UHL NNU Guideline for the Management of Brachial Plexus Injury

University Hospitals of Leicester NHS Trust

C84/2007

Contents

1. Introduction and Who Guideline applies to

This guideline is aimed at all Health care professionals involved in the care of infants within the Perinatal Directorate.

Key Points

- There should be a low threshold for a Chest x-ray (clavicle and upper arm) in all infants with an apparent brachial plexus injury.
- Associations of a brachial nerve palsy include fracture of the clavicle and humerus[1], phrenic nerve palsy[2] and Horner's syndrome.
- Respiratory distress associated with an Erb's palsy will require a chest x-ray.
- The physiotherapists will document the results of the Toronto movement assessment scale at 8 weeks and 12 weeks[3].
- An infant with a result of <3.5 on the Toronto scale should be considered for referral for surgery at a specialist centre[4].
  (local referrals to , Women &Children's Hospital, Birmingham . https://bwc.nhs.uk/hand-surgery-information-for-professionals)

Aims

The aim of this policy is that infants with a significant brachial nerve injury are identified, complications are excluded and referral to a paediatric physiotherapist is instituted. In addition those infants at risk of permanent nerve damage are highlighted and referred on by 12 weeks for specialist opinion and possible surgical intervention[5 6 7 8 9].

Background

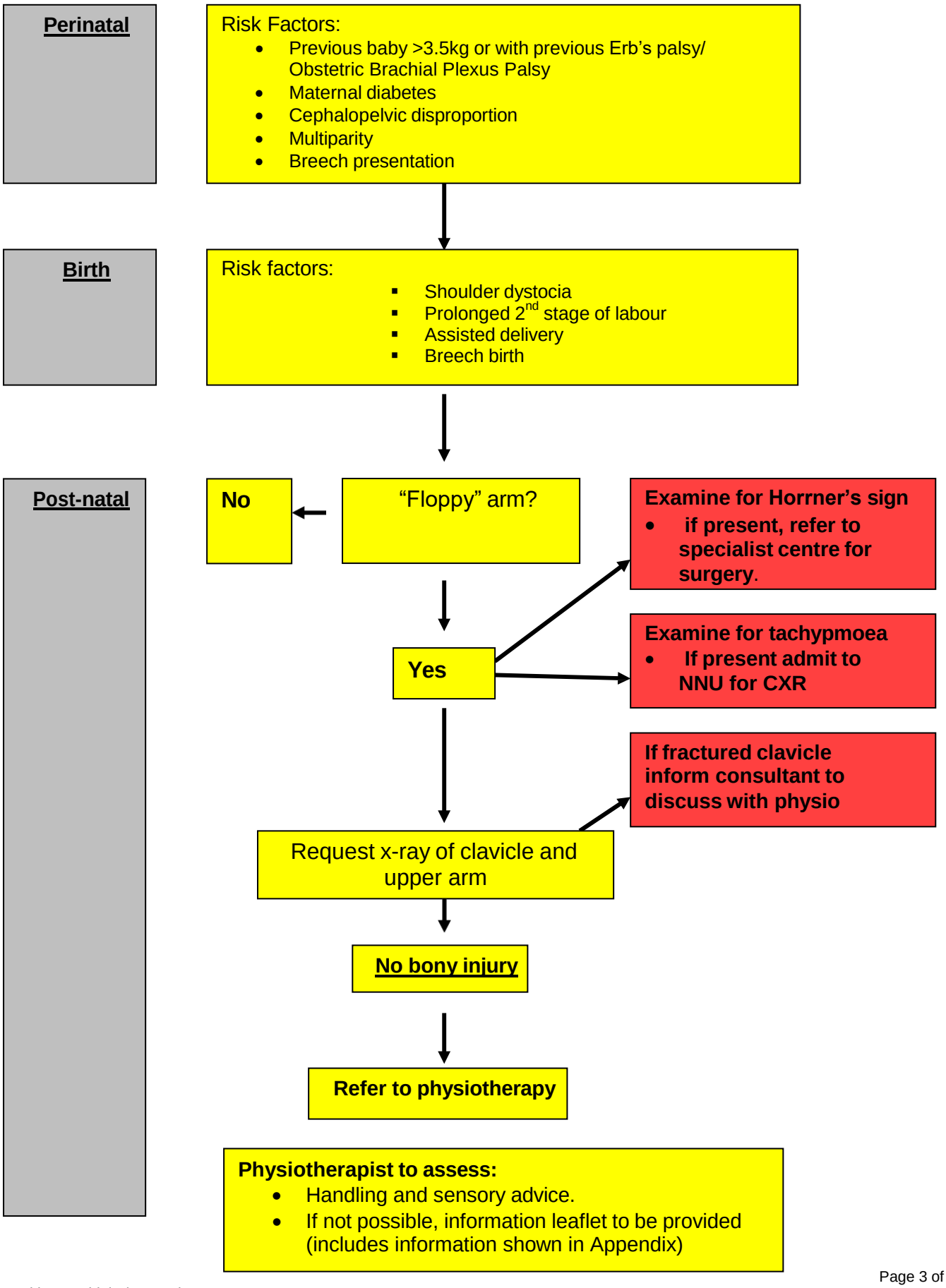
Brachial nerve injury has an incidence of between 0.4 - 2 per 1000 deliveries. [10] [1] The brachial plexus consists of the nerves C5/C6/C7/C8/T1 and the clinical features will depend on the nerve roots that have been injured and the severity of the injury. Factors that increase the risk of a brachial nerve injury include macrosomia[11], prolonged labour, shoulder dystocia, breech delivery and assisted delivery [1] [12]. The injuries occur secondary to forceful traction of the infant's neck.[13] [14] [15] [16] The type of injury can be classified as:

