

Disclosures

Nothing to disclose

Stroke is a leading cause of disability worldwide*



* Feigin VL et al Global Burden of Diseases, Injuries, and Risk Factors Study 2010 (GBD 2010) and the GBD Stroke Experts Group. Global and regional burden of stroke during 1990-2010: findings from the Global Burden of Disease Study 2010. Lancet. 2014 Jan 18;383(9913):245-54.



Why stroke Rehabilitation Matters ?

Rehabilitation has given my husband a life to live. It has improved both his mobility and his communication. Slowly at first, then dramatically, and even today there is still improvement in his communication.

This gives me a little more hope for tomorrow.

How to achieve good functional potential in Post-Stroke rehabilitation ?

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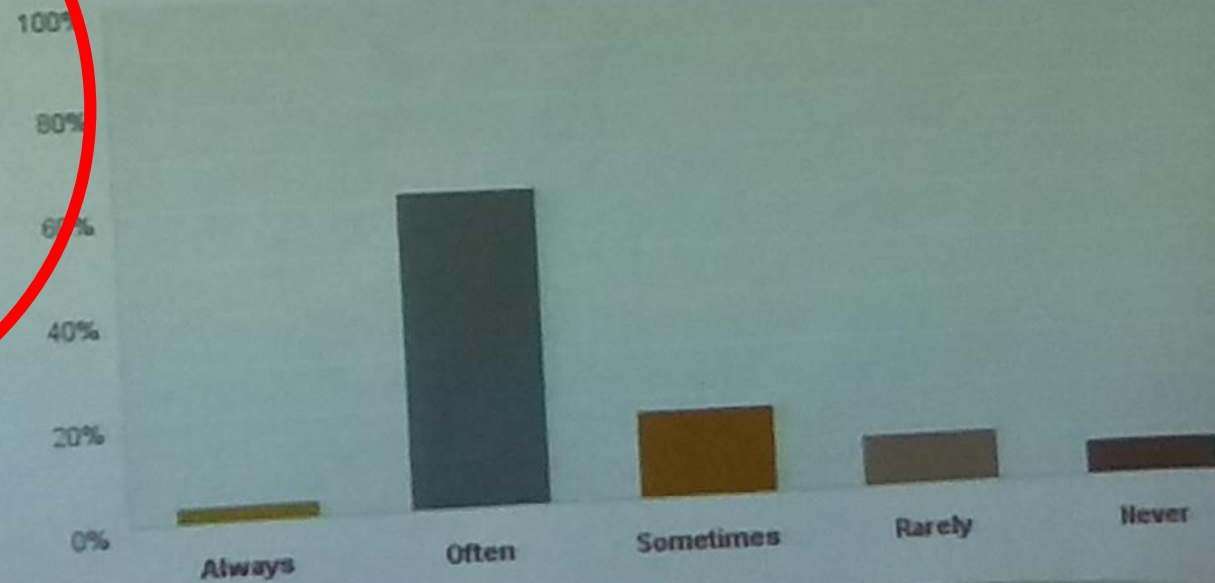
EVIDENCE-BASED MEDICINE

