Canadian Agency for Drugs and Technologies in Health

RAPID RESPONSE REPORT: SUMMARY OF ABSTRACTS

TITLE: Multidisciplinary and Interdisciplinary Rehabilitation Interventions for Patients with Acquired Brain Injuries: Clinical Effectiveness, Cost-Effectiveness, and Guidelines

DATE: 22 August 2016

RESEARCH QUESTIONS

1. What is the clinical effectiveness of multidisciplinary and interdisciplinary rehabilitation interventions for patients with an acquired brain injury?

2. What is the cost-effectiveness of multidisciplinary and interdisciplinary rehabilitation interventions for patients with an acquired brain injury?

3. What are the evidence-based guidelines regarding multidisciplinary and interdisciplinary rehabilitation therapy post-acquired brain injury?

KEY FINDINGS

One health technology assessment, six systematic reviews and meta-analyses, five non-randomized studies, one economic evaluation, and eight evidence-based guidelines were identified regarding multidisciplinary and interdisciplinary rehabilitation interventions for patients with acquired brain injuries.

METHODS

A limited literature search, with main concepts appearing in title, abstract or major subject heading only, was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2011 and August 8, 2016. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

SELECTION CRITERIA

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria	
Population	Adults with acquired brain injuries in acute care or community settings
Intervention	Short-term or long-term multidisciplinary rehabilitation interventions (e.g., physiotherapy and occupational therapy)
Comparator	Q1 & 2: Multidisciplinary and interdisciplinary rehabilitation interventions compared with each other, standard care, single interventions Q3: No comparator necessary
Outcomes	Q1: short and long-term functional outcomes (e.g., intellectual, social, physical) Q2: cost-effectiveness outcomes Q3: evidence-based guidelines for rehabilitation post-acquired brain injury
Study Designs	Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, economic evaluations, evidence-based guidelines

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, economic evaluations, and evidence-based guidelines. Evidence regarding stroke is presented first, followed by evidence regarding non-stroke causes or multiple causes of acquired brain injury, or where the cause is not specified.

Six systematic reviews and meta-analyses, and five non-randomized studies were identified regarding the clinical effectiveness of multidisciplinary and interdisciplinary rehabilitation interventions for patients with acquired brain injuries. One economic evaluation was identified regarding cost-effectiveness of multidisciplinary and interdisciplinary rehabilitation interventions for patients with an acquired brain injury. One health technology assessment and eight evidence-based guidelines provided guidelines and recommendations on multidisciplinary and interdisciplinary rehabilitation interventions for patients with acquired brain injuries.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

Stroke

One health technology assessment[1], one systematic review[2], one non-randomized study[3], one economic evaluation[4], and four evidence-based guidelines[5-8] were identified regarding multidisciplinary and interdisciplinary rehabilitation interventions for stroke patients.

One health technology assessment[1] provided guidelines and recommendations regarding rehabilitation therapy for stroke patients. The report specified that patients should be treated during the acute phase at a stroke unit in the acute care setting, that has a "coordinated multidisciplinary team" with "stroke and rehabilitation experience".[1] In the post acute phase, it was specified that patients should have access to "complete, multidisciplinary outpatient or home rehabilitation services".[1]

One systematic review[2] and one non-randomized study[3] were identified regarding the clinical effectiveness of multidisciplinary and interdisciplinary rehabilitation interventions for patients with stroke. The systematic review[2] reported on two studies that found positive effects on quality of life of stroke patients after an intervention; however, none of the included studies found positive effects on daily activities and social participation after a multidisciplinary intervention. The non-randomized study[3] concluded that community stroke rehabilitation teams significantly improved several physical, social, and cognitive domains on the Stroke Impact Scale (a stroke-specific, self-report, health status measure) post-stroke. No improvements were observed in memory and thinking upon discharge.

One economic evaluation[4] was identified regarding the cost-effectiveness of multidisciplinary integrated care for patients with stroke. The study[4] concluded that early-supported discharge costs less than conventional care and provides similar health benefits. The study[4] also found that at home rehabilitation achieves better health outcomes than conventional care, but may not result in cost-savings.

