NICE National Institute for Health and Care Excellence

NICE guideline

Rehabilitation after traumatic injury

NICE guideline
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Your responsibility

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the Yellow Card Scheme.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Contents

Overview

This guideline covers complex rehabilitation needs after traumatic injury, including assessment and goal setting, rehabilitation plans and programmes, physical, psychological and cognitive rehabilitation, rehabilitation for specific injuries, coordination of rehabilitation in hospital, at discharge and in the community, and commissioning and organising rehabilitation services.

Traumatic injury is any major or minor injury that requires admission to hospital at the time of injury, including musculoskeletal, visceral and nerve injuries, soft tissue damage, spinal injury, limb reconstruction and limb loss.

Who is it for?

- Healthcare professionals
- Social care practitioners
- Commissioners and providers of rehabilitation services
- Members of the public who have experienced traumatic injury, their families and carers

How to use this guideline

All the recommendations apply to all people with complex rehabilitation needs after a traumatic injury, regardless of age or the nature of the injury, unless:

- the recommendation specifically states that it is for adults only, or children and young people only **or**
- the recommendation or section of the guideline specifically states that it is for people with a particular injury.

The following sections provide a pathway from assessment through to goal setting, agreeing and coordinating the delivery of a rehabilitation plan and programmes of therapy, and coordinating and organising rehabilitation at and following discharge:

- Initial assessment and early interventions for people with complex rehabilitation needs
- Multidisciplinary team rehabilitation needs assessment
- Setting rehabilitation goals
- Developing a rehabilitation plan and making referrals
- Rehabilitation programmes of therapies and treatments
- Principles for sharing information and involving family and carers
- Coordination of rehabilitation care in hospital:
  - From admission to hospital
  - When transferring between services and settings
- Coordination of rehabilitation care at discharge
- Supporting access and participation in education, work and community (adjustment and goal settings)
- Commissioning and organisation of rehabilitation services

The rehabilitation therapies and interventions included in the following sections apply to

ALL people with complex rehabilitation needs after a traumatic injury:

- Physical rehabilitation
- Cognitive rehabilitation
- Psychological rehabilitation

The following injury-specific sections should be read in conjunction with the sections on physical rehabilitation, cognitive rehabilitation and psychological rehabilitation:

- Rehabilitation after limb reconstruction, limb loss or amputation
- Rehabilitation after spinal cord injury
- Rehabilitation after nerve injury
- Rehabilitation after chest injury

Recommendations

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

1.1 Initial assessment and early interventions for people with complex rehabilitation needs

1.1.1 Be aware that the severity of a person's traumatic injury does not necessarily correlate with the complexity of their rehabilitation needs, so assess the impact of the injury using a person-centred, individualised and holistic approach at all stages of their care pathway.

1.1.2 After a traumatic injury, assess the person's rehabilitation needs as an integral part of their care pathway from admission. This may include:

- discussing findings from early rehabilitation assessments with the person, and their family members or carers (as appropriate)
- helping the person, and their family members or carers (as appropriate), to think about preferred rehabilitation goals to inform shared decision making about medical or surgical options
- involving rehabilitation specialists (ideally including a consultant in rehabilitation) alongside acute care teams to discuss the implications for rehabilitation depending on different medical and surgical options.

1.1.3 All practitioners involved in the person's care should provide immediate

psychological and emotional support for people who are mentally distressed and/or cognitively impaired after a traumatic injury. Request additional support and/or advice from psychology services as needed.

1.1.4 After a traumatic injury:

- Avoid delays in acute treatment so that rehabilitation can start as soon as possible, for example, to maintain movement.
- Start rehabilitation when the person is ready and able to engage and participate (see also recommendation 1.2.5). For people who lack capacity to engage in making decisions about their rehabilitation, follow the NICE guideline on decision making and mental capacity.

1.1.5 Provide access to rehabilitation therapies:

- before surgery, to maintain respiratory function and functional abilities (if surgery is delayed) **and**
- as soon as possible after surgery (starting ideally no later than the following day).

1.1.6 As soon as possible after the traumatic injury, assess how the person's physical impairments might affect their ability to engage in activities of daily living. Involve occupational therapy for:

- input and advice on therapies and referral for aids **and**
- equipment and adaptations.

1.1.7 As soon as possible after a traumatic injury, start to assess whether the person has new or existing cognitive, hearing, visual or communication impairments or emotional difficulties that might affect their ability to engage in rehabilitation and in activities of daily living. Involve occupational therapy, psychology and speech and language therapy as appropriate.

1.1.8 Use equipment as appropriate to encourage movement (for example, walking aids and transfer devices) and to protect the injury (for example, splints or orthotics).

1.1.9 Ask about the person's diet and nutrition, including their weight, eating habits and any use of health supplements such as vitamins and minerals or high-calorie drinks.

1.1.10 Ensure that the initial assessment checks to see if the person can swallow safely. Also see recommendation 1.11.51 and the NICE guideline on nutrition support for adults.

1.1.11 Assess the person's risk of malnutrition using, for example, the Screening Tool for the Assessment of Malnutrition in Paediatrics (STAMP) score in children and young people under 16 years and, for example, the Malnutrition Universal Screening Tool (MUST) score for adults (see the section on screening for malnutrition and the risk of malnutrition in hospital and the community in the NICE guideline on nutrition support for adults).

1.1.12 Monitor the person's nutritional intake and weight throughout their hospital stay, provide nutrition support in line with the NICE guideline on nutrition support for adults, and refer for a specialist dietitian review if needed.

1.1.13 Complete a safeguarding assessment for children, young people and vulnerable adults after a traumatic injury, taking into account any known or suspected non-accidental injury. (Also see the NICE guidelines on child abuse and neglect and child maltreatment, and the Care Act 2014.)

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on initial assessment and early interventions for people with complex rehabilitation needs.

Full details of the evidence and the committee's discussion are in:

- evidence review A.1/A.2: identification and assessment of rehabilitation needs after traumatic injury
- evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury
- evidence review B.3: psychological and psychosocial interventions for people with complex rehabilitation needs after traumatic injury
- evidence review B.4: rehabilitation interventions relating to participation in society for people with complex rehabilitation needs after traumatic injury
- evidence review D.1 (service coordination): inpatient settings for people with complex rehabilitation needs after traumatic injury.

1.2 Multidisciplinary team rehabilitation needs assessment

1.2.1 The multidisciplinary team should complete a personalised and holistic rehabilitation needs assessment in partnership with the person and their family members or carers (as appropriate), which should include:

- physical functioning (see the section on assessing physical functioning)
- cognitive functioning (see the section on assessing cognitive functioning)
- psychological functioning (see the section on assessing psychological functioning).

1.2.2 In addition to the holistic rehabilitation needs assessment in recommendation 1.2.1, the multidisciplinary team should complete specialist assessments for the

following injuries:

- for limb injuries, see the section on rehabilitation after limb reconstruction, limb loss or amputation
- for nerve injuries, see the section on rehabilitation after nerve injury
- for spinal injuries, see the section on rehabilitation after spinal cord injury
- for chest injuries, see the section on rehabilitation after chest injury.

1.2.3 Always think about the mechanism of injury and whether the person may have had a head injury. Be aware that the symptoms of traumatic brain injury can be subtle and regular screening may be necessary. If there are clinical symptoms, refer the person for a specialist assessment with healthcare professionals with expertise in traumatic brain injury rehabilitation. See also the NICE guideline on head injury.

1.2.4 The multidisciplinary team involved in assessing people's rehabilitation needs in hospital should consist of healthcare professionals and practitioners with expertise in rehabilitation after traumatic injury. Depending on the nature of the injury, the setting for assessment and treatment, the age of the person and other pre-existing health or care issues, the multidisciplinary team could involve:

- surgeons, rehabilitation medicine specialists, intensive care specialists, elderly care specialists and/or paediatricians (as appropriate)
- allied health professionals such as occupational therapists, physiotherapists, dietitians, orthotists and speech and language therapists
- practitioner psychologists
- specialist nurses
- play therapists
- pharmacists
- a trauma coordinator and/or rehabilitation coordinator
- when planning discharge:

- a social worker
- a discharge coordinator.

1.2.5 The multidisciplinary team should assess the person's rehabilitation needs as soon as possible after the traumatic injury, when measures are being taken to optimise their ability to engage in the assessment process. These measures include:

- pain management
- resolution of infections
- resolution of acute confusion or delirium
- consideration of psychological wellbeing
- making available hearing aids, glasses, dentures and other orthodontic appliances
- access to communication aids (if needed)
- access to interpreters (for example, for people who do not speak English)
- having in place drug or alcohol dependence withdrawal management
- restarting long-term medications to maintain physical and mental health; see also the NICE guideline on medicines optimisation.

1.2.6 Be aware that traumatic injury may affect sexual function. Discuss this with people at assessment and review, and seek specialist advice about sexual function, fertility issues and psychological support.

1.2.7 If a person lacks mental capacity, carry out a rehabilitation needs assessment based on the principles of best interests decision making, as set out in the NICE guideline on decision making and mental capacity.

1.2.8 As part of the rehabilitation needs assessment, the multidisciplinary team should ask about the person's pre-injury activities, for example:

- the person's background, personal history, relationships, work, education,

meaningful activities, spiritual and religious practices, and hobbies and interests

- usual activities of daily living, including mobility and other physical activity
- motivational factors such as the person's lifestyle, previous ability, future aspirations, priorities and core values.

1.2.9 The multidisciplinary team should allow adequate time to:

- liaise with the clinical team managing any pre-existing, long-term conditions that may affect rehabilitation
- complete the rehabilitation needs assessment, which should include a detailed and accurate analysis of the person's injuries, impairments, goals and likely rehabilitation needs **and**
- discuss the findings together, to reduce the need to repeat questions and to improve the efficiency of the assessment process.

1.2.10 When discussing rehabilitation needs with people, and their family members or carers (as appropriate):

- be sensitive about the timing because pain, confusion, fatigue and trauma can make it more difficult for people to absorb and retain information
- give people sufficient time to process information about their injuries and rehabilitation options, to help them adjust after the traumatic injury and engage more readily in the rehabilitation therapy
- if people ask for information about the likely long-term prognosis, recognise that this may be difficult to predict and should only be discussed with the person after multidisciplinary team review.

1.2.11 Use validated tools (for example, the rehabilitation complexity scale [RCS], patient categorisation tool [PCAT], complex needs checklist [CNC] or post-ICU presentation screen [PICUPS]), in the rehabilitation needs assessment to determine the need for early referral to specialist rehabilitation units.

1.2.12 Regularly reassess (using clinical assessment and validated tools) whether

referral for specialised rehabilitation is still needed and what other referrals may now be needed.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on multidisciplinary team rehabilitation needs assessment.

Full details of the evidence and the committee's discussion are in:

- evidence review A.1/A.2: identification and assessment of rehabilitation needs after traumatic injury
- evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury
- evidence review B.4: rehabilitation interventions relating to participation in society for people with complex rehabilitation needs after traumatic injury
- evidence review D.2 (service coordination): inpatient to outpatient settings for people with complex rehabilitation needs after traumatic injury
- evidence review D.3 (service coordination): barriers and facilitators to accessing rehabilitation services following discharge to the community
- evidence review D.4 (service coordination): support needs and preferences following discharge to outpatient or community rehabilitation services for people with complex rehabilitation needs after traumatic injury.

Assessing physical functioning

1.2.13 As part of the rehabilitation needs assessment after a traumatic injury, the multidisciplinary team should assess the person's pre-injury and current physical functioning, which should include:

- assessing pain management to enable physical rehabilitation activities to begin

- a comprehensive neuromusculoskeletal assessment to identify physical impairments such as nerve injury, muscle imbalance and proprioception problems
- assessing upper and lower limb function and the impact of the injury on the person's ability to move and use walking aids (if needed)
- assessing and recording the range of movement for each joint affected
- asking about any problems with balance or dizziness and other vestibular symptoms (either pre-existing or new), and considering assessment for benign paroxysmal positional vertigo (BPPV) and for head injury
- if the traumatic injury has been caused by a fall, asking about previous falls and considering a falls risk assessment in line with the section on multifactorial risk assessment in the NICE guideline on falls
- assessing pre-existing or newly acquired vision or hearing problems
- assessing whether there are any new difficulties with communication, speech and language
- assessing ability to do transfers, for example, to move from lying to sitting, and sitting to standing
- assessing trunk control and core stability (if relevant)
- assessing ability to move and level of aerobic fitness and/or exercise tolerance
- assessing skin care, wound care and pressure area management
- for children and young people, asking about previous developmental attainment and functioning.

1.2.14 Refer the person for a specialist assessment if the multidisciplinary team does not have appropriate skills or expertise to perform the assessment needed. Examples are:

- to determine when and how splints and orthoses should be used, taking into account that people with complex traumatic injuries may need bespoke

splints or orthoses

- if they have external fixation for lower limb fractures
- if they have sensory loss or nerve injury (see the section on rehabilitation after nerve injury).

1.2.15 Assess the person for factors that may affect their ability to engage in rehabilitation. These may include balance and coordination issues (neurovestibular disorders), and newly acquired vision or hearing loss. Refer for specialist assessment and management as needed. Also see the section on sudden or rapid onset of hearing loss in the NICE guideline on hearing loss in adults.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on assessing physical functioning.

Full details of the evidence and the committee's discussion are in evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury.

Assessing cognitive functioning

Please note this guideline does not cover assessment or specific rehabilitation interventions for people with traumatic brain injuries. See recommendation 1.2.3 in the section on multidisciplinary team rehabilitation needs assessment.

1.2.16 Be aware that even if there has been no brain injury, problems with cognitive functioning are common after a traumatic injury because of the psychological shock and trauma.

1.2.17 As part of the rehabilitation needs assessment after a traumatic injury, the multidisciplinary team should ask about any cognitive problems, for example:

- confusion

- disorientation
- slowed thinking and/or slowed processing of information
- withdrawal
- memory problems
- agitation
- communication, speech or language changes (for example, withdrawal or selective mutism).

1.2.18 If a person has problems with cognitive functioning after a traumatic injury, investigate for other causes such as:

- pre-existing cognitive impairment or dementia (see the NICE guideline on dementia)
- delirium (for example, alcohol or drug misuse, drug toxicity or opiate-related confusion, infection or sepsis, or hypoxia; see the NICE guideline on delirium)
- behavioural problems or learning disabilities (see the NICE guideline on challenging behaviour and learning disabilities)
- traumatic brain injury (this may not show up on scans immediately and further investigations will be needed if it is suspected; see also recommendation 1.2.3).

1.2.19 If a person has problems with cognitive functioning after a traumatic injury and the potential causes in recommendation 1.2.18 have been ruled out, assess the person's:

- orientation to time, place, person and situation
- ability to follow simple instructions
- ability to recall information and communicate it correctly after a short period of time.

1.2.20 If the assessment in recommendation 1.2.19 confirms difficulties with cognitive

functioning, refer the person to an occupational therapist, practitioner psychologist (ideally a neuropsychologist) or a speech and language therapist (as appropriate) for a specialist cognitive assessment.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on assessing cognitive functioning.

Full details of the evidence and the committee's discussion are in evidence review B.2: cognitive interventions for people with complex rehabilitation needs after traumatic injury.

Assessing psychological functioning

1.2.21 As part of the rehabilitation needs assessment after a traumatic injury, the multidisciplinary team should ask about psychological and psychosocial risk factors, for example:

- past or present mental health problems, such as anxiety or depression
- past or present mental illness or psychiatric treatment
- history of traumatic brain injury
- history of self-harm or suicide attempts
- any experience of domestic violence or abuse
- any safeguarding concerns (if the person is a child or a vulnerable adult)
- excessive alcohol consumption or recreational drug use
- the circumstances of the injury, for example, self-harm or a violent crime
- social factors that mean the person may need additional support, for example, if the person is socially isolated, homeless, a refugee or recent migrant, if they have difficulty reading or speaking English, or if they have learning disabilities or other needs.

1.2.22 As part of the rehabilitation needs assessment after a traumatic injury, look for indicators of psychological problems (including lack of engagement with rehabilitation) beyond that of an acute stress response (see recommendation 1.13.1). Take into account any psychological and psychosocial risk factors (see recommendation 1.2.21) and, if needed, refer the person for a psychological assessment with a practitioner psychologist (with relevant expertise in physical trauma and rehabilitation) or a member of the liaison psychiatry team to inform their rehabilitation plan and goals.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on assessing psychological functioning.

Full details of the evidence and the committee's discussion are in evidence review B.3: psychological and psychosocial interventions for people with complex rehabilitation needs after traumatic injury.

1.3 Setting rehabilitation goals

Also see the section on supporting access and participation in education, work and community (adjustment and goal setting).

1.3.1 Agree short-term and long-term rehabilitation goals with the person and their family members or carers (as appropriate), and review them regularly based on:

- what is most important to the person and what they most value
- activities that are meaningful for the person and relate to what is important
- a strengths-based approach, which builds on positive function and ability
- the person's home circumstances
- the person's aspirations about returning to work or education, and their preferred timeframe
- developing the knowledge, skills and confidence to manage their own health

and wellbeing

- an understanding that there may be setbacks as well as gains, so goals should be flexible.

1.3.2 When setting long-term rehabilitation goals, agree small steps so that progress can be monitored in a way that is meaningful and motivational for the person.

1.3.3 Members of the multidisciplinary team involved in setting rehabilitation goals should be skilled and competent in:

- helping people identify goals that are right for them
- understanding how the psychological impact of trauma can affect goal setting and rehabilitation planning.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on setting rehabilitation goals.

Full details of the evidence and the committee's discussion are in evidence review D.4 (service coordination): support needs and preferences following discharge to outpatient or community rehabilitation services for people with complex rehabilitation needs after traumatic injury.

1.4 Developing a rehabilitation plan and making referrals

1.4.1 Use the rehabilitation needs assessment (see the section on multidisciplinary team rehabilitation needs assessment) and the person's rehabilitation goals (see the section on setting rehabilitation goals) to develop a rehabilitation plan for the person (this may be in the form of a rehabilitation prescription). The rehabilitation plan should include:

- information about the person's injuries

- the person's short-term and long-term rehabilitation goals (see the section on setting rehabilitation goals)
- information about the person's needs and preferences
- a suggested rehabilitation programme of therapies and treatments (see the section on rehabilitation programmes of therapies and treatments)
- how the rehabilitation programme of therapies and treatments will be delivered
- information and sources of further information about returning to vocational or leisure activities
- information about associated risks, responsibilities, and possible legal issues about returning to driving and sources of specific advice (for example, the DVLA [Driver and Vehicle Licensing Agency])
- information about referrals or sources of further information
- any follow-up arrangements (especially when transferring to home or community settings)
- who the rehabilitation plan should be shared with (with the person's consent) and details about any information that the person wants to remain confidential
- details of a rehabilitation coordinator or key worker, and the lead healthcare professional involved in the person's care.