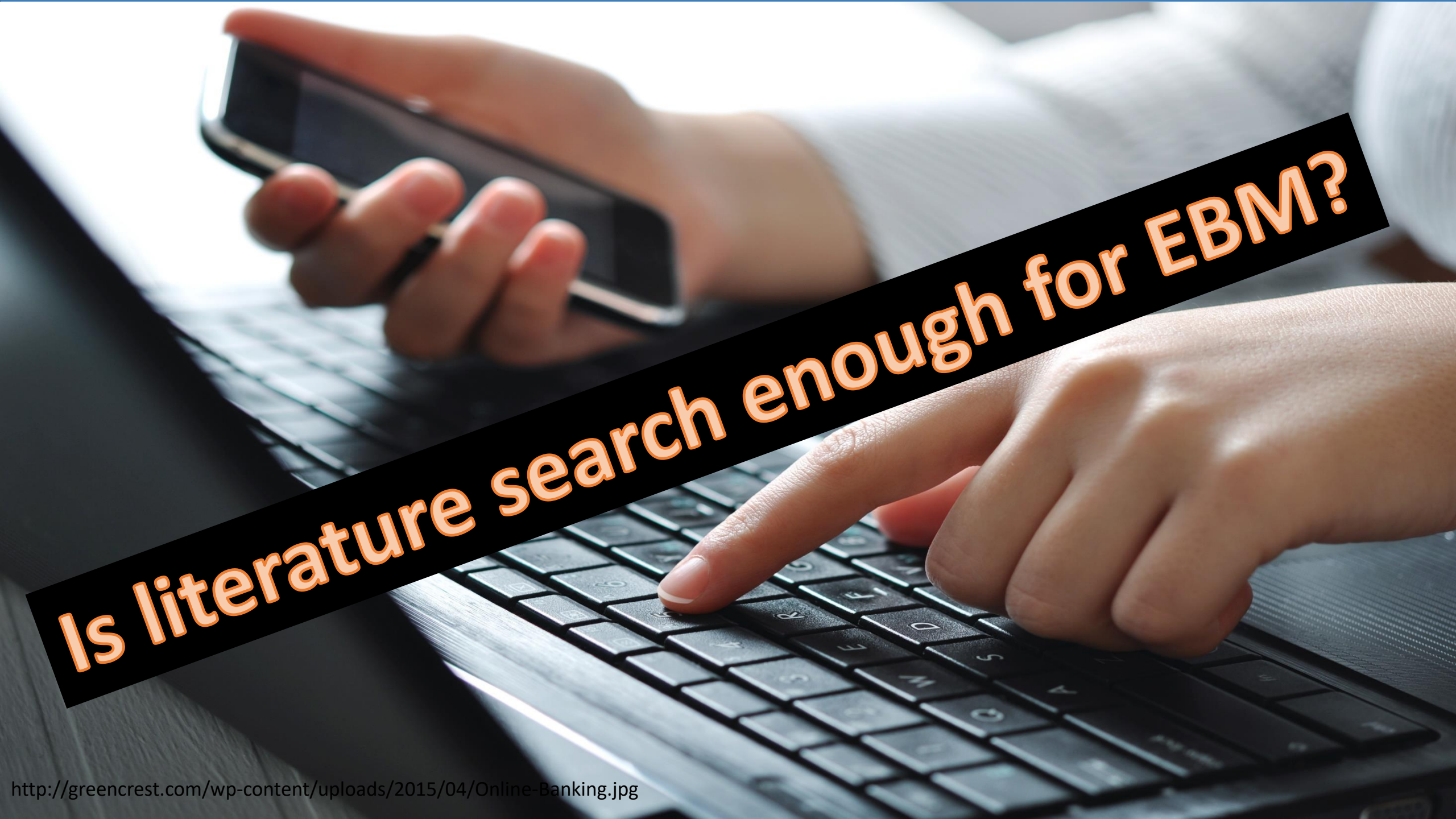
Barriers to knowledge use

- 62% of staff are guided by departmental norms, practices and culture.

