



Topic Exploration Report

Topic explorations are designed to provide a high-level briefing on new topics submitted for consideration by Health Technology Wales. The main objectives of this report are to:

1. Inform discussions on new topics received by HTW.
2. Determine the quantity and type of evidence available on a topic.
3. Assess the topic against HTW selection criteria.

Topic:	Prehabilitation before cancer treatments
Topic exploration report number	TER008
Referrer:	Rachael Barlow, Public Health Wales
Topic exploration undertaken by:	Health Technology Wales

Aim of search

Health Technology Wales researchers searched for evidence on prehabilitation of patients before cancer treatment, and whether it improves patient outcomes.

Summary of findings

Several systematic reviews and primary studies were identified for prehabilitation before cancer treatments. No existing technology assessments or economic evaluations were identified.

Technology assessments

No relevant technology assessments were identified.

Clinical evidence (systematic reviews and primary studies)

Several systematic reviews and primary studies were identified, published between 2010 and 2018. Several ongoing studies assessing prehabilitation in cancer patients were also identified. Almost all of the identified evidence considered prehabilitation before cancer surgery only; in one systematic review, only 1 of the 18 included studies assessed prehabilitation before chemotherapy. Types of prehabilitation included exercise, education, nutritional support and psychological support. The mode and type of intervention varied; some looked at implementing a single intervention prior to cancer surgery; others included a multimodal (combined interventions) approach. There was variability in the type of cancer assessed; some systematic reviews only included studies on a particular type of cancer (e.g. only studies in colorectal cancer) and others included studies of different cancer types.

Other evidence

A Cancer Delivery Plan for Wales 2016-2020 was identified, which outlined the need for multi-disciplinary teams to engage with primary care and/or GPs in “supporting patients to face their treatment (prehabilitation)”.

Economic evaluations

No relevant economic evaluations were identified.

Conclusions

There is evidence about clinical-effectiveness outcomes for prehabilitation before cancer treatments, but there is uncertainty around the evidence due to heterogeneity between and the majority of studies being of low quality/high risk of bias. No economic evidence was identified.

Areas of uncertainty

It was unclear at this stage whether a fuller assessment of evidence would focus on particular types (or combinations) of prehabilitation interventions. It was also unclear as to what measurements or outcomes would be most relevant for estimating costs and resource use.

This initial exploration focused on the use of prehabilitation before cancer surgery, as this was the focus on the initial topic submission. It was unclear whether a fuller assessment would include other cancer treatments (e.g. chemotherapy).

Feasibility of technology assessment

Prehabilitation before cancer treatment may have potential benefits to patients, including better and quicker recovery post-surgery, improved remission, and better quality of life before, during and after surgery. However, the topic covers a very broad area of potential interventions, making it difficult to produce focused, evidence-based Guidance that would be useful to the service. Assessment Group were also made aware of ongoing research in this area relevant to the context of NHS Wales; the group acknowledged that the evidence base could not be fully assessed until this work had been completed.

HTW's Assessment Group concluded not to progress this topic further.

Brief literature search results

Resource	Results
HTA organisations	
Healthcare Improvement Scotland:	We did not identify any results on prehabilitation of cancer patients from this source.
Health Technology Assessment Group	We did not identify any results on prehabilitation of cancer patients from this source.
Health Information and Quality Authority	We did not identify any results on prehabilitation of cancer patients from this source.
Guidelines and guidance	
Guidelines International Network (GIN)	We did not identify any results on prehabilitation of cancer patients from this source.
NICE	We did not identify any results on prehabilitation of cancer patients from this source.
evidence.nhs.uk/	<p>Guidelines/guidance:</p> <p>Guidelines for perioperative care in elective colonic surgery: Enhanced Recovery After Surgery (ERAS) Society recommendations. Gustafsson UO et al., 2012. https://doi.org/10.1016/j.clnu.2012.08.013</p> <p>Cancer delivery plan for Wales. Wales Cancer Network. https://gov.wales/docs/dhss/publications/161114cancerplanen.pdf</p>
Secondary literature and economic evaluations	
ECRI	We did not identify any results on prehabilitation of cancer patients from this source.
Cochrane library	We did not identify any results on prehabilitation of cancer patients from this source.
epistemonikos.org	Effects of prehabilitation and rehabilitation including a home-based component on physical fitness, adherence, treatment tolerance, and recovery in patients with non-small cell lung cancer: A systematic review. Driessen EJ et al., 2017. http://dx.doi.org/10.1016/j.critrevonc.2017.03.031
evidence.nhs.uk/	<p>Systematic reviews:</p> <p>A systematic review of prehabilitation programs in abdominal cancer surgery. Hijazi Y et al, 2017. https://doi.org/10.1016/j.ijsu.2017.01.111</p> <p>An international review and meta-analysis of prehabilitation compared to usual care for cancer patients. Treanor C et al., 2018. https://doi.org/10.1007/s11764-017-0645-9</p> <p>Psychological Prehabilitation Before Cancer Surgery: A Systematic Review. Tsimopoulou I et al., 2015. https://doi.org/10.1245/s10434-015-4550-z</p>