Four evidence-based guidelines[5-8] were identified regarding the use of multidisciplinary and interdisciplinary rehabilitation interventions for patients with stroke. The Canadian Stroke Best Practice Recommendations[5] provide guidance for all members of multidisciplinary teams in different settings who are caring for patients post-stroke. This includes recommendations for initial assessment, providing care in a specialized stroke rehabilitation unit, delivery of rehabilitation, outpatient and community rehabilitation, and management of upper extremity issues.[5] The guideline from the American Occupational Therapy Association[6] gives recommendations regarding multidisciplinary occupational therapy interventions to improve occupational performance of people with cognitive, motor, and psychosocial or emotional impairments, as well as interventions to improve activities of daily living and instrumental activity of daily living. Guidelines from the National Institute for Health and Care Excellence (NICE)[7] in the United Kingdom, and the Scottish Intercollegiate Guidelines Network (SIGN)[8] both recommend that inpatient stroke rehabilitation units be staffed by a multidisciplinary team including physicians and other medical staff (e.g., pharmacists),[7,8] nurses,[7,8] occupational therapists,[7,8] speech and language therapists,[7,8] social workers,[7,8] and rehabilitation assistants.[7] The NICE guideline[7] also recommends that multidisciplinary education be made available to patients, that roles and responsibilities of the care team be communicated to the patient and caregivers, and that early supported discharge be comprised of the same intensity of therapy and range of multidisciplinary care available in hospital without a delay in care.[7] With regards to early discharge teams, the SIGN[8] guideline stated that all members of the inpatient care team be included with the exception of social workers. The SIGN guideline also states that multidisciplinary team communication should occur at least once per week.[8]

Acquired Brain Injury – Non-Stroke Causes, Multiple Causes or Cause Unspecified

Five systematic reviews and meta-analyses,[9-13] four non-randomized studies,[14-17] and four evidence-based guidelines[18-21] were identified regarding multidisciplinary and interdisciplinary

rehabilitation interventions for patients with acquired brain injuries. No health technology assessments or economic evaluations were identified for patients with acquired brain injuries.

Five systematic reviews and meta-analyses[9-13] were identified regarding the clinical effectiveness of multidisciplinary and interdisciplinary rehabilitation interventions for patients with acquired brain injury. One systematic review[9] found evidence to support the use of multidisciplinary and interdisciplinary interventions in patients with traumatic brain injury. One systematic review[10] reported that specialist in-patient and specialist multidisciplinary community rehabilitation may result in functional gains; however, it was noted that different interventions need to be combined in order to suit the needs of patients with different brain injury severity. One systematic review[13] concluded that a multidisciplinary rehabilitation team can effectively improve rehabilitation in different study populations, including patients with stroke and acquired brain injuries. Two systematic reviews[11-12] were unable to draw conclusions about the effectiveness of multidisciplinary rehabilitation programs for patients with moderate-to-severe traumatic brain injuries.

Four non-randomized studies (NRS)[14-17] were identified regarding the clinical effectiveness of multidisciplinary and interdisciplinary rehabilitation interventions for patients with acquired brain injury. One non-randomized study[14] reported that intensive inpatient multidisciplinary rehabilitation resulted in significant functional improvements in military patients with traumatic brain injuries. One NRS[15] reported improvement in functional abilities of United States veterans with brain injury after interdisciplinary rehabilitation. One NRS[16] reported on various neurologic inpatients (including patients with stroke and traumatic brain injury) who underwent an intensive multidisciplinary rehabilitation. The study[16] found that there were motor and cognitive gains in all patient groups, but cognitive gains were less evident in traumatic brain injury patients. Another NRS[17] reported that a multidisciplinary approach to rehabilitation in a sub-acute rehabilitation setting led to an increase in both physical and cognitive function in patients with traumatic brain injury.

