



Community Rehabilitation Case Study

Introduction and background to service development

My name is Sarah Daniel and I am the Director of MOTIONrehab Limited. MOTIONrehab have provided Neurological Rehabilitation across Yorkshire and Humberside for nearly 13 years. The delivery of our rehabilitation was predominately in the private sector, providing neurological physiotherapy in our clinic bases, people's homes or residential homes.

In 2017, I was reflecting on the services we provided and considering whether we were maximising rehabilitation outcomes for our clients. At the time it was widely acknowledged that UK was experiencing a growing population of individuals with long-term rehabilitation needs as a consequence of stroke and other long-term conditions. Whilst I recognised that the NHS had a statutory obligation to meet the rehabilitation needs of the local population in line with The NHS Long Term Plan and other NICE guidelines and care pathways (e.g. Stroke Guidelines) the delivery model seemed less than optimal and there appeared to be an opportunity to improve rehabilitation services. I understood that the NHS had acknowledged that through Public Private Partnerships they could achieve the delivery of innovative, efficient, cost-effective treatment within modern facilities, whilst minimising their financial risk if they partnered with the private sector. With this in mind, I saw an opportunity to develop MOTIONrehab and innovate the delivery of rehabilitation to the benefit of both private and NHS patients.

After reviewing the literature, it was increasingly apparent that we should be delivering rehabilitation with greater intensity and dosage. Clark et al (2017) reported that rehabilitation outcomes were determined by number of minutes of therapy provided each week, the frequency (i.e. number of days per week) and the rehabilitation duration/ time period over which rehab was delivered. Furthermore, the NICE Stroke Quality Standard 2016 stated:

“Higher intensity stroke rehabilitation therapies can improve the quality of life for adults who have had a stroke. The improvements that an adult with stroke should expect to achieve will depend on their health and abilities before and after the stroke, the severity of the stroke and the intensity of the rehabilitation therapy. The intensity of stroke rehabilitation should be suitable for the person, so that they are able to participate and make progress towards their functional goals.”

Finally, after visiting the Upper Limb Programme at Queens Square, UCL, and reviewing their outcome data it was clear that higher intensity of rehabilitation was not only tolerated by patients but achieved improved outcomes.

I therefore decided to develop a new concept of rehabilitation supported by robotic and VR based technology. The integration of technology with traditional physiotherapy approaches is well supported in the literature including Cochrane reviews for both lower limb and upper limb.

Methods

To develop the concept, I visited clinics across Europe including, Austria, Croatia and Germany to evaluate the technology in use with patients rather than seeing it on display at an exhibition. Whilst there, I considered the design of clinic environment, how the clients tolerated the intensity, the referral criteria, the staffing levels and associated skill mix. It was also crucial to look at diary management, as well as, the needs of the carers and family members during the rehabilitation programme.

After producing a comprehensive business plan, I successfully raised finance, without investment, to purchase a full suite of evidence based-robotic and VR equipment. In April 2018 MOTIONrehab opened the UK's first Robotic led Intensive Outpatient Neurological Rehabilitation Facility in Leeds.

MOTIONrehab's concept was to implement specialist 'hands-on' therapy augmented by state of the art, evidenced based robotic and VR technology. The centre included a range of upper and lower limb robotics and virtual reality technology.

MOTIONrehab's developed Intensive Rehabilitation Programmes. Our clients attend for a pre-assessment to ascertain their suitability for treatment. Once they start the programme clients have baseline assessments taken of impairment, function and quality of life documented. These are reviewed weekly and finally at discharge. Each client then participates in 4 hours of therapy per day, for 3 - 5 days per week, for a total of 80 hours of rehabilitation. This delivered over 4 -7 weeks. All programmes are tailored to meet individually agreed patient orientated goals. The MOTIONrehab concept offered patients specialist one to one hands-on therapy from experienced and highly skilled clinicians. Uniquely, MOTIONrehab clients also spend time training with the robotic, sensor based and virtual reality devices supported by clinicians. This allows patients to practice high repetitions of movements with real-time biofeedback, which is critical to neuro-plasticity and the optimisation of outcomes.

