Brain reorganisation: the key to stroke recovery?

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Brain Reorganisation – the key to stroke recovery?

What is a stroke?

- Hemorrhagic Stroke
- Ischemic Stroke
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How does a stroke affect arms and hands?

How much will this person recover?

What is the best treatment for them?
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*Measuring things in the brain*

Natalie wonders if brain measurements have any relationship to brain capacity.
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Why does a stroke cause weakness?
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What happens after stroke?

Recovery – on average

Recovery – individuals

- Red: Tract descending from M1--uninjured
- Orange: Tract descending from M1--injured by stroke
- Green: Stroke

ARAT score (max = 67)

Time since stroke (w)

Complete
Notable
Limited
None
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What is plasticity?

Plasticity takes place in the cortex
- changing strength of existing connections
- new connections
- getting rid of unused connections
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What is plasticity?

Dendrites

Axon
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What is plasticity?
The structure of the brain is constantly changing.

This is the basis of learning both in health and disease.

However, it requires ‘activity’ to take advantage of these processes and create new connections and networks.
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Can we see plasticity?

infarct

affected side

10 days post stroke

17 days post stroke

24 days post stroke

31 days post stroke

3 months post stroke

affected side
The brain is plastic throughout lifetime – this is the basis of learning both in health and disease.

It requires ‘activity’ to take advantage of these processes and create new connections and networks – generally more is better!

After stroke the brain is most plastic in the first few weeks/months – this is when most therapy/practice should take place.

There are some things we might be able to do to make the brain more ‘plastic’.
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Upper limb neurorehabilitation service @ Queen Square

Do you still have difficulty using your arm after a stroke?

If you or a relative have suffered a stroke and still have problems using your arm, then you might be interested in this NHS service at The National Hospital for Neurology and Neurosurgery (NHN), Queen Square.

The multidisciplinary service is run by Dr Nick Ward (Consultant Neurologist), Fran Brander (Physiotherapist), and Kate Kelly (Occupational Therapist) with expertise in assessing and treating upper limb problems.

In the clinic, we offer advice on the management of patients with neurological upper limb deficits secondary to central nervous system disease. We are particularly interested to see stroke survivors who might benefit from more intense treatment of upper limb deficits, especially early after stroke.

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