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# Early rehabilitation in patients with stroke





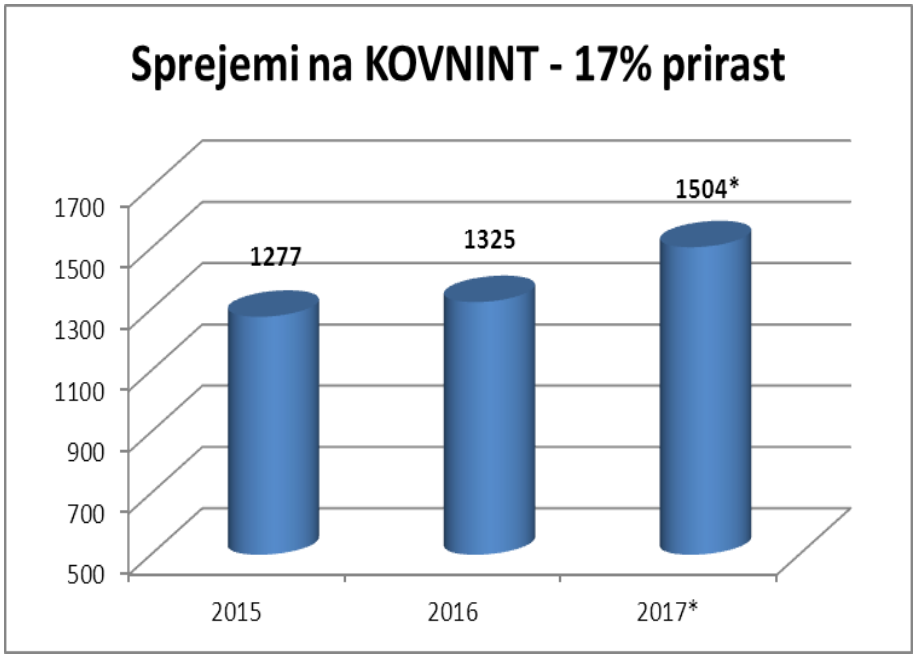

Aleš Pražnikar

We are not very good at healing stroke:

1. Stroke is the most common cause of long-term disability in adults.
2. 40% of stroke patients are left with moderate functional impairment and 15% 30% with severe disability.
3. The prevalence of stroke-related burden is expected to increase over the next two decades.

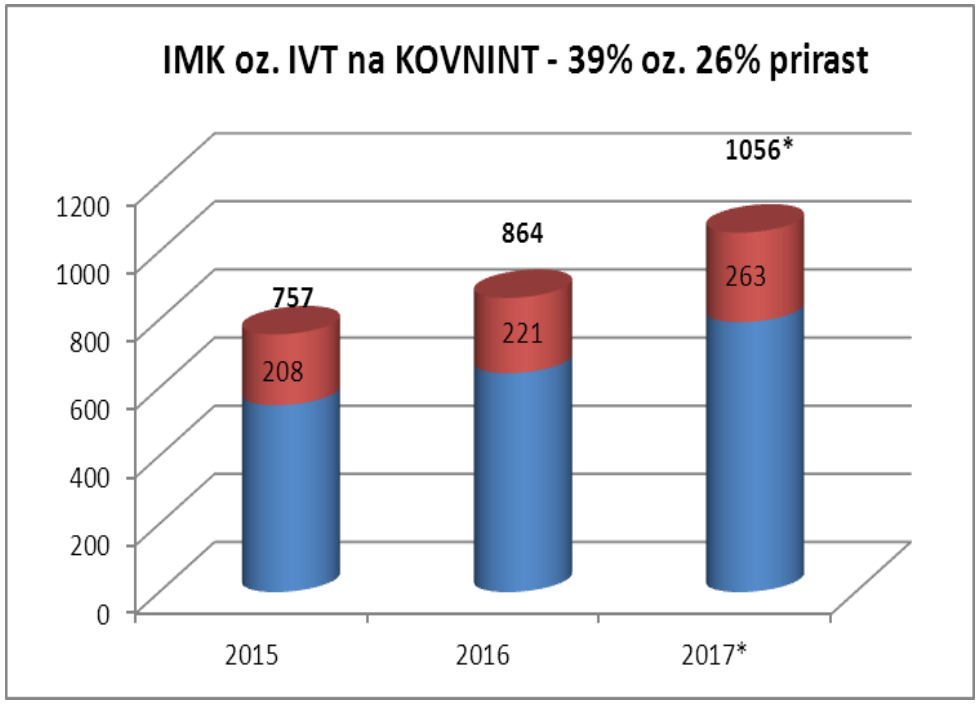
Langhorne P et al., 2011; Barnes 2003;

