

Cochrane in CORR®–Interactive Telemedicine: Effects on Professional Practice and Health Care Outcomes

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Importance of the Topic

The novel coronavirus (COVID-19) pandemic has accelerated the use and implementation of interactive telemedicine technologies, which are platforms that allow clinicians and patients to exchange information and communicate in real-time [6]. This trend has impacted all specialties of medicine, including orthopaedic surgery [2, 8, 14, 17–19]. However, the flood of fast-tracked papers relating to COVID-19, with discussions surrounding the validity of these rapidly produced manuscripts [12], can cloud clinicians'

decision-making when implementing telemedicine. Further, the use of these rapidly developing technologies is arguably premature, and can potentially be harmful when implemented without evidence to support their safety and efficacy.

The drive to implement telemedicine comes from its potential to improve patient access to care, health outcomes, and reduce healthcare costs; however, remote technology-based patient care is not a one-size-fits-all solution for all medical and surgical conditions. Each condition presents unique hurdles that the patient, provider, and technology

must overcome, including difficulty with and resistance to fitting telemedicine into routine practice, complications in the interaction between healthcare professionals, inconsistent patient satisfaction, patient (lack of) access to internet, and ethical concerns [15].

In a Cochrane review from 2015, Flodgren and colleagues [11], investigated the efficacy, costs, and acceptability of interactive telemedicine as an alternative, or in addition to, usual care across all medical specialties. Ninety-three randomized controlled trials were included (22,047 participants). The authors found that

A note from the Editor-in-Chief: We are pleased to publish the next installment of Cochrane in CORR®, our partnership between CORR®, The Cochrane Collaboration®, and McMaster University's Evidence-Based Orthopaedics Group. In this column, researchers from McMaster University and other institutions will provide expert perspective on an abstract originally published in The Cochrane Library that we think is especially important. We welcome reader feedback on our editorials as we do on all of our columns and articles; please send your comments to eic@clinorthop.org.

(Flodgren G, Rachas A, Farmer AJ, Inzitari M, Shepperd S. Interactive telemedicine: effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews* 2015, Issue 9. Art. No.: CD002098. DOI: [10.1002/14651858.CD002098.pub2](https://doi.org/10.1002/14651858.CD002098.pub2).)

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Cochrane Reviews are regularly updated as new evidence emerges and in response to feedback, and The Cochrane Library (<http://www.thecochranelibrary.com>) should be consulted for the most recent version of the review.

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interactive telemedicine in the management of chronic health conditions was equivalent to usual practice, but the cost implications and acceptability from patients and healthcare practitioners has not yet been elucidated.

Upon Closer Inspection

This Cochrane review discusses results that are of particular interest to orthopaedic surgeons and has implications on their future practice. As the abstract describes, the quality of evidence in telemedicine domain is high, however, there is a great deal of heterogeneity in the patient populations, healthcare practitioners, and types of interactive telemedicine interventions included. Most of the studies included in this Cochrane review pertained to heart failure and diabetes, with the bulk of interventions dealing with monitoring and/or providing treatment of chronic conditions, which provide little direct insight into the impact of telemedicine on patients with musculoskeletal injuries. Further, this review did not cover issues surrounding access to internet and telemedicine, or the ethics of providing care through telemedicine.

Only two studies included orthopaedic patients [13, 23]. These papers investigated participants attending outpatient clinics for a variety of specialty consultations or minor procedures and found no difference in patient satisfaction between telemedicine and face-to-face consultations, but reported more investigations ordered, higher healthcare costs, and decreased costs borne by the patient when care was provided via telemedicine. No patients with musculoskeletal injuries were included from a postoperative or rehabilitation perspective. Still, there are included studies that can be extrapolated to the orthopaedic populations; they reported no difference

in outcomes of patients undergoing immediate postoperative telemedicine assessments in solid organ transplant recipients [16], and for urological surgeries [9, 10]. While this Cochrane review concludes that interactive telemedicine works well in the monitoring of chronic conditions (although it is more expensive than “usual care”), it is our opinion that the several studies directly relevant to the practicing orthopaedic surgeon together can validate increased usage of telemedicine technologies in preoperative consultations and post-operative rounding/assessments of our patients.

Since this review has been completed, there has been a large expansion in the orthopaedic-specific evidence about telemedicine, in large part because of COVID-19, that likely necessitates an updated review of the literature. Randomized controlled trials have shown no change in patient satisfaction in remote orthopaedic consultations with both patient and systems cost savings [3, 4], and decreased length-of-stay in fast-tracked patients with total hip replacement [22]. Additional lower quality evidence has been published in various orthopaedic subspecialty patient populations such as pediatric and adult fractures [5, 20], spine [21], patients with long-term musculoskeletal injuries [7], and sports medicine [1], with generally positive results pertaining to patient outcomes and satisfaction, ultimately further validating uptake of telemedicine in clinical practice.

Take-home Messages

There is promising evidence presented in this Cochrane review, and otherwise, to support the continued uptake of telemedicine technologies in the orthopaedic world. In the proper settings,

orthopaedic patients can be safely be assessed pre and postoperatively through interactive telemedicine technologies, with maintained patient satisfaction.

Nonetheless, in a world with rapidly increasing demand for telemedicine solutions to provide musculoskeletal care, whether it be caused by a global pandemic or otherwise, our specialty needs to proceed with caution. Given the breadth of patients and clinical problems that orthopaedic surgeons manage on a daily basis, it is difficult to make generalizable, or blanket statements about the safety, efficacy, and cost-nature of telemedicine in orthopaedics. The need for prospective research data that are specific to different orthopaedic patient populations, clinical problems, and type of telemedicine utilized to deliver care to ultimately improve patient care and practice management cannot be overstated.

In addition, there are numerous stakeholders whose needs one must consider prior to executing and interpreting future studies on this topic. The various stakeholders include: patients, physicians and surgeons, physio- and occupational therapists, health system management, and society as a whole. Disease-specific outcome measures, patient satisfaction, healthcare professional workflow and efficiency, cost-effectiveness (from patient and system perspectives) and cost-utility must all be considered. In the case where the use of telemedicine is necessary or potentially helpful, upon integration into their practice, surgeons should make every attempt to gather data and feedback about the telemedicine system used in real time, through patient surveys, interpreting costing data, and following patient outcomes, to understand its impact on their patients, and on the healthcare systems in which they practice.

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