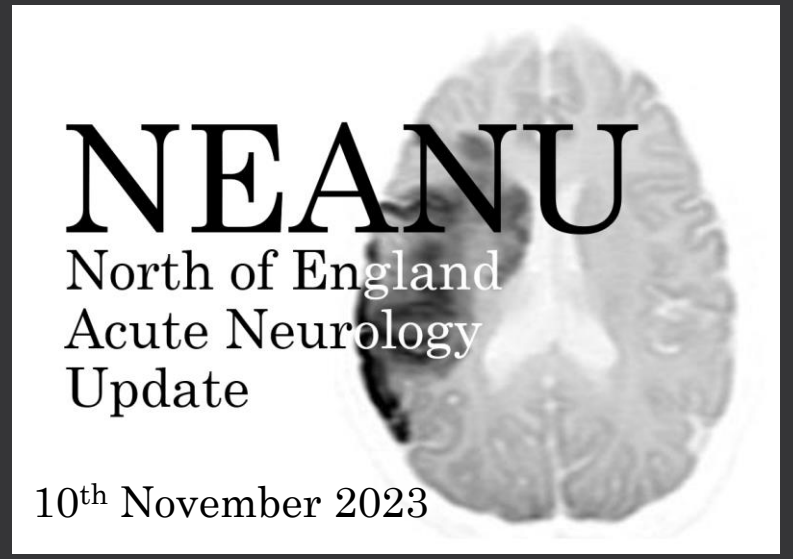
Functional Neurological Disorders

Chrissie Burness

Michael Walsh



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- https://www.youtube.com/watch?v=NxREVvnLDDc

Outline of Session

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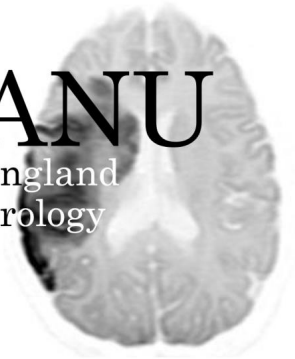

- What is FND
- Acute Presentations (focusing on seizures and stroke)
- Treatment of functional motor disorders
- Local experience in Liverpool
- Conclusions
- Escape!

Functional Neurological Disorder (FND) Terminology

Purely **Psychological** aetiology
- Psychogenic, conversion disorder, somatization

Emphasising what the problem is **not**
- Non-organic, non-epileptic, medically unexplained

Focusing on the *mechanism*
- ***Functional, Dissociative***
- ***Functional Motor Disorder (FMD)***

Biopsychosocial aetiology

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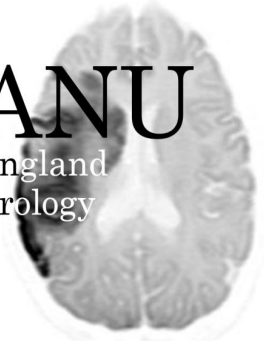

Functional Symptoms

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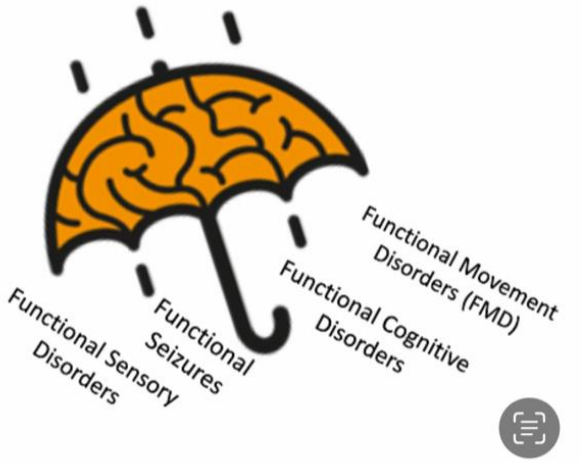
Neurology



Motor: Weakness
Movement disorders

Seizures (dissociation)
Cognitive
Sensory
Visual symptoms
Balance

Gastroenterology	IBS, dyspepsia, abdominal pain
Gynaecology	Chronic pelvic pain, PMS
ENT	Functional dysphonia, globus pharynges (hystericus)
Cardiology	Atypical chest pain, palpitations
Respiratory	Dyspnoea with normal pulmonary function etc
Rheumatology	Fibromyalgia
Infectious Diseases	CFS
Immunology/Allergy	Multiple sensitivities

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What is FND?

- Functional Neurological Disorder is a medical condition where there is a problem with *functioning* of the nervous system and *how the brain and the body send and receive signals,* rather than a structural disease process such as a tumour or multiple sclerosis.

FNDAction
FUNCTIONAL NEUROLOGICAL DISORDER
WWW.FNDACTION.ORG.UK

FNDHOPE.ORG

Aetiology

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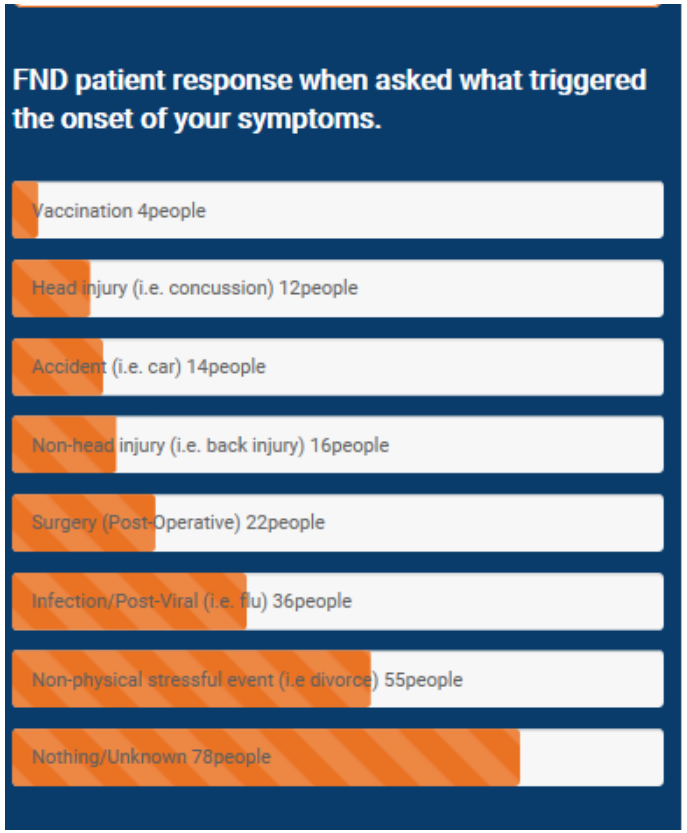
- Biopsychosocial framework
- Multiple network brain disorder
- Identifiable event at onset
- Triggers a state of abnormal focused attention
- Strengthened by internal beliefs
  - "I'm having a stroke"
- And external beliefs
  - Paramedics saying "You're having a stroke"



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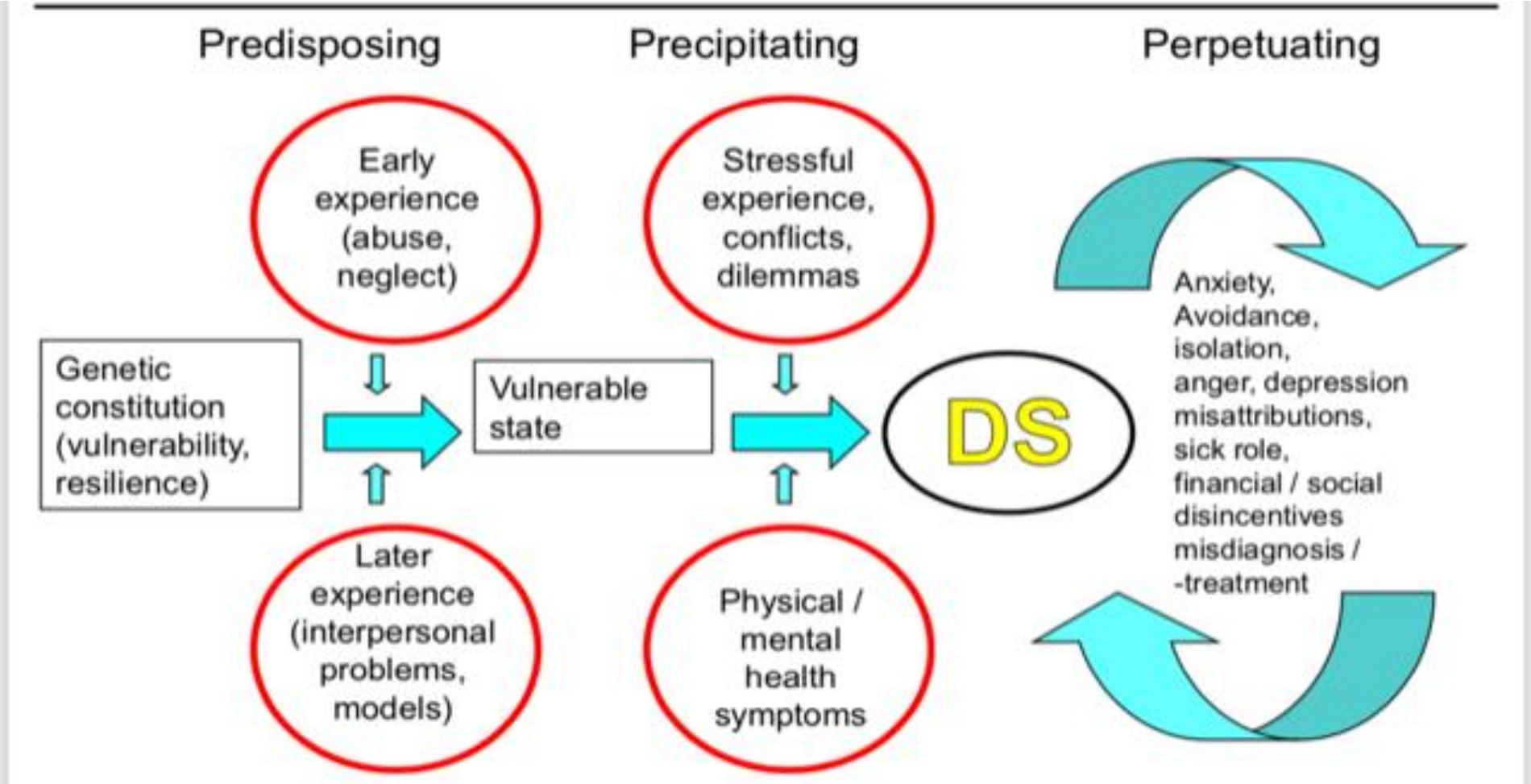
Integrative Cognitive Model

