Neurologic Music Therapy within Inpatient Neurorehabilitation

Roz Cabrita, Clinical Lead for Chiltern-MusAbility partnership and Director, MusAbility

Nuala Goggins, Speech & Language Therapist, NHS Trafford Healthcare NHS Trust

The Pilot

- Funded by the ‘Small Change, Big Difference’ charity fund at Manchester Foundation Trust
- 12 Full days of NMT across 3 months
- Mix of individual and group sessions

Project aims:

- *to improve outcomes for patients at discharge*
- *To evidence the benefits of Neurologic Music Therapy to staff, patients and families in the context of UK hospital care*
- *To evidence the need for expansion of the service with project hospital site and further sites in UK*
- *To evidence a need for further research using UK data*

Neurologic Music Therapy

NMT is an evidence-based, neuro-scientific model of practice

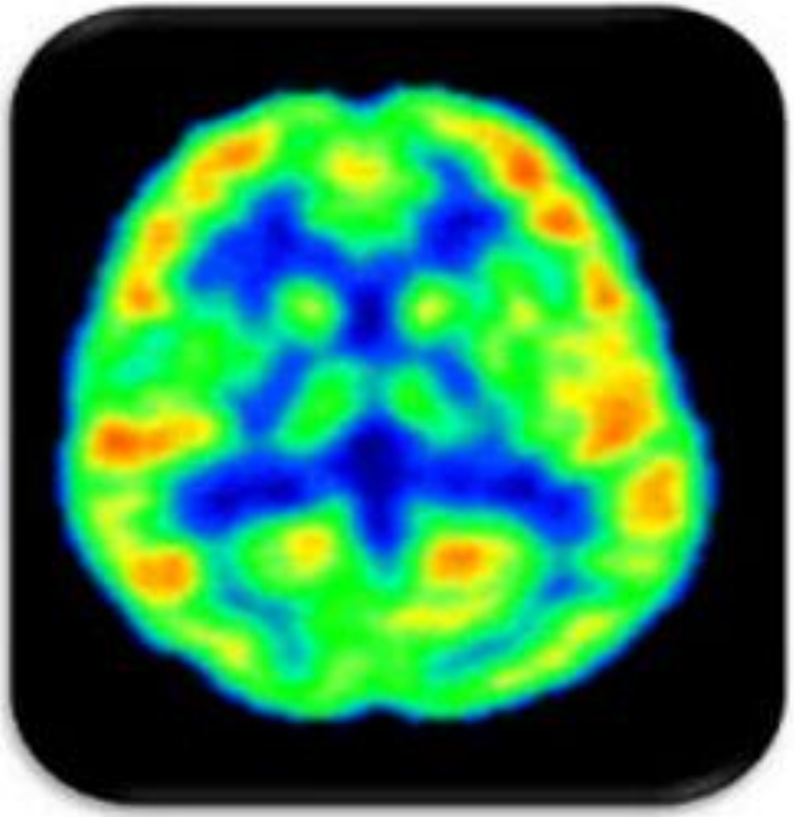
SENSORIMOTOR TRAINING

SPEECH AND LANGUAGE TRAINING

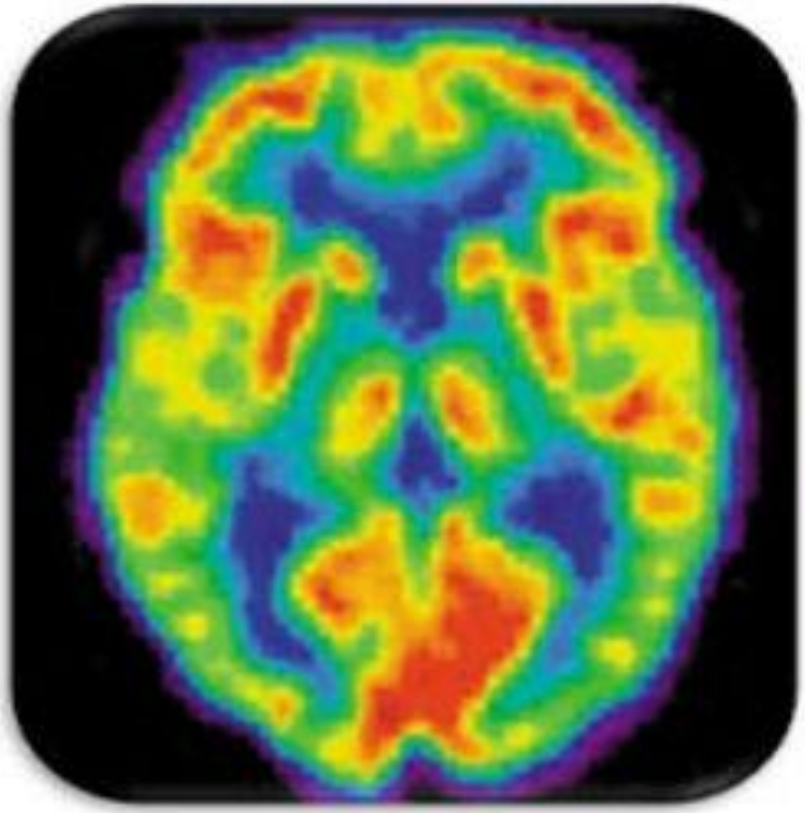
COGNITIVE TRAINING

Music and the Brain

The brain at rest

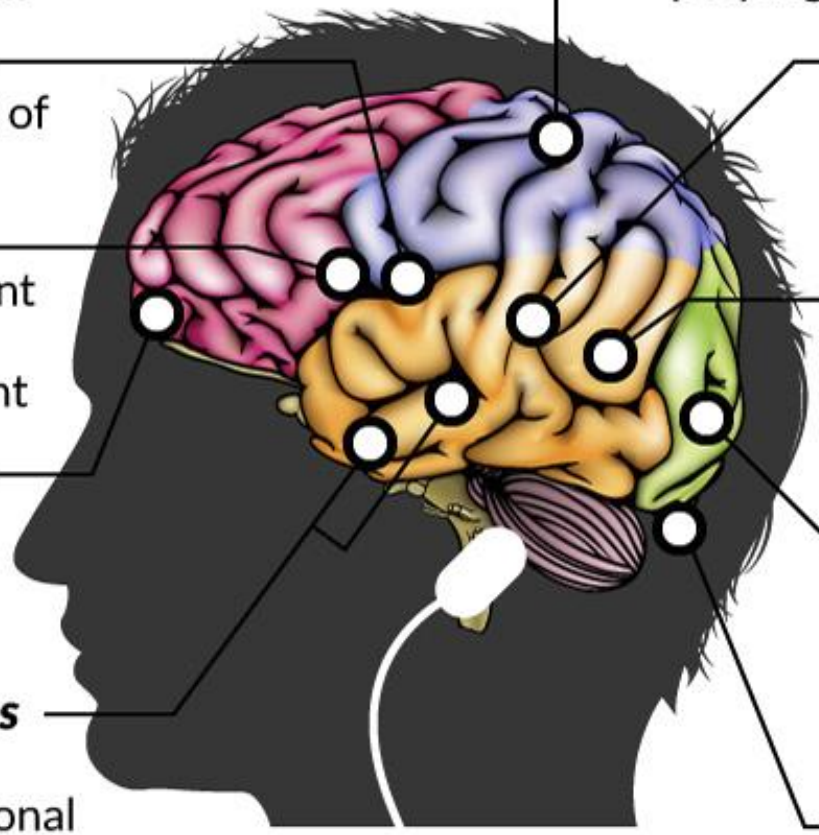


The brain's reaction to music



Music and the brain

Playing and listening to music works several areas of the brain



Corpus callosum:
Connects both sides of the brain

Motor cortex:
Involved in movement while dancing or playing an instrument

Prefrontal cortex:
Controls behavior, expression and decision-making

Nucleus accumbens and amygdala:
Involved with emotional reactions to music

Sensory Cortex:
Controls tactile feedback while playing instruments or dancing

Auditory cortex:
Listens to sounds; perceives and analyzes tones

Hippocampus:
Involved in music memories, experiences and context

Visual Cortex:
Involved in reading music or looking at your own dance moves

Cerebellum:
Involved in movement while dancing or playing an instrument, as well as emotional reactions

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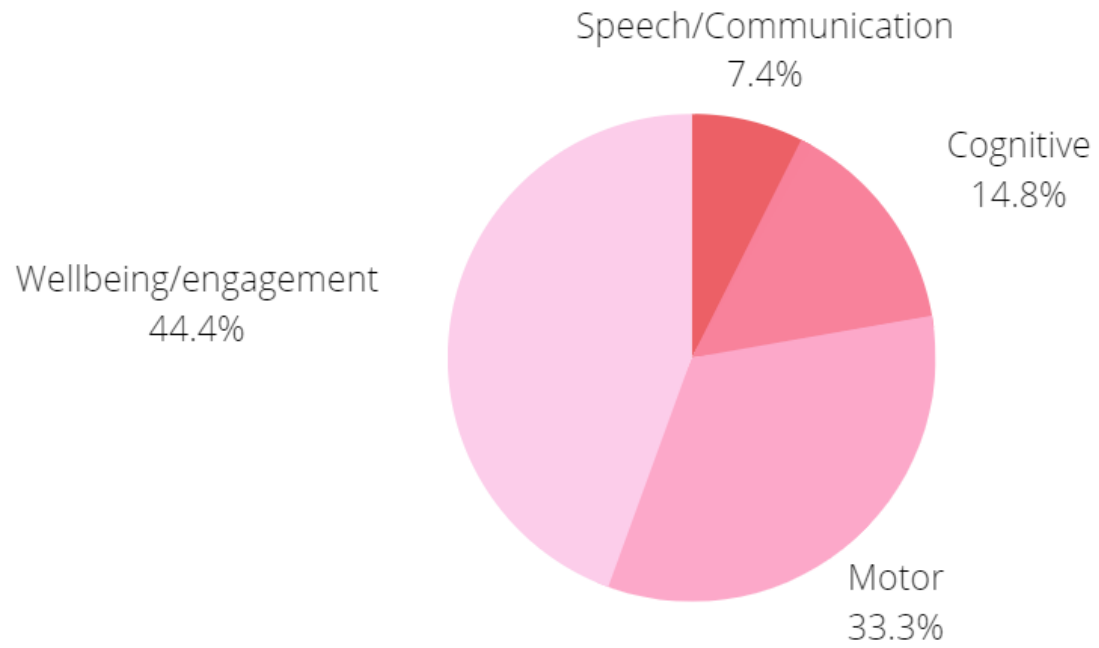
Referral Criteria