- Avulsion or rupture
    - Neurotemesis - Severe contusion and loss of encapsulating sheath
    - Axonotemesis - Loss of continuity of axon but with preservation of encapsulating sheath
- Neuropraxia
    - Mild shock or bruising

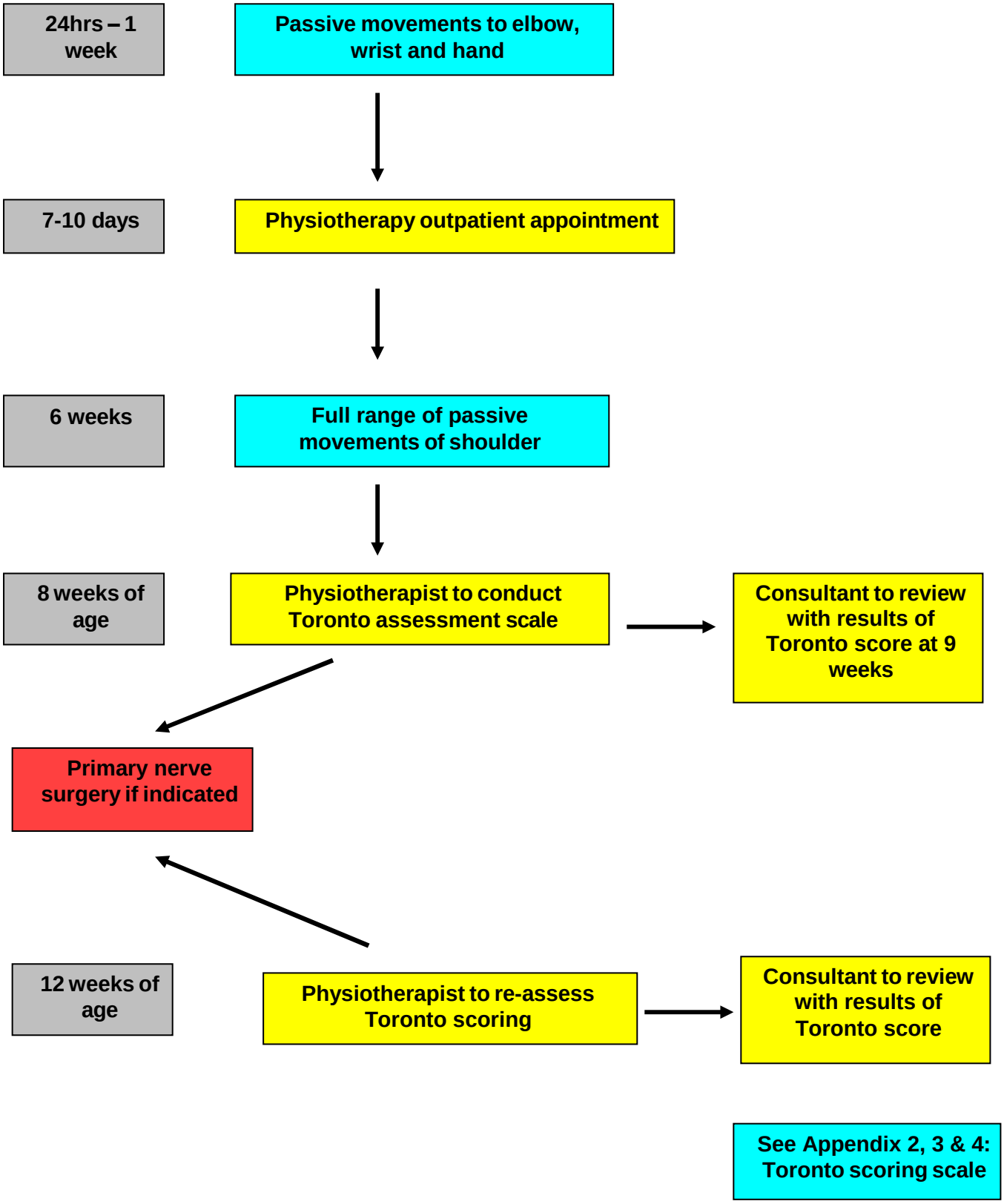
Fractures

If baby appears to be in persistent pain seek medical advice to look for any associated diagnosis of fracture humerus.

Risk Factors and Neonatal Management



Outpatient Management



3. Education and Training

None

4. Monitoring Compliance

This is based on a review of incident forms by the Risk Manager in conjunction with the clinical lead, and will include trend analysis if considered necessary, and referred to the Perinatal Risk Group where appropriate. Any action points / plans will then be referred to the Maternity Services or Neonatal Governance Group.

Audit Standards (neonatal)

All infants with an Erbs palsy / brachial plexus palsy should be referred by the neonatal team to a paediatric physiotherapist for assessment and follow up. (100%)

5. Supporting References

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14. Iffy, L. and P. Pantages, Erb's palsy after delivery by Cesarean section. (A medico-legal key to a vexing problem.). Med Law, 2005. 24(4): p. 655-61.

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16. Weizsaecker, K., J.E. Deaver, and W.R. Cohen, Labour characteristics and neonatal Erb's palsy. BJOG, 2007. 114(8): p. 1003-9.
