

Evidence check

16 July 2020

Rapid evidence checks are based on a simplified review method and may not be entirely exhaustive, but aim to provide a balanced assessment of what is already known about a specific problem or issue. This brief has not been peer-reviewed and should not be a substitute for individual clinical judgement, nor is it an endorsed position of NSW Health.

Resuming elective surgery - Post-surgery innovations

Evidence check question

1. What is the evidence for post-surgery innovations in an outpatient setting, such as virtual follow up and rehabilitation, in improving outcomes for patients who have undergone surgery?

In brief

Telerehabilitation

- Telerehabilitation has been shown to reduce pain and improve function, with no differences observed in rates of hospital readmissions or treatment-related adverse events following total hip or knee replacement for people with osteoarthritis, compared to usual care.(1) A further review on knee arthroplasty found that compared with face-to-face rehabilitation, telerehabilitation could achieve comparable pain relief, better Western Ontario and McMaster Universities Osteoarthritis Index improvement, significantly higher extension range and quadriceps strength.(2) Another review for this condition found patients experienced high levels of satisfaction with the use of telerehabilitation alone.(3)
- A hybrid model, consisting home-based cardiac rehabilitation with direct supervised centre-based cardiac rehabilitation showed similar improvement in functional capacity, no significant difference in changes in exercise duration, systolic or diastolic blood pressure or health-related quality of life compared to standard cardiac rehabilitation programs.(4)
- Physiotherapy with telerehabilitation has the potential to increase quality of life, is feasible, and is at least equally effective as usual care in surgical populations.(5)
- Evidence on telerehabilitation after surgical procedures on orthopaedic conditions were in favour of telerehabilitation in patients following total knee and hip arthroplasty. There was limited evidence in the upper limb interventions.(6)
- One review examined the feasibility of remote telemedicine connection to provide in auditory rehabilitation services through hearing aids and cochlear implants. There are significant concerns regarding internet bandwidth limitations for remote clinics and a paucity of research examining reimbursement and cost-effectiveness for services.(7)

Virtual follow up

- A review of telephone follow-up of patients after radical prostatectomy reported the psychoeducative intervention to manage the uncertainty about the disease and the treatment reduced the level of uncertainty and anguish it causes.(8)
- Studies on telephone follow-up for patient after myocardial revascularisation found statistically significant positive changes in the outcome measures of health-related quality of life, pain, physical functioning, mood symptoms, anxiety, knowledge about self-care measures, medication compliance and lipid profile.(9)
- A systematic review on telemedicine for post-discharge surgical care found that of studies that reported outcomes, the majority reported significant time, travel, and cost savings to patients without compromising clinical outcomes.(10) A broader review of telemedicine in surgical care found that telemedicine evaluation after surgery and follow-up visits were beneficial.(11)

Limitations

This study is limited to systematic reviews, and so some surgeries or interventions not yet evaluated in a systematic review would not be included.

Background

Telerehabilitation and virtual follow up can be applied in out-of-hospital settings.

Methods (Appendix 1)

PubMed and Google were searched on the 27 June 2020. Due to a large volume of literature, studies were limited to systematic reviews or meta-analysis.

Innovations included in this review were telerehabilitation and virtual follow up. Standard post-operative interventions such as rehabilitation or exercise were not included unless they specifically referred to virtual care.

Results

Table 2 Post-surgery innovations in an outpatient setting

Source	Summary
Peer reviewed sources	
Telerehabilitation	<ul style="list-style-type: none"> • Following total hip or knee replacement for people with osteoarthritis, compared to usual care, technology-based rehabilitation was more effective in reducing pain and improving function measured with the timed up-and-go test in people undergoing total knee replacement. No between-group differences were observed in rates of hospital readmissions or treatment-related adverse events in these studies.(1) • Another review in patients following total knee arthroplasty found that compared with face-to-face rehabilitation, telerehabilitation could achieve comparable pain relief, better Western Ontario and McMaster Universities Osteoarthritis Index improvement, significantly higher extension range and quadriceps strength.(2) Another review for this condition found that patients experienced high levels of satisfaction with the use of telerehabilitation alone. There was no significant difference in change in active knee extension and flexion in the home telerehabilitation group compared to the control group. The patients in the home telerehabilitation group showed improvement in physical activity and functional status similar to patients in the conventional therapy group.(3) • A hybrid model, consisting of home-based cardiac rehabilitation with direct supervised centre-based cardiac rehabilitation, showed patients had similar improvement in functional capacity. There was no significant difference in changes in exercise duration, systolic or diastolic blood pressure or health related quality of life, compared to standard cardiac rehabilitation programs.(4) • Physiotherapy with telerehabilitation has the potential to increase quality of life, is feasible, and is at least equally effective as usual care in surgical populations.(5) • Evidence on telerehabilitation after surgical procedures on orthopaedic conditions were in favour of telerehabilitation in patients following total knee and hip arthroplasty. There was limited evidence in the upper limb interventions.(6) • One review examined the feasibility of remote telemedicine connection to provide in auditory rehabilitation services through hearing aids and cochlear implants. There are significant concerns