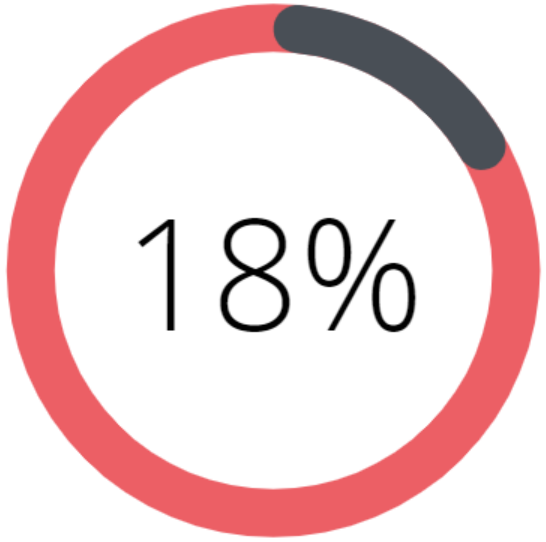
P1 – Patient not engaging in any therapy

P2 – To supplement the patient's current rehab program

P3 – To support quality of life, leisure and enjoyment



% of referrals to NMT by primary domain reason



% of Priority 1 referrals during the project

Case Study: Ben

- 46 years old, in INRU for 6 months prior to NMT input.

- Cortically blind and suffering severe cognitive and sensory impairment following a left frontal intracerebral haemorrhage in 2021.

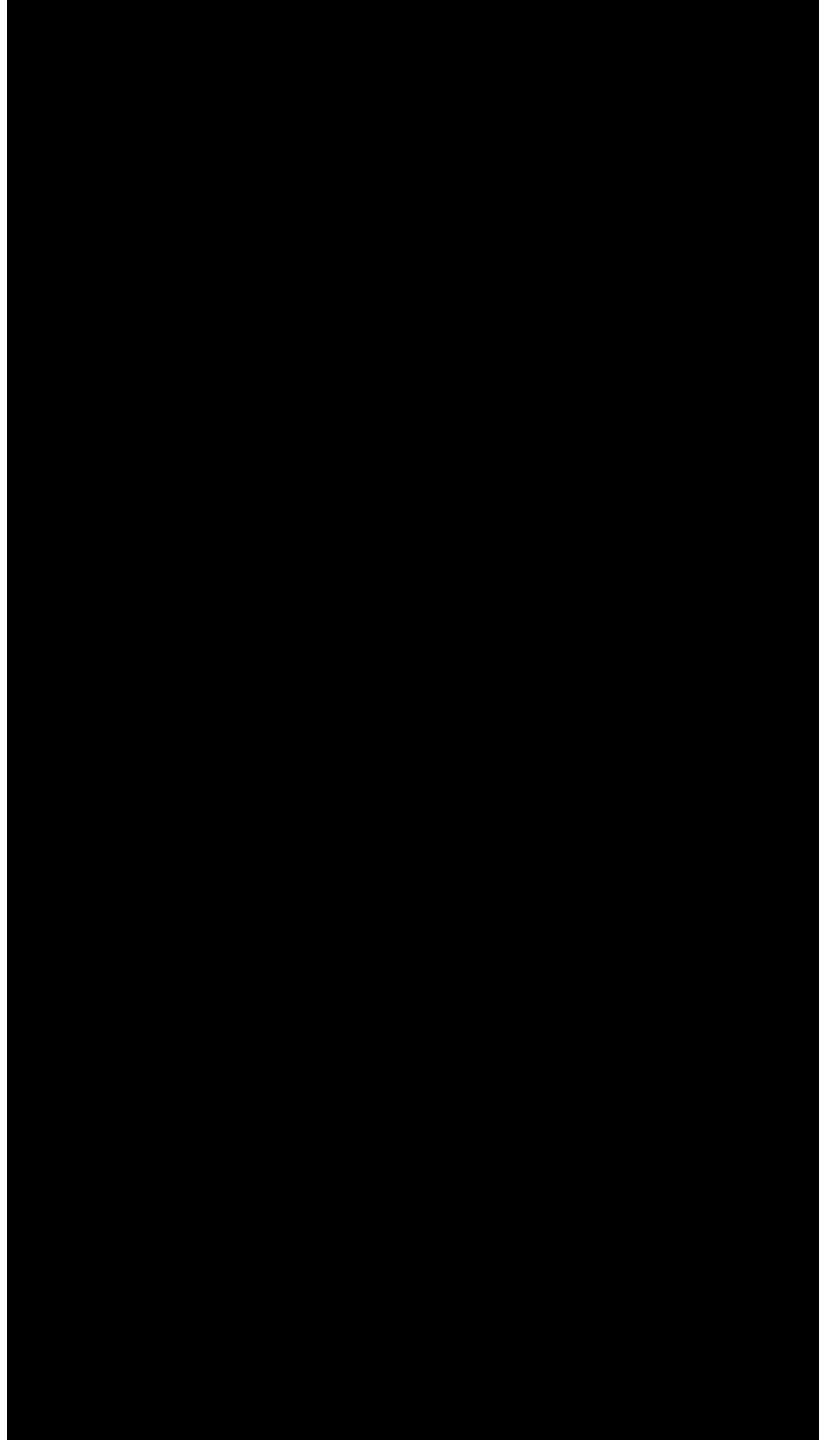
- Struggled to engage in any therapy despite intensive input from MDT. Goals discontinued as unable to attend or concentrate. Passive and unintelligible.

Chiltern music therapy
MusAbility
MUSIC THERAPY SPECIALISTS

NHS
Manchester University
NHS Foundation Trust

Session 1

- Understanding and responding to verbal interaction.
- Spontaneously recalling lyrics.
- Spontaneously improvising and exploring rhythms.



Chiltern music therapy

MusAbility MUSIC THERAPY SPECIALISTS

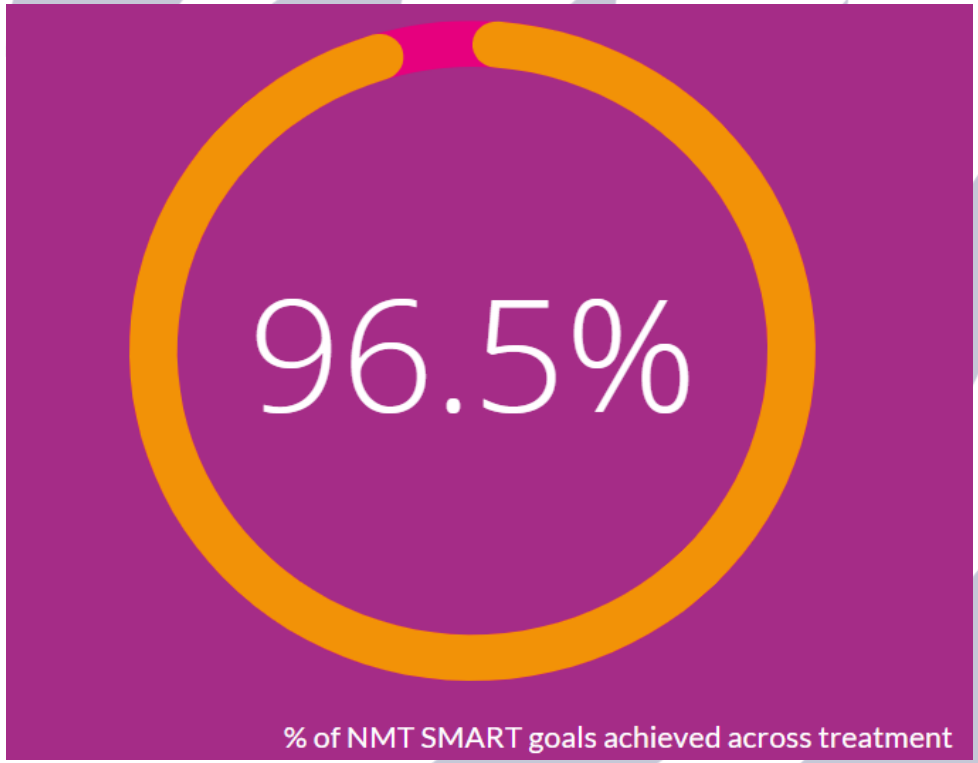
NHS Manchester University NHS Foundation Trust

Ben

SMART goals included:

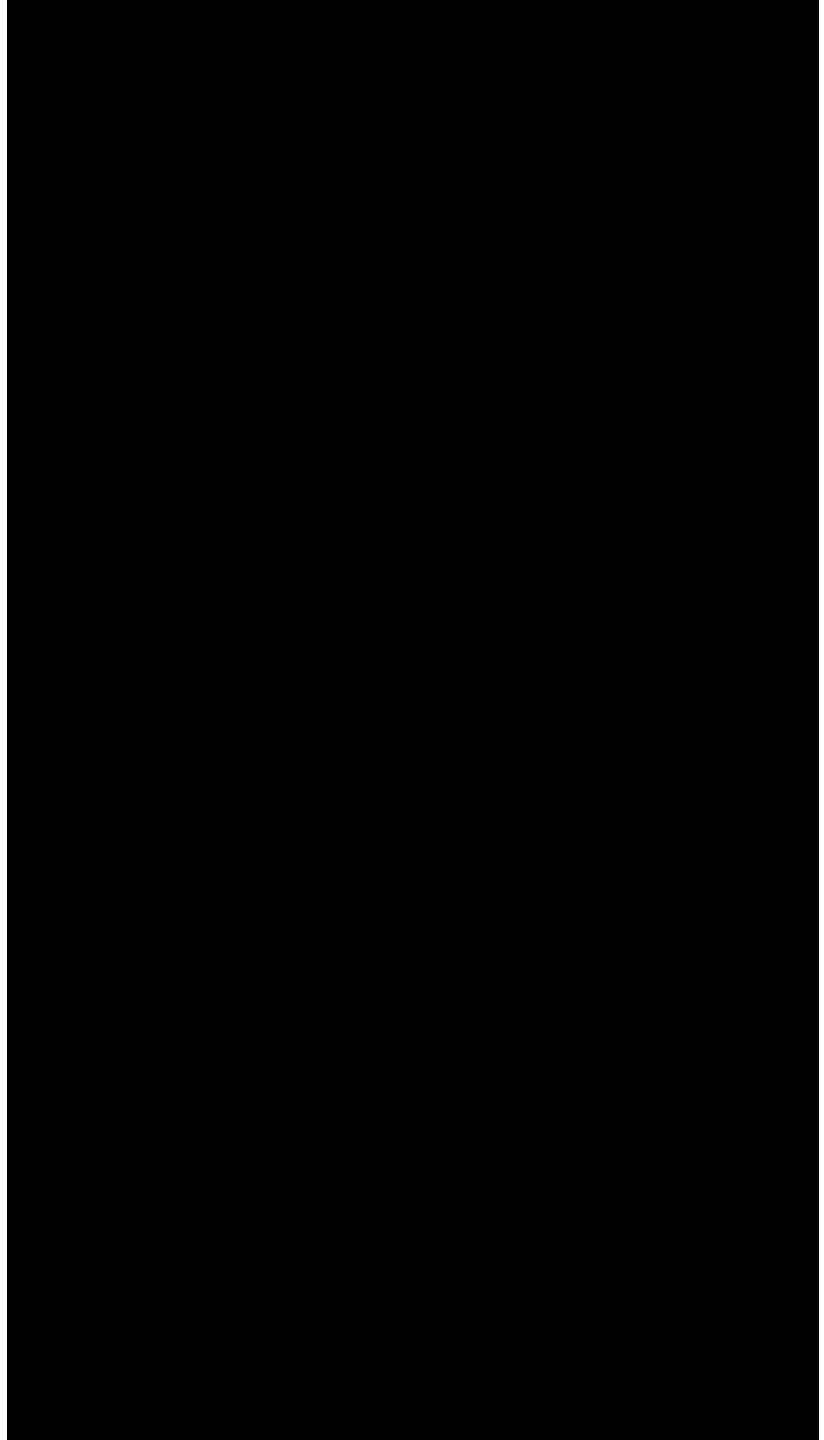
- choosing between x3 objects,
- discriminating and understanding sounds,
- following verbal commands and
- initiating communicative vocalisations

Discharge Report with recommendations for care and clinical approach and potential for rehabilitation.



Session 10

- Direction following
- Memory and exercise retention
- Functional movement for ADLs
- Character and humour!



Case Study: Mobility Group

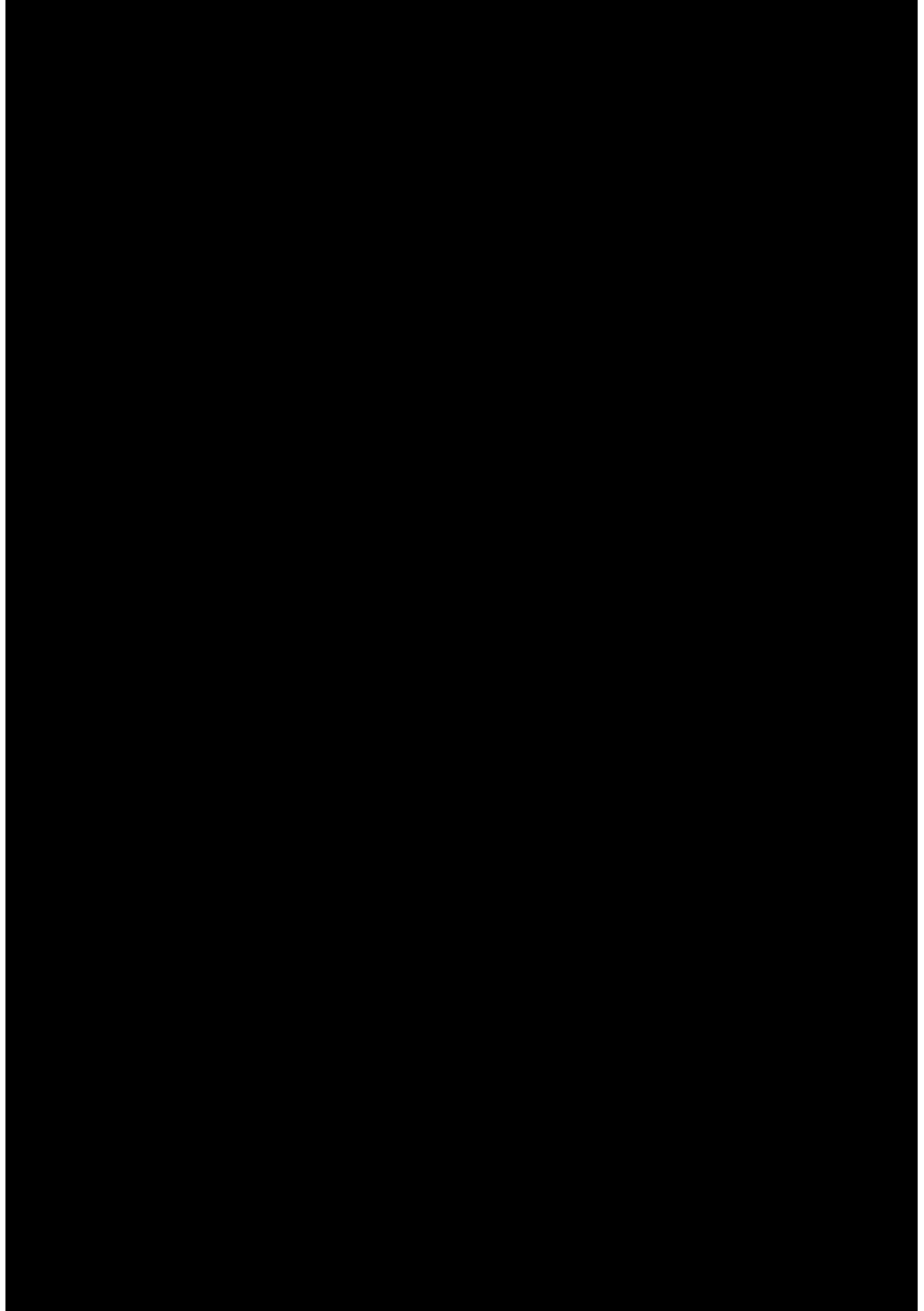
Collaborative Physical Aims

Chiltern music therapy

- Improve joint ROM
- Improve co-ordination, balance, precision and position
- Improve fine and gross motor movement patterns
- Improve functional ability for independence for ADLs
- Improve muscle activity, endurance and strength
- Maintain cardiac health
- Reduce pain and pain perception
- Improve quality of life
- Plus additional cognitive aims!

“It was on my timetable and I was like…YAY!”

- Upper and lower limb functional movement.
- Exercises centred around personalised rehab aims.
- Fun!



Chiltern music therapy
MusAbility
MUSIC THERAPY SPECIALISTS

NHS
Manchester University
NHS Foundation Trust

INRU: 3-Month NMT Pilot Review highlights

Chiltern music therapy

87%

87% of patients achieved their SMART goals in NMT sessions.

21 unique patients were seen during the pilot

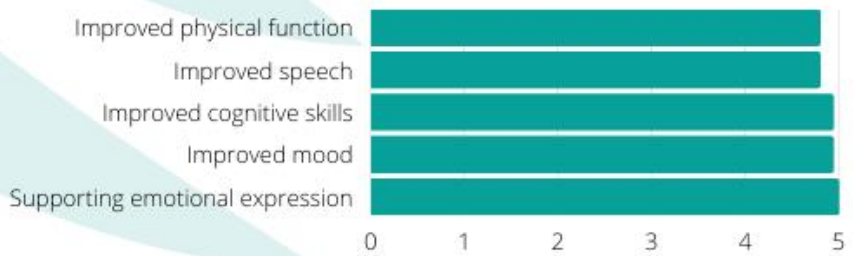
95% of patients improved in mood following NMT

"I've never seen him as engaged, ever" - MDT member

100%

100 % of patients agreed they would like to come back for more sessions

All staff agreed or strongly agreed that NMT was effective for improving physical function, speech, cognitive skills, mood, and emotional expression for patients on the unit.



EQ-5D Data

Mean change in EQ-5D index = 0.2584

There was a mean clinically important difference between admission and discharge.

EQ-5D data suggesting music therapy group sessions were shown to be beneficial to the patients' quality of life.

What's next?

- Clear positive impact evident on both staff and patients
- EQ-5D data and patient and staff data show that there is a need for NMT
- Securing funding for an extended pilot study to determine longer term impact of NMT in INRU.

