

# Clinical guideline recommendations on the use of digital services in rehabilitation

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## Abstract

*Aim:* To determine what clinical guidelines recommend on the use of digital services in rehabilitation. *Methods:* We searched the Guidelines International Network (GIN) database and undertook additional handsearching for NICE and British Society of Rehabilitation Medicine (BSRM) guidelines to identify evidence-based recommendations on the use of digital services in rehabilitation. *Results:* We screened 94 guidelines and included 41 recommendations (from 13 guidelines), published between January 2012 and June 2022. Most of the included recommendations related to using digital services to support information sharing, monitoring and organisation of care. Relatively few practice recommendations specifically identified clinician involvement for intervention delivery, and contextual information was often reported incompletely. Inclusiveness of rehabilitation was considered broadly through the provision of different modes of delivery. *Overall Conclusion:* Investment in knowledge translation could help to support greater implementation of evidence-based guideline recommendations. Clearer definition of digital services and the professional scope of rehabilitation practitioners may also help to translate recommendations into practice.

## Background

We undertook this review to determine evidence-based, clinical guidance on the use of digital services in rehabilitation. We set out to collate this guidance to inform wider exploration of digital innovation across the East of England region, as part of a collaboration between Eastern AHSN, the East of England Rehabilitation Network and East of England Trauma Network. Understanding digital exclusion is also key to the wider collaboration and efforts to address health inequalities. A recent community consultation facilitated by the Norwich Institute for Health Ageing and involving 53 participants found 'internet resources were thought to be not inclusive of everyone's technical ability or access' (Norwich Institute of Health Ageing, 2022).

More broadly, this review is intended to be used as a resource alongside guidelines to support clinical decision-makers and researchers involved in their implementation. As such, it is anticipated this review could help to bridge gaps between guideline production and implementation in practice and research.

It is important to note that both 'rehabilitation' and 'digital services' can have different meanings for different people. For this review, we have defined and explained terms as follows:

## Rehabilitation

The World Health Organization (WHO) defines rehabilitation as 'a set of interventions designed to optimize functioning and reduce disability in individuals with health conditions in interaction with their environment' (WHO, 2021).

## Digital services

Digital services include a wide range of technologies and ways of working that may be used to support healthcare systems. The purpose of these services may be to facilitate delivery of a health intervention or organisation of care. Within a healthcare context, digital services can serve as a communication support tool. Many digital services are already embedded in hospital systems, such as electronic communication systems for staff. There has also been an increase in remote delivery of patient care since the COVID-19 pandemic, as well as the development of digital health innovations, such as smartphone applications.

## Review Question

What do clinical guidelines recommend on the use of digital services in rehabilitation?

## Objectives

- To identify clinical guideline recommendations relevant to the use of digital services in rehabilitation.
- To provide contextual information on clinical guideline recommendations, and identify implications for future practice and research.

## Methods

### Inclusion criteria

We included clinical guidelines published between 1 January 2012 and 7 June 2022 about rehabilitation for any condition. We considered guidelines published worldwide but restricted inclusion to guidelines available in the English language. New and updated reviews were eligible for inclusion.

### Exclusion criteria

We excluded standards of professional practice that were not underpinned by a systematic review of the evidence base.

### Search strategy

One person (KJ) searched the Guidelines International Network (GIN) database for published guidelines about rehabilitation. Full text guidelines were then searched manually by one person

(KJ) for any clinical guideline recommendation relating to the use of digital services, guided by a list of prespecified search terms listed in Appendix 1.

Additional handsearching was undertaken for UK guidelines relevant to rehabilitation. Another Eastern AHSN Advisor and a Coordinator (LN and GC) searched NICE and British Society of Rehabilitation Medicine (BSRM) repositories using the same criteria as above.

## Data collection and reporting

One Eastern AHSN Advisor (KJ) retrieved clinical guidelines from the GIN database and collated practice and research recommendations for consideration. These collated recommendations were reviewed by a Senior Advisor for the wider project at Eastern AHSN (AM) along with three further members of Eastern AHSN. A second person (LN) checked the GIN database for any additional guideline recommendations for consideration. Uncertainties for inclusion or exclusion were discussed and agreed.

Recommendations identified through additional handsearching for UK guidelines (by LN and GC) were reviewed by at least two other people (AM and KJ) to agree eligibility. One person collated the recommendations (KJ) for presentation as Summary of Recommendation Tables (SORT) 1-11, organised alphabetically and from the most recent to oldest publication years. Another person (from AM, LN and JG) checked data entry.

## Results

### Search results

On 9 May 2022, a search of the GIN database retrieved 84 records of published guidelines about rehabilitation. An update search on 7 June 2022, retrieved a total of 85 records, including two additional publications and one removal of a publication since the previous search. Eleven guidelines were initially identified for inclusion (by KJ), but one was excluded following discussion as it provided standards of practice and delivery without underpinning systematic review of the evidence base (European Region World Physiotherapy Professional Issues Working Group, 2018; see References excluded following discussion). Dual assessment (by LN) identified one further guideline however this was subsequently excluded on the basis that the recommendation did not explicitly refer to the use of digital services (Tunkel *et al.*, 2014; see References excluded following discussion). As such, a total of 75 records were excluded from our review of the GIN database and we identified a total of 10 guidelines with 27 relevant recommendations (23 practice recommendation and 4 research recommendations; see Appendices 2 and 3).

Additional handsearching of NICE and British Society of Rehabilitation Medicine repositories was undertaken in June 2022 (by LN and GC). These searches initially identified 10 further guidelines not captured by the GIN search database. Following discussion, one duplicate was removed, and six guidelines were subsequently excluded because (i) they were principles or standards of practice and recommendations were not underpinned by systematic review of the evidence base (n=3) or (ii) recommendations did not explicitly refer to the use of digital services (n=3) (see References excluded following discussion). From the three included guidelines, we identified 14 recommendations as being relevant to the use of digital services in rehabilitation (14 practice recommendations and no research recommendation; see Appendix 2).