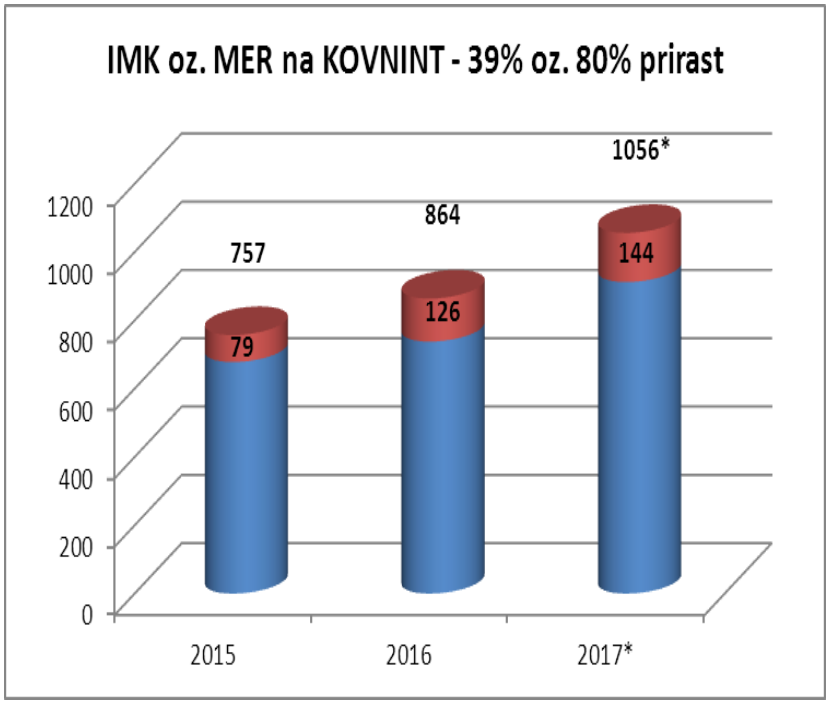
# Number of admitted patients with stroke to our clinic




Stroke unit: 50 beds + 10 ICU

- 26 % of patients with stroke receives IVT with average DTN time 36 min.
- LoH is 11.53 days
- Mortality 12 %



# Patients with stroke benefit from stroke units:

1. from acute interventions and
2. from multidisciplinary management:
   - treatment optimization,
   - minimization of complications and
   - early neurorehabilitation.

Warlow C. et al, 2003

“ REHABILITATION MEDICINE / NEUROREHABILITATION focuses on the restoration of function and the subsequent reintegration of the patient into the community.”

