

## CASE STUDY

# PREP-WELL Project Enhances Patient Health Through Innovative Prehabilitation Approach

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## Introduction

PREP-WELL was one of four specific Communities of Interest in the original proposal to Sport England from South Tees, building on pilot work undertaken by Professor Gerry Danjoux, Consultant in Anesthesia and Sleep Medicine at South Tees Hospitals NHS Foundation Trust. At its inception, PREP-WELL was the first comprehensive, community-based prehabilitation programme in the UK specifically designed to improve patients' fitness, health, and well-being before they undergo major surgery.

Prehabilitation involves coordinated lifestyle and well-being support for patients in advance of surgery to improve preoperative physical and mental health and speed up recovery.

Inactivity, smoking and excess alcohol all have an independent evidence base for adverse surgical outcomes, and the prevalence of these behaviours in patients presenting for major surgery in South Tees was high and between 30%-50%. Complications following surgery can lead to significant morbidity, resulting in an adverse effect on quality of life and reduced independence.

As an emerging concept, prehabilitation prescribed 'early intervention' physical activity measures to reduce recovery time and, as a result, reduce hospital bed occupancy. It could support multiple behaviour changes, using the "teachable moment" of surgery, across inactivity, smoking, excessive alcohol intake and obesity to generate long-term, sustainable, positive behaviours, as these factors were recognised as broader determinants of physical activity.

Preoperative patients quoted lack of opportunity and concerns around health as reasons for not undertaking physical activity; however, 90% are prepared to undertake physical activity with the proper support. This was identified as an opportunity for healthcare practitioners to support individuals in changing their behaviour positively and permanently.

## Impact

PREP-WELL has demonstrated encouraging results, including sustained increases in physical activity, post surgery.

Outcomes with the initial cohort showed that 73% of patients moved from being inactive to achieving a physical activity level recommended by the World Health Organisation (WHO) of 150 minutes of exercise per week plus regular strength training. None of the patients achieved this at the entry. After three months, 63% of patients complied with the WHO aerobic exercise guidance compared to 17% at entry. The team also observed a substantial reduction in other risk factors and improved quality of life. What they found particularly noteworthy was that these benefits were also sustained even three months after surgery. The table below summarises the physical activity and other behavioural changes for the initial cohort.

	ENTRY	EXIT	3MPS	
<b>Patients complying with WHO aerobic exercise guidance (%)</b>	17	75	63	▲▲▲
<b>Patients complying with WHO aerobic + strength training guidance (%)</b>	0	73	29	▲
<b>Mean 6MWD (m)</b>	444	479	N/A	▲
<b>Alcohol &gt;14 u/week (%)</b>	17	13	4	▼▼
<b>Smoking (%)</b>	17	13	17	▶
<b>Anxiety Score (mean) *</b>	5.5	5.4	4.4	▼
<b>Depression Score (mean) **</b>	4.6	3.8	2.5	▼▼
<b>HRQOL (mean) ***</b>	0.54	0.64	0.78	▲▲

\* Taken from Hospital Anxiety and Depression Scale (HADS). A higher score equates to greater levels of Anxiety (range 0-21).

\*\* Taken from HADS. A higher score equates to greater levels of depression (range 0-21).

\*\*\* Taken from EQ5D-3L toll. Score of 1.0 = full health, 0 = a state equivalent to being dead (see Section 10)

WHO - World Health Organisation. WHO guidance = 150 min of moderate exercise and x2 sessions of strength training per week. 6MWD = distance walked in 6 minutes, objective measure of aerobic fitness.

Patient stories collected as part of the feedback and evaluation process:

Patient 1: "I give my fullest thanks for the care and concern you and the team showed me during my time on the programme, and I feel that it helped me in recovery after the operation.

I found it beneficial to my health. It made me feel more positive about the results of my future operation. The exercises and care from the staff increased my confidence as a result."

Patient 2: "I am so glad and thankful that this programme was available to me. I was telling the lady in the next bed about it as she was amazed at how much I could bend my knee the day after my op. I can strongly recommend this programme, and you do get a fantastic result if you stick to it. I had no strength or bend in my left leg at this point. Within a matter of 10 days of doing the exercises, I got better strength and bend. I was so amazed I even started to do the aerobic exercise. I wasn't one for exercise but I really enjoyed this and got stuck into it. I had my op in August and was home two days later, which was a surprise. Five weeks on and I am walking around the house with no sticks and one stick when I go out. It is hard, but if you keep at it, you will never look back. I am so happy that I have my life back and I'm proud of myself."

