

Safety and quality in remote delivery of case management services: a brief literature review

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Introduction

Telerehabilitation is defined as the delivery of rehabilitation evaluations and services via a range of information and communication technologies (ICT) such as video and audio conferencing, chat messaging, wearable technologies, sensor technologies, patient portals or platforms, mobile health applications, virtual reality, robotics, and therapeutic gaming technologies (Richmond *et al.* 2017). Professional bodies recommended use of remote telerehabilitation as an alternative to face to face consultations to ensure continued service access despite the restrictions of COVID19 (CSP 2020, RCOT 2020, IRCM 2020). Even before the coronavirus restrictions, telerehabilitation utilisation has been increasing rapidly over the last two decades (Cason 2014). Case managers have traditionally utilised telephone and email technology for remote assessment but primarily as means of follow up (Ross, Curry and Goodwin 2011, Barlow *et al.* 2007).

Telerehabilitation has demonstrated effectiveness similar to face to face consultations for cardiac and pulmonary conditions (Chan *et al.* 2016), multiple sclerosis (Charvet *et al.* 2017), aphasia following stroke (Choi *et al.* 2016), balance after stroke (Llorens *et al.* 2015), diabetes (Handley *et al.* 2008), depression (Wang *et al.* 2007), mental illness (Malakouti *et al.* 2016, Mavandadi *et al.* 2015), orthopaedic conditions (Agostini *et al.* 2014), post-surgical clients (van Egmond *et al.* 2017) and traumatic brain injury (Ownsworth *et al.* 2017, Calabro *et al.* 2017).

However, the criteria for selection of clients who may be appropriate for remote management is not well-defined. Through this rapid literature review, we summarise the evidence for telerehabilitation in helping to deliver case management through consideration of safety and quality of telerehabilitation consultations

Based on this evaluation, we propose a selection criterion to identify rehab clients who may or may not be suitable for remote case management to ensure safe and effective service delivery.

Literature search and selection

A literature search was conducted in healthcare databases (MEDLINE, CINAHL, SCOPUS, Web of Science) to identify published research exploring aspects of remote working for adult population receiving rehabilitation case management services. The key search terms included:

‘rehabilitation case management’, ‘remote case management’, ‘telerehabilitation’, ‘virtual rehabilitation’, ‘safety’ ‘acceptability’. The search was limited to the period between 2000 and 2020. Additionally, references within the papers were also used to identify additional papers as well as industry guidance documents. As the papers published specifically within case management were sparse, we extended the search to additional papers within allied health professions. Only English language papers were included.

Safety and quality of telerehabilitation consultations

Despite the well documented effectiveness of telerehabilitation across the whole spectrum of medical conditions (as presented above), managing patients at a distance, synchronously by telephone/ video or asynchronously by e-mail/ text messages can be more challenging than face to face clinical consultation and adds a level of medico-legal risk that can be difficult to measure. There were numerous other studies exploring the effectiveness of telerehabilitation which did not report any significant adverse events and therefore implying the safety of telerehabilitation services, however a review of those was beyond the scope of this article. We have decided to focus our research on studies where safety and quality were the principal outcomes of interest. Through our rapid search and evaluation, we found 18 articles from various domains of healthcare which explored safety and quality aspects of telehealth consultations. These ranged from evaluation of quality of communication during telephone consultations at out of hours centre (Derx *et al.* 2008, Graversen *et al.* 2020, Hildebrandt *et al.* 2003, 2006, Kilip *et al.* 2007, Montalto *et al.* 2010, Pasini *et al.* 2015, Warren *et al.* 2016), emergency service (Dale *et al.* 2004, Marsden 2000), general practice (McKinstry *et al.* 2010, 2011, Reisman and Brown 2015, Smits *et al.* 2016,), post stroke (Proffitt *et al.* 2017), orthopaedics (Jansson *et al.* 2020) and closed claim case review (Katz *et al.* 2007). It must be noted that these are the articles where safety was the principal outcome of interest.

