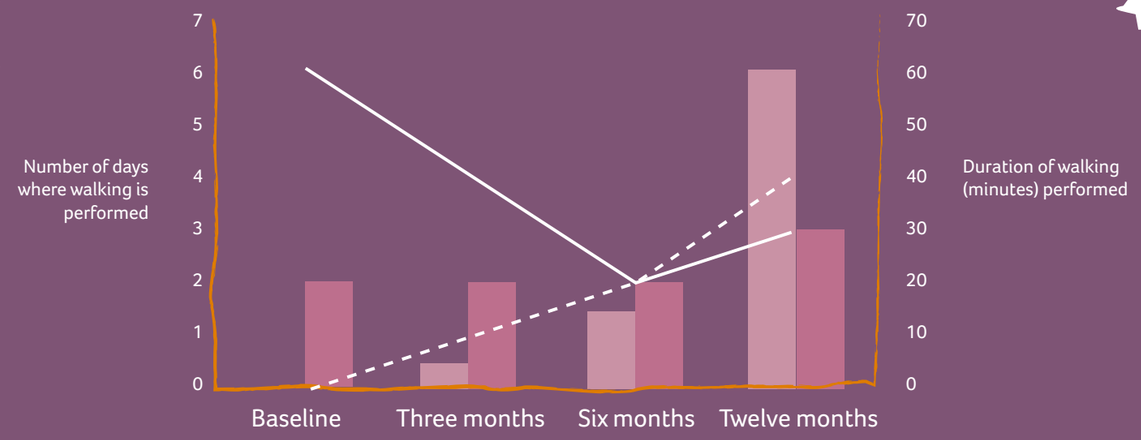
Sport-specific activity

No patients (n=0) took part in sporting activity at baseline or three months (0.0%). After six months, there was one person engaged in sporting activity (4.5%). This remained unchanged after 12 (n=1; 6.7%).

Walking

For patients in the IPAQ group, the number of days where walking was undertaken did not significantly increase over time (Figure 13b). Patients in the IPAQ-E group reported walking on significantly fewer days after 12 months. Neither the IPAQ, nor IPAQ-E group reported significant changes in walking duration.

Figure 13b – The median number of days where walking was undertaken



Where walking was undertaken (lines) and duration of walking activities (bars) for patients in the IPAQ (dotted lines/ dark purple bars) and IPAQ-E groups (solid white lines/light purple).

* Significantly different from baseline.

Moderate intensity physical activity

There was no change in the number of days that moderate physical was performed on throughout the study for patients in either the IPAQ group or IPAQ-E groups (Table 11).

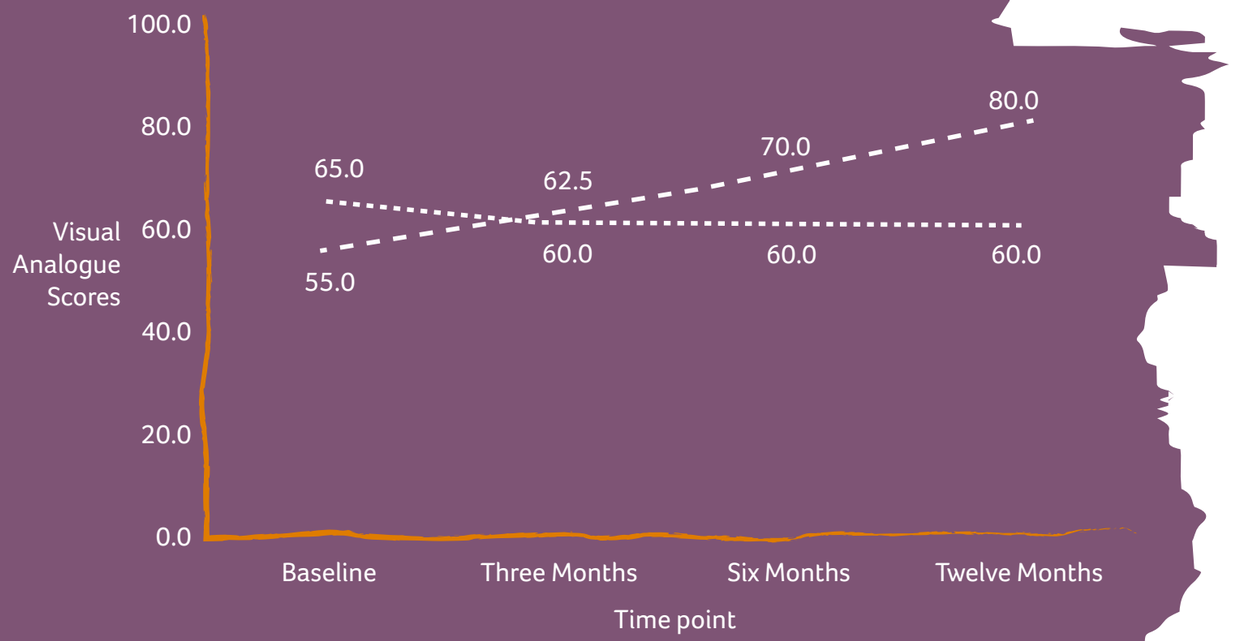
Table 11 - Median number of days that patients took part in physical activity (range)

Time Point	IPAQ Group (Range)	IPAQ-E Group (Range)
Baseline	0 (0 to 2)	1 (0 to 7)
Three Months	1 (0 to6)	1 (0 to 7)
Six Months	2 (1 to 7)	2 (0 to 7)
Twelve Months	1 (1 to 2)	1 (0 to 7)

Stroke Quality of Life – Visual Analogue Score

Neither the IPAQ (p=0.480) or the IPAQ-E group (p>0.999) reported a significant change in VAS scores after three months (Figure 13c).

Figure 13c – Changes in visual analogue scores during the Active for Health intervention.



Dashed lines indicate patients in the IPAQ group and dotted lines represent patients in the IPAQ-E group.

* = Significantly different from baseline.

Qualitative results - Stroke

Active for Health

Patients in the Stroke pathway talked largely about the structure of the exercise and find monitored exercise, with simple exercises beneficial for their condition. Overall, stroke patients seemed to have more reliance on instructors compared to other LTC pathways.

Perceived patient benefits of physical activity were primarily based on improvements in activities of daily living.

Patient Activation

Patients had some knowledge about their condition, but large gaps exist in both their understanding of their health condition and also self-management. There was a belief that others were generally responsible for their health. Only one patient in the Stroke pathway believed that they were responsible for their own health. Others believed it was the responsibility of their partner (n=3) or HCP (n=1).

