

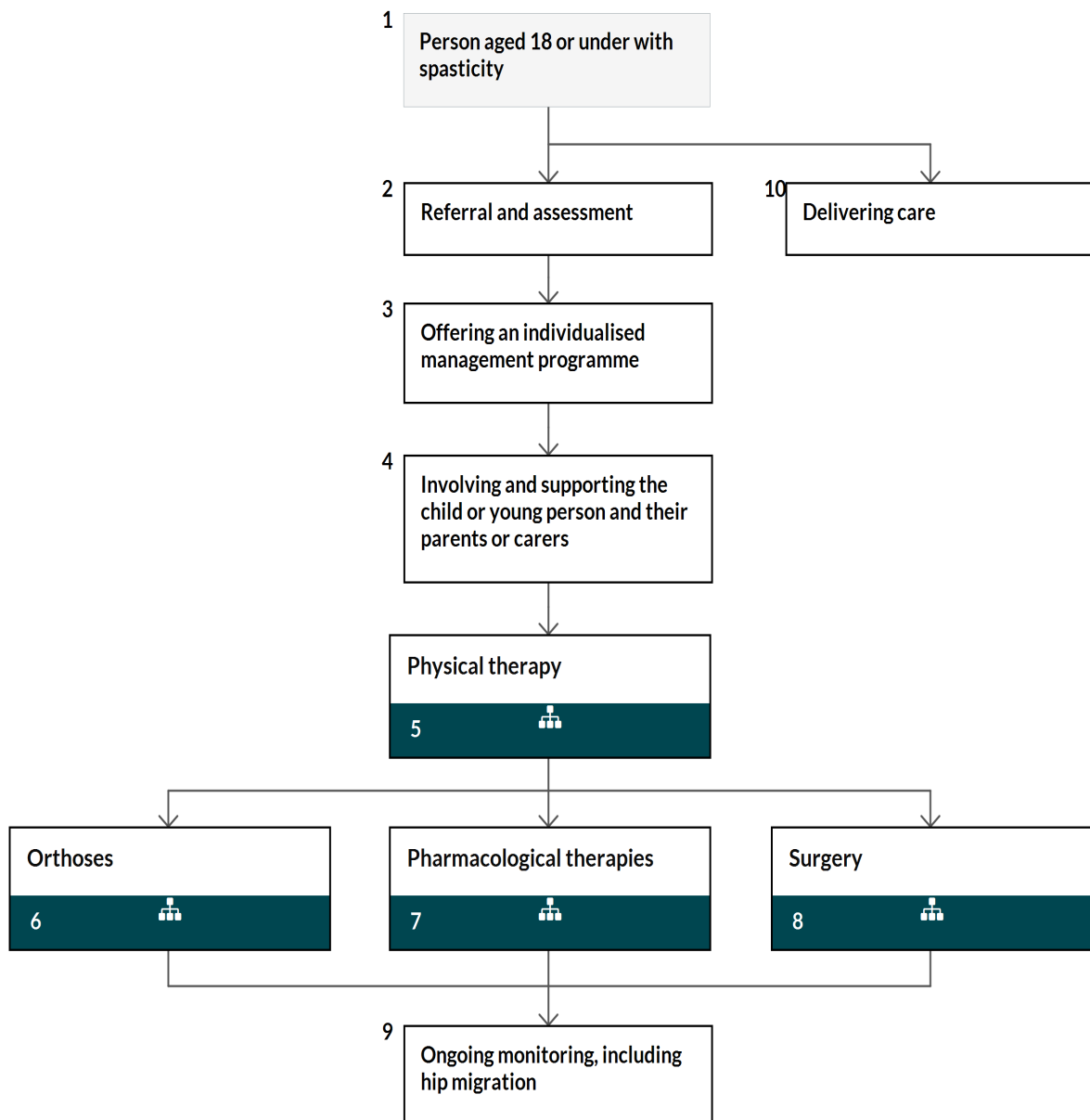
Spasticity in children and young people overview

NICE Pathways bring together everything NICE says on a topic in an interactive flowchart. NICE Pathways are interactive and designed to be used online.

They are updated regularly as new NICE guidance is published. To view the latest version of this NICE Pathway see:

<http://pathways.nice.org.uk/pathways/spasticity-in-children-and-young-people>
NICE Pathway last updated: 30 November 2017

This document contains a single flowchart and uses numbering to link the boxes to the associated recommendations.



1 Person aged 18 or under with spasticity

No additional information

2 Referral and assessment

Following diagnosis, ensure that all children and young people with spasticity are referred without delay to an appropriate member of the network team.

Children and young people with cognitive impairments

Carefully assess the impact of spasticity in children and young people with cognitive impairments:

- be aware that the possible benefit of treatments may be more difficult to assess in a child or young person with limited communication
- ensure that the child or young person has access to all appropriate services.