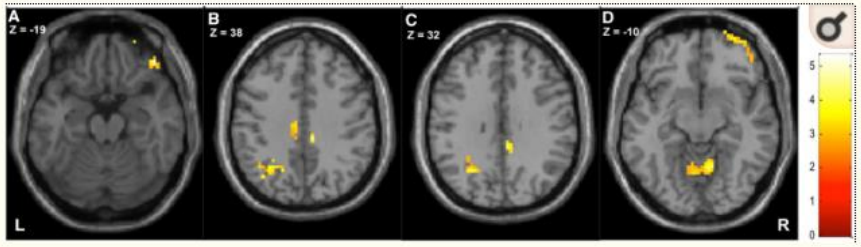


Courtesy of M Reuber and R Brown 2016

Neuroimaging in FND

fMRI differences between FND patients and healthy Controls

Increased limbic and paralimbic activity in FND patients
rTPJ



Open in a separate window

Fig. 2

Contrast patients > control in axial plane.

Hyperconnectivity of clusters (listed in Supplemental Table S3) showing the right inferior frontal/orbitofrontal gyrus (A), the left parietal lobule and right mid cingulate cortex (B + C) and the bilateral cerebellum (D).

FMD and controls pretending they can't move a limb differ.
Abnormal connections between the amygdala and motor areas in FMD

? Possible to predict treatment responses using multimodal imaging biomarkers

Wegrzyk 2018 Neuroimage Clin
Aybek et al 2017

Prevalence and Cost

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- Canadian observational study shows final diagnosis of FND in **13%** of neuro emergency consultations (63/174)

- UK study of 91 consecutive seizure ED visits
  - 10 FND (**11.5%**)
  - 9 Cardiogenic (10%)

- **9%** of admissions to hyper acute stroke units have FND

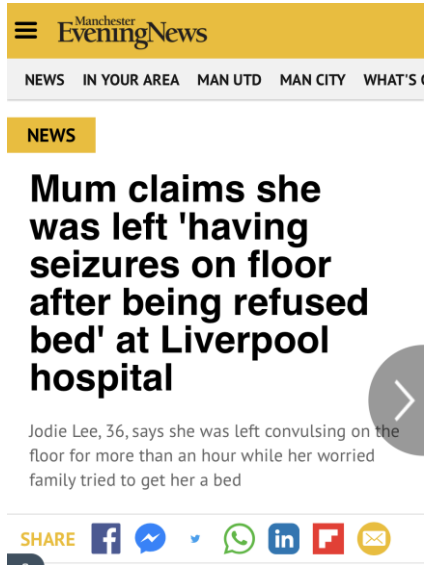
- US 2017 ED expenditure
  - $163 on FND
  - $135 on refractory epilepsy

Moeller et al 2008 Can *J Neurol Science*
Cock & Edwards (2018) *Clinical Medicine*

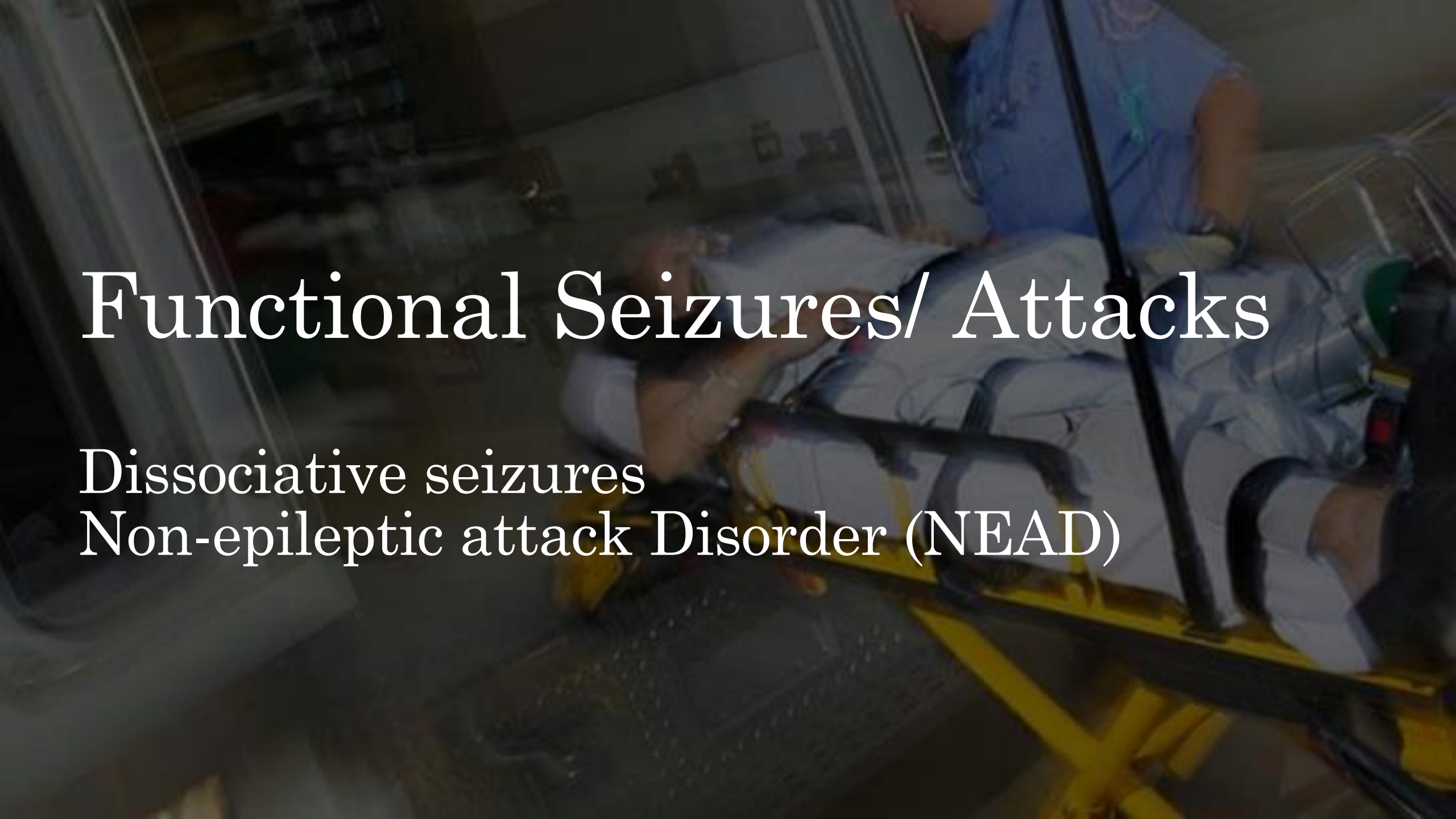
Dickson et al (2017) *BMJ Open*
Stephen, CD (2020) *JAMA Neurology*

Challenges in the Acute Setting

- For clinicians
  - Time pressures
  - Prioritisation
  - Lack of training
  - Lack of familiarity
  - Lack of confidence



- For patients
  - Desperation
  - Distress
  - Vulnerability
  - Fear of not being believed
  - Fear about cause of symptoms
  - Previous negative experiences
  - Trauma



Functional Seizures/ Attacks

Dissociative seizures
Non-epileptic attack Disorder (NEAD)

Functional Seizures

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Seizure emergencies in May 2012 in Yorkshire (pop 4M)
11% (10/91) were dissociative seizures

300000 emergency seizure admissions in England.
Only **0.4%** coded as dissociative (? underdiagnosis)

For self-terminated seizures, diagnosis can be made outside of the inpatient setting

