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8 **Abstract**

9

10

11 Adults with moderate to severe traumatic brain injury (TBI) rely on assistance from paid
12 and unpaid caregivers upon return to the community. An inability to move independently
13 makes these adults highly dependent on caregivers for transfers and manual handling
14 tasks. In hospital and residential facilities, guidelines such as “no lift” policies direct staff to
15 use hoist equipment to complete manual handling tasks. However the applicability of these
16 same guidelines in home-based environments is questionable. Evidence-based guidelines
17 are therefore important to ensure that caregivers and people in the community are
18 protected and that practices are standard and consistent. This study commenced with a
19 rapid review of evidence-based recommendations between 2000-2015 pertaining to
20 transfers and manual handling in people with TBI; and ended with a structured stakeholder
21 dialogue that reflected upon this evidence and gathered perspectives on how to address
22 key issues in community-based manual handling following TBI.

23

24 Three relevant guidelines were identified, providing nine recommendations encompassing
25 assessment of the person’s ability to assist caregivers, manual handling and appropriate
26 equipment use. Due to the low number of recommendations and low level of supporting
27 evidence, these recommendations alone could not provide comprehensive guidance.
28 Three systematic reviews and two primary studies were also identified, and these suggest
29 that comprehensive training programs in transfers and manual handling tasks are
30 effective. We then conducted the structured stakeholder dialogue, which revealed six
31 major themes – 1) comprehensive risk assessment, 2) presence of two caregivers, 3)
32 provision of training, 4) home environment modification, 5) equipment, and 6) policy
33 implementation context.

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Recommendations for health professionals include providing information packs to caregivers, risk assessment and mitigation for those at high risk, and strategies to prevent and minimise injury in caregivers. Development of comprehensive guidance for caregivers in transfers and manual handling in people with moderate to severe TBI living in the community is a hidden but important priority.

Keywords: traumatic brain injury, community, manual handling, transfers, caregivers, home

What is known about this topic –

- In hospital and residential facilities, guidelines for “no lift” policies direct staff seek support from colleagues, and use expensive equipment to complete handling tasks. However the applicability of these same guidelines in the home-based environment is questionable.
- Incorrect transfers or handling performed by inexperienced people is thought to increase the risk of falls or of caregiver injury.
- There are no home-based studies of “no lifting” or “minimal lifting” and its influence on paid and unpaid caregiver injury rates.

What this paper adds –

- Expert opinion did agree with identified evidence-based recommendations, however it was strongly suggested that a multidimensional strategy be applied for home-based caregivers.

- Implications for policy-makers and organisations should consider improving accessibility and funding for education, training and support programs for home-based caregivers; developing strategies to improve sustainability of caregivers; and facilitating greater collaboration in manual handling tasks between family and paid caregivers.
- Future research considerations should include to design, implement and evaluate training programs for home-based caregivers, to explore the effectiveness of providing two caregivers, and to investigate family and caregivers' knowledge and skills of transfers and manual handling of people with moderate to severe TBI.

78 Introduction

79

80

81 Adults with moderate to severe traumatic brain injury (TBI) represent a significant
82 proportion of people living in the community who suffer long-standing disability. This
83 disability may involve physical, psychosocial and cognitive impairments, which decrease
84 their functional abilities and quality of life. These individuals often require assistance to
85 perform daily tasks, which may be provided by either paid and/or unpaid caregivers. Paid
86 caregivers are employees of an organisation who provide assistance to individuals with a
87 disability. Unpaid caregivers are usually a family member, relative, friend, or neighbour
88 who provides care to those requiring assistance (Reinhard et al., 2008). Both categories of
89 caregivers are crucial in enabling people with moderate and severe TBI to live with as
90 much maximum possible independence in the community over the long-term - in particular,
91 being able to return to live in their pre-injury home environment.

92

93 Manual handling - defined in this paper as assistance in repositioning, transferring or
94 ambulation - is a physically demanding part of a caregiver's duties. In addition to being
95 physically demanding, manual handling also involves a potential risk of injury to both the
96 caregiver (for example, musculoskeletal strain) and the person with TBI (for example, a fall
97 leading to a fractured bone). The risk of such injuries is increased if manual handling is not
98 performed correctly, and may create fear and insecurity for caregivers, especially in unpaid
99 caregivers if they are on their own undertaking a manual handling task requiring two
100 people.