Fontera et al, 2010

# The correlation between different levels of health after stroke IS NOT LINEAR !

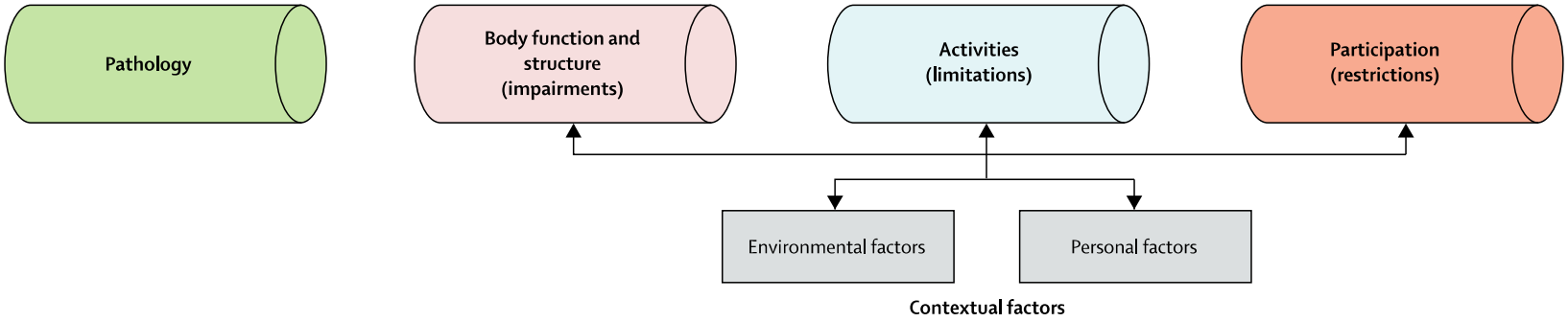
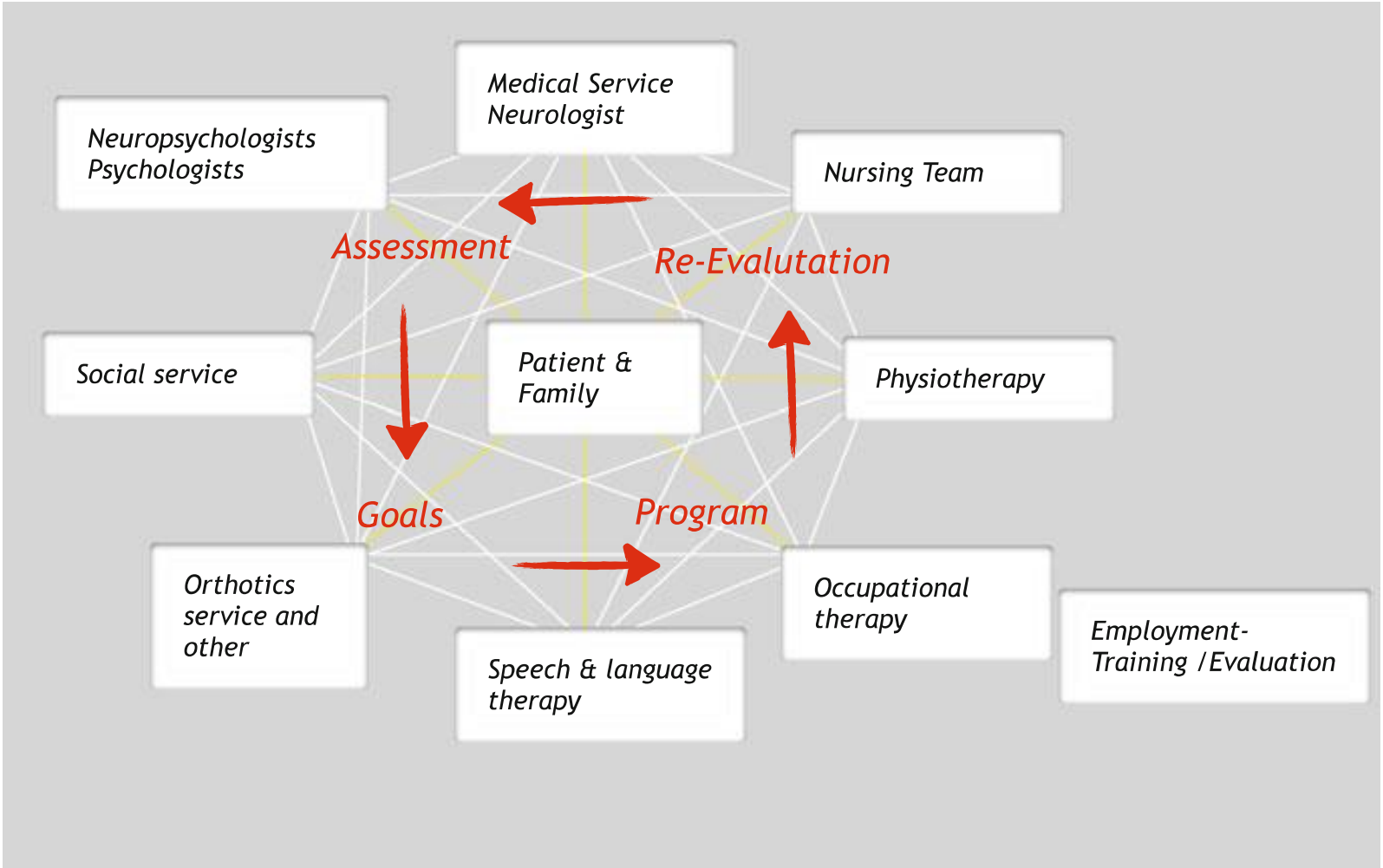



