



Prehabilitation Services for People Diagnosed **With Cancer in Scotland -** **Scoping & Recommendations**

Report by: Transforming Cancer Care Prehabilitation Short Life Working Group

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Introduction

Prehabilitation is the practice of enhancing a patient's functional and psychological capacity before treatment commences. Ideally, prehabilitation interventions start at diagnosis, helping people to prepare for the next treatment stage in their journey of care¹. It is of interest in the cancer context because of the well documented impact of cancer treatments (chemotherapy, radiotherapy and surgery) on immediate and long-term well-being and quality of life. Additionally, most older cancer patients are likely to have comorbidities (e.g. obesity, diabetes, cardiorespiratory disease) resulting in low levels of physical fitness that complicate treatment delivery and increase the likelihood of side-effects and complications that subsequently prolong their recovery^{2,3,4}. These complications are even more likely in frail patients⁵.

As the first stage of a care pathway, prehabilitation has the potential to decrease length of hospital stay and postoperative complications as well as to improve aspects of neuro-cognitive function and quality of life after completion of treatments^{6,7,8}. The impact of prehabilitation on long term patient outcomes is dependent upon such pre-treatment behaviour changes being maintained into a rehabilitation programme⁹.

Current evidence suggests that three key factors should be considered within the design of prehabilitation programmes: physical activity¹⁰, nutrition (individualised requirements in relation to under nutrition, otherwise keeping to a healthy balanced diet) and psychological support. In addition, alcohol reduction and smoking cessation are also important to support the aims and objectives of prehabilitation. Programmes for delivery are already in place within the NHS for alcohol reduction and smoking cessation and these should be fully utilised as early as feasible. Most research has focussed on physical activity or fitness interventions as many patients do not achieve the recommended baseline activity requirements for good health and there is much fewer trial data on multimodal approaches which encompass all the three factors.

There is a need for further research on prehabilitation including impact of programmes in non-surgical oncological treatments, definition of minimum and individualised 'exercise prescriptions', key goals of preoperative nutritional care, adherence and benefits in certain population subgroups such as frail older patients. Furthermore, the impact of prehabilitation programmes on mortality, disease prognosis and health economics need further exploration. However, work to date indicates that prehabilitation is safe, feasible and can be delivered alongside complex treatment pathways in different cancer sites including lung¹¹, colorectal¹² and upper gastro-intestinal¹³. A growing number of national and international reports now recommend prehabilitation as part of cancer pathways and it is timely to explore how research findings can be implemented in Scotland^{6,14,15}.

The principles of prehabilitation have been warmly welcomed within many NHS sites but practice varies and may not embrace optimal procedures. Documenting current practice, barriers and challenges to

implementing prehabilitation provides insight for the translation of research to practice and the development of national frameworks for action and evaluation procedures to be co-ordinated.

The aim of the Prehabilitation Short Life Working Group (SWLG) is to make recommendations for the establishment of an action plan for prehabilitation procedures based on published evidence of benefit and current practice, that is mindful of patient engagement and the need for equity of access and uptake¹⁶.

Key Issues for Delivery and Monitoring

When considering the development of a prehabilitation service, it is important that prehabilitation is not seen in isolation from the remainder of each patient's pathway and should be integrated with diagnosis, investigations, treatment decision-making processes, follow-up care, support and recovery. In particular, prehabilitation needs to lead into rehabilitation services and beyond.

Crucial to the successful implementation will be the ability to communicate the benefits of prehabilitation and defining the 3 components involved. These communications will have implications for cross specialty, cross professional and cross sector agencies (i.e. across health, social care and the third sectors).

Research and experience highlight the following key delivery issues¹

➤ **Referrals**

Interventions targeted at improving physical and/or mental health **should start as early as possible after diagnosis** and in advance of any cancer treatment. Some studies have shown the benefits of prehabilitation in as little as 2 weeks,¹⁷ (when followed by rehab procedures) and emerging evidence suggests that the longer the period available in which to implement these interventions the more positive the impact. In addition, a number of studies indicate that in primary colorectal cancer, limited delay to achieve appropriate prehabilitation does not lead to poorer overall or cancer-free survival^{18,19,20}.

Optimisation of health at the point of referral for cancer investigation is highly desirable²¹ and can be followed up by formalised prehabilitation approaches prior to commencing treatment (following agreement at Multi-Disciplinary Team meetings).

➤ **Triage**

The timing of their cancer diagnosis relevant to when treatment can start will have a significant influence on the amount of prehabilitation that can be pursued. In addition, it is important to consider

the suitability and levels of activities that would be appropriate taking into consideration issues such as frailty, mental and physical capacity

➤ **Screening**

Screening procedures should occur early in the cancer pathway to allow for the delivery of prehabilitation. There is a need to agree valid and reliable Physical Activity, Nutrition and Psychology & wellbeing screening tools that can be used by general health & care providers. These tools allow a standardised approach to monitor baseline parameters and assess risk stratification.

➤ **Assessment**

After initial screening, further assessments will be required to design appropriate programmes based on individual patient characteristics and possible contraindications. Ongoing assessments are required to monitor service delivery, patient adherence and impact of prehabilitation.

➤ **Intervention approaches**

Universal

Applicable to anyone with a cancer diagnosis with a focus on providing dietary, exercise and psychological advice and behaviour change support. Patients and families will also be signposted to appropriate resources, which will help to elaborate and reinforce the prehabilitation advice provided by a health care professional.

Targeted

In addition to universal advice, some patients who are identified as being at risk from late effects of disease and treatment (e.g. due to co-morbidities) may benefit from more targeted interventions. Such interventions which will be prescribed by a registered health & care professional who will also monitor adherence.

Specialist

Some patients with complex needs (e.g. due to have major surgery) will require specialist intervention and will be referred to registered health care experts (e.g. dietitians) who can assess and prescribe appropriate interventions and take responsibility for monitoring procedures.

➤ **Monitoring and Evaluation**

For those receiving universal intervention advice the emphasis is on self-monitoring and supporting the patients to do so. This could be supported through the use of a Macmillan Holistic Needs Assessment approach with contact from community supports.

For targeted and specialist interventions it is important that the professionals prescribing this level of intervention can monitor adherence, efficacy and experience.

Quality Assurance Considerations

Integral to the implementation of any change in clinical care is a framework to monitor and ensure quality. From the perspective of prehabilitation there are two key factors to consider; the implementation of any nationally agreed standards and the quality of care delivered.

To empower implementation across Scotland, it is important that standards of care are established from the outset and based on evidence. Therefore, a set of standardised screening, assessment, adherence, efficacy, experience and outcome measures will require to be defined. In addition, to quality assure the delivered care against the defined standards, a minimum dataset should be developed in collaboration with clinicians and patients. This may well include current data available from multiple sources (e.g. Public Health Scotland National Enhanced Recovery in Colorectal Initiative.) and may involve dedicated data collection. These data should be utilised for health improvement rather than performance monitoring and a clear implementation framework will require development to ensure agreement and support available to all areas across Scotland.

Health Economics

The evidence base for prehabilitation continues to expand over time. The beneficial outcomes from ERAS (Enhanced Recovery after Surgery) would suggest health economic gains from prehabilitation. Several meta-analyses, systematic reviews and individual studies have assessed outcomes relevant to health economic aspects of prehabilitation programme components and examples are presented in [Table 1](#)

Prehabilitation could have health economic benefits for Scotland. From the published literature (Study 26 and 27 from the table), extrapolating a reduction of two days in length of hospital stay for patients undergoing colorectal procedures in Scotland in 2019 (n=1456)²² a potential 2912 inpatient bed days could be saved. With a general ward bed cost of approximately £352 per day, this cost saving is conservatively estimated to be £1.02 million.

Implications for Sectors

Primary & Community Care

Given its role in supporting people with cancer to prepare for treatment, much of the emerging evidence base for prehabilitation is embedded within secondary care, but there is merit to further scoping work to understand

the role that primary & community care can play in normalising prehabilitation as part of the cancer continuum of care and of optimising health through supporting conversations.

Prehabilitation promotes healthy behaviours, and public health priorities around reducing the burden of smoking and obesity and have been well embedded within general practice for many years. Primary & community care practitioners regularly signpost to community-based services to support healthy lifestyles. They play a crucial part in the prevention pathway as they can typically reach a larger number of the population.