17. Obstetric Brachial Plexus Palsy: A Guide to Management. Association of Paediatric Chartered Physiotherapists, London 2012.

6. Key Words

Clavicle, Erb's palsy, Horner's syndrome, Palsy, Toronto scale

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The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.
As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

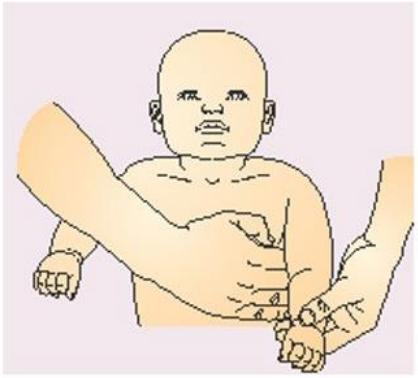
Contact and review details			
Guideline Lead (Name and Title) Nicky Horsley, Kay Calvert, Paediatric Physiotherapists Contact – S Mittal- Consultant - clinical guidelines lead			**Executive Lead** Chief Nurse
Details of Changes made during review:			
Date	**Issue Number**	**Reviewed By**	**Description Of Changes (If Any)**
Oct 2007	**1**		Original guideline
Aug 2008	**2**	Neonatal Guidelines Meeting	
Oct 2015 - Nov 2015	**3**	Kay Calvert, Paediatric Physiotherapist (Guidelines lead - REM) Neonatal Guidelines Meeting Neonatal Governance Meeting	Minor editorial changes
Nov 2018 – Dec 2018	**4**	Nicky Horsley, Paediatric Physiotherapist Neonatal Guidelines Meeting Neonatal Governance Meeting	Review and update
March 2022	**5**	Neonatal Guidelines Meeting Neonatal Governance Meeting	The name of the guideline has been changed to Management of Brachial Plexus Injury The new referral centre for babies who are not getting better by physiotherapy team is now Birmingham Children Hospital (link attached), in the past it was at Derby Hospital Added APCP referral pathway