**Table 2** New classifications of the International Classification of Functioning and Disability: ICIDH II

| | |
|---|---|
| Impairment | The loss or abnormality of a body structure or of a physiological or psychological function |
| Activity | The nature and extent of functioning at the level of the person. Activities may be limited in nature, duration, and quality |
| Contextual factors (participation) | Include the features, aspects and attributes of objects, structures, human made organisations, service provision, and agencies in the physical, social, and attitudinal environment in which people live and conduct their lives. Contextual factors include both environmental factors and personal factors |

WHO 1998.

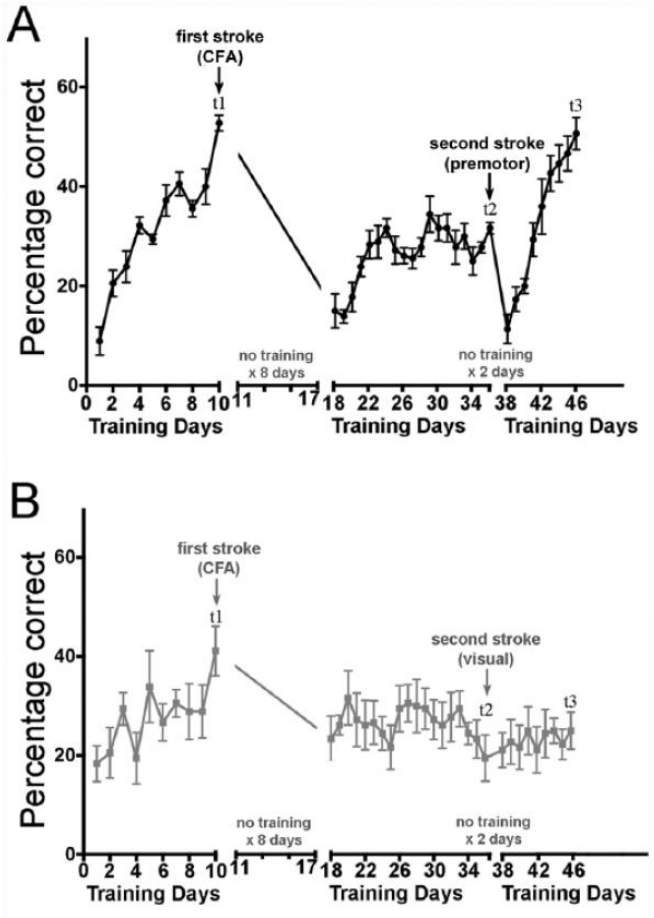
Langhorne P et al., 2011; Barnes 2003;




Albert SJ, Kesselring J, 2011

- Neurorehabilitation unit at UMC Ljubljana for stroke unit:
  - 6 Physio Th.
  - 3 OT
  - 3 Respiratory Th.
  - 3 Speech Th.
  - 2 Psychologists
  - 1 Rehab. Med. Specialist

Outsourced:
1. Dietician
2. Social worker




1. Does ischemia open a sensitive period of heightened responsiveness to training and mediate functional recovery from a stroke?

