

## SENSE &amp; IN\_TOUCH

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## Special points of interest:

- 40 participants recruited to the SENSe study
- 11 participants recruited to the IN-Touch study
- Still recruiting in the new year!
- New 'Division of Neurorehabilitation and Recovery' at the National Stroke Research Institute
- Research presented on *Catalyst* television program

## THANKS FOR AN EXCITING 2005!

It has been a very busy and exciting year in relation to our two major studies, SENSe and IN\_Touch.

We would like to thank all participants for giving so generously of their time and interest. It is important that we learn from you and then spread this knowledge to therapists and others who have had a stroke. These findings will help us improve current therapy and recovery after stroke.

Also we would like to say a big thank you to all the clinicians who have assisted us in the recruitment of participants. We have had the pleasure of working closely with therapists and doctors from Austin Health, Melbourne Health, Southern Health, Eastern Health, Northern Health, and Barwon Health.

**SENSe: Study of the Effectiveness of Neurorehabilitation on Sensation.**

We have included 40 participants in the SENSe study, 27 of these in 2005!



Some of the team: Sandy LeBlanc, Angela Nicholas, Leeanne Carey, Mary Mastos, Anne Gordon, Sara Hewish, Matthew Harvey, Ettie Ben-Shabat

**IN-Touch: Imaging Neuroplasticity of Touch.**

Eleven stroke participants have been included in the IN-Touch study. These people have been involved in helping us understand how the brain adapts during the process of recovery and following treatment.

Eight healthy volunteers have also been involved to help us understand how the brain normally works over this time. Thank you once again to everyone involved! Without you this study would not be possible.

## WHAT'S HAPPENING IN 2006?

Recruitment for IN\_Touch will continue throughout the year and will become a priority for us. We will also continue recruiting for SENSe in the first half of the year.

Recruitment for people who have had a single stroke and

are already at least 1 year after their stroke may be interested to be involved in our study that will investigate how the brain adapts in late stages of recovery after stroke. This will involve having a brain scan on a single occasion to see which areas of the

brain are active when feeling a textured surface under the fingertips.

Finally, we are pleased to have the opportunity of working with Donvale Private Rehabilitation in recruitment of participants for both studies.



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### IMPORTANT!

If you have changed address, please let us know so that we can continue to send you updates and the final summary on the projects.

## ACHIEVEMENTS FOR 2005

*Catalyst:* Our research on the mechanisms of recovery after stroke featured in the television program *Catalyst*. The focus was on the potential for recovery after stroke – even after many years.

*New grant:* We were successful on obtaining funding from the Austin Medical Research Foundation to investigate the neuroplasticity of touch in late stages of recovery after stroke.

*Publications:* See list of major publications related to the SENSe and IN\_Touch studies below.

*Conferences:* Prof Carey was invited to present a session on how therapy may be used to facilitate brain recovery after stroke at an international workshop on *Imaging Recovery from Stroke* in Hamburg. Preliminary data has been presented at national and international conferences.

*Scholarships and awards:* Ettie and Melinda are currently supported for their PhD by post-graduate research scholarships. Congratulations to Sara on her recent scholarship, Anne on her grant, and to Jannette on her award for best conference presentation.

*Media:* A small article about the SENSe study was published in a Geelong newspaper for Occupational Therapy week. Johanne Walker, a masters student, and Sue Harmen, featured in the article, are collecting data for the SENSe study in the Geelong region.

## GETTING THE MESSAGE TO OTHERS

### PUBLICATIONS & CONFERENCES

Carey, L.M. (in press). Somatosensory Loss. In Selzer, M., Clarke, S., Cohen, L., Duncan, P., Gage, F.H. (eds). *Textbook of Neural Repair and Rehabilitation*. Vol II. Cambridge: Cambridge University Press. (Chapter II.16, pages 231-247).

Carey, L.M., Abbott, D.F., Egan, G.F., Bernhardt, J., Donnan, G.A. (2005). Motor impairment and recovery in the upper limb after stroke: behavioral and neuroanatomical correlates. *Stroke* 36:625-629.

