Exercise Prescription App "Hand Therapy"

Introduction

Carpal tunnel decompression remains the most common hand operation carried out in the UK, with 53,000 procedures carried out in secondary care each year. With the increasing prevalence of predisposing factors such as diabetes and obesity and with an aging population, the demand for elective hand surgery is predicted to significantly increase. With increasing demand, strategies are needed to reduce treatment costs while maintaining care standards (Palial 2019).

The Getting It Right First Time (GIRFT) programme aims to improve patient outcomes and reduce unwarranted variations in services through data-driven improvements (BSSH, 2022). For hand therapy, a key focus is implementing standardised care pathways for common conditions like carpal tunnel syndrome.

The opportunity arose to address this demand by utilising the Hand Therapy app (HTA) (CW+, 2022) to develop a GIRFT recommended pathway of care for patients undergoing carpal tunnel release surgery.

Using a hand therapy mobile app can support delivering consistent, high-quality care aligned with GIRFT goals.

The award-winning HTA app enables therapists to prescribe personalised home exercise programmes to patients' phones, with videos, education, and reminders to support adherence and self-management (Fig 1). Valdes et al (2021) recommend the HTA as a tool to prescribe home exercise programmes.

Figure 1: Chelsea and Westminister Hand Therapy App

Background

At the Chelsea and Westminster Hospital Hand unit, approximately 200 carpal tunnel release procedures are performed annually. Initial data collection in 2021 uncovered several points of variation in the pathway:

- Inconsistent pre/post-op information provided to patients
- Varying number and location of post-surgical follow-ups (consultants, specialist plastics or GP nurse practitioner)
- Patients presenting later with avoidable problems due to lack of early intervention
- Patient engagement giving "voice to the customer" highlighted insufficient post-discharge recovery information and lack of a reliable point of contact as key issues

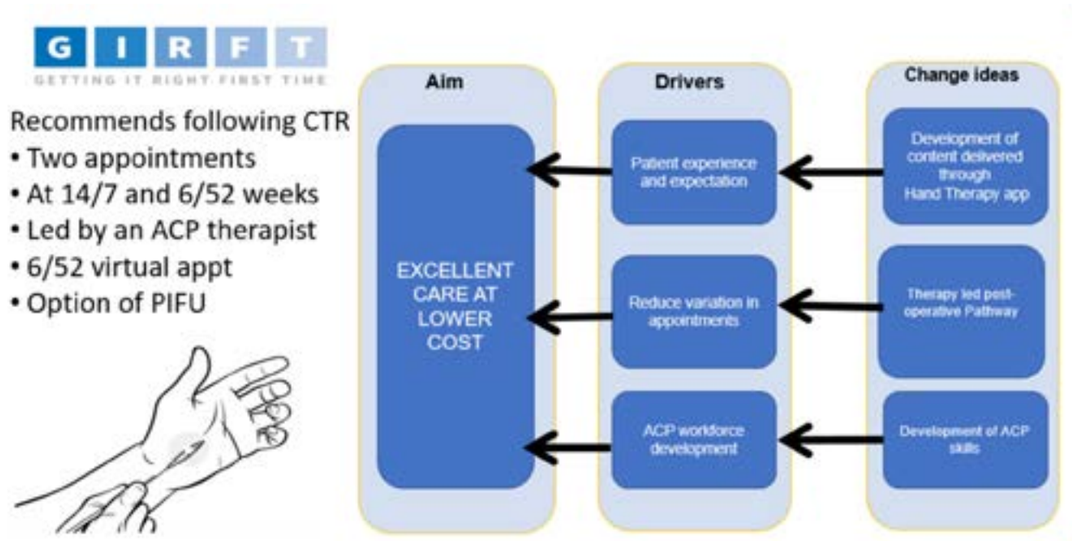

Figure 2: Development of a Therapy Led pathway for post-op carpal tunnel syndrome based on GIRFT recommendations by BSSH

Quality Improvement methods were used to develop the therapy-led CT pathway (TLCTP) aiming to provide excellent care at lower cost by freeing surgeons to other work. Utilising the skills of Hand therapists develops the AHP workforce but provides the "right treatment, by the right person at the right time". Streamlining appointments improves experience and virtual appointments reduce travel to appointments, supporting National Health Service (NHS) sustainability. As the NHS aims for new healthcare delivery models, innovative technology (such as the HTA integrated into the TLCTP pathway is an enabler to self-management) is an important factor in patient adherence (O'Brien 2012; NHS England, 2023) (Fig 2.).

Our improvement aims:

- 100% of patients* undergoing a CTR to be seen on new pathway
- Monitor complications (aiming <9% the local pre-pilot complication rate)
  * met the inclusion criteria

Outcome measures:

- ≥60% virtual 6-week follow-up (using DrDr appointment platform links to the electronic patient record (EPR) system*
- ≥70% of patients to utilise the HTA to support self-management*
- BCTQ outcome measure
  The BCTQ questionnaire was developed into an e-form using ISLA, a digital platform which links to EPR. The questionnaire automatically triggers prior to the 6-week review appointment, sending it to patients to complete and auto-populating their record with response data.
  *% based of pre-pilot patient engagement and HTA usage

Balancing measures:

- Patient experience would be compared to pre-pilot data
- Decrease follow-up ratio

Pathway Process

The HTA provides standardised information and exercises for self-management in the first weeks after surgery; dressing changes, wound care and exercises.