Building on this universal health promotion approach, primary & community care is ideally suited to initiate prehabilitation conversations as early as the referral for urgent suspicion of cancer. The advantage of this approach is that it capitalises on a teachable moment when healthy behaviours can be promoted to the patient and their supporters. A primary & community care approach would give more time for prehabilitation by using the diagnostic period, but this must be balanced against capacity issues within a depleted workforce. Further scoping around a more formalised structure to prehabilitation within primary & community care activities (e.g. lifestyle advice, optimisation of chronic disease, medication rationalisation and wellbeing support) would be beneficial.

The role that primary & community care can play in optimising a secondary care prehabilitation model also needs to be understood. For example, primary care could raise the issue of prehabilitation at the point of referral to normalise the concept and manage expectations at subsequent appointments. Within a secondary care model, it is also crucial that uptake and outcomes of prehabilitation are shared with primary & community care teams (as would be expected with any care package). In addition, 3rd sector organisations within an integrated approach will be crucial in supporting the delivery of prehabilitation services in the community.

Secondary Care

Prehabilitation aims to improve the patient experience and outcomes of an individual's cancer treatment, in a patient sensitive and specific way. The aspiration is for programmes to run in parallel with the diagnostic pathway and early oncological treatment. The gap between initial investigations giving a high suspicion of cancer (e.g. a CT scan or endoscopy), to the completion of staging investigations and initiation of treatment can take several weeks. This allows initiation of steps to optimise a patient's health for treatment, but would not delay treatment.

In secondary care these interventions are likely to be tailored by tumour sub types, but there are broad themes that are likely to be important in many types of cancer; these include: minimising symptoms of cancer,

maximising treatment of co-morbidities, improving a patient's physical capacity, improving nutrition and removing barriers to adequate calorie intake, smoking cessation and psychological support. These interventions should not be limited to only those with curable cancer nor those having further treatments. In the patient group with probable poor outcomes, prehabilitation may overlap with the delivery of early palliative care, aiming to minimise the impact of the cancer on a patient and their family.

Models of Prehabilitation Programmes Within the UK

Prehabilitation services for people living with cancer are developing rapidly across the UK. The number of clinical trials, implementation and service transformation projects are also rapidly expanding. Those services mentioned below are some of the most noted in the UK. Some are pilots, which have become services.

- Lung cancer Prehab programme, [Barts Health NHS Trust](#). The preoperative physiotherapy 'pre-hab' programme, one of the first of its kind in the UK for lung cancer patients, focused on progressive muscle strength and aerobic fitness training.
- Prehabilitation is offered based on referral to the [Royal Marsden NHS Foundation Trust](#). The physiotherapy team run supervised exercise circuits in Chelsea and Sutton for patients who will be undergoing major surgery as part of their treatment. This aims to increase fitness, reduce the risk of complications following surgery, and improve recovery time. Referrals are made following anaesthetic assessment, and sessions take place twice weekly before surgery.
- [PREPARE programme](#) Imperial College Healthcare NHS Trust. Assessment of medical, physical, psycho-social and nutritional wellbeing before surgery. Based on results a personalised programme is created for patients to work through.
- [Kent and Medway prehabilitation service Medway NHS Foundation Trust](#). The prehabilitation service aims to get patients to their optimal health before their operation, helping them cope with the challenges of surgery as well as to recover faster.
- [Prehabilitation services Bristol](#). A programme of Prehabilitation offered to upper GI surgical patients.
- [Prehab4cancer Greater Manchester](#) GM Cancer NHS Foundation Trust. A transformation project which will facilitate up to 2000 people, living in Greater Manchester, who are newly diagnosed with cancer, to engage in exercise, nutritional screening and have improved emotional well-being.
- [PREPWELL](#)²³ A pilot programme, a one-stop preoperative health and wellbeing programme for patients undergoing major surgery. South Tees Hospitals NHS Foundation Trust.

Further information about the Prehab4Cancer Programme in Greater Manchester can be found in Annex 1.

Prehabilitation in Scotland

In Scotland, several local programmes have been described but there is little published work available. For example, The Apple Clinic in Royal Alexandra Hospital, Paisley has been running for 12 months. With a dedicated prehabilitation specialist undertaking weekly outpatient clinics in the colorectal surgical department, over 100 bowel, breast and gynaecological patients have undergone a programme of initially hospital-based exercise classes with community onward referrals. This prehabilitation is supported by the entire surgical perioperative team allowing easy transition into the inpatient ERAS programme and post-operative rehabilitation services.

To identify current prehabilitation work a scoping study was undertaken to identify the availability of relevant services.

A short online survey was created by the SLWG for distribution to key stakeholders working across Scotland. A sub-group of respondents were then followed up by telephone interview. Details regarding outcome measures, barriers to implementation, suggestions for improvement, referral practices, and perceived importance of prehabilitation and rehabilitation in the context of cancer were also sought.

A total of 295 responses were obtained in a 4-week period. Respondents (from across the country) were from a variety of professional backgrounds and care settings including primary and secondary care, local authority and third sector. Interviews were carried out with 11 individuals from 6 health care professionals working across 6 Health Board areas.

The responses indicate that less than one-third of respondents (28%, n=81) could identify prehabilitation activities within their local area (51%, n=151 did not know, 21%, n=62 no activities available). Of those who identified services, 63% (n=49) were located within the West of Scotland Cancer Network area, 29% (n=23) were located in the South East Scotland Cancer Network area and 8% (n=6) were in the North Cancer Alliance area.

None of the identified services offered a multi-modal, multi-phasic, multi-professional intervention with clear access routes and embedded outcome measures as recommended by expert guidance¹. However, there are a number of prehabilitation clinics, research trials and pilot programmes in progress; this demonstrates real willingness to do things differently and free text comments indicated further interest in developing this area with requests for support, guidance on approach and mentions of sharing practice. Further examination

of the services on offer, ascertained through interview, indicated that many describe enhanced recovery after surgery programmes and/or standard services^{1*} offered pre-treatment as prehabilitation.

Lack of awareness and understanding of what constitutes prehabilitation, its benefits and method of delivery were seen as barriers to implementation. Funding and resource availability (Allied Health Professionals (AHPs) and/or dietetic workforce in particular), pathway redesign and timing, evidence and willingness of patients to participate were also highlighted as challenges for programme design and delivery. On the other hand, it was reported that clinical and managerial support could clearly facilitate action. Finally, respondents recognised a need for equity of service in terms of geography, population reach and tumour site.

The impact of COVID-19 was discussed during the interviews with all respondents noting a significant impact on delivery. Those who described 'surgery school'^{2*} or pre-treatment group interventions explained that service delivery had now ceased; the exception to this was a therapeutic radiographer providing a 'fear of recurrence' project. Due to the nature of the programme's funding (fixed-term funding from third-sector), facilitators were able to continue project delivery using a popular online group video-chat platform. Services that previously offered one-to-one face-to-face prehabilitation or usual care interventions had largely moved to video-consultations but in some cases the collection of outcome measures was adversely affected.

The full report detailing the outputs of the questionnaire and interviews can be found in Annex 2.

^{1*} **Standard care** includes essential medical preparation such as blood tests, blood pressure, scans, informing the patients of any preparations (medications, eating, drinking) and perhaps written information such as a leaflet on exercises.

^{2*} **Surgery School** is usually a group education session. It is designed to help patients and their family/friends understand what to expect after surgery, and to help them to prepare their body in a way that supports optimal recovery.

Key Findings

Published research demonstrates that some cancer patients who participate in prehabilitation can achieve better outcomes, particularly when prehabilitation is delivered as part of a rehabilitation continuum that extends beyond treatment. This report has demonstrated the growing body of evidence and support for the development of prehabilitation services across the UK, and here in Scotland. It also demonstrates the degree of redesign required to implement a rehabilitation continuum within routine pathways of care; this is echoed in Scotland's 'Framework for supporting people through Recovery and Rehabilitation during and after the COVID-19 Pandemic'²⁴.