101

102 Should an injury occur to a caregiver, this would then increase the difficulty faced in
103 keeping the person with a TBI as active and mobile as possible. If the injury is significant,
104 then it would also necessitate the involvement of another caregiver to provide assistance
105 to the person. Anecdotally, persons with TBI report that new caregivers have often not
106 received the same level of training as their "usual" caregiver and often is unfamiliar with
107 the preferred transfer approaches of the person with moderate to severe TBI which is
108 distressing and may potentially lead to an injury.

109

110 For paid caregivers, employers have a vested interest in minimising occupational injuries
111 arising from manual handling. In recent years, "no lift" policies have become prevalent in
112 institutional healthcare settings in order to minimise risk of occupational injury. However,

113 this terminology varies from location to location and it is often misinterpreted. Investigation
114 of the extent to which the existing “no lifting” or “minimal lifting” policies could potentially
115 increase the risk of physical burden of care and potential injury for unpaid caregivers
116 warrants further scrutiny, as does the efficacy of the “no lifting” or “minimal lifting” policy for
117 the reduction in paid worker injury rates. Furthermore, implementing ‘no lift’ policies is
118 potentially easier in institutional settings, with greater access to hoists and other
119 infrastructure and more human resources than home-based settings. To date, there are no
120 home-based studies of “no lifting” or “minimal lifting” and its influence on paid and unpaid
121 caregiver injury rates. It is also unknown how applicable manual handling policies
122 designed for use in a “workplace”, or to what extent these documents are being used to
123 generate organisational policies.

124

125 This complex issue is of importance to policy-makers and caregivers alike for two key
126 reasons: (1) the direct costs associated with providing paid attendant care (often used for
127 manual handling) after TBI are significant; and (2) caregivers have a high risk of injury
128 from manual handling, which may ultimately prevent them being able to continue in their
129 role. Hence, it is critical to consider and provide appropriate and comprehensive guidance
130 to caregivers performing home-based transfers and manual handling activities for people
131 with moderate to severe TBI.

132

133 It is a central belief that people with moderate to severe TBI should live in their own homes
134 in an active community, and that such environments (both physical and community) should
135 support a person’s individual recovery and maximise their independence. We
136 acknowledge, however, that the environment and equipment to support this belief may not
137 be suitable. Frequently, modifications to the home environment and specialised equipment
138 are necessary to accommodate care and support needs for people with moderate to
139 severe TBI living in their own home. However, equipment needed to facilitate transfers and
140 manual handling tasks may not fit in the home, may be unavailable when required, or may
141 be delayed in installation/or incorrectly installed. This means that although the person is
142 home, it is not uncommon to have to “make do” in the short-term. But it is not only the
143 physical environment, paid caregivers who provide assistance for the person with TBI may
144 not be appropriately trained in use of the equipment (which is new to them) nor how to
145 maintain it. Or they may also lack the necessary financial resources to pay for
146 recommended modifications or equipment. Therefore it can be challenging to safely
147 provide the level of care that is required by people following moderate-severe TBI.

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The purpose and aims of this article are to present -

- A review of current evidence-based recommendations for the guidance of transfers and manual handling in people with TBI; and
- Results of a structured stakeholder dialogue convened to reflect on review evidence, gather a shared understanding of key practice issues and explore development of community-based comprehensive guidelines for caregivers.

Methods

This article employed research methodology from the National Trauma Research Institute Forum program (NTRI, 2012-2014). This program is based on the Canadian McMaster Health Forum, established in 2009 by John Lavis to support evidence-informed health systems and address a broad range of health policy challenges in Canada. Phase 1 of the NTRI Forum process involves synthesizing and summarizing evidence from the literature into a high-level briefing document utilizing rapid evidence review methodology (Khangura et al., 2012). Phase 2 of the NTRI Forum process involved convening stakeholder dialogues to connect the information from the briefing document with the people who can make change happen. Evaluation of the McMaster model of evidence briefs and structured stakeholder consultations has demonstrated that this approach appears to be highly regarded by participants and leads to intentions to act (Moat et al., 2014).