Confidence levels in this group tended to be mixed, with some patients rating their confidence in managing their condition as low and others as high. Without the Active for Health sessions these patients may find continued activity difficult, without some additional support.

Patient activation score

Based on the comments above, patient activation levels are mid to low, with patients scoring between level 2 (n=4) and level 3 (n=1).

Appendix 1c - COPD condition card

About this condition

Chronic obstructive pulmonary disease or COPD refers to a group of conditions that cause inefficient air movement in and out of the lungs. Patients with COPD often complain of being breathless at light levels of PA, or even at rest. Patients with COPD are less physically active lifestyle than healthy people (Troosters et al., 2005; Waschki et al., 2012). Low PA levels are associated with lower quality of life (McGlone et al., 2006), more frequent hospitalisations and higher mortality rates (Garcia-Rio et al., 2012) in patients with COPD.

Benefits of physical activity

Lower levels of physical inactivity caused by shortness of breath are thought to result in further physical deconditioning, and subsequent developing psychosocial problems such as depression and social isolation (GOLD, 2010). This can lead to reduced symptoms of breathlessness. Exercise training and PA are also thought to improve patient's ability to manage and tolerate symptoms of breathlessness.

COPD patient characteristics

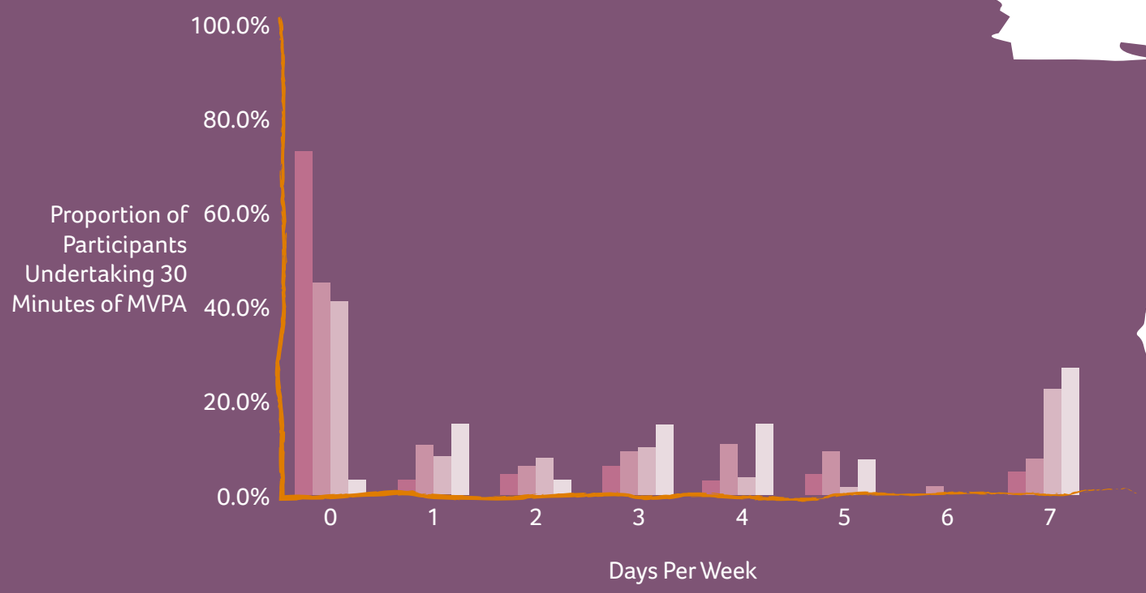
One-hundred and thirty-five (n=135) patients with a mean age of 67.2 ± 7.5 years were enrolled to the chronic obstructive pulmonary disease (COPD) LTC pathway. The. The majority of patients were Caucasian (99.3%) females (48.8%; n=66). After three months, more than half of patients (51.8%; n=70) were lost to follow-up. 19.3% (n=26) of the original cohort were followed up after twelve months.

COPD physical activity results

Single item measure

At baseline, 72.3% (n=47) of patients did not undertake at least one, 30 minute bout MVPA (Figure 14a). Only one person did not take part in at least one 30 minute bout of MVPA after 12 months (3.2%). Of the patients who remained in the evaluation after 12 months, more than three quarters (76.9%; n=20) had reported not participating in at least one, 30 minute bout of MVBA at baseline.

Figure 14a – Number of days that patients report participating in 30 minutes of MVPA



Purple through to light purple lines indicate baseline, three month, six month and twelve month data, respectively.

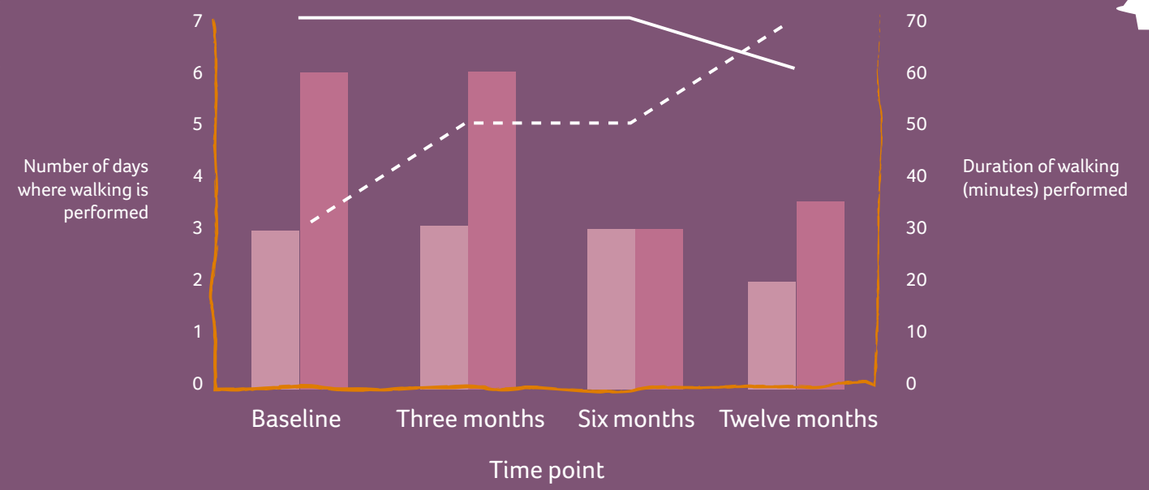
Sport-specific activity

At baseline, four people (2.9%) participated in sporting activity. The number of patients engaged in sporting activity decreased to three, at three months (4.6%), and remained at 3 after six (6.1%) and 12 months (11.5%).