The outcome of the scoping work found clear evidence of enthusiasm across Scotland to support the development and implementation of prehabilitation. However, issues and key gaps were identified, which must be addressed to enable wide-spread implementation across Scotland. Although there is a growing awareness of prehabilitation as a term, considerable variation in understanding remains. Differences in understanding appear to be linked to timing and content of the offer. This demonstrates the need for clarity. In addition, we did not find a prehabilitation service in Scotland that encompassed all recognised and recommended elements of prehabilitation. Those that responded to the survey generally described services led by enthusiasts, which primarily focussed on the provision of a single discipline-led component. Usually this was due to a lack of dedicated funding and/or restricted access to key personnel, with a large number calling for greater access to nutritional care. Whilst this indicates that a substantial amount of work is required before multi-modal, multi-phasic interventions can become the norm, it also provides evidence of a solid basis from which we can grow and develop comprehensive prehabilitation services across the country.

Finally, it is worth noting that the components of prehabilitation align with the Scottish Government's public ambitions for a healthier lifestyle, ambitions that have become even more important since the onset of the global COVID-19 pandemic. Thus, it could be argued that exploiting the teachable moment associated with a cancer diagnosis (i.e. engaging those newly diagnosed with cancer in prehabilitation) and providing ongoing support throughout the rehabilitation continuum, could demonstrate gains which have value beyond cancer services. Coupling this with the potential of digital, which has also been embraced during the pandemic, would provide further opportunity to maximise reach, minimise treatment burden, monitor impact of intervention (i.e. with PROMs and PREMs) and maximise value for money. Thus, a comprehensive multi-modal, prehabilitation service, delivered as part of the rehabilitation continuum would provide opportunity to collaborate across all sectors including public, private, third sector and education.

Recommendations

The Short Life Working Group was established to scope the provision of prehabilitation services across Scotland. The aim was also to understand the parameters for best practice for the delivery of such services with a review of similar services across the rest of the UK.

Following the immediate and debilitating impact of COVID-19 on the delivery of NHS services and patient care²⁵, there is a clear and present opportunity to offer prehabilitation services. This should be aligned with the delivery of the 'Framework for Rehabilitation & Prehabilitation During & Post Covid' which was recently published by the Scottish Government²⁴.

In this context and as a result of the scoping exercise, the following recommendations should be progressed. This will support the development and implementation of prehabilitation for people affected by cancer across Scotland over the short, medium and longer term.

No.	Recommendation	Timeframe
1.	To initiate an educational and information campaign for the general public and professionals to promote the benefits of prehabilitation and to provide clarity and consistency for a standardised definition of prehabilitation in Scotland.	Short Term 0-4 months
2.	<p>To build on existing digital resources, which will support the provision of prehabilitation/rehabilitation across Scotland and assist in raising awareness, providing education and supporting delivery. This should meet the following specification and will require ongoing maintenance and monitoring;</p> <ul style="list-style-type: none"> ➤ A 'Once for Scotland' cancer rehabilitation website with a specific focus on prehabilitation ➤ Links that signpost individuals to resources that support a 'universal' prehabilitation offer including advice on physical activity, nutrition, psychological support, smoking cessation and alcohol reduction. ➤ Online access to mandatory and supplementary training for relevant professionals, including those involved in generalist and specialist care delivery across health and care sectors ➤ Digital provision should be advanced to support the delivery of more targeted and specialist provision of prehabilitation, meeting the needs of those with more complex needs prior to treatment. This should enable <ul style="list-style-type: none"> - Screening and triage - Assessment - Monitoring - Two-way communication - Signposting and referral - Data collation and reporting. ➤ Standardisation and continual monitoring of the above points for the Quality Assurance will be key to aid sustainable delivery of Prehabilitation across Scotland. 	<p>Short to Medium Term 0-12months</p> <p>Short Term</p> <p>Short Term</p> <p>Medium Term</p> <p>Medium Term</p> <p>Medium Term</p>

3.	To establish a basis for tiered psychological support underpinning prehabilitation practices. This could include extending the scope of the 'Psychological therapies and support framework for people affected by cancer' (West of Scotland Cancer Network, 2017) to cover all of Scotland,	Medium Term
4.	To convene a nutritional care advisory/working group who will develop a framework for nutritional care which would underpin cancer prehabilitation service delivery and support the wider aim of safe and effective cancer care.	Medium Term
5.	To progress the implementation of prehabilitation with different cancer types, where one pathway for prehabilitation is established, to provide a template for the newly developed pathways. This will test and establish the concept for prehabilitation delivery in Scotland.	Medium Term
6.	To build the delivery of prehabilitation across all tumour types across Scotland thereby establishing a foundation for the cancer rehabilitation continuum.	Long Term – 2 years
7.	Over the longer term to develop pathways to prehabilitation, which originate in primary care following the initial suspicion of cancer.	Long Term

Drawing on work from other areas there is a clear need for additional budgetary provision to support the implementation of these recommendations.

References

1. Macmillan Cancer Support, Royal College of Anaesthetists and National Institute of Health Research Cancer and Nutrition Collaboration (2019) Principles and guidance for prehabilitation within the management and support of people with cancer. <https://www.macmillan.org.uk/assets/prehabilitation-guidance-for-people-with-cancer.pdf>
2. Sarfati D, Koczwara B, Jackson C. The impact of comorbidity on cancer and its treatment. *CA Cancer J Clin*, . 2016 Jul;66(4):337-50. doi: 10.3322/caac.21342. Epub 2016 Feb 17.
3. Stairmand J, Signal L, Sarfati D *et al* (2015). Consideration of comorbidity in treatment decision making in multidisciplinary cancer team meetings: A systematic review. *Annals of Oncology*, 26, 1325–1332. <https://doi.org/10.1093/annonc/mdv025>
4. Barberan-Garcia A *et al* *Ann Surg* 2018 Jan;267(1):50-56
5. Makary MA, Segev DL, Pronovost PJ, *et al*. Frailty as a predictor of surgical outcomes in older patients. *J Am Coll Surg*. 2010; **210**:901-908.
6. Macmillan (2019) Prehabilitation – evidence and insight review. https://www.macmillan.org.uk/images/prehabilitation-evidence-and-insight-review_tcm9-335025.pdf
7. Carli F, Silver JK, Feldman LS *et al* (2017). Surgical Prehabilitation in Patients with Cancer: State-of-the-Science and Recommendations for Future Research from a Panel of Subject Matter Experts. *Phys Med Rehabil Clin N Am*. 2017 Feb;28(1):49-64. doi: 10.1016/j.pmr.2016.09.002
8. Boereboom C, Doleman B, Lund JN *et al*. Systematic review of pre-operative exercise in colorectal cancer patients. *Tech Coloproctol* 20, 81–89 (2016). <https://doi.org/10.1007/s10151-015-1407-1>
9. Faithfull S, Turner L, Poole K *et al* (2019) Prehabilitation for adults diagnosed with cancer: A systematic review of long-term physical function, nutrition and patient-reported outcomes. *Eur J Cancer Care (Engl)*. 2019 Jul;28(4):e13023. doi: 10.1111/ecc.13023. Epub 2019 Mar 11.
10. Tew GA, Ayyash R, Durrand J *et al* (2018) Clinical guideline and recommendations on pre-operative exercise training in patients awaiting major non-cardiac surgery *Anaesthesia* 73:6750-678 <https://onlinelibrary.wiley.com/doi/epdf/10.1111/anae.14177>

