

Supplementary material to article by L. Turner-Stokes et al. "Assessing the effectiveness of upper-limb spasticity management using a structured approach to goal-setting and outcome measurement: first cycle results from the upper limb international spasticity-iii study"

SUPPLEMENTARY INFORMATION

ULIS-III investigators

Australia: Ian Baguley, Arun Aggarwal, John Olver, John Estell, Steven Faux, Edwin Luk, Katya Kotschet, Andrew Hughes, Rachael Nunan. Austria and Germany: Klemens Fheodoroff, Bernhard Haslinger, Petra Baum, Cornelia Mobius, Urban Fietzek, Chi Wang Ip. Brazil: Tae Mo Chung, Régina Helena Chueire, Carla Heloisa Cabral Moro. France: Alexis Schnitzler, Claire Delleci, Anne-Laure Ferrapie, Marie-Eve Isner-Horobeti, Dominic Perennou. Hong Kong: Ching Man Leung. Italy: Michela Cosma, Carlo Caltagirone, Manuela Diverio, Paolo Girlanda, Giancarlo Ianeri, Marzia Millevolte, Franco Molteni. Mexico: Jorge Hernandez Franco, Juan Francisco Gomez Hernandez, Sandra Quinones Aguilar, Laura Patricia De La Lanza Andrade, Philippines: Raymond Rosales, Jeanne Flordelis. Poland: Dariusz Koziorowski, Anna Potulska, Monika Rudzinska. Portugal: Luis Jorge Jacinto, Eduarda Afonso, Ana Rolo Duarte. Russia: Svetlana Khatkova, Alexey Korenko; Dina Khasanova; Dmitry Okhobov; Elena Arefyeva; Denis Karpov; Andrey Korolev. Taiwan: Yi-Chung Lee, Sen-Wei Tsai. USA: Jessica Tate, Thomas L. Davis, Cynthia Marciniak, Atul Patel.

**Table SI.** Botulinum toxin type A (BoNT-A) treatment for upper limb spasticity by formulation

Agent	AboBoNT-A n = 602 (63.2%)	OnaBoNT-A n = 241 (25.3%)	IncoBoNT-A n = 104 (10.9%)
Number of injected muscles			
Median (IQR)	5 (3)	5 (3)	5 (3)
Range	1–16	1–15	1–11
Total dose (U)*			
Median (IQR)	800 (500)	220 (150)	230 (125)
Total dose range (units)	120–2,375	30–600	50–640
Total dose per segment (U);			
Shoulder, n (% injected)	247 (41.0)	99 (41.1)	33 (31.7)
Median (IQR)	200 (150)	80 (50)	100 (75)
Upper arm, n (% injected)	447 (74.3)	180 (74.7)	64 (61.5)
Median (IQR)	300 (200)	80 (75)	90 (85)
Forearm, n (% injected)	564 (93.7)	214 (88.8)	99 (95.2)
Median (IQR)	450 (300)	125 (125)	150 (100)
Hand and fingers, n (% injected)	230 (38.2)	98 (40.7)	47 (45.2)
Median (IQR)	100 (150)	40 (40)	50 (50)
Localisation of injection (used for ≥ 1 muscle), n (%)			
Any guidance technique	436 (72.4)	181 (75.1)	77 (74.0)
EMG	180 (41.3)	77 (42.5)	22 (28.6)
Electrical stimulation	192 (44.0)	105 (58.0)	30 (39.0)
Ultrasound	183 (42.0)	48 (26.5)	41 (53.2)
Injection interval (between Visits 1 and 2)	n = 485	n = 164	n = 70
Mean (SD) (days)	189.5	149.5	147.4

\*Doses for each BoNT-A are not interchangeable.

