

## Guideline topic: Brain Injury Rehabilitation

### *Search coverage*

#### ***Patient searches***

The patient search was conducted using the search strategy outlined below in conjunction with the patient search filter.

*Databases covered: Medline, Embase, CINAHL, Dates covered: 2000–May 2010*  
***PsycINFO, ERIC***

*Total hits: Medline, Embase, CINAHL, PsycINFO, ERIC (total ): 2631                      Sifted result: 139*

#### **Medline search strategy**

1. exp Craniocerebral Trauma/
2. (head adj3 injur\$).tw.
3. (brain adj3 injur\$).tw.
4. (skull adj3 fractur\$).tw.
5. or/1-4
6. exp Rehabilitation/
7. exp "Recovery of Function"/
8. rehabilit\$.tw.
9. or/6-8
10. 5 and 9

**Guidelines**

*Websites searched:*

Agency for Health Care Research and Quality (AHRQ) <http://www.ahrq.gov/>  
ASERNIP-S  
<http://www.surgeons.org/Content/NavigationMenu/Research/ASERNIPS/ASERNIPSPublications/default.htm>  
Canadian Medical Association <http://mdm.ca/cpgsnew/cpgs/index.asp>  
Centre for Clinical Effectiveness (Australia) <http://www.med.monash.edu.au/healthservices/cce/>  
Health Technology Assessment <http://www.hta.nhsweb.nhs.uk/>  
NHS Centre for Reviews and Dissemination <http://www.york.ac.uk/inst/crd/welcome.htm>  
NHS Quality Improvement Scotland <http://www.nhshealthquality.org>  
National Institute for Clinical Excellence (NICE) <http://www.nice.org.uk/>  
National Electronic Library for Health <http://www.library.nhs.uk/guidelinesFinder/>  
National Guideline Clearinghouse <http://www.guideline.gov/>  
National Health and Medical Research Council (NHMRC)  
<http://www.health.gov.au/nhmrc/publications/index.htm>  
New Zealand Guidelines Group <http://www.nzgg.org.nz/>  
PRODIGY Knowledge <http://www.prodigy.nhs.uk/>  
Swedish Council on Technology Assessment in Health Care (SBU)  
<http://www.sbu.se/www/index.asp>  
TRIP Database <http://www.tripdatabase.com/>

*Total hits: 30*

**Systematic reviews**

*Databases covered: Medline, Embase, CINAHL, Dates covered: start date of database to PsycINFO, Cochrane, ERIC, Social Work Abstracts, Social Policy & Practice, Psycbite*

*Total hits: 1135*

*Sifted result: 168*

*Papers requested: 141*

**RCTs**

*Databases covered: Medline, Embase, CINAHL, Dates covered: various depending on key question; see Scope of Searches below*

### ***Observational studies/ Searches without filter***

*Databases covered: Medline, Embase, CINAHL, PsycINFO* *Dates covered: various depending on key question; see Scope of Searches below*

### ***Update searches***

*Databases covered: Medline, Embase, CINAHL, PsycINFO* *Dates covered: Systematic reviews 2010–2012; RCTs 2011–2012; see Scope of Searches table below*

## ***Search strategies***

The following are listings of the main Medline strategies used for this guideline. All conventions and symbols are from the Ovid implementation of Medline. Strategies used in other databases were substantially the same, though different terminology may have been used to take account of different thesauri used in non-Medline databases.

Search filters were added to identify studies of a particular type (systematic review, RCT etc.)

Listings of the search filters used by SIGN can be found on the SIGN Web site.

### **Medline Stem for Systematic review search:**

1. exp Craniocerebral Trauma/
2. exp Cerebrovascular Trauma/
3. exp Subarachnoid Hemorrhage/
4. exp Hypoxia, Brain/
5. exp Anoxia/
6. exp Encephalitis/
7. ((head or brain or skull or scalp) adj3 (injur\* or damage\* or fracture\* or trauma\* or hypoxi\* or anoxi\*)).tw.
8. (subarachnoid adj3 h?emorrhage).tw.
9. encephaliti\*.tw.
10. or/1-9
11. exp Rehabilitation/
12. exp Rehabilitation Centers/
13. exp Rehabilitation Nursing/
14. exp "Recovery of Function"/
15. rehabilit\*.tw.
16. exp Long-Term Care/
17. exp Subacute Care/

18. exp Progressive Patient Care/

19. Patient Care/

20. exp Ambulatory Care/

21. exp Institutionalization/

22. or/11-21

23. 10 and 22

**Medline Short Stem:**

1. exp Craniocerebral Trauma/

2. exp Cerebrovascular Trauma/

3. exp Subarachnoid Hemorrhage/

4. exp Hypoxia, Brain/

5. exp Anoxia/

6. exp Encephalitis/

7. ((head or brain or skull or scalp) adj3 (injur\* or damage\* or fracture\* or trauma\* or hypoxi\* or anoxi\*)).tw.