Walking

For patients in the IPAQ group, there was a trend towards more days where walking activities were undertaken, however none of the reported changes were statistically significantly (Figure 12d). Patients in the IPAQ-E group, undertook walking activities on every day of most days of the week throughout the evaluation. For patients in the IPAQ group, there was a trend towards more days where walking activities were undertaken, however none of the reported changes were statistically significantly (Figure 14b). Patients in the IPAQ-E group, undertook walking activities on every day of most days of the week throughout the evaluation. Variations in walking activity duration did not change significantly throughout the intervention.

Figure 14b – The median number of days where walking was undertaken



Where walking was undertaken (lines) and duration of walking activities (bars) for patients in the IPAQ (dotted lines/ dark purple bars) and IPAQ-E groups (solid white lines/light purple).

* Significantly different from baseline.

Moderate intensity physical activity

Patients in the IPAQ-E group, but not the IPAQ group undertook moderate intensity physical activity on more days of the week at three months, compared to baseline (Table 12).

Table 12 - Median number of days that patients took part in physical activity (range)

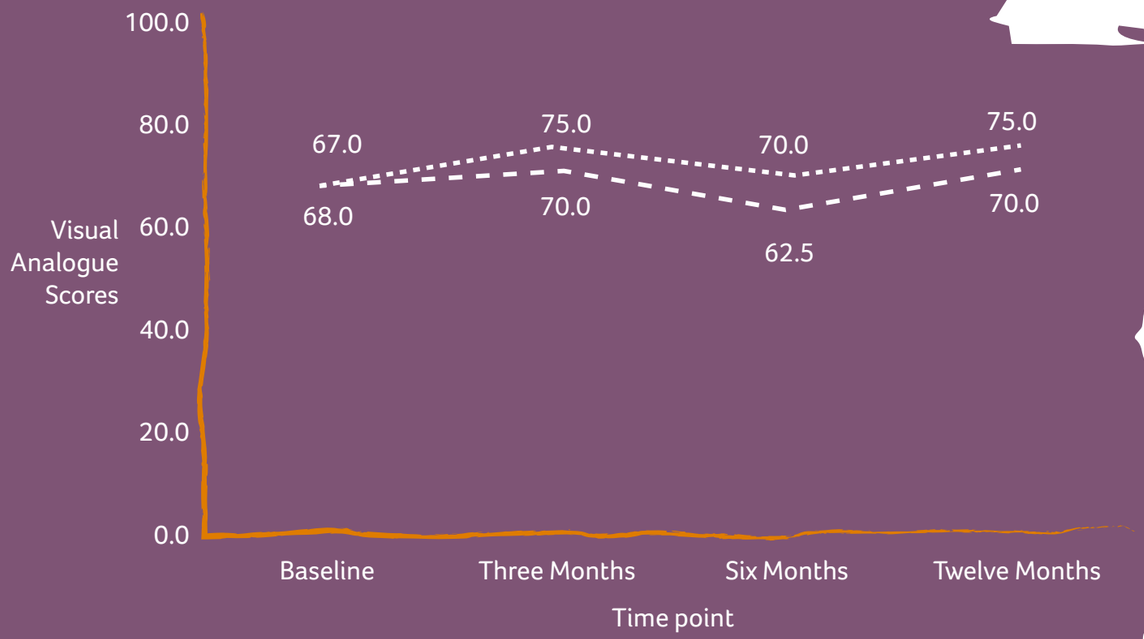
Time Point	IPAQ Group (Range)	IPAQ-E Group (Range)
Baseline	3 (0 to 7)	3 (0 to 7)[a]
Three Months	3 (0 to 7)	4 (0 to 7)[a]
Six Months	3 (1 to 3)	3 (0 to 7)
Twelve Months	1 (0 to 7)	3 (0 to 7)

a = Significant difference between baseline and three month values

COPD Quality of Life – Visual Analogue Score

Neither the IPAQ nor IPAQ-E groups had a significant change in VAS score during the evaluation (Figure 14c).

Figure 14c – Changes in visual analogue scores during the Active for Health intervention



Dashed lines indicate patients in the IPAQ group and dotted lines represent patients in the IPAQ-E group.

* = Significantly different from baseline.

Qualitative results - COPD

Active for Health

Patients, who engaged with the COPD pathway, discussed the importance of the Active for Health programme, for some the programme has been a lifeline and given them purpose, not simply in terms of managing and improving their condition, but in giving them a reason to get out of bed. If the Active for Health sessions stopped some individuals would struggle without the support.

Physical benefits were discussed including; reduced breathlessness, increased muscle mass. All patients commented on the social benefits of being together for exercise, making friends and the different roles they have taken up with the group.

Patient activation

Patients had good knowledge of their condition and medications and managed well. Some had already attended COPD education sessions at Breathing Space and knowledgeable about their condition. All patients agreed that they were responsible for their own health and that they should do more to help themselves and not rely on medications.

One patient regretted previous behaviours which may have contributed to their condition. Confidence in their ability to do more exercise increased and patients were more motivated to take up other activities.

Patient activation score

Patients in this pathway were highly activated in managing their health condition, with patients scoring between level 3 (n=3) 4 and the other patients scored level 4 (n=2).

Appendix 1d - Cancer condition card

About this condition

Cancer is the abnormal growth of cells within an area of the body. Cancer has multiple causes including certain viruses, exposure to radiation or chemicals, and lifestyle behaviours. Sedentary behaviour is a major risk factor for developing cancer. People living with cancer often feel depressed, anxious and tired.

Benefits of physical activity

Engaging in exercise training and PA can improve many of these symptoms. Once someone has gone in to remission, exercise and PA may also help prevent the recurrence of cancer (Macmillan, 2017, Lee, 2003; Thune, 2001; Homes et al., 2005).