Recommendations that specifically identified clinician involvement for intervention delivery were highlighted in blue (4/23 practice recommendations on neurological and psychiatric management and 1/4 research recommendations on musculoskeletal management post-surgery).

## Grading of the evidence

NICE guidelines applied the GRADE approach to assessing the certainty of the evidence underpinning practice recommendations (i.e., high, moderate, low or very low certainty evidence). Other guidelines published in the last five years referred to levels of evidence in terms of the type of evidence. The Qatari Ministry of Public Health outlined levels of evidence from 1 to 3, whereby 1 represented the highest level of evidence (such as meta-analysis) and 3 represented the lowest level of evidence (such as expert opinion only) (Ministry of Public Health Qatar (2020). A similar focus on study design was used in other UK guidance but using levels of evidence from 1 to 4 (Goebel, Barker, Turner-Stokes L; Guideline Development Group, 2018) or from 1++ to 4 (Scottish Intercollegiate Guidelines Network, 2017).

## Practice recommendations

We identified 37 practice recommendations relating to the use of digital services in rehabilitation. Just over half of these recommendations were published in the last five years, between 2017 and 2022 (19/37). Most included guidelines applied to European countries (8/11), with 20 recommendations published in guidelines applicable in England.

Included practice recommendations were published in 2022 (n=7 from 1 guideline), 2021 (n=6 from 1 guideline), 2020 (n=3 from 2 guidelines), 2018 (n=1 from 1 guideline), 2017 (n=2 from 1 guideline), 2014 (3 from 2 guidelines), 2013 (n=5 from 2 guidelines) and 2012 (n=10 from 1 guideline).

We included seven recommendations that related to assistive technology without specifying digital services, highlighting some ambiguity in the definition. Only 16% of practice recommendations specifically identified clinician involvement for intervention delivery (6/37). Where reported, the care setting tended to be in the community and practice recommendations mostly related to adults. Six of the eleven included guidelines targeted neurological or psychiatric conditions; other conditions included traumatic injury, myalgic encephalomyelitis, chronic regional pain syndrome, cardiovascular disease and chronic obstructive pulmonary disease.

Thematically, 27% of practice recommendations on the use of digital services specifically referred to 'rehabilitation' (10/37). Several other recommendations referred to 'exercise', 'retraining' or 'therapy'. The sharing of information and organisation of care were a key focus for most practice recommendations on the use of digital services in rehabilitation.

## Research recommendations

We identified four research recommendations relating to the use of digital services in rehabilitation. None of these recommendations were published in England. The recommendations were published in guidelines from 2020 (n=1), 2017 (n=2) and 2016 (n=1). Only one recommendation specifically identified clinician involvement for intervention delivery. Population age group and care setting were incompletely reported across research recommendations. In terms of health conditions, the research recommendations targeted osteoarthritis, cardiovascular disease and colorectal cancer.

Thematically, none of the research recommendations specifically referred to 'rehabilitation' although one recommendation referred to 'therapy'. Other research recommendations appeared to focus on the use of digital services for monitoring patients more broadly.

## Discussion

### Main findings

We screened 94 guidelines and included 37 practice recommendations and 4 research recommendations on the use of digital services in rehabilitation from 13 guidelines. Most of the practice recommendations related to people living with neurological or psychiatric conditions. Relatively few recommendations specifically referred to 'rehabilitation' or clinician involvement. The sharing of information, organisation of care and patient monitoring were common themes for recommendations on the use of digital services in rehabilitation. However, we also found some ambiguity in the professional scope of rehabilitation and definition of digital services.

Included guidelines applied different methodologies for grading the evidence underpinning practice recommendations. These differences made it difficult to compare the strength of the evidence supporting guideline recommendations. In England, NICE guideline development applies the GRADE approach to assessing the certainty of evidence underpinning recommendations. This approach involves grading the evidence as high, moderate, low or very-low certainty based on an assessment of study limitations, inconsistency, indirectness, imprecision and publication bias (Schünemann *et al.*, 2013). Whilst the GRADE approach is internationally recognised for assessing certainty in the evidence, other tools have also been widely used over the years to grade the evidence. Most of the included practice recommendations were based on a combination of research evidence and expert opinion. In the absence of research evidence, some recommendations were made on expert opinion alone. This information may help to inform gaps in the evidence base, however, caution is advised for interpreting the certainty of evidence on this basis as the availability of research evidence may or may not increase the certainty of the evidence. It was also noted that several recommendations were structured using examples of digital technology. As such, the main recommendation statement could be based on research evidence, while the example might be based on expert opinion.

### Applying recommendations to the local context

It is important to recognise variations in the local context that may affect the applicability of guideline recommendations. For example, a recommendation relating to resource availability might be specific to a particular region or country. However, other recommendations may transcend national boundaries and different healthcare professions. The supporting rationale for implementing each guideline recommendation will need to be established at a local level in consultation with the full guideline. We found that more than half of included practice recommendations were published in England although the care setting was not always clearly reported.

### Health inequality considerations

In England, the NHS has adopted 'CORE20PLUS5' as an approach to reducing health inequalities. 'CORE20' represents the most deprived proportion of society, 'PLUS' relates to underserved population groups, and '5' relates to the following five clinical areas of focus and smoking cessation which positively impacts them: maternity care; severe mental illness;

chronic respiratory disease; early cancer diagnosis; hypertension and lipid management (NHS England, 2022).

It was beyond the scope of this review to determine the representation of 'CORE20PLUS' in the evidence base underpinning guideline recommendations. However, two practice recommendations (from one guideline) aligned to serious mental illness and another practice recommendation aligned to chronic respiratory disease. Included recommendations on cardiac management are also anticipated to be relevant to addressing hypertension and lipid management. One research recommendation related to cancer care although the focus was post-diagnosis.

'Digital inclusion/exclusion' was not referred to in any of the included recommendations; awareness of this factor in the delivery of rehabilitation has perhaps increased in more recent years and with expectations for remote working during the COVID-19 pandemic. Nevertheless, the inclusiveness of rehabilitation was considered more broadly through the availability of different modes of delivery.