Q10 Departmental norms / practices / culture

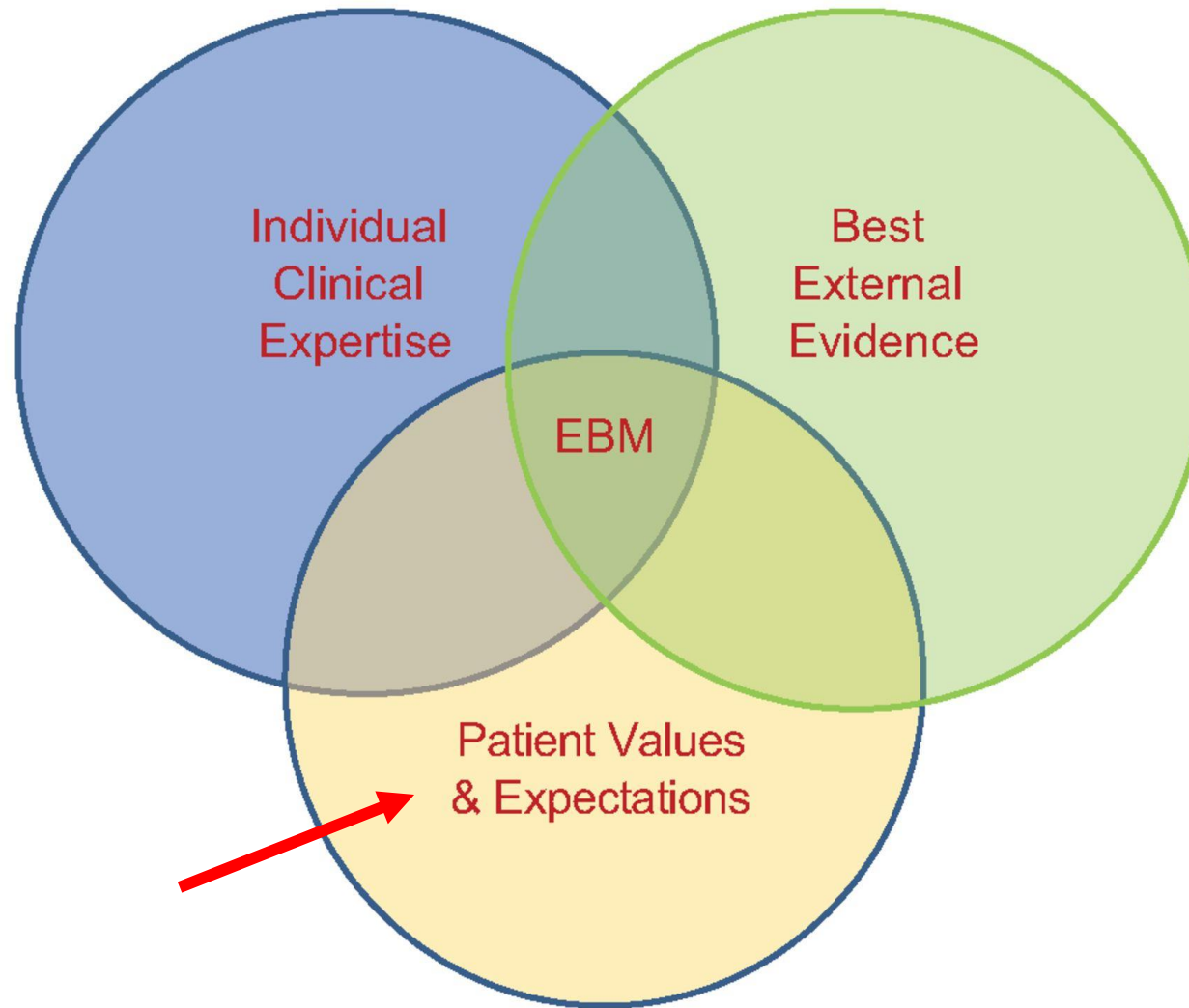
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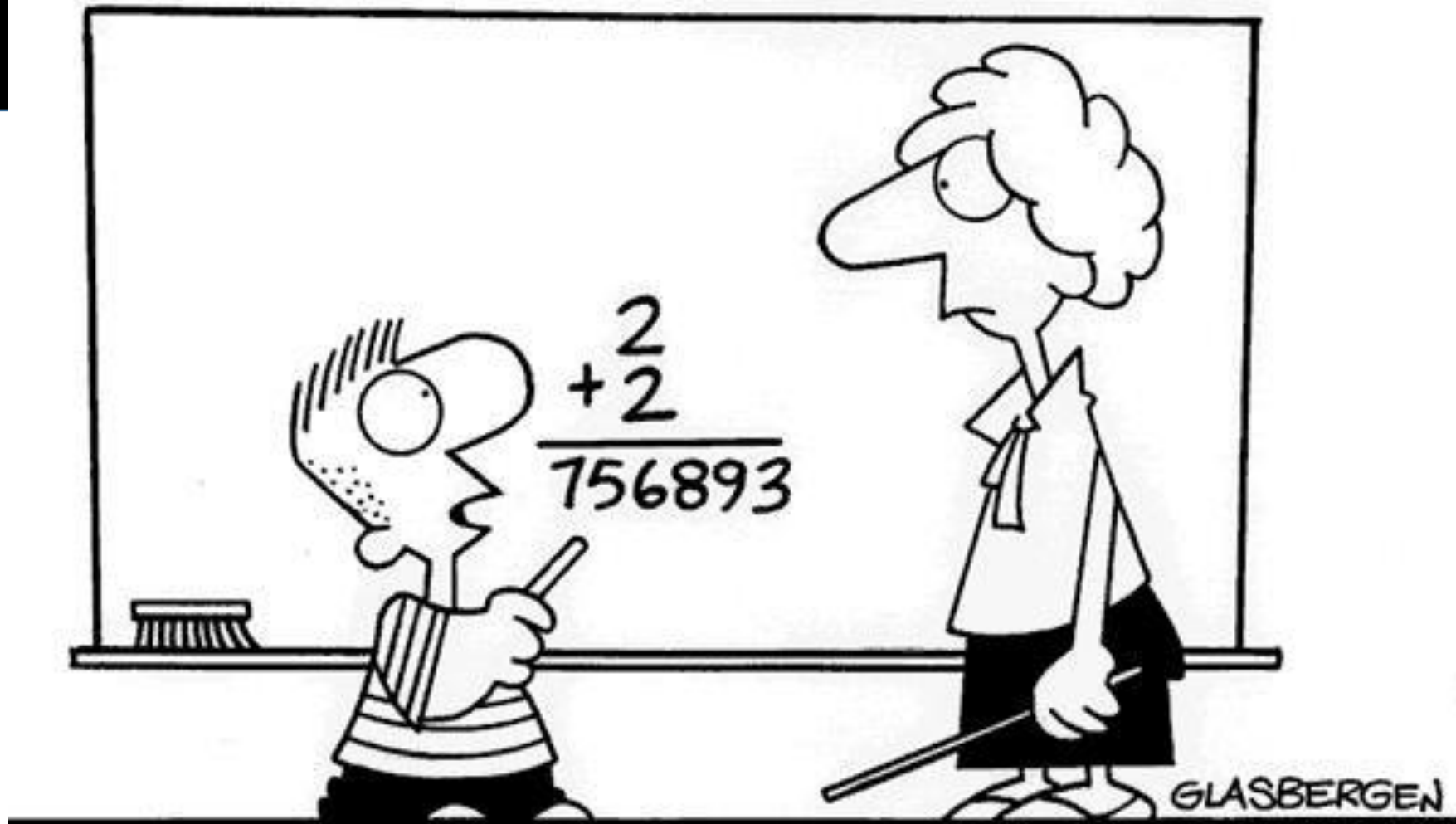