Ongoing convulsive seizures require urgent diagnosis

Dickson et al 2014 *BMJ Open* Dickson et al 2018 *BMJ Open*

Prolonged Convulsive Seizures

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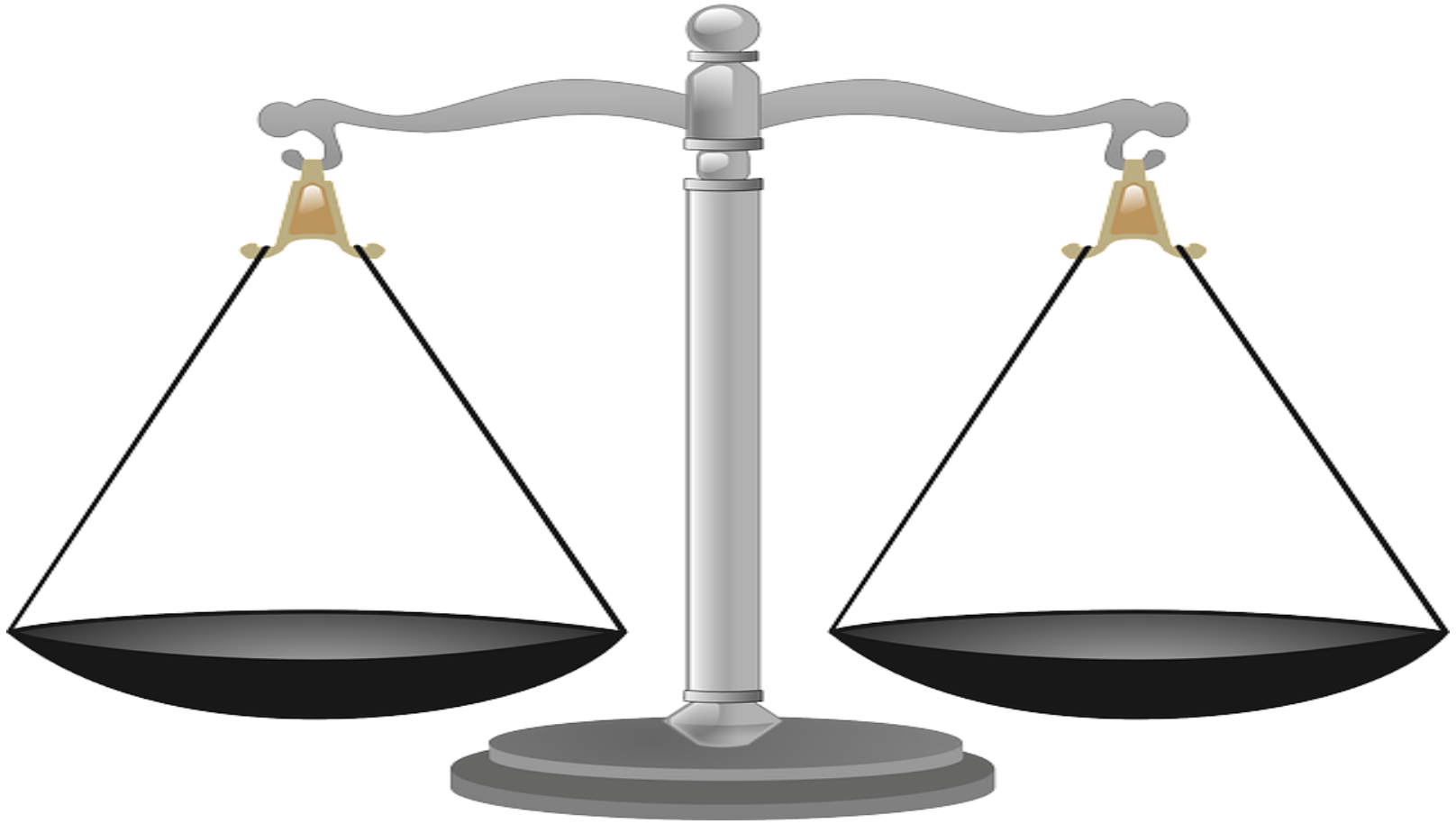

Iatrogenic Harm

Neuronal damage

Status Epilepticus

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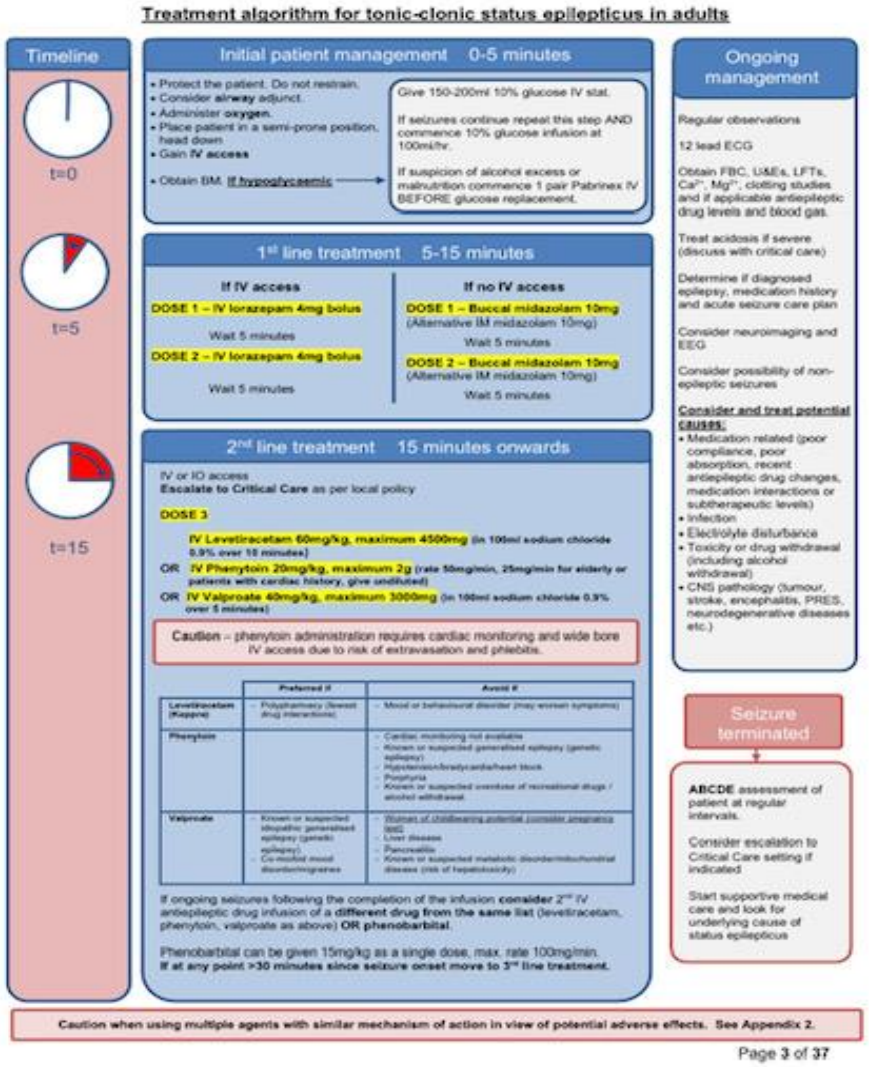

Convulsive seizure lasting > 5 minutes

Mortality rises with longer duration

>30 mins	**19%**
10-29 mins	**3%**

Neuronal damage at >80 minutes (hippocampal) in baboons

Long term consequences after 30 minutes in humans

DeLorenzo et al 1999 *Epilepsia*
Meldrum et al 1973 *Arch Neurol*
Trinka et al 2015 *Epilepsia*

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Misdiagnosis is common

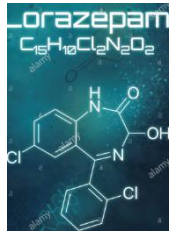
- **ESETT**

- **10.5%** of 313 cases over 8 years old
- **20%** of patients age 18-29 years
-
- Of those patients:-
  - 48% adverse effects
  - 30% admitted to ITU
  - 12% intubated

- 26.1% misdiagnosis rate in refractory

epilepsy patients

Chamberlain et al 2020 *Lancet*
Smith et al 1999 QJM



Consequences of Misdiagnosis

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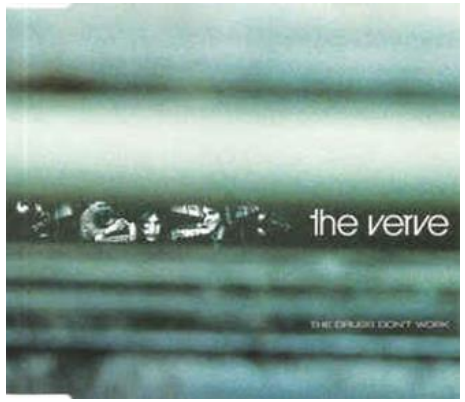

- **Benzodiazepines**
  - Can promote dissociation
  - 23 % of patients with DS have obesity/ apnoea

- **Intubation and Mechanical Ventilation**
  - **15 %** of patients in A&E with DS end up intubated
  - 18-27% of all patients with dissociative seizures have been to ICU

- **Mortality**
  - 17 year old who died after recurrent admission with firm diagnosis of 'NEAD'
  - Mortality from vEEG confirmed dissociative seizures. Of 55 deaths, **24%** had 'epilepsy' recorded as the cause of death

Holtkamp et al 2006 *Neurology*
Popkirov et al 2018 Eur J Neurol
Viarasilpa et al 2020 *Seizure*
Reuber et al 2004 *Neurology*
Nightscales et al 2020 *Neurology*

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Psychological Consequences

- **Traumatic subjective experience**
  - Physical restraint
  - Repeated painful stimuli to assess GCS
  - Insertion of catheters and lines

- **ICU associated PTSD** (approx **10%**)
  - Higher risk with psychiatric risk factors
  - **18-27%** of all patients with dissociative seizures have been to ICU