Whilst it may be argued that emergency department consultations do not reflect the real life scenarios for rehabilitation case managers, we felt that safety and quality aspects of triage and clinical interviews in those settings may also be relevant in screening and triage for case management and therefore we decided to include these studies in our review. Following on from the Rehab Code (2015), we postulate that case management service provision can be divided into the following three aspects:

1. Triage – Process about identification and selection of appropriate management pathway
2. Immediate Needs Assessment – Detailed bio-psychosocial needs assessment
3. Ongoing case management/ treatment coordination – Implementing rehabilitation plans following needs assessment.

The key themes emerging from our review include:

- a. Telephone triages undertaken by skilled clinicians may be an effective means of identifying the correct pathway for client rehabilitation. The use of different triage professionals can influence the quality of telephone triage and it is recommended that non-clinicians are not included in the triage teams.
- b. For telephone assessments, there is evidence however that clinicians ask principally for medical information and less psychosocial or affective information is obtained than in face-to-face contacts.
- c. There is a significant positive correlation between the length of the telephone consultation and the quality of the communication, though optimum call durations for effective communication need further research. Currently, existing research indicates anywhere between 10 and 23 minutes consultation time.
- d. The key aspects of communication were checking whether the client has understood and accepted the advice provided and use of summarising techniques.
- e. Use of Clinical Decision Support Systems (CDSS) and algorithms helps enhance the quality of triage
- f. Some of the common telephone consultation errors included poor documentation, faulty triage decisions, incomplete history taking, failing to recognise the seriousness of condition, lack of policies and procedures for managing telecommunication and delayed communications.
- g. Patients had similar recall levels of the salient content of their consultations irrespective of whether these were conducted face-to-face or by telephone.
- h. System errors such as accessibility issues, software malfunction, inadequate training, understaffing or high workload and overly brief call-processing time requirements interfering with adequate assessments can also contribute to safety and quality of telephone consultations.
- i. There is limited research on the use of video consultations in community rehabilitation or case management settings; however there is a large body of underpowered randomised control trials which highlight high patient and staff satisfaction, similar clinical outcomes and (sometimes) modest cost savings compared to traditional consultations. These studies have not demonstrated any significant adverse events.
- j. For an effective video consultation, dependability and a good technical connection (to avoid lag) are important. If technical connection is high-quality, clinicians and patients tend to communicate in much the same way as in a face-to-face consultation. Minor technical breakdowns (e.g. difficulty establishing an audio connection before getting started, or temporary freezing of the picture) tend not to cause major disruption to the clinical interaction. Major breakdowns, however, disrupt the ethos and quality of the remote consultation and clinicians experience them as “unprofessional”.
- k. It is possible but difficult to undertake a limited physical examination via video conferencing, especially if the patient has monitoring equipment at home and is confident in using it. However, such examinations place a high burden on patients, who

need to not only take measurements but also ensure that the remote clinician is able to see that they are doing the examination correctly.

Based on the above findings, telephone and video consultations provide a safe and effective means of providing rehabilitation and case management services. However, some of the key requirements include skilled clinicians with appropriate training and clinician decision support systems, sufficient duration and workload management to allow clinicians to explore the psychosocial aspects of client presentation, communication skills training, standardised organisational policies and procedures and appropriate client training and system set up prior to the clinical consultation for effective video consultations.

As rehabilitation case management generally does not involve hands on interventions or physical examination, it can be argued that in most cases, an effective triage can be undertaken over the phone whilst a detailed immediate needs assessment can be undertaken over video consultation. As per (b) above, there is however a concern that the psychosocial aspects or an evaluation of home environment may not be effectively completed without a face to face home visit. This aspect needs further investigation through high quality research studies.