Phase 1 - Rapid Evidence Review

A comprehensive search was performed to identify any studies or practice guidelines relevant to transfers and manual handling of people with brain injury using the following databases: Medline (see end of article); The Cochrane Library; CINAHL Plus; and PsycINFO from January 2000 until October 2015. Google and Google Scholar were also searched using the terms “brain injury” combined with “manual handling or patient transfers” and “community or home” with no date restriction. The first 100 results were screened. Reference lists of included studies were also scanned to identify further relevant references. In addition, a search of 24 websites was also performed using the words “traumatic brain injury” and / or “TBI”, “head injury” or “rehabilitation” to identify any practice guidelines. The inclusion criteria are summarised in Table 1 -

183 **Insert table 1 here**

184

185 *Phase 2 – Structured stakeholder dialogue*

186 A day-long stakeholder dialogue involving 17 participants was held in October, 2013 in
187 Melbourne, Australia to (1) develop a shared understanding of how transfers and manual
188 handling activities are currently being managed of people with moderate to severe
189 traumatic brain injury (TBI) in the community, and (2) consider how this information could
190 be used to develop an implementation strategy to address any challenges, with an aim of
191 facilitating optimal practice. Deliberations on the day were facilitated by an experienced
192 senior researcher with content expertise and guideline development expertise.
193 Participation by dialogue participants was approved by the local ethical committee (HREC
194 Approval No. 302/12). Collectively, the participants represented the following perspectives
195 (with some participants that represented multiple perspectives) - research, including
196 research leadership, clinical practice, including clinical leadership, government
197 departments, funding providers, service delivery and consumer advocacy.

198

199 Dialogue participants received a briefing document containing a high-level summary of the
200 existing, relevant evidence which assisted in the deliberations. Notes were taken by two
201 independent authors followed by consolidation, thematic analysis and evaluation of key
202 themes and considerations for developing community-based comprehensive guidelines for
203 transfers and manual handling in people with moderate to severe TBI (see Appendix).

204

205 **Results**

206

207

208 The search yielded 2779 articles. Following screening of titles and abstracts, 62 full text
209 articles were retrieved for review against the inclusion criteria resulting in the identification
210 of 3 relevant guidelines only (ABIKUS Guideline Development Group, 2007, New Zealand
211 Guidelines Group, 2006, Royal College of Physicians and British Society of Rehabilitation
212 Medicine, 2003).

213

214 ***Phase 1 - Rapid Evidence Review***

215 ***Clinical Practice Guidelines***

216

217 Collectively, the guideline recommendations centred around general aspects of early and
218 holistic preparedness for return home/community living (including training), comprehensive
219 assessment of an individual's cognitive, behavioural and physical ability to participate in
220 manual handling tasks, caregiver training/education for equipment set-up/use and correct
221 manual handling procedures, modifications to the home environment conducive to manual
222 handling tasks, safe and appropriate equipment provision and use, and recommend
223 having key contacts for ongoing equipment specific support (Table 1, Appendix 1).
224 Although the current guidelines for brain injury provide some recommendations that may
225 be used to guide caregivers and family members with manual handling tasks, they are by
226 no means a comprehensive guide for caregivers or service providers.

227

228 ***Peer-reviewed evidence***

229

230 In addition to the 3 guidelines, there were 3 reviews and 2 studies identified. However
231 these articles focused on specific elements of manual handling, i.e. training, equipment,
232 and reducing injuries. It was found that there is insufficient evidence that the risk of injury
233 is reduced in the community setting having two care workers assisting in a manual
234 handling task rather than one only (Kayess et al., 2013). There are no current guidelines
235 that make recommendations for paid or unpaid caregivers who work alone, particularly in
236 high-risk situations (Kayess et al., 2013). There are relatively few studies investigating the
237 effect of interventions, strategies or equipment on the number of injuries attributed to
238 manual handling in the community (Nelson and Baptiste, 2004).

239

240 ***Use of ceiling hoists***

241 There is strong evidence supporting the effectiveness of the use of ceiling hoists in
242 significantly decreasing musculoskeletal injuries and physical stress in caregivers for
243 manual handling of people with physical disabilities (Jung and Bridge, 2009). Although the
244 hoists were found effective for assisting in the transfer of people, there was still a need for
245 some degree of manual handling. Hence, the use of equipment does not replace the need
246 for assistance by caregivers. The studies were mostly from the US, UK and Canada
247 (n=23) and were conducted in institutional settings (such as hospitals). Hence, it is difficult
248 to generalize these findings to the community setting. Institutional settings are purpose-
249 built facilities that have abundant room available for people to be transferred and handled
250 with the use of appropriate equipment including hoists and beds. The community setting is
251 often different as modifications to an existing home have to be made to accommodate the

252 person's requirements which can be expensive and not considered at the time. The review
253 also reported that limited numbers of ceiling hoists are actually used in healthcare
254 facilities, and research to date has not investigated the different types of ceiling hoists
255 available.