Cancer patient characteristics

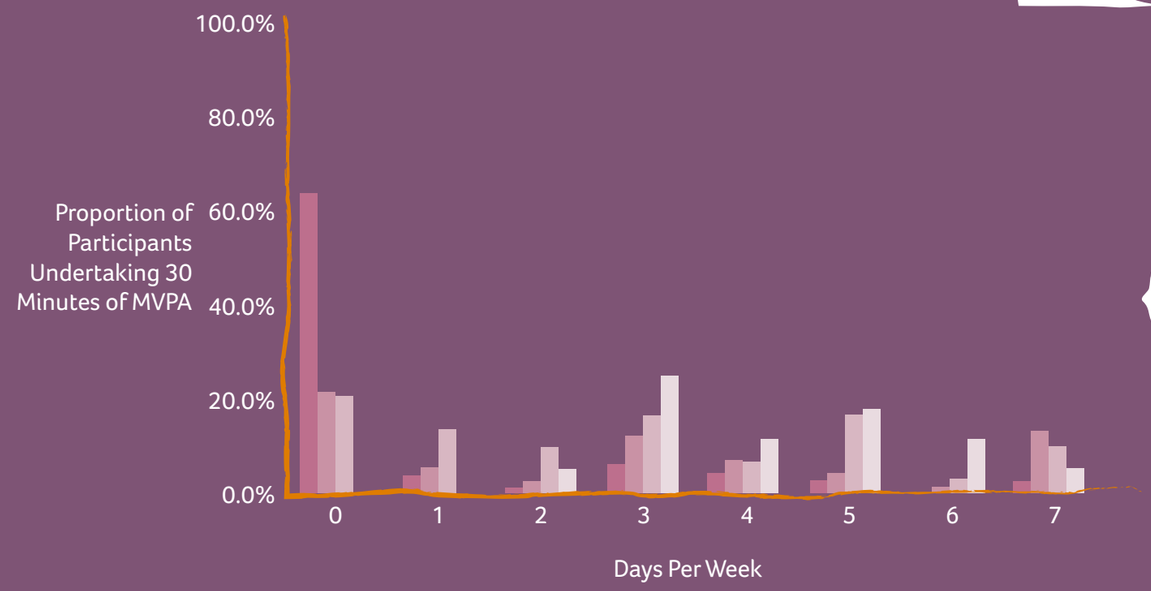
One-hundred and nine (n=109) patients with a mean age of 57.8 ± 10.4 years enrolled to the Active for Health cancer LTC pathway. All patients were Caucasian (100.0%) and most were female (83.3%; n=91). After three months, more than half (62.4%; 68) of patients were lost to follow-up. 14.7% of the original cohort were followed up after 12 months.

Cancer physical activity results

Single item measure

Nearly two-thirds of cancer patients did not participate in at least one, 30 minute bout of MVPA per week at baseline (63.4%; n=26). After 12 months however, all patients undertook at least one, 30 minute bout of MVPA per week (100.0%; n=16; Figure 15a). Of the patients who remained in the evaluation after 12 months, 50.0% (n=8) had reported not participating in at least one, 30 minute bout of MVBA at baseline.

Figure 15a – Number of days that patients report participating in 30 minutes of moderate to vigorous physical activity (MVPA)



Purple through to light purple lines indicate baseline, three month, six month and twelve month data, respectively.

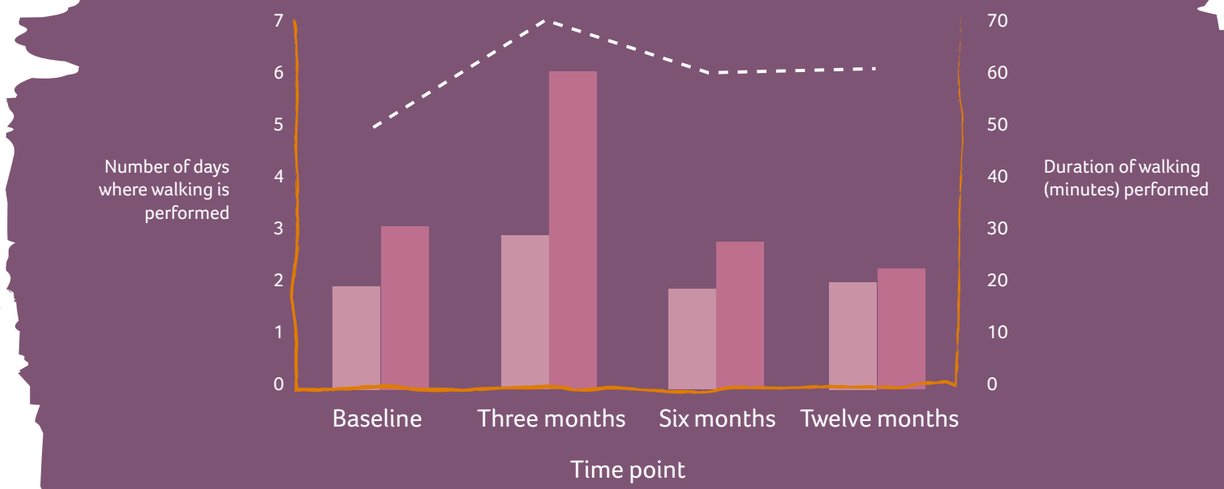
Sport-specific activity

At baseline, two patients (4.9%) said that they took part in sporting activity. After three months, eight patients were engaging with sporting activity (19.5%). Only two patients reported participation in sporting activity at six (6.9%) and 12 (12.5%).

Walking

The median number of days that patients reported taking part in walking activities was the same the same for the IPAQ and IPAQ-E groups throughout the evaluation (Figure 15b).The number of days where walking activity was performed was not significantly different after 12, compared to baseline, however the number of days where patients engaged in walking activities remained high throughout the study. No significant changes in the duration of walking activities performed were noted.

Figure 15b –The median number of days where walking was undertaken



Where walking was undertaken (lines) and duration of walking activities (bars) for patients in the IPAQ (dotted lines/ dark purple bars) and IPAQ-E groups (solid white lines/light purple).

* Significantly different from baseline.

Moderate intensity physical activity

Despite a trend for greater participation (Table 13), patients in the IPAQ group did not participate in moderate physical activity on significantly more days of the week after 12, compared to baseline. Patients in the IPAQ-E group however, reported taking part in physical activity on more days of the week after three months.