8. (subarachnoid adj3 h?emorrhage).tw.

9. encephaliti\*.tw.

10. or/1-9

## Scope of Searches

(RCT, Observational studies (OBS) and no filter searches (NOF), update searches)

KQ	Type of studies	Date range	Initial recall	Sifted result
1	NOF	No date limit	484	63
2	RCT	2006-2011	1272	37
2	OBS	2006-2011	806	16
3	RCT	2001-2011	824	24
3	OBS	2001-2011	551	17
4	RCT	No date limit	617	10
4	OBS	No date limit	186	5
5	RCT	2001-2011	2695	30
6	RCT	2006-2011	1581	66
6C	NOF	2001-2011	2237	46
7	-	-	-	-
8	RCT	2006-2011	1947	26
9	RCT	No date limit	1595	32
9	OBS	No date limit	1146	10
10	NOF	No date limit	1853	17
11	NOF	No date limit	As for 10	As for 10
12	RCT	No date limit	598	4
13	NOF	2007- Feb 2011	421	12
14	RCT	2001-2011	1459	25
15	NOF	2006-Feb 2011	2313	14
16	NOF	No date limit	1847	50
17	NOF	No date limit	2716	60
18	RCT	2001-2012	417	33
18	OBS	2001-2012	676	
Update REV	REV	2010-2012	827	29
Update RCT	RCT	2011-2012	2186	23

### Medline Search strategies used for specific key questions:

(all search strategies below with the exception of KQ1 were combined with the Medline Short Stem strategy)

#### KQ 1 (assessment of mild/minor brain injury patients representing to primary care)

1. minor brain injur\*.tw.
2. mild brain injur\*.tw.
3. minor traumatic brain injur\*.tw.
4. mild traumatic brain injur\*.tw.
5. MTBI.tw.
6. Post-Concussion Syndrome/
7. (post-concussion syndrom\* or postconcussion syndrom\*).tw.
8. (post-concussion symptom\* or postconcussion symptom\*).tw.

9. or/1-8
10. screening.tw.
11. exp decision support techniques/
12. (decision adj3 rule\*).tw.
13. (clinical adj3 decision\*).tw.
14. (clinical adj3 assessment\*).tw.
15. exp Risk Assessment/
16. exp Risk Factors/
17. (risk or risks).tw.
18. exp prognosis/
19. prognos\*.tw.
20. or/10-19
21. 9 and 20

## **KQ 2 (physical functioning)**

1. exp Physical Therapy Modalities/
2. physiotherap\*.tw.
3. exp Occupational Therapy/
4. (occupational adj3 therap\*).tw.
5. exp Restraint, Physical/
6. (constraint induced therap\* or constraint-induced therap\*).tw.
7. exp Computer Simulation/
8. exp Computer-Assisted Instruction/
9. virtual reality.tw.
10. wii.tw.
11. nintendo.tw.
12. xbox\*.tw.
13. exp Video Games/
14. (physical adj3 game\*).tw.
15. exp Exercise/
16. exp Sports/
17. or/1-16
18. exp "Activities of Daily Living"/
19. activities of daily living.tw.
20. (adl or dadl or padl or iadl).tw.
21. exp Cosmetics/
22. personal care.tw.
23. exp Hygiene/
24. personal hygiene.tw.
25. exp Baths/
26. grooming.tw.