256

257 *Comprehensive training programs*

258 There is sufficient evidence that comprehensive programs providing equipment and
259 training (with written policies on safe manual handling) can prevent and/or decrease
260 injuries (Nelson et al., 2007). Furthermore, interventions which were multifaceted and
261 individualised which include training and education, comprehensive counselling sessions,
262 telephone calls and home are effective in reducing risk among people being cared for
263 (Reinhard et al., 2008). Risk assessment, redesigning of the work environment and
264 changes to work organisation and practices were also key to reducing the risks (Highett,
265 2003).

266

267 ***Phase 2 - Structured stakeholder dialogue***

268

269 Several major themes were identified in the one-day deliberative dialogue conducted on
270 community-based transfers and manual handling practices provided by caregivers
271 following moderate to severe traumatic brain injury (TBI) including the home environment,
272 risk assessment, training, use of two caregivers, equipment and existing policies.

273

274 *Undertake a comprehensive risk assessment tailored to TBI*

275 Experts have indicated that when a risk assessment is conducted, assessment of the
276 extent of spasms and contractures, scoliosis of the spine, ventilation needs, people with
277 high support position needs, people's weight and height, assessment of the home
278 environment, what equipment is available, and potential risky situations for caregivers
279 and/or people, including those with TBI, need to be identified.

280

- 281 1. *The use of two caregivers rather than one could reduce injury risk, however this is*
282 *contentious*

283 In high-risk situations, i.e. people with TBI who exhibit challenging behaviours or have
284 severe spasticity, the use of two rather than one caregiver could be considered. When
285 experts in the field were consulted, it was perceived that the use of two care workers does
286 facilitate a reduction of manual handling injuries, unsafe handling practices, unsafe

287 environments, and reduces the risks to caregiver and individual safety, particularly in those
288 individuals with challenging behaviours. However, during group expert discussion there
289 was disagreement as to whether two care workers was, in fact, more effective at reducing
290 the risk of injuries than using only one care worker. As indicated above, no data is
291 available supporting the necessity of using two caregivers in *any* specific manual handling
292 task. It must be acknowledged that the use of two paid caregivers would add costs to the
293 health system, however decisions regarding the number of caregivers should not only be
294 based on cost-drivers. The lack of studies to date demonstrating risk reduction through the
295 use of two caregivers, as well as the individualised nature of manual handling in the home
296 environment, makes this issue contentious and complex. More research is needed testing
297 the benefit of two versus one caregiver for a person with moderate-severe TBI who lives in
298 the community post-discharge.

299

300 *2. Provision of training and person-centred care planning is critical given the number*
301 *of unpaid caregivers looking after people following TBI*

302 Safe and appropriate manual handling is of paramount importance for anyone involved in
303 the care/manual handling of people with a TBI. Comprehensive training encompassing
304 individual safety, risk reduction, back care and appropriate handling techniques should be
305 administered to anyone who has involvement in moving/ handling people with a TBI. Each
306 person with a TBI will have specific needs and so, will require collaboratively tailored and
307 individualised manual handling routines/programs. Furthermore, it is important that this
308 person-driven program is communicated correctly to the treating team and
309 family/caregivers to ensure consistency. Ongoing evaluation and revision is further
310 required to meet the changing needs of the individual.

311

312 *3. Home environment assessments and modifications should be initiated early*

313 Given the time taken to assess and modify the home environment, home environment
314 assessments and modifications should commence as early as possible following TBI,
315 because once a person with TBI reaches end of their rehabilitation phase of care, there is
316 usually insufficient time to implement necessary, but major, home modifications. However,
317 in practice this may be limited due to psychosocial factors including knowledge and/or
318 acceptance of the projected necessity of the home modifications.

319

320 *4. Equipment, although effective in assisting caregivers to perform their duties, does*
321 *not eliminate the need for manual handling tasks or transfers, or the risk of injuries*

322 In the home or community setting caregivers can use equipment for assistance in
323 providing care and support to people with moderate-severe TBI, i.e. hoists, however it is
324 important that adequate training and education has been provided. Given the systematic
325 reviews in this area, equipment should not be viewed as an “all in one” solution to
326 eliminating the risks associated with providing care. The use of hoist transfers may also
327 limit the person’s time spent sitting as well as opportunities for weight-bearing, which may
328 have medical, and/or therapy implications.