Is literature search enough for EBM?

Evidence based Medicine



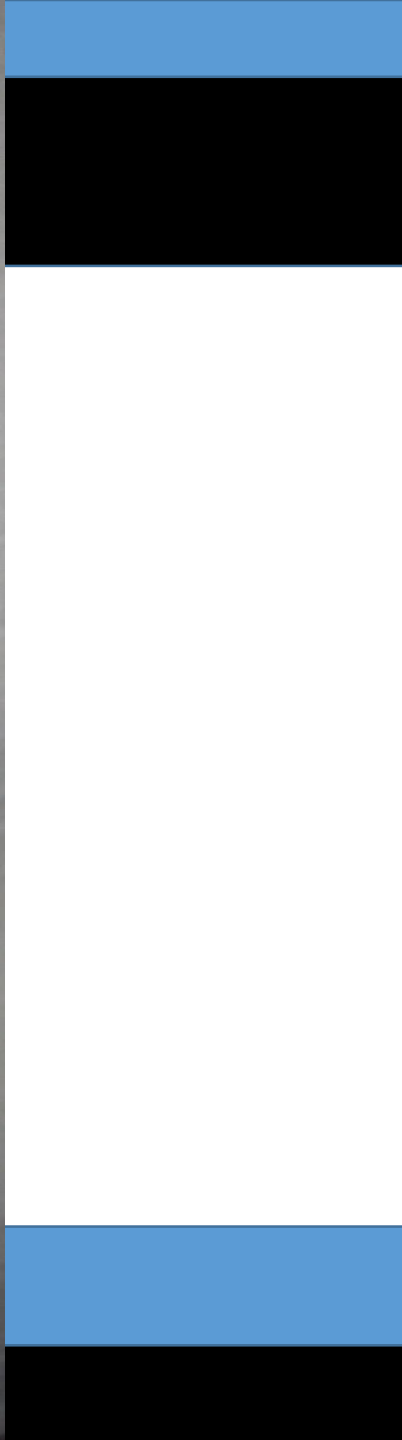


**“In an increasingly complex world,
sometimes old questions require new answers.”**

The simple things **matter** most

- Start early
- Multi-disciplinary team approach
- Patient centered rehabilitation and goal setting
- Positioning, counselling and discussing outcomes and prognosis