EMG: electromyography; IQR: interquartile range; SD: standard deviation; aboBoNT-A: abobotulinumtoxinA; onaBoNT-A: onabotulinumtoxinA; incoBoNT-A: incobotulinumtoxinA

**Table SII.** Most commonly injected muscles (≥ 5% patients) and botulinum toxin type A (BoNT-A) dosing within each upper limb segment

Group/muscle	Total patients injected n (%)	Use of any guidance n (%)	Number of units, median (IQR)			Range of units (min–max)		
			AboBoNT-A	OnaBoNT-A	IncoBoNT-A	AboBoNT-A	OnaBoNT-A	IncoBoNT-A
<i>Shoulder</i>								
Pectoralis major	317 (33.3)	187 (59.0)	150.0 (100)	50.0 (30.0)	50.0 (30.0)	50–400	20–130	20–150
Teres major	54 (5.7)	42 (77.8)	100.0 (10.0)	50.0 (20.0)	45.0 (30.0)	50–200	10–85	25–75
Subscapularis	62 (6.5)	32 (51.6)	150.0 (50.0)	50.0 (20.0)	70.0 (50.0)	50–400	30–60	40–100
Deltoid	52 (5.5)	35 (67.3)	150.0 (100.0)	30.0 (30.0)	80.0 (40.0)	50–300	10–100	60–100
<i>Upper arm</i>								
Biceps brachii	498 (52.3)	314 (63.1)	200.0 (75.0)	50.0 (35.0)	50.0 (25.0)	25–400	10–150	20–100
Brachialis	356 (37.4)	270 (75.8)	150.0 (100.0)	50.0 (25.0)	50.0 (25.0)	25–500	5–100	20–100
Triceps brachii	70 (7.3)	45 (64.3)	150.0 (100.0)	50.0 (13.5)	70.0 (70.0)	50–300	20–100	20–120
<i>Lower arm</i>								
Flexor digitorum superficialis	705 (74.0)	512 (72.6)	150.0 (100.0)	50.0 (35.0)	50.0 (40.0)	25–500	5–140	15–150
Flexor digitorum profundus	470 (49.3)	336 (71.5)	150.0 (100.0)	40.0 (25.0)	40.0 (10.0)	20–400	5–100	20–100
Flexor carpi radialis	499 (52.4)	367 (73.5)	150.0 (100.0)	50.0 (20.0)	50.0 (10.0)	15–350	5–120	20–100
Flexor carpi ulnaris	433 (45.4)	315 (72.7)	100.0 (50.0)	40.0 (20.0)	50.0 (20.0)	15–350	5–100	15–75
Brachioradialis	330 (34.6)	226 (68.5)	100.0 (60.0)	50.0 (32.5)	40.0 (25.0)	25–300	5–100	20–100
Pronator teres	317 (33.3)	221 (69.7)	100.0 (50.0)	40.0 (20.0)	50.0 (20.0)	40–300	10–100	20–100
Flexor pollicis longus	319 (33.5)	244 (76.5)	100.0 (50.0)	20.0 (5.0)	25.0 (5.0)	13–300	5–75	5–50
Palmaris longus	62 (6.5)	24 (38.7)	100.0 (30.0)	25.0 (10.0)	50.0 (30.0)	20–180	5–40	10–120
<i>Hand/fingers</i>								
Flexor pollicis brevis	131 (13.7)	56 (42.7)	50.0 (10.0)	20.0 (15.0)	25.0 (10.0)	15–200	5–80	10–40
Adductor pollicis	81 (8.5)	46 (56.8)	50.0 (62.5)	17.5 (10.0)	25.0 (12.5)	20–100	5–30	15–50
Lumbricales	108 (11.3)	63 (58.3)	100.0 (60.0)	40.0 (30.0)	40.0 (0.0)	25–250	10–100	10–80
Interossei dorsales	87 (9.1)	35 (40.2)	135.0 (140.0)	40.0 (30.0)	50.0 (30.0)	50–400	5–100	10–80
Interossei palmares	51 (5.4)	12 (23.5)	75.0 (50.0)	40.0 (25.0)	60.0 (60.0)	50–350	25–50	10–100
Opponens pollicis	97 (10.2)	49 (50.5)	50.0 (60.0)	20.0 (10.0)	22.5 (15.0)	10–150	5–40	10–50

Percentages are based on the number of patients injected in the muscle, except \* for which percentages are based on the number of patients in the efficacy population.

EMG: electromyography; IQR: interquartile range; aboBoNT-A: abobotulinumtoxinA; onaBoNT-A: onabotulinumtoxinA; incoBoNT-A: incobotulinumtoxinA.