329

330 5. *‘No lift’ policies are ambiguous and require scrutiny in community settings*

331 One attempt to address the risks to the caregiver in the community has been the rather
332 arbitrary introduction of the ‘no lifting’ policies by the human services sector which is now
333 known as Safe Patient Handling. It has been defined as “a safer approach to patient
334 handling whereby the manual lifting of patients is eliminated, wherever possible...in all but
335 strictly exceptional or life threatening situations”(Australian Nursing and Midwifery
336 Federation, 2013). This terminology however varies in its meaning and it is often
337 misinterpreted. Investigation of the extent to which the existing “no lifting” or “minimal
338 lifting” policies could potentially increase the risk of physical burden of care and potential
339 injury for caregivers warrants further scrutiny, as does the efficacy of the “no lifting” or
340 “minimal lifting” policy for the reduction in paid worker injury rates. To date, there are no
341 home-based studies of “no lifting” or “minimal lifting” and its influence on paid and unpaid
342 caregiver injury rates.

343

344 **Considerations for development of community-based transfers and manual** 345 **handling of people with moderate to severe TBI**

346

347

348 It is important to highlight several considerations for clinicians, research, and policy-
349 makers and organisations for developing guidance and/or standards for community-based
350 transfers and manual handling activities in people with moderate to severe TBI. Evidence
351 and opinions of experts in the field conclude that the major consideration should be an
352 emphasis on following the principles of person-centred care and planning that is specific to
353 the person’s needs. It has also been reported that a duty of care and level of responsibility
354 be acknowledged by all stakeholders (people with moderate-severe TBI, caregivers,
355 caregiver associations, advocacy organisations, funding providers, service providers and
356 designers, manufacturers and suppliers of equipment) when conducting community-based

transfers and manual handling activities. There should also be a multidimensional strategy which takes into account risk assessment and risk mitigation, education and training, environmental modification and monitoring systems.

Considerations for clinicians

1. Strategies to prevent and minimise injury in caregivers, particularly family or unpaid caregivers.
2. Encourage referrals from clinicians to programs that focus on initiatives for reducing injury.
3. Risk assessment and mitigation to identify individuals and caregivers at high risk of injury.
4. Information packs for caregivers to utilise for support programs and counselling groups to reduce care burden and prevent mental health issues.

Considerations for research

1. Training programs created and evaluated for both paid and unpaid caregivers with modifications for the changing nature of each caregivers' situation.
2. Greater research on the effectiveness and cost of people being provided with two caregivers rather than one only, if required.
3. Analysis of family and unpaid caregivers' knowledge and skills relating to transfers and manual handling tasks.

Considerations for policy-makers and organisations

1. Explore and evaluate the care burden and cost implications of unpaid caregivers.
2. Improve accessibility to education, training and support programs for unpaid caregivers, i.e. funding for in-home training programs.
3. Re-evaluate participant care arrangements following implementation of any new awards.
4. Develop strategies to improve sustainability and longer-term retention of paid caregivers.
5. Increase collaboration between paid and unpaid caregivers to ensure everyone is working towards the same goal.

It should also be noted that a limitation of this study is that the current state, quality and consistency of evidence was informed by consultations provided by experts (17

392 participants) who attended the one-day deliberative dialogue only. Future research could
393 extend the insights provided by the current study by conducting a survey of practice
394 through consumer/advocacy organisations of caregivers of people with moderate to severe
395 TBI in the community to understand what resources are being utilised at present. This
396 would strengthen the recommendations of guidelines developed for this group.

397 398 **Conclusion**

400
401 This article provided evidence of recommendations from existing guidelines on transfers
402 and manual handling, however they were not comprehensive or based in the community-
403 setting or specific to people with moderate to severe TBI. Nevertheless, they provide a
404 basis for the development of guidelines for caregivers in the community.

