Prompt Intervention in Post-Stroke Spasticity

Webinar Key Takeaways

World Stroke Organization | World Stroke Academy

Definition of Spasticity

- **Lance (1980):** "a motor disorder characterized by a velocity-dependent increase in tonic stretch reflexes with exaggerated tendon jerks, resulting from hyper excitability of the stretch reflex, as one component of the UMNS"
- **Pandyan et al (2005):** "disordered sensori-motor control, resulting from an UMN lesion, presenting as intermittent or sustained involuntary activation of muscles"

Spasticity Onset Post-Stroke

- Estimated prevalence of spasticity (MAS >0) **increases** with **survival time post-stroke**
  - 1–4 weeks: 4–27%
  - 1–3 months: 19–27%
  - >3 months: 17–43%
- Estimated prevalence of **disabling spasticity** at 6 months post-stroke is up to 13%
- Disabling spasticity is defined as **PSS that needs treatment (MAS ≥2)**

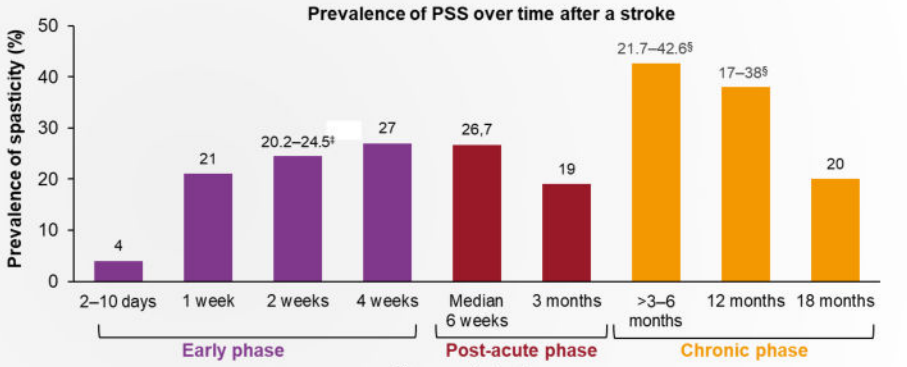
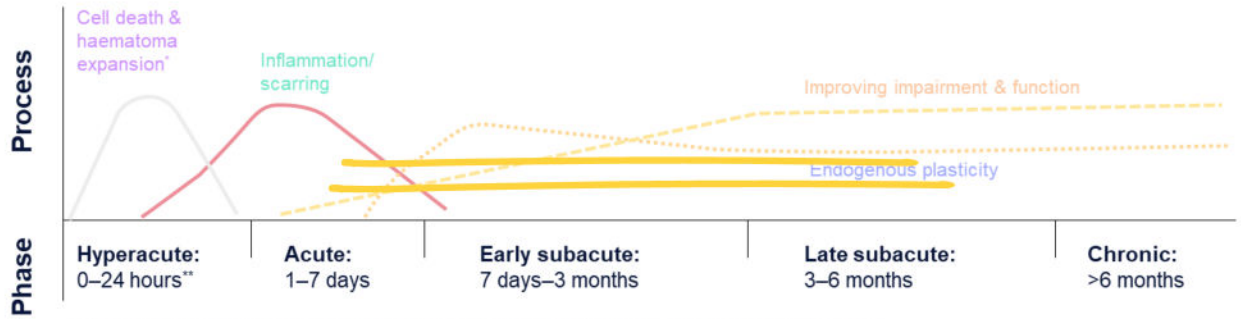


Figure adapted from Wissel J, *et al.* 2013.[1]

PSS captured as velocity-dependent increase in muscle tone using MAS and TAS‡

Development of Spasticity: Early Diagnosis Matters



*Haemorrhagic stroke-specific.[4] **Treatments extend to 24 hours to accommodate options for anterior and posterior circulation as well as basilar occlusion.[4]

1. Bavikatte G., ed. *Spasticity Early & Ongoing Management.* 1st ed. Dr G Bavikatte, England: 2017; 2. Wissel J, *et al. Neurology.* 2013;80 (3 Suppl 2):S13–19; 3. Wissel J, *et al. PM R.* 2015;7(1):60–67; 4. Bernhardt J, *et al. Int J Stroke.* 2017;12(5):444–450.

Adapted from Bernhardt J, *et al.* 2017.[4]

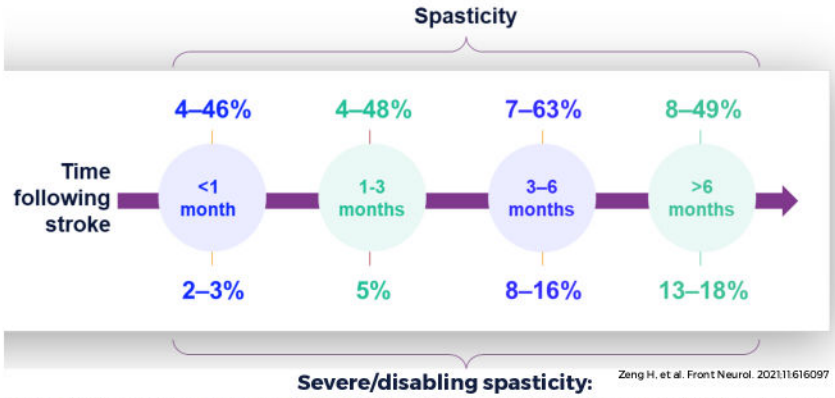
Considering the challenges around the early identification of PSS

Common Barriers:

- Late recognition of symptoms
- Limited access to specialists
- Gaps in multidisciplinary care

Strategies to Overcome Them:

- Awareness & training for healthcare providers
- Early screening tools
- Coordinated care approach



Zeng H, et al. Front Neurol. 2021;11:616097

Severe/disabling spasticity:
Spasticity that has a clinically significant impact on movement function, activity performance or participation in social life, accompanied by positive symptoms of UMN syndrome.