“The only comment one wishes to make is to implement **a music therapist permanently on INRU!!!!”**

Rehabilitation Assistant

Thank you for listening

@ChilternMusic @musabilitymt

www.chilternmusictherapy.co.uk

www.musability.co.uk

Dr Claire Howard

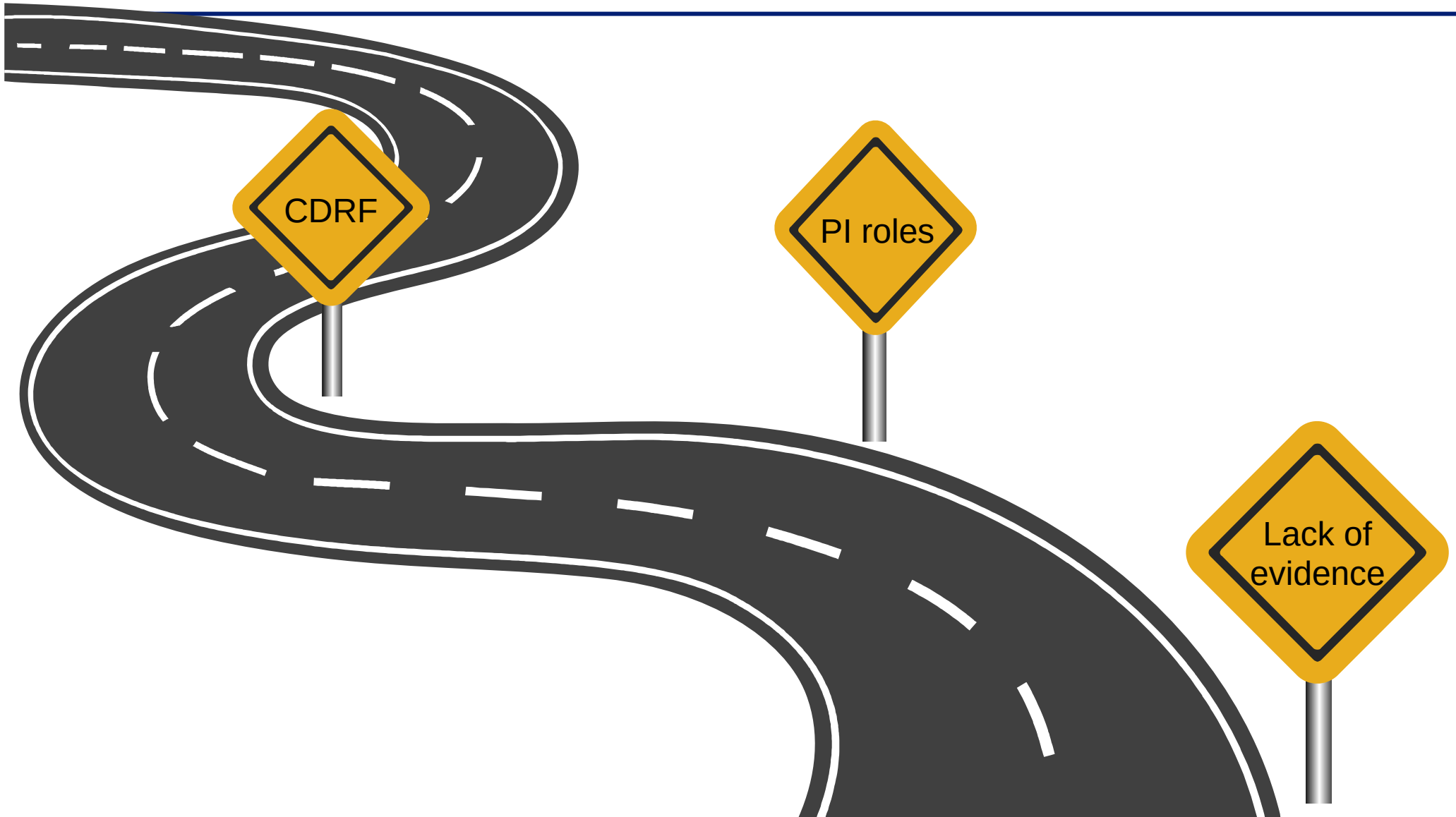
Stroke / Brain injury Specialist Research Orthoptist