### **Alignment with WHO recommendations on digital interventions for health system strengthening**

Included guideline recommendations mostly emphasise a need for patient choice in the mode of delivery of their care. This finding is consistent with the WHO recommendation on client-to-provider telemedicine - Recommendation 4:

*'WHO recommends client-to-provider telemedicine:*

- *under the condition that it complements, rather than replaces, face-to-face delivery of health services;*
- *and in settings where patient safety, privacy, traceability, accountability and security can be monitored.'* (WHO, 2019)

### **Limitations of the review process**

Currently, guideline search filters are less advanced than study search filters, requiring more manual screening to identify recommendations relevant to the use of digital services in rehabilitation. However, as with study screening for systematic reviews, the process of screening guidelines would benefit dual, independent assessment to reduce the risk of inaccuracies in data extraction. In future, automation of guideline screening might assist with the screening of large volumes of text. However, we found that 'digital services' were incompletely defined and we discussed uncertainties for inclusion, such as recommendations on assistive technology, as part of the review process. We also identified a number of recommendations relating more broadly to access to health services but did not include these unless they made specific reference to search terms for digital services.

We included guidelines dating back ten years although they often require updating within this timespan. In the future, a 'living review' of guidelines could help to ensure that decision-making is informed by the most up-to-date guidance. It was also beyond the scope of this current review to assess the evidence base supporting guideline recommendations. However, included guidelines were reported to be supported by a systematic review of the evidence base.

Commented [In1]: Smoking cessation

## Conclusions

The collation of recommendations in this review could help to inform decision-making on the use of digital services in rehabilitation across health and social care settings. We identified 41 recommendations (from 13 guidelines) relating to the use of digital services in rehabilitation, published between January 2012 and June 2022. The focus of these recommendations was mostly on using digital services to support information sharing, monitoring and organisation of care. Relatively few practice recommendations specifically identified clinician involvement for intervention delivery, and contextual information was often reported incompletely. The inclusiveness of rehabilitation was considered broadly through the provision of different modes of delivery.

Further investment into knowledge translation could support greater implementation of evidence-based guideline recommendations. These recommendations could be structured to include more complete reporting of contextual information and apply a more consistent approach to grading of the supporting evidence. Greater clarity on the professional scope of rehabilitation practitioners and definition of digital services could also assist implementation. In addition, living review of guideline recommendations may help to ensure that practice and research are informed by the most up-to-date clinical guidance.

## Contributions to review

KJ: development of review scope; running of GIN database search; collation of guidelines and extraction of guideline recommendations; facilitation of discussion to agree included recommendations; dual assessment of additional NICE and BSRM guidelines; drafting of review.

LN: running of additional NICE database search; collation of guidelines and extraction of guideline recommendations; dual assessment of GIN database results; contribution to the finalisation of the review.

GC: running of additional BSRM database search; collation of guidelines and extraction of guideline recommendations; contribution to the finalisation of the review.

JF: contribution to discussions on recommendations identified for inclusion and uncertainties; contribution to the finalisation of the review.

JG: contribution to the development of the review scope and contribution to finalisation of the review.

AM: contribution to the development of the review scope; overseeing review completion as part of the wider project; facilitating feedback from the project team; contribution to the finalisation of the review.

## Acknowledgements

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## References

### Included guidelines

American Academy of Orthopaedic Surgeons (2020). Management of Glenohumeral Joint Osteoarthritis Evidence-Based Clinical Practice Guideline. Available at: <https://www.aaos.org/gjocpg> (Accessed: 9 June 2022).

Criner, G.J., Bourbeau, J., Diekemper, R.L., Ouellette, D.R., Goodridge, D., Hernandez, P., Curren, K., Balter, M.S., Bhutani, M., Camp, P.G., Celli, B.R., Dechman, G., Dransfield, M.T., Fiel, S.B., Foreman, M.G., Hanania, N.A., Ireland, B.K., Marchetti, N., Marciniuk, D.D., Mularski, R.A., Ornelas, J., Road, J.D., and Stickland, M.K. (2015). Prevention of acute exacerbations of COPD: American College of Chest Physicians and Canadian Thoracic Society Guideline. *Chest*, 147(4):894-942. doi: 10.1378/chest.14-1676.

Goebel, A., Barker, C.H., Turner-Stokes, L., and the Guideline Development Group (2018). Complex regional pain syndrome in adults: UK guidelines for diagnosis, referral and management in primary and secondary care. London: Royal College of Physicians.

Institute of Health Sciences of Aragon (2014). Clinical Practice Guideline for the Management of Patients with Parkinson's Disease. Available at: [https://portal.guiasalud.es/wp-content/uploads/2018/12/GPC\\_546\\_Parkinson\\_IACS\\_comp\\_en.pdf](https://portal.guiasalud.es/wp-content/uploads/2018/12/GPC_546_Parkinson_IACS_comp_en.pdf) (Accessed: 9 June 2022).

Institut national d'excellence en santé et en services sociaux – Ontario Neuro Trauma Foundation (2012). Clinical Practice Guideline for the Rehabilitation of Adults with Moderate to Severe TBI (Traumatic Brain Injury). Available at: <https://braininjuryguidelines.org/modtosevere/> (Accessed: 9 June 2022).

Members of the Colorectal Cancer Survivorship Guideline Development Group (2016). Follow-up care, surveillance protocol, and secondary prevention measures for survivors of colorectal cancer. Toronto (ON): Ontario Health (Cancer Care Ontario). Program in Evidence-based Care Evidence-Based Series No.: 26-2 Version 3.

National Institute for Health and Care Excellence (2022). Rehabilitation after traumatic injury [NICE Guideline 211]. Available at: <https://www.nice.org.uk/guidance/ng211/> (Accessed: 9 June 2022).

National Institute for Health and Care Excellence (2021). Myalgic encephalomyelitis (or encephalopathy)/chronic fatigue syndrome: diagnosis and management [NICE Guideline 206]. Available at: <https://www.nice.org.uk/guidance/ng206/> (Accessed: 9 June 2022).

National Institute for Health and Care Excellence (2020). Rehabilitation for adults with complex psychosis [NICE Guideline 181]. Available at: <https://www.nice.org.uk/guidance/ng181> (Accessed: 9 June 2022).