Figure 3: An example of an exercise video that can be accessed via the Hand Therapy App. The App content includes exercises, scar management, desensitisation advice

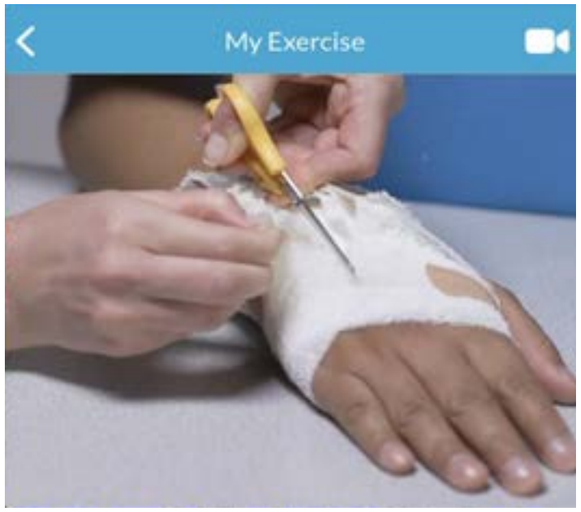

Figure 4: The digital bundle also includes: How/ when to remove the outer post-op bandaging, Wound management, Finger tendon gliding exercises, Elevation/oedema management , Advice on function and timeframes for recovery, Animated educational content specific to CTR*. (*animation currently in production)

Patients are advised to download the app via the discharge packs, and what content to add populating to MY EXERCISES. Further content can be added as patient's progress. Content can be personalised by adding clinician notes. Timed reminders can be set to encourage adherence to home programmes.

Patients were provided with a single point of contact to escalate concerns with the option of patient-initiated follow-up (PIFU) prior to planned appointments given.

A pilot was undertaken to test and evaluate the pathway. We used a tool Failure Mode and Effect Analysis (FMEA) to identify all potential risks in the pathway processes, for areas of high consequences. For example, in the case of suspected infection we mitigated for this and ensured robust escalation processes were in place.

For the pilot a three-appointment pathway was implemented to ensure clinical safety/effectiveness and provide reassurances to stakeholders. Patients were seen at 4-7 days (wound review), 10-14 days (suture removal) and 6 weeks post-surgery (surgical review).

Results

Results from the pilot are provided in Fig 5.

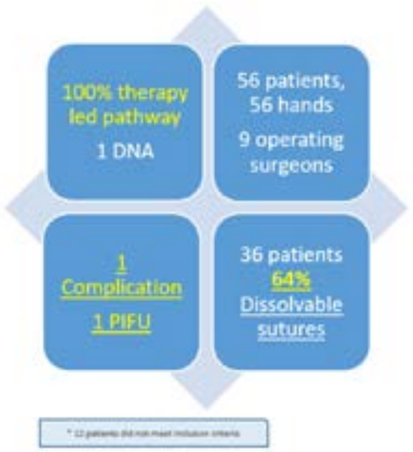

Figure 5: 56 patients/100% of suitable patients were seen over a three-month period. There was one complication (<2%) of a stitch abscess. Overall, there was an improvement in the timeliness of follow- up appointments across all three post-op appointments. 97% saw a HT at 3-7 days post operatively compared with 74% pre-pilot, 100% compared with 63% at 10-14 days and 97% compared with 72% at 6 weeks post operatively

Our pre-pilot data found that at the initial appointment 50-60% were seen by a specialist plastic surgery nurse, and of these 37% were additionally seen by a surgeon. The remaining 30-40% were seen by GP practice nurses. On the new pathway all patients were seen in one location by a therapist who could provide all their post-operative care needs, wound management, exercises, scar management and ADL advice.

Overall patient experience improved (Table 1) from 50% to 80% patients reporting Excellent/ Good experience in favour of the therapy led pathway. Figure 6 provides data on virtual follow up appointments.

Table 1: Patient experience data

Pre-pilot
50% Good/Excellent quality of care
60% felt they were followed up at the right time
60% would be happy to see an experienced therapist instead of their surgeon
60% would be happy to be seen for a virtual follow-up

Post Pilot
81% Good/Excellent quality of care
82% felt they were followed up at the right time
81% happy to see an experienced therapist instead of their surgeon
60% happy to be seen for a virtual follow-up

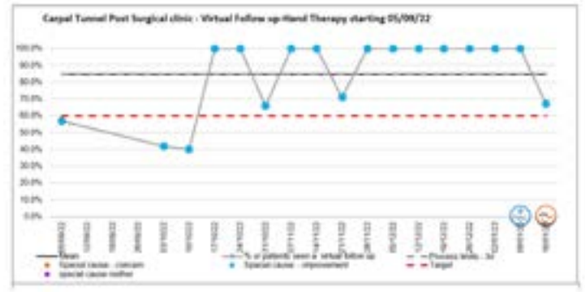

Figure 6: The percentage of patients with virtual follow-up, apart from the initial drop below our target as the pathway was established, we have been successfully reaching and exceeding our target of for virtual follow-up.

