Predicting Recovery

Time is Function
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Learning Objectives:

Knowledge of predictors of stroke recovery

Knowledge of measures of stroke recovery

Strategies for implementing knowledge

- This is a non-systematic skim of literature designed to recap what we know and look at emergent trends in current research
• Recommendation 1.2 (d)
  All patients, including those with severe stroke, who are not receiving palliative care should be assessed by the specialist rehabilitation team prior to discharge from hospital regarding their suitability for ongoing rehabilitation.

• There are no generic patient criteria for selecting those who would most benefit from rehabilitation
How do we make this decision?

How do we prioritise?

Who will benefit most from rehabilitation?

Who will benefit least? –
those who won’t be better off
those who won’t be worse off

When do we discontinue rehabilitation?
Traditional predictors for functional outcome

- Age
- Social support

Functional level post stroke
- Cognitive Impairment
- Severity of paralysis
- Sitting balance
- Global Aphasia
- Lesion Type
- Depression
- Apraxia
- Hemianopia
- Unilateral spatial neglect
Systematic Review

To identify evaluate and summarise studies that have identified prognostic indicators of functional outcome, models for prediction of acute discharge outcome, selection criteria after acute stroke.

Overall Indicators For Functional Outcome and Discharge Disposition:
- Age
- Functional level post stroke
- Cognition

Indicators For Acute discharge disposition:
- Age
- Severity of impairment
- Presence of hemiparesis
- Cognition
  - (urinary incontinence)

Indicators for selection to rehabilitation:
- Age
- Pre-stroke functional level
- Post stroke functional level

Comments

Outcome indicators don’t entirely match rehabilitation selection

Can understand that pre stroke function may have some bearing

Doesn’t seem to narrow the choice for who would benefit most
Audit of successive stroke admissions.

Arch Phys Med Rehabil. 2010; 91 May: 788-93

Home vs Rehab

Was predicted by
• Total Mobility Score
• Code units 2 and 3

(these units were less likely to discharge home)
Selecting patients for rehab after stroke.

Are there variations in practice?

Ilett, P et al  2010

Rehab   vs   Nursing home

Was predicted by

• Age
• Mobility Score
• Modified Barthel Bowel Score
• Unit code 1

(This centre was less likely to discharge to nursing home)
Discharge outcomes for Severe Disability

Discharge outcomes for Moderate Stroke


Fig 2. Discharge destination for patients with moderate disability (16–30).
Discharge outcomes for Severe Disability
Arch Phys Med Rehabil. 2010; 91 May: 788-93
Decisions may be influenced by...

Availability of alternative rehabilitation options.

Exit flow from rehabilitation

The funding model for rehabilitation could have a bearing
Past the person and the stroke we look to the rehabilitation

Grube M et al Evidence based quality indicators for stroke rehabilitation. Stroke. 2012;43 142-6

**Process**
- Long term cardiac monitoring
- Nutrition counselling for obesity
- Control of blood pressure
- Admission screening of cognition
- Screening for depression
- Adm screen for swallow
- Speech Path Assessment
- Management to reduce spasticity
- Counselling in social law

**Outcome**
- Recovery of …
  - mobility
  - walking function
  - assistive U L function
  - functional U L function
  - Application for further rehab

**Structure**
- Provision of smoking cessation training
- Management of malnutrition
- Record of complications
- Possibility of family involvement
We have the means…. to ensure evidence based care of stroke and use key performance indicators

A National Stroke Audit of Rehabilitation Services is conducted every 2 years
An opportunity to ensure that your process are in place
Outcomes are picked up by AROC data
Adherence to clinical guidelines improves patient outcomes in Australian audit of stroke rehabilitation outcomes


Support for the argument that rehabilitation units that adhere to the recommendations are more likely to be providing evidence based care.
Associations


Good recovery outcomes
Recommended management in areas of

Discharge elsewhere
Recommended management in areas of

sensorimotor impairment
activities of daily living,
home assessment,
education,
post discharge needs assessed
balance,
secondary prevention
upper limb

prescription of DVT prophylaxis,
sit to stands
standing balance
But wait there’s more…

FIM discharge score of greater than or equal to 100 was a benchmark in predicting discharge to home

FIM discharge score of less than or equal to 80 was an indicator for discharge elsewhere
How do we use this information?
Duration, Participation Rate and Supervision

Choon-Huuat Koh G et al Effect of duration, participation rate and supervision during community rehabilitation on functional outcomes in the first poststroke year in Singapore

Performing supervised therapy at 1 month and 6 months post discharge
Performing unsupervised therapy was not a predictor of good outcome
• Completion of more than 703 repetitions in the first week after admission for stroke was associated with *quicker recovery of independent walking*

• Exercise in the first week is an important indicator of *walking speed at discharge (from rehab) and time to achieve independent walking*
• Evolution towards normal patterns of fMRI occurs in patients with moderate impairment and good recovery.
• Patients with severe impairment and poor recovery showed persistent reduced activation.
• Dynamic changes in the supplementary motor cortex indicate its importance in recovery.

Measurement of electrophysiological parameters in Magnetic Stimulation
A suppression of afferent inhibition in acute stroke is correlated with recovery long term functional recovery in humans.
Electrophysiological parameters
Recovery vs Compensation


Health Condition (Stroke)

Body Function and Structure (Impairment)
Functions: Spasticity, muscle Activity patterns, interjoint and intersegment coordination Dexterity, motor learning etc
Structures: Arm, leg, trunk

Activity (Disability)
Performance of a task (e.g. reaching and grasping, walking)

Participation (Handicap)
An individual’s involvement in life Situations and Activities of self care

Functioning vs Disability

Facilitators vs Barriers

Personal Factors Internal influences

Environmental Factors External influences
Evolvement of Outcome Measures reflect evolvement of prognostic indicators

- Death
- Discharge destination
- Disability/Activity/Functional
- Impairment outcomes
- Motor pattern
- Neuronal outcomes
Person

EB Rehab Processes

For Prognosis

Neurological Impairments

Participation

EB Treatments

Progress Function

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