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Predicting functional outcomes in stroke

Prediction of upper limb function within 72 hours after stroke

- Finger extension and shoulder abduction.
- Patients with some finger extension and shoulder abduction on day 2 after stroke onset had a 98% probability of achieving some dexterity at 6 months.
- Patients lacking this voluntary motor control had a probability of 25%.
- 60% of the patients with some finger extension within 72 hours had full recovery of upper limb function according to the action research arm test (ARAT) at 6 months.

Shoulder subluxation as a predictor

- The presence of shoulder subluxation at the early stage of stroke can be a predictor of motor outcome of the affected upper extremity and the degree of shoulder subluxation can be a predictor of the motor function of the affected hand.

Infections adversely affect the outcomes in stroke

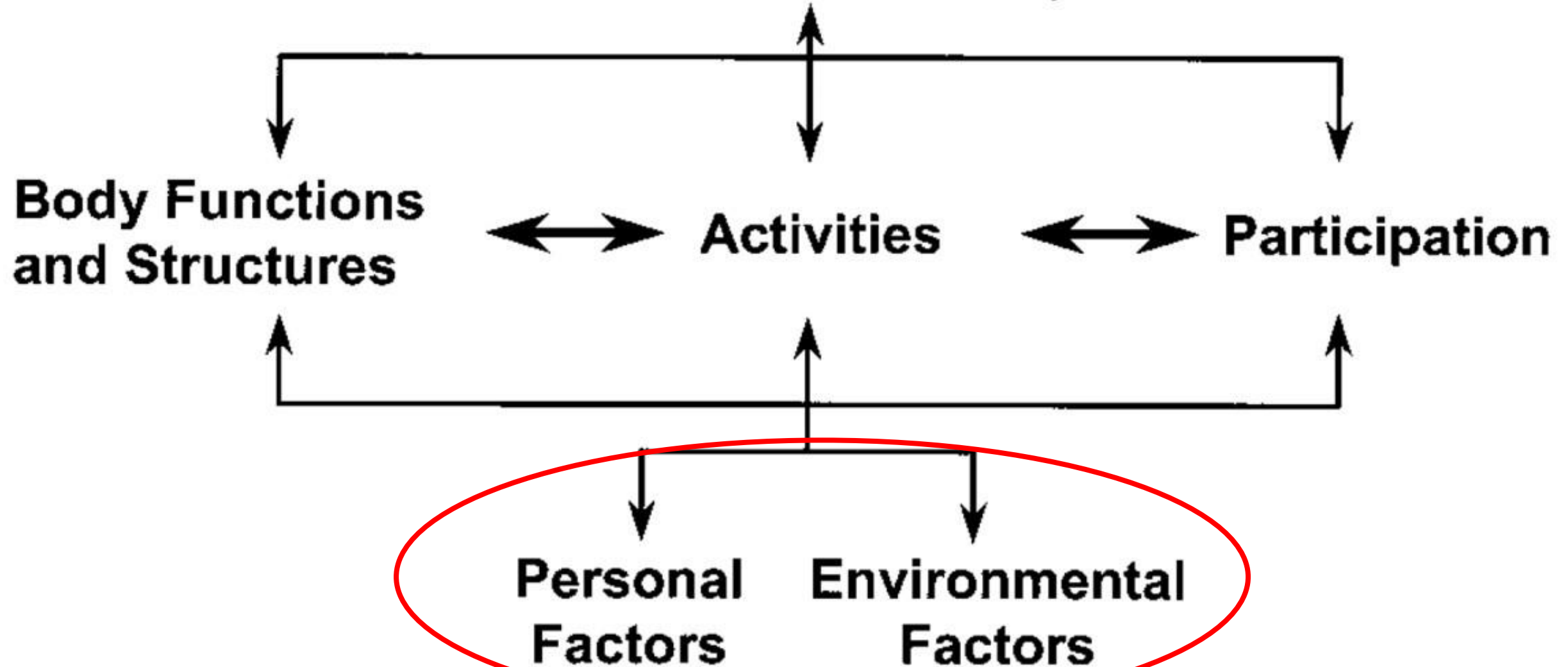
- Are delayed infections (up to 76 days post-stroke) associated with poor outcome at 90 days ?
- **Severe post-stroke infections**, whether occurring **early or late** after stroke, are associated with an **increased risk** of death and poorer functional outcome, independent of differences in baseline characteristics or treatment.
- Strategies to reduce the risk of infection immediately and first 3 months post-stroke.

