

# A survey of the current practice of intramuscular Botulinum toxin injections for hemiplegic shoulder pain in the UK

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## Background

- Hemiplegic shoulder pain (HSP) is a common and debilitating complication of stroke
- Botulinum toxin injections has been suggested as a treatment for HSP associated with range-limiting spasticity
- Conflicting results found in the literature for efficacy
- Reviews have recommended the need for larger scale RCTs to explore optimisation of patient selection, muscle selection and dosage
- However, first it would be beneficial to understand the current 'state of play' to see if there is a consensus on the implementation of this intervention in practice and to identify any gaps between available evidence and contemporary practice

## Method

- A UK-based cross-sectional survey design with data collected via an online survey (SurveyMonkey®)
- Survey developed and refined with feedback from experts in topic matter and survey design before final version peer reviewed by the Clinical Standards Committee at the British Society of Rehabilitation Medicine
- Sample population for the study was both medical and non-medical practitioners in the UK who inject botulinum toxin for spasticity as part of their current practice
- Link to survey distributed to the members of the British Society of Rehabilitation Medicine and the British Neurotoxin Network and recipients asked to forward on to other practitioners as appropriate thus sourcing additional participants via snowball sampling
- Responses analysed using SPSS software

## Large variations in practice found for the use of botulinum toxin to treat hemiplegic shoulder pain

## Results

### Demographics

- 73.5% of respondents were doctors, 25% physiotherapists and 1.5% nurses
- 54.5% had over 10 years experience; 7.4% had under 2 years experience
- 33.8% injected over 20 injections per month
- Clinicians worked in a variety of settings (outpatient clinics 88.2%; rehabilitation wards 77.9%; acute wards 55.9%; domiciliary visits 42.6%)

### Clinical reasoning

- 86.8% of respondents would consider using botulinum for HSP
- 54.4% agreed it was effective
- Only 8.8% would consider it a first-line treatment
- Main barriers to the intervention were 'difficulties determining cause of pain', 'difficulty isolating muscles to inject' and 'lack of evidence'

### Current use

- Large variations seen in muscle selection, dose and volume of injectate
- Large variations in dose outside of recommended ranges reported
- Only a third of respondents referred to a standardised outcome measure to assess effectiveness

	Dose compared to recommended guidelines (%)			Volume of injectate (ml)		
	Under	Within	Over	Min.	Max.	Mean (SD)
Pectoralis major (n=46)	47.8	30.4	21.7	0.4	4.0	1.41 (0.91)
Subscapularis (n=17)	11.8	23.5	64.7	0.3	4.0	1.35 (1.01)
Biceps brachii (n=10)	20.0	70.0	10.0	0.3	2.5	1.54 (0.82)
Teres major (n=10)	0.0	20.0	80.0	0.3	2.0	0.97 (0.62)
Latissimus dorsi (n=10)	20.00	30.0	50.0	0.3	5.0	2.23 (1.57)

Fig 2. Dose comparison and volumes of injectate of five most common muscles

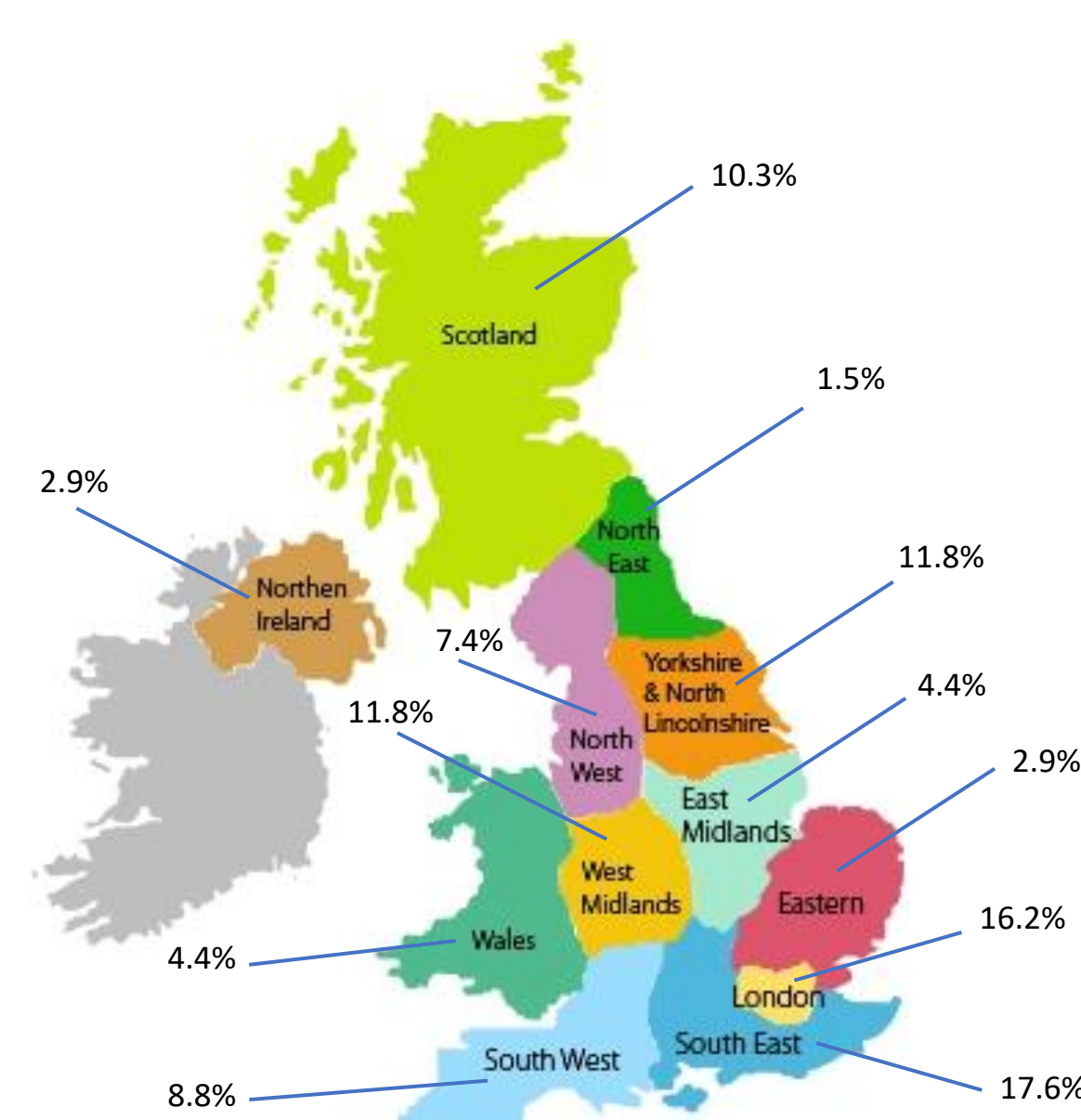


Fig 1. Respondents % per UK region (n=68)

## Clinical Implications

- There are wide variations in practice for this complex intervention and clinicians should consider that their individual decision-making could be based on their own beliefs rather than available evidence
- Pectoralis major is most commonly injected to treat hemiplegic shoulder pain, but further evaluation is required to address whether it is the most effective
- Clinicians most often use a limitation of shoulder abduction and external rotation, flexor patterning of the arm, and pain on passive movement to identify when hemiplegic shoulder pain is due to spasticity over other causes
- Further research is needed to identify which patients are most likely to benefit from this intervention and at what stage post-stroke its use is most optimal

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