1.4.2 The rehabilitation plan should be:

- a tailored and personalised journey towards the person's agreed goals, focusing on what is important to them
- developed with the person, and their family members or carers (as appropriate)
- based on advice and input from all members of the multidisciplinary team
- written in clear English

- a single document or file
- shared with the person, their families and carers (as appropriate), the person's GP, and healthcare professionals involved in their ongoing care
- regularly updated in partnership with the person to reflect their progress, goals, ongoing needs and key contact information, particularly at key points of transition in care.

1.4.3 Where it is not possible or appropriate for the person to have access to all of the information in a rehabilitation plan, ensure that important components of the plan are included in a summarised patient-held document that is regularly updated with progress, appointment times and contact details.

1.4.4 If there are aspects of the rehabilitation plan that the multidisciplinary team cannot implement, the rehabilitation coordinator or another senior member of the multidisciplinary team should make appropriate referrals without delay, including referrals to specialised rehabilitation services.

1.4.5 Manage the care of adults with fragility fractures of the femur within a specialist pathway involving orthogeriatricians. Also see the NICE guideline on hip fracture.

1.4.6 If an older person with a traumatic injury is on a care pathway that does not routinely involve geriatrician support, consider referral to an orthogeriatrician, a surgical liaison or a perioperative physician (as appropriate).

1.4.7 For adults with a fragility fracture, assess bone health and refer as necessary, for example, to a specialist bone health clinic or outpatient service. Also see the NICE guideline on osteoporosis.

1.4.8 If a traumatic injury has been caused by a fall, ask the person about previous falls, and consider a falls risk assessment and a referral to a community falls service (as appropriate). Also see the section on multifactorial risk assessment in the NICE guideline on falls.

1.4.9 Assess all adults over 65 who have a traumatic injury for their risk of falls in line with the recommendations on multifactorial risk assessment in the NICE guideline on falls.

1.4.10 Provide information about, or refer people to, services that may help prevent future injury, such as falls prevention, safeguarding services, domestic abuse services, violence prevention programmes, and condition-specific support organisations.

1.4.11 For people admitted to hospital with violent injuries related to suspected criminal activity, consider a violence prevention programme and follow-up as part of their rehabilitation plans. This could include psychological support (for example, counselling), substance abuse rehabilitation, employment or education training, group sessions, family development, liaison with the police, social worker involvement, and rehousing, when needed.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on developing a rehabilitation plan and making referrals.

Full details of the evidence and the committee's discussion are in:

- evidence review A.1/A.2: identification and assessment of rehabilitation needs after traumatic injury
- evidence review B.4: rehabilitation interventions relating to participation in society for people with complex rehabilitation needs after traumatic injury
- evidence review D.1 (service coordination): inpatient settings for people with complex rehabilitation needs after traumatic injury
- evidence review D.2 (service coordination): inpatient to outpatient settings for people with complex rehabilitation needs after traumatic injury
- evidence review D.3 (service coordination): barriers and facilitators to accessing rehabilitation services following discharge to the community.

1.5 Rehabilitation programmes of therapies and treatments

General principles for rehabilitation programmes

1.5.1 Rehabilitation programmes of therapies and treatments should:

- form part of the person's rehabilitation plan, and be tailored to their individual needs (see the section on developing a rehabilitation plan and making referrals)
- focus on outcomes (for example, return to work, school or leisure activities) and be based on the person's short-term and long-term rehabilitation goals (see the section on setting rehabilitation goals)
- include educational material to help people understand the nature of their injuries, to promote self-care and to prepare them for any long-term or intensive periods of rehabilitation (for example, sleep, pacing activities and pain management)
- include (as appropriate) physical, cognitive and psychological therapies and treatments such as physiotherapy, exercise, occupational therapy, psychology and orthotics, as well as injury-specific therapies and treatments; see the sections on:
  - physical rehabilitation
  - cognitive rehabilitation
  - psychological rehabilitation
  - rehabilitation after limb reconstruction, limb loss or amputation
  - rehabilitation after spinal cord injury
  - rehabilitation after nerve injury
  - rehabilitation after chest injury
- include access to specialist services to address complex issues such as

fertility and endocrine concerns

- include (as appropriate) a combination of group and individual sessions as well as the development of a self-management rehabilitation programme (see the section on supporting access and participation in education, work and community [adjustment and goal setting])
- include and document regular progress reviews and a final assessment to review outcomes, update the rehabilitation plan and detail any ongoing rehabilitation needs for onward referrals to GP, outpatient and/or community services
- include post-programme follow-up, in person or virtually.

1.5.2 Tailor the start time, frequency, intensity and duration of the rehabilitation programme to have the most beneficial effect on the person's recovery (for example, a short period of intensive rehabilitation at an important time point might be better than weekly sessions over a long period).

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on general principles for rehabilitation programmes.

Full details of the evidence and the committee's discussion are in evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury.

Intensive rehabilitation programmes

1.5.3 In the post-acute period, consider an intensive (for example, 3 weeks) inpatient or outpatient (including residential) rehabilitation programme for adults, young people and children with complex injuries and rehabilitation needs if such an intervention is likely to have a significant impact on change in function (for example, it could result in return to work or education and living independently).

1.5.4 When providing intensive rehabilitation programmes:

- offer education and learning materials (see the section on guided self-managed rehabilitation) to prepare people for intensive rehabilitation, for example, 1 week of remote learning followed by a (for example, 3-week) residential or outpatient programme
- answer questions, such as those relating to the person's injuries and rehabilitation
- consider delivering rehabilitation therapies with regular breaks (for example, only during weekdays to allow for rest periods at weekends and time to review progress)
- communicate any changes to the rehabilitation plan with the local team following the intensive period of rehabilitation.

1.5.5 Start an intensive rehabilitation programme at the appropriate time for the person, taking into account:

- that the timing and nature of rehabilitation therapies and treatments will depend on issues such as bone and soft tissue healing, weight-bearing, and removal of weight-bearing restrictions
- the person's psychological and emotional wellbeing, levels of adjustment and engagement with the rehabilitation process.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on intensive rehabilitation programmes.

Full details of the evidence and the committee's discussion are in evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury.

Guided self-managed rehabilitation

1.5.6 Consider guided self-managed rehabilitation to allow the person to engage in rehabilitation in their own time and by their own schedule, working with

rehabilitation healthcare professionals and practitioners, with regular reviews to check on progress, provide ongoing reassurance and answer queries.

1.5.7 As part of a self-management rehabilitation programme, consider providing a tailored package of online education and learning materials for people after a traumatic injury, which could include information on:

- movement and physical activity
- energy conservation and pacing
- sleep
- activities of daily living
- work, social activities and hobbies
- nutrition and diet
- pain management and medicines
- wound healing
- mental health
- local and national sources of information
- peer support services, including local and national groups.

For people who cannot access the internet, explore alternative ways to provide these materials.

1.5.8 If people are following a self-management rehabilitation programme, consider arranging follow-up appointments and regular reviews with rehabilitation healthcare professionals and practitioners to check on self-managed progress, provide ongoing reassurance and answer new queries.

1.5.9 For children, young people and vulnerable adults, offer additional support to develop and deliver a self-management programme that takes into account their communication needs, their own views and priorities and (for children) their developmental stage.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on guided self-managed rehabilitation.

Full details of the evidence and the committee's discussion are in:

- evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury
- evidence review B.3: psychological and psychosocial interventions for people with complex rehabilitation needs after traumatic injury
- evidence review B.4: rehabilitation interventions relating to participation in society for people with complex rehabilitation needs after traumatic injury
- evidence review D.3 (service coordination): barriers and facilitators to accessing rehabilitation services following discharge to the community
- evidence review D.4 (service coordination): support needs and preferences following discharge to outpatient or community rehabilitation services for people with complex rehabilitation needs after traumatic injury.

Monitoring progress against the rehabilitation plan, goals and programme of therapies and treatments

1.5.10 Monitor the person's progress after starting rehabilitation. Use tools such as patient-reported outcome measures (PROMs) and clinician-reported outcome measures (CROMs) for adults; parent- and child-reported measures for children and young people; and consider using tools that involve family members and carers. Additional specific clinical assessments may be used as appropriate.

1.5.11 Encourage people to record information about their injuries, treatments and rehabilitation therapy options (for example, using a diary as part of their rehabilitation plan) to assist discussions and shared decision making.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on monitoring progress against the rehabilitation plan, goals and programme of therapies and treatments.

Full details of the evidence and the committee's discussion are in:

- evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury
- evidence review D.3 (service coordination): barriers and facilitators to accessing rehabilitation services following discharge to the community.

1.6 Principles for sharing information and involving family and carers

1.6.1 Involve people, and their families and carers (as appropriate), in assessments, in planning their coordination of care and in making decisions at all stages of the rehabilitation process. This should include discussing medical or surgical treatment options, discussing findings from assessments, setting goals, discussing potential discharge destinations and examining the different rehabilitation options after discharge.

1.6.2 Encourage and support children and young people to be actively involved in decision making about their rehabilitation to the best of their ability.

1.6.3 Be aware that encouragement from family members, carers, friends and healthcare professionals can all have a positive effect on a person's rehabilitation after a traumatic injury, so involve the person's family members, carers and friends (as appropriate) as much as possible throughout the person's rehabilitation journey.

1.6.4 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:

- specific to the person's injuries
- 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
- offered throughout the person's care
- personalised and sensitive
- supportive and respectful
- evidence-based and consistent between healthcare professionals.

  For more guidance on communication, providing information (including different formats and languages) and shared decision making, see the NICE guidelines on patient experience in adult NHS services, babies, children and young people's experience of healthcare, decision making and mental capacity and shared decision making.

1.6.5 Be aware that if a person has severe and complex rehabilitation needs after a traumatic injury, if they have had a brain injury or if they have problems with cognitive functioning after a traumatic injury, information giving may need to be enhanced and reinforced by:

- repeating information on several occasions
- providing information in a suitable format (for example, Easy Read)
- giving information in the presence of family members or carers (as appropriate).

1.6.6 Be aware that people who lack mental capacity may be legally entitled to professional advocacy (see the Mental Capacity Act 2005), as may people who have care and support needs (see the Care Act 2014). Also see the NICE guideline on decision making and mental capacity.

1.6.7 Advise carers about their right to a carer's assessment, an assessment for replacement care, and other support (see the NICE guideline on supporting adult

carers for recommendations on identifying, assessing and meeting the caring, physical and mental health needs of families and carers).

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on principles for sharing information and involving family and carers.

Full details of the evidence and the committee's discussion are:

- evidence review D.1 (service coordination): inpatient settings for people with complex rehabilitation needs after traumatic injury
- evidence review D.2 (service coordination): inpatient to outpatient settings for people with complex rehabilitation needs after traumatic injury
- evidence review D.3 (service coordination): barriers and facilitators to accessing rehabilitation services following discharge to the community
- evidence review D.4 (service coordination): support needs and preferences following discharge to outpatient or community rehabilitation services for people with complex rehabilitation needs after traumatic injury.

1.7 Coordination of rehabilitation care in hospital

From admission to hospital

1.7.1 Where possible, provide continuity of staff throughout the person's rehabilitation pathway.

1.7.2 Assign a named rehabilitation coordinator or key worker to oversee the person's care as soon as possible and within 72 hours of admission. Ensure that the person knows who their rehabilitation coordinator or key worker is, how they will coordinate care, and how they can be contacted.

1.7.3 The trauma team should agree the core members of the rehabilitation

multidisciplinary team who will establish an injury management plan and start developing a rehabilitation plan and goals. See recommendation 1.2.4 for details of the multidisciplinary team after hospital admission.

1.7.4 A member of the rehabilitation multidisciplinary team should discuss the person's rehabilitation at daily trauma meetings or ward rounds.

1.7.5 Where assessment identifies the need for specialist rehabilitation (see the section on multidisciplinary team rehabilitation needs assessment), complete the referral to specialist rehabilitation units as soon as possible.

1.7.6 Use a unique identifier, preferably the NHS number if this is known, when exchanging clinical information about the person's assessment, rehabilitation plan, onward referral, transition between services, discharge to community services, and all aspects of their care pathway.

When transferring between services and settings

1.7.7 Make follow-up appointments with acute teams (if needed) for people moving from an acute unit to rehabilitation services, and ensure that the person is informed before they are transferred.

1.7.8 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:

- to those coordinating and delivering rehabilitation in the new setting or service
- to the person, and family members and carers (as appropriate)
- to any other service providers involved in the person's care and support.

1.7.9 The detailed handover and report should include oral and online or printed

information about:

- all of the person's injuries
- different treatment options and their benefits and risks
- the person's current rehabilitation plan and goals
- the person's cultural, language and communication needs
- psychological approaches to managing pain and fatigue, if relevant
- beneficial activities, and activities to avoid
- how to manage activities of daily living, including self-care and re-engaging with everyday life
- plans for returning to work or school, housing and benefits, and driving, if relevant
- how to recognise possible problems or complications, and what to do
- local support groups, opportunities to access peer support, online forums and national charities, and how to get in touch with them
- services that provide independent legal, financial, employment and welfare advice
- advice for the family or carers about:
  - what to expect and how to support the person at home
  - the impact of the traumatic injury on family members and carers, and how they can get support.

1.7.10 When people transfer between service providers or settings, discuss with them:

- their expected recovery pathway
- what might happen if recovery is slower than expected
- the emotional impact of living with possible long-term symptoms and treatments.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on coordination of rehabilitation care in hospital.

Full details of the evidence and the committee's discussion are in:

- evidence review C.1: specific programmes and packages in amputation for people with complex rehabilitation needs after traumatic injury
- evidence review D.1 (service coordination): inpatient settings for people with complex rehabilitation needs after traumatic injury
- evidence review D.2 (service coordination): inpatient to outpatient settings for people with complex rehabilitation needs after traumatic injury
- evidence review D.3 (service coordination): barriers and facilitators to accessing rehabilitation services following discharge to the community
- evidence review D.4 (service coordination): support needs and preferences following discharge to outpatient or community rehabilitation services for people with complex rehabilitation needs after traumatic injury.

1.8 Coordination of rehabilitation care at discharge

Discharge planning and a multidisciplinary approach

1.8.1 Consider early, multidisciplinary discharge planning to ensure appropriate and smooth discharge and transition to outpatient and community services.

1.8.2 Reassess the person's needs and review the rehabilitation plan before discharge to ensure that their needs are addressed alongside any long-term, existing health conditions or disabilities.

1.8.3 Be aware that family members and carers can play a key role in the smooth transition to outpatient and community services. If the person consents and their family members or carers agree, actively involve them in the transition process.

1.8.4 Give people information and support at the earliest opportunity if they need to apply for funded equipment for use after discharge from hospital (for example, wheelchairs) because applications can take time to process and may delay the person's discharge.

1.8.5 For children and young people, arrange a meeting between the school or education setting, 1 or more members of the multidisciplinary team, and their parents or carers, to inform the education provider about the changes to the environment and education plan that the child or young person may need to meet their education and support needs. This should take into account transport needs.

1.8.6 Advise people that further help with funding for equipment, assistive technology, environmental adaptations and other forms of support with rehabilitation might be available for their home, education and workplace settings (for example, through local authorities, the education, health and care plan, Access to Work grants, voluntary sector grants and the Department for Work and Pensions).

1.8.7 Give people, and their family members or carers (as appropriate), information about services that provide independent legal, financial, employment and welfare advice (for example, Citizens Advice).

1.8.8 If a person has significant ongoing and complex medical and therapy needs, offer a gradual and incremental return into the community, for example, transfer to a local hospital, a stepdown bed or a pre-discharge visit to home, to reduce the distress of the sudden loss of support as an inpatient.

1.8.9 Ensure that ongoing advice about pain management, including a plan to reduce analgesia, is discussed with the person and passed onto the person's GP or another lead clinician. See also the NICE guideline on medicines optimisation.

1.8.10 Where possible, arrange joint inpatient and community team home visits with the person before discharge, especially for people with significant ongoing needs.

1.8.11 If there are any concerns about how the person will manage at home after they are discharged, consider overnight or weekend visits home before discharge, depending on their needs, preferences and home circumstances.

1.8.12 When arranging overnight or weekend visits home, involve the person in discussing the possible risks and how to manage them, especially if they live alone.

Planning for rehabilitation and other support following discharge

1.8.13 If a person is likely to have continuing health and social care needs after discharge to home:

- inform relevant healthcare professionals, social care practitioners and education practitioners (as appropriate)
- establish the person's eligibility for funded social care support, including for families and carers
- use the NHS continuing healthcare checklist, to establish the person's eligibility for a full continuing healthcare assessment before discharge
- for children and young people, establish their eligibility for emergency education funding for short-term support at school and for funded support through an education, health and social care plan (if appropriate).

  Also see the NICE guideline on transition between inpatient hospital settings and community or care home settings for adults with social care needs.

1.8.14 Offer a multidisciplinary approach to meet the person's rehabilitation and social care needs that is coordinated, consistent and as integrated as possible, to support the person, and their family or carer (as appropriate), through transfer from inpatient to outpatient rehabilitation services.

1.8.15 Document in the rehabilitation plan and handover report how rehabilitation after discharge will be delivered (see recommendations 1.7.7 to 1.7.9 for what should be included). When transferring the person to outpatient and community settings (including home), also include:

- whether ongoing support and follow-up after discharge is needed, for example, community rehabilitation, referrals and review appointments

- when community rehabilitation appointments will be likely to take place.

1.8.16 For people who will have significant ongoing needs after discharge:

- arrange a pre-discharge planning meeting with community practitioners who will be involved in the person's rehabilitation, care and support (for example, therapists, social workers and care coordinators)
- encourage pre-discharge visits by community practitioners to meet the person, and their family or carer (as appropriate)
- consider organising a joint 'handover' appointment between the inpatient multidisciplinary team and community practitioners at the point of discharge.

1.8.17 Liaise with community teams (such as community and voluntary sector providers, physiotherapists and occupational therapists, education support, and special educational needs coordinators in schools and nurseries for children and young people) to agree a staged return to the workplace or education. (See also the NICE guideline on transition between inpatient hospital settings and community or care home settings for adults with social care needs.)

1.8.18 When planning discharge, address potential barriers that may prevent the person accessing rehabilitation in the community. For example, ensure that they can travel to and access the location of treatments, and ensure that the timing and length of appointments will be manageable for them.

1.8.19 If a person cannot travel to rehabilitation appointments, offer telephone or video consultations, or rehabilitation in the person's home.

1.8.20 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).

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on coordination of rehabilitation care at discharge.