National Institute for Health and Care Excellence (2013). Stroke rehabilitation in adults [Clinical Guideline 162 181]. Available at: <https://www.nice.org.uk/guidance/cg162> (Accessed: 9 June 2022).

Ministry of Public Health Qatar (2020). National Clinical Guideline: The Diagnosis and Management of Stroke and Transient Ischaemic Attack. Available at: <https://guidelines.ebmportal.com/quality-assurance-standards-physiotherapy-practice-and-delivery> (Accessed: 9 June 2022).



Scottish Intercollegiate Guidelines Network (2017). Cardiac Rehabilitation (SIGN 150). Available at: <https://www.sign.ac.uk/media/1047/sign150.pdf> (Accessed: 9 June 2022).

Scottish Intercollegiate Guidelines Network (2013). Brain Injury Rehabilitation in adults (SIGN 130). Available at: <https://www.sign.ac.uk/media/1068/sign130.pdf> (Accessed: 9 June 2022).

## References excluded following discussion

British Society of Rehabilitation Medicine (2021). Standards for specialist rehabilitation for community dwelling adults – update of 2002 standards. Available at: <https://www.bsrn.org.uk/downloads/2021-v9.3-22-3-21-speccommunitystandards-summary-fortheweb-clean.pdf> (Accessed 9 June 2022).

British Society of Rehabilitation Medicine (2018). Amputee and Prosthetic Rehabilitation – Standards and Guidelines, 3rd Edition; Report of the Working Party (Co-Chairs: Hanspal, R.S., and Sedki, I). British Society of Rehabilitation Medicine, London. Available at: <https://www.bsrn.org.uk/downloads/prosthetic-amputeerehabilitation-standards-guidelines-3rdedition-webversion.pdf> (Accessed 9 June 2022).

European Region World Physiotherapy Professional Issues Working Group (2018). Quality Assurance Standards of Physiotherapy Practice and Delivery. Available at: [https://www.erwcppt.eu/physiotherapy\\_and\\_practice/standards\\_of\\_practice](https://www.erwcppt.eu/physiotherapy_and_practice/standards_of_practice) (Accessed: 9 June 2022).

National Institute for Health and Care Excellence (2022). myCOPD for managing chronic obstructive pulmonary disease [Medical Technologies Guidance 68]. Available at: <https://www.nice.org.uk/guidance/mtg68/> (Accessed: 9 June 2022).

National Institute for Health and Care Excellence (2020). Acute coronary syndromes [NICE guideline 185]. Available at: <https://www.nice.org.uk/guidance/ng185> (Accessed 9 June 2022).

NHS England (2016). Commissioning guidance for rehabilitation. Available at: <https://www.england.nhs.uk/wp-content/uploads/2016/04/rehabilitation-comms-guid-16-17.pdf> (Accessed: 9 June 2022).

Royal College of Physicians (2021). Clinical guide for the management of stroke patients during the COVID-19 pandemic. Specialty guides for patient management during the COVID-19 pandemic.

Tunkel, D.E., Bauer, C.A., Sun, G.H., Rosenfeld, R.M., Chandrasekhar, S.S., Cunningham, E.R. Jr., Archer, S.M., Blakley, B.W., Carter, J.M., Granieri, E.C., Henry, J.A., Hollingsworth, D., Khan, F.A., Mitchell, S., Monfared, A., Newman, C.W., Omole, F.S., Phillips, C.D., Robinson, S.K., Taw, M.B., Tyler, R.S., Waguespack, R., and Whamond, E.J. (2014). Clinical practice guideline: tinnitus. *Otolaryngology–Head and Neck Surgery*, 151(2 Suppl):S1-S40. doi: 10.1177/0194599814545325.

## Additional references

Laver, K.E., Adey-Wakeling, Z., Crotty, M., Lannin, N.A., George, S., and Sherrington, C. Telerehabilitation services for stroke. *Cochrane Database of Systematic Reviews 2020*, Issue 1. Art. No.: CD010255. DOI: 10.1002/14651858.CD010255.pub3 (Accessed 15 June 2022).

NHS England (2022). Core20PLUS5 – An approach to reducing health inequalities. Available at: <https://www.england.nhs.uk/about/equality/equality-hub/national-healthcare-inequalities-improvement-programme/core20plus5/> (Accessed 28 July 2022).

Norwich Institute of Health Ageing (2022). NIHA Co-production partnership. Key findings from a listening exercise.

Schünemann, H., Brožek, J., Guyatt, G., and Oxman, A., editors (2013). GRADE handbook for grading quality of evidence and strength of recommendations. Updated October 2013. The GRADE Working Group, 2013. Available from [guidelinedevelopment.org/handbook](http://guidelinedevelopment.org/handbook).

WHO (2021). Rehabilitation. Available at: <https://www.who.int/news-room/fact-sheets/detail/rehabilitation> (Accessed 28 July 2022).

# Appendices

## Appendix 1

Search terms for digital services, adapted from Laver *et al.* (2020).

ehealth  
mobile health  
mhealth  
telehealth  
telemedicine  
telespeech  
teleOT  
telerehabilitation  
teletherapy  
telehomecare  
telecoaching  
telepractice  
telegame  
exergame  
teleconsultation  
teleconference  
telecommunication  
telemetry  
videoconsultation  
videoconferencing  
computer communication  
networks  
remote consultation  
personal digital assistant  
remote sensing technology  
activity tracker  
pedometry  
accelerometry  
actigraphy  
virtual reality  
virtual environment  
video  
webcam  
web  
website  
internet  
electronic mail  
email  
text message  
computer  
microcomputer  
minicomputer  
mobile application

app  
mobile phone  
cell phone  
smartphone  
android  
tablet  
device  
telephone  
phone