11. Crandall K, Maguire R, Campbell A *et al* (2014) Exercise intervention for patients surgically treated for Non-Small Cell Lung Cancer (NSCLC): A systematic review. *Surgical Oncology-Oxford*. Vol. 23. Issue 1. Pp. 17–30
12. Hoon LS, Sally CWC, Hong-Gu H (2013) Effect of psychosocial interventions on outcomes of patients with colorectal cancer: A review of the literature. Vol. 17. Issue 6. 883–891
13. Minella EM, Awasthi R, Loiseau S *et al* Effect of Exercise and Nutrition Prehabilitation on Functional Capacity in Esophagogastric Cancer Surgery: A Randomized Clinical Trial (2018) *JAMA Surgery* Dec 1;153(12):1081-1089.
14. Stout NL, Silver JK, Raj VS *et al* (2016). Toward a national initiative in cancer rehabilitation: Recommendations From a subject matter expert group. *Archives of Physical Medicine and Rehabilitation*, 97(11), 2006–2015. <https://doi.org/10.1016/j.apmr.2016.05.002>
15. National Academies of Sciences, E.a.M. (2018). Long-term survivorship care after cancer treatment: Proceedings of a workshop. Washington, DC, USA: The National Academies Press. PMID: 29738209 NBK499470 DOI: 10.17226/25043
16. Giles C, Cummins S (2019) Prehabilitation before cancer treatment *BMJ* 2019;366 <https://www.bmj.com/content/366/bmj.l5120>
17. Sekine Y, Chiyo M, Iwata T *et al* (2005). Perioperative rehabilitation and physiotherapy for lung cancer patients with chronic obstructive pulmonary disease. *Japanese Journal of Thoracic and Cardiovascular Surgery*, 53(5),237–243.
18. Strous MTA, Janssen-Heijnen MLG, Jeroen Vogelaar F (2019). Impact of therapeutic delay in colorectal cancer on overall survival and cancer recurrence - is there a safe timeframe for prehabilitation? *Eur J Surg Oncol* 2019 Dec;45(12):2295-2301. doi: 10.1016/j.ejso.2019.07.009. Epub 2019 Jul 4.
19. Delisle MM, Helewa RM, Ward MAR, The Association Between Wait Times for Colorectal Cancer Treatment and Health Care Costs: A Population-Based Analysis *Dis Colon Rectum* 2020 Feb;63(2):160-171

20. Abdulaal A, Arhi C, Ziprin P Effect of Health Care Provider Delays on Short-Term Outcomes in Patients With Colorectal Cancer: Multicenter Population-Based Observational Study. *Inter J Med Res* 2020 17:9(3)
21. Barlow, R. C. et al. (2018) Fit for Cancer Treatment: a prospective feasibility study of primary care initiated prehabilitation for patients with suspected cancer. *BJGP Open*, 2018 Oct 17;2
22. Public Health Scotland (2020). Available from : <https://www.isdscotland.org/Health-Topics/Hospital-Care/Operations-and-Procedures/>. Accessed on 1st September 2020
23. Danjoux G, Carr E, Durrand J *et al*. Preparing for surgery: the PREP-WELL project. Available from: https://www.southtees.nhs.uk/content/uploads/PREP_WELL_final_report.pdf (Accessed 26 August 2020).
24. Scottish Government (2020) Framework for supporting people through Recovery and Rehabilitation during and after the COVID-19 Pandemic. <https://www.gov.scot/publications/framework-supporting-people-through-recovery-rehabilitation-during-covid-19-pandemic/>
25. COVIDSurg Collaborative (2020) Elective surgery cancellations due to COVID-19 pandemic: global predictive modelling to inform surgical recovery plans, *BJS*, May 12, <https://doi.org/10.1002/bjs.11746>
26. Steffens D, Beckenkamp PR, Hancock M *et al* (2018) Preoperative exercise halves the postoperative complication rate in patients with lung cancer: a systematic review of the effect of exercise on complications, length of stay and quality of life in patients with cancer. *Br J Sport Med* 2018;52(5): 344
27. Ni HJ, Pudasaini B, Yuan XT *et al* (2017) Exercise training for patients pre- and post-surgically treated for non-small cell lung cancer: a systematic review and meta-analysis. *Integr Cancer Ther* 2017;16(1): 63-73.
28. Cerantola Y, Hübner M, Grass F *et al* (2011). Immunonutrition in gastrointestinal surgery. *Br J Surg* 2011;98(1): 37-48.
29. Gillis C, Buhler K, Bresee L *et al* (2018). Effects of nutritional prehabilitation, with and without exercise, on outcomes of patients who undergo colorectal surgery: a systematic review and meta-analysis. *Gastroenterology* 2018;155(2): 391-410.
30. Danjoux G, Carr E, Durrand J *et al*. Preparing for surgery: the PREP-WELL project. Available from: https://www.southtees.nhs.uk/content/uploads/PREP-WELL_final_report.pdf (Accessed 26 August 2020)
31. Wang B, Shelat VG, Chow JJL *et al* (2020). Prehabilitation program improves outcomes of patients undergoing elective liver resection. *J Surg Res* 2020;251: 119-125.

Table 1: Reported Results relevant to health care costs

Study	Prehabilitation Modality	Intervention Details	Patient Group	Key Findings
Steffens D, Beckenkamp PR, Hancock M <i>et al</i> (2018) ²⁶	Exercise	Pre-operative exercise	Patients with all types of lung cancer	Decreased length of hospital stay by an average of 2.86 days (95% confidence intervals 0.33-5.40 days)
Ni HJ, Pudasaini B, Yuan XT <i>et al</i> (2017) ²⁷	Exercise	Pre-operative exercise	Patients with non-small cell lung cancer	Decreased length of hospital stay by an average of 4.98 days (95% confidence intervals 3.74-6.22 days)
Cerantola Y, Hübner M, Grass F <i>et al</i> (2011) ²⁸	Nutrition	Pre-operative immunonutrition	Patients with all types of gastrointestinal cancer	Decreased length of hospital stay by an average of 2.12 days (95% confidence intervals 1.26-2.97 days)
Gillis C, Buhler K, Bresee L <i>et al</i> (2018) ²⁹	Nutrition	Pre-operative nutritional support (+/- exercise)	Patients with colorectal cancer	Decreased length of hospital stay by an average of 2 days
Danjoux G, Carr E, Durrand J <i>et al.</i> ³⁰	Multi-modal prehabilitation	PREPWELL programme ²⁰ : <ul style="list-style-type: none"> • Smoking cessation • Alcohol intake review • Exercise • Weight management • Anaemia management 	Patients awaiting surgery	80% of participants maintained or improved Health-Related Quality of Life (HRQOL); there was an average improvement of 20% by the time of surgery; this improved to 45% 3 months after surgery. The cost of running PREPWELL prehabilitation was on average £404.86 per patient.
Wang B, Shelat VG, Chow JLL <i>et al</i> (2020). ³¹	Multi-modal prehabilitation	<ul style="list-style-type: none"> • Physiotherapy (breathing exercise education) • Nutrition • Psychology 	Patients with hepatocellular carcinoma awaiting surgical resection	Decreased cost of healthcare by 16.5%

Greater Manchester Prehab4Cancer Programme Case Study**Greater Manchester's Prehab 4 Cancer Programme**

From the beginning of the scoping period in Sept 2018, to the preparation, pilot (launch April 2019) and delivery phase, Greater Manchester's (GM) Prehabilitation and Recovery Programme 'Prehab 4 Cancer', has supported more than 1000 participants to prepare for cancer treatment and feel better, physically and mentally, before and after treatment. Now in its sustainability phase 'Prehab4Cancer' is a free exercise, nutrition and wellbeing scheme co- delivered through GM's leisure services (87 venues across GM) GM Active.

Building on the local Enhanced Recovery After Surgery + (ERAS+) programme, Prehab4Cancer is offered to people over the age of 18 years who are going to have curative surgical treatment for colorectal, lung or upper gastrointestinal cancer. The team aim to contact potential participants within 48 hours of referral and baseline assessment is carried out within 4 working days. Participants are assessed at regular intervals using a range of measures:

Incremental shuttle walk test or 6-minute walk test	Hand grip dynamometry	1-minute sit to stand
EQ5D-5L	International physical activity questionnaire (IPAQ)	Self-efficacy scale for Exercise
Rockwood frailty	World Health Organization Disability Assessment Schedules (WHODAS 2.0)	EORTCQLQ-C30 (Cancer specific QOL)
Patient Generated Subjective Global Assessment (PG-SGA) (Nutritional screen)	Blood pressure	Height
Weight	Resting Heart Rate	Oxygen saturation

The programme combines reduced exertion high intensity interval training (RE-HIIT) with resistance training, graded based on individual participants baseline level of fitness and other co-morbidities and utilises a 'red flag' system to monitor nutritional risk and psychological wellbeing, providing low-level nutritional and psychological support as is required. Typically the intervention begins approx. 3-4 weeks before first treatment and continues for a 12-week period when patients are safe to resume the programme after surgery (between 4 to 8 weeks after surgery typically).

