

## INTRODUCTION

Botulinum toxin (BoNTA) injection is one the most effective treatments for post stroke spasticity, in particular for focal spasticity.

Patient-centred goal setting is a fundamental guiding principle of rehabilitation.

Definition of goals for every BoNTA injection session can help in choosing the key muscles to inject and to evaluate the success of the therapy as well as defining new strategies when the goals are not met.

Due to goal diversity, the challenge is to incorporate standardized measures that capture the different aims of treatment into a time-effective approach that is practical for real-life clinical practice.

Although stroke represents a non evolving lesion, its sequelae, such as spasticity, are not static, arising the possibility of different goals according to the timing of the first injection and/or related to the chronicity post-stroke.

## OBJECTIVES

To describe treatment goals in the first botulinum toxin (BoNTA) injection and monitor their changes over time in patients with post-stroke spasticity (PSS).

## METHODS

Observational study. Data were collected prospectively and retrieved from clinical files of outpatients treated in 2014 including all of their BoNTA treatments (2001-2016).

Patients were classified at the time of their first BoNTA injection according to age, gender, etiology (ischemic versus hemorrhagic) and affected territory.

Primary treatment goals set according to SMART rules and their outcomes were evaluated by the Goal Attainment Scale (GAS). Primary goals set and their achievement are described, for 2 groups: Group 1 (G1) ≤1 year vs Group 2 (G2) > 1 year post-stroke.

## RESULTS

### DEMOGRAPHICS

Out of 117 patients, we gathered data from the first BoNTA injection of 85 patients, of which 49% had their first injection in the first year post-stroke.

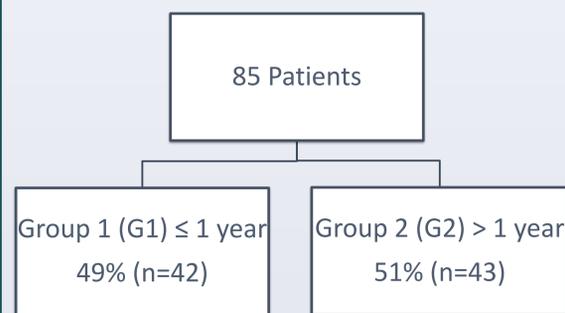


FIG 1: Primary goal setting, assessment and achievement/overachievement for G1 and G2.

Table 1 summarizes their characteristics:

<b>Age (years)</b>	56,5 (SD 12,5)
<b>Gender</b>	
Male	56,5%
Female	43,5%
<b>Etiology</b>	
Ischemic	65%
Hemorrhagic	37,8%
<b>Stroke localization</b>	
Right hemisphere	55%
Left hemisphere	39%
Sub hemispheric	6%

Table 1. Sample demographic characterization (n=85 patients); both groups (G1 and G2) were similar regarding age, gender distribution, type and topography of stroke.

### GOAL SETTING

Regarding treatment goals, 57% had a properly defined primary goal, 70% of which were assessed for achievement; **97% achieved /overachieved the goals**, with no apparent difference between the 2 groups.

	Set	Assessed	Achieved/ Overachieved
<b>G1</b>	25	17	17
<b>G2</b>	24	17	16
<b>Total</b>	<b>49 (57%)</b>	<b>34 (70%)</b>	<b>33 (97%)</b>

Table 2: Primary goals set by subcategories in symptoms/impairments domain at G1 and G2.

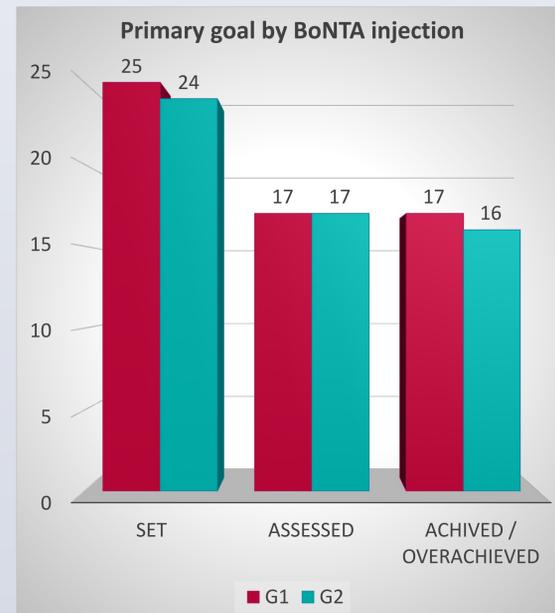


FIG 2. Primary goal setting, assessment and achievement/overachievement for G1 and G2.