Carey, L.M., Matyas, T.A. (2005). Training of somatosensory discrimination after stroke: Facilitation of stimulus generalization. *American Journal of Physical Medicine and Rehabilitation*. 84(6):428-442.

Carey, L.M. (2005). Imaging recovery from stroke: treatment facilitated recovery. *Imaging Recovery from Stroke: Second International Workshop*. Hamburg, Germany. (May 23-24)

Carey, LM, Abbott, DA, Chapman, H, Harvey, M. (2005). Recovery of touch sensation after stroke: Clinical and neuroanatomical outcomes associated with spontaneous and training-facilitated recovery: A case study. *14<sup>th</sup> European stroke conference*. Bologna, Italy. 25-28 May.

Carey, L.M. & Corben, L. (2005). *Stroke Rehabilitation and Recovery Conference: The evidence and how to implement it*. National Stroke Foundation. Melbourne. 4-5 August.

Carey, L.M., Abbott, D.F., Harvey, M., Puce, A., Seitz, R., Donnan, G. (2005). IN\_Touch: Imaging Neuroplasticity of Touch after stroke: preliminary findings of brain activation with moderate and severe touch impairment. *Stroke Society of Australasia Annual Scientific Meeting*. 6-9 September, Melbourne. Australia.

Carey, L.M. (2005). Driving neural plasticity: What road should we take? *4<sup>th</sup> Annual Stroke Research Retreat: Strengthening collaborations*. 12-13<sup>th</sup> Aug, Daylesford, Australia.

## SENSe: Study of the Effectiveness of NeuroRehabilitation on Sensation

This project aims to establish the evidence needed to recommend the introduction of a scientifically based sensory retraining program into routine clinical practice.

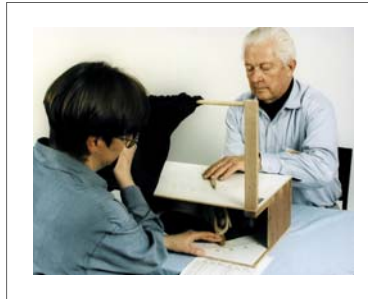
The training, which has strong theoretical foundations derived from over 10 years of research, is focused on improving three sensory functions:

texture discrimination, limb position sense and tactual

object recognition.

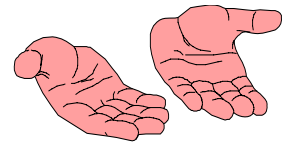
We have had the opportunity to include a total of 40 participants in the study thus far, representing a range of age and gender groups, severity of sensory loss, type of stroke, and time since stroke.

We are continuing with the recruitment stage into the



Test of wrist position sense.

New Year, and we are aiming to include a total number of 50-60 participants.



### EXPERIENCE OF A SENSe PARTICIPANT

My name is Sue, I am 35 and I suffered a stroke in 2003. I lost half my sight and the sense of touch to the whole right side of my body. After I ran out of Health Insurance to cover my rehabilitation I thought it had all come to an end. Then one day I received a phone call from Mary Mastos inviting me to be a member of their test group to assist in sensory loss research. This is where I met Leanne and Sandy.

They offered me the opportunity to do intensive therapy, working to improve my sensory loss.

This opportunity has changed my life in ways I don't think even they realise. At first I was sceptical how much they could help, and I must admit I was pretty negative about things they asked me to do. But through persistence and unsurmountable patience on Sandy's part every task they gave me I

improved on.

The most satisfying thing was to have documented testing done at various stages of the process showing proof of improvement. This proof showed that with persistence there are few tasks I can't improve on. Thankyou ladies for giving me the opportunity to realise that recovery never stops, and for giving me the incentive to keep "working at it".