	<p>Multimodal Prehabilitation Programs as a Bundle of Care in Gastrointestinal Cancer Surgery: A Systematic Review. Bolshinsky V et al., 2018. https://doi.org/10.1097/DCR.0000000000000987 .</p> <p>The effects of physical prehabilitation in elderly patients undergoing colorectal surgery: a systematic review. Bruns ER et al., 2016. https://doi.org/10.1111/codi.13429</p> <p>Physical and Nutritional Prehabilitation in Older Patients With Colorectal Carcinoma: A Systematic Review. Looijaard S et al., 2017. https://doi.org/10.1519/JPT.0000000000000125</p> <p>Systematic review: the impact of exercise on mesenteric blood flow and its implication for preoperative rehabilitation. Knight KA et al., 2017. https://doi.org/10.1007/s10151-017-1589-9</p> <p>The effect of preoperative exercise on upper extremity recovery following breast cancer surgery: a systematic review. Yang, A et al., 2018. https://doi.org/10.1097/MRR.0000000000000288</p> <p>Primary studies:</p> <p>Effect of prehabilitation in gastro-oesophageal adenocarcinoma: study protocol of a multicentric, randomised, control trial—the PREHAB study. Le Roy B et al., 2016. https://dx.doi.org/10.1136%2Fbmjopen-2016-012876</p> <p>The effect of pre- and post-operative physical activity on recovery after colorectal cancer surgery (PHYSSURG-C): study protocol for a randomised controlled trial. Onerup A et al., 2017. https://doi.org/10.1186/s13063-017-1949-9</p> <p>Guidelines/guidance:</p> <p>Guidelines for perioperative care in elective colonic surgery: Enhanced Recovery After Surgery (ERAS) Society recommendations. Gustafsson UO et al., 2012. https://doi.org/10.1016/j.clnu.2012.08.013</p> <p>Cancer delivery plan for Wales. Wales Cancer Network. https://gov.wales/docs/dhss/publications/161114cancerplanen.pdf</p>
<p>Primary studies Cochrane library</p>	<p>Multimodal prehabilitation improves functional capacity before and after colorectal surgery for cancer: a five-year research experience. Minnella EM et al., 2017. https://doi.org/10.1080/0284186X.2016.1268268</p> <p>Exercise-based pre-habilitation is feasible and effective in radical cystectomy pathways—secondary results from a randomized controlled trial. Jensen B et al., 2016. https://doi.org/10.1007/s00520-016-3140-3</p>