Prolonged Convulsive Seizures

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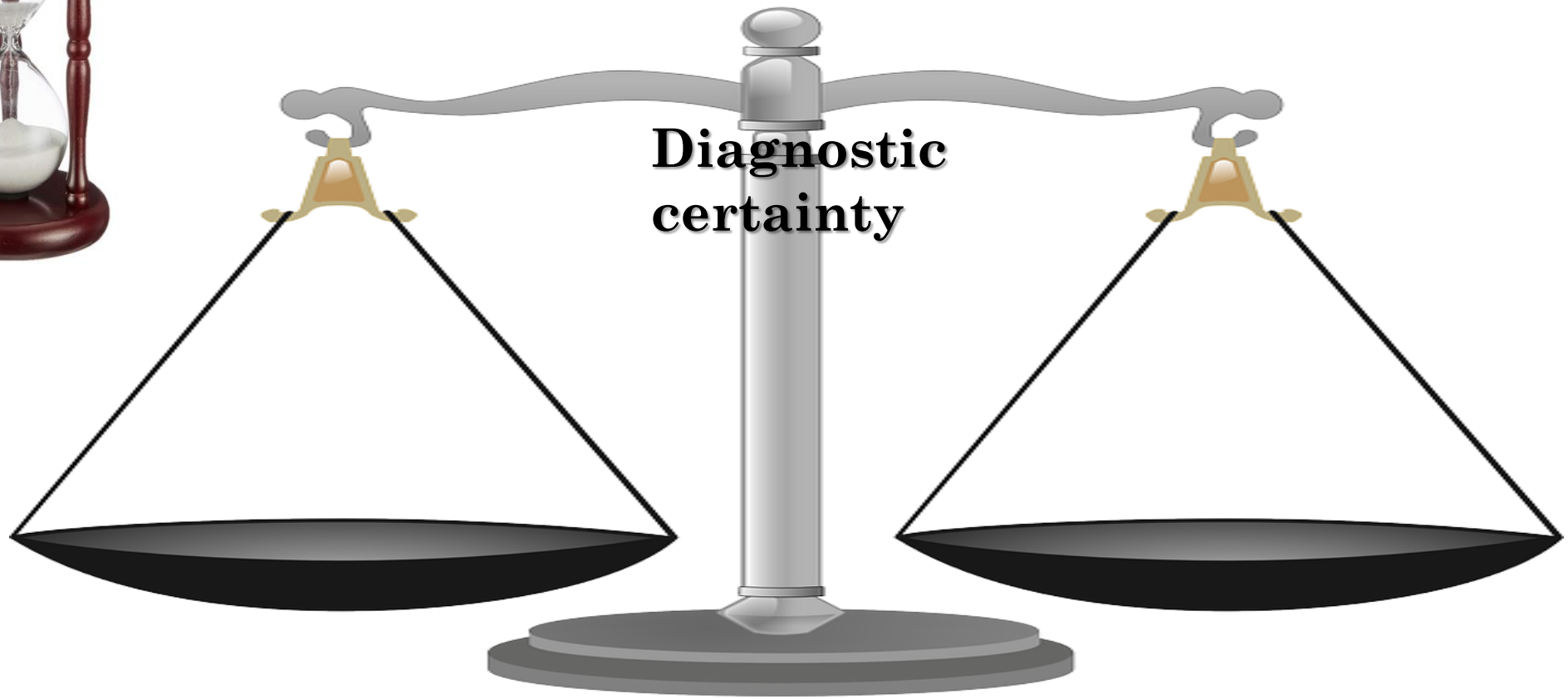

Iatrogenic Harm

Neuronal damage

Raised index of suspicion

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- Age 18-29 years
- Depression (40%)
- Panic (20%)
- Sleep disorders (33%)
- Chronic pain (47%)
- PTSD (38%)
- Personality disorder (25-67%)
- Epilepsy (12%)
- Migraine (50-60%)
- Functional movement disorder (5%)

Chamberlain et al 2020 *Lancet*
Popkirov et al 2019 *Epileptic Disorders*

Amongst intubated patients

* Age <50
* Female
* White
* psychiatric disorders
* No intracranial abnormality
* Systolic BP < 140 mmHg

* 5-6 of these factors
* **= 86% likelihood of dissociative seizures**

Viarasilpa et al 2020 *Epilepsy & Behaviour*

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Semiology

	sensitivity	specificity
Eyes closed	34-88%	**74-100%**
Eyelid Flutter	50%	**100%**
Fluctuating Course	69%	**96%**
Asynchronous Movements*	44-96%	**93-96%**
Pelvic Thrusting*	1-31%	**96-100%**
Side-to-side thrusting	25-63%	**96-100%**
Ictal Crying	13-14%	**100%**

Avbersek and Sisodiya 2010 *JNNP*
Syed et al 2011 *Ann Neurol*

* beware FLE

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Ictal Examination

- Change in seizure in response to others found in 50%
  - **100% specific**
- Flutter/ blinking on eyelash rub
  - **100% specific**
- Active resistance to eye opening/ geotropic gaze
  - **100% specific**
- Avoid provocation with discomfort

Syed et al 2011 *Ann Neurol*
Wardrope et al 2020 *Epilepsia*
Rosenberg 1982 *J Clin Neurooptha*lmology

Management of Functional Seizures

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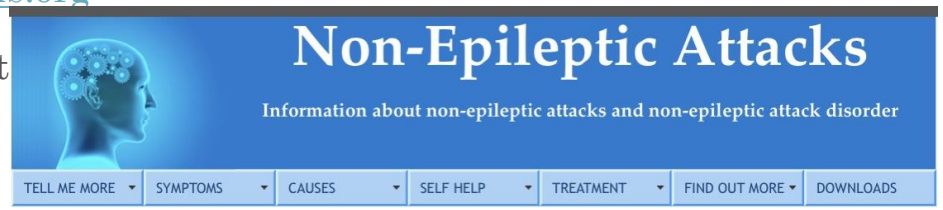
- **Slow down/ de-escalate**
- Reduce number of people in room
- **Talk to the patient**
  - Grounding (describe what is happening, engage the senses)
  - Suggest cessation of seizure
- Explain to the family
- Avoid sedation/ medication or placebo
- Avoid invasive procedures
- Communicate diagnosis clearly and sympathetically
- **Patience**
- Signpost to sources of information

- www.neurosymptoms.org
- www.nonepilepticatt



Improving Care

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- **Empower and educate patients**
  - Wristbands/ screen savers
  - Information about risks of hospitalisation and treatment
  - Hospital passport
  - Letters re diagnosis

- **Train first responders and ED staff**
  - To recognise signs
  - Convulsive dissociative seizures can be diagnosed with 96% accuracy from smartphone video (or real life!!)
  - Video-aided courses increase diagnostic accuracy
- **Alerts in ED** (eg senior review/ look at neurology letters before imaging/ treatment)
- **Treatments and specialist clinics**

Tatus et al 2020 *JAMA Neurology*
Gronheit et al *in preparation*

Therapy is hard work, and not for everyone

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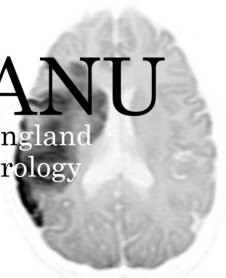
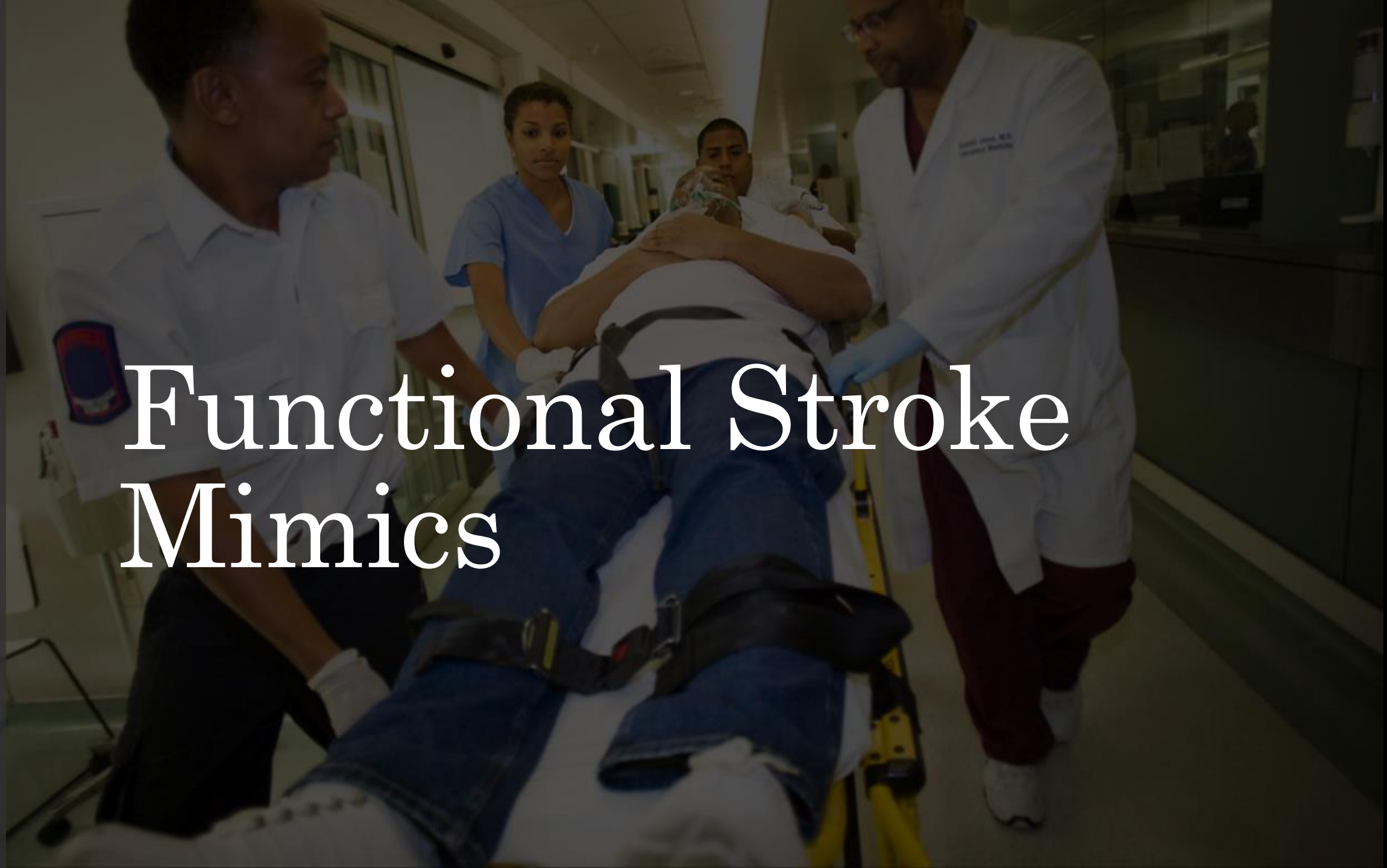