Acceptability of telerehabilitation by patients and healthcare professionals

Through this brief review we also looked at the acceptability of telerehabilitation by clients and healthcare professionals. Shulver *et al.* 2016 interviewed 17 participants who had participated in an individualized therapy programme, using a combination of face-to-face and video consults with therapists. The programme used 'off-the-shelf' technologies including iPads for videoconferencing and electronic FitBitR devices. The emergent themes from this study were that telerehabilitation is convenient, promotes motivation and self-awareness and fosters positive therapeutic relationships. It also confirmed previous research findings that telerehabilitation approaches are acceptable to older patients as long as sufficient training and guidance is provided (Shulver *et al.* 2016, Tousignant *et al.* 2011, Kairy *et al.* 2011). Hoas *et al.* (2016) highlighted that telerehabilitation provided emotional safety due to regular meetings and access to specialist advice.

Cottrell *et al.* (2017) interviewed 26 healthcare providers about their views on implementation of telerehabilitation within their service and most stated that this would make it much easier for patients to attend their appointments. One of the other aspects that emerged was that telerehabilitation could provide more flexibility in how services are delivered. Most participants acknowledged that telerehabilitation would be acceptable for review appointments, whilst a small number of participants felt that "*depending on the nature of the referral ... it could be used at any point*". Carrasqueiro *et al.* (2011) in their systematic review found that most studies presented positive levels of patient satisfaction, but they, along with Leibowitz *et al.* (2003) observed that satisfaction rates decreased when patients' initial expectations were not met.

Criteria for effective telerehabilitation case management

Based on the above findings, telerehabilitation is effective and safe means of service delivery for delivery of case management services for initial triage, immediate needs assessment as well as subsequent case management and treatment coordination phases. In addition, with the Institute of Registered Case Manager's current guidelines concerned with COVID-19, case managers must utilise a virtual first approach (IRCM 2020). However, there are several pre-requisites which must be fulfilled for an effective case management consultation. These can be divided into client, case manager and organisational factors:

1. Client related factors

- a. **Age:** There is a perception that an alternative to a face-to-face consultation is more suitable for younger patients who are greater users of technology. According to the office of national statistics (ONS) 99.2% of those aged between 16-24 years of age were internet users compared to 38.7% of those over 75 in 2016. However, data from our review indicated that older patients are equally amenable to use of telerehabilitation and virtual technologies. With adequate support and guidance, older patients may also be able to access video technology.
- b. **Safeguarding:** Consideration must be given to communication with children and young people who may feel less able to communicate effectively with clinicians and defer to their parents. Clinicians must also consider any safeguarding issues to evaluate whether a video consultation is appropriate.
- c. **Social class:** Patients with lower income groups may not have access to or be able to afford large data packages required for video streaming and therefore depend mainly on smartphone for their internet usage which may present challenges in assessment (e.g. home assessment).
- d. **Technical ability:** Whilst this belief was not found to be true in our review, there appeared to be a requirement to provide training and support (perhaps through use of pre-clinical call with an administrator) in the use of technology. These assumptions include patients require a level of familiarity, competence and confidence (both in technology and their own health) and an alternative to a face-to-face consultation is only for 'savvy' patients - those with access to, and ability to use technology.
- e. **Language barriers:** Telerehabilitation consultation can be challenging for clients who are unable to converse in English. Whilst an interpreter may be used, it can still be challenging to conduct such an assessment remotely (depending on the complexity of client's presentation).
- f. **Client's cognition and mental health:** For client's with cognitive or mental health impairments, remote consultations can present additional challenges and the case manager may struggle to complete comprehensive assessment.

- g. Client's with history of alcohol or substance misuse:** Similar to clients with cognitive impairment, remote case management may not be suitable for clients with a history of alcohol or substance misuse.

2. Case manager related factors

Like client, there are several aspects related to case manager which impact on their ability to deliver effective tele-consultations.