### STAFF AND STUDENTS INVOLVED WITH DIVISION (CONT.)

- Ettie Ben-Shabat—Physio, completing PhD on imaging proprioception, associated with SENSe.
- Angela Nicholas—D.Psyc student assisting with data management.
- Johanne Walker—OT, completing Masters associated with SENSe. Role in recruitment and training of participants in SENSe.
- Suzanne Harmen—Research Therapist (OT), role in assessment of participants for SENSe.
- Trish Eickmeyer—OT completed masters project on Multijoint Assessment,
- Jannette Blennerhasset—Physio, completing PhD on pinch grip and sensation.
- Melinda Randall—OT, completing PhD on test of upper limb function in children.
- Brian Hoare—OT, completing Masters/PhD using constraint induced movement therapy.
- Megan Turville—LaTrobe OT student completing honours project associated with SENSe
- Kunshan Goh—LaTrobe OT student completing honours project on Multijoint Assessment.

### Coming up!

World Federation of Occupational Therapists  
**WFOT July 2006 in Sydney**

#### Presentation:

SENSe: Study of the Effectiveness of Neurorehabilitation on Sensation after Stroke

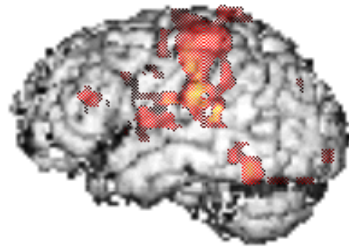
#### Posters:

Brain adaptation associated with spontaneous and treatment-facilitated recovery of touch sensation after stroke. (IN\_Touch)

A new functional Tactual Object Recognition Test (fTORT) for stroke clients: Normative standards and discriminative validity

# IN\_Touch: Imaging Neuroplasticity of Touch

Brain networks may reorganise to help in stroke recovery. However, little is known about brain mechanisms underlying spontaneous and training-induced recovery post-stroke, particularly follow-



ing loss of body sensations.

The aim of the In\_Touch project is to locate and compare areas of brain activation associated with spontaneous and training-induced recovery of touch sensation following early stages of stroke recovery (ie up to 6 months after stroke). This is done by using serial functional magnetic resonance imaging (fMRI).

In the new year, as an ex-

tension of the In\_Touch study, we plan to investigate how the brain adapts in the later phases of recovery after a stroke (ie 12 months and more).

This new information about stroke recovery and brain adaptation will help to provide direction for the development and testing of scientific-based treatments designed to maximise recovery by driving and shaping neural reorganisation.

*Loss of body sensations is common after stroke, with negative consequences for performance of everyday tasks.*

## DIVISION OF NEUROREHABILITATION AND RECOVERY

During 2005 we formed a new division within the National Stroke Research Institute called the *Division of Neurorehabilitation and Recovery*. The aim of our group is to develop and test approaches to rehabilitation that aim to restore lost abilities such as sensation and movement after

stroke. Our studies span 3 major areas: 1) Mechanisms of brain adaptation associated with recovery, 2) Restorative approaches to rehabilitation, and 3) Nature of impairment and impact on function. Researchers and clinicians from occupational therapy, physiotherapy, neurology, physics and experimental

psychology are involved in the research. Currently there are 7 research therapists/research fellows in the division as well as 3 PhD, 3 masters and 2 honours students. An important feature of our research program is the collaborative links with researchers and centers locally and internationally.

## STAFF AND STUDENTS INVOLVED WITH DIVISION

There are a number of staff and students involved in our studies on Neurorehabilitation and Recovery:

- Leeanne Carey—Head of Division of Neurorehabilitation and Recovery, Chief Investigator for SENSE and IN\_Touch
- Thomas Matyas—Co-chief investigator for SENSE
- David Abbott—Co-chief investigator for IN\_Touch
- Sandy LeBlanc—Research Therapist (OT), responsible for recruitment and training of participants for SENSE/IN\_Touch
- Mary Mastos—Research Therapist (OT) and completing Masters project associated with SENSE. Role in recruitment, assessment, and training of participants for SENSE/ IN\_Touch.
- Sara Hewish—Research Therapist (OT), role in assessment of participants for SENSE/ IN\_Touch.
- Anne Gordon—Research Therapist (OT), assists with imaging, clinical assessment, and imaging analysis for IN\_Touch