

Determining the best practice for serial casting to increase ankle range of movement following Botulinum Toxin injections in children with Acquired Brain Injury

Rachel Garrod, Gemma Kelly, Vijay Palanivel, Sammy Randall

Background

- Reduced ankle range of movement is commonly seen in children following acquired brain injury (ABI), due to altered muscle tone and prolonged periods of immobility.
- This can affect a child's ability to sit and stand, impacting on participation.
- It is recommended that serial casting following Botulinum Toxin injections is used with a goal of increasing joint range of movement.
- Casting is frequently used at The Children's Trust. However, there is no consistent approach to timescales, duration and frequency of casting post injections.

Method

Scoping approach:

- Review of the literature.
- Consultation with Physiotherapists and Occupational Therapists working with children with ABI in the UK, USA and Canada.
- A special interest multi-disciplinary working group at The Children's Trust convened to consider current practice in light of all the evidence available for upper and lower limb serial casting.

Results

- Limited published evidence for casting protocols in children with ABI following Botulinum Toxin exists.
- Differences in clinical casting protocols:
 - Included length of time between injection and casting (1-14 days).
 - Application length (2-14 days).
 - Position of joints in cast (from 10° off maximum range to end of range of movement).
 - Position of child.
 - Materials used.
 - Professions who splinted.

Aim

To develop and pilot a local protocol for serial casting post Botulinum Toxin, based on a review of evidence and expert opinion.

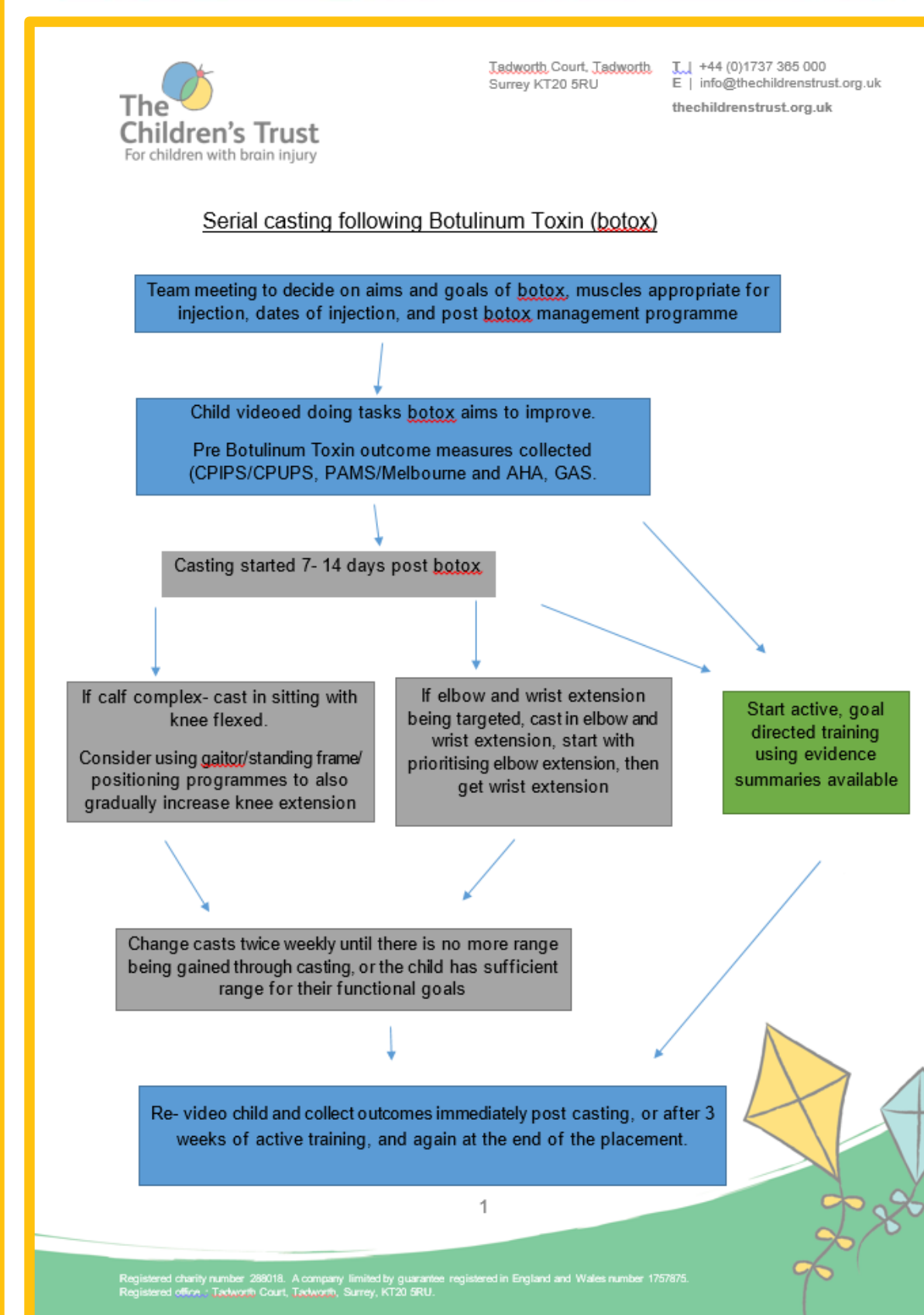


Figure 1: Local protocol

From this approach the findings informed the writing of a local protocol (Fig.1) which was rolled out to the below illustrative case study

Illustrative Case Study



- 7 year old girl with severe ABI following encephalitis.
- Complex dystonic movement disorder impacting her whole body.
- Shortening in gastrocnemius and soleus muscles prevented standing in a frame and accessing supportive walker.
- Botulinum Toxin to her calf complex with serial casting following protocol.
- Casting continued for 5 weeks until changes in joint range ceased.

Results

- Functional goals were achieved including standing and use of a Rifton pacer walker.
- Improved score on the Physical Abilities and Mobility Scale outcome measure as well as improved joint range of movement (Tab. 1) which prevented orthopaedic surgery.



Case study

Pre Botulinum Toxin		Post Botulinum Toxin		Number of casts made
Right	Left	Right	Left	
-45°	-40°	-2°	1°	11 each leg

Table 1. Joint range of movement pre and post Botulinum Toxin injection (degrees)

Conclusion(s) and Implications:

- A lack of consensus for best practice for casting following Botulinum Toxin exists.
- A local protocol has been developed and used locally.
- Ongoing quality improvement PDSA cycles required locally to ensure best practice is fully implemented.
- Research is required to test and compare the intervention in terms of the parameters used to form an evidence base.



References

- NICE (2016), Spasticity in under 19s: Management, Clinical guideline [CG145]. Available at <https://www.nice.org.uk/guidance/cg145>. Accessed on 20th September 2019



@rachelEgarrod



rgarrod@thechildrenstrust.org.uk

Please scan the QR code to access a PDF of this poster in the Research section of our website: www.thechildrenstrust.org.uk