Risk Factors Identification

- **INCREASED MUSCLE TONE** — MAS ≥1 led to spasticity by 3–6 month
- **MODERATELY INCREASED MUSCLE TONE** — MAS ≥2 led to severe spasticity by 3–6 months
- **SEVERE PARESIS** — Led to spasticity by 6 months
- **HEMIHYPESTHESIA** — Led to spasticity by 6 months
- **LOW BI SCORE AND EQ-5D** — Led to severe spasticity by 3–6 months & 6 months, respectively

BI, Barthel Index; EQ-5D, EuroQol-5D; MAS, Modified Ashworth Scale; PSS, post-stroke spasticity. Wissel J, et al. PM R. 2015;7:60–67; Wissel J, et al. J Neurol. 2010;257:1067–1072; Urban PP, et al. Stroke 2010;41:2016–2020; Lundström E, et al. J Rehabil Med. 2010;42:296–301.

Complications associated with Spasticity

STRUCTURAL

- Contracture
- Bony fractures
- Heterotropic ossification
- Pressure ulcer
- Skin infection/fungal infection
- Joint subluxation/dislocation
- Secondary peripheral compression neuropathy

MEDICAL

- Pressure sores
- Cardiovascular problems
- Thrombophlebitis
- Respiratory infections
- Bladder and bowel problems

FUNCTIONAL

- Interferes with activity of daily living – interferes with nursing care
- Impairment in mobility
- Pain and discomfort
- Poor seating in wheelchair
- Poor sitting or standing balance
- Associated reaction
- Further deterioration in functional ability

PSYCHOSOCIAL

- Social isolation
- Depression
- Anxiety

1. Bavikatte G, ed. Spasticity Early & Ongoing Management. 1st ed. United Kingdom: Dr Ganesh Bavikatte; 2017. ISBN: 978-1-9997487-7-7; 2. Royal College of Physicians. National Guidelines 2018. Available at: https://www.rcplondon.ac.uk/guidelines-policy/spasticity-adults-management-using-botulinum-toxin (Accessed: February 2022).

Post-Stroke Spasticity (PSS) Referral Tool

This tool is recommended by experts in the field of stroke rehabilitation and neurorehabilitation to be used when evaluating patients who have had a stroke. Ideally this should be used within the first 12 weeks post-stroke, but it can still be used at other timepoints. It is recommended that this screening tool be used during regular follow-up visits following a stroke to identify and manage symptoms of PSS.

Urgent referral

Refer to a spasticity specialist

(e.g. neurologist, physiatrist, physical medicine and rehabilitation [PM&R], or spasticity clinic)

If both of the following criteria are met:

1. Moderately, markedly or severely increased muscle stiffness across two or more joints that causes functional impairment or problems related to active or passive motion[a,1,2]
2. Severe loss of sensorimotor function (e.g. severe decrease in surface sensation, impaired proprioception and severe motor dysfunction)[b,3,4]

- Urgently initiate physiotherapy (evaluation and treatment) and refer patient to an occupational therapist with experience in stroke management[8,9]
- Immediately refer the patient to a physician or other healthcare professional who is a spasticity specialist (e.g. neurologist, physiatrist, physical medicine and rehabilitation [PM&R], or spasticity clinic)[8,9]

Routine referral

Consult with the multidisciplinary team (MDT)

In the presence of mildly[a] increased muscle tone across one joint and involuntary muscle contractions in the affected limb[*c,1] **plus one or more of the following:**

1. Reduced sensitivity on one side of the body and/or visual inattention[d,1,5]
2. Weakness of the limbs and problems with function that cause difficulties with active range of motion and/or daily living[e,1,2,6,7]
3. Significant damage to the corticospinal tract[*], as seen on CT and/or MRI scan[1]

- Initiate physiotherapy and consult with the MDT for advice[9,10]
- If symptoms do not resolve, refer patient to a spasticity specialist and request that they assess the patient and decide if additional intervention is needed[8]

Periodic monitoring

Monitor periodically

Monitor periodically (re-evaluate in three to six months) if the patient has persistent dexterity problems in the absence of increased tone[*]

- Patient should be evaluated within three months, and monitored by a physiotherapist or occupational therapist with experience in stroke management[*]
- Provide the patient and caregivers with information about post-stroke spasticity management and relevant contacts[9]

Management of Focal Spasticity

PHARMACOLOGICAL MANAGEMENT

- Injectable treatment options may be used for the symptomatic treatment of focal spasticity.

MULTIDISCIPLINARY APPROACH

- Spasticity should be managed as part of a wider rehabilitation program, considering individual patient needs.
- It may involve a wider MDT, including:
  - Rehabilitation physicians
  - Physiotherapists
  - Occupational therapists
  - Neurologists
  - Orthotists

Program Details

References: https://www.world-stroke-academy.org/webinars/prompt-intervention-in-post-stroke-spasticity/

Moderator: Prof. Octavio Pontes Neto (Brazil)

Speakers & Topics:

- Introduction to Post-Stroke Spasticity - Dr. Theodore Wein (Canada)
- Importance of Early Diagnosis and Intervention – Dr. Ganesh Bavikatte (UK)
- Current Challenges & Barriers in Managing PSS – Dr. Jussara Baggio (Brazil)
- Optimizing Prompt Intervention: Best Practices – Dr. Tamina Levy (Australia)

Watch recording:

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