Appendix 1: Passive Movement Exercises
(taken from reference 17 APCP)

Range of Motion Exercises for Infants with Obstetric Brachial Plexus Palsy

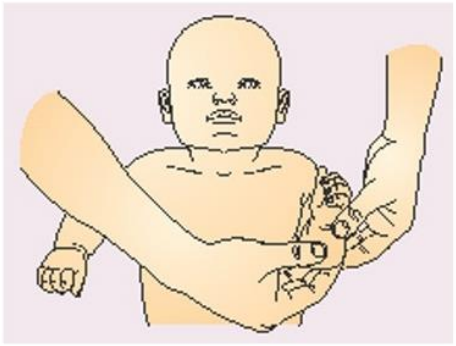
Range of motion exercises are movements done with your baby's arm to ensure that the joints maintain full movement. They should be performed slowly and held at the end of range for at least 10 seconds. The exercises should be done at least **3 times a day** with each exercise being repeated three times unless otherwise directed by your therapist. There will be many more opportunities to do these stretching exercises such as during baths and times when your baby is being nursed, held or changed.

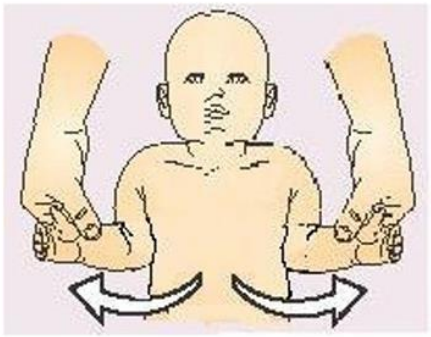
Shoulder Exercises



A Gently grasp your baby's forearm and hold their shoulder blade down firmly with the palm of your hand. Then raise their arm slowly up over their head keeping the arm close to the ear and hold.

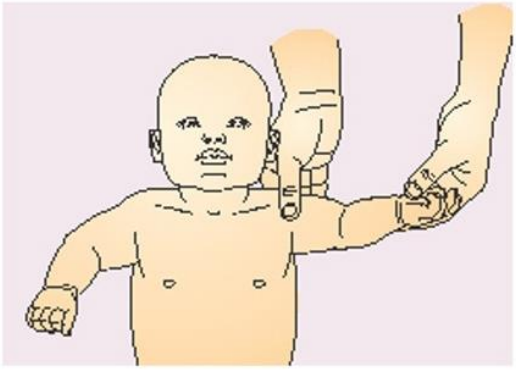
B This exercise resembles a 'high five'. Raise your baby's shoulder out half way and bend the elbow to 90°. Maintaining this position, rotate the baby's arm back so that the arm touches the bed and hold.