3 Offering an individualised management programme

Offer a management programme that is:

- developed and implemented in partnership with the child or young person and their parents or carers
- individualised
- goal focused.

When formulating a management programme take into account its possible impact on the individual child or young person and their family.

Recording and sharing the goals

Record the child or young person's individualised goals and share these goals with healthcare professionals in the network team and, where appropriate, other people involved in their care.

4 Involving and supporting the child or young person and their parents or carers

Agreeing management programme goals

Identify and agree with children and young people and their parents or carers assessments and goals that:

- are age and developmentally appropriate
- focus on the following domains of the World Health Organization's International Classification of Functioning, Disability and Health:
 - body functions
 - body structures
 - activities and participation
 - environmental factors.

Providing information

Help children and young people and their parents or carers to be partners in developing and implementing the management programme by offering:

- relevant, and age and developmentally appropriate, information and educational materials
- regular opportunities for discussion **and**
- advice on their developmental potential and how different treatment options may affect this.

Offer contact details of patient organisations that can provide support, befriending, counselling, information and advocacy.

NICE has written information for the public on spasticity in under 19s.

Supporting implementation of the management programme

Ensure that children and young people have timely access to equipment necessary for their management programme (for example, postural management equipment such as sleeping, sitting or standing systems).

5 Physical therapy

See [Spasticity in children and young people / Physical therapy for children and young people with spasticity](#)

6 Orthoses

See [Spasticity in children and young people / Orthoses for children and young people with spasticity](#)

7 Pharmacological therapies

See [Spasticity in children and young people / Pharmacological therapies for children and young people with spasticity](#)

8 Surgery

See [Spasticity in children and young people / Surgery for children and young people with spasticity](#)

9 Ongoing monitoring, including hip migration

Checks to perform

Monitor the child or young person's condition for:

- the response to treatments
- worsening of spasticity
- developing secondary consequences of spasticity, for example pain or contractures
- the need to change their individualised goals.

Hip migration

Recognise the following clinical findings as possible indicators of hip displacement (hip migration greater than 30%):

- pain arising from the hip

- clinically important leg length difference
- deterioration in hip abduction or range of hip movement
- increasing hip muscle tone
- deterioration in sitting or standing
- increasing difficulty with perineal care or hygiene.

Hip X-ray

Offer a hip X-ray to assess for hip displacement:

- if there are clinical concerns about possible hip displacement
- at 24 months in children with bilateral cerebral palsy.

Consider repeating the hip X-ray annually in children or young people who are at GMFCS level III, IV or V.

Consider repeating the hip X-ray after 6 months in children and young people where the initial hip migration is greater than 30%, and then consider repeating the hip X-ray every 6 months after this if the hip migration is increasing by more than 10 percentage points per year.

10 Delivering care

Children and young people with spasticity should have access to a network of care that uses agreed care pathways supported by effective communication and integrated team working.

The network of care should provide access to a team of healthcare professionals experienced in the care of children and young people with spasticity. The network team should provide local expertise in paediatrics, nursing, physiotherapy and occupational therapy. Access to other expertise, including orthotics, orthopaedic surgery and/or neurosurgery and paediatric neurology, may be provided locally or regionally.

If a child or young person receives treatment for spasticity from healthcare professionals outside the network team, this should be planned and undertaken in discussion with the network team to ensure integrated care and effective subsequent management.

The network of care should have a pathway for monitoring children and young people at increased risk of hip displacement.

There are details about service organisation for specific types of treatment in [administering botulinum toxin type A](#), [performing an assessment](#), [intrathecal baclofen testing](#), [assessing the response to intrathecal baclofen testing](#), [performing orthopaedic surgery](#) and [selective dorsal rhizotomy](#).

Transition to adults' services

The network team should have a central role in transition to prepare young people and their parents or carers for the young person's transfer to adult services.

See what NICE says on [transition from children's to adults' services](#).

Glossary

Botulinum toxin type A

a neurotoxin produced by the bacterium *Clostridium botulinum* that blocks neurotransmitter release at peripheral cholinergic nerve terminals; injection into a muscle reduces spasticity

Constraint-induced movement therapy

an approach to physical therapy in which an unaffected arm is temporarily restrained to encourage use of the other arm

Continuous pump-administered intrathecal baclofen

direct administration of baclofen into the fluid-filled space around the spinal cord (the intrathecal space) using a catheter and infusion pump; the pump is implanted in the abdominal cavity and allows a continual controlled delivery of baclofen adjusted according to need

Contractures

shortening of muscle tendons, ligaments and soft tissues resulting in a limitation of joint movement, usually, muscle shortening is the primary abnormality, but prolonged immobility or scarring may also contribute

Dystonia

involuntary, sustained, or intermittent muscle contractions that cause twitching and repetitive movements, abnormal postures or both

Equinus deformities

abnormal ankle plantarflexion (movement of the foot at the ankle joint in a downward direction); this can, for example, result in the child or young person walking on tiptoe