Full details of the evidence and the committee's discussion are in:

- evidence review A.1/A.2: identification and assessment of rehabilitation needs after traumatic injury
- evidence review B.4: rehabilitation interventions relating to participation in society for people with complex rehabilitation needs after traumatic injury
- evidence review D.2 (service coordination): inpatient to outpatient settings for people with complex rehabilitation needs after traumatic injury
- evidence review D.3 (service coordination): barriers and facilitators to accessing rehabilitation services following discharge to the community
- evidence review D.4 (service coordination): support needs and preferences following discharge to outpatient or community rehabilitation services for people with complex rehabilitation needs after traumatic injury.

A single point of contact, key contact and key worker after discharge

1.8.21 At discharge from hospital, provide people and their family or carers (as appropriate) with a single point of contact at the hospital for information, help and advice for a limited time period (for example, 3 months).

1.8.22 If people need ongoing rehabilitation and other health and social care support after discharge, the inpatient multidisciplinary team and community practitioners should agree who will be the key contact after discharge when contact with the hospital is no longer appropriate (see recommendation 1.8.23). This person may be a GP, rehabilitation physician, special educational needs coordinator, allied health professional, family support worker, social worker, case manager, disability paediatrician or speciality-specific coordinator, for example, a neuro navigator.

1.8.23 If people have complex or long-term conditions or social care needs, consider appointing a key worker as a direct source of advice, support and signposting. This should be a healthcare or social care professional with knowledge and expertise about inpatient or community-based rehabilitation and support, including education or training support for children and young people.

1.8.24 For young people who are transitioning between children's and adults' services, see recommendations about the role of the named worker in the NICE guideline on transition from children's to adults' services for young people using health or social care services.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on a single point of contact, key contact and key worker after discharge.

Full details of the evidence and the committee's discussion are in:

- evidence review B.4: rehabilitation interventions relating to participation in society for people with complex rehabilitation needs after traumatic injury
- evidence review D.2 (service coordination): inpatient to outpatient settings for people with complex rehabilitation needs after traumatic injury
- evidence review D.3 (service coordination): barriers and facilitators to accessing rehabilitation services following discharge to the community
- evidence review D.4 (service coordination): support needs and preferences following discharge to outpatient or community rehabilitation services for people with complex rehabilitation needs after traumatic injury.

1.9 Supporting access and participation in education, work and community (adjustment and goal setting)

Also see the section on setting rehabilitation goals.

1.9.1 Help and support the person to adjust after a traumatic injury by asking them and their family members or carers (as appropriate) about:

- their life, hobbies, occupation, usual activities, and personal and family history, and finding out what is important to them
- their views and feelings about their injuries and rehabilitation options
- the support they think they will need by asking about their views and feelings
- allowing time for adjustment and considering this before starting any new rehabilitation therapies or interventions.

1.9.2 Support the person to achieve realistic rehabilitation goals for life skills, work-related training or education (see the section on setting rehabilitation goals). Support should be tailored to the person's needs and may include:

- providing equipment and adaptations (for example, wheelchairs and seating)
- increasing independence in activities of daily living (for example, personal care, dressing and bathing, housework, shopping, food preparation, eating and drinking, managing money, how to access carers' and disability benefits and grants, driving or using public transport)
- work-related training (for example, careers advice and retraining)
- advice from job centres (for example, disability employment advisers and access to work scheme)
- access to adult education settings
- access to education for children and young people (for example, special educational needs and disabilities [SEND] adjustments in school, or new school placements).

1.9.3 Revisit rehabilitation goals with the person at regular intervals and align them with ongoing emotional and psychological adjustment.

1.9.4 Give people information about opportunities for engaging in daily meaningful activity (for example, hobbies, social activities or voluntary work) while they are in the process of a staged return to work.

1.9.5 Adapt rehabilitation activities to promote social interaction and participation in the person's normal activities of daily living consistent with the person's lifestyle and preferences.

1.9.6 Provide information for the person's employer or education provider about:

- the person's rehabilitation needs **and**
- how they can make adjustments to support the person's rehabilitation goals, for example, a staged or part-time return to work or education, and/or amended duties.

1.9.7 See the section on workplace culture and policies in the NICE guideline on workplace health: long-term sickness absence and capability to work for recommendations about vocational support and returning to work.

1.9.8 Provide information for early years settings or schools about the child or young person's rehabilitation needs, and the adjustments needed to enable their return to education and sports, for example, a staged return.

1.9.9 Give children and young people, and their families and carers (as appropriate), information about educational support and return to school.

1.9.10 For young people who are starting to access support from adult rehabilitation services, see the NICE guideline on transition from children's to adults' services for young people using health or social care services.

1.9.11 Community practitioners should offer emotional and psychological support to adults and their families and carers to help with lifestyle adjustments and the effects of the traumatic injury (for example, prolonged hospitalisations), and support their gradual return to work, education, social roles and leisure activities.

1.9.12 The team around the child should offer emotional and psychological support to children, young people and their families and carers to help with lifestyle adjustments and the effects of the traumatic injury (for example, prolonged hospitalisations), and support their gradual return to education, play, social and leisure activities.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on supporting access and participation in education, work and community (adjustment and goal setting).

Full details of the evidence and the committee's discussion are in:

- evidence review B.3: psychological and psychosocial interventions for people with complex rehabilitation needs after traumatic injury
- evidence review B.4: rehabilitation interventions relating to participation in society for people with complex rehabilitation needs after traumatic injury
- evidence review D.3 (service coordination): barriers and facilitators to accessing rehabilitation services following discharge to the community
- evidence review D.4 (service coordination): support needs and preferences following discharge to outpatient or community rehabilitation services for people with complex rehabilitation needs after traumatic injury.

1.10 Commissioning and organisation of rehabilitation services

Commissioning

1.10.1 When planning, commissioning and coordinating the delivery of rehabilitation and related services (for example, social care and the voluntary sector), commissioners and providers should design services with whole care pathways in mind, from acute treatment and inpatient rehabilitation through to community provision, including specialised and non-specialised elements.

1.10.2 Ensure collaboration between commissioners from different commissioning bodies to ensure seamless provision, for example, to include specialist community, vocational and educational rehabilitation provision for people after a traumatic injury, including those transferring between children's and adults' services.

1.10.3 Ensure that it is clear locally who has overall designated commissioning responsibility for rehabilitation services.

1.10.4 Commissioners and providers should ensure that rehabilitation services for people after a traumatic injury:

- meet the needs of people of all ages and at all stages of rehabilitation
- are developed and co-designed in collaboration with the people who use rehabilitation services and the healthcare professionals who work within them
- are outcome-focused and relevant for the people who use them.

1.10.5 Consider commissioning intensive (for example, 3-week) residential or outpatient rehabilitation programmes for people of all ages in addition to existing rehabilitation pathways, for example, as a tertiary service for trauma rehabilitation within the trauma network.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on commissioning.

Full details of the evidence and the committee's discussion are in:

- evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury
- evidence review D.1 (service coordination): inpatient settings for people with complex rehabilitation needs after traumatic injury.

Organisation

1.10.6 Establish care networks (for example, trauma networks) and clear guidance on coordination and communication between rehabilitation settings and services to meet the needs of the local population across different aspects of rehabilitation service commissioning.

1.10.7 Rehabilitation units should maintain an online directory of care pathways, rehabilitation facilities and voluntary sector services (including recreational facilities) so that practitioners have access to up-to-date information and contact details to pass on to people with complex rehabilitation needs.

1.10.8 If community treatments and services remain uncertain at the point of discharge, give people and their families and carers (as appropriate) information about rehabilitation community and social services available in their local area and from national support networks, and how they can access these.

1.10.9 Offer networking opportunities between different rehabilitation, social care and related services to enhance inter-service awareness and working relationships.

1.10.10 Consider technology-enabled follow-up, support and rehabilitation sessions if people request more local, accessible therapy or if rehabilitation practitioners are not available in their area, for example, in rural areas.

1.10.11 Consider group rehabilitation sessions to allow people to interact with peers, share experiences and to provide valuable support.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on organisation.

Full details of the evidence and the committee's discussion are in:

- evidence review D.1 (service coordination): inpatient settings for people with complex rehabilitation needs after traumatic injury
- evidence review D.2 (service coordination): inpatient to outpatient settings for people with complex rehabilitation needs after traumatic injury
- evidence review D.3 (service coordination): barriers and facilitators to accessing rehabilitation services following discharge to the community.

Rehabilitation skills, knowledge and expertise in the workforce

1.10.12 Ensure that staff working with people with complex rehabilitation needs have specialist skills, knowledge and expertise in the person's injuries, the complexity of their rehabilitation needs and goals, and the stages of their recovery journey.

1.10.13 Ensure that hospital staff have access to supervision and training to develop their specialist knowledge in the management and rehabilitation of traumatic injuries.

1.10.14 Ensure that community rehabilitation practitioners have access to training expertise, advice or peer support from specialist services, especially where specific rehabilitation interventions or services are not widely available. For example, healthcare professionals such as speech and language therapists, practitioner psychologists and consultants with specialist knowledge of specific injuries and complex rehabilitation could work together with general rehabilitation staff working in community-based rehabilitation services.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on rehabilitation skills, knowledge and expertise in the workforce.

Full details of the evidence and the committee's discussion are in:

- evidence review D.2 (service coordination): inpatient to outpatient settings for people with complex rehabilitation needs after traumatic injury
- evidence review D.4 (service coordination): support needs and preferences following discharge to outpatient or community rehabilitation services for people with complex rehabilitation needs after traumatic injury.

1.11 Physical rehabilitation

Physical rehabilitation – early interventions and principles

1.11.1 Provide personalised exercises as soon as possible after a traumatic injury to

maintain and improve muscle function, strength and range of movement.

1.11.2 Proactively support people in managing their pain, and ensure that they have adequate analgesia so that rehabilitation can go ahead.

1.11.3 Choose a pain scale appropriate for the person, taking into account a range of factors such as their developmental age, cognitive ability, any communication difficulties and their first language.

1.11.4 If needed, provide aids, splints or orthotics to maintain range of movement or protect the injury (for example, an ankle-foot orthosis, knee brace or spinal orthosis).

1.11.5 Use clinical judgement and expertise to determine the frequency and dose of the prescribed exercises because this is vital to the success of the interventions, and will differ depending on the individual needs and goals.

1.11.6 Before starting weight-bearing exercises, be aware of the effects of low blood pressure (for example, postural hypotension or vasovagal syncope [fainting]) and monitor the person for hypotensive symptoms when starting therapy.

1.11.7 Minimise adverse effects of low blood pressure and loss of postural reflexes by:

- optimising the person's bed position and using strategies such as thromboembolic stockings
- ensuring adequate hydration
- carrying out a medication review
- using abdominal binders and tilt tables.

1.11.8 Be aware that traumatic injury that requires intubation, or causes facial trauma, oedema or loss of dentition may lead to a voice disorder, decreased speech intelligibility and/or swallowing difficulties. Consider early referral to appropriate professionals as needed; this may include maxillofacial specialists, dental services, ear, nose and throat services, or speech and language therapy.

1.11.9 Promote independence with activities of daily living, in particular personal

activities of daily living, and consider referral to occupational therapy if needed.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on physical rehabilitation – early interventions and principles.

Full details of the evidence and the committee's discussion are in evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury.

Early weight-bearing

1.11.10 The surgical team should define and document the person's weight-bearing status at the earliest opportunity after a traumatic injury, and inform the rehabilitation multidisciplinary team, explaining the reasons for restricted weight-bearing, what limits should be put in place and for how long.

1.11.11 Start a programme of weight-bearing exercises, including exercises through play for children and young people, as soon as possible after a traumatic injury to encourage mobility and maintain postural reflexes, muscle mass, strength and function.

1.11.12 For people with lower limb injuries, start a programme of targeted weight-bearing exercises, including exercises through play for children and young people, to improve range of movement of the affected joint(s), improve muscle activation, and improve strength and balance. Aim to progress the person's function with weight-bearing tasks such as mobility, ability to move from sitting to standing, and ability to lateral step.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on early weight-bearing.

Full details of the evidence and the committee's discussion are in evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury.

Aerobic and strengthening exercises

1.11.13 As soon as possible after a traumatic injury, start a tailored exercise programme to help with reconditioning, fitness, strengthening, balance, proprioception and vestibular function, irrespective of the person's age, stage of rehabilitation or combination of injuries. The exercise programme:

- could be self-directed and/or delivered as one-to-one sessions or in a group
- should include resistance training, core strengthening exercises and general aerobic fitness
- should include task-specific balance training if needed
- should be incorporated into the usual play activities for children
- should be tailored to the person's needs and goals (for example, the frequency of the sessions and the exercises involved).

1.11.14 Consider a continued programme of aerobic exercise when agreeing a rehabilitation plan and at appropriate points along the rehabilitation pathway.

1.11.15 For people with limited lower limb mobility or immobility after a traumatic injury, consider a programme of upper body aerobic training or seated exercises.

1.11.16 Tailor the aerobic exercise programme to the person's interests to help with personal commitment and adherence, and depending on the nature of their traumatic injuries.

1.11.17 Do not withhold aerobic exercise programmes from older people after a traumatic injury.

1.11.18 After discharge from hospital after a traumatic injury, offer people a home exercise programme that includes aerobic and strengthening exercises, and review their progress at outpatient clinics or key worker appointments.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on aerobic and strengthening exercises.

Full details of the evidence and the committee's discussion are in evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury.

Gait training and re-education

1.11.19 For people who are unable to weight-bear (because of clinical restrictions or pre-existing conditions), start an exercise programme as soon as possible after the traumatic injury to reduce the impact of non-weight-bearing and to optimise the transition to gait training when possible.

1.11.20 As soon as possible after a traumatic injury and once weight-bearing can begin, start a gait re-education programme that:

- aims to restore gait patterns
- includes passive stretches and range of movement exercises
- reduces the impact of non-weight-bearing on joints and muscles.

1.11.21 For people who need a non-weight-bearing period after a traumatic injury:

- assess muscle weakness and joint range of movement as soon as possible after the non-weight-bearing period ends **and**
- start an exercise programme aimed at muscle strengthening and gait

progression.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on gait training and re-education.

Full details of the evidence and the committee's discussion are in evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury.

Manual therapies and maintaining joint range of movement

1.11.22 Provide a programme of passive, active assisted or active range of movement exercises for all affected joints.

1.11.23 Consider a programme of targeted stretching techniques in addition to the standard range of movement exercise programme in recommendation 1.11.22.

1.11.24 If the person is unable to engage in range of movement exercises independently, consider using controlled motion devices to help with range of movement at the knee and ankle joints.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on manual therapies and maintaining joint range of movement.

Full details of the evidence and the committee's discussion are in evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury.

Splinting and orthotics

1.11.25 Regularly review the use of splints (as part of donning [putting on] and doffing [taking off]), cautiously increasing the length of time the splint is in use to ensure

that it is still appropriate and that there are not complications such as nerve injury or pressure sores.

1.11.26 Ensure that the person, and their families and carers (as appropriate), know how to put on and take off their orthoses and splints, when to wear them and when to seek advice.

1.11.27 For people with lower limb fractures or nerve injuries, consider an orthosis (for example, a dorsi-wedge in a moon boot or an ankle-foot orthosis) if there is a risk of loss of ankle range of movement.

1.11.28 For people with external fixation for lower limb fractures, carry out specialised splinting to maintain ankle range of movement.

1.11.29 Monitor the pressure effects on skin by orthoses or splints, particularly in people with reduced cutaneous sensation and/or recent skin graft or flaps. Seek advice from tissue viability services and/or plastic surgery specialists as needed.

1.11.30 Be aware that spinal orthoses, such as cervical collars and thoraco-lumbar spinal orthoses, may be poorly tolerated by some people, particularly older people or those with delirium, cognitive impairment or dementia.

1.11.31 If spinal orthoses are causing problems (such as pain, pressure sores, or swallowing or breathing difficulties) or are significantly affecting the person's ability to engage with rehabilitation, inform the relevant surgical team.

1.11.32 If splints or braces are used to immobilise and protect joints, avoid positions that may result in loss of function or complications in the future.

1.11.33 For people with upper limb injuries that affect range of movement in their hands and fingers, offer bespoke (thermoplastic) splints as early as clinically possible to maintain range of movement. Refer people with complex hand injuries to a hand therapy specialist, as appropriate.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on splinting and orthotics.

Full details of the evidence and the committee's discussion are in evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury.

Management of swelling and oedema, and scars

Swelling and oedema management

1.11.34 Discuss with people what swelling to expect after a traumatic injury. Explain how to monitor swelling on a daily basis, and advise them about signs or symptoms that they should seek medical advice for.

1.11.35 Consider alternative medical causes for unexpected swelling such as deep vein thrombosis, and investigate as necessary.

1.11.36 Start a programme of circulation exercises and elevate the person's affected limb to prevent and reduce swelling after a traumatic injury, for example, by using elevating leg rests for wheelchairs.

1.11.37 Consider providing compression bandaging under specialist supervision, for example, from a specialist in hand therapy.

Scar management

1.11.38 Help the person desensitise themselves to their injury by encouraging them to:

- look at the affected area
- gently touch the affected area
- move their affected limb.

1.11.39 For children and young people, keep their hospital bed as a 'safe' space, and carry out potentially painful scar management techniques such as massage, or other painful treatments, away from their bed if possible.

1.11.40 Reassure people that unpleasant sensations (for example, pain and itchiness) in the area of wounds or skin injuries are normal after a traumatic injury, and may change as recovery progresses.

1.11.41 Discuss and give people information about scar management such as keeping the wound out of direct sunlight for 1 year, and using recommended emollients.

1.11.42 Provide a massage programme for scar tissue after healing, to desensitise the affected area and increase tissue mobility.

1.11.43 Consider referral for specialist treatments for people with problematic scars such as hypertrophy or contracture across joints.

1.11.44 If the person's injuries and scars have had a significant psychological impact on them, consider referral to psychology services and/or signpost to appropriate support groups. See also the section on assessing psychological functioning and the section on psychological rehabilitation.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on management of swelling and oedema, and scars.

Full details of the evidence and the committee's discussion are in evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury.

Nutritional supplementation

1.11.45 Monitor the person's intake of adequate food and drink to maintain weight, taking into account the effects of post-surgical anorexia, pain medications, constipation and nausea, and the increased calorific needs of healing.

1.11.46 Regularly and proactively review the person's nutritional needs and the dietary plan for effective rehabilitation. See recommendations in the NICE guideline on nutrition support for adults.

1.11.47 Following assessment by a dietitian specialising in trauma care, consider supplementation of dietary protein for people who are frail, have gastrointestinal health issues or have multiple injuries.

1.11.48 Involve specialist dietitians when considering dietary protein requirements for people with severe kidney impairment.

1.11.49 For people with a fragility fracture, measure vitamin D levels and consider a supplement. Also see the recommendations in the NICE guideline on osteoporosis: assessing the risk of fragility fracture and the NICE guideline on vitamin D: supplement use in specific population groups.