NHS
Salford Care Organisation
Northern Care Alliance
NHS Foundation Trust

VISION
Vision, Orthoptic and Brain Injury
Research Unit

UNIVERSITY OF
LIVERPOOL

A journey into research and visual impairment



Lack of evidence

2004

Stroke

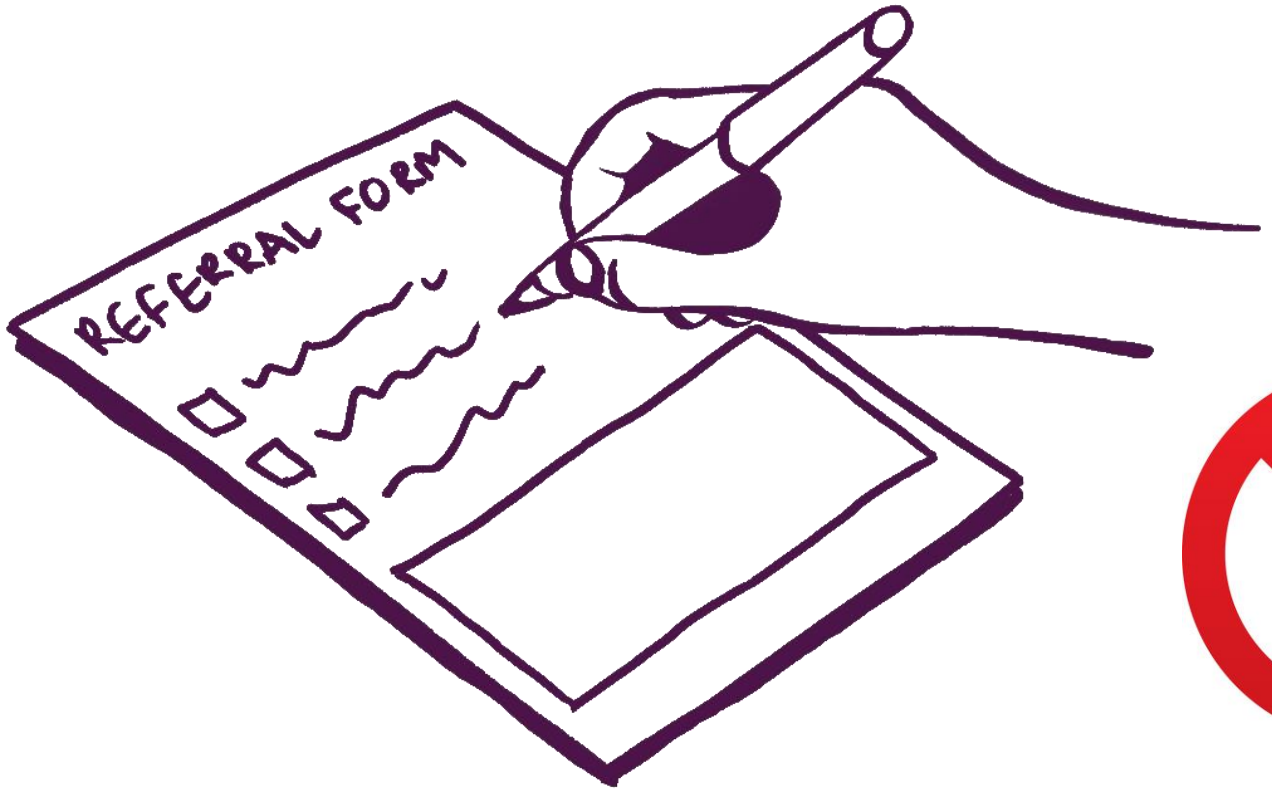
Unanswered questions

First steps

VIS Study

- 915 recruited
- 92% had confirmed visual impairment

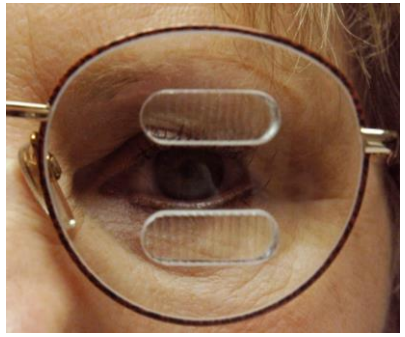
2006-2009

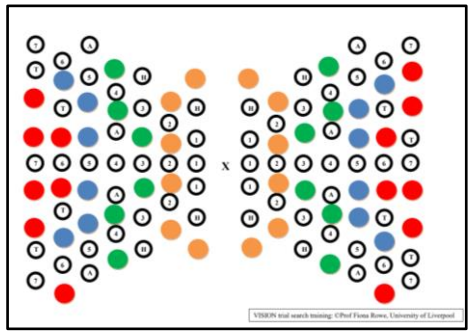


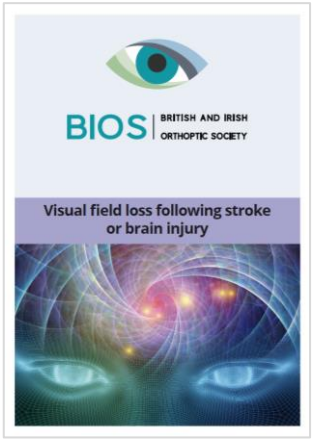
VISION trial

- Pilot trial hemianopia
- 3 arm RCT

2011-2013



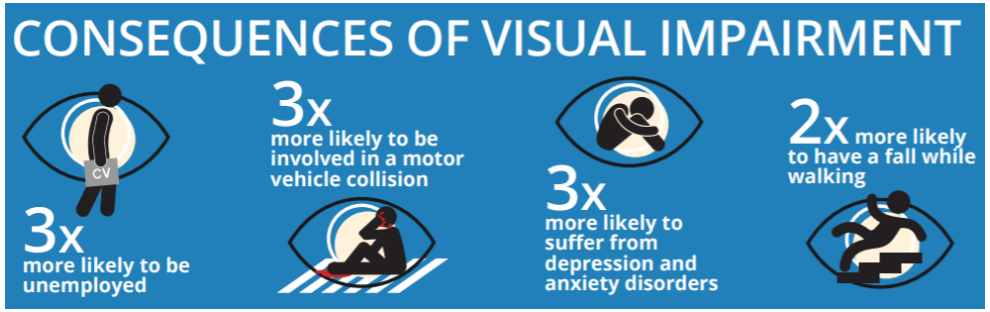




Stroke Association

IVIS Study

2013-2018



FUNDED BY
NIHR | National Institute for Health and Care Research

NIHR CDRF

2015

Accepted: 28 November 2016
DOI: 10.1111/ane.12725

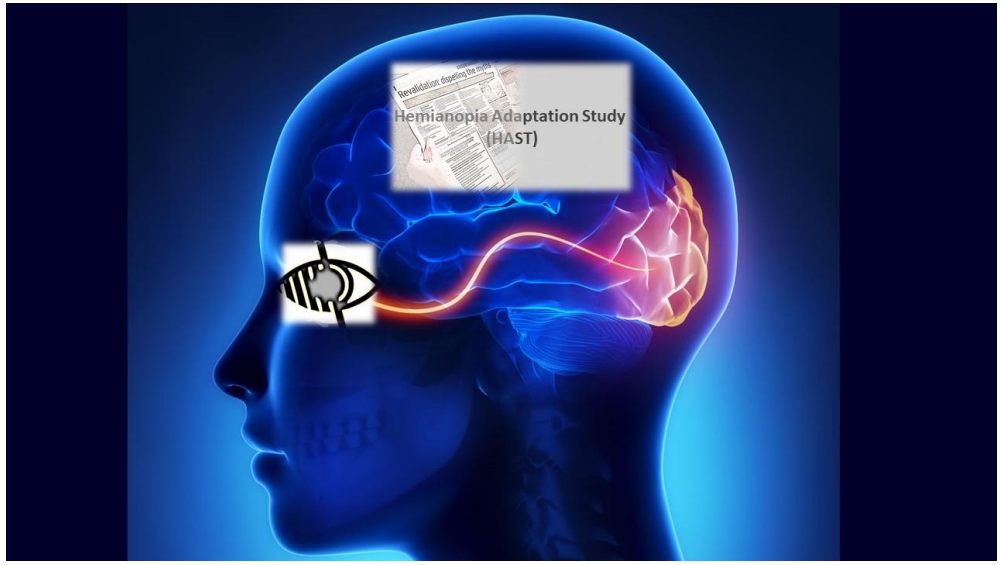
ORIGINAL ARTICLE

WILEY Acta Neurologica Scandinavica

A pilot randomized controlled trial comparing effectiveness of prism glasses, visual search training and standard care in hemianopia

F. J. Rowe[1] | E. J. Conroy[2] | E. Bedson[3] | E. Cwiklinski[3] | A. Drummond[4] | M. García-Fiñana[2] | C. Howard[5] | A. Pollock[6] | T. Shipman[7] | C. Dodridge[8] | C. MacIntosh[8] | S. Johnson[9] | C. Noonan[10] | G. Barton[11] | C. Sackley[12]

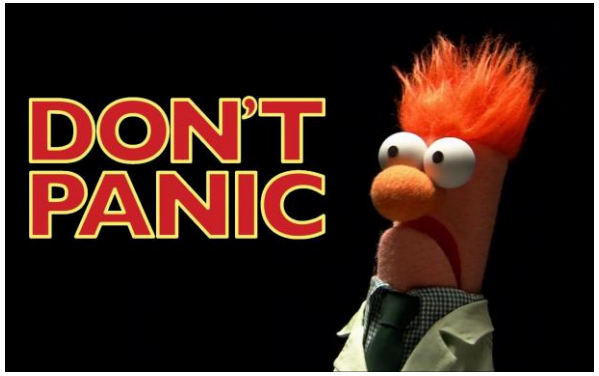
NIHR CDRF



2016-2020

NIHR CDRF - Tips

NIHR | Research Design Service North West



Peer Support

IVIS Results

2013-2018

- 1033 stroke patients screened
- 73% had visual impairment

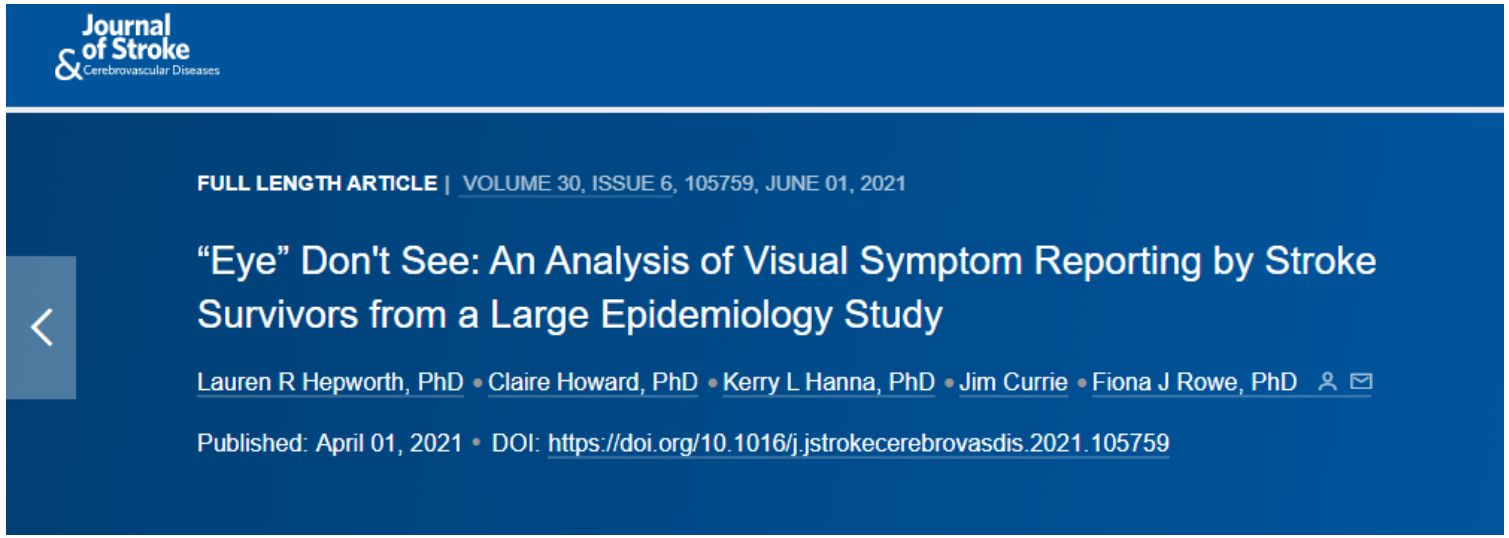
Rowe et al 2019. High incidence and prevalence of visual problems after acute stroke: An epidemiology study with implications for service delivery. PLoS One.

22% Normal vision assessment

20% Vision assessment not possible

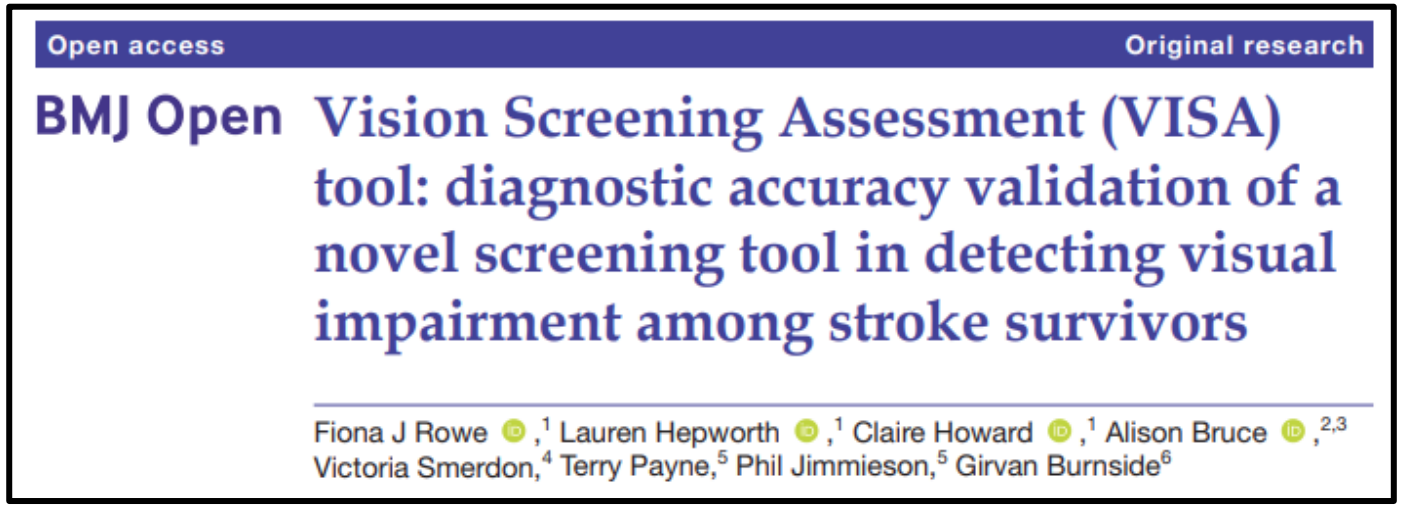
58% Abnormal vision assessment

Symptoms



Almost 40% of stroke survivors with new onset visual impairment do not or cannot report visual symptoms

Visual Impairment Screening Assessment (VISA)



Open access Original research

BMJ Open **Vision Screening Assessment (VISA) tool: diagnostic accuracy validation of a novel screening tool in detecting visual impairment among stroke survivors**

Fiona J Rowe ,[1] Lauren Hepworth ,[1] Claire Howard ,[1] Alison Bruce ,[2,3] Victoria Smerdon,[4] Terry Payne,[5] Phil Jimmieson,[5] Girvan Burnside[6]