Table 13- Median number of days that patients took part in physical activity (range)

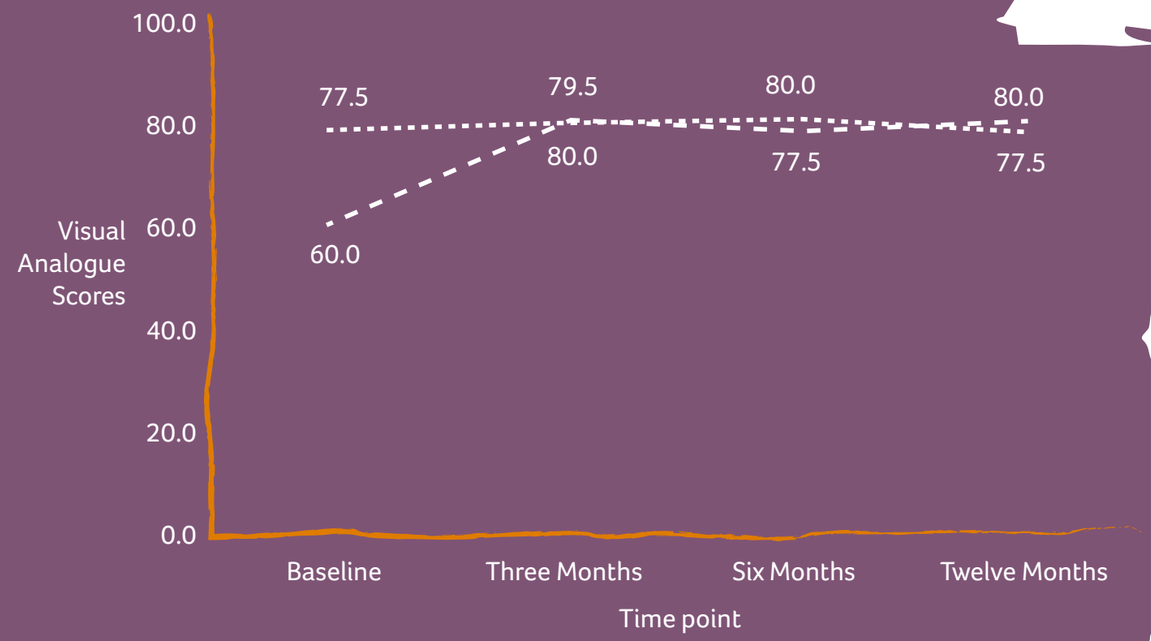
Time Point	IPAQ Group (Range)	IPAQ-E Group (Range)
Baseline	0 (0 to 7)	3 (0 to 7)[a]
Three Months	2 (0 to 7)	4 (0 to 7)[a]
Six Months	2 (0 to 7)	3 (1 to 7)
Twelve Months	3 (0 to 5)	6 (0 to 7)

a = Significant difference between baseline and three month values

Cancer Quality of Life – Visual Analogue Score

At three months, patients in the IPAQ and IPAQ-E groups both had higher VAS scores compared to baseline (Figure 13e). There was no further increase in physical activity days after six and 12 for patients in the IPAQ group. Values did not significantly change from values.

Figure 15c – Changes in visual analogue scores during the Active for Health intervention.



Dashed lines indicate patients in the IPAQ group and dotted lines represent patients in the IPAQ-E group.

* = Significantly different from baseline.

Qualitative results- Cancer

1. Active for Health

Individuals, who engaged with the Cancer pathway, discussed social support as particularly important. Cancer patients didn't feel others understood their experiences; hence they discussed the importance of support of others in a similar position.

They referred to having a social group as a way to not feeling abandoned. One of the younger patients found the social side difficult and alleged that the group discussions could evoke some anxiety if the discussions were around cancer. This was not a shared opinion by the other group members.

Patients referred to having a good relationship with HCPs and considered this important. The believed Active for Health offers the non-medicalised support, which was viewed as essential.

2. Patient Activation

All patients interviewed were knowledgeable about their condition and understand; treatment, medication, self-management strategies including lifestyle management (keeping active, eating well, weight management).

They identified themselves as responsible for their own health. Patients were generally confident about managing their health now and in the long-term and believed the sessions had helped with increasing confidence. Based on their knowledge and information taught in the exercise sessions, patients have skills to carryout exercise in their own time away from the session.

Patient Activation score

Based on the comments above, patient activation levels were high, with patients scoring between level 3 (n =3) and level 4 (n=2).

Appendix 1e - MSK condition card

About this condition

In the Active for Health programme, the musculoskeletal pathway (MSK) refers to patients who have lower back pain. The lower part of the spine supports the upper body and helps to move the hips when walking. The lower parts of the spine are therefore an integral part of the mechanical processes that facilitate human movement. When injury to the soft tissues in the lower spine occurs, inflammation usually follows. This can be very painful and cause a reduction of physical mobility and quality of life.

Benefits of physical activity

Current evidence suggests that exercise training can reduce the symptoms of pain, strengthens the joints, improves physical function and improves quality of life.

MSK patient characteristics

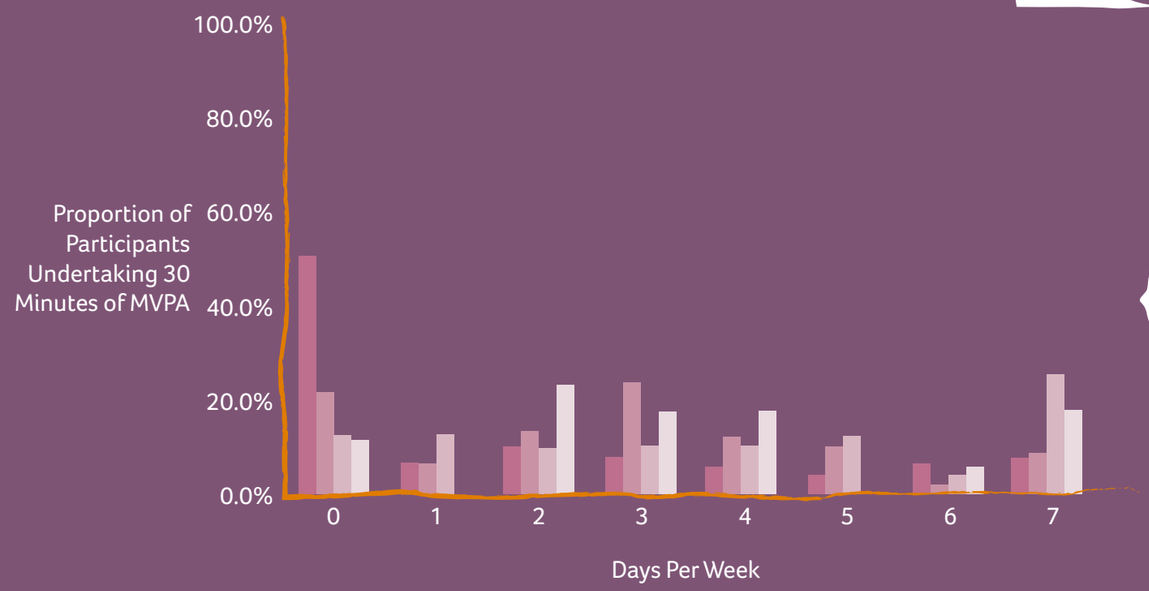
Two-hundred and thirty-five (n=235) patients with a mean age of 50.1 ± 13.0 years enrolled to the Active for Health musculoskeletal (MSK) LTC pathway. Most patients were Caucasian (93.6%) females (60.4%; n=142). After three months, more than half of the cohort (62.6%; n=147) were lost to follow-up. Seventeen patients (n=17; 7.2%) were followed up at 12.