- a. Clinical skills:** As demonstrated in our review, effective telephone consultations require a high degree of clinical skill to identify the client presentation and decide on rehabilitation plan appropriately. Use of clinical decision support systems may also be beneficial.
- b. Communication skills:** Delivering clinical consultations remotely requires additional communication skills and manner beyond the face to face consultation. These are required to ensure smooth and effective discussion wherein the case manager allows the patient to tell their story but channels the conversation to ensure all relevant information is obtained.
- c. Technological skills:** Like clients, case managers may also need further training with technological elements of remote service delivery. Some may feel resistant to adapting whereas others may be innovators within the service. Additionally, as case managers may be working from home, it is important to ensure that they have enough speed and bandwidth to deliver video consultations.
- d. Environment assessment:** Remote consultations may not be suitable for completing in-depth home or environmental assessments.
- e. Documentation:** Sometimes recording of telephonic or remote consultations can be problematic as it may be a client request, quick follow up or may even be done whilst the case manager is travelling. It is imperative that case managers document each clinical consultation. If this has occurred while travelling, this should be recorded when it is safe to do so, even for quick follow ups whilst having been driving. Taking calls while driving comes with its own risks and where possible, should be avoided.

3. Organisational factors:

Successful implementation of telerehabilitation within case management also requires certain organisational elements to be considered.

- a. Policies and procedures:** Policies, procedures, rules of engagement and protocols need to be put in place to ensure smooth adoption of remote case management service delivery to ensure that team members are aware of their roles, responsibilities and escalation points.

- b. **Technological support/infrastructure:** Companies adopting new virtual technologies should consider the technical support and training for the staff members, who will provide the training and the associated costs.
- c. **Workload management:** Changing the mode of service delivery can lead to additional burden on admin staff as the pattern of appointments as well as enquires related to service delivery may change.
- d. **Data security:** Organisations utilising tele-case management need to ensure systems are in place for secure storage of emails, audio and digital files as well as call and video recording facilities.

Summary

Telerehabilitation is an interface that is well evidenced in offering a treatment modality to address unmet needs, however the degree of client satisfaction may vary across specialities and depend upon the criteria or care pathway applied within a service. While case management telerehabilitation specific studies are sparse, the safety and quality outcomes of telerehabilitation studies across the healthcare spectrum are available and have common key themes for consideration for case managers using telerehabilitation to apply. Giving consideration to the rapid literature review we have carried out, the three domains we have identified above are pivotal to a positive client experience. This may mean we need to offer more education of telerehabilitation to the client to increase their awareness and to ensure patient-centred outcomes remain paramount. Further research is required to test the criteria to confirm validity for telemedicine intervention opposed to home visits to demonstrate telerehabilitation is as a minimum, as effective as traditional face to face methods for case management services. Such research would be particularly useful when considering rehab clients with cognitive impairment and challenging family dynamics.

References

Calabrò, Rocco Salvatore et al. "Telerehabilitation in individuals with severe acquired brain injury: Rationale, study design, and methodology." *Medicine* (2018), 97(50): e13292. doi:10.1097/MD.00000000000013292

Campbell D G et al. "Suicide risk management: development and analysis of a telephone-based approach to patient safety." *Translational Behavioural Medicine* (2011), 1:372–383 doi: 10.1007/s13142-011-0055-x

Carrasqueiro, Sara et al. "Evaluation of telephone triage and advice services: a systematic review on methods, metrics and results." *Studies in health technology and informatics* (2011), 169: 407-11

Cason, Jana. "Telehealth: a rapidly developing service delivery model for occupational therapy." *International journal of telerehabilitation* (2014), 6(1), 29-35
doi:10.5195/ijt.2014.6148

Chartered Society of Physiotherapy: "COVID-19: guide for rapid implementation of remote consultations" Available from
https://www.csp.org.uk/system/files/publication_files/Remote%20consultations%20top%20tips%20v9.pdf ; last accessed 10/07/2020