1.11.50 For people with burns in combination with other traumatic injuries, regularly monitor their weight and involve a dietitian with experience of burns, for example, if the person's weight fluctuates or they are at risk of losing muscle mass and strength.

1.11.51 If there are concerns about safe swallowing and risk of aspiration (see recommendation 1.1.10), keep the person nil by mouth and carry out a swallowing assessment by an appropriately trained healthcare professional as soon as possible. If immediate assessment is not available, maintain hydration and nutrition by non-oral means. Also see the NICE guideline on nutrition support for adults.

1.11.52 Involve a dietitian and nutrition team for treatments to maintain nutritional supply, for example, a nasogastric tube, percutaneous endoscopic gastrostomy (PEG), radiologically inserted percutaneous gastrostomy (RIG) or parenteral nutrition (PN).

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on nutritional supplementation.

Full details of the evidence and the committee's discussion are in evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury.

1.12 Cognitive rehabilitation

Please note this guideline does not cover assessment or specific rehabilitation interventions for people with traumatic brain injuries. See recommendation 1.2.3 in the section on multidisciplinary team rehabilitation needs assessment.

1.12.1 Reassure people that most trauma-related problems with cognitive functioning are temporary.

1.12.2 Adapt rehabilitation therapy to the person's current cognitive function and emotional needs, taking into account any problems with motor development and skills, and any coexisting neurodevelopmental conditions.

1.12.3 If problems with cognitive functioning persist, get worse or recur, carry out further assessments to understand the cause.

1.12.4 If a person has problems with cognitive functioning after a traumatic injury, provide information:

- using clear language
- with the timing, content and delivery tailored to the person's needs and preferences
- in a suitable format (for example, Easy Read)
- with written plans to aid recall
- that uses pictures, symbols and objects of reference

- with calendar or diary prompts for sessions or appointments.

1.12.5 Share information with family members or carers (as appropriate) so they can help the person understand the key messages and aid recall.

1.12.6 For children and young people:

- ask parents and carers if there are any pre-injury cognitive issues, for example, any known special educational needs
- liaise with their education provider if information about their pre-injury cognitive performance is needed
- inform education providers and teachers, including those in the hospital setting, about the child or young person's needs and any problems with cognitive functioning.

1.12.7 Be aware that after a traumatic injury, people may present with fluctuations in mental capacity, and that this may affect decision making. See the NICE guideline on decision making and mental capacity.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on cognitive rehabilitation.

Full details of the evidence and the committee's discussion are in evidence review B.2: cognitive interventions for people with complex rehabilitation needs after traumatic injury.

1.13 Psychological rehabilitation

1.13.1 Reassure people that short-term psychological problems in the form of an acute stress response are common after a traumatic injury. Symptoms can last for 4 to 6 weeks and may include:

- disturbed sleep

- intrusive thoughts and memories
- nightmares
- bedwetting in children
- flashbacks
- low mood
- anxiety.

1.13.2 Be aware that:

- there is an ongoing risk of low mood in people after a traumatic injury
- psychological problems and mental distress commonly accompany ongoing emotional and psychological adjustments, for example, as a result of life-changing injuries
- psychological problems and mental distress can recur or deteriorate when a person is discharged home or transferred to another setting
- anxiety, depression and post-traumatic stress disorder (PTSD) can occur or recur at any time after a traumatic injury.

1.13.3 Discuss psychological support with the person, and their family members or carers (as appropriate), and offer psychological and emotional support that is tailored to their rehabilitation goals, needs and preferences as part of an overall rehabilitation treatment programme.

1.13.4 If the person's rehabilitation is adversely affected by their psychological problems (for example, if the person is struggling to engage with the rehabilitation process), refer them urgently to psychology services for psychological assessment and treatment, ideally to a practitioner psychologist with appropriate expertise with physical trauma and rehabilitation.

1.13.5 Ask about thoughts of self-harm and suicide regularly, as part of psychological assessment, and particularly at key milestones such as hospital discharge and changes of setting.

1.13.6 The multidisciplinary team should regularly check for signs and symptoms of anxiety, depression and PTSD when reviewing the person's progress against rehabilitation goals and plans.

1.13.7 Treat PTSD, anxiety, and depression in adults, children and young people as part of an overall coordinated rehabilitation treatment package, and in line with the NICE guidelines on:

- post-traumatic stress disorder
- social anxiety disorder
- generalised anxiety disorder and panic disorder in adults
- depression in adults
- depression in adults with a chronic physical health problem
- depression in children and young people
- service user experience in adult mental health.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on psychological rehabilitation.

Full details of the evidence and the committee's discussion are in evidence review B.3: psychological and psychosocial interventions for people with complex rehabilitation needs after traumatic injury.

1.14 Rehabilitation after limb reconstruction, limb loss or amputation

This section covers specific rehabilitation for people after limb reconstruction, limb loss or amputation. The recommendations in this section should be read together with all the recommendations in the rest of the guideline apart from those specific to spinal cord injury, nerve injury or chest injury.

Rehabilitation after limb-threatening injury – early assessment, decision making and support

1.14.1 Discuss limb reconstruction and/or amputation with the person, and their family members or carers (as appropriate), when making decisions about treatment pathways and assessing rehabilitation options. Recognise that, for some people who have had a complex limb-threatening injury, amputation may be the option that best delivers the person's most important rehabilitation goals.

1.14.2 Members of a specialist multidisciplinary team (for example, a limb reconstruction team or prosthetics team) alongside the trauma rehabilitation team should discuss the implications of the following, as part of assessing rehabilitation needs, as soon as possible with the person, and their family members or carers (as appropriate):

- rehabilitation pathways
- pain management
- recovery timescales
- long-term expectations
- impact on daily life, for example, work, hobbies, activities, education and play.

1.14.3 When amputation is being considered and if time permits before surgery, a member or members of the specialist multidisciplinary team with expertise in prosthetic prescription and rehabilitation should carry out a pre-amputation rehabilitation assessment and consultation.

1.14.4 Offer psychological support before limb reconstruction or amputation (see the section on psychological support).

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on rehabilitation after limb-threatening injury – early assessment, decision making and support.

Full details of the evidence and the committee's discussion are in evidence review C.1: specific programmes and packages in amputation for people with complex rehabilitation needs after traumatic injury.

Rehabilitation after limb reconstruction

1.14.5 After limb reconstruction, start rehabilitation therapy as early as possible (ideally the day after surgery) to maintain range of movement. This may include:

- splinting
- exercise
- pain management
- swelling and oedema management
- hand therapy
- mobility
- positioning.

1.14.6 Avoid early rapid irreversible loss of range of movement after limb reconstruction by ensuring that the person carries out range of movement exercises for the affected joint and other joints to optimise recovery and avoid contractures.

1.14.7 Continue psychological and emotional support after limb reconstruction (see the section on psychological support).

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on rehabilitation after limb reconstruction.

Full details of the evidence and the committee's discussion are in evidence review C.1: specific programmes and packages in amputation for people with complex rehabilitation needs after traumatic injury.

Rehabilitation after limb loss or amputation

1.14.8 After limb loss or amputation, refer the person to the amputee and prosthetic rehabilitation service as soon as possible if the referral was not made before the surgery.

1.14.9 After limb loss or amputation, start rehabilitation therapy as early as possible and ideally the day after surgery. This may include:

- pain management (see the section on pain management)
- residual limb oedema and shaping (see the section on residual limb oedema and shaping)
- range of movement and strengthening exercises (see the section on range of movement and strengthening)
- functional independence, including play for children (see the section on functional independence)
- psychological support (see the section on psychological support).

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on rehabilitation after limb loss or amputation.

Full details of the evidence and the committee's discussion are in evidence review C.1: specific programmes and packages in amputation for people with complex rehabilitation needs after traumatic injury.

Pain management after limb loss or amputation

1.14.10 Plan analgesia with the person before surgery, and ensure that their pain is managed after surgery so that they can effectively participate in rehabilitation therapies.

1.14.11 Manage the different types of pain that can develop, for example, phantom limb pain, neurogenic pain, psychogenic pain, myogenic pain and complex regional pain, and refer the person to a specialist pain team if needed.

1.14.12 Consider visualisation interventions such as graded motor imagery or mirror therapy to manage phantom limb pain in people who have had an amputation or limb loss after trauma.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on pain management after limb loss or amputation.

Full details of the evidence and the committee's discussion are in evidence review C.1: specific programmes and packages in amputation for people with complex rehabilitation needs after traumatic injury.

Residual limb oedema and shaping after limb loss or amputation

1.14.13 Manage residual limb oedema using elevation and compression therapy to reduce swelling and improve shaping in preparation for prosthetics fitting.

1.14.14 For people with a below-knee amputation, keep the limb elevated using a residual limb (stump) board when using a wheelchair.

1.14.15 Avoid residual limb swelling when using walking aids, for example, by using crutches or a frame with the limb in a dependent position.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on residual limb oedema and shaping after limb loss or amputation.

Full details of the evidence and the committee's discussion are in evidence review C.1: specific programmes and packages in amputation for people with complex rehabilitation needs after traumatic injury.

Range of movement and strengthening after limb loss or amputation

1.14.16 Maintain and improve range of movement and strength after limb loss or amputation (particularly in hip flexors, hip abductors and knee flexors) by starting rehabilitation therapy that includes:

- exercise
- mobility, including early walking aids (for example, amputee-specific early walking aids) after surgery when the wound has settled
- positioning.

For a short explanation of why the committee made this recommendation and how it might affect practice, see the rationale and impact section on range of movement and strengthening after limb loss or amputation.

Full details of the evidence and the committee's discussion are in evidence review C.1: specific programmes and packages in amputation for people with complex rehabilitation needs after traumatic injury.

Functional independence after limb loss or amputation

1.14.17 Do not wait for prosthetics to be fitted before starting rehabilitation after limb loss or amputation.

1.14.18 Ensure that wheelchairs:

- are provided as early as possible
- include appropriate accessories (for example, anti-tippers and residual limb [stump] boards)
- are adjusted to accommodate the changes in the person's weight distribution after limb loss or amputation.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on functional independence after limb loss or amputation.

Full details of the evidence and the committee's discussion are in evidence review C.1: specific programmes and packages in amputation for people with complex rehabilitation needs after traumatic injury.

Psychological support after limb loss, amputation or limb reconstruction

1.14.19 Continue psychological support and ensure that the multidisciplinary team has access to a practitioner psychologist with appropriate expertise in physical trauma and rehabilitation, ideally with experience of working with people with limb loss, amputation or limb reconstruction.

1.14.20 For children, consider play or play therapy when offering psychological and emotional support.

1.14.21 For children and young people, the team around the child should actively monitor for any emerging emotional difficulties as the child or young person grows and develops (for example, moving schools, puberty and emotional relationships).

1.14.22 Take into account the long-term psychological impact of change in body image as a result of injury for all people and the psychological impact for children and young people as they grow.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on psychological support after limb loss, amputation or limb reconstruction.

Full details of the evidence and the committee's discussion are in evidence review C.1: specific programmes and packages in amputation for people with complex rehabilitation needs after traumatic injury.

Continuing rehabilitation after limb reconstruction, limb loss or amputation and after discharge

1.14.23 When completing a rehabilitation plan (see the section on developing a rehabilitation plan and making referrals) for people after limb reconstruction, limb loss or amputation, ensure that the following are always included in the person's rehabilitation programme:

- exercise and mobility
- psychological and emotional support
- referral and signposting to support groups
- pin-site review (for limb reconstruction)
- frame adjustment (for limb reconstruction)
- prosthetics team review, if relevant.

1.14.24 The specialist multidisciplinary team should offer psychological and emotional support to enable the person to adjust to their altered body image, manage pain and cope with the possibility that they may need further procedures. Psychological and emotional support should involve:

- listening carefully and validating feelings
- supporting reflection and reasoning around realistic goals and care
- supporting planning

- offering feedback about progress towards goals.

1.14.25 Carry out reviews of the rehabilitation plan (for example, equipment, home environment, clothing and footwear needs) at key points, for example:

- at discharge
- when an external-fixation frame is removed
- when weight-bearing status changes
- when prosthetics are changed
- when the person starts to go outside
- when the person starts to return to education, work or community activities
- if the person is readmitted because of complications.

(Also see the section on monitoring progress against the rehabilitation plan, goals and programme of therapies and treatments.)

1.14.26 For children and young people, monitor the impact of growth on the residual limb and prosthetic fitting, and refer without delay for specialist assessment when there are changes.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on continuing rehabilitation after limb reconstruction, limb loss or amputation and after discharge.

Full details of the evidence and the committee's discussion are in evidence review C.1: specific programmes and packages in amputation for people with complex rehabilitation needs after traumatic injury.

1.15 Rehabilitation after spinal cord injury

This section covers specific rehabilitation for people after spinal cord injury. The recommendations in this section should be read together with all the recommendations in

the rest of the guideline apart from those specific to limb injury, nerve injury or chest injury.

These recommendations focus on the rehabilitation and supportive needs of people with spinal cord injury (after initial acute assessment) who are not currently in a regional specialist spinal cord injury centre. See also the NICE guideline on spinal injury: assessment and initial management.

Rehabilitation after spinal cord injury – referral, assessment and general principles

1.15.1 For people with a spinal cord injury:

- ensure that ongoing contact with the regional specialist spinal cord injury centre is made in line with the recommendations on communication with tertiary services in the NICE guideline on spinal injury **and**
- refer using the national spinal injuries database within 24 hours of the diagnosis.

1.15.2 Seek advice from the regional specialist spinal cord injury centre outreach team throughout the person's inpatient stay and at discharge to support their rehabilitation.

1.15.3 A healthcare professional with appropriate clinical skills should complete an assessment using an American Spinal Injury Association (ASIA) chart as soon as possible after a spinal cord injury, and repeat this as clinically indicated.

1.15.4 Be aware that spinal cord injury may affect areas of physical function including bowel, bladder and sexual function, and seek specialist advice as appropriate (see also recommendation 1.2.6 in the multidisciplinary team rehabilitation needs assessment section).

1.15.5 Refer children and young people with a spinal cord injury:

- to specialist play services to support their emotional and physical development and wellbeing

- to education services to support their ongoing educational development.

1.15.6 For children and young people, monitor growth and nutrition throughout the rehabilitation process.

1.15.7 When discharge planning for children and young people after a spinal cord injury, ensure that meetings take place early and involve the child or young person, and their parents and carers (as appropriate), together with the local education authority, specialist play services and multidisciplinary teams involved in their care.

1.15.8 After hospital discharge, consider ongoing contact between the rehabilitation team and the person, and their family members and carers (as appropriate), with education and a structured review of progress in rehabilitation as part of outpatient follow-up. This could be offered by telephone or video link.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on rehabilitation after spinal cord injury – referral, assessment and general principles.

Full details of the evidence and the committee's discussion are in evidence review C.3: specific programmes and packages in spinal cord injury for people with complex rehabilitation needs after traumatic injury.

Bladder and bowel function

1.15.9 Assess and manage bladder function after a spinal cord injury as follows:

- protect upper renal function at all times by maintaining safe bladder emptying (inserting a urinary catheter if necessary), and ensuring that people understand and use bladder management techniques as a key part of their rehabilitation (see also the monitoring and surveillance section in the NICE guideline on urinary incontinence in neurological disease)
- identify acute kidney injury in line with the NICE guideline on acute kidney injury

- identify renal tract stones (see also the NICE guideline on urinary incontinence in neurological disease).

1.15.10 Regularly assess and manage bowel function after a spinal cord injury as follows:

- assess anal tone and sensation
- start and review a bowel management plan that includes laxatives, enemas, suppositories and manual evacuation, depending on the level and severity of the spinal injury.

1.15.11 Keep the person nil by mouth until their bowel function has been assessed because of the risk of neurogenic bowel stasis and aspiration pneumonia. Avoid unnecessary delays to assessing bowel function to avoid prolonged periods of nil by mouth.

1.15.12 For younger children, ask their parents and carers (as appropriate), about their pre-injury continence skills, and take their age and ability into account when assessing and managing bladder and bowel function.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on bladder and bowel function.

Full details of the evidence and the committee's discussion are in evidence review C.3: specific programmes and packages in spinal cord injury for people with complex rehabilitation needs after traumatic injury.

Respiratory function, swallowing and speech

1.15.13 Keep the person nil by mouth until their risk of aspiration has been assessed (see recommendation 1.11.51).

1.15.14 Be aware that people with cervical spine injuries and those managed on flat bed rest, are particularly at risk of swallowing and speech difficulties and should be assessed early for risk of aspiration.

1.15.15 Assess and manage respiratory function (taking into account age and ability when assessing children and young people) as follows:

- use spirometry to measure vital capacity in line with the NICE guideline on spinal injury
- consider prophylactic respiratory support with, for example, active cycle of breathing techniques, incentive spirometry, intermittent positive pressure breathing (IPPB) or non-invasive ventilation (NIV), to maintain forced vital capacity (FVC) and prevent chest complications
- consider use of cough-assist techniques or devices.

1.15.16 Consider critical care management for people with a high-level spinal injury.

1.15.17 Assess voice quality and refer to a speech and language therapist and/or ear, nose and throat specialist as needed.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on respiratory function, swallowing and speech.

Full details of the evidence and the committee's discussion are in evidence review C.3: specific programmes and packages in spinal cord injury for people with complex rehabilitation needs after traumatic injury.

Preventing complications

1.15.18 Assess skin and pressure care after a spinal cord injury as follows:

- start a 24-hour positioning and turning programme and use a pressure mattress if appropriate (ensuring that the spinal column has been assessed as mechanically stable) or indicated **and**
- give information about skin protection for people with sensory deficits.

1.15.19 Be aware of the risk of autonomic dysreflexia, and treat it as a medical

emergency.

1.15.20 Be aware that most people who have had a spinal cord injury will develop orthostatic hypotension, which can affect their participation in rehabilitation. Consider interventions to optimise blood pressure, for example, medication review, graduated positioning, abdominal binders and compression stockings.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on preventing complications.

Full details of the evidence and the committee's discussion are in evidence review C.3: specific programmes and packages in spinal cord injury for people with complex rehabilitation needs after traumatic injury.

Maintaining mobility and movement

1.15.21 For people with a spinal cord injury who are using a spinal orthosis (for example, cervical collar or thoraco-lumbar spinal orthosis), regularly assess them for complications such as pain, pressure sores, swallowing or breathing difficulties (particularly in older people or those with dementia or delirium).

1.15.22 If spinal orthoses are causing side effects or are significantly affecting the person's engagement with rehabilitation, inform the relevant surgical team.

1.15.23 Maintain joint range of motion after a spinal cord injury and consider early use of splints and orthoses.

1.15.24 Seek specialist advice about hand splints for people with a higher level cervical spinal injury to maintain tenodesis grasp and release ability where indicated; for example, do not splint into wrist extension if there is C6 involvement.