MSK Physical activity results

Single item measure

At baseline, half (50.0%; n=44) of patients did not participate in at least one, 30 minute bout MVPA (Figure 11f). At 12, this had declined to (11.8%; n=2). Of the patients who remained in the evaluation after 12 months, 58.8% (n=10) had reported not participating in at least one, 30 minute bout of MVBA at baseline; Figure 16a.

Figure 16a– Number of days that patients report participating in 30 minutes of MVPA



Purple through to light purple lines indicate baseline, three month, six month and twelve month data, respectively.

Sport specific activity

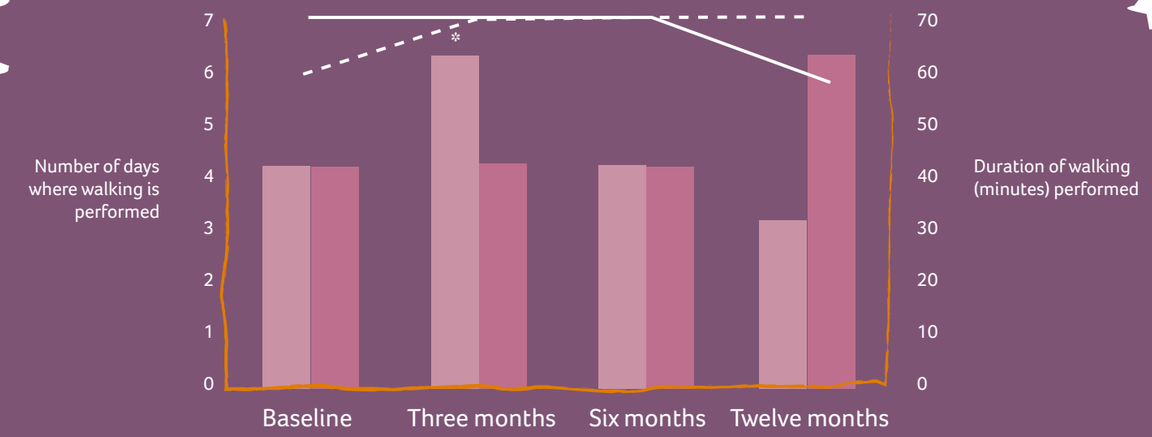
At baseline, two patients (2.3%) said that they took part in sporting activity. After three months, ten patients were engaged in sporting activity (11.4%). At six months and 12, this had reduced to six (12.8%) and two (11.8%), respectively.

Walking

Patients in the IPAQ group were already undertaking walking activities on six days of the week (Figure 16b). The number of days where walking was undertaken increased to seven days after three months and remained unchanged after 12.

The number of days were walking activities were performed by patients in the IPAQ-E group remained high throughout the evaluation, and no significant changes were reported. Neither the IPAQ nor IPAQ-E group reported changes in the duration of walking activities over the course of the evaluation.

Figure 16b–The median number of days where walking was undertaken (lines) and duration of walking activities



Where walking was undertaken (lines) and duration of walking activities (bars) for patients in the IPAQ (dotted lines/ dark purple bars) and IPAQ-E groups (solid white lines/light purple).

* Significantly different from baseline.

Moderate intensity physical activity

Patients in the IPAQ, but not the IPAQ-E group, undertook moderate intensity physical activity on more days of the week after three months, compared to baseline (Table 7f). No further changes in the number of days that patients engaged in moderate physical activity were noted.

Table 14 - Median number of days that patients took part in physical activity (range)

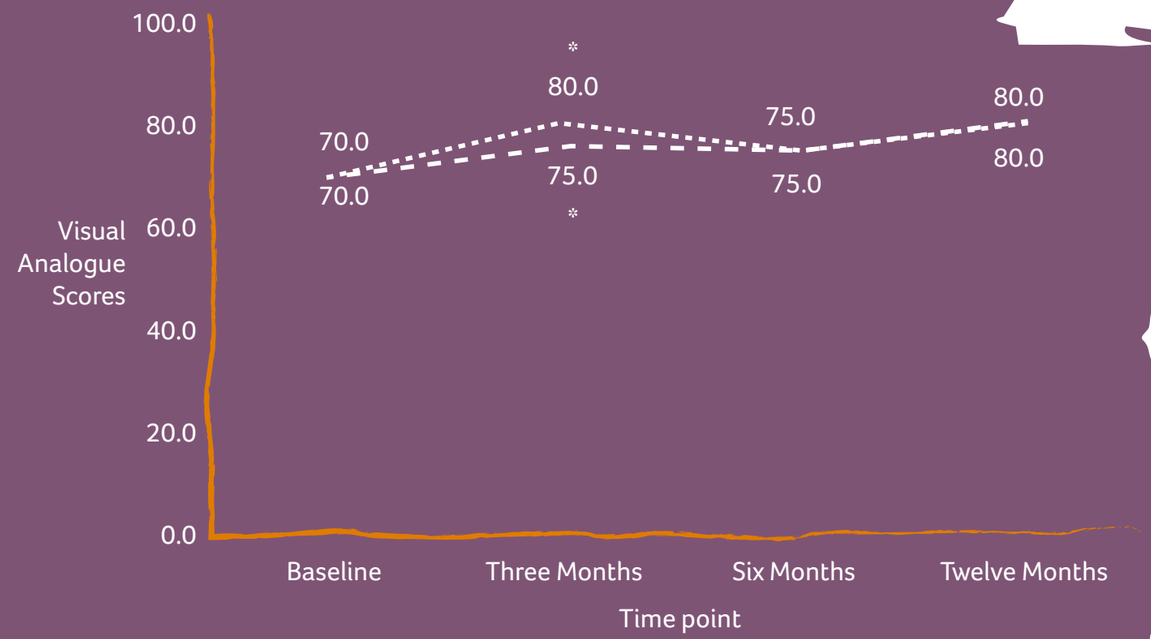
Time Point	IPAQ Group (Range)	IPAQ-E Group (Range)
Baseline	1 (0 to 7)[a]	2 (0 to 7)
Three Months	3 (0 to 7)[a]	4 (0 to 7)
Six Months	2 (0 to 7)	2 (0 to 7)
Twelve Months	2 (0 to 3)	4 (2 to 7)

a = Significant difference between baseline and three month values

MSK Quality of Life – Visual Analogue Score

At three months, patients in the IPAQ and IPAQ-E groups both had higher VAS scores compared to baseline (Figure 16c). No further changes in VAS scores were identified.

