

“Physio anywhere”: digitally-enhanced outpatient care as a legacy of coronavirus 2020

On 16th March 2020, the UK government announced a reduction in all non-essential travel and a partial lockdown 7 days later, in response to the primary wave of COVID-19 infections. Outpatient services, including physiotherapy, quickly transitioned to remote working practices to comply with emergency measures to protect the safety of staff and the public [1].

Remote working

Remote working *via* telemedicine (telephone or video-assisted consultation) displaces the need for face-to-face contact whilst providing care within patients' own homes [2]. To facilitate rapid deployment of video consultations NHS England and NHS Improvement funded access to the Attend Anywhere platform for NHS providers, in line with that available in Scotland. Clinical guidance on remote care during the emergency period was rapidly published both by NHS England [3] and the Chartered Society of Physiotherapy [4]. Despite the relative infancy of remote working in physiotherapy, there is an emerging body of evidence that supports its incorporation in clinical practice as both an assessment and rehabilitation tool.

Remote assessment

Non face-to-face consultations conducted via remote contact have utility to provide a platform for effective clinical assessments. Remote assessment for musculoskeletal disorders shows good concurrent validity and excellent reliability in most areas [5]. Clinicians working by phone are able to modify their communication to counteract loss of visual bodily cues which would usually aid assessment [6]. This may include greater reliance of verbal description, and Shaw et al. [7] advise the pre-planning of themes to guide conversation.

There is evidence of moderate to high agreement between remote and face-to-face examination in patients with low back pain [8,9] and ankle disorders [10]. Inter and intra-rater reliability are high and moderate, respectively, for knee assessment [11]. Telehealth and in-person assessments, in an advanced-practice physiotherapy screening clinic, demonstrate a high level of agreement in relation to clinical management decisions and diagnosis in patients with chronic musculoskeletal conditions [12]. Further, video consultation is deemed acceptable to most patients [13].

Remote monitoring and rehabilitation

Treatment interventions can also be delivered successfully via remote working. Patients with chronic knee pain report satisfaction with the patient-therapist relationship, the use of technology and the provision of exercises provided remotely [14]. High levels of patient satisfaction, adherence to rehabilitation protocols and clinically significant improvements in outcome measures were also demonstrated in individuals undergoing remote pulmonary rehabilitation [15] and cardiac rehabilitation [16].

Non-adherence with face-to-face physiotherapy care can be as high as 70% [17], and is particularly poor for unsupervised home-based exercise [18,19]. Further, there is little evidence that interventions to facilitate better adherence are effective [20]. In the current situation, with patients not able to come to attend exercise classes and have their condition monitored, adherence and compliance is likely to decline even further.

However, telemedicine, aided by an ever-increasing number of digital health tools, can significantly increase patients' confidence in undertaking exercise and improve compliance and adherence to exercise-based rehabilitation programmes, compared to usual physiotherapy care [21,22]. Digital health tools provide images and videos of exercises, patient advice

and education and include reminders for patients to carry out prescribed exercise programs given by their physiotherapist in a 'virtual' exercise class, which can be remotely delivered and adherence monitored. Tools which combine education with appropriately timed reminders and exercise prompts can use "nudges" to positively transform behaviour and modify heuristics [23]. Moderate-high quality evidence supports the use of nudges to improve self-management outcomes, including physical activity adherence [24]. Digital tools and telemedicine can allow physiotherapists to remotely monitor and supervise a patient's rehabilitation, whilst at the same time promoting patient self-management and empowerment. Admittedly, the majority of the research in this area remains based upon small trials, however does provide a basis of evidence to support adoption of technology in practice.

The post-Covid era

The step change in outpatient care provision as an emergency response provides an opportunity to redesign services within a new framework of innovative working practices that can extend beyond the immediate crisis. Quality improvement initiatives in response to rapid deployment of virtual services due to COVID-19 have already begun in the area of allied health [25].

Novel working practices have the potential to enhance patient choice and clinical efficacy. However, alongside the readiness to embrace innovation, there must be detailed and careful evaluation of new remote working practices in order to ensure patient safety, clinical efficacy and long term sustainability. Evaluation of new technology in healthcare must be relative to the context of the service change [26]. Changes to services adopted in response to an emergency situation, although well-intentioned, may not necessarily turn out to be changes for the better.

