

**Promoting Recovery at the Bedside:  
A Virtual NDT Workshop**

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01

# Promoting Recovery

How the research drives NDT clinical practice

## Key Aspects of NDT

- **Holistic, interdisciplinary** clinical practice model informed by current and evolving research
- Involves **problem solving** to assess activity and participation limitations and identify underlying impairments
- **Therapeutic handling** is used to help individuals achieve their meaningful functional goals



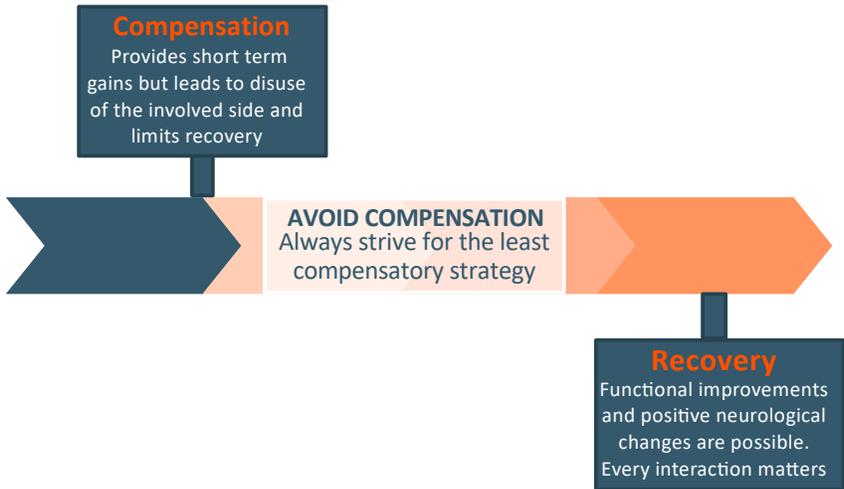
## Neuroplasticity

Early rehab capitalizes on a dynamic period of brain remodeling and counters a tendency for compensatory strategies to allow suboptimal reorganization patterns

Using the more involved limbs promotes functional reorganization and enhances functional recovery

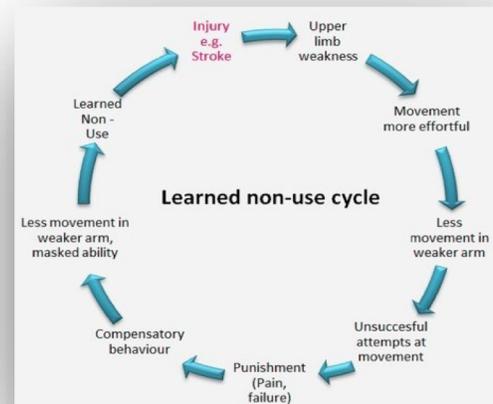


## Driving Neuroplasticity



## Factors That Limit Recovery

Learning to use the “good” limb interferes with the potential of the cortex to mediate function in the involved limb



## Practice and Repetition



THE MORE PRACTICE  
THE BETTER

Many studies report the percentage of time spent in active practice in therapy is <50%

Recent study showed active practice occurred in 78% of the sessions – there was an expectation that patients can and should continue to practise even when not directly supervised by a therapist

## ✦ ✦ Consider the Environment

### Enriched Environments

- Practice opportunities
- Stimulating
- Challenge



### Stroke Units

Social, sensory, cognitive and motor experiences has been shown to promote neuroplasticity



## NDT in Treatment

### FUNCTIONAL

Focus on incorporating the more involved limbs in tasks

### CHALLENGING

Allows an individual to participate in activities they could not do on their own

### THERAPEUTIC

Use your hands and body to in a way that facilitates movement

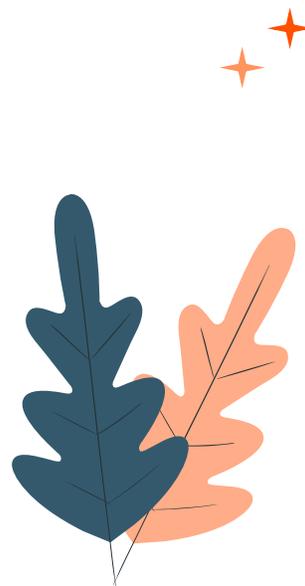


Make our interactions therapeutic

  
In order to help our patients move, we need to understand where their movement falls apart 

## Understanding Typical Movement Lab

- Feel how the set up can encourage use
- Use this to our advantage to promote recovery