1.15.25 Consider interventions (for example, progressive sitting, tilt table) to increase mobility and aid early sitting as soon as possible after a spinal cord injury.

1.15.26 Consider additional techniques and specialised equipment (for example,

functional electrical stimulation, gait orthoses, bodyweight-supported gait training and robotic devices) to promote mobility, upper limb function and independent walking.

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.

1.15.28 For adults, treat spasticity to prevent losing range of joint movement and avoid contractures.

1.15.29 For adults, consider oral medications to treat spasticity or botulinum toxin type A targeted muscle injections, depending on the clinical circumstances.

In January 2022, botulinum toxin type A was an off-label use for some of the available brands. See individual summaries of product characteristics and NICE's information on prescribing medicines.

1.15.30 Stop oral medications and targeted muscle injections for spasticity if there is no benefit at the maximum tolerated dose. (Explain to the person that special precautions may be needed when stopping certain medicines.)

1.15.31 If spasticity is causing significant impairments in mobility, posture or function, and initial treatments are unsuccessful, refer the person to a multidisciplinary team experienced in the management of spasticity for assessment and treatment planning.

1.15.32 For children and young people, assess spasticity and follow the recommendations in the NICE guideline on spasticity in under 19s.

1.15.33 Be aware that pre-pubertal children have a high risk of early or late onset kyphoscoliosis, so monitor their spinal shape and curvature at regular intervals and refer early for specialist assessment if needed.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on maintaining mobility and movement.

Full details of the evidence and the committee's discussion are in:

- evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury
- evidence review C.3: specific programmes and packages in spinal cord injury for people with complex rehabilitation needs after traumatic injury.

Low mood and psychological support

1.15.34 Be aware that there is significant risk of low mood and psychological trauma for people with spinal injury, and that this may have an impact on rehabilitation.

1.15.35 Consider psychological support after spinal cord injury, and ensure that the multidisciplinary team has access to a practitioner psychologist with appropriate expertise in physical trauma and rehabilitation, ideally with experience of working with people with spinal cord injury.

1.15.36 For children and young people, the team around the child should actively monitor for any emerging emotional difficulties as the child or young person grows and develops (for example, moving schools, puberty and emotional relationships).

1.15.37 Take into account the long-term psychological impact of change in body image as a result of injury for all people and for children and young people as they grow.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on low mood and psychological support.

Full details of the evidence and the committee's discussion are in evidence review C.2: specific programmes and packages in nerve injury for people with complex rehabilitation needs after traumatic injury.

1.16 Rehabilitation after nerve injury

This section covers specific rehabilitation for people after nerve injury. The recommendations in this section should be read together with all the recommendations in the rest of the guideline apart from those specific to limb injury, spinal cord injury or chest injury.

Rehabilitation after nerve injury – general principles

1.16.1 Be aware that nerve injuries may be hidden, particularly if the person:

- has multiple injuries
- has a cognitive impairment or a learning disability
- has a head injury
- is in critical care (adults) or paediatric intensive care (children and young people)
- has a pre-existing neurological condition or injury
- has a complex fracture.

1.16.2 If nerve injury is suspected, assess the peripheral nerves of the affected limb to identify the involved nerve and functional deficit. The surgical team should decide whether early surgical intervention is necessary (see also the section on assessing physical functioning).

1.16.3 Be aware of the risk to tissue viability if there is sensory or motor loss secondary to peripheral nerve injury.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on rehabilitation after nerve injury – general principles.

Full details of the evidence and the committee's discussion are in evidence review C.2: specific programmes and packages in nerve injury for people with complex rehabilitation needs after traumatic injury.

Therapies and referral

1.16.4 After nerve injury, start rehabilitation therapy to maintain range of movement and regain function. This may include:

- splinting
- exercise (passive and active range of movement)
- play therapy (for children)
- pain management
- sensory interventions (including mirror therapy, electrical stimulation and hand therapy)
- hydrotherapy (where available)
- functional or vocational therapy.

1.16.5 Regularly assess for signs of nerve recovery and review the programme of therapy as needed.

1.16.6 Consider nerve conduction or a specialist opinion to help determine prognosis and guide future therapy and management if early surgical intervention was not needed and:

- there are no signs of nerve recovery 6 weeks after the injury **or**
- if recovery is not as expected.

1.16.7 For people who have a poor prognosis for recovery after rehabilitation therapy and nerve conduction studies, consider referral to a specialist peripheral nerve injury service, for example, for surgery.

1.16.8 Be aware that people recovering from nerve injury may experience low mood, anxiety and lack of motivation because recovery may be a lengthy and ambiguous process (for example, because of uncertainty about the long-term prognosis).

1.16.9 Consider psychological support after nerve injury, and ensure that the multidisciplinary team has access to a practitioner psychologist with appropriate expertise in physical trauma and rehabilitation, ideally with experience of working with people with nerve injury.

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on therapies and referral.

Full details of the evidence and the committee's discussion are in evidence review C.2: specific programmes and packages in nerve injury for people with complex rehabilitation needs after traumatic injury.

1.17 Rehabilitation after chest injury

This section covers specific rehabilitation for people after chest injury. The recommendations in this section should be read together with all the recommendations in the rest of the guideline apart from those specific to limb injury, spinal cord injury or nerve injury.

1.17.1 Start rehabilitation after chest injury as soon as possible to optimise respiratory function and prevent deconditioning.

1.17.2 Assess pain regularly and provide adequate analgesia to allow people to be able to breathe deeply, cough, start moving around early and participate in rehabilitation activities.

1.17.3 If oral or intravenous analgesia is inadequate to enable people to breathe deeply, cough or start engaging in rehabilitation, consider early neuraxial (for example, epidural catheter) or regional (for example, paravertebral, erector spinae plane or serratus anterior blocks) analgesia delivered by an appropriately qualified healthcare professional.

1.17.4 Encourage people with chest trauma to start moving around as soon as it is safe to do so, to optimise respiratory function and prevent deconditioning.

1.17.5 Offer a range of rehabilitation therapies to prevent atelectasis and promote deep breathing and secretion clearance. Therapies may include:

- supported cough to brace chest wall
- active cycle breathing technique
- incentive spirometry
- portable intermittent positive pressure breathing (IPPB) devices.

1.17.6 Be aware that stiffness of the upper limbs is a common complication of chest and rib injury on the affected side.

1.17.7 The multidisciplinary team should discuss the risks and benefits of the use of spinal orthoses in people with a combination of spine injury and rib fracture.

1.17.8 Prevent stiffness of the upper limbs with range of movement exercises and advice about maintaining function. Encourage children to play to maintain their range of movement.

1.17.9 Give people information about what they can do to help themselves return to their normal activities of daily life (for example, how to increase their exercise tolerance), and how to seek help if they are worried about problems such as:

- pain

- shortness of breath
- fatigue
- cough.

1.17.10 Assess adults presenting with rib fractures for their risk of fragility fracture in line with NICE's guideline on osteoporosis.

1.17.11 If people have complex chest injuries that affect communication and swallowing skills, consider referral to speech and language therapy.

1.17.12 Consider assessing children and young people with rib fractures for bone density disorder and for the possibility of non-accidental injury (see recommendation 1.1.13 on safeguarding).

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on rehabilitation after chest injury.

Full details of the evidence and the committee's discussion are in evidence review C.4: specific programmes and packages in chest injury for people with complex rehabilitation needs after traumatic injury.

Terms used in this guideline

Complex rehabilitation needs

Complex rehabilitation needs cover multiple needs due to traumatic injury or injuries (polytrauma), and will involve coordinated multidisciplinary input from 2 or more allied health professional disciplines.

Controlled motion device

A device that gently flexes and extends the knee joint (usually after surgery) to allow the joint to bend without the person needing to exert any effort. Sometimes called a

continuous passive motion machine.

Key worker

A key worker is a named member of clinical staff (for example, a senior nurse, physiotherapist or occupational therapist) assigned at each stage of the care pathway who coordinates the person's rehabilitation and care; this may continue post-discharge. They act as a single point of contact for the person and their family and carers, and will support liaison with other services, such as social care. The person who fulfils this role may be different along the pathway, for example, following hospital discharge. This role may also be performed by case managers or case coordinators, who would coordinate care as well as liaise with insurers and legal teams, particularly following discharge.

For major trauma, the role of key worker is defined further in recommendation 1.6.3 in the NICE guideline on major trauma: service delivery.

Neurovestibular disorders

Dizziness or problems with balance caused by damage to parts of the inner ear and/or the brain that process the sensory information involved with controlling balance and eye movements.

Orthostatic hypotension

Low blood pressure on changing position from lying to sitting, and sitting to standing.

Practitioner psychologists

The definition of practitioner psychologists is based on the Health and Care Professions Council (HCPC) registration criteria and standards of proficiency.

Pre-amputation rehabilitation assessment and consultation

This follows the principles of the initial rehabilitation assessment in the section on assessment and early interventions for people with complex rehabilitation needs, and also takes into account implications for rehabilitation such as recovery timescales, quality of life and goal setting for different surgical options that may include amputation of all or part of

the limb, or reconstructive surgery of the limb. Decisions about surgical interventions would affect the kind of rehabilitation interventions and therapies the person would need, the timescales involved and their personal goals.

Rehabilitation coordinator

Rehabilitation coordinators are rehabilitation specialists, for example, allied health professionals such as physiotherapists, occupational therapists, speech and language therapists, or clinicians who play an active role in the multidisciplinary team. They are usually responsible for decisions about rehabilitation treatment options at the beginning of the pathway and for the implementation of the pathway, including referral or transfer to other services. They are usually part of the team that delivers the rehabilitation care, and the lead contact for the person receiving care.

Rehabilitation plan

This may be in the form of a rehabilitation prescription. It may also come in different versions such as the rehabilitation passport, which is a patient-held document, and may be a simplified version of the plan. It is carried with the person and also communicated between rehabilitation teams and updated accordingly and used to document information about injuries and rehabilitation treatments in an accessible format.

Single point of contact

A single point of hospital contact following discharge may be a key worker, trauma coordinator or a rehabilitation coordinator, or it may simply be a link to a unit, team or person that formed part of the person's rehabilitation care while in hospital. The point of contact may not be able to offer advice directly but can seek information and input from others if this is needed for a defined period post-discharge.

Specialised rehabilitation services

Specialised elements of care pathways would include options for people with complex rehabilitation needs, for example, level 1, level 2a and level 2b units within a local area.

Strengths-based approach

Strengths-based (or asset-based) approaches focus on the person's strengths (including personal strengths, and social and community networks) and not on their deficits. Strengths-based practice is holistic and multidisciplinary, and works with the individual person to promote their wellbeing.

Team around the child

A group of professionals who work with an individual child or young person with a disability or complex needs who come together to share information and agree a plan – along with parents and carers – to meet the child's needs. The emphasis should be on the needs of the child and the aim is to provide joined-up support.

Trauma coordinator

This person would work closely with the multidisciplinary team to coordinate the patient pathway between relevant specialties involved in the treatment, including acute surgical and medical teams and rehabilitation, from admission to discharge, particularly for people with highly complex traumatic injuries and rehabilitation needs. They offer clinical advice and sometimes this role is performed by a nurse and is sometimes called a nurse coordinator. This role may also include the responsibilities of a key worker, liaising with family and carers, especially in the early stages of the pathway.

Traumatic injury

This includes multiple, major and severe injuries, sometimes referred to as polytrauma, and any musculoskeletal, visceral, nerve, soft tissue, spinal or limb injury that requires admission to hospital at the time of injury.

Vocational therapy

Focuses on the rehabilitation interventions needed to help people with long-term health conditions or disabilities return to or stay in work, education or training. This may involve adapting working conditions, job roles or retraining.

Recommendations for research

The guideline committee has made the following recommendations for research.

1 Effectiveness of intensive rehabilitation in adults

What is the effectiveness and cost effectiveness of intensive rehabilitation programmes in adults with complex rehabilitation needs after a traumatic injury?

For a short explanation of why the committee made the recommendation for research, see the rationale section on intensive rehabilitation programmes.

Full details of the evidence and the committee's discussion are in evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury.

2 Effectiveness of intensive rehabilitation in children and young people

What is the effectiveness and cost effectiveness of intensive rehabilitation programmes in children and young people with complex rehabilitation needs after a traumatic injury?

For a short explanation of why the committee made the recommendation for research, see the rationale section on intensive rehabilitation programmes.

Full details of the evidence and the committee's discussion are in evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury.

3 Thoracic lumbar sacral orthoses in older people

What are the benefits and harms of using thoracic lumbar sacral orthoses in older people

with thoraco-lumbar vertebral fractures?

For a short explanation of why the committee made the recommendation for research, see the rationale section on splinting and orthotics.

Full details of the evidence and the committee's discussion are in evidence review B.1: physical interventions for people with complex rehabilitation needs after traumatic injury.

4 Self-management materials

What is the effectiveness and cost effectiveness of rehabilitation programmes combined with self-management materials, compared with rehabilitation programmes alone, in people with complex rehabilitation needs after a traumatic injury?

For a short explanation of why the committee made the recommendation for research, see the rationale section on guided self-managed rehabilitation.

Full details of the evidence and the committee's discussion are in evidence review B.3: psychological and psychosocial interventions for people with complex rehabilitation needs after traumatic injury.

5 Length of bed rest after spinal cord injury

What is the effectiveness and cost effectiveness of short-term bed rest compared with long-term bed rest on functional outcomes in people with complex rehabilitation needs after traumatic injury that involves the spinal column or spinal cord injury?

For a short explanation of why the committee made the recommendation for research, see the rationale section on maintaining mobility and movement.

Full details of the evidence and the committee's discussion are in evidence review C.3: specific programmes and packages in spinal cord injury for people with complex rehabilitation needs after traumatic injury.

Rationale and impact

These sections briefly explain why the committee made the recommendations and how they might affect services.

Initial assessment and early interventions for people with complex rehabilitation needs

Recommendations 1.1.1 to 1.1.13

Why the committee made the recommendations

Rehabilitation can be a long journey, and people will need different interventions and will aim for different endpoints. Because of this, the committee agreed that healthcare professionals should think about each person's individual rehabilitation needs and what is important to them, and take into account their personal strengths, lifestyle and goals, rather than being primarily driven by the nature of the injury.

Psychological and emotional support is important immediately after the injury, to help the person come to terms with their experience and engage with rehabilitation assessment, early interventions and goal-setting discussions.

There was evidence that avoiding delays in acute treatment can improve the effectiveness of early rehabilitation interventions. In the committee's view, early assessments and interventions are also important so that healthcare professionals have up-to-date information and can plan and start rehabilitation promptly. Nutritional assessment (including swallowing safety) is an important factor (particularly in soft tissue healing) but is often overlooked.

The person's longer-term rehabilitation goals should be taken into account when discussing treatment options because these can affect decisions made about the timing and nature of rehabilitation. For example, if a person has upper and lower limb injuries, they might not have surgical treatment of their upper limb injuries because they want to use crutches to help with weight-bearing during rehabilitation for their lower limb injuries.

How the recommendations might affect practice

The recommendations will not involve a major change in practice and are consistent with existing NICE guidelines. Healthcare professionals might need to spend more time assessing how traumatic injuries affect all aspects of a person's life, and explaining the implications of different medical and surgical treatments on rehabilitation. Spending time on initial assessment and early treatment immediately after a traumatic injury will lead to a better tailored rehabilitation plan and goals, which will save time later on. Generally, all professionals involved in the person's care following a traumatic injury will already be equipped to provide psychological and emotional support.

Return to recommendations

Multidisciplinary team rehabilitation needs assessment

Recommendations 1.2.1 to 1.2.12

Why the committee made the recommendations

There was no evidence in this area, so the committee made recommendations based on their knowledge and experience. They agreed that a comprehensive approach to needs assessment is vital to meet all aspects of the person's care needs, including personal history, usual activities and potential motivations. They also highlighted injuries or conditions that may need to be assessed by specialists who are better equipped to meet complex care needs.

The committee specified the healthcare professionals who should be members of the multidisciplinary team. These members of the multidisciplinary team do not necessarily have to be available all the time, but should be able to contribute when needed.

The committee suggested ways to help people engage in the assessment process because people can have problems with engagement after a traumatic injury. The timing of the needs assessment is also an important aspect of this, because pain, fatigue and confusion can make it difficult for people to understand what is happening. They may need more time than normal to process information and adjust after the trauma. This is particularly important for people with cognitive impairment or brain injuries.

The committee agreed that time was needed for members of the multidisciplinary team to work with clinical teams to fully understand the person's rehabilitation needs and in particular consider the impact of pre-existing conditions so that this could inform a tailored rehabilitation programme. The committee were keen to highlight the importance of validated outcome tools and checklists because these can help identify people who need to be referred to a specialist service early, which can prevent delays in rehabilitation.

How the recommendations might affect services

It is standard practice to have multidisciplinary teams conduct needs assessments. Staff might need additional training on how to use assessment tools, and some extra time might be needed as a result of the recommendations. However, this will be offset by the benefits of appropriate and timely care, increased care coordination, and better outcomes. Overall, the recommendations reinforce current practice and are in line with other guidance.

Return to recommendations

Assessing physical functioning

Recommendations 1.2.13 to 1.2.15

Why the committee made the recommendations

The committee discussed the importance of assessing physical functioning as part of the rehabilitation needs assessment after a traumatic injury. There was no evidence in this area so the committee agreed, based on their knowledge and experience, that the assessment should include both pre-injury and current levels of physical functioning to inform rehabilitation goals. Referrals to specialists may be needed as part of this. The person's current level of physical functioning will serve as a baseline for initial rehabilitation needs and to monitor changes.

How the recommendations might affect services

The recommendations are not expected to have a large resource impact or be difficult to implement, although extra time might be needed to complete the comprehensive assessment. There may also be more referrals to specialist services. However, the involvement of specialist services at the assessment stage will identify needs earlier and

reduce unmet care needs.

Return to recommendations

Assessing cognitive functioning

Recommendations 1.2.16 to 1.2.20

Why the committee made the recommendations

There was no evidence in this area. However, the committee believed that recommendations are needed because problems with cognitive functioning are common after a traumatic injury (even without brain injury). The committee also highlighted some of the cognitive problems the multidisciplinary team should consider as part of the rehabilitation needs assessment, because these may not show up on scans immediately.

How the recommendations might affect services

The recommendations reflect current practice, but where there are regional variations, practice may need to be amended. Some extra time might be needed to complete the comprehensive assessment. There may also be more referrals to specialist services. However, the involvement of specialist services at the assessment stage will identify needs earlier and reduce unmet care needs.