- 27. (bathing or showering or toilet\*).tw.
- 28. exp Clothing/
- 29. exp Shoes/
- 30. (dressing or clothes or clothing or sock\* or stocking\*).tw.
- 31. exp Eating/
- 32. (kitchen\* or cooking or cookery).tw.
- 33. or/18-32
- 34. 17 or 33

### **KQ 3 (spasticity/muscle tone)**

- 1. exp Muscle Spasticity/
- 2. exp Spasm/
- 3. spasm\*.tw.
- 4. spastic\*.tw.
- 5. exp Muscle Hypertonia/
- 6. hyperton\*.tw.
- 7. (muscle\* adj3 contract\*).tw.
- 8. (muscle\* adj3 tone).tw.
- 9. or/1-8

### **KQ4 (continence)**

- 11. exp Urinary Incontinence/
- 12. exp Fecal Incontinence/
- 13. exp Urinary Bladder, Neurogenic/
- 14. exp Urination Disorders/
- 15. incontinen\*.tw.
- 16. (bladder adj3 control\*).tw.
- 17. (bowel adj3 control\*).tw.
- 18. or/11-17

### **KQ5 (gait/balance/mobility)**

- 1. exp Gait/
- 2. exp Gait Apraxia/
- 3. exp Gait Ataxia/
- 4. exp Gait Disorders, Neurologic/
- 5. (gait or balance or mobility or walking).tw.
- 6. exp Postural Balance/
- 7. exp Mobility Limitation/
- 8. or/1-7
- 9. treadmill.tw.
- 10. exp Biofeedback, Psychology/
- 11. exp Feedback/
- 12. exp Feedback, Physiological/

13. exp Feedback, Psychological/
14. (feedback or biofeedback).tw.
15. exp Electric Stimulation/
16. exp Electric Stimulation Therapy/
17. (electric stimulation or electrostimulation).tw.
18. exp Orthotic Devices/
19. (orthotic device\* or orthoses).tw.
20. canes/ or crutches/ or walkers/
21. walking aid\*.tw.
22. walker\*.tw.
23. zimmer\*.tw.
24. walking stick\*.tw.
25. walking frame\*.tw.
26. or/9-25
27. exp Self-Help Devices/
28. (walk\* or movement or ambulat\*).tw.
29. 27 and 28
30. 8 or 26 or 29

### **KQ6 (Cognition)**

1. exp Cognition/
2. exp Cognition Disorders/
3. exp Cognitive Therapy/
4. (cognition or cognitive).tw.
5. exp Learning/
6. (errorless adj3 learning).tw.
7. (enhanced adj3 learning).tw.
8. mnemonic\*.tw.
9. holistic\*.tw.
10. (compensatory or compensating).tw.
11. exp Reminder Systems/
12. exp Self-Help Devices/
13. assistive technolog\*.tw.
14. exp Cellular Phone/
15. neuropage.tw.
16. exp Cues/
17. mobile phone\*.tw.
18. (alarm or alarms or reminder\*).tw.
19. (personal digital assistant\* or pda or pdas).tw.
20. (pager or pagers).tw.
21. (electronic adj3 (aid or aids or device\*)).tw.



22. memory device\*.tw.
23. calendar\*.tw.
24. (diary or diaries).tw.
25. smartphone\*.tw.
26. exp Computers, Handheld/
27. or/1-26

### **KQ6C (awareness/perception)**

1. exp Awareness/
2. awareness.ti.
3. unawareness.tw.
4. (awareness adj5 intervention\*).tw.
5. (awareness adj5 disorder\*).tw.
6. ((perception or perceive) adj5 self).tw.
7. Self-awareness.tw.
8. selfawareness.tw.
9. (self adj3 awareness).tw.
10. exp Self Concept/
11. (self and (concept\* or esteem)).tw.
12. or/1-11

### **KQ8 (Emotion)**

1. (emotional adj5 labilit\*).tw.
2. exp Affective Symptoms/
3. exp Crying/
4. exp Laughter/
5. exp Emotions/
6. exp Depression/
7. exp Depressive Disorder/
8. (depression or depressive\*).tw.
9. exp Anxiety/
10. exp Anxiety Disorders/
11. (anxiet\* or anxious or overanxious or over-anxious).tw.
12. exp Antidepressive Agents/
13. antidepress\*.tw.
14. exp Anti-Anxiety Agents/
15. (anti-anxiety or antianxiety or anxiolytic\*).tw.
16. exp Psychotherapy/

17. exp Psychoanalysis/
18. exp Psychoanalytic Therapy/
19. exp Psychotherapeutic Processes/
20. (cognitive adj5 therap\*).tw.
21. exp Cognitive Therapy/
22. (psycho\* adj5 therap\*).tw.
23. neuropsychological.tw.
24. or/1-23