Figure 16c – Changes in visual analogue scores during the Active for Health intervention



Dashed lines indicate patients in the IPAQ group and dotted lines represent patients in the IPAQ-E group.

* = Significantly different from baseline.

Qualitative results - MSK

Active for Health

Patients in this pathway presented with a range of co-morbidities including mental health issues and dementia. Patients were knowledgeable about their condition and condition management.

Many benefits were noted including mobility and energy levels and overall quality of life improvements. Dedicated social time after the session was viewed as a nice added extra, but not deemed essential.

Most patients interviewed had been active in the past.

Patient Activation

Patients were knowledgeable about their back problems and management of relapse prevention.

All but one patient believed that they were responsible for their own health. With the other patient viewing HCPs at the most important.

Patients believed they were part of their health care team and their own advocate for their healthcare.

Patients had the key facts for building self-management strategies and are goal orientated. All patients were skilful in managing condition through reducing sedentary time, doing exercises from the class at home and walking to increase movement.

Patient activation score

Patients in this group were considered the most activated in their own health with patients scoring between 3 (n=2) and 4 (2=3).

Appendix 1f - Falls Prevention condition card

About this condition

One in three people over the age of 65 will have at least one fall a year. Falls can cause physical injury such as broken bones or abrasions. Of equal importance however, is the loss of confidence that people may face if they have a fall. Loss of confidence when undertaking daily activities may cause people to become withdrawn and socially isolated. There are many reasons why people may have a fall, for example, a drop in blood pressure can cause someone to become dizzy or disorientated, or poor co-ordination may cause someone to trip.

Benefits of physical activity

Regular participation in exercise training and PA is integral to the maintenance of good health and functional independence in older age, and reduces the risk for falls and fall-related injuries. Where a fall has occurred, exercise training and PA may restore physical function and confidence to a level that preserves physical and social independence.

Falls prevention patient characteristics

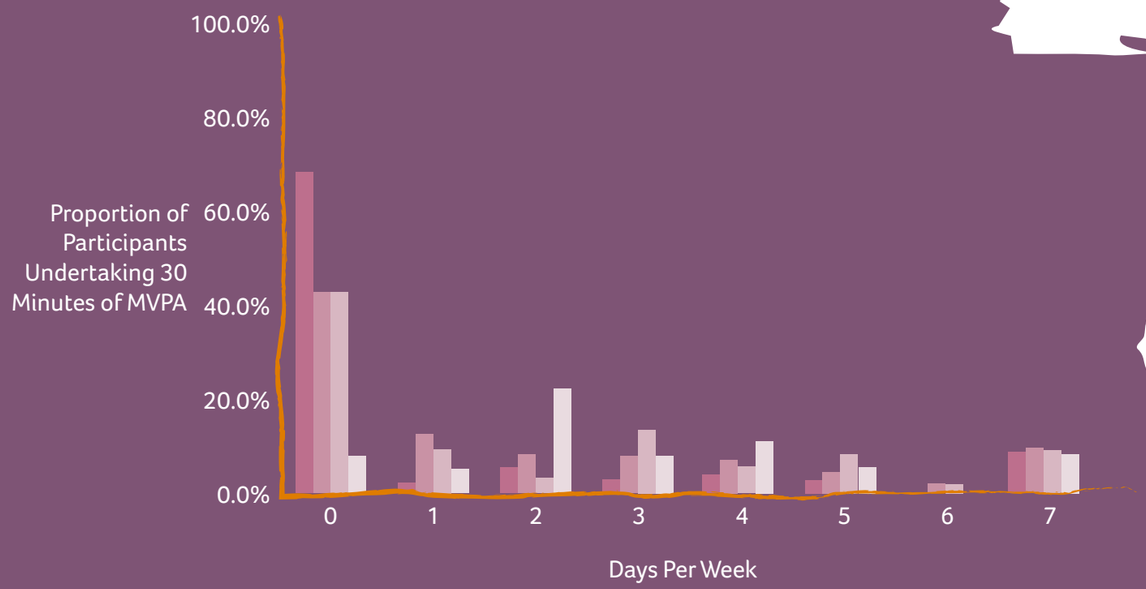
Two-hundred and thirty-seven (n=237) patients with a mean age of 74.4 ± 9.5 years enrolled to the Active for Health falls and fractures LTC pathway. Most patients were Caucasian (97.5%) females (75.0%; n=178). After three months, more than half of patients (51.3%; n=121) were lost to follow-up. Thirty-four (n=34) patients (14.3% of the original cohort) were followed up at 12.

Falls Prevention physical activity results

Single Item Measure

At baseline, the majority of patients (71.1%; n=86) reported that they did not participate in at least one, 30 minute bout MVPA (Figure 11g). Conversely, the majority of patients were performing one 30 minute bout of MVPA per week after 12 (91.2%; n=31). Of the patients who remained in the evaluation after 12 months, 76.5% (n=26) had reported that they did not participate in at least one, 30 minute bout of MVBA at baseline.

Figure 17a – Number of days that patients report participating in 30 minutes of MVPA



Purple through to light purple lines indicate baseline, three month, six month and twelve month data, respectively.