405
406 This study used a rapid review methodology and expert consultation process to
407 summarize the state of current best practices and some supporting evidence for transfers
408 and manual handling of people with traumatic brain injuries. A rapid review methodology
409 offers a comprehensive overview of all synthesised evidence, e.g. systematic reviews or
410 evidence-based reviews. As rapid reviews are produced in a short time period of weeks
411 quality appraisal was not undertaken, and therefore the level of methodological bias within
412 the included studies was not evaluated. However, the use of the expert stakeholder
413 consultations in addition to the rapid review is valuable in the filling gaps of limited existing
414 resources and also ensures that the recommendations for developing guidelines are more
415 comprehensive than could otherwise be provided.

416
417 Comprehensive risk assessment, early assessments and home modifications, and
418 provision of comprehensive training (including use of equipment) for caregivers were
419 considered to be important for inclusion in the development of community-based
420 comprehensive guidelines following expert deliberative dialogue.

421
422 It is important that the considerations for clinicians, research and policy-makers and
423 organizations are reflected upon when developing guidelines to ensure that improvements
424 can be made to protect caregivers and people with moderate to severe TBI within the
425 community.

426 ***Example of search strategy (Medline)***

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427
428
429 1. exp Brain Injuries/
430 2. exp Craniocerebral Trauma/
431 3. exp Brain Edema/
432 4. exp Glasgow Coma Scale/
433 5. exp Unconsciousness/
434 6. exp Cerebrovascular Trauma/
435 7. ((head or crani\$ or cerebr\$ or capitis or brain\$ or forebrain\$ or skull\$ or hemispher\$ or
436 intra-cran\$ or inter-cran\$) adj3 (injur\$ or trauma\$ or lesion\$ or damag\$ or wound\$ or
437 destruction\$ or oedema\$ or edema\$ or fractur\$ or contusion\$ or concus\$ or commotion\$
438 or pressur\$)).ti,ab.
439 8. ((head or crani\$ or cerebr\$ or brain\$ or intra-cran\$ or inter-cran\$) adj3 (haematoma\$ or
440 hematoma\$ or haemorrhag\$ or hemorrhag\$ or bleed\$ or pressure)).ti,ab.
441 9. exp Glasgow Outcome Scale/
442 10. (Glasgow adj3 scale).ti,ab.
443 11. "rancho los amigos scale".ti,ab.
444 12. ("diffuse axonal injury" or "diffuse axonal injuries").ti,ab.
445 13. "persistent vegetative state".ti,ab.
446 14. ((unconscious\$ or coma\$ or concuss\$) adj3 (injur\$ or trauma\$ or damag\$ or wound\$
447 or fracture\$ or contusion\$ or haematoma\$ or hematoma\$ or haemorrhag\$ or hemorrhag\$
448 or bleed\$ or pressure)).ti,ab.
449 15. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14
450 16. Practice guideline.pt.
451 17. guideline.pt.
452 18. exp guideline/
453 19. Health Planning Guidelines/
454 20. 16 or 17 or 18 or 19
455 21. 15 and 20
456 22. limit 21 to yr="2000 -Current"
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References

- ABIKUS GUIDELINE DEVELOPMENT GROUP 2007. ABIKUS Evidence Based Recommendations for Rehabilitation of Moderate to Severe Acquired Brain Injury Toronto, Canada: Toronto Rehabilitation Institute.
- AUSTRALIAN NURSING AND MIDWIFERY FEDERATION, V. B. 2013. Safe Patient Handling (formerly No Lifting) Policy Statement. Available: <http://www.anmfvic.asn.au/news-and-publications/publications?q=safe+patient+handling> [Accessed 10 October 2013].
- HIGHETT, S. 2003. Intervention strategies to reduce musculoskeletal injuries associated with handling clients: a systematic review. *Occupational and Environmental Medicine*, 60.
- JUNG, Y. M. & BRIDGE, C. 2009. Evidence based research: the effectiveness of ceiling hoists in transferring people with disabilities. Sydney: Home Modification Information Clearinghouse, University of New South Wales.