Cottrell, Michelle A et al. "Service provider perceptions of telerehabilitation as an additional service delivery option within an Australian neurosurgical and orthopaedic physiotherapy screening clinic: A qualitative study." *Musculoskeletal science & practice* vol. 32 (2017): 7-16.
doi:10.1016/j.msksp.2017.07.008

Dale J et al. "Safety of telephone consultation for "non-serious" emergency ambulance service patients." *Quality of Safety in Health Care* (2004), 7: 363–373. doi:10.1136/qshc.2003.008003

Derxx H P et al. "Quality of communication during telephone triage at Dutch out-of-hours centres." *Patient Education and Counselling* (2009), 7: 174–178

Frederix I et al. "Medium-Term Effectiveness of a Comprehensive Internet-Based and Patient-Specific Telerehabilitation Program With Text Messaging Support for Cardiac Patients: Randomized Controlled Trial." *Journal of Medical Internet Research* (2015), 17(7)

Graversen D S, et al. "Quality of out-of-hours telephone triage by general practitioners and nurses: development and testing of the AQTT – an assessment tool measuring communication, patient safety and efficiency." *Scandinavian Journal of Primary Health Care* (2019,) 37:1, 18-29,
doi: 10.1080/02813432.2019.1568712

Graversen D S, et al. "Safety, efficiency and health-related quality of telephone triage conducted by general practitioners, nurses, or physicians in out-of-hours primary care: a quasi-experimental study using the Assessment of Quality in Telephone Triage (AQTT) to assess audio recorded telephone calls." *BMC Family Practice* (2020) 21:84 <https://doi.org/10.1186/s12875-020-01122-z>

Hildebrant D E, Westfall J M, Smith P C. "After-hours telephone triage affects patient safety." *The Journal of Family Practice* (2003), 52(3)

Hildebrant D E, Westfall J M et al. "Harm Resulting from Inappropriate Telephone Triage in Primary Care." *The Journal of the American Board of Family Medicine* (2006), 19(5)

Hoas, Hanne et al. "Adherence and factors affecting satisfaction in long-term telerehabilitation for patients with chronic obstructive pulmonary disease: a mixed methods study." *BMC medical informatics and decision making* (2016), 16(26), doi:10.1186/s12911-016-0264-9

IRCM COVID19 Guidance. 2020 Available at

<https://www.cmsuk.org/files/Together%20comms/COVID-19%20IRCM%20announcement%20final.pdf>

Last accessed 10/07/2020

Jansson M M et al. "The effects and safety of telerehabilitation in patients with lower-limb joint replacement: A systematic review and narrative synthesis." *Journal of Telemedicine and Telecare* 0(0) 1–19

Kairy D, Lehoux P, Vincent C, Visintin M. A systematic review of clinical outcomes, clinical process, healthcare utilization and costs associated with telerehabilitation. *Disability and Rehabilitation* (2009), 31: 427–447

Katz H P, Kaltsounis D, Halloran L, and Mondor M. "Patient Safety and Telephone Medicine Some Lessons from Closed Claim Case Review." *The Journal of General Internal Medicine* (2008), 23(5), 517–22 doi: 10.1007/s11606-007-0491-y

Killip S et al. "Patient Safety in After-hours Telephone Medicine." *Family Medicine: Clinical Research and Methods* (2007), 39(6), 404-409

Lake R et al. "The quality, safety and governance of telephone triage and advice services – an overview of evidence from systematic reviews." *BMC Health Services Research* (2017), 17:614 doi 10.1186/s12913-017-2564-x

Lattimer V et al. "Safety and effectiveness of nurse telephone consultation in out of hours primary care: randomised controlled trial." *BMJ* 1998;317:1054–9

Leibowitz, Ruth et al. "A systematic review of the effect of different models of after-hours primary medical care services on clinical outcome, medical workload, and patient and GP satisfaction." *Family practice* (2003), 20(3) 311-7. doi:10.1093/fampra/cm31