The project team consists of a secondary healthcare clinical lead (anaesthetist and critical care consultant, also Clinical Lead for the ERAS+ scheme), primary care lead (Macmillan GP), GM Cancer programme lead (specialist rehabilitation occupational therapist) and GM Active exercise specialist programme manager. They are supported by an integrated governance structure with visibility at Board level.

To support the delivery of the programme, particularly its 'universal' offer, the 'Prehab4Cancer' website was recently launched. This has been designed to support many more people affected by cancer in GM and beyond, not just those currently eligible for referral to the service. As a direct result of the COVID-19 pandemic participants of the programme have been supported remotely since March 2020 using phone and video technology.

Ongoing evaluation will measure against 'legacy' datasets representing usual care models and will provide evidence of 'real world' effectiveness of prehabilitation and rehabilitation in cancer care. Data from the first 600+ patients demonstrates acceptability with positive feedback obtained.

Cancer Type	No. of Participants	Male:Female Ratio	Age Profile
Colorectal	331	60:40	47% >70years
Lung	258	47:53	57% >70years
Oesophago-Gastric	124		53% >70 years

Prehab4Cancer has been developed and delivered with £1.167m of funding (Sept 2018 – March 2021). Approx. £800K is allocated to direct delivery to 2000 participants (i.e. £400-600pp as per universal/targeted offer); the remaining budget is allocated to project delivery i.e. project team, communications and branding. Resource had been allocated for additional input from Allied Health Professionals (Dietetics, Physiotherapy and Occupational Therapy) with the aim of developing targeted/specialist input, addressing needs/gaps in service provision and improving particular outcomes i.e. nutritional outcomes and supporting patients experiencing frailty; however, due to the impact of COVID-19, this resource has been re-allocated to support digital innovation for optimised remote service delivery.

For further information on implementing prehabilitation and recovery programme in Greater Manchester [click here](#). Additional detail can also be found via their [website](#).

Cancer Prehabilitation and Rehabilitation in Scotland:

Results of a Scoping Exercise

Background

Scotland's Cancer Prehabilitation Short Life Working Group was convened to scope the provision of cancer rehabilitation services across Scotland, with a more detailed look at the pre-treatment/prehabilitation phase, and to provide guidance for implementation in Scotland. To achieve these objectives, it was agreed that an online questionnaire would be developed and circulated to stakeholders for completion and a series of interviews carried out with a sub-group of respondents. The questionnaire would not only determine current provision, but plans for future provision, attitudes towards prehabilitation and rehabilitation, and barriers and opportunities for success. The semi-structured interviews would allow a deeper look at examples of good practice and planned activity, facilitating a greater understanding of rehabilitation provision across Scotland's cancer pathways.

Method

Questionnaire

An online questionnaire created via Webropol was distributed via email to key stakeholders working across Scotland. Scotland's three Cancer Networks (North Cancer Alliance, South and East Cancer Network and West of Scotland Cancer Network), the Cancer Coalition, Scotland's Perioperative Medicine Group and the Scottish Primary Care Cancer Group were the main points of contact for onward distribution of the questionnaire.

The questionnaire was open for a duration of 4 weeks from November 19th – December 20th 2019 and a reminder email was sent out via the main distribution channels after two weeks to maximise return rate.

When a mainland Board area was showing a nil response at the mid-way stage, the questionnaire co-ordinator made attempts through local contacts to highlight the questionnaire and encourage engagement.

Responses were discussed at the Prehabilitation Short Life Working Group (SLWG) with individuals noting key messages and identifying themes during a face-to-face meeting. A small core group agreed to carry out a more in-depth analysis on behalf of the wider SLWG.

Semi-structured Interviews

Following analysis of the questionnaire a topic guide was drafted, this would form the structure of the interviews. Once the topic guide was approved by the SLWG, a list of questionnaire respondents who identified themselves as willing to be interviewed was reviewed (n=31), and a number of individuals were

selected for follow-up (n=14, with a back-up list of 5 additional respondents should additional interviewees be required). The number of interviewees was guided by both the time-constraints of the SLWG and of the interviewers; whilst those selected were chosen for a number of reasons; for example, their involvement in prehabilitation delivery, funding source/security or delivery setting (a full list of reasons is noted in Table 1.). Upon contacting those selected individuals (n=17), one person declined to be interviewed and 4 did not respond. Each interview was typed up in full and themes identified and agreed by two members of the SLWG.

Table 1A: Reasons for Short-listing Respondent for Interview

Reason for Inclusion
Response describes established activity measured using a variety of outcome measures. Interested to understand how this was established without source of funding.
Although describing a pilot, response outlines established activity which uses a wide variety of interventions. Interesting to enquire about future activity.
Although potentially describing same service as response above, interesting to pick up information about funding (permanent)
Has permanent funding and describes different interventions to others.
Seems comprehensive and uses different outcome measures compared to other responses. Has no funding therefore interesting to understand how it is delivered.
Respondent seems knowledgeable and is involved in service delivery. Permanent funding with plans to expand.
Involves different part of the pathway to other responses and is a unimodal intervention.
Will be continued after funding ceases – how?
Comprehensive programme with permanent funding.
Project at early stage but interesting to understand how they are delivering without funding.
Established programme with home-based angle.
Highlights interesting barriers to implementation of existing activity.
Interesting example of established activity.
Describes established activity.
Different focus with a variety of outcome measures used but no funding
Service in planning phase – useful to understand detail and factors driving development.

Results

Questionnaire

In total, 295 people responded to the questionnaire. Question logic was incorporated resulting in a lower response rate for some questions.

Demographics

Respondent demographics are outlined below in Tables 2, Table 3 and Figure 1.

Table 2: Respondents by Employing Organisation

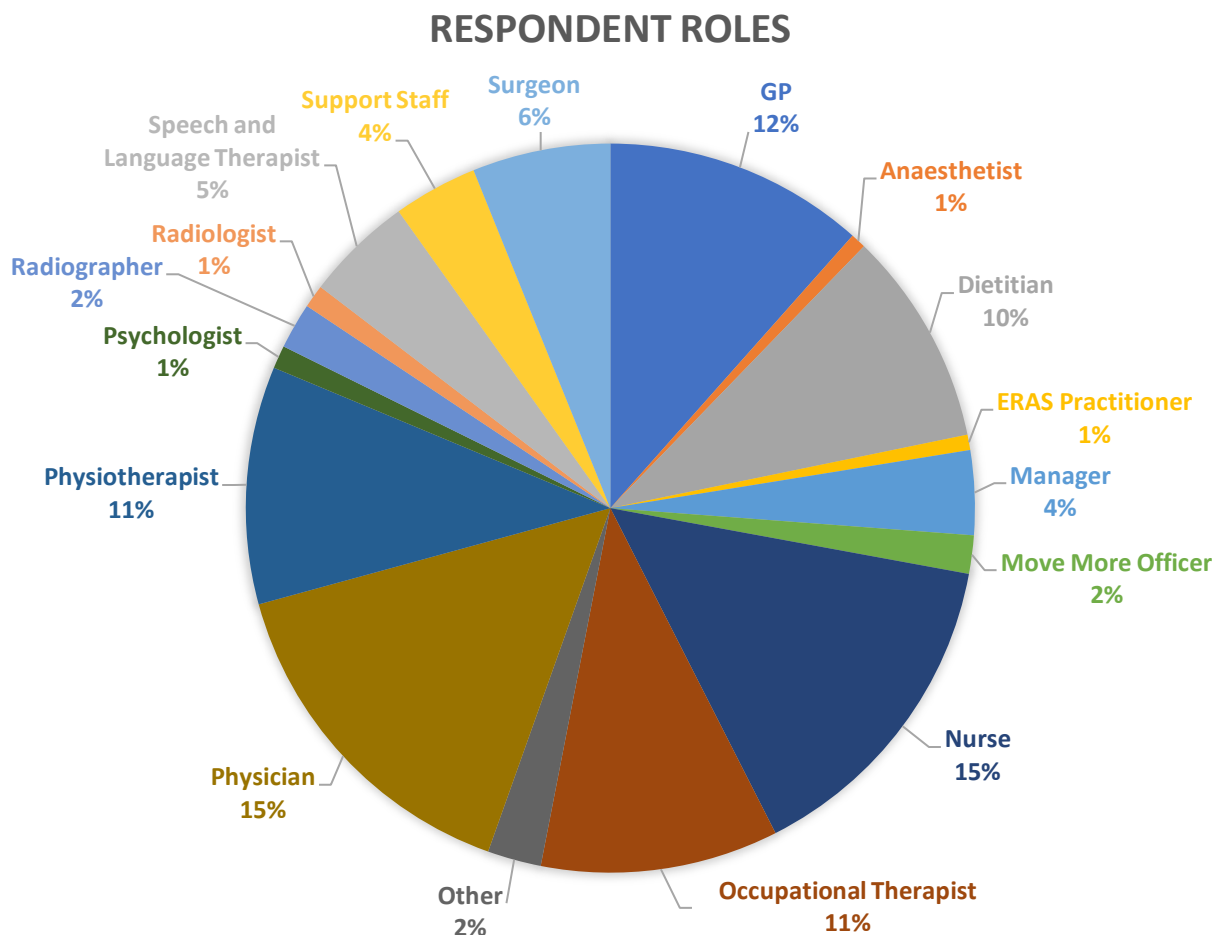
Organisation	Number of Respondents
NHS (Secondary, Tertiary Care)	242
NHS (Primary Care)	38
Health and Social Care Partnership	3
Higher Education Institute	1
Leisure Organisation	4
Local Authority	1
Third Sector Organisation	3
Unknown	2