## Appendix 2

### Summary Of Recommendations Table 1 (SORT1), year 2022

Recommendation(s):
<p><b>'Rehabilitation programmes of therapies and treatments. Intensive rehabilitation programmes (1.5.4).</b> When providing intensive rehabilitation programmes: offer education and learning materials...to prepare people for intensive rehabilitation, for example, 1 week of remote learning followed by a (for example, 3-week) residential or outpatient programme'</p> <p>Recommendation based on expert opinion of guideline committee.</p>
<p><b>'Principles for sharing information and involving family and carers (1.6.4).</b> In discussions and when giving information to people, and their family members or carers (as appropriate), use clear language, and tailor the timing, content and delivery of information to the needs and preferences of the person. Information should be... offered in face-to-face (in person or remotely by video link) discussions, and in a suitable format, for example, digital, printed, braille or Easy Read'</p> <p>Recommendation based on research evidence and expert opinion of guideline committee.</p>
<p><b>'Coordination of rehabilitation care in hospital. When transferring between services and settings (1.7.8).</b> When people transfer between service providers or settings (for example, wards, hospitals and inpatient rehabilitation facilities), share information (with the person's consent) by providing a detailed verbal and written or online handover (for example, the rehabilitation plan and the person's progress against it) and let the person know this has been done. Ensure information is promptly communicated:</p> <ul style="list-style-type: none"> <li>• to those coordinating and delivering rehabilitation in the new setting or service</li> <li>• to the person, and family members and carers (as appropriate)</li> <li>• to any other service providers involved in the person's care and support.'</li> </ul> <p>Recommendation based on research evidence and expert opinion of guideline committee.</p>
<p><b>'Coordination of rehabilitation care at discharge. Planning for rehabilitation and other support following discharge (1.8.19).</b> If a person cannot travel to rehabilitation appointments, offer telephone or video consultations, or rehabilitation in the person's home.'</p> <p>Recommendation based on research evidence and expert opinion of guideline committee.</p>
<p><b>'Coordination of rehabilitation care at discharge. Planning for rehabilitation and other support following discharge (1.8.20).</b> Consider arranging telephone or video consultations or rehabilitation in the person's home, rather than in a clinic or hospital setting (for example, if the person needs help to learn to live independently in their own home).'</p> <p>Recommendation based on research evidence and expert opinion of guideline committee.</p>
<p><b>'Commissioning and organisation of rehabilitation services. Organisation (1.10.10).</b> Consider technology-enabled follow-up, support and rehabilitation sessions if people request</p>

more local, accessible therapy or if rehabilitation practitioners are not available in their area, for example, in rural areas.'

Recommendation based on research evidence and expert opinion of guideline committee.

**Rehabilitation after spinal cord injury. Maintaining mobility and movement (1.15.27).** Assess people's needs and refer them to specialist services without delay if assistive technology, such as environmental control systems, is needed.

Recommendation based on research evidence and expert opinion of guideline committee.

Guideline	Guideline stakeholders	Country	Care setting	Population
<a href="#">Rehabilitation after traumatic injury [NG211]</a>	<p>Guideline producer: National Institute for Health and Care Excellence (NICE)</p> <p>Target user(s): 'Healthcare professionals, social care practitioners, commissioners and providers of rehabilitation services, members of the public who have experienced traumatic injury, their families and carers' (p.6)</p>	England	Including home/residential, outpatient health and social care	<p>Condition: traumatic injury (defined as 'any injury that requires admission to hospital at the time of injury' except management of traumatic brain injury, which will be addressed in a separate guideline)</p> <p>Age group: children, young people and adults</p>

#### Summary Of Recommendations Table 2 (SORT2), year 2021

Recommendation(s):

**'Information and support. Communication (1.6.2).** When providing information for children and young people with ME/CFS, take into account their age and level of understanding, symptoms and any disabilities or communication needs. Use interactive formats such as...digital media, for example video or interactive apps.'

Recommendation based on research evidence and expert opinion of guideline committee.

**'Access to care and support (1.8.1).** Health and social care organisations should ensure that people with ME/CFS can use their services by... providing care flexibly to the person's needs, such as by online or phone consultations or making home visits.'

Recommendation based on research evidence and expert opinion of guideline committee.
<p><b>'Access to care and support. Maintaining independence (1.8.5).</b> If a person with ME/CFS needs support at home, carry out a social care needs assessment. As a minimum, record and provide information and support on...access to technology, including internet access..'</p> <p>Recommendation based on research evidence and expert opinion of guideline committee.</p>
<p><b>'Supporting people with ME/CFS in work, education and training (1.9.4).</b> Health and social care professionals should work with training and education services to... discuss a flexible approach to training and education – this could include adjustments to the school day, online learning or education at home and using assistive equipment.'</p> <p>Recommendation based on research evidence and expert opinion of guideline committee.</p>
<p><b>'Managing ME/CFS. Energy Management (1.11.7).</b> Make self-monitoring of activity as easy as possible by taking advantage of any tools the person already uses, such as an activity tracker, phone heart-rate monitor or diary.'</p> <p>Recommendation based on expert opinion of guideline committee.</p>
<p><b>'Care for people with or very severe ME/CFS. Access to care and support (1.17.6).</b> Service providers should be proactive and flexible in delivering services to people with severe or very severe ME/CFS, who may have particular difficulty accessing services and articulating their needs. This could include home visits, online or phone consultations, supplying written communication, and supporting their applications for aids and <b>severe</b> appliances.'</p> <p>Recommendation based on expert opinion of guideline committee.</p>

Guideline	Guideline stakeholders	Country	Care setting	Population
<p><a href="#">Myalgic encephalomyelitis (or encephalopathy)/chronic fatigue syndrome: diagnosis and management [NG206]</a></p>	<p>Guideline producer: National Institute for Health and Care Excellence (NICE)</p> <p>Target user(s): 'Health and social care professionals, including those working or providing input into educational and occupational health services, commissioners, people with suspected or diagnosed</p>	England	Including home, health and social care	<p>Condition: myalgic encephalomyelitis (or encephalopathy)/chronic fatigue syndrome</p> <p>Age group: children, young people and adults</p>

	ME/CFS, their families and carers and the public' (p.5)			
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Summary Of Recommendations Table 3 (SORT3), year 2020