Likely to benefit

- Patient fully accepts diagnosis
- Quick to (positive) diagnosis, few comorbidities, no polypharmacy
- 'Internal locus of control', ACTIVE participant
- 'Simple' PTSD
- Insightful, reflective, bright (enough)

Barriers

- Still seeking organic explanation
- Entrenched sick role, brain health compromised, medically unstable – often iatrogenic!
- 'Fix me', passive
- Complex trauma
- Symptoms eat into session time
- LD



Functional Stroke Mimics

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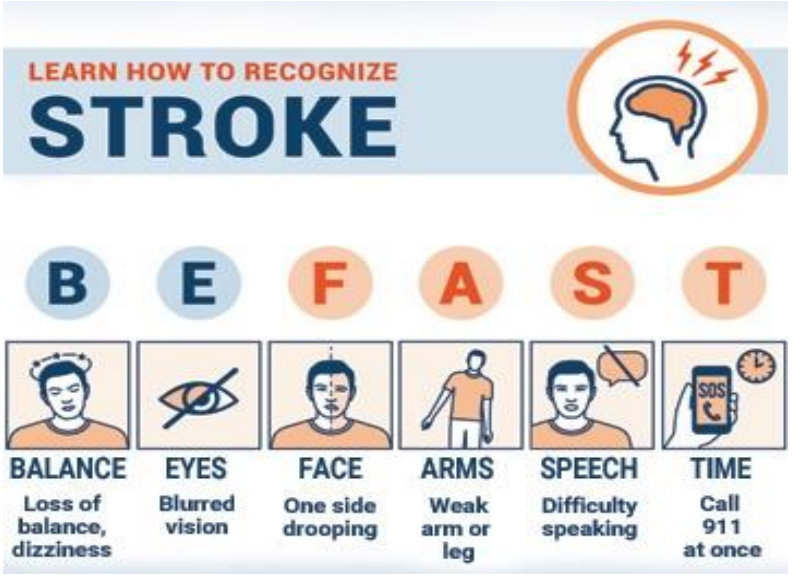
Acute Stroke Treatment

- Target door to needle time <60 minutes
- Treatment window 4.5 hours
- Time is brain!



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Speed vs Accuracy

Increased speed to treatment correlates with decreased diagnostic accuracy (2010-2014, n=121)

- Door-to- needle down from 89 to 56 minutes
- tPA for mimics up from 7 to 30%!!

	Stroke treated with tPA	Stroke Mimic	%
2012	6775	134	1.9
2013	8335	195	2.3
2014	9262	268	2.8
2015	10515	373	3.4
2016	12002	695	5.5
2017	12801	740	5.5

Liberman et al 2015 *Neurology Clin Prac*
Ali-Ahmed et al 2019 *Circ Cardiovasc Qual Outcomes*

FND misdagnosed as Stroke

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- **Symptoms**
  - 70% weakness or sensory disturbance
  - 17% speech/ language problems

- 8% of all suspected strokes are FND (98/904 in London, 161/1961 in Doha)
- 1.3% of tPA treated 'strokes are FND (132/10436)
- 9% of people with functional stroke mimics receive tPA (5/56)

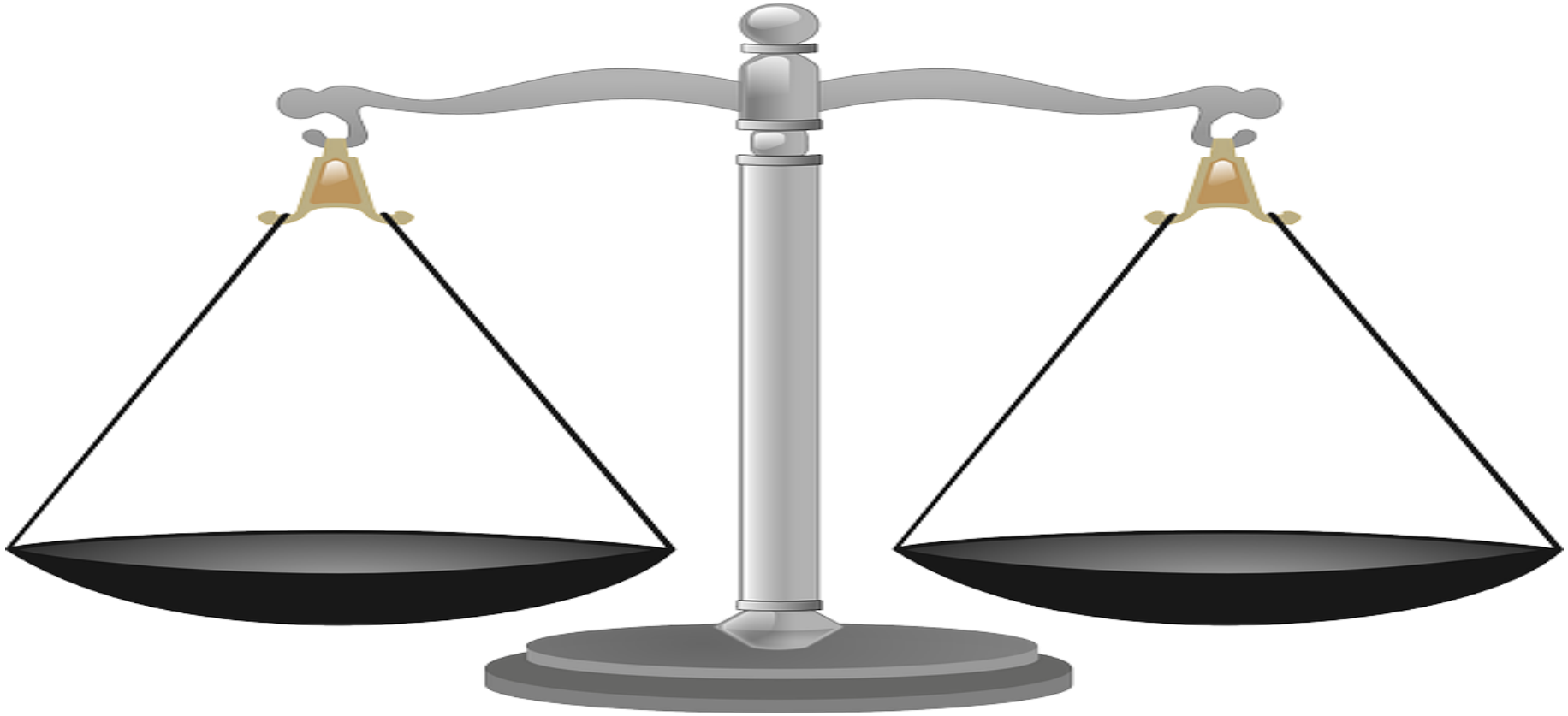
Gargalas et al 2017 *JNNP*
Wilkins et al 2018 *Psychosom Med*
Keselman et al 2019 *Eur J Neurol*
Jones et al 2019 Eur J Neurol
Jones et al 2020 *J Psychosom Res*

Risks of Misdiagnosis

- 2517 stroke mimics all treated with tPA
  - **1.5% complication rate**
    - 0.4% symptomatic haemorrhage
    - 0% serious or life threatening systemic haemorrhage
    - 1% other serious complication
    - ?? Under reported

Ali-Ahmed et al 2019 *Circ Cardiovasc Qual Outcomes*

Acute Decision Making



Iatrogenic Harm

Neuronal damage

We need to be certain as risks of not treating are high

Raised index of suspicion

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- **Stroke mimic**
- Age < 50
- epilepsy
- migraine
- Isolated sensory deficit

Ischaemic Stroke

*Age > 70
*Atrial fibrillation
*Hypertension
*Facial weakness

Stroke mimic prediction scales have specificity of 53-88%
(validated on 257 tPA patients)