Table 3:

Respondents per Health Board Location

Health Board Location	Number of Respondents	Percentage of Respondents
Ayrshire and Arran	15	5.14%
Borders	10	3.43%
Dumfries and Galloway	3	1.03%
Fife	42	14.38%
Forth Valley	11	3.77%
Grampian	42	14.38%
Greater Glasgow and Clyde	65	22.26%
Highland	8	2.74%
Lanarkshire	22	7.53%
Lothian	64	21.92%
Orkney	0	0%
Shetland	0	0%
Tayside	9	3.08%
Western Isles	1	0.34%

Figure 1: Professional Role of Respondents



Prehabilitation

Availability of Prehabilitation Activities

In response to being asked whether prehabilitation activities are offered in the local area, 28% of respondents (n=81) indicated prehabilitation activities were available, whilst 21% (n=62) responded that they were not. The remaining 51% (n=151) stated they did not know whether prehabilitation activities were available locally. Of those who stated prehabilitation activities were available locally, 63% (n=49) were located within the West of Scotland Cancer Network (WoSCAN), whilst 29% (n=23) were located in the South East Scotland Cancer Network, and 8% (n=6) were in the North Cancer Alliance.

Those who stated that prehabilitation activities were available in their local area (n=81) were asked to describe those activities. Prompts encouraging detail on referral/access route, inclusion/exclusion criteria including patient group and planned treatment type, screening and assessment process, location and duration of intervention were provided.

None of the 79 respondents reported the availability of a programme that fully encompassed the 3 modalities recommended as part of a comprehensive prehabilitation programme i.e. physical activity/exercise, psychological support and dietary interventions. However, responses indicated that those due to undergo bone marrow or stem cell transplant are offered input from physiotherapy, dietetics and clinical psychology following clinic assessment (approximately 2-3 months pre-transplant).

Questionnaire respondents identified the availability of the following pilot programmes:

- Royal Alexandra Hospital – Those with endometrial cancer (focus on physical activity)
- NHS Ayrshire and Arran – Those with upper GI cancer (focus on physical activity with holistic assessment and onward referral to dietetics and/or psychological support)
- Beatson West of Scotland Cancer Centre – Those diagnosed with brain tumours, prostate, upper GI or lung cancers (focus on physical activity)

Responses also indicated that prehabilitation clinics have been established in the following areas:

- Beatson West of Scotland Cancer Centre – Those with lung cancer undergoing radical radiotherapy
- Queen Margaret Hospital – Those with head and neck cancer

Two respondents told of a pilot project focusing on the psychological impact of cancer treatment which also relayed information about lifestyle factors. The project initially focused on those diagnosed with breast cancer who were going for radiotherapy (and their family/carers) and was delivered by Radiography staff at the Beatson West of Scotland Cancer Centre. However, the services is now being rolled out to other patient groups and replicated at the Lanarkshire Beatson.

Another respondent noted that those “meeting the criteria [not specified] can be referred urgently to the pulmonary rehabilitation programme, although this is normally reserved for those undergoing radiotherapy rather than resection and can be offered to those who “fail” CPET for optimisation prior to intervention.”

One other respondent mentioned clinical psychological support being offered to patients whilst three respondents spoke of signposting to Maggie’s for both psychological and physical health reasons.

‘Move More’ was mentioned frequently as a physical activity/exercise offer. The involvement of ‘Move More’ ranged from being part of an ‘official’ prehabilitation offer versus signposting or referral to local services. Similarly, some respondents mentioned signposting/referral to local gyms.

A number of respondents stated that advice was given pre-operatively and pre-radiotherapy by a variety of professionals including physiotherapist, dietitian, clinical nurse specialist, radiotherapist etc. A smaller number of individuals mentioned surgery school however, this appeared to be limited to those going for elective colorectal surgery. In the majority of instances, it appears that the pre-operative advice described is

being delivered as part of standard care or an ‘Enhanced Recovery After Surgery’ (ERAS) programme rather than prehabilitation.

Table 4 indicates the staff groups involved in the delivery of prehabilitation activities across Scotland. Where ‘other’ was selected, the staff group reported were as follows: Local Authority (n=2), Speech and Language Therapist (n=8), Physician (n=4), Radiographer (n=6), Dentist and Hygienist (n=4), Smoking Cessation (n=4), Anaesthetist (n=4), Move More (n=3), Benefits Advisor (n=1), Nutritionist (n=1), Charity (n=2), and Weight Management Service (n=1). Once again, some responses suggest that standard care is being described in place of prehabilitation.

Table 4: Staff delivering prehabilitation

Staff Group	Number of Respondents
Nurse	48 (60.76%)
Physiotherapist	34 (43.04%)
Dietitian	24 (30.38%)
Occupational Therapist	6 (7.59%)
Clinical Psychologist	9 (11.39%)
Counsellor	2 (2.53%)
NHS Technical Instructor/Support worker	2 (2.53%)
Fitness Instructor	16 (20.25%)
Volunteer/Buddy	7 (8.86%)
Other	37 (46.84%)

Outcome Measures

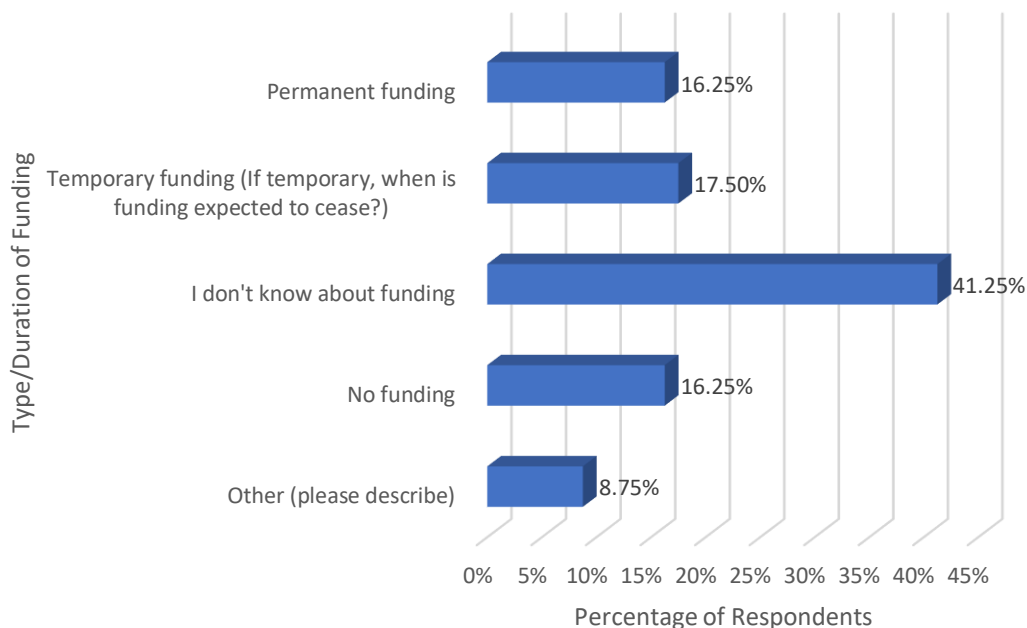
Respondents were also asked to describe the outcome measures being used to determine the effectiveness of the prehabilitation activities. Of the 73 responding individuals, 24 did not know which measures were being used, whilst nine stated that no measures were being used. A large amount of variation in measurement was discovered through the remaining 40 responses with measures including objective measures of fitness (6 minute walk test or timed sit to stand), muscle strength (hand-grip dynamometer), weight and body mass index; and patient reported outcome measures (EQ5D, FACT-L, self-efficacy and fatigue). Subjective self-reported measure such as the Godin Leisure Time Exercise Questionnaire and lifestyle change trackers were also mentioned, as were service level outcomes (i.e. post-operative morbidity and mortality, and bed days/length of hospital stay). A small number of respondents reported experiential measures generated through feedback and satisfaction questionnaires. Some screening (i.e. Malnutrition Universal Screening Tool (MUST)) and assessment tools (i.e. Holistic Needs Assessment (HNA)) were also mentioned by respondents; whilst they have a role in identifying and providing relevant services, these tools are not regarded as outcome measures. Additional tools utilised as part of standard care were also noted.