Return to recommendations

Assessing psychological functioning

Recommendations 1.2.21 and 1.2.22

Why the committee made the recommendations

There was no evidence in this area, so the committee made recommendations based on their knowledge and experience. They recommended asking about past risk factors to help inform future rehabilitation goals, and current risk factors to help form a baseline for initial rehabilitation needs and monitor changes.

Some people may need additional support because they react to trauma in different ways, have different barriers to rehabilitation, and may have different responses to psychological and psychosocial interventions. Because of this, the committee recommended referral to a practitioner psychologist with trauma and rehabilitation experience when needed.

How the recommendations might affect services

The recommendations reflect current practice, but where there are regional variations, practice might need to be amended. Some extra time might be needed to complete the comprehensive assessment, and there might also be more referrals to specialist services. However, the involvement of specialist services at the assessment stage will identify needs earlier and reduce unmet care needs.

Return to recommendations

Setting rehabilitation goals

Recommendations 1.3.1 to 1.3.3

Why the committee made the recommendations

Based on qualitative evidence, the committee highlighted the need to agree patient-focused short- and long-term goals with people. They also recommended that these goals are reviewed regularly, to ensure a flexible approach that takes people's concerns into account.

Agreeing small steps as part of long-term rehabilitation goals ensures that efforts are consistently made towards achieving these goals.

The committee highlighted skills and competencies needed by the multidisciplinary team, to ensure that staff have the right training.

How the recommendations might affect services

The recommendations reflect current practice, but where there are regional variations, practice might need to be amended. Some additional professional time might be needed to explore psychological and psychosocial risk factors.

Return to recommendations

Developing a rehabilitation plan and making referrals

Recommendations 1.4.1 to 1.4.11

Why the committee made the recommendations

There was convincing qualitative evidence on patient education, communication between settings, and follow-up. Combining this with their own knowledge and experience, the committee recommended several key components of a successful and comprehensive rehabilitation plan. This should be a single document that can be shared between people undergoing rehabilitation, families or carers, and healthcare professionals. It should be an evolving document, detailing a person's rehabilitation journey and any changes in goals and needs. The committee reflected that it is not always possible or appropriate for people to have access to all of a rehabilitation plan, and therefore recommended that a separate patient-held document be provided if this is the case.

The committee agreed that preventing recurrence of traumatic injury should form an essential component of the rehabilitation plan. Prevention is covered in several other NICE guidelines, so the committee made recommendations that supplement and refer to these guidelines.

There was strong qualitative evidence from both healthcare professionals and people undergoing rehabilitation that reducing delays leads to better coordination of care and rehabilitation outcomes. Based on this, the committee made a recommendation on referrals for parts of the plan that the multidisciplinary team cannot implement themselves. The committee also used their experience to recommend that older people have access to orthogeriatricians, surgical support or perioperative physicians. This is important because the needs of older people with traumatic injuries are complex, and it will prevent delays further on in rehabilitation.

Limited evidence showed that violence intervention programmes might reduce hospital admissions. There was also convincing economic evidence that such programmes represent value for money. The committee agreed that the effectiveness evidence combined with economic evidence was sufficient to support a recommendation on

violence reduction interventions.

How the recommendations might affect services

Practitioners should already be producing these rehabilitation plans, but some extra time might be needed to ensure they fulfil the expectations set out in these recommendations. However, this will be offset by reducing problems with the suitability of the plan further down the line, because the more it is tailored for the person, the more effective it will be at helping the person achieve their goals. The recommendations outline good practice points and should make practice more consistent. Having a clear rehabilitation plan will make the whole process more efficient and potentially reduce the amount of extra support people need (for example, asking the team for more information because they do not understand the rehabilitation plan).

Currently, violence reduction interventions are mainly funded by the voluntary sector, so the recommendation on these may represent a change in practice. However, any cost increase will be offset by a potential reduction in future NHS and personal social service costs (for example, readmissions as a result of violent crime).

Return to recommendations

General principles for rehabilitation programmes

Recommendations 1.5.1 and 1.5.2

Why the committee made the recommendations

Evidence showed that rehabilitation programmes should be tailored to a person's needs and rehabilitation goals to maximise their effectiveness. There is no 'one-size-fits-all' programme. Instead, they should be multidisciplinary and developed in conjunction with healthcare professionals and people undergoing rehabilitation, to ensure they are relevant to a person's everyday life. The committee used their knowledge and experience to recommend the content of rehabilitation programmes. There was also evidence on education materials, showing that they can help people learn about their trauma and rehabilitation in their own time, increasing their engagement in the process.

How the recommendations might affect services

The recommendations reinforce current practice and should not be difficult to implement. Education materials on rehabilitation already exist in healthcare settings, but they might need to be changed into a suitable format for people undergoing rehabilitation.

Return to recommendations

Intensive rehabilitation programmes

Recommendations 1.5.3 to 1.5.5

Why the committee made the recommendations

There was no evidence on what to include in an intensive rehabilitation programme. Based on their own experience and expert testimony, the committee made a recommendation on general good practice principles.

There was also no evidence relating to the timing or intensity of rehabilitation. The committee were aware, based on their own experience and expert testimony, that delivering rehabilitation at the right time and providing short blocks of intensive rehabilitation might improve patient outcomes, leading to a quicker recovery and return to work. They gave the example of a 3-week residential rehabilitation programme because economic modelling indicated that this type of programme could be cost effective. However, the committee agreed that an intensive rehabilitation programme would be appropriate only for the most severe injuries and complex needs, when a significant impact on rehabilitation outcomes is likely. Such an approach to rehabilitation may also reduce the health and social care costs associated with longer-term care and rehabilitation.

The expert witness supported the use of education materials before intensive rehabilitation starts, to prepare people for the programme.

The committee made research recommendations on the effectiveness of intensive rehabilitation in adults and the effectiveness of intensive rehabilitation in children and young people.

How the recommendations might affect services

The recommendations are in line with current practice and should have little impact on resources. Intensive rehabilitation is already available for some people (for example, people who have lost a limb). Because rehabilitation services are already being carried out, intensive rehabilitation could be delivered through service redesign and repurposing of existing funds and resources rather than introducing them as completely new resources. Intensive rehabilitation would potentially represent value for money as per the economic model. Also, only a small group of people with the most severe injuries would be eligible for an intensive rehabilitation programme.

On education, existing materials for guided self-management rehabilitation could be used for intensive rehabilitation. This has the potential to reduce the amount of extra support people need, freeing up professionals for other work.

Return to recommendations

Guided self-managed rehabilitation

Recommendations 1.5.6 to 1.5.9

Why the committee made the recommendations

Evidence showed that self-management programmes are appreciated because they give people the flexibility to perform exercises at times most suitable for them. The committee used their experience and knowledge to recommend several possible components of a self-management programme.

Guided self-management rehabilitation was identified in the qualitative literature, as well as expert witness testimony and committee experience, but not in the quantitative literature. The committee made a research recommendation on self-management rehabilitation interventions to better inform future guideline development.

How the recommendations might affect services

Guided self-managed rehabilitation is not provided consistently across the country. In areas where it is not currently provided, extra professional time might be needed for planning, particularly for children, young people and vulnerable adults. There may also be

costs from adopting self-managed rehabilitation programmes to different settings.

For trusts that do not like sharing their content using external content-sharing services, there may be costs from hosting programme content on their own server. However, much of the content could be standardised for most people using guided self-managed rehabilitation, so the costs for creating the plans would be mostly one-off. These programmes could be developed at a national level, reducing costs to individual services.

Guided self-managed rehabilitation programmes have the potential to reduce the amount of extra support people need, freeing up professionals for other work.

Return to recommendations

Monitoring progress against the rehabilitation plan, goals and programme of therapies and treatments

Recommendations 1.5.10 and 1.5.11

Why the committee made the recommendations

In the committee's experience, rehabilitation plans and goals can only be helpful to people if progress is monitored consistently and accurately. There are many tools that can be used for this; the choice depends on the person's rehabilitation goals and the type of trauma. Because of this variation, the committee did not recommend specific measurement tools.

For some people, family members and carers will need to be involved in monitoring progress (for example, for young children or vulnerable adults). The paediatric professionals on the committee recommended using a measurement tool that includes both children- and parent-reported measures for this population. Another way to monitor progress is to use the person's own views. There was some evidence that supported asking people to record information to assist discussions and shared decision making while describing subjective measurements that are hard to quantify (for example, their motivation to continue rehabilitation).

How the recommendations might affect services

The recommendations reflect current practice, but where there are regional variations, practice might need to be amended. Some additional professional time may be needed to complete tools to monitor progress (for example, patient-reported outcome measures [PROMs]).

Return to recommendations

Principles for sharing information and involving family and carers

Recommendations 1.6.1 to 1.6.7

Why the committee made the recommendations

One theme that appeared throughout the evidence was the importance of giving clear and consistent verbal and written information to people undergoing rehabilitation. Evidence showed that this communication should be tailored to a person's injury, needs and goals. If information was too general, people felt poorly prepared and less supported by healthcare staff and services.

People should be given sufficient time to process information in order for them to adjust after trauma and explore their rehabilitation options thoroughly. This is particularly important for people with cognitive impairment or brain injuries, and they may need professionals to repeat information to them.

Along with good evidence, the committee used their knowledge and experience to highlight the central role that families, carers and friends can have in encouraging and supporting people through rehabilitation.

How the recommendations might affect services

The recommendations reinforce current practice and are in line with current guidance and legislation. Some extra time might be needed to consistently involve people and their families and carers in planning. Services might need to develop multiple templates for different communication formats. However, this will be offset by the benefits of people

understanding their options, increased engagement and potentially better outcomes.

Return to recommendations

Coordination of rehabilitation care in hospital

Recommendations 1.7.1 to 1.7.10

Why the committee made the recommendations

The committee agreed with the evidence that multidisciplinary teams should be formed early. Evidence showed that delays in rehabilitation can cause poorer outcomes. In order to reduce this, the committee recommended that referrals to specialist rehabilitation services be made as soon as possible. Similarly, the committee recommended follow-up appointments with acute teams when people move to rehabilitation units to further reduce delays.

There was conflicting evidence on how people feel about receiving information from many different specialists. This may be confusing to people, and specialists may have difficulty prioritising different clinical perspectives. The committee believed that named rehabilitation coordinators or key workers are needed to help reduce this confusion. These should be assigned within 72 hours of admission because this is the time limit for starting a trauma prescription for major trauma patients.

There was evidence that providing continuity of staff enhances coordination by building trust and rapport between healthcare staff and the people they are caring for. However, the committee were aware that this is not always possible.

There was good evidence about the importance of prompt and consistent communication when transferring people between inpatient settings. Using their experience and knowledge, the committee agreed recommendations to improve communication between settings, including the use of unique identifiers.

Evidence showed that coordination is improved when a person is educated in their rehabilitation, because they are more engaged. The evidence also showed that coordination is improved when family members and carers receive this information, because they frequently act as a support network for people undergoing rehabilitation. The committee understood the important role that families and friends can fulfil, but were

aware of the potential safeguarding concerns around this issue. Therefore, they recommended that this information is only provided to additional people if appropriate, and only with a person's consent.

The committee agreed that families and carers be advised about the support that is available to them at a time that can be confusing and distressing.

How the recommendations might affect services

Multidisciplinary teams are a standard way of working. Having a named rehabilitation coordinator might lead to an increased workload for the coordinator, but this can be limited by daily conversations within the team and delegating responsibilities. Key workers are already routinely assigned to people with complex health and social care needs.

There may be more referrals as a result of involving specialist rehabilitation services earlier in the trauma pathway, but this will ensure timely care with a reduction in disability and will support optimal physical, cognitive and emotional recovery for patients. Most services have established processes and templates for handover. Where this is not the case, services will have to spend time creating them. Additionally, technology might need to be updated to ensure systems are compatible with those used by other services.

Return to recommendations

Coordination of rehabilitation care at discharge

Recommendations 1.8.1 to 1.8.20

Why the committee made the recommendations

Discharge home from inpatient settings is often a time of great stress and apprehension for people with a traumatic injury because they are facing a large reduction in monitoring and support from healthcare staff. The recommendations emphasise the importance of making sure that plans are in place, eventualities are covered and people have all the information they need.

There was evidence that early planning for discharge is needed to take into account the person's needs and preferences, contact relevant services to arrange necessary

adjustments, and allow enough time to reassess the rehabilitation plan before discharge. For children and young people returning to education, a meeting between healthcare professionals, education staff and parents or carers should be arranged to discuss new education and support needs. This also gives time to address any potential barriers the person might face in using community rehabilitation services.

There was good evidence on the importance of providing adequate information to people and their families or carers before discharge. This should not be limited to immediate medical information, but should be as comprehensive as possible. The committee used the evidence and their own knowledge and experience to identify information that should be provided. Evidence also showed that including family members and carers in discharge planning can lead to a smoother transition back into the community. The committee agreed that it is important to include family and carers, but they should only be involved if all parties consent.

There was good evidence, supported by the committee's knowledge and experience, that people who have help with organising their access to rehabilitation services are more likely to use them. In the committee's experience, complex funding is a barrier to receiving equipment that a person may need once discharged. Similarly, there are many different services that a person may need to work with after a traumatic injury (for example, legal services and welfare advice). In order to prevent delays in discharge, information on these organisations should also be provided as soon as possible, to avoid delays in the application process.

There was evidence that people can find a gradual return home helpful, beginning with overnight or weekend visits home before final discharge. This allows people to adjust to being in their home with their new needs, identifying areas that might need further rehabilitation and multidisciplinary team input before permanently going home. The committee acknowledged that this is not appropriate for everyone, but should be discussed as part of discharge planning. Home visits were also identified as being good practice to highlight any potential risks and allow people to have a fully informed discussion about what would benefit them.

The need for flexibility in rehabilitation appointments after discharge was a key theme in the evidence, because people face certain barriers to access (for example, time constraints, or travel to and from rehabilitation appointments). The committee agreed that arranging rehabilitation sessions at home rather than in a clinic or hospital can help, by decreasing travel and waiting times. Based on the evidence and their experience, the

committee also recommended alternative consultation formats (for example, phone or video), to increase the flexibility of rehabilitation appointments.

How the recommendations might affect services

Additional time might be needed to compile information and discuss it with people and their support networks. However, by giving comprehensive information before discharge, there will be a decreased need to contact healthcare professionals with rehabilitation questions, and potentially reduced visits and readmissions to inpatient services.

Additional professional time might be needed to cover early discharge planning, checking access to community rehabilitation services, liaising with education providers and organising home visits. The recommendations imply more coordination between inpatient teams and other health and social care services, which will take more time. However, this additional time spent will result in patients feeling more supported, increasing their confidence in services and improving outcomes. There is a potential resource impact from staggering discharge through overnight or weekend visits home. However, this would only be needed in exceptional cases.

Telephone or video consultations may result in a greater uptake of some services, because people may find remote attendance easier. However, services would have planned to provide in-person consultations for these people anyway, so there should be no overall resource impact.

Return to recommendations

A single point of contact, key contact and key worker after discharge

Recommendations 1.8.21 to 1.8.24

Why the committee made the recommendations

There was good evidence that people benefit from having a single point of contact after discharge from hospital (for example, a discharge coordinator, a phone line or an email contact). Having a team or a professional as a single point of contact can build rapport and trust, increasing the person's confidence in accessing outpatient and community

rehabilitation services. It also reduces communication delays or duplication. This contact can also provide injury-specific information and information about local rehabilitation services, help people organise their rehabilitation, and advocate for them. This should be provided for a limited time after discharge in order to provide a secure and safe transition of care. The committee gave an example of 3 months, which was designed to encompass the transition period while still providing a stimulus to ensure healthcare is properly transferred to the appropriate setting.

Based on both the evidence and their own experience, the committee recommended appointing a key contact or key worker for people with continued or complex health and social care needs after discharge. Because of the increased level of support these people might need, a one-to-one relationship will increase trust and rapport, which will benefit patients and healthcare professionals.

How the recommendations might affect practice

Multiple healthcare professionals within the team have access to the relevant patient information and could therefore act as a point of contact, and so this would not need additional resources. Having a single point of contact may reduce the workload of case managers that are routinely assigned to people with complex healthcare and social care needs.

Key worker roles would be filled by existing healthcare or social care professionals. However, there may be more pressure on their time.

Return to recommendations

Supporting access and participation in education, work and community after discharge (adjustment and goal setting)

Recommendations 1.9.1 to 1.9.12

Why the committee made the recommendations

There was evidence showing that people appreciate psychological and emotional support to adjust to social roles (for example, parenting or other family roles, relationships,

intimacy), access meaningful activities for day-to-day living, and return to work, education and training. This is in line with the committee's own knowledge and experience. In the committee's experience, it is difficult to predict the outcome of rehabilitation, and making realistic goals is essential (for example, some people will not be able to return to the same type of work and will need retraining). The committee agreed that it is beneficial for people to continue with their normal activities and hobbies as part of their rehabilitation therapy. Even if adjustments are needed, this improves participation in social activities, counteracts the social isolation people may feel after traumatic injury, and makes rehabilitation goals more tangible. And the longer a person is not undertaking their everyday activities, the more difficult it is for them to return to the same level as before their injury.

There was good evidence on the importance of providing adequate information to people and their families before discharge. Evidence also showed that people often rely on family, carers and friends to help them navigate the multiple appointments and services needed during rehabilitation.

How the recommendations might affect services

More time might be needed to develop a rapport with people, to find out what goals are most important to them and to tailor support needs to them. Additional time may also be needed in order to provide information to employers or education providers.

All team members involved in the care of an individual provide emotional and psychological support, so this would not be an additional cost.

Return to recommendations

Commissioning

Recommendations 1.10.1 to 1.10.5

Why the committee made the recommendations

The qualitative and quantitative evidence identified aspects of planning, commissioning and coordinating that were important to the successful delivery of rehabilitation services. The committee agreed that rehabilitation services should collaborate and use joined-up commissioning approaches to provide a whole pathway rehabilitation. Based on their

knowledge and experience, and limited qualitative evidence, the committee identified general principles that commissioners and providers should consider when planning, commissioning and coordinating rehabilitation services. Because these services will have different commissioners, collaboration and good communication will be needed.

There was no evidence on intensity of rehabilitation, so the committee took expert witness testimony on this. They expanded on the points raised by the expert witness to recommend providing an intensive rehabilitation programme. The committee recommended commissioning this as a tertiary service because it would only be appropriate for some people. This way, the service would be best designed to meet the needs of their local population.

Based on the qualitative evidence and their experience, the committee agreed that it is essential for an identified commissioner to have overall responsibility for local rehabilitation services, to avoid confusion and subsequent commissioning and budget errors.

How the recommendations might affect services

The recommendations are in line with current practice and should have little impact on resources. Where practice differs, there may be some resource implications, because services will need to set up frameworks for more collaborative and integrated commissioning. Intensive rehabilitation is already commissioned for some patient groups (for example, people who have lost a limb).