Sport-specific activity

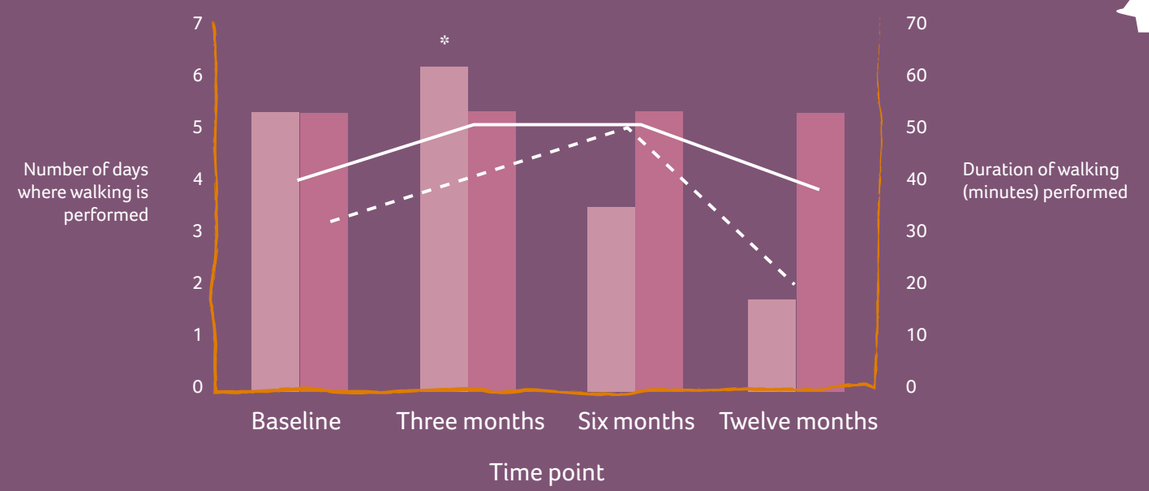
At baseline, and at three months, one person (0.8%) participated in sporting activity. No (n=0) patients engaged in sporting activity at six and 12.

Walking

Patients in the IPAQ group undertook walking activities on three days per week at baseline (range: 0 to 7 days). The number of days where walking was undertaken increased at three and six months; however this was not statistically significant (Figure 12g).

In the IPAQ-E group, the number of days where walking activities were undertaken was greater after three and six months, but not at 12. Changes in the duration of walking activities over the course of the evaluation did significantly change in either group.

Figure 17b –The median number of days where walking was undertaken



Where walking was undertaken (lines) and duration of walking activities (bars) for patients in the IPAQ (dotted lines/ dark purple bars) and IPAQ-E groups (solid white lines/light purple).

* Significantly different from baseline.

Moderate intensity physical activity

Patients in the IPAQ and IPAQ-E groups undertook moderate intensity physical activity on more days of the week after three months, compared to baseline (Table 7g).

Patients in the IPAQ further increased the numbers of days where moderate physical activity after six months.

Table 7g - Median number of days that patients took part in physical activity (range)

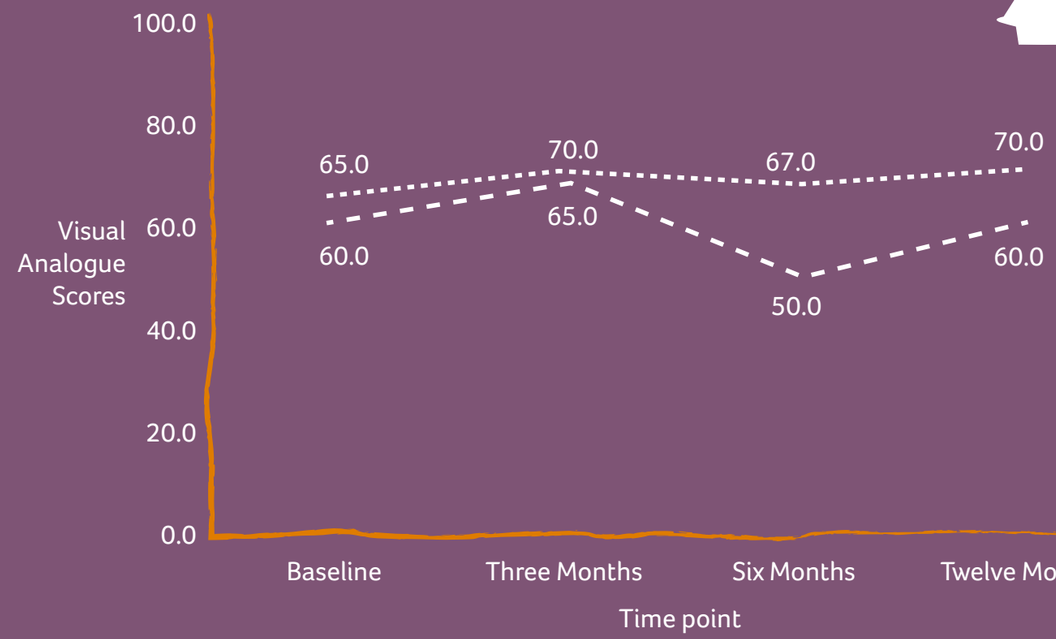
Time Point	IPAQ Group (Range)	IPAQ-E Group (Range)
Baseline	0 (0 to 7)[ab]	1 (0 to 7)[a]
Three Months	2 (0 to 7)[a]	3 (0 to 7)[a]
Six Months	1 (0 to 4)[b]	2 (0 to 7)
Twelve Months	1 (0 to 1)	1 (0 to 6)

a = Significant difference between baseline and three month values
b = Significant difference between baseline and six month values.

Falls Prevention Quality of Life – Visual Analogue Score

There was no change in VAS (Figure 13g) among patients in the IPAQ group at three months. Patients in the IPAQ-E group however had a significant increase in VAS after three months.

Figure 17c – Changes in visual analogue scores during the Active for Health intervention



Dashed lines indicate patients in the IPAQ group and dotted lines represent patients in the IPAQ-E group.

* = Significantly different from baseline.

Qualitative results - Falls Prevention

Active for Health programme:

These patients exhibited symptoms of anxiety around; additional falls, changes to the session structure (change of instructor) and feeling conscious about the number of falls they have had in comparison to others. However all of these anxieties were improved over time.

This group found the social support particularly important, with comments made around reducing isolation. Patients had a preconceived idea of age related decline in PA; however the Active for Health sessions changed this attitude.

Patient Activation:

All patients had a good understanding around their prevalence of falling and knowledge of their condition.

They frequently discussed skills that have been learnt in the session, which could be applied to everyday life, including backward chaining (teaching someone how to get up following a fall) and foot positioning.

Patients believed that others were responsible for their health including loved ones (n=1), instructors (n=2) and HCPs (n =2). One patient also discussed their own responsibility when prompted.

Patients discussed confidence frequently and generally felt confident in managing their condition; this was as a result of attending the Active for Health sessions.

Patient activation levels

Based on the above comments, patient activation levels were varied in this group scoring between level 3 (n-3) and level 2 (n=2).




Rotherham ACTIVE FOR HEALTH

A Local Evaluation Report

SPORT ENGLAND LOTTERY FUNDED
NHS Rotherham Clinical Commissioning Group
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FUNCTIONAL FITNESS
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