Concerning the **symptoms/impairment domain**:

- G1 (56% of goals set), pain/discomfort was the most common (32% vs 8% in G2);
- G2 had 71% of goals set in that domain, being involuntary movements the most common (58% vs 16% in G1).

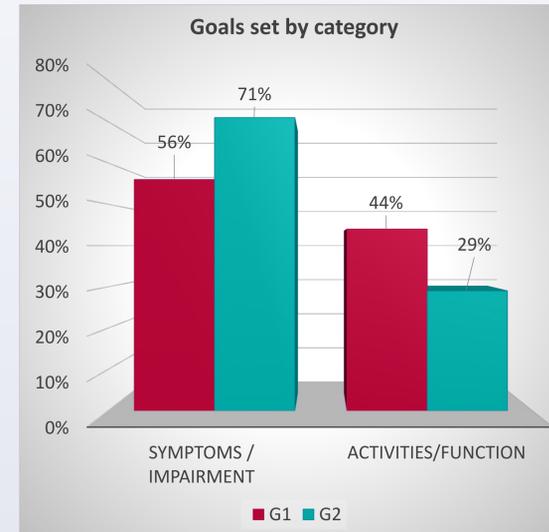


Fig 3. Primary goals set by subcategories in symptoms / impairment and activities/function domain at G1 and G2.

	Pain / discomfort	Range of motion	Involuntary movements
<b>G1</b>	<b>32%</b>	8%	16%
<b>G2</b>	8%	4%	<b>58%</b>

Table 3. Primary goals set by subcategories in symptoms / impairment domain at G1 and G2.

As for the **activities/function domain**:

- it represented 44% of the goals set in G1, mobility and active function being the most frequent (28% and 12%)
- In G2, only 29% of goals were in that domain, and 21% regarding passive function.

	Passive function	Active function	Mobility
<b>G1</b>	4%	12%	<b>28%</b>
<b>G2</b>	<b>21%</b>	0%	<b>8%</b>

Table 4. Primary goals set by subcategories in activities/function domain at G1 and G2.

## CONCLUSIONS

Although the sample size didn't allow us to perform deeper statistical analysis, there seems to be a difference in treatment goals related to chronicity post-stroke at the time of first BoNTA injection.

In the first year, mobility and pain/discomfort prevailed, but after the first year, passive function and involuntary movements were the main targets.

Goal achievement was massive (97%), regardless of the time since stroke at first injection, which in our opinion underlines the relevance of establishing realistic and achievable personalized goals for each treatment cycle.

## Bibliography

Zorowitz RD, Gillard PJ, Brainin M. Poststroke spasticity: sequelae and burden on stroke survivors and caregivers. *Neurology*. 2013; 80 (3 Suppl 2):S45-52. doi: 10.1212/WNL.0b013e3182764c86.

Turner-Stokes L, Ashford S, Jacinto J, et al. Impact of integrated upper limb spasticity management including botulinum toxin A on patient-centred goal attainment: rationale and protocol for an international prospective, longitudinal cohort study (ULIS-III). *BMJ Open* 2016;6:e011157. doi:10.1136/bmjopen-2016-011157

Ashford S, Turner-Stokes L. Goal attainment for spasticity management using botulinum toxin. *Physiother Res Int* 2006;11:24-34.

Ward AB, Aguilar M, De Beyl Z, Gedin S, Kanovsky P, Molteni F, Wissel J, Yakovlev A. Use of botulinum toxin type A in management of adult spasticity— a European consensus statement. *J Rehabil Med* 2003;35:98-99.

Dressler D, Saberi FA. Safety of botulinum toxin short interval therapy using incobotulinumtoxin A. *J Neural Transm (Vienna)*. 2016 Oct 17. [Epub ahead of print] PubMed PMID: 27747444.

Mail to André Yee [andreyee@gmail.com](mailto:andreyee@gmail.com)

Centro de Medicina de Reabilitação de Alcoitão.

Rua Conde Barão, Alcoitão.

2649-506 Alcabideche, Portugal