Tu et al 2020 *BMC Neurol*

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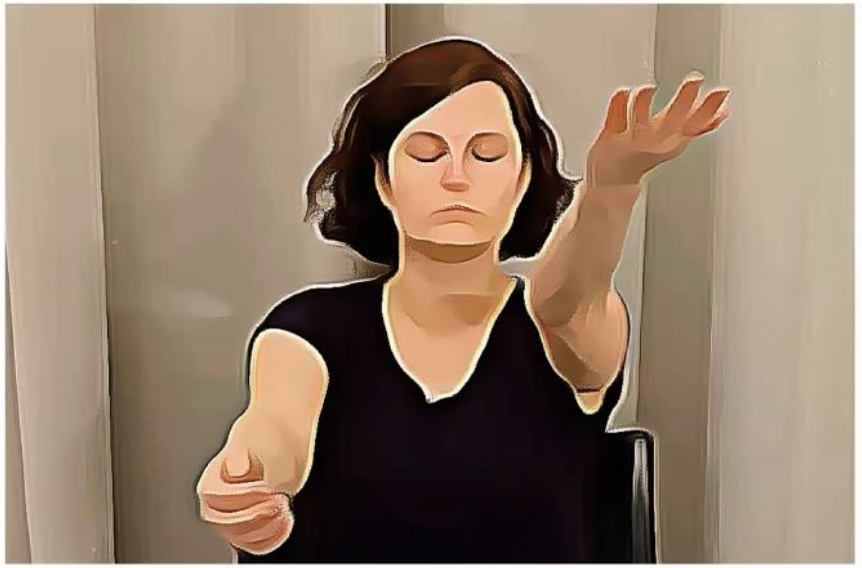
Clinical Signs

Drift without pronation for functional arm weakness

functional arm weakness



upper motor neuron weakness

Positive predictive value of: **93-100%**

Stone and Aybeck 2016 *Handb Clin Neurol*
Image Popkirov et al 2020 *Stroke*

Clinical Signs

Hoover sign for functional leg weakness

Positive predictive value: **67-100%**

Stone and Aybeck 2016 *Handb Clin Neurol* McWhirter et al 2011 *J Psychosom Res*
Image Popkirov et al 2020 *Stroke* *Mohebi et al 2019 J Neurol*

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Clinical Signs

- **Functional facial weakness**

Stone from www.neurosymptoms.org

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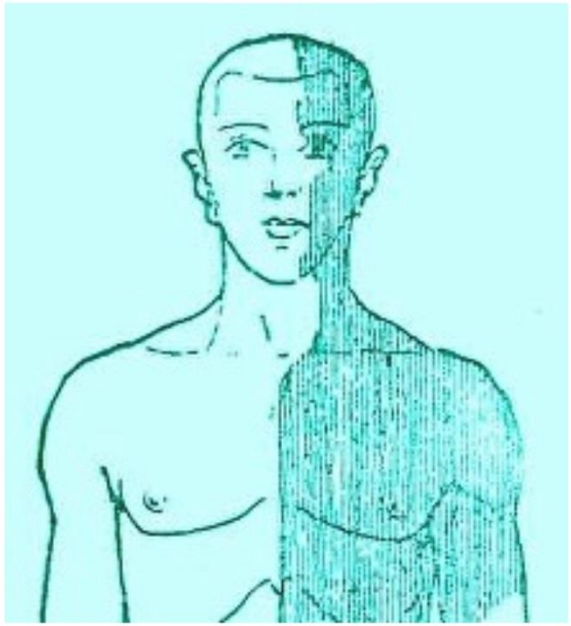
Clinical Signs: sensory

- Not specific or sensitive enough
  - Midline splitting
  - Non-anatomical distribution
  - Splitting of vibration sense



- **Isolated hemisensory syndrome** (n=79)

sensory symptoms:

• in stroke	**100% negative**	11% positive
• In FND	67% negative	56% positive

Popkirov et al 2020 *Stroke*

Pei Xuan Koh et al (in press)

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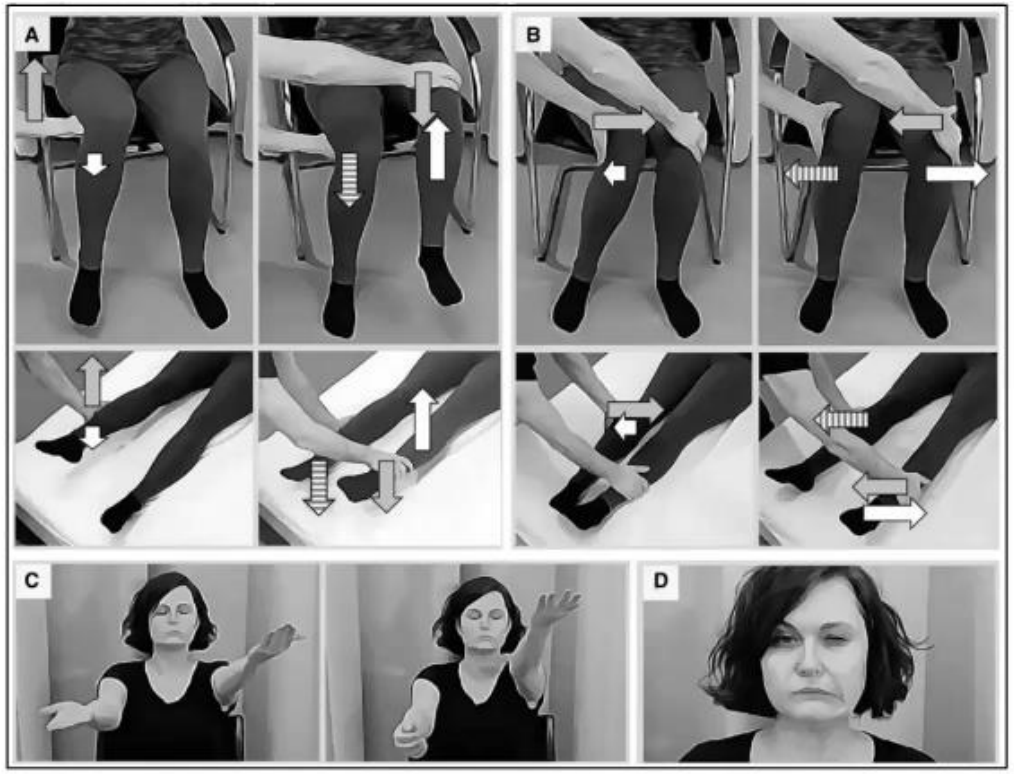
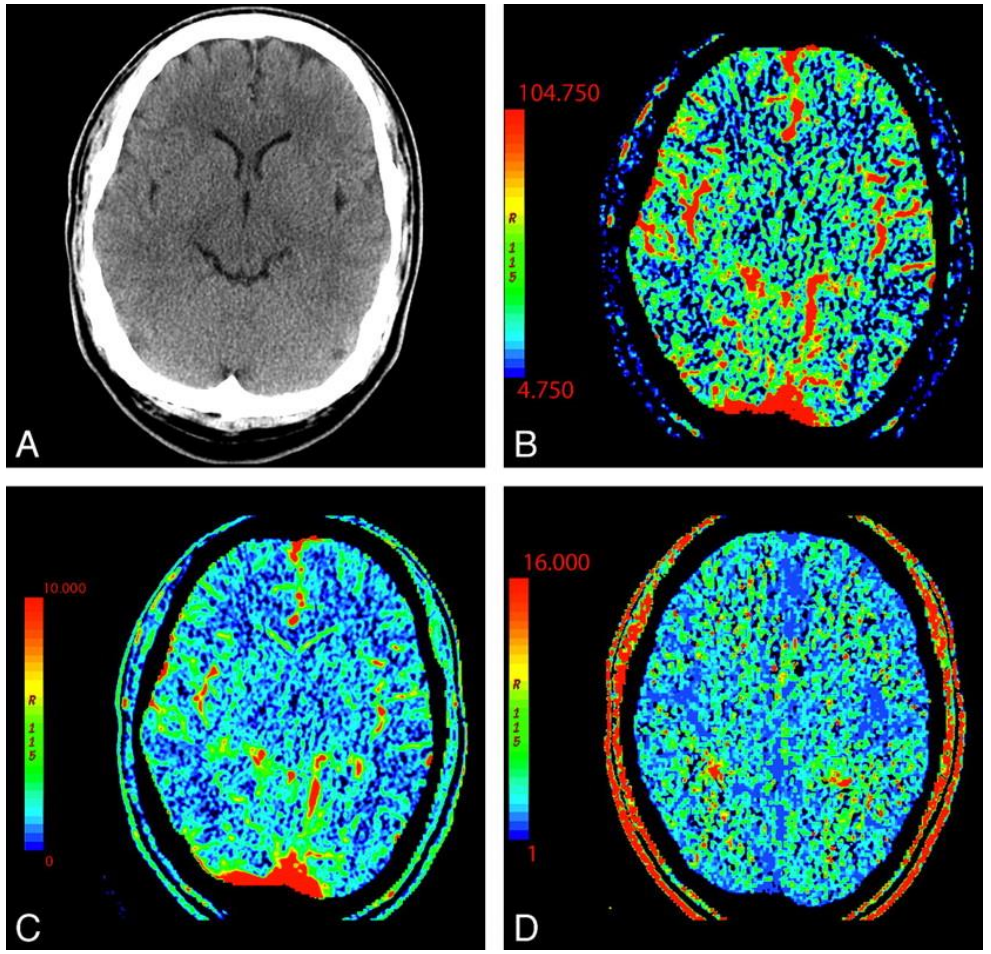
Acute Diagnosis





- Examination
- Imaging

Functional Movement Disorders

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- 1.4 % of emergency neuro consults are for movement disorders
- **20% of these are functional**
- Often abrupt onset
- Stroke misdiagnosis common in > 60 year olds (21%)