02

## ADL's in Sitting

Making interactions at the bedside therapeutic

## Breakout Session

- Sit at the edge of a surface with feet on the floor, now think about how you could manipulate the environment to encourage the movements you want
  - Many ADL's require you to sit up tall
- Consider:
- How could you adjust the patient's surface and position
  - How could you position the objects of the task i.e. to wash your face, brush your hair, reach for items, etc.
  - Discuss with your group and be ready to share. Someone will need to be the speaker for your group



## ✦ Setting up to perform ADL's



### Position of Patient

Hips higher than knees

No more than hip width distance apart

Close to front edge – no more than ½ of femur

Affected arm on the surface, to their side, biased towards shoulder ER

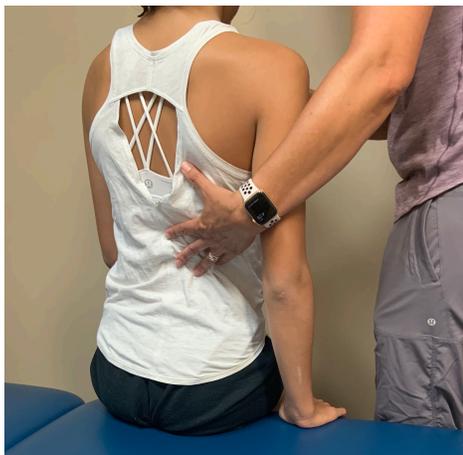
### Health Care Provider

Positioned to the affected side of the patient

With your leg ensure that the patient's hand stays on the bed

One hand contacts back of patient's arm then connects to their back, ask patient to sit tall

## ADL's at the bedside



### Cuing:

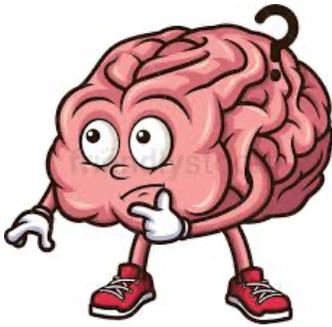
- Your contact to the back of the patient's arm gives a slight down cue towards the heel of the hand to activate patient's extensors
- Your hand in contact with the patient's back, provides a light down cue to the thoracic spine and verbally cue the patient to sit "tall"
- Your leg can provide a boundary and prevent the patient's hand from falling off the bed - only use if necessary
- Available arm can assist the patient with the task

# 03

## Bed Mobility

Getting the patient to be more active when moving in bed

## Movement Analysis



- There is always variation in movement
- BUT there are critical invariant components that must be necessary for the activity to be performed
- Consider what movements need to occur first, second, third etc. in order for the activity to be performed
- Consider what are the key muscles groups that are necessary in performing the activity
- We need to understand these key components in typical movement, in order to understand where movement falls apart for our patient and in order to know where we likely need to be to assist them

## Scoting in Bed



✦ ✦ **Rolling onto your Side**



✦ ✦ **Going from Lying to Sitting**



## ✦ ✦ Going from Sitting to Lying

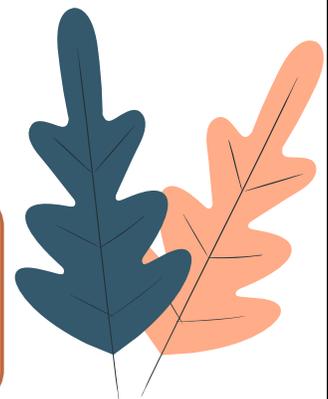


### Breakout Session

- Perform the activity on your own
- Consider what are the key movements and the order i.e. what happens first, then next, etc.
- What are the key muscles you feel working to perform the activity
- Discuss with your group and be ready to share – someone will need to be the speaker for your group

#### Groups:

1. Scooting to the side of the bed
2. Rolling on your side
3. Lying to sitting
4. Sitting to lying



## ✦ Scooting in Bed



1. Contact the front of the tibia with one hand and the other hand on the lateral side of the patient's foot. The input with your top hand is facilitating hip flexion. Your hand on patient's foot stays away from the plantar surface and gives input into dorsiflexion. Both hands are working together to encourage hip flexion.



2. Reach across the patient's lower extremity so you make some contact with the distal femur. You want to be in a stride position so that you have a wide base of support. Your hands can rest on the lateral side of the hips. With your arm across the patient's leg, give a pressure down towards the foot, by shifting your weight from your front to back leg. Ask the patient to lift their hips as you perform this cue.