Funding

Of the 81 respondents who stated that prehabilitation activities were available in their local area, 80 stated the type/duration of funding available. This is described in Figure 2. In relation to 'other' the following details were provided:

- The clinic has no funding; however, the physiotherapist is in a Macmillan funded post as a physical activity lead [Identified as being funded for 3 years]
- Both permanent and temporary due to end March 2020
- Funded by Maggie's general fundraising
- Funding is permanent for the clinic but not specifically for prehabilitation
- Part of role incorporated, or charity based
- It's not badged as Prehab, but funding is available for UGI and H&N
- No funding except for cost of incentive spirometers. Absorbed into my current job
- At end of trial
- 2yrs
- 2021
- 2 years duration - 2021
- One-off pilot
- October 2020
- Macmillan Funding finishes in Oct 2020 but we will continue to offer this service permanently after funding
- 2021
- 02/05/2020
- 2 projects, 1 permanent funding
- Ceased but looking to renew
- 3 years

Figure 2: Type/Duration of Funding Available for Prehabilitation Activities

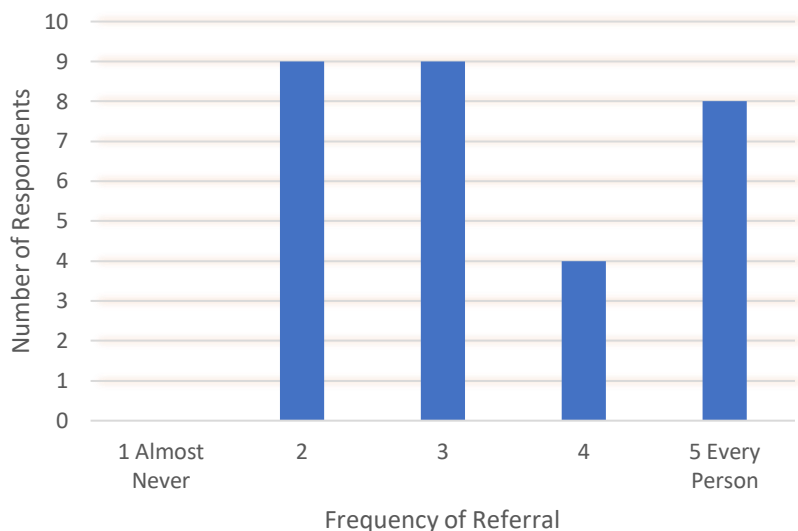


Referral to Prehabilitation

Questionnaire respondents were asked how important they think prehabilitation interventions are for people about to undergo cancer treatment using a five-point scale where zero was of no importance at all and five was of critical importance. Of the 280 respondents, almost half (47%, n=132) rated prehabilitation at a 5 (of critical importance). The median response was 4, and the mean 4.19.

Of those that stated prehabilitation activities were available locally (n=81), 37.5% (n=30) stated that they would refer people to prehabilitation activities. Of the remaining respondents, 30 (37.5%) did not refer, whilst 12 (15%) were providers of prehabilitation services and 8 (10%) stated that the question was not applicable to them. Figure 3 indicates how routinely the 30 respondents would refer individuals to prehabilitation.

Figure 3: Frequency of Referral to Prehabilitation Activities



New Services/Development of Existing Activities

When asked if there were any plans to introduce or add to the prehabilitation activities already available within the local area 20% (n=59) of the 292 respondents stated there were, the remaining respondents replied there were no plans (6.16%, n=20) or they did not know (73.63%, n=215).

When asked how local pathways could be changed to support prehabilitation and optimise patients for treatment the following themes emerged.

Awareness was the most common theme with both general awareness and increasing awareness being mentioned. A number of comments suggest that people are unaware of what constitutes Prehabilitation; this was particularly evident amongst responses from primary care practitioners. Many also stated that they did not know what was available or where services were delivered.

Funding and availability of resources were also frequently raised by respondents with many highlighting that whilst prehabilitation is important, implementation is dependent on funding (to both sustain current provisions and to set up additional services/develop pathways of care that permit prehabilitation). A number of responses related specifically to the role and therefore resource requirements of Allied Health Professionals (AHPs) with a general consensus that current models of care are not able to support the provision of prehabilitation.

Pathway redesign and timing was another strong theme. This was relayed in the context of the short time frames allowed by waiting times/referral to treatment time targets. Future models would need to be cognisant of this and pathways redesigned to allow maximum gain from intervention without delays to definitive treatment.

Many respondents commented on the need for national or local **guidance** outlining what constitutes prehabilitation, in which context a referral should be made and to whom it should be made. Some respondents also commented on a need for equity of service across regions/Scotland.

Two less common themes included **patients not wanting to participate** and **lack of evidence**. The former raises questions about approach to prehabilitation i.e. core or optional component of treatment and the latter may represent information that is essential during awareness raising activity.

Rehabilitation

Availability of Rehabilitation Activities

In response to being asked whether rehabilitation activities were being offered in the local area, 51.54% of respondents (n=151) indicated that rehabilitation activities were available; 7.51% (n=22) responded that they were not and the remaining 40.95% (n=120) stated they did not know.

Those who stated that rehabilitation activities were available (n=151) were asked to describe those activities. Prompts encouraging detail on referral/access route, inclusion/exclusion criteria including patient group, screening and assessment process, location and duration of intervention were provided. 127 responses were provided.

A range of service providers were identified by respondents; the majority of which are provided by or affiliated with third sector organisations i.e. Macmillan Cancer Support, Maggie's, Breast Cancer Now, Cancer Support Scotland, Marie Curie, CLAN Cancer Support, St Andrew's Hospice, Ayrshire Hospice, Roxburghe House. The remaining services mentioned by respondents were provided by the NHS (usually via community rehabilitation teams or acute AHP services) or local authority/leisure trusts. Services mentioned included:

- Cognitive rehabilitation
- Health and wellbeing events
- Post prostatectomy care
- Weigh to go/Tier 2 weight management services
- Working health services
- Transforming care after treatment (TCAT)
- Occupational Therapy-led fatigue management services
- Hospice day services
- Move More
- Managing fear of recurrence programme

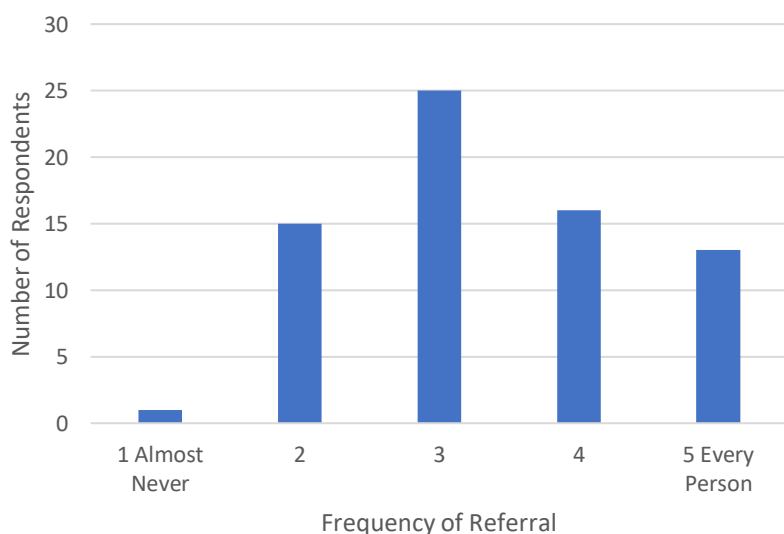
The majority of services being offered focus on the provision of physical activity/exercise interventions, closely followed by psychological support. A smaller number of nutrition services were identified, with dietetic involvement usually the result of MUST screening. Like prehabilitation, some descriptors were of clinics or information provision rather than interventions led/supported by a professional/expert. In general, it appears that there are a greater number of rehabilitation services available across Scotland compared with prehabilitation availability; however, services appear to be provided on an opt-in basis or offered as a result of identified impairment rather than being delivered as part of a routine pathway.