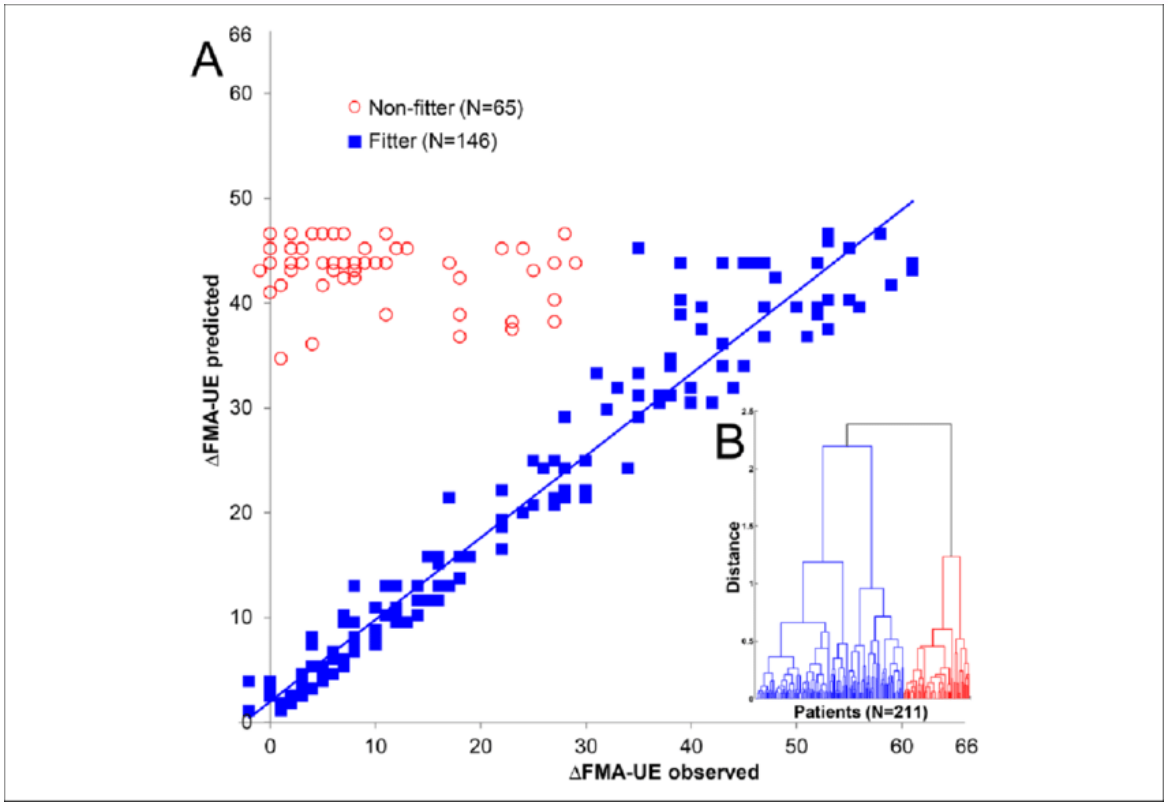
   Yes, we believe so.

2. Do we or can we influence that?

   Yes, we believe so:

   early start with fragmentation
   pharmacotherapy
   enriched experience

Zeiler SR et al., 2016, Krakauer J, 2017




# "Proportional Recovery Model":

$\Delta FMA\text{-}UE_{predicted} = 0.7 \cdot (66 - FMA\text{-}UE_{initial}) + 0.4$

Winters C. et al., 2016

***Table 2.* Variables That Influence Stroke Recovery**

| | |
|---|---|
| Infarct Size | Infarct Location |
| Prestroke medical comorbidities | Prestroke disability |
| Prestroke experience and education | Age |
| Severity of initial stroke deficits | Breadth of stroke deficits |
| Acute stroke interventions | Medications during stroke recovery period |
| Amount of poststroke therapy | Type(s) of poststroke therapy |
| Medical complications after stroke | Socioeconomic status |
| Depression | Caregiver status |
| Genetics? | |