	<p>The effects of prehabilitation versus usual care to reduce postoperative complications in high-risk patients with colorectal cancer or dysplasia scheduled for elective colorectal resection: study protocol of a randomized controlled trial. Berkel A et al., 2018. https://doi.org/10.1186/s12876-018-0754-6</p> <p>Four-week prehabilitation program is sufficient to modify exercise behaviors and improve preoperative functional walking capacity in patients with colorectal cancer. Chen B et al., 2017. https://doi.org/10.1007/s00520-016-3379-8</p> <p>Prehabilitation for men undergoing radical prostatectomy: a multi-centre, pilot randomized controlled trial. Mina DS et al., 2014. https://doi.org/10.1186/1471-2482-14-89</p> <p>Evaluation of supervised multimodal prehabilitation programme in cancer patients undergoing colorectal resection: a randomized control trial. Bousquet-Dion G et al., 2018. https://doi.org/10.1080/0284186X.2017.1423180</p> <p>Prehabilitation with Whey Protein Supplementation on Perioperative Functional Exercise Capacity in Patients Undergoing Colorectal Resection for Cancer: A Pilot Double-Blinded Randomized Placebo-Controlled Trial. Gillis C et al., 2016. https://doi.org/10.1016/j.jand.2015.06.007</p> <p>Prehabilitation for radical prostatectomy: A multicentre randomized controlled trial. Mina DS et al., 2018. https://doi.org/10.1016/j.suronc.2018.05.010</p> <p>Preoperative modifiable risk factors in colorectal surgery: an observational cohort study identifying the possible value of prehabilitation. Rooijin S et al., 2016. https://doi.org/10.1080/0284186X.2016.1267872</p> <p>Effect of prehabilitation on objectively measured physical fitness after neoadjuvant treatment in preoperative rectal cancer patients: a blinded interventional pilot study. West MA et al., 2015. https://doi.org/10.1093/bja/aeu318</p>
<p>evidence.nhs.uk/</p>	<p>Primary studies:</p> <p>Effect of prehabilitation in gastro-oesophageal adenocarcinoma: study protocol of a multicentric, randomised, control trial—the PREHAB study. Le Roy B et al., 2016. https://dx.doi.org/10.1136%2Fbmjopen-2016-012876</p> <p>The effect of pre- and post-operative physical activity on recovery after colorectal cancer surgery (PHYSSURG-C): study protocol for a randomised controlled trial. Onerup A et al., 2017. https://doi.org/10.1186/s13063-017-1949-9</p>
Ongoing trials	
<p>Clinicaltrials.gov</p>	<p>Prehabilitation in Frail Colon Cancer. https://clinicaltrials.gov/ct2/show/NCT03097224</p> <p>Prehabilitation to Improve Cancer Surgery Outcomes (PICaSO). https://clinicaltrials.gov/ct2/show/NCT03502317</p>

	<p>The Prehabilitation Study: Exercise Before Surgery to Improve Patient Function in People. https://clinicaltrials.gov/ct2/show/NCT02934230</p> <p>Trimodal Prehabilitation for Cystectomy Patients to Enhance Post-operative Care (TPC-RCT). https://clinicaltrials.gov/ct2/show/NCT03347045</p> <p>Prehabilitation in Colorectal Cancer. https://clinicaltrials.gov/ct2/show/NCT03096951</p> <p>Impact of Prehabilitation in Oncology Via Exercise - Breast Cancer (IMPROVE-B). https://clinicaltrials.gov/ct2/show/NCT03498157</p> <p>Pre-habilitation of Patients With Head and Neck Cancer (SYNK). https://clinicaltrials.gov/ct2/show/NCT02385929</p> <p>Improving Outcomes in Cancer Patients With a Nutritional and Physical Conditioning Prehabilitation Program. https://clinicaltrials.gov/ct2/show/NCT03475966</p> <p>Pre-Habilitation Exercise Intervention. https://clinicaltrials.gov/ct2/show/NCT02849717</p> <p>Using Multimodal Prehabilitation to Improve Outcomes for Frail Patients Undergoing Resection of Colorectal Cancer. https://clinicaltrials.gov/ct2/show/NCT02502760</p> <p>Enhancing Fitness With Preoperative Exercise in Colorectal Cancer Surgery (EFEx). https://clinicaltrials.gov/ct2/show/NCT03336229</p> <p>Preoperative Physical Activity Intervention in Patients Before Planned Liver Resection for Cancer (APACHE). https://clinicaltrials.gov/ct2/show/NCT03518632</p>
<p>UK Clinical trials gateway</p>	<p>The Wessex Fit-4-Cancer Surgery Trial. https://ukctg.nihr.ac.uk/trials/trial-details/trial-details?trialNumber=NCT03509428</p> <p>Feasibility of Pre Transplant Exercise (Pre-habilitation) for Multiple Myeloma Patients Awaiting Autologous Stem Cell Transplantation. https://ukctg.nihr.ac.uk/trials/trial-details/trial-details?trialNumber=NCT03135925</p>
<p>Other</p>	
<p>Dynamed Plus</p>	<p>We did not identify any results on prehabilitation of cancer patients from this source.</p>
<p>BMJ Best Practice (download PDF)</p>	<p>We did not identify any results on prehabilitation of cancer patients from this source.</p>
<p>evidence.nhs.uk/</p>	<p>Systematic reviews:</p>