### **KQ9 (Communication)**

1. exp Communication Disorders/
2. exp Speech Disorders/
3. exp Language Disorders/
4. ((communication or speech or language) adj3 disorder\*).tw.
5. (speech adj3 language).tw.
6. exp Dysarthria/
7. dysarthria\*.tw.
8. exp Aphasia/
9. (aphasia\* or dysphasia\*).tw.
10. exp Apraxias/
11. (apraxia\* or dyspraxia\*).tw.
12. exp Dyslexia, Acquired/
13. dyslexia\*.tw.
14. exp Agraphia/
15. (agraphia\* or dysgraphia\*).tw.
16. exp Speech Therapy/
17. exp Language Therapy/
18. exp "rehabilitation of speech and language disorders"/
19. ((speech or language) adj3 therap\*).tw.
20. ((speech or language) adj3 exercise\*).tw.
21. ((alternative or augmentative) adj3 communication\*).tw.
22. (impairment adj3 strateg\*).tw.
23. (communication and partner and training).tw.
24. or/1-23

### **KQs10 and 11 (Swallowing/dysphagia)**

1. exp Deglutition Disorders/
2. dysphagia\*.tw.
3. swallow\*.tw.
4. or/1-3
5. exp Fluoroscopy/

6. fluoroscop\*.tw.
7. videofluoroscop\*.tw.
8. Endoscopy/
9. exp Endoscopy, Digestive System/
10. endoscop\*.tw.
11. or/5-10
12. compensat\*.tw.
13. (restor\* adj3 exercis\*).tw.
14. exp Exercise Therapy/
15. or/12-14
16. 4 and 15
17. 4 and 11

### **KQ12 (Oral hygiene)**

11. exp Oral Hygiene/
12. exp Oral Health/
13. exp Dental Care/
14. (oral adj3 (hygiene or health or care)).tw.
15. (dental adj3 (hygiene or health or care)).tw.
16. or/11-15
17. exp Pneumonia/
18. pneumonia\*.tw.
19. exp Respiratory Tract Infections/
20. (respiratory adj5 infection\*).tw.
21. (chest adj3 infection\*).tw.
22. or/17-21
23. 10 and (16 or 22)

### **KQ13 (Vocational rehabilitation)**

1. exp Rehabilitation, Vocational/
2. (vocational adj3 rehab\*).tw.
3. (vocational adj3 support).tw.
4. (work adj3 prep\*).tw.
5. (work adj3 read\*).tw.
6. (vocational adj3 (program\* or train\*)).tw.
7. exp Employment, Supported/
8. (employment adj3 support\*).tw.
9. Vocational Guidance/
10. ((vocation\* or career) adj3 counsel\*).tw.
11. (job adj3 coach\*).tw.
12. (job adj3 development).tw.

13. exp Sheltered Workshops/
14. (sheltered adj3 employ\*).tw.
15. or/1-14
16. exp Employment/
17. return to work.tw.
18. rtw.tw.
19. (vocational adj3 reentry).tw.
20. (work adj3 reentry).tw.
21. return to education.tw.
22. return to caring.tw.
23. valpar.tw.
24. copm.tw.
25. Canadian occupational performance measure.tw.
26. worker role interview.tw.
27. wri.tw.
28. model of human occupation.tw.
29. moho.tw.
30. work environment impact scale.tw.
31. weis.tw.
32. or/16-31
33. 15 or 32

#### **KQ14 (Models/delivery of care)**

1. exp Rehabilitation/
2. exp Rehabilitation Centers/
3. exp Rehabilitation Nursing/
4. rehabilitat\*.tw.
5. (neurorehabilitat\* or neuro-rehabilitat\*).tw.
6. exp "Recovery of Function"/
7. or/1-6
8. exp Comprehensive Health Care/
9. exp Critical Pathways/
10. exp "Delivery of Health Care"/
11. exp Patient Care Team/
12. (special\* or dedicat\*).tw.
13. ((multi-disciplinary or multidisciplinary or inter-disciplinary or interdisciplinary or integrated or multi-modal or multimodal or multi-professional or multiprofessional or holistic) adj3 (therap\* or care\* or restor\* or team\*)).tw.
14. (community adj5 (re-integrat\* or reintegrat\* or rehabilitat\* or neurorehabilitat\*)).tw.
15. ((inpatient or in-patient or outpatient or out-patient) adj5 (rehabilitat\* or neurorehabilitat\*)).tw.
16. ((activit\* adj3 daily living) or ADL or EADL).tw.
17. ((self or personal or alone or own) adj3 (care or manag\*)).tw.