Fine motor function

the ability to use small muscle groups, often in coordination with the eyes, to perform precision activities such as writing or fastening buttons

Focal dystonia

dystonia involving a specific muscle or group of muscles

Focal spasticity

spasticity involving a specific muscle or group of muscles

Function

the ability to perform normal activities or actions; such function may be impaired by spasticity and associated motor disorders and by the complications of spasticity

Gait analysis

a detailed approach to analysing the component phases of walking using instrumentation or video analysis in addition to clinical observation, undertaken to evaluate a child or young person's ability and style of walking and to plan or assess treatment

GMFCS

Gross Motor Function Classification System – a five-point scale that describes gross motor function: level I, walks without restrictions; level II, walks without assistive devices; level III, walks with assistive devices; level IV, has limited self-mobility; level V, has severely limited self-mobility even with assistive devices

Gross motor function

the ability to use large muscle groups to perform body movements such as sitting, standing, walking and running

Hip migration

movement of the top of the thigh bone that connects with the pelvis (the femoral head) from its normal position in the socket joint of the hip (the acetabulum) – often measured by reporting the degree of displacement seen on X-ray (known as the hip migration percentage)

Intrathecal baclofen testing

direct injection of baclofen into the fluid-filled space around the spinal cord (the intrathecal

space) using a lumbar puncture needle or a temporary spinal catheter in order to assess the likely response to continuous pump-administered baclofen treatment

Kyphosis

abnormal curvature of the spine when viewed from the side of the body that results in a hunched or slouching position

Low-load active stretching

a physical therapy intervention in which the child or young person actively stretches their muscles with the aim of increasing range of movement

Low-load passive stretching

a physical therapy intervention involving sustained stretching using positioning with equipment, orthoses or serial casting

Muscle tone

the normal state of continuous passive partial contraction in a resting muscle; muscle tone is important in maintaining posture – increased muscle tone (hypertonia) is associated with an abnormal resistance to passive stretch, while reduced muscle tone (hypotonia) is associated with floppiness of the limbs or trunk and poor posture

Network of care

linked groups of healthcare professionals and organisations working in an agreed and coordinated manner to deliver a clinical service; a network is not constrained by existing professional, organisational or institutional boundaries

Network team

a multidisciplinary group of healthcare and other professionals working in a network of care to deliver a clinical service

Orthosis

an artificial device or appliance used to support, align, prevent, or correct deformities or to improve musculoskeletal function

Passive range of movement

the degree of motion through which a joint can be moved by an outside force without active participation by the child or young person themselves (for example, movement by another person)

Physical therapy

physiotherapy and/or occupational therapy

Range of movement

the range of motion, usually measured in degrees, through which a joint can move

Scoliosis

an abnormal lateral curvature of the spine viewed from in front of or behind the child or young person

Secondary complications of spasticity

an adverse effect on musculoskeletal structure that occurs as a result of spasticity (for example, a contracture or abnormal torsion)

Secondary consequences of spasticity

any effect experienced by a child or young person as a result of spasticity; this may be symptomatic (for example, pain or difficulty walking) or a complication affecting the structure of the musculoskeletal system (see secondary complications of spasticity)

Selective dorsal rhizotomy

a neurosurgical procedure in which some of the sensory nerves that contribute to spasticity in the lower limb are cut at the point where they enter the spinal cord

Serial casting

the successive use of casts with the aim of progressively lengthening muscles and other non-bony tissues such as ligaments and tendons thereby reducing the effect of contractures by passive stretching to gradually improve the range of movement

Spasticity

a specific form of increased muscle tone (hypertonia) in which one or both of the following are present: resistance to externally imposed movement increases with increasing speed of stretch and varies with the direction of joint movement; resistance to externally imposed movement increases rapidly beyond a threshold speed or joint angle

Spinal fusion

a surgical procedure where two or more vertebrae are joined to prevent movement between them

Task-focused active-use therapy

physiotherapy technique where a specific goal is identified and the child or young person carries out exercises or activities using the affected limb or limbs to improve their performance

Sources

[Spasticity in under 19s: management](#) (2012 updated 2016) NICE guideline CG145

Your responsibility

Guidelines

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.

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.

Technology appraisals

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, health professionals are expected to take these recommendations fully into account, alongside the individual needs, preferences and values of their patients. The application of the recommendations in this interactive flowchart is at the discretion of health professionals and their individual patients and do not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian.

Commissioners and/or providers have a responsibility to provide the funding required to enable the recommendations to be applied when individual health professionals and their patients wish to use it, in accordance with the NHS Constitution. They should do so 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.

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.

Medical technologies guidance, diagnostics guidance and interventional procedures guidance

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take these recommendations fully into account. However, the interactive flowchart does not override the individual responsibility of healthcare professionals to

make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Commissioners and/or providers have a responsibility to implement the recommendations, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this interactive flowchart should be interpreted in a way that would be inconsistent with compliance 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.