A systematic review of prehabilitation programs in abdominal cancer surgery. Hijazi Y et al., 2017. <https://doi.org/10.1016/j.ijsu.2017.01.111>

An international review and meta-analysis of prehabilitation compared to usual care for cancer patients. Treanor C et al., 2018. <https://doi.org/10.1007/s11764-017-0645-9>

Psychological Prehabilitation Before Cancer Surgery: A Systematic Review. Tsimopoulou I et al., 2015. <https://doi.org/10.1245/s10434-015-4550-z>

Multimodal Prehabilitation Programs as a Bundle of Care in Gastrointestinal Cancer Surgery: A Systematic Review. Bolshinsky V et al., 2018. <https://doi.org/10.1097/DCR.0000000000000987>

The effects of physical prehabilitation in elderly patients undergoing colorectal surgery: a systematic review. Bruns ER et al., 2016. <https://doi.org/10.1111/codi.13429>

Physical and Nutritional Prehabilitation in Older Patients With Colorectal Carcinoma: A Systematic Review. Looijaard S et al., 2017. <https://doi.org/10.1519/JPT.0000000000000125>

Systematic review: the impact of exercise on mesenteric blood flow and its implication for preoperative rehabilitation. Knight KA et al., 2017. <https://doi.org/10.1007/s10151-017-1589-9>

The effect of preoperative exercise on upper extremity recovery following breast cancer surgery: a systematic review. Yang, A et al., 2018. <https://doi.org/10.1097/MRR.0000000000000288>

Primary studies:

Effect of prehabilitation in gastro-oesophageal adenocarcinoma: study protocol of a multicentric, randomised, control trial—the PREHAB study. Le Roy B et al., 2016. <https://dx.doi.org/10.1136%2Fbmjopen-2016-012876>

The effect of pre- and post-operative physical activity on recovery after colorectal cancer surgery (PHYSSURG-C): study protocol for a randomised controlled trial. Onerup A et al., 2017. <https://doi.org/10.1186/s13063-017-1949-9>

Guidelines/guidance:

Guidelines for perioperative care in elective colonic surgery: Enhanced Recovery After Surgery (ERAS) Society recommendations. Gustafsson UO et al., 2012. <https://doi.org/10.1016/j.clnu.2012.08.013>

Cancer delivery plan for Wales. Wales Cancer Network. <https://gov.wales/docs/dhss/publications/161114cancerplanen.pdf>

Evidence identified by topic proposer	<p>Gillis C, Li C, Lee L, Awasthi R, Augustin B, Gamsa A et al. 2014. Prehabilitation versus rehabilitation: a randomised control trial in patients undergoing colorectal resection for cancer. <i>Anaesthesiology</i> 121(5) 937-947</p> <p>Levett D, and Grocott, M. 2015. Cardiopulmonary exercise testing, prehabilitation and Enhanced Recovery After Surgery (ERAS). <i>Canadian Journal of Anaesthesia</i> 62(2) 131-142</p> <p>Barlow R and Fairlie S. 2013. The All Wales Enhanced Recovery after Surgery Collaborative. Available at: http://www.1000livesplus.wales.nhs.uk/sitesplus/documents/1011/ERAS%20Programme%20Final%20Combined%20Report.pdf (Accessed 10 July 2017)</p>
Google	<p>Randomized clinical trial of prehabilitation before planned liver resection. Dunne DF et al., 2016. https://doi.org/10.1002/bjs.10096</p> <p>New Award Winning Prehabilitation and Optimisation Programme (POP) seeks to increase Cancer Patient Survival in Wales. May 2018. http://www.wales.nhs.uk/news/48312</p>

Date of search:	August 2018
Concepts used:	prehabilitation, cancer, preoperative