- KAYESS, R., VALENTINE, K., THOMPSON, D., MELTZER, A. & FISHER, K., R. 2013. Research on the need for two care workers in a community setting - Final report. New South Wales: Social Policy Research Centre.
- KHANGURA, S., KONNYU, K., CUSHMAN, R., GRIMSHAW, J. & MOHER, D. 2012. Evidence summaries: the evolution of a rapid review approach. *Syst Rev*, 1, 10.
- MOAT, K. A., LAVIS, J. N., CLANCY, S. J., EL-JARDALI, F., PANTOJA, T. & KNOWLEDGE TRANSLATION PLATFORM EVALUATION STUDY, T. 2014. Evidence briefs and deliberative dialogues: perceptions and intentions to act on what was learnt. *Bull World Health Organ*, 92, 20-8.
- NELSON, A. L. & BAPTISTE, A. S. 2004. Evidence-based practices for safe client handling and movement. *Online Journal of Issues in Nursing* [Online], 9. Available: www.asphp.org/learning-center/.
- NELSON, A. L., COLLINS, H., KNIBBE, K., COOKSON, A., DE CASTRO, A. B. & WHIPPLE, K. L. 2007. Sort through the myths and facts to determine how you uphold best practices for client lifting. *Nursing Management*, 38, 26-32.
- NEW ZEALAND GUIDELINES GROUP 2006. *Traumatic Brain Injury: Diagnosis, Acute Management and Rehabilitation*. Wellington, New Zealand: Accident Compensation Corporation.
- NTRI. 2012-2014. NTRI Forum - Improving Care of the Injured [Online]. Available: www.ntriforum.org.au 2014].
- REINHARD, S. C., GIVEN, B., PETLICK, N. H. & BEMIS, A. 2008. Supporting Family Caregivers in Providing Care. In: HUGHES, R. G. (ed.) *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*. Rockville (MD).
- ROYAL COLLEGE OF PHYSICIANS & BRITISH SOCIETY OF REHABILITATION MEDICINE 2003. *Rehabilitation following acquired brain injury: national clinical guidelines*. In: TURNER - STOKES, L. (ed.). London: RCP, BSRM.

Appendix

Table 1: Recommendations on supporting evidence from TBI-specific publications

	Recommendation	Supporting Evidence
1	<p>“Preparing family/ caregivers and patient for community transition should include:</p> <ul style="list-style-type: none"> ♦ Assessment of discharge destination environment and support available ♦ Provision of any equipment and adaptations that are required ♦ Training of caregivers/ family in the use of equipment and in managing the patient to ensure patient safety in the home environment ♦ Educating patients and family/ caregivers about relevant formal and informal resources and how to access these resources including voluntary services and self-help groups.” <p>[ABIKUS, p.30](ABIKUS Guideline Development Group, 2007)</p> 	C – Expert opinion, experience of a consensus panel
2	<p>“The prescription of equipment should take account of any cognitive and behavioural deficits and their constraints on the person’s ability, or their family/ caregiver’s ability, to use the equipment safely and appropriately. Where this in doubt, arrangements should be in place for regular review.”</p> <p>[ABIKUS, p.31](ABIKUS Guideline Development Group, 2007)</p>	C – Expert opinion, experience of a consensus panel
3	<p>“The person, their family/whānau or carer(s) should be trained in the safe and effective use of equipment.”</p> <p>[NZGG, p.107](New Zealand Guidelines Group, 2006)</p>	C (The recommendation is supported by international expert opinion)

	Recommendation	Supporting Evidence
4	<p>“All team members handling patients should be taught safe and appropriate ways to handle patients.”</p> <p>[RCPL / BSRM, p.31](Royal College of Physcians and British Society of Rehabilitation Medicine, 2003)</p>	C - Expert committee reports, opinions and/or experience of respected authorities
5	<p>“A suitable moving/handling programme for each patient with limited mobility should be:</p> <ul style="list-style-type: none"> • instituted through collaboration between physiotherapy and nursing staff within 48 hours of admission • applied consistently by all staff • reviewed and revised as the patient’s needs change.” <p>[RCPL / BSRM, p.31](Royal College of Physcians and British Society of Rehabilitation Medicine, 2003)</p>	C - Expert committee reports, opinions and/or experience of respected authorities
6	<p>“Patients unable to protect their pressure areas should:</p> <ul style="list-style-type: none"> • have a clinical assessment for risk of pressure sores • be provided with appropriate pressure-relieving equipment (mattress, cushion etc.) without delay • have regular inspection of the skin area at risk to ensure that adequate protection is occurring • have access to specialist advice from special seating teams, tissue viability specialists etc.” 	C - Expert committee reports, opinions and/or experience of respected authorities