Recommendation(s):				
<p><b>'Joint Working, Transitions (1.3.13).</b> The lead commissioner should think about ways to improve the sharing of information and IT systems between health and social care staff, particularly in relation to people placed out of area' (NICE, 2020).</p> <p>Recommendation based on research evidence and expert opinion of guideline committee.</p>				
<p><b>'Rehabilitation programmes and interventions, Daily living skills (1.8.2).</b> Provide activities to help people with complex psychosis develop and maintain daily living skills such as self-care, laundry, shopping, budgeting, using public transport, cooking and communicating (including using digital technology)' (NICE, 2020).</p> <p>Recommendation based on research evidence and expert opinion of guideline committee.</p>				
Guideline	Guideline stakeholders	Country	Care setting	Population
<p><a href="#"><u>Rehabilitation for adults with complex psychosis (NG181)</u></a></p>	<p>Guideline producer: National Institute for Health and Care Excellence (NICE)</p> <p>Target user(s): 'Healthcare professionals, social care practitioners and other practitioners providing public services for people with complex psychosis, commissioners and providers of mental health services, people using mental health services, their families and carers' (p. 5).</p>	England	Not specified beyond health and social care	<p>Condition: Complex psychosis</p> <p>Age group: adults</p>



**'Emergency Department Assessment and Management.** Tele-stroke services can be used to remotely discuss the management of patients with stroke specialists if stroke services are unavailable at the receiving hospital [R-GDG]' (MOPH QA, 2020; p.13).

[R-GDG]: recommendation based on expert opinion of guideline development group.

Guideline	Guideline stakeholders	Country	Care setting	Population
<a href="#"><u>The Diagnosis &amp; Management of Stroke and Transient Ischaemic Attack</u></a>	Guideline producer: Ministry of Public Health. Qatar (MOPH QA)  Target user(s): Health professionals	Qatar	Acute, remote	Condition: Stroke and transient ischaemic attack  Age group: adults

#### Summary Of Recommendations Table 4 (SORT4), year 2018

Recommendation(s):				
<b>Long-term support in CRPS. Ongoing access to specialist care (QR2).</b> People with CRPS who require continued contact with specialist pain or rehabilitation services should have access to these through an appropriate route, which may include telephone or email access to a named team member and/or access by self-referral, within 1 year of treatment completion, subject to funding agreements...'				
Guideline	Guideline stakeholders	Country	Care setting	Population
<a href="#"><u>Complex regional pain syndrome in adults: UK guidelines for diagnosis, referral and management in primary and secondary care. 2018</u></a>	Guideline producer: Royal College of Physicians  Target user(s): professionals working in the different health specialties who care for these patients	UK	Not specified	Condition: complex regional pain syndrome  Age group: adults

#### Summary Of Recommendations Table 5 (SORT5), year 2017

Recommendation(s):

<p><b>'Physical activity and reducing sedentary behaviour (5.3.1).</b> Technology-based interventions should be considered for patients participating in cardiac rehabilitation' (SIGN, 2017; p.11).</p> <p>Recommendation based on research evidence and expert opinion of guideline development group.</p>				
<p><b>'Delivery of dietary advice (5.4.1).</b> A range of strategies, including telephone follow up, educational tools, contracts, nutritional tools and feedback should be considered for patients in cardiac rehabilitation to enhance adherence to dietary advice' (SIGN, 2017; p.12).</p> <p>Recommendation based on research evidence and expert opinion of guideline development group.</p>				
Guideline	Guideline stakeholders	Country	Care setting	Population
<p><b>Cardiac rehabilitation (SIGN CPG 150)</b></p>	<p>Guideline producer: Scottish Intercollegiate Guidelines Network (SIGN)</p> <p>Target user(s): 'cardiologists and physicians, dietitians, exercise professionals, general practitioners, health service managers, primary and secondary care nurses, occupational therapists, patients, pharmacists, physiotherapists, psychologists, specialist nurses, academics, third-sector organisations and other healthcare professionals working with patients with cardiac disease' (p.9).</p>	Scotland	Not specified	<p>Condition: Cardiovascular disease</p> <p>Age group: not specified</p>

#### Summary Of Recommendations Table 6 (SORT6), year 2014

<p>Recommendation(s):</p>
<p><b>'Non-pharmacological treatment, Occupational and physical therapy.</b> There are other complementary techniques for patients with PD, which can be evaluated based on the characteristics of the patients and their environment, such as tai-chi, training with video games that involve physical exercise and dance' (IACS, 2014; p.24).</p> <p>Recommendation based on expert opinion of guideline editorial team.</p>
<p><b>'Speech therapy, Swallowing.</b> The evaluation of the use of video-assisted swallowing therapy (VAST) to improve swallowing in persons with PD is recommended' (IACS, 2014; p.25).</p> <p>Recommendation based on research evidence and expert opinion of guideline editorial team.</p>

Guideline	Guideline stakeholders	Country	Care setting	Population
<a href="#"><u>Clinical practice guideline for the Management of Patients with Parkinson's Disease</u></a>	Guideline producer: Instituto Aragonés de Ciencias de la Salud (IACS)  Target user(s): professionals and patients	Spain	Not specified	Condition: Parkinson's disease  Age group: adults
<p><b>'PICO 1. Do Nonpharmacologic Treatments and Vaccinations Prevent/Decrease Acute Exacerbations of COPD? (11).</b> For patients with COPD, we suggest that telemonitoring compared with usual care does not prevent acute exacerbations of COPD, as assessed by decreases in emergency room visits, exacerbations, or hospitalizations over a 12-month period (Grade 2C). <u>Underlying Values and Preferences:</u> There is insufficient evidence at this time to support the contention that telemonitoring prevents COPD exacerbations' (CHEST, 2015).</p> <p>Recommendation based on research evidence and expert opinion of clinicians and researchers.</p>				
Guideline	Guideline stakeholders	Country	Care setting	Population
<a href="#"><u>Prevention of Acute Exacerbation of Chronic Obstructive Pulmonary Disease: American College of Chest Physicians and Canadian Thoracic Society Guideline</u></a>	Guideline producer: American College of Chest Physicians and Canadian Thoracic Society (CHEST)  Target user(s): clinicians, healthcare providers and the public	United States; Canada	Not specified	Condition: Chronic Obstructive Pulmonary Disease  Age group: adults in evidence review, (p. 10) although unspecified in recommendation