Marsden J. "An evaluation of the safety and effectiveness of telephone triage as a method of patient prioritization in an ophthalmic accident and emergency service." *Journal of Advanced Nursing* (2000), 31(2), 401-409

McKinstry B et al. "The quality, safety and content of telephone and face-to-face consultations: a comparative study." *BMJ Quality and Safety* (2010), 19:298e303 doi:10.1136/qshc.2008.027763

McKinstry B et al. "Comparison of the accuracy of patients' recall of the content of telephone and face-to-face consultations: an exploratory study." *BMJ Postgraduate Medical Journal* (2011). doi:10.1136/pgmj.2010.101287

Montalto M et al. "Testing the safety of after-hours telephone triage: Patient simulations with validated scenarios." *Australasian Emergency Nursing Journal* (2010), 13, 7–16

Pasini A, Rigon G and Vaona A. "A cross-sectional study of the quality of telephone triage in a primary care out-of-hours service." *Journal of Telemedicine and Telecare* (2015), 21(2) 68–72

Piotrowicz E. "Telerehabilitation in heart failure patients: The evidence and the pitfalls." *International Journal of Cardiology* (2016), 220, 408-413
<http://dx.doi.org/10.1016/j.ijcard.2016.06.277>

Profitt R et al. "Safety and Feasibility of a first-person view, full-body interaction game for telerehabilitation post-stroke." *International Journal of Telerehabilitation* (2018) 10(1)
doi:10.5195/ijt.2018.6250

Rahejeng I M. "Telehealth for Emergency Nursing Case Management in Rural or Remote Areas." *Philippine Journal of Medicine*, (2018), 5, doi: 10.13140/RG.2.2.23321.03688

Reissman A B and Brown K E. "Preventing Communication Errors in Telephone Medicine A Case-Based Approach." *Journal for General Internal Medicine* (2005), 20:959–963, doi: 10.1111/j.1525-1497.2005.0199.x

Richmond, Tammy et al. "American Telemedicine Association's Principles for Delivering Telerehabilitation Services." *International Journal of telerehabilitation* (2017), 9(2), 63-68.
doi:10.5195/ijt.2017.6232

Roganti M et al. "A quality assessment of systematic reviews on telerehabilitation: what does the evidence tell us?" *Ann Ist Super Sanità* (2015), 51(1), 11-18 doi: 10.4415/ANN_15_01_04

Royal College of Occupational Therapists "Coronavirus (COVID-19)" Available from <https://www.rcot.co.uk/coronavirus-covid-19-0> ; last accessed 10/07/2020

Ross, Shilpa; Curry, Natasha; Goodwin, Nick. "Case Management What is it and how it is best implemented" 2011, Available from https://www.kingsfund.org.uk/sites/default/files/Case-Management-paper-The-Kings-Fund-Paper-November-2011_0.pdf ; last accessed 10/07/2020

Smits M. "Telephone triage in general practices: A written case scenario study in the Netherlands." *Scandinavian Journal of Primary Health Care*, 34:1, 28-36, doi: 10.3109/02813432.2016.1144431

Tousignant M, Boissy P, Moffet H et al. Patients' satisfaction of healthcare services and perception with in-home telerehabilitation and physiotherapists' satisfaction toward technology for post-knee arthroplasty: an embedded study in a randomized trial. *Telemedicine Journal and e-Health* (2011), 17: 376–382

Warren L E G et al. "Analysis of After-Hours Patient Telephone Calls in Two Academic Radiation Oncology Departments: An Opportunity for Improvement in Patient Safety and Quality of Care." *American Society of Clinical Oncology* (2016), Vol 12(4) doi: 10.1200/JOP.2015.007583



Wheeler S Q et al. "Safety of Clinical and Non-Clinical Decision Makers in Telephone Triage: A Narrative Review." *Journal of Telemedicine and Telecare* (2015), Vol. 21(6) 305–322