Return to recommendations

Organisation

Recommendations 1.10.6 to 1.10.11

Why the committee made the recommendations

There was qualitative evidence showing that establishing care networks and pathways between different settings encourages conversation, allows services to share advice and support each other, and can help identify gaps in local provision.

There was qualitative evidence on the usefulness of an electronic directory of care

pathways, rehabilitation facilities and voluntary sector services. Some trauma units already have these in place, but directories are often out of date or incomplete. Accessing this information is also often difficult.

There was qualitative evidence showing the importance of community and social services for overall rehabilitation and recovery. Non-medical rehabilitative services are wide-ranging and can include social care, housing, home adaptation, transport, and sports and recreational facilities. The committee made a recommendation to make sure that people and their families or carers know these other services exist.

There was qualitative evidence showing that continuity of care increases when various professionals involved are aware of other areas of rehabilitation and can network with each other. There was also qualitative evidence on the importance of professionals in generalised medical settings having access to networking opportunities. This allows greater familiarity between professionals and improves cooperation.

There was qualitative evidence showing that technology and telehealth can be suitable methods of improving flexibility and availability of specialist appointments. This can be particularly useful in rural areas, because qualitative evidence showed that these areas are underserved by specialist rehabilitation services. However, not everyone has the equipment needed for remote consultations, so they cannot completely replace face-to-face consultations.

There was qualitative evidence showing that socialising and interacting with peers can promote rehabilitation uptake and counteract isolation. In the committee's experience, group rehabilitation sessions are a good way for people to get peer support. This was supported by expert witness testimony. However, peer support might not be suitable for everyone (for example, some people may feel discouraged if they are not progressing at the same rate as others).

How the recommendations might affect services

More resources may be needed to establish care networks and pathways. However, there are already examples of this in the NHS. Some trauma units already have electronic directories of care pathways, rehabilitation facilities and voluntary sector services. Services may need to do more to keep these up-to-date.

Most professionals already have opportunities for networking. However, practice may need

to change for some services where this is not the case (for example, in rural areas).

Telehealth is becoming more common and does not need any specialist equipment.

Group rehabilitation sessions may represent a change in practice for some services.

Return to recommendations

Rehabilitation skills, knowledge and expertise in the workforce

Recommendations 1.10.12 to 1.10.14

Why the committee made the recommendations

The evidence identified a disparity in access to specialist rehabilitation services, depending on location (for example, rural areas are underserved) and individual needs (for example, if a person is not able to leave their home). A lack of rehabilitation knowledge within non-specialist healthcare services adversely impacts a person's trust in their rehabilitation services. The committee agreed that training is needed to address this. Community rehabilitation practitioners in general healthcare services should also have access to specialist rehabilitation support. This would not need to be full time, and could be provided remotely. Peer support and networking opportunities are also recommended. These will improve communication between professionals in different areas of healthcare and improve coordination for people undergoing rehabilitation.

How the recommendations might affect services

Specialist rehabilitation professionals might need to spend more time providing peer support to general services. This could be done in low-cost ways, for example, virtual meetings. If non-specialist healthcare professionals are better supported, people's needs are more likely to be met locally and there will be less pressure on specialist services. Time and resources might be needed to provide more training for non-specialists. However, this will also reduce demand on specialist services.

Return to recommendations

Physical rehabilitation – early interventions and principles

Recommendations 1.11.1 to 1.11.9

Why the committee made the recommendations

There was conflicting evidence on the frequency and intensity of prescribed exercises because of the wide range of possible exercises, wide range of trauma and wide range of populations covered by the evidence. The committee agreed, based on their knowledge and experience, that healthcare professionals should set the frequency and intensity of rehabilitation exercises depending on the person's rehabilitation goals, but that these should be started as soon as possible. Analgesia may be needed to allow people to participate in rehabilitation. The committee also highlighted the importance of minimising the effects of low blood pressure when undergoing physical rehabilitation. This risk is increased because the person would need to change positions to perform certain rehabilitation exercises. Independence in performing everyday tasks should be encouraged, to prevent loss of these skills.

How the recommendations might affect services

The recommendations reflect current practice, but where there are regional variations, practice might need to be amended. There may be more referrals to occupational therapy as a result of encouraging independence with activities of daily living. However, occupational therapists are already available in these settings, and this should not have a significant resource impact or be difficult to implement.

Return to recommendations

Early weight-bearing

Recommendations 1.11.10 to 1.11.12

Why the committee made the recommendations

The committee agreed with the evidence and current practice that weight-bearing exercises should be started as soon as possible. In their experience, this is important to

encourage mobility and maintain postural reflexes, muscle mass, strength and function.

Decisions about weight-bearing should be led by the surgical team because it will be affected by any potential surgeries. However, bed rest can be harmful to muscle function, skin integrity, postural reflexes and respiratory function (especially in older people), and should be avoided as far as possible for most people with traumatic injury. The surgical team should communicate when a person is able to weight-bear as early as possible to keep bed rest to a minimum and so that weight-bearing can start without delay.

Lower limb injuries will affect a person's mobility, which affects their ability to participate in weight-bearing rehabilitation exercises to a greater extent than upper limb injuries, so the committee recommended a targeted weight-bearing programme. This programme should aim to progress the person's function with weight-bearing tasks such as mobility, ability to move from sitting to standing, and ability to lateral step (which is particularly important for people to maintain independence after discharge).

How the recommendations might affect services

The recommendations reflect current practice and are not expected to need additional resources to implement. Some additional time might be needed for communication between medical and surgical teams.

Return to recommendations

Aerobic and strengthening interventions

Recommendations 1.11.13 to 1.11.18

Why the committee made the recommendations

There was evidence showing the importance of aerobic and strengthening exercises in rehabilitation after traumatic injury. These exercises lead to better rehabilitation outcomes in several different trauma populations. The committee supplemented this evidence with their own knowledge and experience to recommend several aspects that healthcare professionals should consider when designing aerobic and strengthening rehabilitation programmes. The recommendations cover general components rather than specific exercises because the evidence did not clearly show which exercises were best, and

because the recommendations need to be applicable to a wide range of traumatic injuries. The committee also recommended tailoring aerobic and strengthening exercises to each person's interests, to make the exercises more enjoyable and to encourage people to take part.

The committee agreed that the exercise programme should begin as early as possible to limit the loss of muscle tone and physical fitness. Evidence showed that upper body aerobic training can improve rehabilitation outcomes in people with lower limb injuries. The committee discussed how for older people, fitness and strengthening programmes can help to optimise respiratory function, increase endurance when doing rehabilitation exercises, and improve mobility.

Finally, the committee stressed that these exercise rehabilitation programmes should be continued after people are discharged home, to ensure that their physical strength and fitness does not stagnate or decrease. Regular reviews should be carried out during rehabilitation appointments in order to gauge whether the programme components are still appropriate for people's rehabilitation needs, and to change them if not.

How the recommendations might affect services

The recommendations are not expected to have a significant resource impact or be difficult to implement. However, extra time may be needed to tailor exercise programmes to each person's preferences.

Currently, some physiotherapists do not offer aerobic exercise programmes to older people who are frail. For these physiotherapists, there will be a change in practice and there may be a greater uptake of aerobic exercise in older people. Older people would already be working with a physiotherapist, so this will only change the type of exercise used and there will be no additional costs for services.

Return to recommendations

Gait training and re-education

Recommendations 1.11.19 to 1.11.21

Why the committee made the recommendations

Although there was evidence to show that gait re-education did not improve rehabilitation outcomes, the committee disagreed with these findings. In their knowledge and experience, gait re-education is a very effective rehabilitation tool, particularly for muscle strengthening. In people who are not mobile, gait re-education can still be introduced early but should be focused on reducing the impact of non-weight-bearing. This will maintain the current level of functioning and mobility, so people are ready to undertake weight-bearing gait re-education as soon as possible.

How the recommendations might affect services

At some hospitals, physiotherapists do not get patients into their physiotherapy unit until they can weight-bear fully. These physiotherapists will need to change their practice. Overall, the recommendations are not expected to have a significant resource impact or be challenging to implement.

Return to recommendations

Manual therapies and maintaining joint range of movement

Recommendations 1.11.22 to 1.11.24

Why the committee made the recommendations

There are a variety of range of movement exercises that can be used for rehabilitation, with different levels of assistance depending on ability. Controlled motion devices should be considered if people are not able to perform exercises independently. The committee agreed that range of movement is particularly important during rehabilitation. Targeted stretching is a good method of preventing loss of movement, particularly after exercises, when muscles tighten as a response to activation.

How the recommendations might affect services

The committee were aware of the potential resource impact of recommending specific controlled motion devices to assist range of motion. Generally, these devices are rarely

used (and mostly only in hospitals to help with knee injury). However, once acquired, these devices can be used by multiple people. Overall, the recommendations are not expected to have a large resource impact or be difficult to implement.

Return to recommendations

Splinting and orthotics

Recommendations 1.11.25 to 1.11.33

Why the committee made the recommendations

Evidence showed a benefit from orthoses in rehabilitation after trauma. No evidence was found on splinting. The committee combined the available evidence with their experience and knowledge to recommend several specialised splints and orthoses, and to warn about positions known to cause complications and loss of function later on in recovery.

Because of their complexity, the committee recommended bespoke splints for people with hand injuries, as well as referral to a hand therapy specialist. 'Off-the-rack' splints can be ill-fitting and cause lost range of movement in the hands and fingers.

Regular review of splints is recommended because splinting can have adverse effects if not monitored carefully (for example, pressure sores). This risk is increased in people with reduced skin sensation and recent skin graft or flaps, so splints and orthoses may be contraindicated and specialist advice may be needed. People (and families and carers, if appropriate) should receive education on how to wear splints or orthoses to limit adverse effects and when to seek professional advice.

Evidence showed that spinal orthoses can help improve patient rehabilitation outcomes, and they are used in current practice. However, in the committee's experience, not all trauma populations see a benefit (for example, older people) and spinal orthoses can cause adverse events if improperly fitted. Healthcare professionals should be aware that these devices may be poorly tolerated and know when to discuss problems with the surgical team. Because of these issues with the evidence, the committee made a research recommendation on spinal orthoses for older people.

How the recommendations might affect services

The recommendations reflect current practice. Splints and orthoses are commonly used and are all low cost. Bespoke splints are easily made in a treatment room and would not need any additional resources.

Return to recommendations

Management of swelling and oedema, and scars

Recommendations 1.11.34 to 1.11.44

Why the committee made the recommendations

Swelling and oedema management

Swelling is a common side effect of traumatic injury, but there are symptoms that will need treatment from healthcare professionals (for example, signs of deep vein thrombosis). No evidence was found, so the committee used their knowledge and experience to recommend a programme of elevation and exercises to prevent and reduce any swelling associated with trauma. Compression bandages can be used to help this. However, providing appropriate compression is a skill. Therefore, the committee recommended specialist supervision for this.

Scar management

No evidence was found on the psychological aspects of scarring after traumatic injury. Based on their experience, the committee recommended several measures to encourage people to adjust to their new appearance, reassure them of expected recovery sensations and provide information about scar management. For children and young people, the committee recommended performing any painful treatments away from their hospital bed. This encourages them to associate their bed with security, an important factor in their hospital experience.

Evidence was found for massage as a treatment for scar tissue. This will help desensitise the area, and increase tissue mobility (and therefore maintain range of movement).

In the committee's experience, scar management knowledge is not very prevalent in non-specialist healthcare settings. Therefore, they recommended referring people to specialist services if they have scars or skin grafts that need complex treatment (for example, contracture across joints that limits movement).

How the recommendations might affect services

The recommendations reflect current practice, but where there are regional variations, practice might need to be amended.

Return to recommendations

Nutritional supplementation

Recommendations 1.11.45 to 1.11.52

Why the committee made the recommendations

The evidence for nutritional supplementation was of very low quality. However, the committee agreed that there is a lack of awareness about the nutritional risks and needs following traumatic injury. People need more calories after traumatic injury, to help with healing. However, they often have complications that can affect eating habits or nutrient absorption. To address these issues and the lack of awareness around nutritional supplementation, the committee made recommendations based on their own experience.

The committee made a specific recommendation for people with burns in combination with other traumatic injuries because they are at increased risk of losing significant muscle mass, weight and strength for a prolonged period, because of the long-lasting effect of the hypermetabolic response.

How the recommendations might affect services

The recommendations are in line with current practice and will not need additional resources to implement.

Return to recommendations

Cognitive rehabilitation

Recommendations 1.12.1 to 1.12.7

Why the committee made the recommendations

There was no evidence in this area. However, in the committee's experience, trauma-related cognitive functioning problems can be upsetting for people and affect their decision making and participation. Because of this, the committee believed it is important to reassure people that these problems are usually temporary. When problems are not temporary, the committee recommended adapting rehabilitation therapy to take account of this and to help the person participate in therapy and assessments.

As another aspect of helping people with cognitive difficulties to participate, the committee highlighted information needs and formats to use. The committee were also keen to emphasise the need to share this information with the person's family or carers, because they can play an important part in helping the person understand and recall key messages.

The committee agreed on additional steps to follow for children and young people, to ensure that their education providers accommodate their changing needs.

How the recommendations might affect services

The recommendations reflect current practice, but where there are regional variations, practice might need to be amended.

Return to recommendations

Psychological rehabilitation

Recommendations 1.13.1 to 1.13.7

Why the committee made the recommendations

The committee used their knowledge and experience to make recommendations on psychological rehabilitation. They highlighted the importance of reassuring people that the

acute stress response is common and normally temporary, because it can be very distressing. Outside of the acute stress response, the committee identified several other psychological issues, to raise awareness among professionals and encourage good practice.

Because of low quality evidence, the committee based the recommendations on psychological support on their own experience. They agreed that 'one size does not fit all' within psychological and psychosocial therapies and felt it was important to offer psychological and emotional support that is tailored to a person's rehabilitation goals, needs and preferences.

The committee recommended that any treatment for psychological disorders should form part of a complete rehabilitation package, and not be kept separate. This will allow better communication and coordination of physical and mental healthcare.

No evidence of benefit was found for family support interventions. However, in the committee's experience, involving family can be beneficial.

How the recommendations might affect services

The recommendations reinforce current practice and refer to existing NICE guidelines, so should not need additional resources to implement. Most team members specialising in the management of major trauma are equipped to provide psychological and emotional support. Being more aware of psychological problems may result in more referrals to psychology services.

Return to recommendations

Rehabilitation after limb-threatening injury – early assessment, decision making and support

Recommendations 1.14.1 to 1.14.4

Why the committee made the recommendations

There was no evidence in this area. The committee agreed based on their experience who should be involved from the multidisciplinary team and what the discussions needed to

cover.

Although no evidence was identified, the committee recommended psychological support before limb amputation because of the life-changing nature of the procedures. Psychological and emotional support can improve outcomes after surgery (such as emotional wellbeing and pain management).

The committee recommended involving limb reconstruction and prosthetic specialists early on, because amputation and limb reconstruction can be life-changing and traumatic.

How the recommendations might affect services

The recommendations reflect current practice, but where there are regional variations, practice might need to be amended.

Return to recommendations

Rehabilitation after limb reconstruction

Recommendations 1.14.5 to 1.14.7

Why the committee made the recommendations

There was no evidence identified but, based on their own experience, the committee agreed that rehabilitation should start as early as possible after surgery to reduce the risk of complications that may delay the person's recovery, and to maintain range of movement after limb reconstruction. Because of the complexity of limb reconstruction, the committee did not recommend a specific programme but suggested certain interventions that could be used to accomplish this.

The committee also agreed that psychological support should continue after limb reconstruction surgery, to help the person adjust to their appearance and manage pain.

How the recommendations might affect services

The recommendations reflect current practice, but where there are regional variations, practice might need to be amended.

Return to recommendations

Rehabilitation after limb loss or amputation

Recommendations 1.14.8 and 1.14.9

Why the committee made the recommendations

There was no evidence but, based on their own experience, the committee agreed that rehabilitation should start as early as possible after surgery to reduce the risk of complications that may delay the person's recovery. People should usually be referred to the amputee and prosthetic rehabilitation team before their surgery, but the committee acknowledged that sometimes there is not enough time so they would need to be referred afterwards.

The committee also agreed that psychological support should continue after limb loss and amputation to help the person adjust to their appearance and manage pain (for example, mirror therapy).

How the recommendations might affect services

The recommendations reflect current practice, but where there are regional variations, practice might need to be amended. More people being referred to amputee and prosthetic rehabilitation before surgery may cause an initial increase in early referrals, but this will be offset by fewer people being referred later in rehabilitation.

Return to recommendations

Pain management after limb loss or amputation

Recommendations 1.14.10 to 1.14.12

Why the committee made the recommendations

The committee agreed that pain management should be discussed before surgery because pain after limb loss or amputation can be difficult to treat, and managing pain effectively after surgery can increase participation in the rehabilitation process.

Additionally, people with poor perioperative pain control have an increased risk of phantom limb pain in the long term. There was also evidence that mirror therapy (a type of graded motor imagery therapy) is an effective and inexpensive non-pharmacological treatment for phantom limb pain after limb loss or amputation.

How the recommendations might affect services

The recommendations enforce current practice and are not expected to be difficult to implement. Mirror therapy is relatively cheap and easy to implement. Other forms of graded motor imagery therapy are less commonly used and should be delivered by staff with appropriate skills, potentially resulting in extra training costs where it is currently not available. There may be an increased level of referrals to specialised pain management teams, depending on the complexity of pain management plans. However, this will be offset by increased participation in rehabilitation after surgery and therefore better outcomes.

Return to recommendations

Residual limb oedema and shaping after limb loss or amputation

Recommendations 1.14.13 to 1.14.15

Why the committee made the recommendations

There was no evidence so the committee based the recommendations on their knowledge and experience. They highlighted the benefit of elevation and compression therapy in managing residual limb oedema by reducing swelling and facilitating prosthetics fitting. They also agreed that:

- limb swelling should be avoided when using early walking aids because this can delay prosthetics fitting and rehabilitation
- residual limb (stump) boards on wheelchairs can provide support to keep the limb elevated for people with a below-the-knee amputation.

How the recommendations might affect services

The recommendations reflect current practice, but where there are regional variations, practice might need to be amended.

Return to recommendations

Range of movement and strengthening after limb loss or amputation

Recommendation 1.14.16

Why the committee made the recommendation

The committee used their knowledge and experience to recommend providing range of movement exercises to help prevent complications and optimise functional outcomes.

How the recommendation might affect services

The recommendation reflects current practice, but where there are regional variations, practice might need to be amended.

Return to recommendations

Functional independence after limb loss or amputation

Recommendations 1.14.17 and 1.14.18

Why the committee made the recommendations

Although there was some evidence identified about waiting until prosthetics had been fitted before starting rehabilitation, this disagreed with the committee's knowledge and experience. They argued that the best way to maintain and improve the person's range of movement after limb loss or amputation is by starting rehabilitation therapy as early as possible. Rehabilitation should not be delayed by waiting for prosthetics to be fitted

because the maintenance and improvement of range of movement will help prevent complications and optimise functional outcomes.