18. ((self or personal or alone or own) adj3 (dress\* or feed\* or eat\* or toilet\* or bath\* or mobil\* or driving or drive or (public adj transport\*))).tw.
19. ((daily or domestic or house or home) adj3 (activit\* ot task\* or skill\* or chore\*)).tw.
20. (social adj3 (activit\* or function\* or support\* or skill\* or adjust\* or behaviour or behavior or facilitat\*)).tw.
21. or/8-20
22. 7 and 21

### **KQ15 (Discharge planning)**

1. exp Patient Discharge/
2. (discharg\* adj3 plan\*).tw.
3. (discharg\* adj5 (hospital or home)).tw.
4. discharg\*.ti.
5. pre-discharg\*.tw.
6. predischarg\*.tw.
7. post-discharg\*.tw.
8. postdischarg\*.tw.
9. (transition\* adj5 (hospital or home)).tw.
10. transition\*.ti.
11. (hospital adj3 home).tw.
12. ((coming or returning) adj3 home).tw.
13. (community adj3 (integrat\* or reintegrat\* or re-integrat\*)).tw.
14. (social adj3 (integrat\* or reintegrat\* or re-integrat\*)).tw.
15. or/1-14

### **KQ16 (Telemedicine)**

1. (tele-rehab\* or telerehab\*).tw.
2. exp Telemedicine/
3. exp Remote Consultation/
4. exp Therapy, Computer-Assisted/
5. telecommunications/ or electronic mail/ or satellite communications/ or telephone/ or videoconferencing/
6. (teleconferenc\* or videoconferenc\* or videophone\*).tw.
7. (telemedic\* or teletherap\* or telehealth\* or telecare or tele-care or teleconsult\* or telemonitor\*).tw.
8. (e?mail\* not "e?mail survey").tw.
9. ((remote\* or video) adj3 (assess\* or consult\* or monitor\*)).tw.
10. internet/
11. (((internet\* not internet survey) or (on?line not on?line survey) or (web-based not web-based survey) or world wide web) adj7 (rehab\* or physiotherap\* or physical therapy or occupational therapy or speech\* patholog\* or speech\* therap\* or allied health)).tw.
12. chat.tw.
13. technology-based.tw.

14. (virtual reality or virtual world or virtual environment\* or (virtual adj5 (rehab\* or physiotherap\* or physical therapy or occupational therapy or speech\* patholog\* or speech\* therap\* or allied health))).tw.

15. or/1-14

### **KQ17 (Minimally conscious/persistent vegetative state)**

1. exp Persistent Vegetative State/

2. persistent vegetat\*.tw.

3. vegetative state\*.tw.

4. minimally conscious.tw.

5. exp Coma/

6. (comatose or coma).tw.

7. or/1-6

8. exp Acoustic Stimulation/

9. exp Physical Stimulation/

10. exp Sensation/

11. exp Arousal/

12. exp Awareness/

13. exp "Recovery of Function"/

14. sensor\*.tw.

15. stimulat\*.tw.

16. exp Electric Stimulation Therapy/

17. or/8-16

18. sensory modality.mp. and rehabilitation technique.tw. [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]

19. rappaport disability rating.tw.

20. ranchos los amigos.tw.

21. wessex head injury matrix.tw.

22. Western neuro sensory stimulation profile.tw.

23. sensory stimulation assessment measure.tw.

24. or/18-23

25. exp Dopamine Agonists/

26. amantadine.tw.

27. bromocriptine.tw.

28. levodopa.tw.

29. zolpidem.tw.

30. zopiclone.tw.

31. or/25-30

32. 7 and (17 or 24 or 31)

### **KQ18 (Community rehabilitation)**

1. exp Residence Characteristics/
2. (community\* adj5 (re-integrat\* or reintegrat\* or rehabilitat\* or neurorehabilitat\*)).tw.
3. exp Community Networks/
4. exp Community Health Services/
5. exp Rehabilitation Centers/
6. ((multi-disciplinary or multidisciplinary or inter-disciplinary or interdisciplinary or integrated or multi-modal or multimodal or multi-professional or multiprofessional or holistic) adj3 (therap\* or care\* or restor\* or team\*)).tw.
7. or/1-6