Referral to Rehabilitation

Questionnaire respondents were asked how important they think rehabilitation interventions are for people who have undergone cancer treatment using a five-point scale where zero was of no importance at all and five was of critical importance. Of the 289 respondents, more than half (61.59%, n=178) rated rehabilitation at a 5 (of critical importance). The median response was 5, and the mean 4.51.

Of those that stated rehabilitation activities were available locally (n=151), 150 relayed their referral activity i.e. 70 (46.67%) refer people to rehabilitation activities, 50 (33.33%) did not refer, 21 (14%) were providers of rehabilitation services, and 9 (6%) felt that the question was not applicable to them. Figure 4 indicates how routinely the 70 respondents would refer individuals to rehabilitation.

Figure 4: Frequency of Referral to Rehabilitation Activities



Additional Comments

Almost one quarter of the questionnaire's participants (n=68) provided further comment on the topic. In the main, the additional comments received were positive in nature.

"I have seen first-hand the difference this can make to the lives of patients and carers and would be more than happy to support taking this forward"

"I believe this s an essential part of the patients pathway that is missing."

"Both prehab and rehab should be integrated into care pathways - similar to cardiac rehab."

"We call for (p)rehabilitation to be included in an optimal pathway... Prehabilitation can optimise patients to tolerate treatment such as surgery through a joint approach of fitness, physical activity and nutritional optimisation... The benefits of prehabilitation are also extended to faster post-treatment recovery and the wellbeing of patients to live with and beyond cancer."

However, a large number of respondents reported issues that will affect widespread provision of (p)rehabilitation across Scotland. In general, these issues could be categorised into key themes which are similar to those identified previously i.e. workforce, funding and resource availability, and timing and pathway redesign. Collectively they indicate that there is a risk of exacerbating inequalities, and when considered in the context of single services (evidenced above), it should be recognised that there is potential of extra burden being placed on patients.

"Occupational Therapy services for this group are under resourced."

"NHSScotland should provide and equitable service for all in every region. Still lots of variation in each area and without a standardised referral pathway and standardised services in place, inequity will continue to exist and poorer outcomes achieved for many."

"Travel and cost of classes can be prohibitive"

"We are providing a very remote service to a scattered population so isolation, poverty, lack of transport and broad band links have a big impact on cancer patients."

“It would be difficult for patients to attend rehabilitation during treatment as it is daily regional treatment for 6 weeks and patients become highly symptomatic. Trying to engage people in rehabilitation is challenging and timing is very important.”

“Issues arise around a growing population, with longer life expectancy and more complex surgery and treatment, with no increase in staff time and number. This increases the stress on staff and increases the time people may wait for input”

Where there was exception to the positive nature of comments (n=2), respondents questioned whether there was evidence of benefit and whether funding should be spent in this way.

“Evidence of major benefit should come first before major funding, not the other way round.”

“Patient support and preconditioning is essential but an area generally covered by volunteer and other support groups. I am not sure funding for this should detract from funding for treatment. There is a finite pot of money and treatment gets more successful, provided we can continue to afford it.”

Six responses came from individuals who reflected on their own personal experiences of cancer (as a patient n=3, as a carer/family member n=2) or of rehabilitation as a result of another condition (n=1). Each was supportive of the concept of prehabilitation and rehabilitation with some giving examples of how this may have assisted them.

Interviews

A series of 11 interviews were carried out by two experienced members of the SLWG. The interviewees were from 6 different professional backgrounds (anaesthetics, dietetics, nursing (enhanced recovery after surgery and clinical nurse specialist), physiotherapy, speech and language therapy, and therapeutic radiography) and 6 health board areas (Ayrshire and Arran, Dumfries and Galloway, Fife, Greater Glasgow and Clyde, Lanarkshire and Lothian). All interviewees worked in a secondary care setting with the exception of one who worked in primary/community care.

Review of the notes collected by each of the two interviewers revealed key themes which were consistent with the data obtained via the questionnaire (definition, timing, resource, clinical buy-in, evaluation/data collection). However, it was possible to gain more detail about specific aspects of the services on offer, many of which could be labelled as standard interventions or ERAS rather than prehabilitation. Funding for each was either temporary or the service had been developed by individual staff members with a passion for prehabilitation. This left services vulnerable to staff changes and limited scope and scale. Each interviewee noted that the service offered could be improved through greater involvement from the multi-disciplinary team with gaps in nutritional care most frequently mentioned. At the same time, those who had developed

successful interventions noted the importance of buy-in from clinical colleagues and management teams, as this allowed the services to be embedded within pathways rather than opt-in interventions. Clinical measures and outcomes were generally lacking, with one service noting expected benefits (length of stay and reduced complication rate) had not been witnessed despite high engagement and satisfaction/experiential outcomes being obtained.

The impact of COVID-19 was discussed during the interviews with all respondents noting a significant impact on delivery. Those who described 'surgery school' or pre-treatment group interventions explained that service delivery had now ceased; the exception to this was a therapeutic radiographer providing a 'fear of recurrence' project. Due to the nature of the programme's funding (fixed-term funding from third-sector), facilitators were able to continue project delivery using a popular online group video-chat platform. Services that previously offered one-to-one face-to-face prehabilitation or usual care interventions had largely moved to video-consultations but in some cases the collection of outcome measures was adversely affected.

Discussion

Findings indicate a low level of rehabilitation provision across Scotland, with inequalities by geography and site of cancer diagnosis (less than one-third of respondents (28%, n=81) identify the availability of prehabilitation activities within their local area; 63% (n=49) of which are located within the West of Scotland Cancer Network area, 29% (n=23) in the South East Scotland Cancer Network area and 8% (n=6) in the North Cancer Alliance area). In addition to this, none of the identified services offer a multi-modal, multi-phasic, multi-professional intervention with clear access routes and embedded outcomes measures as recommended by expert guidance with nutrition/dietary interventions were particularly absent (NIHR, RCoA, Macmillan Cancer Support, 2019). This has repercussions for individual patient burden and also limits the potential to capture, report and understand the impact on clinical outcomes. Despite this, some inroads have been made, with a small number of prehabilitation clinics, research trials and pilot programmes in progress, and plans for additional provision in place.

Lack of awareness and understanding of what constitutes prehabilitation, its benefits and method of delivery were seen as barriers to implementation. As was funding and resource availability (AHP and/or dietetic workforce in particular), pathway redesign and timing, evidence and willingness of patients to participate. On the other hand, clinical and managerial buy-in were seen as facilitators. Finally, respondents recognised a need for equity of service across Regions/Scotland; this may need consideration at population and subgroup level i.e. per tumour site.

In conclusion, it is clear there is a real willingness amongst the staff groups working in cancer services to work differently. However, a lack of funding and access to particular staff groups including those in co-ordinating roles have made it impossible to deliver the multi-modal, multi-phasic, multi-professional

interventions associated with improved clinical and experiential outcomes. A co-ordinated pro-active approach could address the challenges associated with timing, thereby maximising outcomes whilst negating or avoiding any risks that could arise if treatment was to be delayed. It could also realise efficiencies otherwise improving equity and access to an extent not yet explored or understood.