	Recommendation	Supporting Evidence
	<i>[RCPL / BSRM, p.31](Royal College of Physicians and British Society of Rehabilitation Medicine, 2003)</i>	
7	<p>“Planning for community transition should include:</p> <ul style="list-style-type: none"> • full preparation of the patient and the family • assessment of the discharge destination environment and support available • provision of any equipment and adaptations that are required • training of carers/family in the use of equipment and in managing the patient to ensure patient safety in the home environment • timely liaison with the community teams, primary care teams and social services to guarantee a smooth handover, agree an appropriate package of care and/or continuing rehabilitation programme • graded discharge, usually with short-stay or weekend visits at home, to test the suitability of the home care arrangements • giving patients and their families information about, and offering contact with, the appropriate voluntary services and self-help groups that may be useful to them, e.g. Headway, the Encephalitis Society, Different Strokes (see Appendix 3) etc.” <p><i>[RCPL / BSRM, p.36](Royal College of Physicians and British Society of Rehabilitation Medicine, 2003)</i></p> 	C - Expert committee reports, opinions and/or experience of respected authorities
8	<p>“The need for equipment should be assessed on an individual basis and in the environment in which it will be used.”</p>	C - Expert committee reports, opinions and/or experience of

	Recommendation	Supporting Evidence
	[RCPL / BSRM, p.47](Royal College of Physicians and British Society of Rehabilitation Medicine, 2003)	respected authorities
9	<p>“Once an item of equipment has been identified as required for a patient</p> <ul style="list-style-type: none"> • it should be provided as quickly as possible and before the patient is discharged to the community • the patient, family and/or carers should be thoroughly trained in its safe and effective use • its ongoing use and relevance should be reviewed on a regular basis and in accordance with the manufacturer’s guidelines • patients should be given clear written information on who to contact for repairs, replacement, or for future help and advice regarding the equipment.” <p>[RCPL / BSRM, p.47](Royal College of Physicians and British Society of Rehabilitation Medicine, 2003)</p>	C - Expert committee reports, opinions and/or experience of respected authorities

Key to sources:

RCPL / BSRM - Royal College of Physicians of London / British Society of Rehabilitation Medicine

NZGG / ACC - New Zealand Guidelines Group /Accident Compensation Corporation

ABIKUS - Acquired Brain injury Knowledge - Uptake Strategy

Insert Dialogue summary

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Table 1 – Inclusion and Exclusion criteria for included studies in the review

	Inclusion	Exclusion
Patient group	Caregivers – paid attendant caregivers and unpaid caregivers, e.g. family.	Healthcare professionals providing in-home rehabilitation sessions, i.e. focus of this review is on providing guidance to the caregiver workforce not healthcare professionals such as physiotherapists. Adults with traumatic brain injury (TBI) of moderate to severe severity, i.e. requiring ongoing physical assistance for daily living receiving the intervention.
Intervention	Transfers, positioning, ambulation and manual handling – any transfers that require manual assistance from at least one person e.g. use of adaptive equipment including a slide board, hoist, and walking belt.	Provision of transfers that can be performed independently by a person following TBI or provision of aids (e.g. walking stick).
Phase of care	Community-based - home or supported accommodation (including group homes), in which a person / client requiring transfer or manual handling has only one staff member available on duty.	Institutional settings including rehabilitation hospitals, nursing homes that have specialised infrastructure, and 24 hour multiple staffing facilities in which multiple residents are located.
Study type	Clinical Practice Guideline (CPG), defined as: “Systematically developed statements to assist practitioner and patients’ decisions about appropriate health care for specific clinical circumstances (p.	

	<p>38)"(Field and Lohr, 1990). The guideline must include specific practice recommendations and be evidence-based, as reflected by the following AGREE II appraisal items - 'systematic methods were used to search for evidence' and 'there is an explicit link between the recommendations and the supporting evidence'. The scope of the CPG must specifically focus on, or incorporate, recommendations for transfers and manual handling of TBI patients.</p>	
<p>Date range, Language and Accessibility</p>	<p>Unlimited for searches within each guideline, with date of last search 2000 onward in order to capture the most recent evidence. The most up-to-date version of each CPG was assessed. Where several versions of the same CPG existed, the version that included the greatest detail on the CPG development process was assessed.</p> <p>English</p> <p>Freely available, i.e. copies of guidelines were published in peer-reviewed journals, or otherwise available without cost.</p>	<p>Non-English</p> <p>Copies of guidelines only available by payment</p>

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Title:

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Date:

2017-03-01

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