Four evidence-based guidelines[18-21] were identified regarding the use of multidisciplinary and interdisciplinary rehabilitation interventions for patients with stroke. All of the guidelines[18-21] make recommendations on the treatment and management of traumatic brain injuries. One Italian guideline[18] reports on multidisciplinary rehabilitation methods and rehabilitative and pharmacological treatments to re-integrate patients back into everyday life. The guideline[18] recommends early rehabilitation in specialized hospital units under multidisciplinary supervision. One guideline from NICE[19] provides recommendations on inpatient rehabilitation for people with traumatic brain injury and community-based rehabilitation services. One guideline from SIGN[20] provides a detailed guide on rehabilitation methods and treatment for patients with acquired brain injury. The guideline[20] suggests early, high-intensity rehabilitation should be delivered by specialist multidisciplinary teams and post-acute rehabilitation programs should be delivered by an interdisciplinary team using a goal-focused program. The guideline from the Colorado Division of Worker's Compensation[21] provides recommendations on the management, rehabilitation, and treatment of traumatic brain injuries. The guideline[21] reports there is good evidence that individualized multidisciplinary cognitive rehabilitation for patients improves mobility, personal care, and independence in daily activities.

REFERENCES SUMMARIZED

Stroke

Health Technology Assessments

1. Tessier A. Organization and provision of rehabilitation services for stroke patients and their families: a review of the evidence. [Quebec (QC)]: Montreal: INESSS; 2012. [cited 2016 Aug 18]. (ETMIS 2012; vol.8: no.9). Available from: http://www.inesss.qc.ca/fileadmin/doc/INESSS/Rapports/OrganisationsSoins/ETMIS2012_Vol8_No9.pdf
See: Rehabilitation in the acute phase, page xiii;
Rehabilitation in the postacute phase, page xiv

Systematic Reviews and Meta-analyses

2. Fens M, Vluggen T, van Haastregt JC, Verbunt JA, Beusmans GH, van Heugten CM. Multidisciplinary care for stroke patients living in the community: a systematic review. J Rehabil Med. 2013 Apr;45(4):321-30.
PubMed: PM23546307

Randomized Controlled Trials

No literature identified.

Non-Randomized Studies

3. Allen L, Richardson M, McIntyre A, Janzen S, Meyer M, Ure D, et al. Community stroke rehabilitation teams: providing home-based stroke rehabilitation in Ontario, Canada. Can J Neurol Sci. 2014 Nov;41(6):697-703.
PubMed: PM25377355

Economic Evaluations

4. Tummers JF, Schrijvers AJ, Visser-Meily JM. Economic evidence on integrated care for stroke patients; a systematic review. Int J Integr Care [Internet]. 2012 Oct [cited 2016 Aug 18];12:e193. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3601509
PubMed: PM23593053

Guidelines and Recommendations

5. Hebert D, Lindsay MP, McIntyre A, Kirton A, Rumney PG, Bagg S, et al. Canadian stroke best practice recommendations: Stroke rehabilitation practice guidelines, update 2015. Int J Stroke. 2016 Jun;11(4):459-84.
PubMed: PM27079654

6. Wolf TJ, Nilsen DM. Occupational therapy practice guidelines for adults with stroke. Bethesda (MD): American Occupational Therapy Association (AOTA); 2015. Summary available from: https://www.guideline.gov/summaries/summary/49532/occupational-therapy-practice-guidelines-for-adults-with-stroke

7. National Institute for Health and Care Excellence. Stroke rehabilitation in adults [Internet]. London: NICE; 2013. [cited 2016 Aug 18]. (NICE clinical guideline CG162). Available from: https://www.nice.org.uk/guidance/cg162
See: 1.1 Organising health and social care for people needing rehabilitation after stroke, page 12;
1.2 Planning and delivering stroke rehabilitation, page 16;
1.3 Providing support and information, page 19

8. Scottish Intercollegiate Guidelines Network. SIGN 114: Management of patients with stroke: rehabilitation, prevention and management of complications, and discharge planning [Internet]. Edinburgh: SIGN; 2014. [cited 2016 Aug 18]. Available from: http://www.sign.ac.uk/guidelines/fulltext/118/index.html

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Systematic Reviews and Meta-analyses

9. Powell JM, Rich TJ, Wise EK. Effectiveness of Occupation- and Activity-Based Interventions to Improve Everyday Activities and Social Participation for People With Traumatic brain injury: A Systematic Review. Am J Occup Ther. 2016 May;70(3):7003180040p1-9.
PubMed: PM27089288