Perez et al 2020 *J Neuropsychiatry Clin Neurosci* Dallocchio et al 2019 *Neurol Sci*
Batla et al 2013 *Mov Disord*

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Functional Dizziness

- Persistent Posturoperceptual Dizziness (PPPD)
- Usually chronic
- 8-13% of all ED dizziness presentations
- 30% of BPPV and vestibular neuritis patients develop PPPD in the longer term

Popkirov et al 2018 *Pract Neurology* Heinrichs et al 2007 *J Psychosom Med*
Royle et al 2011 *Eur Neurol* *Godemann et al 2005* J Psychiatry Res
Jahn et al 2020 *J Neurol*

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Acute Management

- Explain diagnosis
  - Be clear
  - Be honest about uncertainty
  - Acknowledge the limitations and aim of emergency workup
  - Consider admitting for further tests *and treatment*
  - ? Stroke unit
- Physiotherapy
- Occupational Therapy
- Speech and Language Therapy
- Psychology
- Give information: www.neurosymptoms.org

Nielsen et al 2015 *JNNP*
Anderson et al 2019 Seminars Neurology

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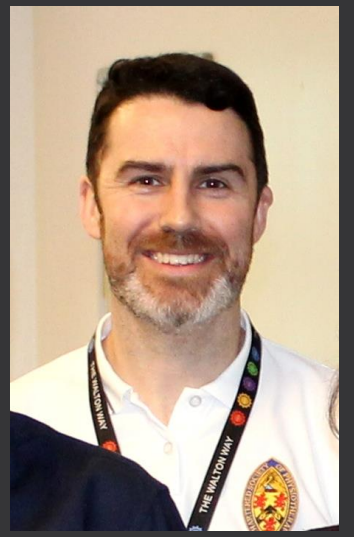
Functional Motor Disorders and Treatment



Walton Centre FND Service

FND Service

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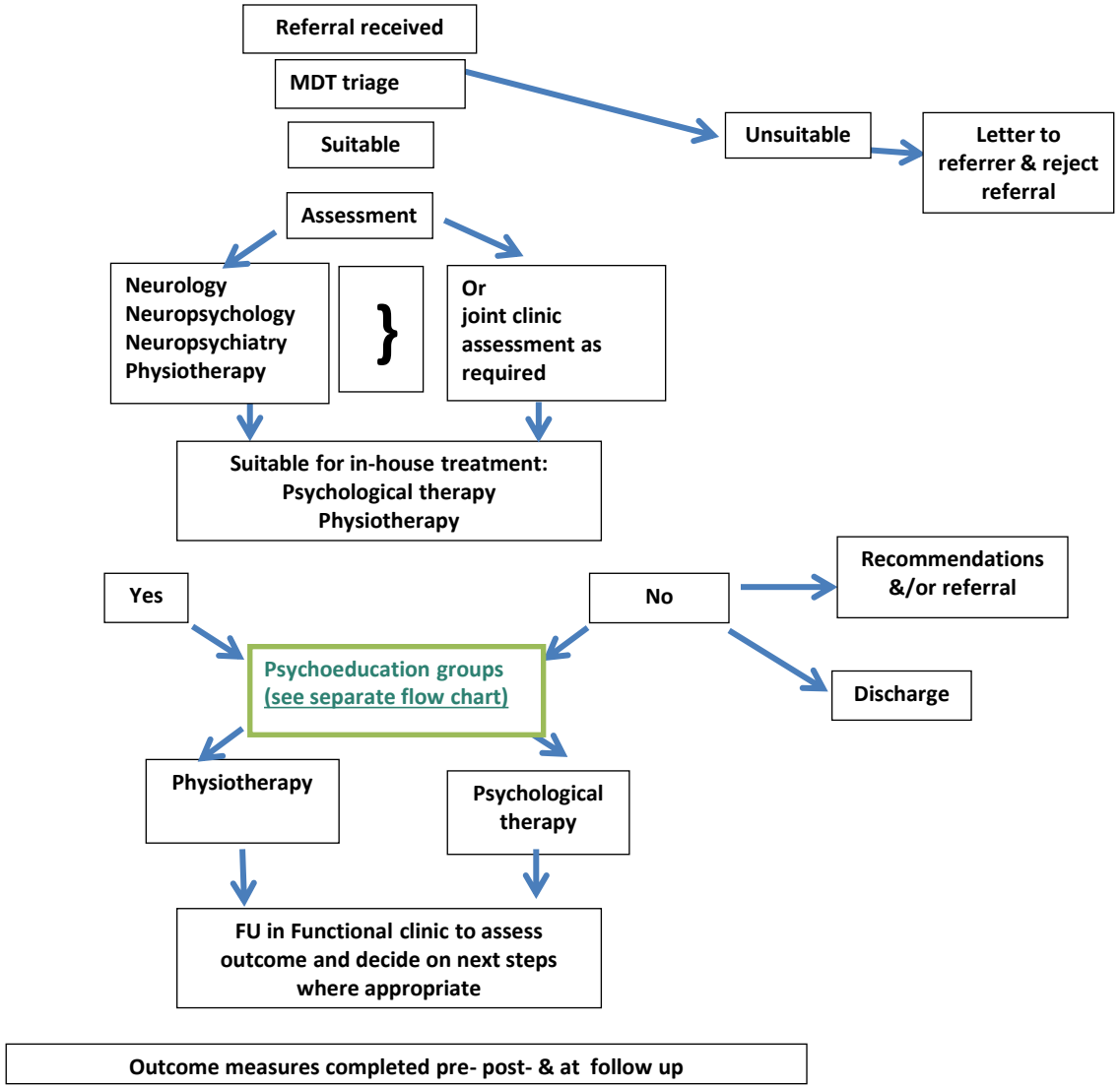
SOP

Patient satisfaction

Clinical Outcomes

Capacity/ Demand

Plans for development



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Cost of Therapy

12 sessions of Psychotherapy

or Physiotherapy costs less than £1000 per patient

- Video EEG £2000
- EEG
- Ambulance call out £252
- A&E visit £419
- Week in Hospital £2500

- Beta Interferon 44mcg
  - £10,572 per year
- Lamotrigine 250mg bd
  - £80 per year
- Keppra 1.5g bd
  - £268 per year

Therapy Outcomes

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Short tailored psychotherapy (max 12 sessions)

- N = 110*
- Functional seizure cohort Reduced frequency in 67.4%
- More than 50% seizure reduction in 55.8%
- Better than CODES (CBT)
- Highly significant improvement in
  - SF-36
  - Anxiety and depression
  - WSAS
  - Somatic Symptoms

Physiotherapy (9 sessions)

- N = 52
- 2020 – 2022
- MRS significant improvement
- Functional mobility scores
- Median prior to treatment 1 (wheelchair). Post treatment 4 (stick)
- Improvement in self-perceived health
- Highly significant improvement in depression and anxiety scores
- All sustained at 3 months
- Collecting longer term data

Prognosis

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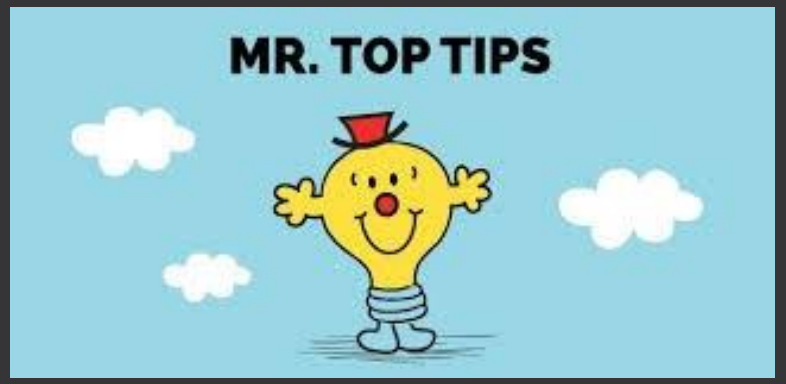
https://www.youtube.com/watch?v=oRw5s_04lMw



Conclusions

Three top tips for clinicians

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1. FND is a positive diagnosis

- Problems with a 'Diagnosis of Exclusion'
  - Confusion and anxiety for the patient
  - Delay to diagnosis and therefore treatment
  - Avoidable healthcare costs
  - Gives the impression that we do not know what is causing the symptoms

- Duck Test
  - We can often recognise FND
  - Avoid unnecessary investigations

"Walks like a duck, looks like a duck, but I need some more quacking tests first."