Evaluation of remote consultations in general practice follows a model of evaluating patient safety, patient and staff satisfaction, clinical efficacy and validity [27,28].

The authors suggest that evaluation of physiotherapy services adopted in response to the COVID-19 crisis follow a similar framework. The initial phase of evaluation should include the administrative, technological and logistical feasibility of remote working clinics. The acceptability of remote working and levels of satisfaction for patients must also be assessed, in particular the willingness of patients to embrace remote working in the long term, after the C-19 crisis has passed. The evaluation model should be applied in two stages; both during the rapid deployment, and subsequently in the development of new innovative pathways for the longer term.

Providers will need to demonstrate they have a mandate from patients for provision of the new services and the patient experience must be fully explored. Similarly, the experience of physiotherapy staff working in these clinics needs to be examined. Knowledge of the challenges and difficulties encountered by physiotherapy staff will guide the delivery

of specifically tailored training and education to ensure that staff feel fully supported and confident to meet the challenges that lie ahead in the new remote working environment.

The shape, structure and processes of remote working practices in the future will be determined by the careful assessment of current services that have been delivered in response to the ongoing emergency situation. Providers must aim to co-design the new remote care pathways with, and for the benefit of, all stakeholders. Remote working practices can be an appropriate, well received and, efficient method of providing physiotherapy care. Without careful evaluation, however, providers run the risk of redesigning pathways, only to discover that the future isn't as bright and successful as was first envisaged.

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References

- [1] Chartered Society of Physiotherapy. When is a face to face consultation necessary during the covid-19 pandemic [Internet]; 2020. Available from: <https://www.csp.org.uk/documents/when-face-face-consultation-necessary-during-covid-19-pandemic> [cited 23 April 2020].
- [2] Eccles S. NHSX's offer to support secondary care [Internet]; 2020. Available from: <https://www.nhs.uk/blogs/nhsx-offer-to-support-secondary-care/> [updated 2020 April 16; cited 04 May 2020].
- [3] NHS England and NHS Improvement. Specialty guides for patient management during the coronavirus pandemic: Clinical guide for the management of remote consultations and remote working in secondary care during the coronavirus pandemic [Internet]; 2020. Available from: <https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/C0044-Specialty-Guide-Virtual-Working-and-Coronavirus-27-March-20.pdf> [updated 2020 Mar 27; cited 04 March 2020].
- [4] Chartered Society of Physiotherapy. COVID-19: guide for rapid implementation of remote consultations. Practical advice for physiotherapists and support workers on how to implement remote consultations rapidly and efficiently [Internet]; 2020. Available from: <https://www.csp.org.uk/publications/covid-19-guide-rapid-implementation-remote-consultations> [updated 2020 Apr 01; cited 04 May 2020].