Source	Summary
Peer reviewed sources	
	<p>regarding internet bandwidth limitations for remote clinics and a paucity of research examining reimbursement and cost-effectiveness for services.(7)</p> <ul style="list-style-type: none"> • Patients with lower-limb joint replacement, who completed telerehabilitation, showed an improvement in physical functioning that was similar to that of patients completing conventional in-person outpatient physical therapy without an increase in adverse events or resource utilisation.(12) • Results for cardiac and total knee arthroplasty patients were in favour of telerehabilitation.(13)
Virtual follow up	<ul style="list-style-type: none"> • A review of telephone follow up of patients after radical prostatectomy included two studies that tested interventions focused on psychological support and three that tested interventions focused on the physical effects of treatment. The psychoeducative intervention to manage the uncertainty about the disease and the treatment revealed statistically significant evidence in reducing the level of uncertainty and anguish it causes.(8) • Studies on telephone follow up for patients after myocardial revascularisation found statistically significant positive changes in the outcome measures of health-related quality of life, pain, physical functioning, mood symptoms, anxiety, knowledge about self-care measures, medication compliance, and lipid profile.(9) • A systematic review on telemedicine for post-discharge surgical care found that of studies that reported outcomes, the majority reported significant time, travel, and cost savings to patients without compromising clinical outcomes.(10) • A broader review of telemedicine in surgical care found that telemedicine evaluation after surgery and follow-up visits were beneficial.(11)

Appendix

PubMed search terms

("Enhanced Recovery" OR ERAS OR "early mobilisa*" OR "Resistance Training" OR "early discharge" OR ((virtual OR "tele*") AND (rehabilitation OR "follow up" OR "follow-up"))) AND ((((((surgery[MeSH Subheading]) OR (surgical procedures, operative[MeSH Terms])) OR (general surgery[MeSH Terms])) OR (surgi*[Title/Abstract])) OR (surge*[Title/Abstract]))) Limits: systematic reviews, date period 2010:2020.

=238 hits on 27 June 2020

Note: This was a combined search with another question in the resuming elective surgery suite of evidence checks. ERAS has been published in a separate evidence check.

Google search terms

Search 1: Virtual follow up surgery systematic review

Search 2: Virtual rehabilitation surgery systematic review

Search 3: Fast track rehabilitation surgery systematic review

References

1. Wang X, Hunter DJ, Vesentini G, Pozzobon D, Ferreira ML. Technology-assisted rehabilitation following total knee or hip replacement for people with osteoarthritis: a systematic review and meta-analysis. *BMC Musculoskelet Disord.* 2019;20(1):506.
2. Jiang S, Xiang J, Gao X, Guo K, Liu B. The comparison of telerehabilitation and face-to-face rehabilitation after total knee arthroplasty: A systematic review and meta-analysis. *J Telemed Telecare.* 2018;24(4):257-62.
3. Shukla H, Nair SR, Thakker D. Role of telerehabilitation in patients following total knee arthroplasty: Evidence from a systematic literature review and meta-analysis. *J Telemed Telecare.* 2017;23(2):339-46.
4. Wu C, Li Y, Chen J. Hybrid versus traditional cardiac rehabilitation models: a systematic review and meta-analysis. *Kardiol Pol.* 2018;76(12):1717-24.
5. van Egmond MA, van der Schaaf M, Vredeveld T, Vollenbroek-Hutten MMR, van Berge Henegouwen MI, Klinkenbijn JHG, et al. Effectiveness of physiotherapy with telerehabilitation in surgical patients: a systematic review and meta-analysis. *Physiotherapy.* 2018;104(3):277-98.
6. Pastora-Bernal JM, Martín-Valero R, Barón-López FJ, Estebanez-Pérez MJ. Evidence of Benefit of Telerehabilitation After Orthopedic Surgery: A Systematic Review. *J Med Internet Res.* 2017;19(4):e142.
7. Bush ML, Thompson R, Irungu C, Ayugi J. The Role of Telemedicine in Auditory Rehabilitation: A Systematic Review. *Otol Neurotol.* 2016;37(10):1466-74.
8. da Mata LR, da Silva AC, Pereira Mda G, de Carvalho EC. Telephone follow-up of patients after radical prostatectomy: a systematic review. *Rev Lat Am Enfermagem.* 2014;22(2):337-45.
9. Furuya RK, Mata LR, Veras VS, Appoloni AH, Dantas RA, Silveira RC, et al. Original research: telephone follow-up for patients after myocardial revascularization: a systematic review. *Am J Nurs.* 2013;113(5):28-31; quiz 52, 40.
10. Gunter RL, Chouinard S, Fernandes-Taylor S, Wiseman JT, Clarkson S, Bennett K, et al. Current Use of Telemedicine for Post-Discharge Surgical Care: A Systematic Review. *J Am Coll Surg.* 2016;222(5):915-27.
11. Asiri A, AlBishi S, AlMadani W, ElMetwally A, Househ M. The Use of Telemedicine in Surgical Care: a Systematic Review. *Acta Inform Med.* 2018;26(3):201-6.

12. Jansson MM, Rantala A, Miettunen J, Puhto AP, Pikkarainen M. The effects and safety of telerehabilitation in patients with lower-limb joint replacement: A systematic review and narrative synthesis. *J Telemed Telecare*. 2020:1357633x20917868.
13. Agostini M, Moja L, Banzi R, Pistotti V, Tonin P, Venneri A, et al. Telerehabilitation and recovery of motor function: a systematic review and meta-analysis. *J Telemed Telecare*. 2015;21(4):202-13.

Evidence checks are archived a year after the date of publication

SHPN: (ACI) 210318 | TRIM: ACI/D20/2511-06