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PubMed: PM26694853

11. Brasure M, Lamberty GJ, Sayer NA, Nelson NW, Macdonald R, Ouellette J, et al. Participation after multidisciplinary rehabilitation for moderate to severe traumatic brain injury in adults: a systematic review. Arch Phys Med Rehabil. 2013 Jul;94(7):1398-420.
PubMed: PM23348125

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Available from: http://www.effectivehealthcare.ahrq.gov/search-for-guides-reviews-and-reports/?pageaction=displayproduct&productID=1141

13. Momsen AM, Rasmussen JO, Nielsen CV, Iversen MD, Lund H. Multidisciplinary team care in rehabilitation: an overview of reviews. J Rehabil Med. 2012 Nov;44(11):901-12.
PubMed: PM23026978

Randomized Controlled Trials
No literature identified.

Non-Randomized Studies

14. Dharm-Datta S, Gough MR, Porter PJ, Duncan-Anderson J, Olivier E, McGilloway E, et al. Successful outcomes following neurorehabilitation in military traumatic brain injury patients in the United Kingdom. J Trauma Acute Care Surg. 2015 Oct;79(4 Suppl 2):S197-S203. PubMed: PM26406431

15. Duchnick JJ, Ropacki S, Yutsis M, Petska K, Pawlowski C. Polytrauma transitional rehabilitation programs: Comprehensive rehabilitation for community integration after brain injury. Psychol Serv. 2015 Aug;12(3):313-21. PubMed: PM25938856

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17. Watanabe S. Vocational rehabilitation for clients with cognitive and behavioral disorders associated with traumatic brain injury. Work. 2013;45(2):273-7. PubMed: PM23478365

Economic Evaluations

No literature identified.

Guidelines and Recommendations

18. De Tanti A, Zampolini M, Pregno S, CC3 Group. Recommendations for clinical practice and research in severe brain injury in intensive rehabilitation: the Italian Consensus Conference. Eur J Phys Rehabil Med. 2015 Feb;51(1):89-103. PubMed: PM25184800

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See: Quality statement 6, pages 28 to 30;
Quality statement 7, pages 31to 33

20. Scottish Intercollegiate Guidelines Network. SIGN 130: Brain injury rehabilitation in adults [Internet]. Edinburgh: SIGN; 2013. [cited 2016 Aug 18]. Available from: http://www.sign.ac.uk/guidelines/fulltext/130/index.html

21. Colorado Division of Workers' Compensation. Traumatic brain injury medical treatment guidelines. Denver (CO): Colorado Division of Workers' Compensation; 2012 Nov 26. Summary available from: https://www.guideline.gov/summaries/summary/43752/traumatic-brain-injury-medical-treatment-guidelines
See: Cognition and MTBI

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APPENDIX – FURTHER INFORMATION:

Stroke

Clinical Practice Guidelines and Position or Opinion Statements

22. Guidelines and Protocols Advisory Committee. Stroke and transient ischemic attack – acute and long-term management [Internet]. Victoria: British Columbia Ministry of Health; 2015. [cited 2016 Aug 18]. Available from: http://www2.gov.bc.ca/assets/gov/health/practitioner-pro/bc-guidelines/stroketia_2015_full.pdf
See: Rehabilitation, page 8

Review Articles

Clinical Reviews

23. Ghazipura M. Home-based versus centre-based rehabilitation for community-dwelling postacute stroke patients: a rapid review [Internet]. Toronto: Health Quality Ontario (HQO); 2015. [cited 2016 Aug 18]. Available from: http://www.hqontario.ca/Portals/0/Documents/evidence/rapid-reviews/qbp-stroke-homevscentre-rehab-20141211-en.pdf

Economic Reviews

24. Home-based versus centre-based rehabilitation for community-dwelling postacute stroke patients: an economic rapid review [Internet]. Toronto: Health Quality Ontario (HQO); 2015. [cited 2016 Aug 18]. Available from: http://www.hqontario.ca/Portals/0/Documents/evidence/rapid-reviews/qpb-stroke-homevscentrerehab-economic-20141211-en.pdf

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Review Articles

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PubMed: PM25816124

26. Karol RL. Team models in neurorehabilitation: structure, function, and culture change. NeuroRehabilitation. 2014;34(4):655-69.
PubMed: PM24796442

Economic Evaluations – Type of Care Unspecified

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PubMed: PM23562414