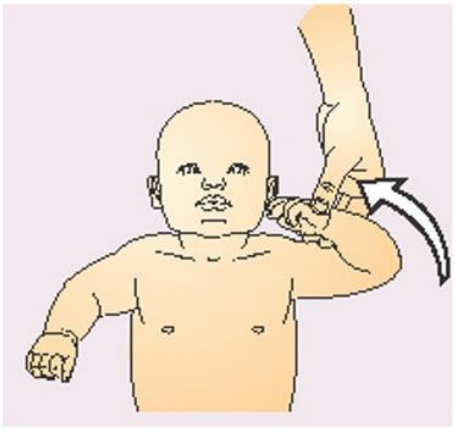




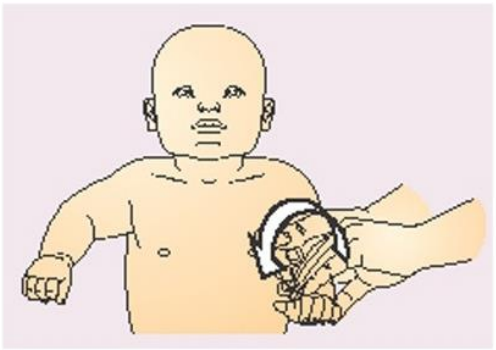
C Bend both your baby's elbows to 90° and keep elbows tucked into the side of your baby's body. Turn the forearms out to the side and down towards the surface and hold. **This is probably the most important exercise.**

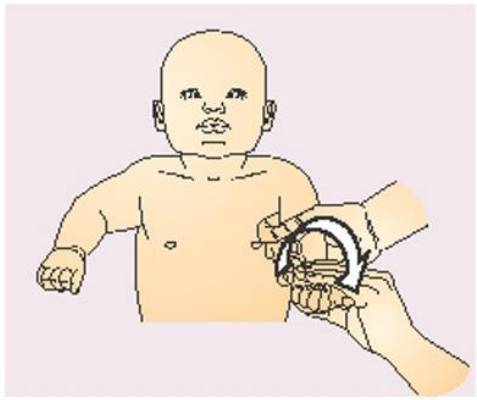
Elbow Exercises





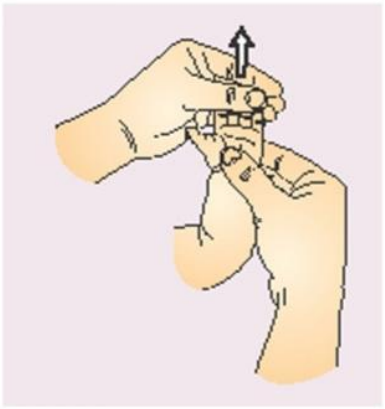
A Keep your baby's palm turned up, hold above and below the elbow, gently but firmly straighten your baby's elbow and hold. Then bend your baby's elbow and hold.

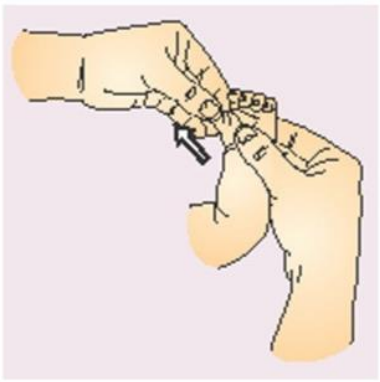




B Keep your baby's elbow bent at 90° with their upper arm against the body. Start with your baby's palm turned down, then turn your baby's forearm up until the palm is facing upwards and hold. Then, turn your baby's forearm until the palm is facing down and hold.

Wrist and Finger Exercises

A 

B 

A Hold your baby's wrist in one hand and their hand in your other hand. Gently bend their wrist backwards and hold, then straighten their fingers and hold.

B Use the same wrist position as above and straighten their thumb and hold.

Positioning and Handling

- If your baby's arm is very floppy it should be well supported with the hand, elbow and shoulder in the neutral position. Often a towel under the affected arm during sleep helps to keep the arm in the neutral position.
- Move your baby's arm gently for washing, dressing and skin care. It is helpful to dress the affected arm first and undress it last. When washing and drying, particular care should be taken with skin folds.
- When handling, feeding and cuddling your baby, the affected arm should be well supported.