## ✦ Scooting in Bed



3. Use your hands on the lateral side of the hips to assist with the scoot laterally. Allow the hips to rest on the bed in the new position.



4. Keep your feet in a stride position. Place your hands over the patient's shoulders so your thumbs are in front. Give a down pressure with your thumbs under the clavicle while asking the patient to tuck their chin. Weight shift back to help unweight the shoulders. Use a lateral pressure on the scapula to direct the shoulders to realign over the hips.

## Positioning in Bed

### Sleep is critical in recovery

Poor sleep can contribute to depression, memory problems and night-time falls \*

### We all have a preferred sleeping position

Often patient's are told they are not allowed to sleep on their more involved side

### There are benefits to sleeping on the more involved side

- Increased sensory input
- The less involved side can move freely

\*<https://www.stroke.org/en/about-stroke/effects-of-stroke/physical-effects-of-stroke/physical-impact/sleep>

## ✦ Rolling onto the More Involved Side



1. You may need to assist the patient to scoot to ensure there is enough room to roll. Keep the bottom leg straight and the patient can bend up their less involved leg. Abduct the affected arm and scapula to avoid lying on the bony protuberance of the shoulder. The patient pushes into the bed with their less involved leg and reaches with their arm to start the roll. You can be in front or behind the patient.

2. Assist the pelvis to rotate backwards to establish stability and comfort in side lying. The amount you move the pelvis will be individualized.

## ✦ Rolling onto the Less Involved Side



Assist the patient to flex up the more involved leg like you did to scoot. Have the patient find their more involved arm to ensure it comes with the roll. Place one hand on the more involved scapula with the other hand on the distal femur. Facilitate a push into the foot and draw the hip over to facilitate the roll. Then assist the pelvis to rotate backwards like in rolling onto the more involved side.

## ✦ Lying to Sitting



1. Elevate the head of the bed to make this transition easier for you and the patient. Eventually the patient needs to be able to do this from a horizontal position but not the place to start. Position the patient's leg on a diagonal so they are closer to the edge of the bed. Ask the patient to lift their head and slide your arm under the patient's upper back - across the scapula as far as you can reach. The patient can hold their more involved arm.

2. Take your other hand on the lateral aspect of the thigh. Start the legs out of the bed and as the legs begin to come off the edge, you assist the upper trunk to come into a sitting position. The patient pivots over the hip closest to the side of the bed.

## ✦ Sitting to Lying



1. The patient can take their more involved arm to ensure it stays safe. Place your arm around the upper trunk to get elongation of the lateral trunk on the side closest to the bed.



2. As the trunk comes towards the bed, assist with the more involved leg into the bed. The patient should move on a diagonal.

# 04

## Wrap Up

Questions???

# Thank You!

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## References

- Allred RP et al. Use it and/or lose it – experience effects on brain remodeling across time after stroke. *Front Hum Neurosci.* 2014; 8: 379.
- Bierman J et al. *Neuro-Developmental Treatment A Guide to NDT Clinical Practice.* Thieme Publishers; 2016.
- Bowden, M et al. Promoting neuroplasticity and recovery after stroke: future direction for rehabilitation clinical trials. *Curr Opin Neurol.* 2013 26(1) 37-42.
- Dorsch S et al. In inpatient rehabilitation, large amounts of practice can occur safely without direct therapist supervision: an observational study. *Journal of Physiotherapy.* 2019; 65: 23-27.
- Kerr et al. Experience-dependent neural plasticity in the adult damaged brain. *J Commun Disord.* 2011; 44(5) 538-548.
- Kleim, J. Neural plasticity and neurorehabilitation: Teaching the new brain old tricks. *Journal of Communication Disorders.* 2011; 44 521-528.
- Kleim, J. and Jones, T. Principles of Experience-Dependent Neural Plasticity: Implications for Rehabilitation After Brain Damage. *Journal of Speech, Language, and Hearing Research,* 2008; 51: S225-S239.
- Nudo RJ. Neural bases of recovery after brain injury. *J Commun Disord.* 2011; 44 (5): 515-520.
- Teasell, R et al. Canadian Stroke Best Practice Recommendations: Rehabilitation, Recovery, and Community Participation following Stroke. *International Journal of Stroke,* 2019; 0 (0).
- Yao S et al. The lingering effects of a busted myth – false time limits in stroke rehabilitation. *Appl. Physiol. Nutr. Metab.* 2015; 40: 858-861
- <https://www.stroke.org/en/about-stroke/effects-of-stroke/physical-effects-of-stroke/physical-impact/sleep>