2016-2019

UNIVERSITY OF LIVERPOOL

Print version - 97% sensitive 67% specific

App version - 88% sensitive 87% specific

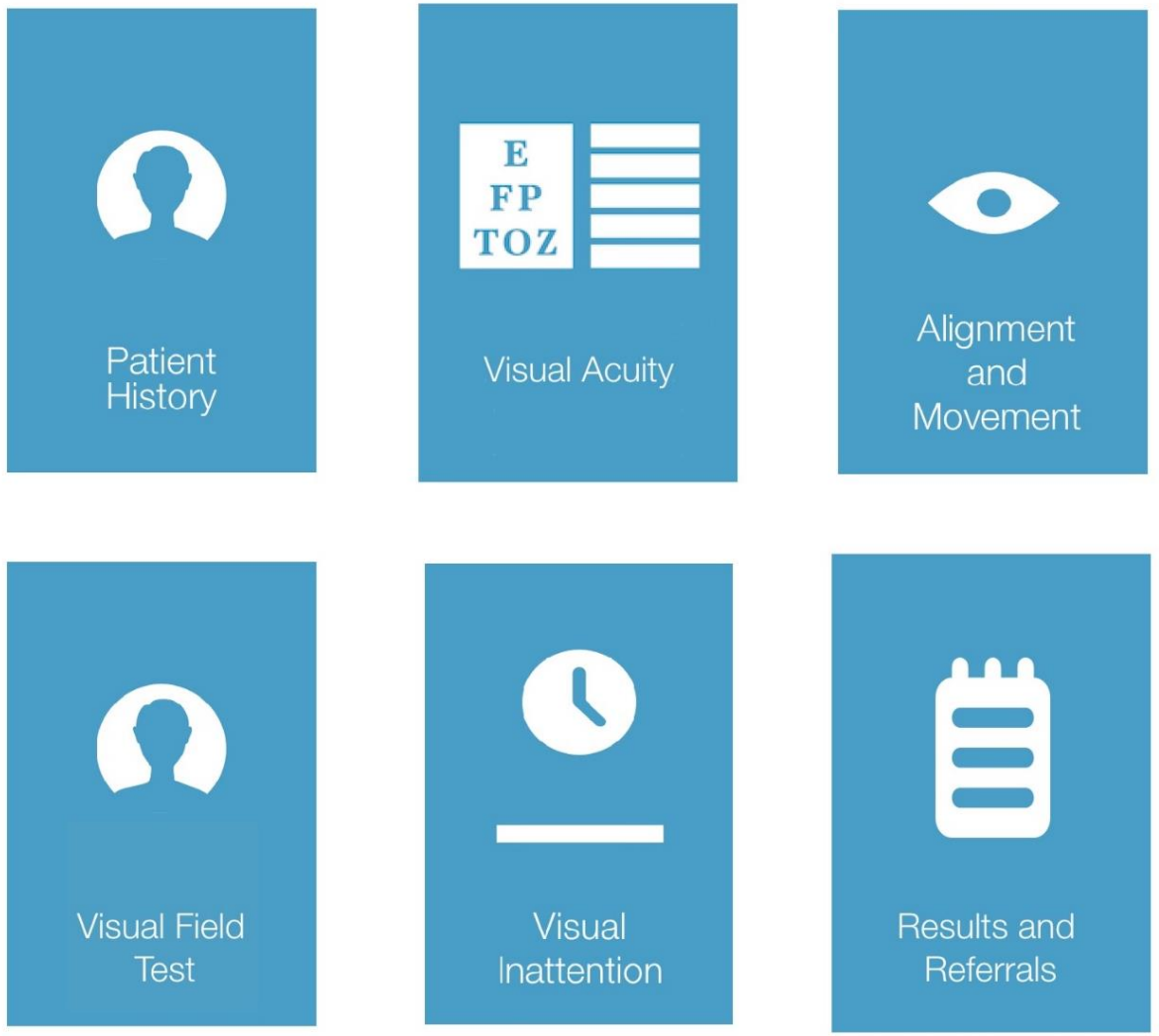
Visual Impairment Screening Assessment (VISA)

VISA

Available as:

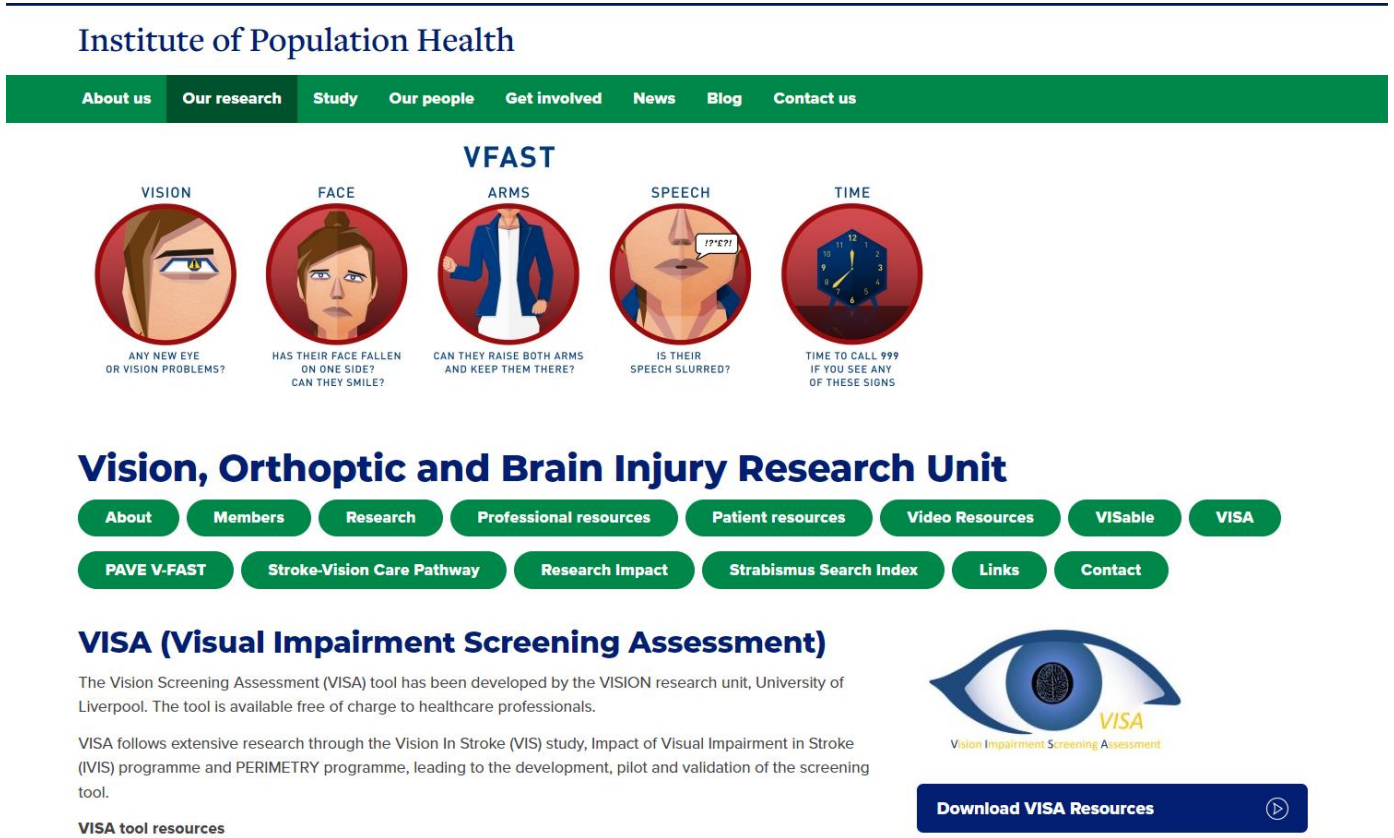
- Booklet
- App

- Detailed instructions
- Video



Visual Impairment Screening Assessment (VISA)

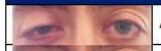
Visual Impairment Screening Assessment (VISA)

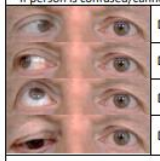
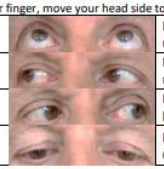


www.vision-research.co.uk

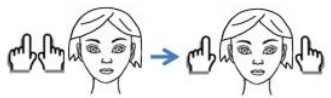
V-FAST

Paramedic Vision Evaluation Checklist

Symptoms	Observations
From patient or their family: What do they report?	 Are the lids different?
Reported a new problem with eyes/vision and/or dizziness or problems with balance	 Are pupils different sizes? (anisocoria)
Is vision different between the 2 eyes? **Ask the person to cover each eye in turn.**	 Do they have a squint? (eye turn)
Have visual symptoms lasted >1 hour?	 Are they closing one eye to focus?
When did the most recent visual problems start?	Do they move their head position to try to see better?

Eye Alignment		Eye Movements	
Use a spotlight to check the pupil position in both eyes. Then, using one finger ask the person to follow it into the 4 positions to extremes (below left), keeping their head still. Tips: - If you cannot move your hand/arm fully to one side, e.g. wall on that side, turn the person's head towards you to test - If person is confused/cannot understand to follow your finger, move your head side to side to check how they follow your face			
	Does one eye turn in		Do both eyes move smoothly upwards?
	Does one eye turn out		Do both eyes move smoothly to the right?
	Does one eye turn up		Do both eyes move smoothly to the left?
	Does one eye turn down		Do both eyes move smoothly downwards?
Do one or both eyes appear to have nystagmus – wobbling eyes?			

Reading	Ask the person to read the following text
Can you read this sentence without any problems?	