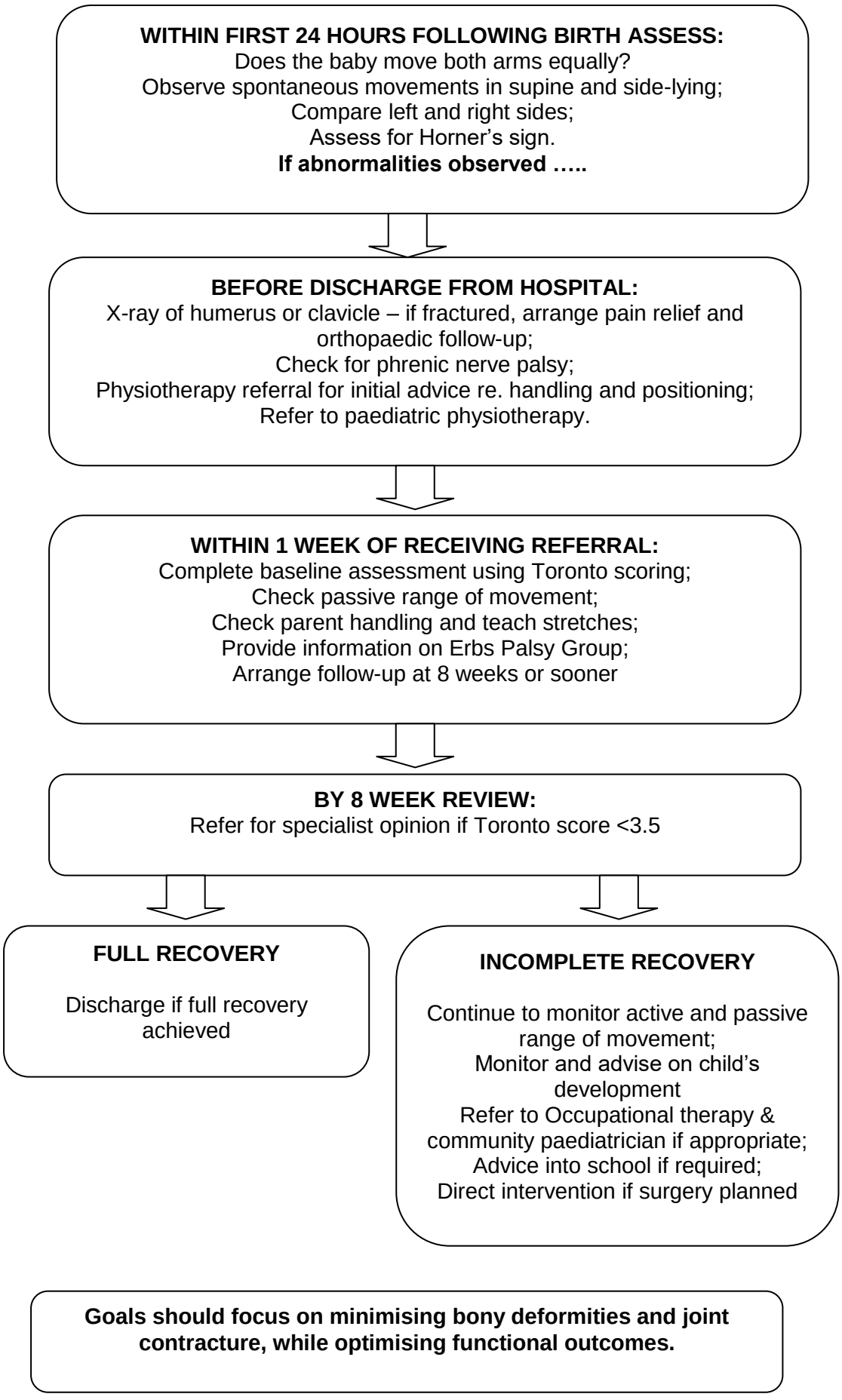
Appendix 2: Toronto Scale for assessment of Erb's Palsy

	Grade	Score
Gravity Eliminated		
No contraction	0	0
Contraction, no motion	1	0.3
Motion < ½ range	2	0.3
Motion > ½ range	3	0.6
Full motion	4	0.6
Against gravity		
Motion < ½ range	5	0.6
Motion > ½ range	6	1.3
Full motion	7	2

Upper limb movements to be measured

1) Elbow flexion
2) Elbow extension
3) Wrist extension
4) Finger extension
5) Thumb extension

Appendix 3: APCP Referral Pathway up to 8 weeks



Appendix 4: Toronto scale pathway - 8 weeks onwards