## We also care for:

1. Sleep,
2. Nutrition

Cramer, 2008

# Our basics:

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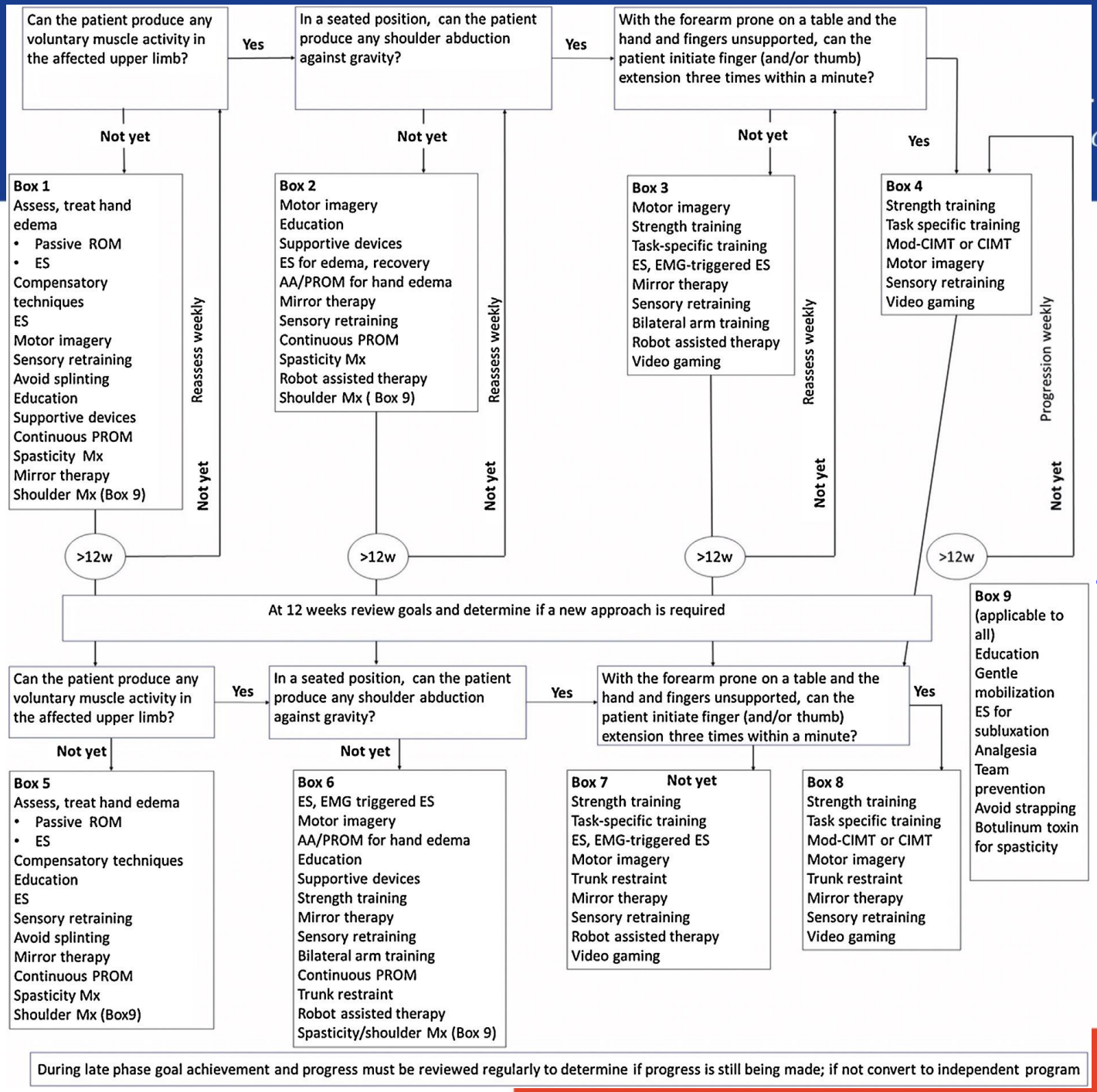
1. early start
2. goal setting meetings
3. specific, measurable, achiavable rehabilitation goals for each relavant dysfunctions for the patient
4. at least 45 minutes of each relevant stroke rehabilitation therapy for a minimum of 5 days a week
5. “task-specific” therapy
6. »context-specific« therapy
7. cognitive rehabilitation, emotional support
8. early supported discharge support

NICE, 2013; AHA, 2016

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# Plus:

1. music therapy
2. tDCS
3. rTMS
4. ES for dysphagia
5. cognitive rehabilitation

Wolf et al., 2016

*The difficulties we face:*

1. general position of rehabilitation medicine
2. specific position of neurorehabilitation (for example vs. palliative medicine)
3. traditional roles of neurologists and nurses
4. changes of the management of the clinic

*We hope for:*

1. quick change from “pay-for-service” to “pay-for-perfomance” systems

# Thank you!