Visual Fields	Visual Inattention / Extinction
1) Holding both of your arms out to the side, asking the person to look at your nose, slowly bring one finger from in from the periphery for all 6 positions (below left) in a random order. **2) Holding both arms up (one to each side) briefly raise one or two fingers of one hand and ask how any are seen, repeat in the 4 quadrant positions (below right)** **3) Ask if they can see all parts of your face or if part or one side appears more blurred than the rest** **Tips:** If you cannot move your hand/arm fully to one side, e.g. wall on that side, turn the individuals head towards you to test	**1) Asking the person to look at your nose, hold up two fingers (one from each hand) to the individual's right side and ask how many fingers they can see** **2) Slowly move one finger across to the left side, keeping the other finger on the right side, asking again how many fingers they can see** **3) Repeat to other side** **Tips:** - One finger may not be seen but individual may be aware it should be seen or alternately they are unaware and only see one - Watch whether they ignore things to left or right side e.g. they miss that someone has approached them from one side
	Example for testing left sided inattention/extinction  Are they ignoring or showing neglect or extinction to **left or to right** side

NHS North West Ambulance Service NHS Trust

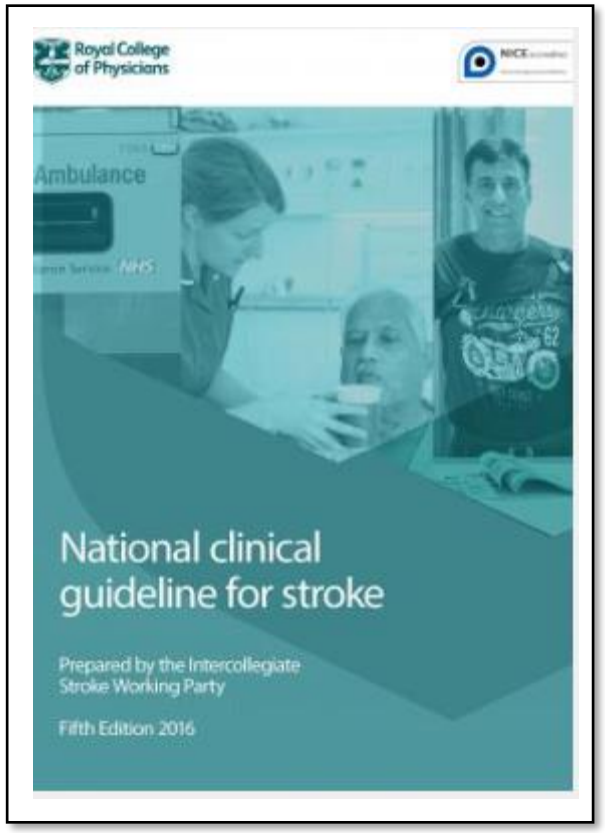
Rowe FJ et al 2020. Development of V-FAST: a vision screening tool for ambulance staff. Journal of Paramedic Practice.

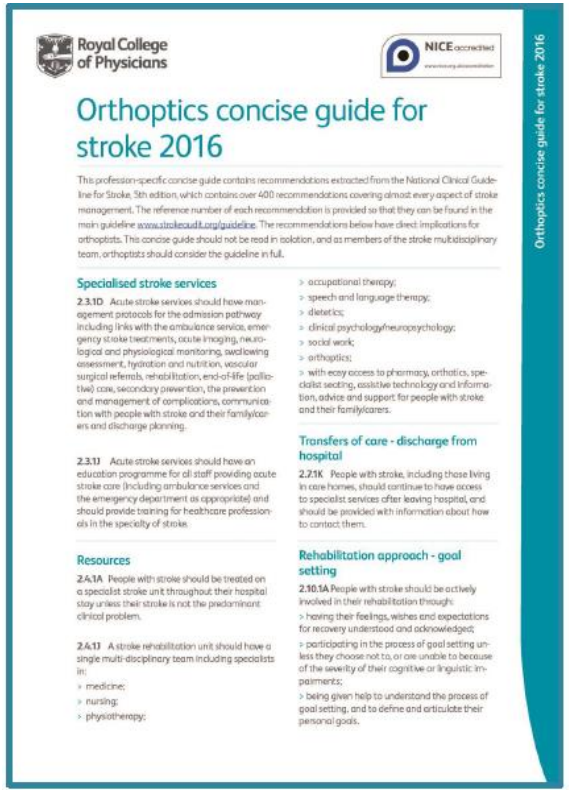
VISable

ppi

Patient and Public Involvement
in
Stroke and Vision

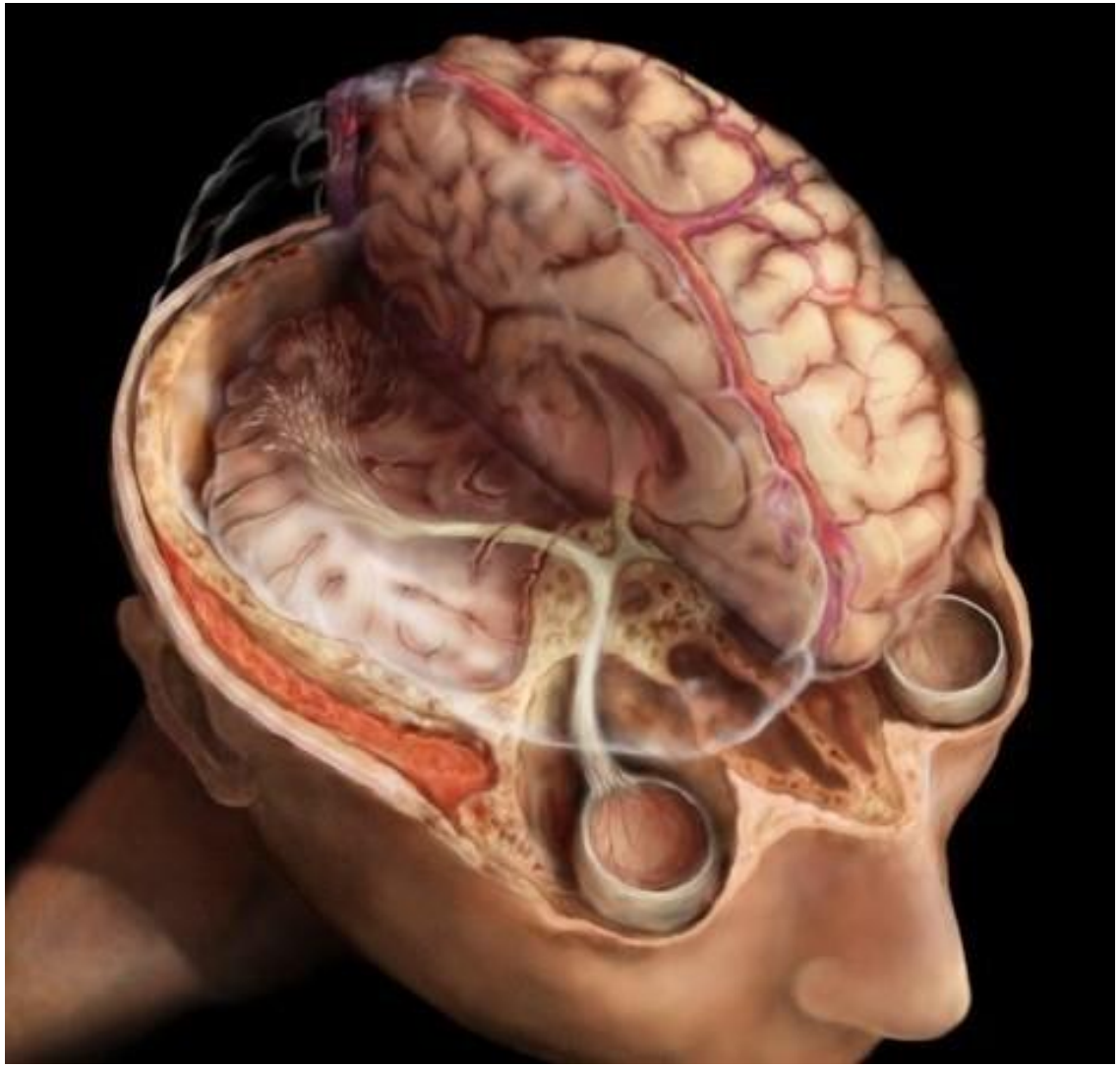
RCP National Stroke Guidelines





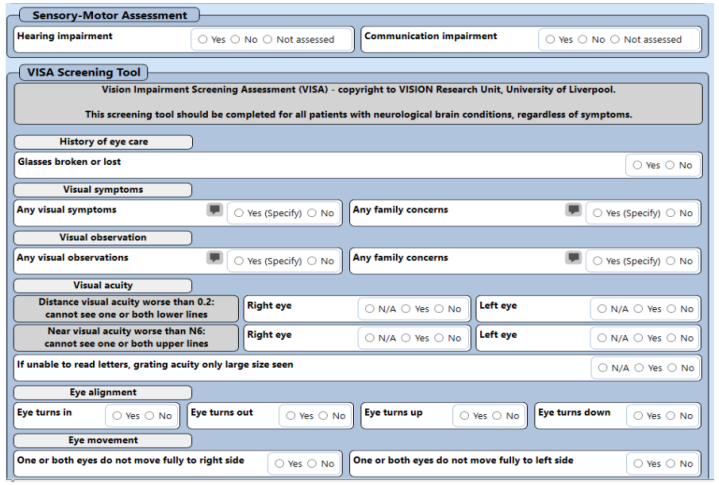
Royal College of Physicians

Neuro rehab



VISA Audit 2022

C2 - hyper-acute
L1 - acute / rehab



Sensory-Motor Assessment

Hearing impairment ○ Yes ○ No ○ Not assessed | Communication impairment ○ Yes ○ No ○ Not assessed

VISA Screening Tool

Vision Impairment Screening Assessment (VISA) - copyright to VISION Research Unit, University of Liverpool.

This screening tool should be completed for all patients with neurological brain conditions, regardless of symptoms.