OSA affects functional outcomes

- Menon D, Sukumaran S, Varma R, Radhakrishnan A. **Impact of obstructive sleep apnea on neurological recovery after ischemic stroke: A prospective study.** Acta Neurol Scand. 2017 Nov;136(5):419-426. doi: 10.1111/ane.12740.
- 60% had OSA, 1/4th had severe OSA
- Ischemic stroke patients with OSA tend to have poor neurological and functional recovery, across all segments of stroke and OSA severity.

“Health Condition”

(disorder or disease)



Role of care givers in improving functional outcomes

- There is very low- to moderate-quality evidence that care giver mediated exercises (CME) may be a valuable intervention to augment the therapeutic options for stroke rehabilitation.
- Future high-quality research should determine whether CME interventions are (cost-)effective.

Improving functional outcomes in chronic stroke



Balance training in Chronic stroke

- Tally Z, Boetefuer L *et al.* The efficacy of treadmill training on balance dysfunction in individuals with chronic stroke: a systematic review. *Top Stroke Rehabil.* 2017 Oct;24(7):539-546
- van Duijnhoven HJ *et al.* Effects of Exercise Therapy on Balance Capacity in Chronic Stroke: Systematic Review and Meta-Analysis. *Stroke.* 2016 Oct;47(10):2603-10.

Role of Virtual reality

- Laver KE, George S, Thomas S, Deutsch JE, Crotty M. ***Virtual reality for stroke rehabilitation***. Cochrane Database Syst Rev. 2015 Feb 12;(2):CD008349
- Conclusions: Evidence that VR and interactive video gaming may be beneficial in improving upper limb function and ADL function when used as an adjunct to usual care (to increase overall therapy time)

Role of Virtual reality

- Ballester BR *et al.* **Domiciliary VR-Based Therapy for Functional Recovery and Cortical Reorganization: Randomized Controlled Trial in Participants at the Chronic Stage Post Stroke.** JMIR Serious Games. 2017 Aug 7;5(3):e15. doi: 10.2196/games.6773.
- Conclusions: Remote delivery of customized VR-based motor training promotes functional gains that are accompanied by neuroplastic changes

Role of Long term electrical stimulation

- Home-based active repetitive peripheral nerve stimulation associated with motor training was feasible, safe, and led to long-lasting enhancement of paretic arm performance in the chronic phase after stroke.

Case 1

- A 33-year-old male with complete weakness of the right extremities due to corona radiata infarct.
- Regular OT and PT in the outpatient clinic until 2 years after onset.
- Neuromuscular electrical stimulation for the right finger extensors continuously until 4 years after onset.
- Combined with transcranial magnetic stimulation

Case 2

- 30 years old Caucasian male, hemorrhagic AVM stroke with bilateral impaired motor control, severe spasticity, vertigo and fear of fall.
- A novel approach combining traditional child motor-learning techniques, play, and proprioceptive-building activities in addition to current stroke rehabilitation techniques.
- Three years intensive program

Case 2

- Patient regained the ability to free-walk in small bouts.
- Progressed from the use of a walker to canes.
- Regained use of his hands and vertigo improved.
- Progressed from using a walker to driving, returning to school, and starting a family.

Take home message

- Determine functional goals for each individual patient.
- Functional potential/outcome in stroke can be predicted
- Simple interventions do make a difference
- Counselling and prognostication of outcome
- Embrace technology
- Beware of the Contextual factors and environmental barriers



Copy of the presentation !

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