Uptake of the HTA

To support the early patient self-management after surgery our target was >70% of patients downloading the HT app. From our data 91% of the cohort had smartphones, however there was marked variation in the uptake of the app prior to their first appointment with on average only 20% downloading the HTA. This improved significantly to >70% uptake when they were signposted to the HTA by a clinician and its purpose was explained.

BCTQ
40% completed before the virtual appointment and 90% completed when prompted at appointment. The Boston Carpal Tunnel Questionnaire is a validated outcome measure for assessing carpal tunnel syndrome symptoms and function (Multanen 2020). Though agreed locally to collect this data, we found scores at 6 weeks after surgery does not reflect the optimal time period for recovery. Also, inconsistent pre-surgery data collection prevented comparison.

Discussion:

The pilot demonstrated the pathway was safe and effective, and the next step was the two-appointment pathway. However, this relied on patients downloading and accessing HTA content prior to their first appointment.

The uptake of the HTA was >70% when the therapist signposted them to it. The next iteration of the pathway relied on patients downloading it on the day of surgery. The most common reason patients cited for not downloading the app was they had not looked in their discharge pack.

To address this, we created customised packs with stickers prompting patients to examine the contents and specifically to "download the app". We also included dressings and sleeves to equip patients to change their dressings after watching the video. By guiding patients to the app resources and supplying dressings, we enabled an efficient two-appointment pathway where patients actively participated in their recovery.

Using the model for improvement plan, do, study, act (PDSA) further data was collected. An additional 139 patients have been seen on the two-appointment pathway. There were two (1.4%) complications and two PIFU. We maintained 70% virtual FU at 6 weeks. This simple idea of stickers on the discharge pack made a big impact, with 80% uptake of the HTA download ahead of the first appointment (improvement of 60%). Of those using the HTA app 71% of patients were able to remove their own bandaging and change their dressing ahead of their first appointment for removal of sutures. For those not able to remove the bandaging themselves there was no negative impact as this could be done in the appointment without detriment to recovery.

Summary:

The therapy led post-surgical carpal tunnel pathway utilising HTA is safe, effective, and efficient. Digital integration can enhance pathway process and design and empower patient self-management. The HTA enhanced the TLCTP pathway by enabling patient participation, but only when accessed at the optimal time. Focusing on this timing was key to successfully implementing the GIRFT pathway. The TLCTP utilising the HTA is replicable as the app is free to download worldwide on IOS and Android (Fig. 7)

Figure 7: The Hand Therapy app is free to download worldwide on IOS and Android

What's next?

The carpal tunnel pre- and post-surgery animation is being completed to further supplement the TLCTP to be added to the app early 2024. This has been created with patients to ensure we are including what is important to them. The educational content is currently audio only. This would ideally have been created prior to the pathway implementation but has been delayed as this has been developed alongside clinical commitments.

Patients have said they would like the HTA information at the time of consenting and/or being given their surgery date to help to prepare. Therapists have a valuable part to play in preparing patients for surgery, managing expectations, anxieties, and the practicalities of how to manage activities of daily living (ADL) while they recover. Evidence suggests this has potential to have a positive impact on post-operative pain response Feninets (2022) and Lee (2018). The HTA has the potential to be utilised as part of this process by supporting information and health literacy in the lead up to surgery.

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IFSHT NEWSLETTER – REACH VOLUME 3, NO. 3

Issue 3 of volume 3 of the IFSHT newsletter is now available on the IFSHT website. Please check out the following link to access it: https://ifsht.org/publications/?publications_category=29

The publication aims to collate Research, Education, Achievement and Clinicians in Hand and upper limb therapy around the world.

In this edition of REACH we provide signposts to other sources of clinical pearls beyond the traditional book. We also continue our series on how to write and publish research.

We present new and noteworthy research on and also a glimpse of what research is coming down the line relating to hand osteoarthritis. Check out our feature article on HandyEvidence, a website that provides efficient and accessible research updates for Hand Therapists.

This issue's Spotlight On! Section features the American Society of Hand Therapists, we also continue our new "Volunteer" section and a new profile of a recipients of the prestigious IFSHT Lifetime Achievement Awards.

We call on hand and upper limb therapy clinicians and researchers to submit any contributions for consideration to: informationofficer@ifsht.org

UPCOMING EVENTS

The countdown begins! The the next Joint Triennial Congress in Washington in 2025 is just over a year away!

The website for this event is launched so please follow for updates!

https://www.ifssh2025.org/s/