Evaluation

The evaluation of the new service has been multifactorial and remains ongoing.

The rehabilitation model has been evaluated by the treatment outcomes of the clients attending. Case study data from assessments taken of clients during their treatment packages has been evaluated and demonstrates successful and meaningful outcomes for the individual's undertaking the programme. In many cases, clients has exceeded expectations, or the outcomes achieved with previous 'traditional' interventions received elsewhere, either privately or from NHS provision. MOTIONrehab has presented this data globally, including at the UK Stroke Forum in 2018 and the World Congress of Neurorehabilitation 2020.

MOTIONrehab are part of a research in progress evaluating the high intensity rehabilitation model with the University of Leeds.

MOTIONrehab would also consider continued growth in referrals to the services as a positive indicator for success. In response to the growing demand for rehabilitation seen during the COVID-19 pandemic MOTIONrehab has seen an ever increasing referral rate from patients and their families, case managers in the medico-legal sector, and a staggering 143% increase in NHS referrals. Consequently, the demand for our services has grown and we have been operating at capacity within our intensive rehabilitation centre based in Leeds. As a result of this growing demand MOTIONrehab have replicated the robotic led intensive rehabilitation facility within the Hull and Humber region. The existing MOTIONrehab clinic based in Hull has been significantly expanded and a second evidence-based robotic and virtual reality technology suite was installed on 24/11/2020.

Finally, MOTIONrehab were honoured to be awarded as a one Top 100 company across the whole of Europe by the Financial Times, Google and leading European policy makers, for pioneering Digital and technological innovation. MOTIONrehab were recognised as a pioneer in the field of rehabilitation for its role in leading digital change, and in challenging an industry sector with a disruptive business model by 'Europe's Road to Growth list' supported by Google and the Financial Times, which aimed to highlight organisations and companies that are tackling the challenge of digitalisation and taking advantage of new technologies in ground-breaking and interesting ways.

Reflection

Since the conception of the clinic, MOTIONrehab and the staff implementing the programmes have continuously reflected on the delivery of the service. This has included;

- Reviewing clinical criteria for the treatment packages. We have identified a wider client base that have or may benefit from our approach. This includes children with Cerebral Palsy, individuals with Functional Movement Disorders, poly-trauma and now post COVID-19 rehabilitation.
- Reviewing outcomes measures used within the service to ensure sensitivity to change, validity and reliability.
- Reflecting on the skill mix required in clinic and have subsequently expanded our MDT to include OT, SLT and therapeutic exercise instructors.
- Constant evaluation of technology and its application, as well as, considering new devices.
- Constant evaluation of the literature and contribution to research where possible.

An ongoing theme for reflection is the role technology has within rehabilitation. For the MOTIONrehab team rehabilitation technology and robotics is not there to replace the therapist, but merely enhance what we do. The role of clinical reasoning, evaluation and responding to each client as an individual remains imperative and central to our service delivery. On occasions it is possible to get carried away by the equipment and lose sight of the individual at the heart of the rehabilitation process. At MOTIONrehab, we have continuously evolved the delivery and operational management of the clinics to keep the patient at the heart of what we do.

My own personal reflection on the development of the concept has been focused on the outcomes observed for our clients and their families. We have repeatedly demonstrated that clients after neurological insult can tolerate rehabilitation at this intensity. It is my opinion, that we should not under-estimate our clients, but challenge them appropriately and be ambitious for them. Although, fatigue must be respected, it is not necessarily a sign to stop an intervention, but change the task and challenge a different aspect of rehabilitation, i.e. if physically fatiguing, challenge cognitively.

Overwhelming, our therapy outcomes confirm that this approach works and I am pleased to see other providers adopt aspects of MOTIONrehab's approach to drive innovation within our field.

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