History of eye care

Glasses broken or lost ○ Yes ○ No

Visual symptoms

Any visual symptoms ○ Yes (Specify) ○ No | Any family concerns ○ Yes (Specify) ○ No

Visual observation

Any visual observations ○ Yes (Specify) ○ No | Any family concerns ○ Yes (Specify) ○ No

Visual acuity

Distance visual acuity worse than 0.2: cannot see one or both lower lines — Right eye ○ N/A ○ Yes ○ No | Left eye ○ N/A ○ Yes ○ No

Near visual acuity worse than N6: cannot see one or both upper lines — Right eye ○ N/A ○ Yes ○ No | Left eye ○ N/A ○ Yes ○ No

If unable to read letters, grating acuity only large size seen ○ N/A ○ Yes ○ No

Eye alignment

Eye turns in ○ Yes ○ No | Eye turns out ○ Yes ○ No | Eye turns up ○ Yes ○ No | Eye turns down ○ Yes ○ No

Eye movement

One or both eyes do not move fully to right side ○ Yes ○ No | One or both eyes do not move fully to left side ○ Yes ○ No

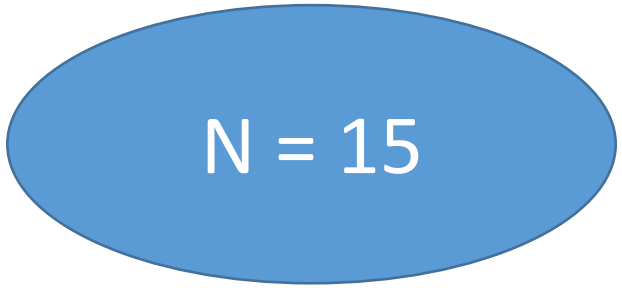
12 weeks

1/7/22 -20/9/22

C2 VISA Audit

- 4/15 VISA performed (27%)

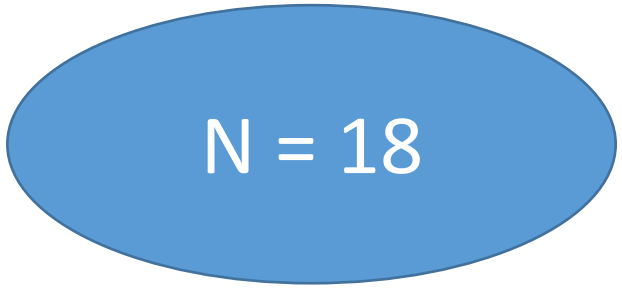
Reason for no screen	Numbers
No reason specified	4
Cognition	3
No vision concerns	2
Lack of engagement	2



L1 VISA Audit

- 7/18 VISA performed (39%)

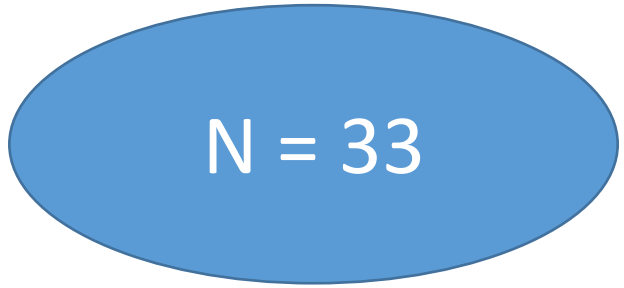
Reason for no screen	Numbers
Spinal injury only	6
Cognition	2
No vision concerns	1
Seen elsewhere (MREH)	1
Lack of engagement	1



Overall VISA Audit

- 11/33 VISA performed (33%)

Reason for no screen	Numbers
Spinal injury only	6
Cognition	5
No vision concerns	3
Lack of engagement	3
Seen elsewhere (MREH)	1



VISA Audit 2022 - Key points

Stroke

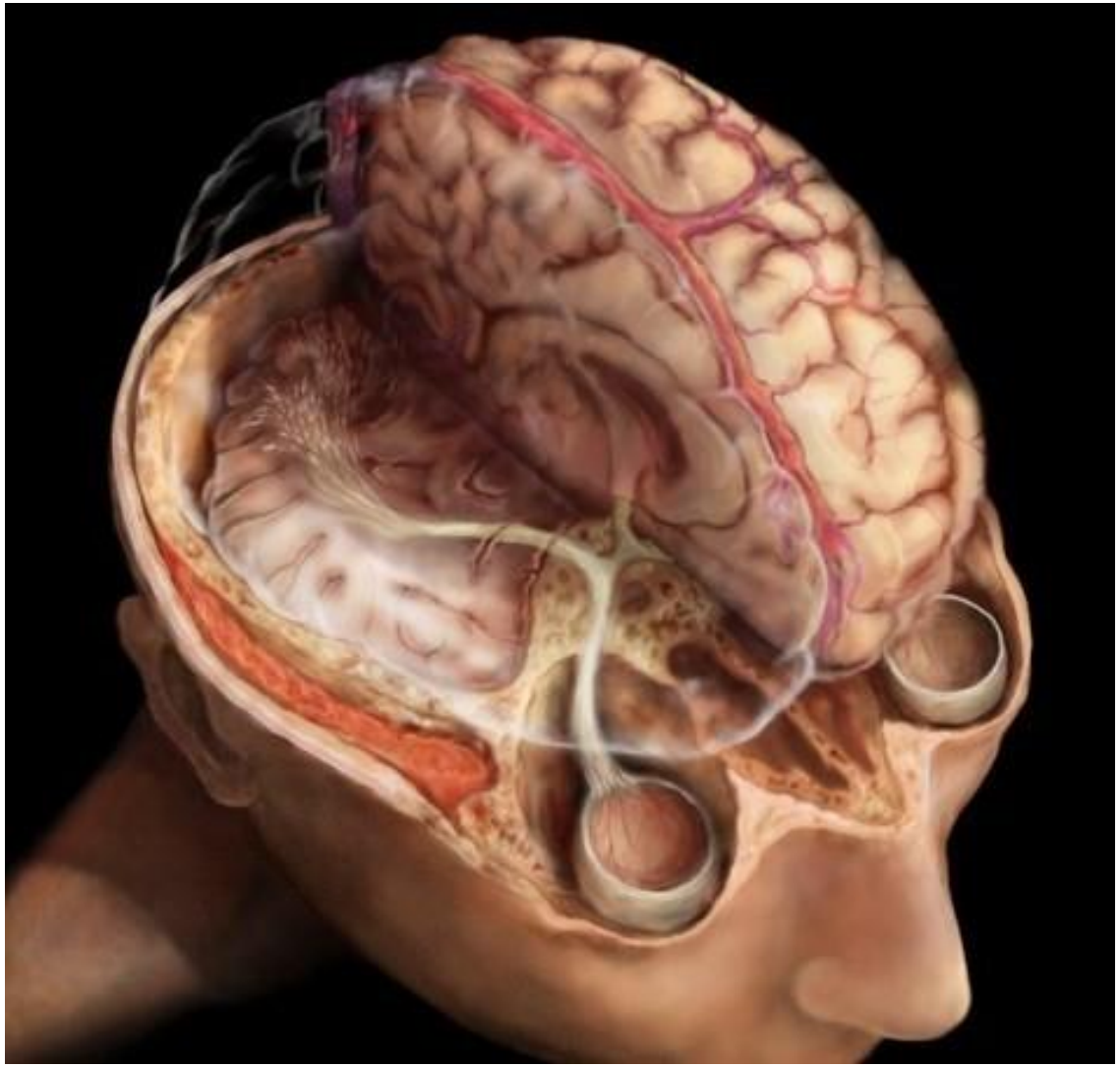
22% Normal vision assessment

20% Vision assessment not possible

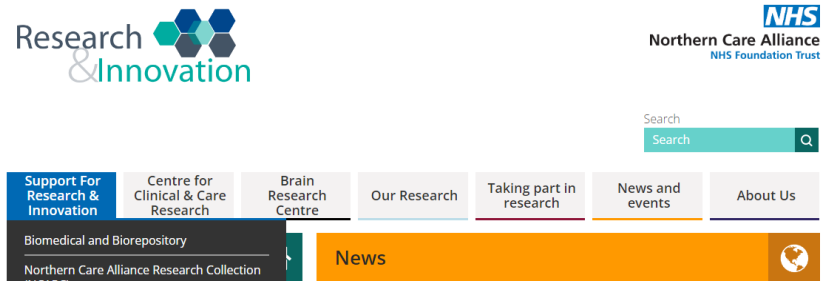
58% Abnormal vision assessment

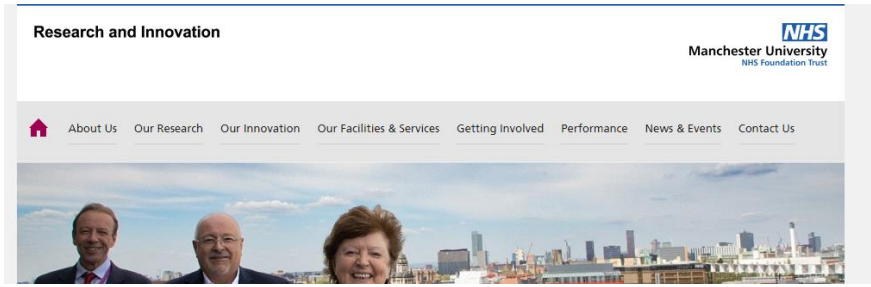
20% v 67%

Neuro rehab



Research support





cahpr
Council for Allied Health Professions Research

Royal College of Nursing
The voice of nursing

Health Innovation Manchester

Greater Manchester

NIHR | Applied Research Collaboration Greater Manchester

Neuro rehab research support

Brain Research UK 1971-2021 50

MS Society

Headway the brain injury association

NIHR | Brain Injury MedTech Co-operative

Geoffrey Jefferson Brain Research Centre

Brain And Spinal Injury Centre BASIC Brain And Spinal Injury Centre 21st Century Rehabilitation

Neuro rehab research support

James Lind Alliance

Priority Setting Partnerships

British Society of Rehabilitation Medicine

Promoting quality through education and standards

Research experience

Research opportunities

Applications currently open

Key Dates:
Online Question & Answer Sessions for applicants: 31st October at 13:00 (Email: arc-gm@nihr.ac.uk to book on)

Deadline for applications: 11th November 2022 at 5pm

Start date: January 2023

My next steps

Special thanks to….

Greater Manchester
Neurorehabilitation & Integrated
Stroke Delivery Network