### Summary Of Recommendations Table 7 (SORT7), year 2013

Recommendation(s):				
<p><b>'Interventions using telerehabilitation. (10.3.3).</b> Where further rehabilitation is indicated for patients with brain injury who are discharged from inpatient care, it may be offered by telephone or face-to-face methods to alleviate long term burdens due to depression, behavioural and cognitive consequences' (SIGN, 2013; p.42).</p> <p>Recommendation based on research evidence and expert opinion of guideline development group.</p>				
Guideline	Guideline stakeholders	Country	Care setting	Population

<p><u>Brain injury rehabilitation in adults (SIGN CPG 130)</u></p>	<p>Guideline producer: Scottish Intercollegiate Guidelines Network (SIGN)</p> <p>Target user(s): 'people who have a responsibility for the management of adults with brain injuries in primary, secondary, tertiary or independent health care or the voluntary sector...It will also be of interest to individuals with personal experience of brain injury, including patients and their carers, members of the voluntary sector and those who are keen to develop research strategies in the area of rehabilitation' (p.2)</p>	<p>Scotland</p>	<p>Not specified beyond post-discharge from inpatient care</p>	<p>Condition: brain injury</p> <p>Age group: over 16 years</p>
<p><b>'Organising health and social care for people needing rehabilitation after stroke, Stroke units (3.2.2).</b> An inpatient stroke rehabilitation unit should consist of the following...electronic aids (for example, remote controls for doors, lights and heating, and communication aids)...' (NICE, 2013; p.22).</p> <p>Recommendation based on modified Delphi consensus statements from existing national and international published guidelines (p.59).</p>				
<p><b>'Communication. (3.2.67).</b> Speech and language therapists should assess people with limited functional communication after stroke for their potential to benefit from using a communication aid or other technologies (for example, home-based computer therapies or smartphone applications)' (NICE, 2013; p.29).</p> <p>Recommendation topic based on research evidence and expert opinion of guideline development group.</p>				
<p><b>'Movement, Fitness training. (1.9.8).</b> For people with stroke who are continuing an exercise programme independently, physiotherapists should supply any necessary information about interventions and adaptations so that where the person is using an exercise provider, the provider can ensure their programme is safe and tailored to their needs and goals. This information may take the form of written instructions, telephone conversations or a joint visit with the provider and the person with stroke, depending on the needs and abilities of the exercise provider and the person with stroke' (NICE, 2013; p.30).</p> <p>Recommendation topic based on research evidence and expert opinion of guideline development group.</p>				
<p><b>Self-care, Return to work. (3.2.112).</b> Return-to-work issues should be identified as soon as possible after the person's stroke, reviewed regularly and managed actively. Active management should include...tailoring an intervention (for example, teaching strategies to support multi-tasking or memory difficulties, teaching the use of voice-activated software for people with difficulty typing, and delivery of work simulations)...' (NICE, 2013; p.33).</p> <p>Recommendation topic based on research evidence and expert opinion of guideline development group.</p>				

Guideline	Guideline stakeholders	Country	Care setting	Population
<u><a href="#">Stroke rehabilitation in adults (CG162)</a></u>	Guideline producer: National Institute for Health and Care Excellence (NICE)  Target user(s): 'Healthcare professionals, social care practitioners, commissioners and providers, adults and young people who have had a stroke and their families and carers' (p.5).	England	Not specified beyond stroke units	Condition: stroke  Age group: 16 years and over

#### Summary Of Recommendations Table 8 (SORT8), year 2012

Recommendation(s):
<p><b>'Promoting reintegration and participation, Postdischarge follow-up and support (D1.1).</b> All individuals with traumatic brain injury (TBI) discharged from a specialized TBI rehabilitation program (inpatient, outpatient, residential) should have access, if needed, to scheduled telephone follow-up contact with a professional skilled in motivational interviewing, goal setting, providing reassurance and problem-solving support. (Adapted from NZGG 2007, 9.1, p. 130)' (INESSS-ONF, 2012)</p> <p>Recommendation based on research evidence and expert opinion.</p>
<p><b>'Cognitive functions, Learning and memory (J5.3).</b> Environmental supports and reminders (e.g., mobile/smartphones, notebooks and whiteboards) are recommended for individuals with traumatic brain injury (TBI) who have memory impairment, and most especially for those who have severe memory impairment. Individuals with TBI and their caregivers must be trained in how to use these external supports. (Adapted from INCOG 2014, Memory 3, p. 372) Note: The selection of environmental supports and reminders should take into account the following factors regarding the person with TBI:</p> <ul style="list-style-type: none"> <li>· Age</li> <li>· Severity of impairment</li> <li>· Premorbid use of electronic and other memory devices</li> <li>· Cognitive strengths and weaknesses (e.g., executive cognitive skills)</li> <li>· Physical comorbidities' (INESSS-ONF, 2012)</li> </ul> <p>Recommendation based on research evidence and expert opinion.</p>
<p><b>'Motor function and control rehabilitation (M2.9).</b> Either virtual-reality-based balance retraining program or a conventional balance retraining program can be used to improve</p>

balance post traumatic brain injury. (INESSS-ONF, 2015) REFERENCE: - ERABI Module 4-Motor & Sensory Impairment Remediation, p.32, 4.4.2' (INESSS-ONF, 2012)

Recommendation based on research evidence and expert opinion.

**'Neurobehaviour and mental health, Management of mood and depression (R5.4).**

Cognitive behaviour therapy (CBT) should be considered for individuals with depressive symptoms after traumatic brain injury, in individual, group, and modified telephone-based formats. (INESSS-ONF, 2015) REFERENCES: - Arundine et al. (2012) - Bradbury et al. (2008)' (INESSS-ONF, 2012)

Recommendation based on research evidence and expert opinion.