A Health Economist from Newcastle University was also starting to demonstrate how much money the programme could save the hospital, and other evaluation staff were able to evidence the positive impact patients who were physically better prepared for surgery were having on in-patient stays. With a cost of approximately £400 per patient, the programme reduced hospital stays by about two days, translating to savings of over £800 per patient.

Initially delivered face-to-face, the onset of the COVID-19 pandemic shifted delivery to on-line and the development of a digital offer. To date, 495 patients accessed PREP-WELL and 40 iPREP-WELL, the digital offer.

### The Journey

PREP-WELL presented a unique opportunity for YGT to work with the team at James Cook University Hospital to expand and embed the presence of physical activity into the PREP-WELL programme and look at changing ways of working within a hospital setting on a large scale. It also meant that working in collaboration, they could shape PREP-WELL's physical activity offer to become more person-centred and educate health professionals that being active can easily be built into a patient's daily lifestyle and activities.

James Hartley, Programme Officer at YGT, said, "Our aim wasn't simply to be viewed as a funding source; we wanted to add value by embedding our ways of working and offering consistent support to the programme."

"Through a collaborative, test-and-learn approach, we worked closely with the team to embrace new insights and foster shared learning. This approach fundamentally helped shift the hospital's culture, expand their understanding, and recognise that all forms of physical activity and movement are beneficial - not just traditional clinical approaches to physical activity and sport."

PREP-WELL was designed to run for six to eight weeks for each patient; however, a key advantage of the programme was its flexibility, allowing it to be adapted to accommodate different surgical timeframes and the needs of individual patients.

Each patient participating in the programme had an initial assessment examining their current health and lifestyle risk factors for surgery, and based on their specific requirements, a tailored package was put together. Key components of this included encouraging people to move more and be active, smoking cessation and alcohol reduction support, healthy eating, and mental well-being support. This aspect of the programme was crucial, as the team's research demonstrated that up to ninety per cent of patients presenting for surgery have at least one lifestyle risk factor for surgery. At the end of the programme, each patient had a follow-up assessment that examined changes in fitness, activity levels, lifestyle, and quality of life.

When the country went into lockdown during the COVID-19 pandemic, the PREP-WELL team was determined to find a way to continue supporting patients, and they quickly implemented home-based exercise options that they could remotely supervise.

A digital prehab programme was created to continue supporting patients in the build-up to surgery. Live virtual exercise classes were also provided to monitor exercise progression and recreate the peer support previously offered through the face-to-face options. Paper-based and audiovisual resources were provided to help patients who could not access the digital offer.

During this time, digital became more critical as it was a vital tool in enabling the prehabilitation service to continue. In addition, the rapid shift from face-to-face interaction to a digital service provided much learning into how patients adapted and adjusted to remote support.

Insight showed that while most people were willing to participate face-to-face, many preferred remotely supervised home-based alternatives because they could do it on their own time and in their surroundings, where they felt more comfortable. These

people would likely have missed out if a digital alternative hadn't been available. The team also learned that patients encounter various barriers when accessing face-to-face support. These include travel difficulties, juggling other weekday commitments, or lack of confidence in a group environment. This learning influenced and shaped the future programme beyond the pandemic.

As a result, a remotely supervised alternative for those unwilling or unable to access face-to-face services alongside an independently aligned digital prehabilitation offer was approved, and the team continued to work closely with YGT to develop the new programme.

Esther Carr, senior physiotherapist and PREP-WELL Project Manager, said: "Implementing a digital prehabilitation offer allowed us to enhance the service we provided to patients and offer a menu of options that gave patients more flexibility and the ability to choose what most suits them".

The digital aspect of the programme, named iPREP-WELL, significantly expanded its reach by enabling effective scaling. The total investment into iPrepwell was £286,757, made up of funding from Sport England - £130,159, MacMillan - £64,500 and South Tees Hospitals NHS Trust - £92,098. The programme's components included:

- A remodelled pathway for patients undergoing higher-risk surgery (including cancer and vascular surgery) enabling more remote support for individuals unable to attend face-to-face classes.
- A pathway to support patients undergoing hip and knee replacements.
- The development and testing of a digital remotely supervised platform to enable access for a wider group of patients.

James Hartley added: "PREP-WELL's innovative approach proved that prescribing physical activity can have life-changing results for people.

"We recognised that being active doesn't need to be delivered by health professionals in a class or a health setting. We educated health professionals to understand that physical activity didn't need to be as prescriptive as all of the other support a patient was getting and that it can easily be built into a person's lifestyle and daily activities."