- [5] Mani S, Sharma S, Omar B, Paungmali A, Joseph L. Validity and reliability of Internet-based physiotherapy assessment for musculoskeletal disorders: a systematic review. *J Telemed Telecare* 2017;23(3):379–91.
- [6] Aggarwal D, Ploderer B, Vetere F, Bradford M, Hoang T. Doctor, can you see my squats? Understanding bodily communication in video consultations for physiotherapy. In: *Proceedings of the 2016 ACM Conference on Designing Interactive Systems*. 2016. p. 1197–208.
- [7] Shaw SE, Wherton J, Vijayaraghavan S, Morris J, Bhattacharya S, Hanson P, *et al*. Advantages and limitations of virtual online consultations in a NHS acute trust: the VOCAL mixed-methods study. *Health Serv Deliv Res* 2018;6(21).
- [8] Truter P, Russell T, Fary R. The validity of physical therapy assessment of low back pain via telerehabilitation in a clinical setting. *Telemed E-Health* 2014;20(2):161–7.
- [9] Kloek CJ, van Tilburg ML, Staal JB, Veenhof C, Bossen D. Development and proof of concept of a blended physiotherapeutic intervention for patients with non-specific low back pain. *Physiotherapy* 2019;105(4):483–91.
- [10] Russell TG, Blumke R, Richardson B, Truter P. Telerehabilitation mediated physiotherapy assessment of ankle disorders. *Physiother Res Int* 2010;15(3):167–75.
- [11] Richardson BR, Truter P, Blumke R, Russell TG. Physiotherapy assessment and diagnosis of musculoskeletal disorders of the knee via telerehabilitation. *J Telemed Telecare* 2017;23(1):88–95.
- [12] Cottrell MA, O'Leary SP, Swete-Kelly P, Elwell B, Hess S, Litchfield MA, *et al*. Agreement between telehealth and in-person assessment of patients with chronic musculoskeletal conditions presenting to an advanced-practice physiotherapy screening clinic. *Musculoskelet Sci Pract* 2018;38:99–105.
- [13] Gilbert AW, Jaggi A, May Cr. What is the patient acceptability of real time 1:1 videoconferencing in an orthopaedics setting? A systematic review. *Physiotherapy* 2018;104(2):178–86.
- [14] Bennell KL, Nelligan R, Dobson F, Rini C, Keefe F, Kasza J, *et al*. Effectiveness of an internet-delivered exercise and pain-coping skills training intervention for persons with chronic knee pain: a randomized trial. *Ann Intern Med* 2017;166(7):453–62.
- [15] Marquis N, Larivée P, Saey D, Dubois MF, Tousignant M. In-home pulmonary telerehabilitation for patients with chronic obstructive pulmonary disease: a pre-experimental study on effectiveness, satisfaction, and adherence. *Telemed E-Health* 2015;21(11):870–9.
- [16] Scalvini S, Zanelli E, Comini L, Tomba MD, Troise G, Giordano A. Home-based exercise rehabilitation with telemedicine following cardiac surgery. *J Telemed Telecare* 2009;15(6):297–301.
- [17] Sluijs EM, Kok GJ, Van der Zee J. Correlates of exercise compliance in physical therapy. *Phys Ther* 1993;73(11):771–82.
- [18] Reilly K, Lovejoy B, Williams R, Roth H. Differences between a supervised and independent strength and conditioning program with chronic low back syndromes. *J Occup Med* 1989;31(6):547–50.
- [19] Nelson BW, Miller M, Hogan M, Wegner JA, Kelly C. The clinical effects of intensive, specific exercise on chronic low back pain: a controlled study of 895 consecutive patients with 1-year follow up. *Orthopedics* 1995;18(10):971–81.
- [20] Jansons PS, Haines TP, O'Brien L. Interventions to achieve ongoing exercise adherence for adults with chronic health conditions who have completed a supervised exercise program: systematic review and meta-analysis. *Clin Rehabil* 2017;31(4):465–77.
- [21] Lambert TE, Harvey LA, Avdalis C, Chen LW, Jeyalingam S, Pratt CA, *et al*. An app with remote support achieves better adherence to home exercise programs than paper handouts in people with musculoskeletal conditions: a randomised trial. *J Physiother* 2017;63(3):161–7.
- [22] Bennell KL, Marshall CJ, Dobson F, Kasza J, Lonsdale C, Hinman RS. Does a web-based exercise programming system improve home exercise adherence for people with musculoskeletal conditions?: A randomized controlled trial. *Am J Phys Med Rehabil* 2019;98(10):850–8.
- [23] Hausman DM, Welch B. Debate: to nudge or not to nudge. *J Polit Philos* 2010;18(1):123–36.
- [24] Möllenkamp M, Zeppernick M, Schreyögg J. The effectiveness of nudges in improving the self-management of patients with chronic diseases: a systematic literature review. *Health Policy* 2019.
- [25] Gilbert AW, Billany JC, Adam R, Martin L, Tobin R, Bagdai S, *et al*. Rapid implementation of virtual clinics due to COVID-19: report and early evaluation of a quality improvement initiative. *BMJ Open Qual* 2020;9(2):e000985.
- [26] May C, Mort M, Mair F, Ellis NT, Gask L. Evaluation of new technologies in health-care systems: what's the context? *Health Inform J* 2000;6(2):67–70.
- [27] Greenhalgh T, Wherton J, Shaw S, Morrison C. Video consultations for covid-19. *BMJ* 2020;(368):m998, <http://dx.doi.org/10.1136/bmj.m998>.
- [28] Seuren LM, Wherton J, Greenhalgh T, Cameron D, Shaw SE. Physical examinations via video for patients with heart failure: qualitative study using conversation analysis. *J Med Internet Res* 2020;22(2):e16694.

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