**Prescription of assistive technology. M6 (6.1 to 6.6).**

**(M6.1).** The prescription of equipment for individuals with traumatic brain injury should take into account cognitive, communicative and behavioural deficits and how these may constrain the person's ability, or their family/caregivers' ability, to use the equipment safely and appropriately. Where this is in doubt, arrangements should be in place for regular review. (Adapted from ABIKUS 2007, G88, p. 31 and NZGG 2006, 6.2, p. 107) (INESSS-ONF, 2012)

**(M6.2).** When an item of equipment has been identified as required for a person with traumatic brain injury, it should be provided as quickly as possible. If safety is at issue, it should be provided before the person is discharged to the community. (NZGG 2006, 6.2, p. 107)

**(M6.3).** The person with traumatic brain injury and their family or caregivers should be trained in the safe and effective use of equipment. (NZGG 2006, 6.2, p. 107)

**(M6.4).** The person with traumatic brain injury and their family or caregivers should be given clear written information on who to contact for repairs, replacement or future help and advice regarding the equipment. The ongoing effectiveness of the equipment should be reviewed on a regular basis and in accordance with the manufacturers' guidelines. (Adapted from ABIKUS 2007, G89, p. 31 and NZGG 2006, 6.2, p. 107)

**(M6.5).** Individuals with traumatic brain injury should have timely provision of an appropriate wheelchair and suitable supportive seating package, with regular review of the seating system as their needs change. (Adapted from NZGG 2006, 6.1.1, p. 90)

**(M6.6).** Walking or standing aids for individuals with traumatic brain injury should be considered only after a full assessment of the potential benefits and harms of the walking aid in relation to the individual's physical status and cognitive ability. (Adapted from SIGN 2013, 4.1.6, p. 16)

Recommendations based primarily on expert opinion.

Guideline	Guideline stakeholders	Country	Care setting	Population
<a href="#"><u>INESSS-ONF Clinical Practice Guideline for the Rehabilitation of Adults with Moderate to Severe TBI (Traumatic Brain</u></a>	Guideline producer: Institut national d'excellence en santé et en services sociaux. Ontario Neurotrauma Foundation (INESSS-ONF) Target user(s): 'healthcare professionals and managers	Canada	Pre-discharge from inpatient care, outpatient care, residential	Condition: moderate to severe traumatic brain injury

<u>Injury) /</u> <u>INESSS-ONF</u> <u>Guide de</u> <u>Pratique Clinique</u> <u>pour la</u> <u>Réadaptation de</u> <u>la clientèle</u> <u>Adulte ayant</u> <u>subi un TCC</u> <u>Modéré ou</u> <u>Grave</u>	providing rehabilitation services to individuals having sustained a moderate to severe TBI, in both: Acute care settings (early rehabilitation) [and] Rehabilitation facilities (post-acute inpatient or outpatient services)' *		care or unspecified	Age group: adults
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\*information available from additional guideline documentation:  
<https://braininjuryguidelines.org/modtosevere/guideline-components/scope-and-purpose/>

### Appendix 3

Summary Of Recommendations Table 9 (SORT9), year 2020

Recommendation(s):				
<p><b>'Post-operative physical therapy...</b>Future studies should evaluate the effect of physical therapy on outcomes following shoulder arthroplasty. A comparison of post-operative exercise protocols, number and timing of physical therapy visits, and method of delivery of physical therapy (physical therapist, physician, video) should be performed' (AAOS, 2020; p.43).</p>				
Guideline	Guideline producer and target user(s)	Country	Care setting	Population
<p><a href="#"><u>AAOS Management of Glenohumeral Joint Osteoarthritis Evidence-Based Clinical Practice Guideline</u></a></p>	<p>Guideline producer: The American Academy of Orthopaedic Surgeons (AAOS)</p> <p>Target user(s): 'Healthcare professionals other than orthopaedic surgeons, including but not limited to, geriatricians, adult primary care physicians, adult medicine specialists, physical therapists, occupational therapists, physician assistants, nurse practitioners, physiatrists, who routinely see this patient population in various practice settings may also benefit from this clinical practice guideline' (p.14).</p>	<p>United States</p>	<p>Not specified</p>	<p>Condition: Glenohumeral Joint Osteoarthritis</p> <p>Age group: not specified</p>

Summary Of Recommendations Table 10 (SORT10), year 2017

Recommendation(s):				
<p><b>'(11.2).</b> The use of pedometers, activity monitors or apps to encourage long-term maintenance of exercise in patients in CR' (SIGN, 2017; p.27).</p>				
<p><b>'(11.2).</b> Long-term (&gt;12 months follow up) RCTs to measure the efficacy of internet-based weight-loss interventions.' (SIGN, 2017; p.27).</p>				
Guideline	Guideline producer and target user(s)	Country	Care setting	Population



<u>Cardiac rehabilitation (SIGN CPG 150)</u>	Scottish Intercollegiate Guidelines Network (SIGN)  'cardiologists and physicians, dietitians, exercise professionals, general practitioners, health service managers, primary and secondary care nurses, occupational therapists, patients, pharmacists, physiotherapists, psychologists, specialist nurses, academics, third-sector organisations and other healthcare professionals working with patients with cardiac disease' (p.9).	Scotland	Not specified	Condition: Cardiovascular disease  Age group: not specified
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Summary Of Recommendations Table 11 (SORT11), year 2016

Recommendation(s):				
'Future work developing a province-wide, interactive, computer-based decision support tool that individually tailors the follow-up regimen for patients should be considered and evaluation of outcomes (regimen selected, compliance, survival) could be used to further support implementation of these guideline recommendations' (McMaster University, 2016; p.13)				
Guideline	Guideline stakeholders	Country	Care setting	Population
<u>Follow-up Care, Surveillance Protocols and Secondary Prevention Measures for Survivors of Colorectal Cancer</u>	Guideline producer: McMaster University  Target user(s): 'Clinicians...involved in the delivery of care for colorectal cancer survivors...Healthcare organizations and system leaders responsible for offering, monitoring, or providing resources for colorectal cancer survivorship protocols' (p.4).	Canada	Not specified	Condition: colorectal cancer  Age group: adults