As PREP-WELL approached the end of its four-year funding investment from YGT, the team could evidence that it would save money in the longer term, although it still needed some investment from the hospital to continue.

We were naturally disappointed to learn that the hospital trust was unable to provide additional funding for the continuation of PREP-WELL's face-to-face delivery,

particularly after the significant effort the PREP-WELL staff invested in developing a business case to sustain it. However, digital prehabilitation interventions offer scalability, and iPREP-WELL has continued to be delivered in South Tees. Training has been designed to enable healthcare professionals to promote, support, and facilitate intervention delivery in this format as part of routine clinical care.

Alongside the trust's decision, the NHS North East and North Cumbria Integrated Care Board (ICB), in collaboration with partners across primary and secondary care, local councils, and the voluntary, community, and social enterprise sector (VCSE), announced that eight areas would receive funding to deliver a programme of support for patients awaiting non-urgent surgery, including South Tees. The programme, 'Waiting Well' also aims to tackle health inequalities, so it has adopted a targeted approach to identifying patients at risk of experiencing health inequalities with long-term health conditions. It aimed to engage with patients, support them in adopting healthier lifestyles while waiting for surgery, prepare them for surgery and recovery, and inspire patients to continue their healthier lifestyle choices in the long term.

Waiting Well presented many immediate similarities to PREP-WELL's way of working, and the team who had worked on it alongside YGT recognised they were perfectly positioned to support this and extend their learning across the region. Fleet-footed, they embraced the opportunity to bring the previous work front and centre, transfer the learning to become part of Waiting Well and speak confidently to a much wider range of health professionals about how physical activity can be embedded into this way of working.

As a result of their ongoing involvement in Waiting Well, Professor Gerry Danjoux and Esther Carr continue to build upon their PREP-WELL experience, communicate their learning, support others in changing the system, and to value physical activity.

The lasting impact of the YGT approach to the PREP-WELL work means that the insight, learning, and lived experience of delivering an innovative approach to a community-based prehabilitation programme have influenced the delivery of Waiting Well and supported 458 patients so far. This extends to a significantly larger geographical area and will positively impact the next phase of Sport England's expansion work into new areas across the North East and Cumbria.

Mark Fishpool, YGT Programme Director, said, "Building collaborative relationships and delivering multi-stakeholder programmes take time, but by listening to patients and taking a person-centred approach, we were incredibly successful at embedding physical activity into the PREP-WELL prehabilitation programme.

“Through this work, we are now actively participating in and influencing Waiting Well steering meetings, which means many more patients value the benefits of physical activity before and after they undergo surgery.”

### **Key insights from PREP-WELL**

In phase one, during the COVID-19 pandemic, approximately one-third of patients wanted a home-based programme. Of the people wanting this type of programme, there was a 50/50 split between those wishing to access this digitally vs paper-based.

Despite undergoing major surgery, COVID-19 enforcing a period of isolation, and the programme delivery moving to a virtual platform, a reduction in inactivity of nearly 10% was observed. This suggests the potential for longer-term behaviour changes in participating patients.

One size doesn't fit all. Through the development of PREP-WELL, we learned that offering a menu of options to patients helps with engagement and patient satisfaction. We took this insight and learning into developing the Waiting Well Programme.

Supporting patients in addressing their personal barriers to engagement improves engagement. Working across sectors with Waiting Well, alongside social prescribers and a Health and Wellbeing Coach, has enabled further enhancement of the service provided to patients.

Engaging in a pre-operative health and wellbeing programme has benefits that can be seen on an individual patient level, and it also benefits the system as a whole.

### **Reflections and Learning**

Within the hospital, PREP-WELL had the backing of many highly qualified surgical champions who believed in the work's positive impact. This support was perceived as a credible way to support the programme continuing beyond the YGT funding through the trust's own investment.

On reflection, throughout the programme, communicating and influencing those within the hospital trust responsible for budgets and investment decision-making would have been merited. As the work moves into Deepening and Expansion, we need to engage and influence the most senior leaders if we want to change policy and behaviour.

Also, if the PREP-WELL team had taken a more collaborative approach to communicating the impact and learning to the trust with the support of other people, e.g., the Director of Public Health South Tees/Programme Director of YGT, and presented the programme's pioneering influence that enabled them to work with NHS

England, The Care Commission, and NHS Horizons, would the trust's decision have been different?

Both of these reflections highlighted for the YGT team the importance of communication throughout the entire programme journey to educate and influence at many levels. A strategic approach to who should be communicated to, when, and how should have formed part of the programme.