The committee also agreed that wheelchairs should be provided early, along with appropriate accessories such as anti-tippers and residual limb (stump) boards. Wheelchairs should be adjusted to accommodate the changes in the person's weight distribution after limb loss or amputation. By providing appropriately fitted and adjusted wheelchairs as early as possible, a person's independence and mobility will be increased and they will be better able to engage in activities of daily living. There was no evidence, so the committee used their knowledge and experience to make the recommendation on wheelchairs.

How the recommendations might affect services

There might be an increased number of referrals to physiotherapists and occupational therapists in order for wheelchairs to be individually fitted and adjusted. However, the committee discussed that the increased mobility and independence will result in an increased engagement with rehabilitation, leading to better rehabilitation outcomes. Overall, the recommendations reflect current practice, but where there are regional variations, practice might need to be amended.

Return to recommendations

Psychological support after limb loss, amputation or limb reconstruction

Recommendations 1.14.19 to 1.14.22

Why the committee made the recommendations

Although there was no evidence, the committee used their experience and knowledge to discuss how continuing psychological support after limb reconstruction, loss or amputation can help the person come to terms with their appearance and manage pain.

The committee recommended actively monitoring children and young people for emerging emotional and psychological impact. This is because childhood and young adulthood is a period of change for anyone, and children who have had limb reconstruction, loss or

amputation may experience it differently to the general paediatric population (for example, altered body image may become more important during puberty).

How the recommendations might affect services

The recommendations reflect current practice, but where there are regional variations, practice might need to be amended.

Return to recommendations

Continuing rehabilitation after limb reconstruction, limb loss or amputation and after discharge

Recommendations 1.14.23 to 1.14.26

Why the committee made the recommendations

The rehabilitation plan should be reviewed at key points to ensure it is updated with any changes in the person's goals, circumstance or needs. For children and young people, physical growth may cause complications around the residual limb or prosthetic fitting. The committee recommended referral to specialist assessment when this occurs, in order to prevent any adverse effects.

Based on their experience, the committee recommended psychological and emotional support after trauma to help a person adjust to their altered body image, manage pain and cope with the possibility of further procedures.

How the recommendations might affect services

The recommendations reflect current practice, but where there are regional variations, practice might need to be amended.

Return to recommendations

Rehabilitation after spinal cord injury – referral,

assessment and general principles

Recommendations 1.15.1 to 1.15.8

Why the committee made the recommendations

The committee discussed their experience with early treatment of traumatic spinal cord injury in emergency departments and how this can affect rehabilitation. Studies involving spinal cord injury treatment in the emergency department were not included in the evidence reviews because of an existing NICE guideline on spinal injury: assessment and initial management. However, the committee highlighted several areas of acute treatment that can affect rehabilitation after traumatic injury.

Because of competing clinical interests, certain aspects of spinal cord injury management are often overlooked in emergency healthcare settings. The committee highlighted the importance of timely contact with regional specialist spinal cord injury centres and the national spinal injuries database to establish a partnership of care with specialist healthcare professionals that will continue throughout the rehabilitation journey. An American Spinal Injury Association (ASIA) chart should also be completed early to identify a current reference point for future assessments.

The committee reflected on the additional issues that people encounter after spinal cord injury because of the chronic nature of the injury and resulting disabilities (for example, bowel, bladder and sexual function). External support networks are very important during spinal cord injury rehabilitation, with family members (and carers or friends, if appropriate) being invited into healthcare discussions and rehabilitation goals. Vocational, educational, recreational and home adjustments may be needed after discharge. By starting these conversations and arrangements early in the rehabilitation process, any modifications can be in place and rehabilitation can be better tailored to an individual, creating a smoother transfer back into the community. Ongoing contact with hospital rehabilitation teams should be maintained to ensure a continued progress review to inform outpatient rehabilitation planning.

The committee discussed the additional complications that children and young people might experience after spinal cord injury because they are still growing. Spinal growth patterns, skeletal growth and nutrition need to be closely monitored in children and young people. Complications in any of these areas can cause additional barriers to rehabilitation, and will become more difficult (if not impossible) to treat as the child or young person

stops growing.

How the recommendations might affect practice

The recommendations reinforce current practice and are in line with the NICE guideline on spinal injury. The benefits of increased care coordination will offset the extra time that professionals might need to follow the recommendations. ASIA charts can be difficult to administer reliably, and staff with appropriate skills should complete assessments, potentially resulting in some extra training costs.

Return to recommendations

Bladder and bowel function

Recommendations 1.15.9 to 1.15.12

Why the committee made the recommendations

The committee agreed that bladder and bowel management is important because the medical consequences from undetected bladder and bowel malfunction can be severe. Complications include renal tract damage, bowel perforation and respiratory distress. The committee used their knowledge and experience to recommend several measures to monitor and maintain bladder and bowel function. Although keeping people nil by mouth is a common practice while assessing bowel function, the committee highlighted that delays in this assessment should be minimised in order to prevent issues with nutrition and discomfort during rehabilitation.

How the recommendations might affect practice

There is variation in bladder and bowel management, so the recommendations should lead to greater consistency and improve care. Monitoring bladder and bowel function will involve additional time, but should have benefits in reducing complications, avoiding delays in starting and continuing rehabilitation, and improving patient outcomes.

Return to recommendations

Respiratory function, swallowing and speech

Recommendations 1.15.13 to 1.15.17

Why the committee made the recommendations

Spinal cord injury can cause problems with speech and swallowing, so the committee agreed that people should be nil by mouth until they have been assessed for aspiration risk. They used their expertise to highlight groups of people that are at a particularly high risk, and should be assessed early. Referral to specialists may be needed.

Maintaining respiratory function is essential after a spinal cord injury because the injury may have damaged the chest muscles used in respiration. Without treatment, this could lead to respiratory failure and severe complications. It can also delay rehabilitation until the person is clinically stable enough to start it, and may mean they also need chest physiotherapy to be added to their care plan. Respiratory function should be assessed in line with the NICE guideline on spinal injury to determine baseline function and mark progress. The committee highlighted that children and young people can find it difficult to complete these assessments (particularly forced vital capacity [FVC]), and these should be performed and interpreted in accordance with their age and ability. The committee used their experience to recommend several protective interventions to assist with respiratory function after spinal cord injury.

How the recommendations might affect services

Monitoring respiratory function after a spinal cord injury will involve additional time, but should have benefits in preventing complications caused by compromised respiratory function, avoiding delays in starting and continuing rehabilitation, and improving outcomes. Prophylactic respiratory support will potentially reduce the need for additional chest rehabilitation further down the pathway.

Return to recommendations

Preventing complications

Recommendations 1.15.18 to 1.15.20

Why the committee made the recommendations

The extended periods of bed rest and immobilisation following spinal cord injury can lead to a wide variety of complications, which can delay rehabilitation. There was no evidence so the committee based the recommendations on their knowledge and experience.

Skin management is a particular area of concern because of decreased mobilisation coupled with reduced physical sensation. People can develop deep pressure ulcers very quickly, which need to be treated before rehabilitation can start.

Blood pressure monitoring is important after spinal cord injury because people are at risk of developing autonomic dysreflexia (in high-level spinal cord injury) and orthostatic hypotension. Autonomic dysreflexia has severe consequences (for example, strokes, encephalopathy, brain haemorrhages and heart attacks) and should be managed as a medical emergency. Orthostatic hypotension has less severe complications but, because it is triggered when changing positions, can affect engagement with rehabilitation exercises.

How the recommendations might affect services

The recommendations reinforce current practice and should not need additional resources to implement. Additional education might be needed for healthcare professionals on the best way to inform people with spinal cord injury about skin and pressure management.

Return to recommendations

Maintaining mobility and movement

Recommendations 1.15.21 to 1.15.33

Why the committee made the recommendations

The committee agreed that it is important to maintain mobility and range of motion after a spinal cord injury. However, they also recognised that the large variety of spinal cord injury disabilities and needs means that this should be considered on a case-by-case basis. Because of this complexity, the committee stressed that specialist advice should be sought when needed (for example, the appropriateness of wrist splints for people with a spinal cord injury involving C6). Spinal orthoses have conflicting results in different people, and can hinder certain rehabilitation programmes. Therefore, the committee

recommended referring to surgical teams in these cases, to explore other avenues of treatment.

There was some evidence on the benefit of specialist equipment and rehabilitation techniques to maintain mobility and range of motion. The committee agreed that these should be considered on a case-by-case basis, aligning interventions with rehabilitation needs and goals.

Spasticity is an important area to treat for people with spinal cord injury, to prevent losing range of joint movement and contractures. There was some evidence on baclofen (an oral antispastic medication) and botulinum toxin type A to manage spasticity after a spinal cord injury. Referral to a multidisciplinary team specialised in spasticity management may be needed.

Length of bed rest after spinal cord injury varies throughout different NHS trusts, and is an area that the committee were keen to standardise. However, because of the lack of evidence identified, they were unable to make any strong recommendations and made a research recommendation on the optimal length of bed rest to inform future guideline updates.

How the recommendations might affect services

More people with spinal cord injury might be referred to specialist services. Any additional cost will be offset by more people achieving their long-term rehabilitation goals because of earlier specialist input. There might be some additional costs for training healthcare staff, and some services might need to procure specialist equipment to help with mobility, upper limb function and independent walking. Although some equipment, like robotics, can be expensive, the committee agreed a range of effective interventions. There is flexibility within the recommendations about the use of a range of assistive devices and techniques.

Return to recommendations

Low mood and psychological support

Recommendations 1.15.34 to 1.15.37

Why the committee made the recommendations

There was conflicting quantitative evidence on using psychosocial interventions after spinal cord injury, with some studies reporting beneficial outcomes and some finding no difference. The committee argued that this was low quality evidence, and that their experience and expertise agreed with the beneficial impact of psychological interventions. However, because they have already made recommendations on psychological interventions for rehabilitation after traumatic injury, they used this section of the guideline to make recommendations that are specific to people with spinal cord injury.

People with spinal cord injury have increased rates of low mood and psychological trauma, and this can affect engagement with rehabilitation. Access to a psychologist with experience in traumatic spinal cord injury and rehabilitation is not guaranteed outside of specialised spinal units, so the committee made a recommendation to address this. Active monitoring is recommended for children and young people because childhood and young adulthood is a period of change for anyone, and children and young people with a spinal cord injury could be affected in different ways to the general paediatric population (for example, altered body image becoming more important during puberty).

How the recommendations might affect services

The recommendations reinforce current practice and should not need additional resources to implement. If multidisciplinary teams are more aware of low mood and psychological trauma in people with a spinal injury, they may make more referrals for psychological support.

Return to recommendations

Rehabilitation after nerve injury – general principles

Recommendations 1.16.1 to 1.16.3

Why the committee made the recommendations

Nerve injuries may be hidden; for instance, when the person has multiple injuries, a cognitive impairment, a head injury, is in critical care or has a pre-existing neurological

condition. These obvious injuries could distract clinicians from recognising subtler nerve injury, and neurological deficit caused by nerve injury can be mistakenly assumed to be due to a pre-existing neurological condition. In addition, diagnosis of nerve injury may not be possible if the person is unconscious, and nerve function cannot be assessed on limbs that are splinted. The committee highlighted the need to assess the peripheral nerves of the affected limb to identify the informed nerve and functional deficit.

The committee highlighted the importance of assessing the risks to tissue viability if there is sensory or motor loss secondary to peripheral nerve injury, to manage the risk and not jeopardise the person's functional recovery.

How the recommendations might affect services

The recommendations reflect current practice, but where there are regional variations, practice might need to be amended.

Return to recommendations

Therapies and referral

Recommendations 1.16.4 to 1.16.9

Why the committee made the recommendations

Based on the evidence and their experience, the committee emphasised the need to start rehabilitation therapy to maintain range of movement and regain function after nerve injury. This is because nerve injury can cause the joint to rest in an unnatural position and lead to fixed deformity from contracture of the capsule and muscle. Providing vocational therapy while the recovery is ongoing can help the person return to normal activities such as work.

Nerve function should be assessed regularly for symptoms of recovery, which will affect the components and intensity of the nerve rehabilitation programme. It should not be a static programme. For people who have a poor prognosis, a referral to a specialist peripheral nerve injury service should be made because these services are better equipped to deal with the complex needs of peripheral nerve injury.

People recovering from nerve injury may experience low mood, anxiety and lack of motivation, because recovery may be a lengthy process. To ensure that specialist psychological support is available for people who may need it, the rehabilitation team should have access to a psychologist with trauma and rehabilitation experience.

How the recommendations might affect practice

Sensory interventions (including mirror therapy) and hydrotherapy are not widely available and this could have some resource implications. However, hydrotherapy would only be offered if pool facilities were available, and mirror therapy and other sensory interventions are relatively inexpensive and easy to implement. All of the above interventions can play a part in stimulating and aiding functional recovery, and can lead to a quicker recovery, help with pain management, and improve the person's health-related quality of life.

Healthcare professionals may need training to conduct nerve conduction studies reliably, but this will save costs further down the care pathway. There may be more referrals to specialist peripheral nerve injury services.

Return to recommendations

Rehabilitation after chest injury

Recommendations 1.17.1 to 1.17.12

Why the committee made the recommendations

There was no evidence identified. However, the committee discussed the importance of starting rehabilitation as soon as possible to avoid further complications. They also discussed the need for regular assessment of pain and highlighted pain management options. This is because pain is a contributing factor for much of the morbidity associated with chest injury, and the appropriateness of pain management options may vary between people with chest injury.

For people with chest trauma, the committee highlighted the need for movement in order to optimise their respiratory function and prevent deconditioning. They further highlighted a range of rehabilitation therapies to use in preventing respiratory difficulties because this is a key component of chest trauma rehabilitation. The committee are aware that the

availability of these therapies may differ between services, and different therapies may be preferred by different people.

Because of the concerns over possible injury causes and underlying pathologies, the committee highlighted the need to assess people with rib fractures, in order to inform future treatment and prevent recurrence. The committee recognise stiffness of the upper limbs as a common complication and discussed measures to prevent compromised function.

The committee recommended referring people with complex chest injuries that affect communication and swallowing skills to speech and language therapy to prevent speech decline and swallowing difficulties.

The committee also recommended providing information that will help people to return to normal life and explain how to seek help for different problems that may arise because rehabilitation for chest injuries can take a long time, causing stress and worry.

How the recommendations might affect services

The recommendations reflect current practice, but where there are regional variations, practice will need to be amended.

Return to recommendations

Context

Traumatic injury is a significant cause of early death and morbidity – particularly in the working population. Major trauma is the biggest cause of death in children and adults under the age of 40.

This guideline defines traumatic injury as any injury that requires admission to hospital at the time of injury. This could include musculoskeletal injuries, visceral injuries, nerve injuries, soft tissue damage, spinal injury, limb reconstruction and limb loss. Minor injuries can also lead to a hospital admission.

This guideline does not cover the management of traumatic brain injury, except in relation to early screening for onward referral and the coordination of services for people with multiple injuries, one of which may be traumatic brain injury. The specialist assessment and delivery of rehabilitation services for traumatic brain injury will be covered in a new NICE guideline on rehabilitation for chronic neurological disorders including traumatic brain injury.

In England, 45,000 people are affected by very severe or major trauma every year. A further 500,000 people (included in the population for this guideline) experience less severe trauma, and a proportion of those will need hospital admission because of pre-existing conditions, disability, frailty, or because the functional impact of injuries and environmental factors means that they will not be able to manage in their own home.

Trauma affects all age groups, but there are 2 peaks: younger age and older age. People may have different rehabilitation needs that reflect different functional expectations and priorities. Trauma can negatively affect quality of life, both physically and mentally. It can lead to problems with mobility, pain, breathing, swallowing, eating, drinking, toileting, cognitive function, speech, language and communication, sensory problems, and can lead to depression, anxiety and other psychological difficulties. These issues can similarly have a social and financial impact on the person, as well as on their family and carers. The impact of these problems may be influenced by pre-existing conditions.

After a traumatic injury, people need rehabilitation assessment and interventions that take account of any pre-existing conditions and focus on helping them regain optimum function and independence as quickly as possible.

This guideline focuses on people with complex rehabilitation needs after a traumatic injury. The defined population in this guideline has not been based on the severity of the injury (sometimes measured using an injury severity score) but on the complexity of the rehabilitation need, taking into account existing conditions and circumstances that will impact rehabilitation. Complex needs cover multiple needs, and will involve coordinated multidisciplinary input from at least 2 allied health professional disciplines, which may include rehabilitation medicine, and could also include:

- vocational or educational social support for the person to return to their previous functional level, including return to work, school or college
- emotional, psychological and psychosocial support
- equipment or adaptations
- ongoing recovery from injury that may change the person's rehabilitation needs (for example, restrictions of weight-bearing, cast immobilisation in fracture clinic)
- further surgery and readmissions to hospital.

Currently, people who meet 'major trauma' criteria should have a rehabilitation assessment and prescription carried out during the hospital admission. Further assessments are performed over time to capture changing needs. For people who do not meet major trauma criteria (currently those with an injury severity score of less than 9), the pathway for rehabilitation is less clear.

There are limitations in access to the appropriate rehabilitation services for people after trauma, which may be related to geography, age, injury type or rehabilitation need. There is significant variation in practice, with no national network of services.

Improvement in survival rates resulting from the introduction of major trauma networks in 2012 has led to an increased need for rehabilitation.

Military experience has shown better outcomes with improved rehabilitation, where early and intensive rehabilitation has been shown to improve function, pain, quality of life and mental health outcomes. It can also improve outcomes for carers of those affected by traumatic injury.

Costs of treatment after a traumatic injury are high in the acute phase, and there are also long-term care costs to the NHS through ongoing treatment. Social care costs may be high

for people who need ongoing care and support in the community. There are wider costs to the community if people are unable to return to work or education. Rehabilitation may be able to reduce these costs through improving overall function. Interventions may improve outcomes at a number of stages.

There are several NICE guidelines about the assessment, treatment and management of specific injuries for adults and children. There is guidance about service delivery, assessment and management of major trauma, and rehabilitation after critical illness and stroke. There are also guidelines about the transition between hospital and home, from children's to adults' services, and about home care services.

Finding more information and committee details

To find NICE guidance on related topics, including guidance in development, see the NICE topic page on injuries, accidents and wounds.

For full details of the evidence and the guideline committee's discussions, see the evidence reviews. You can also find information about how the guideline was developed, including details of the committee.

NICE has produced tools and resources to help you put this guideline into practice. For general help and advice on putting our guidelines into practice, see resources to help you put NICE guidance into practice.

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