2. Our Words Matter

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- **Terminology**
  - Avoid 'psycho' (patients hear 'psycho', mad etc)
  - Avoid 'pseudo' (implies fake)
  - Avoid negative terminology
    (tells the patient what is *not* wrong with them, gives the impression that we do not know what is)

Be honest
Be clear
Show empathy

" PAMELA, I'M OUT OF EUPHEMISMS. "

3. Don't fear the consultation

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Most people just want to understand what is causing their symptoms

Carson et al JNNP 2015

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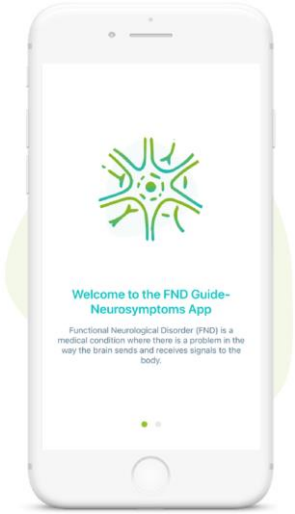
4. Offer a follow up

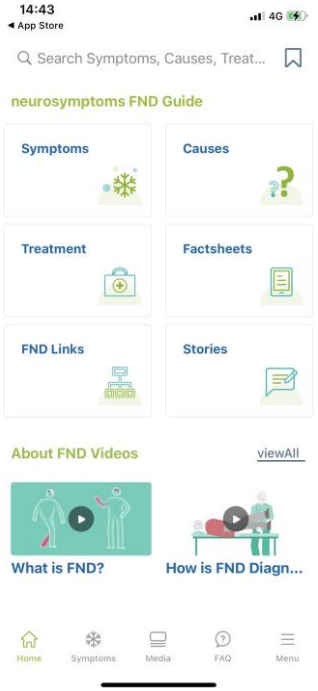
- Understanding the diagnosis is usually a process not a one stop
- We need to have a good understanding ourselves
- Explain patiently and give information
- See the person again to give them a chance to ask questions/ challenge the diagnosis

www.neurosymptoms.org

FND Hope

'Taking control of your functional neurological symptoms'





Take Home Messages

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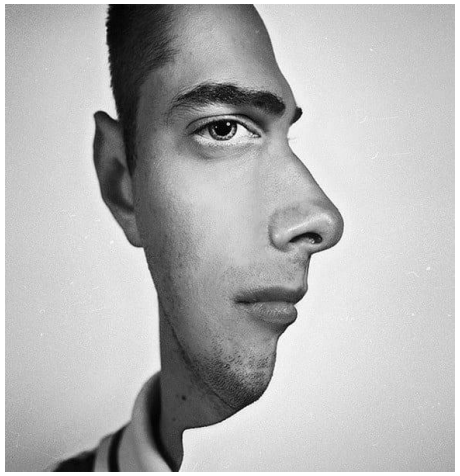
- **Non specialists can recognise FND**
- **Be mindful of our words and behaviour**
- **Don't *under*estimate the specificity of clinical signs for functional seizures**
- Imaging is needed for most hyperacute cases of functional weakness
- **Be honest about diagnosis and uncertainty**
- Signpost to useful information and support
- There are evidence- based and cost-effective treatments
- Onward referral to neurology

www.neurosymptoms.org
www.nonepilepticattacks.info

FND HOPE
FUNCTIONAL NEUROLOGICAL DISORDER

The Walton Centre NHS
NHS Foundation Trust

Excellence in Neuroscience



Questions??

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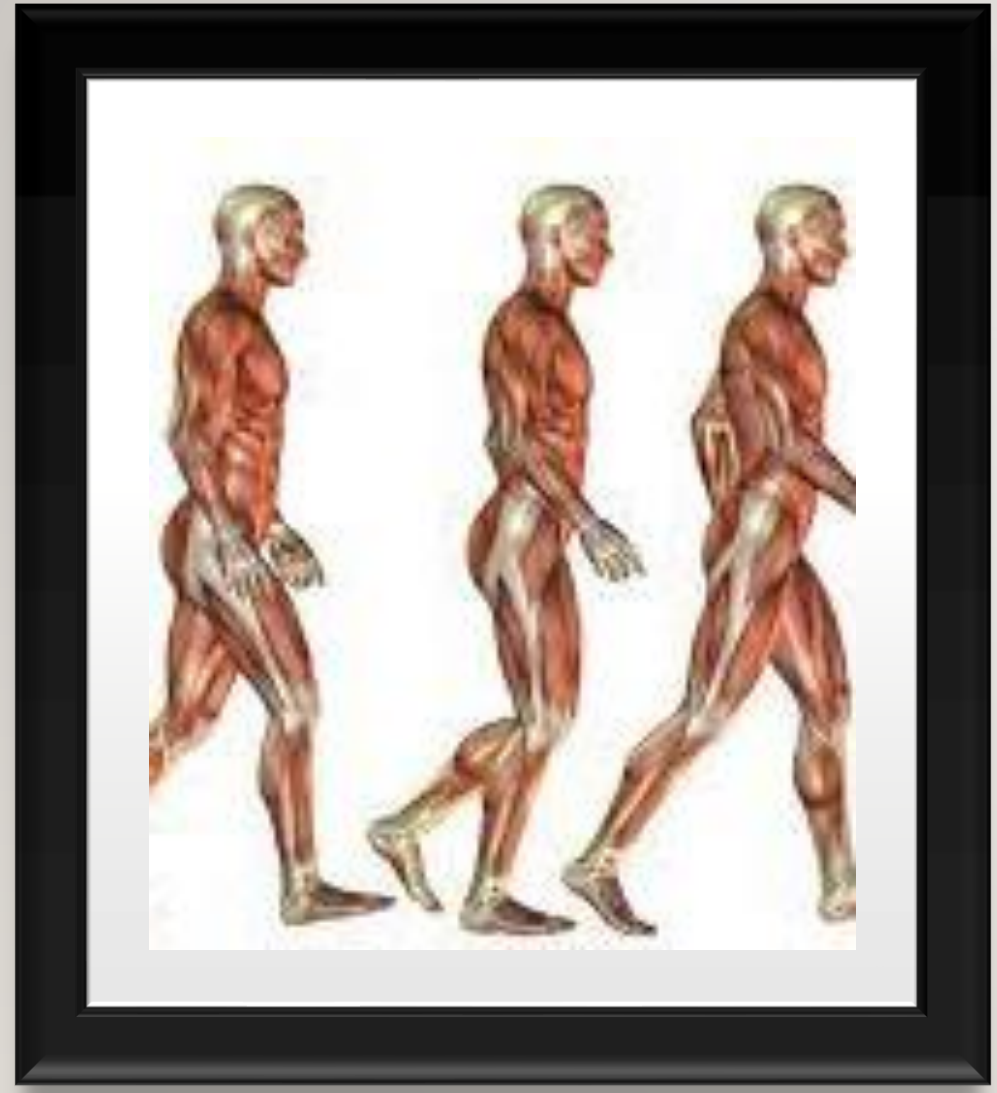


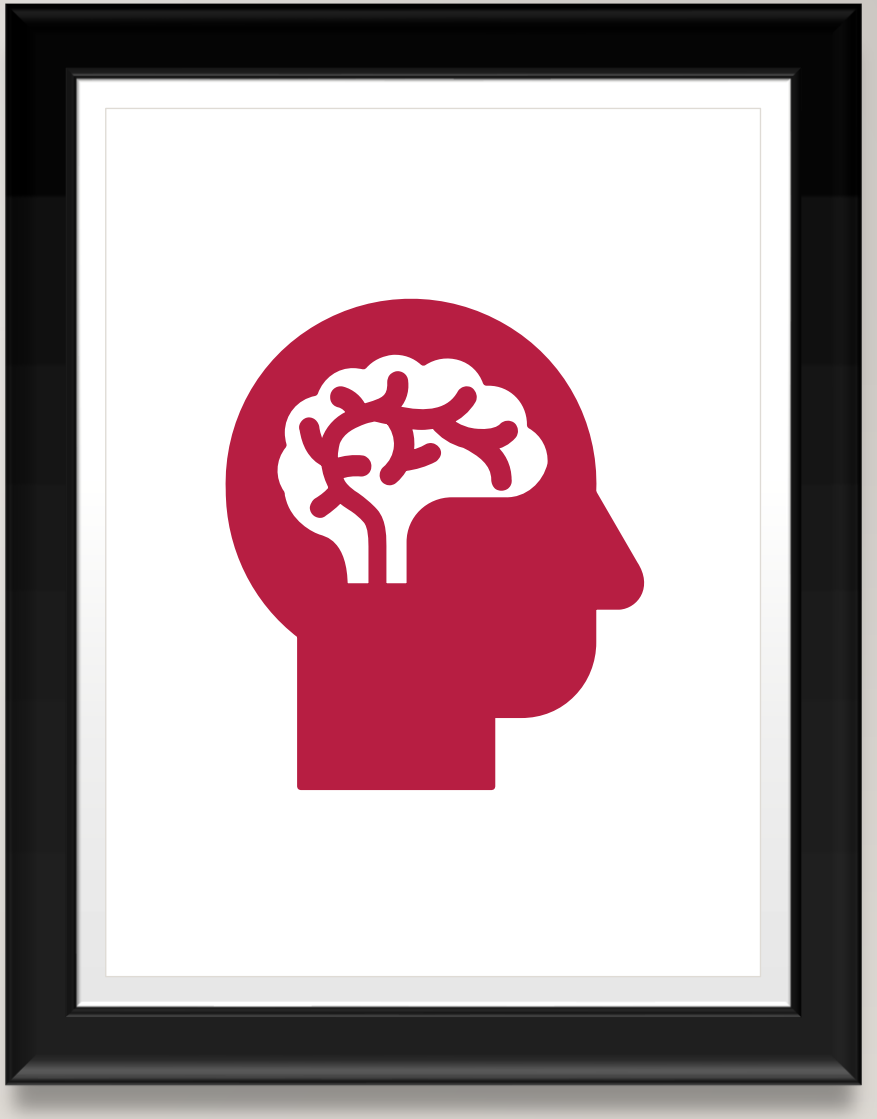
PHYSIO FOR FUNCTIONAL MOTOR DISORDER (FMD)

MICHAEL WALSH

NOVEMBER 2023

LEARNING OUTCOMES – WHAT'S DIFFERENT!!!

- Brief what is FMD
- Current evidence
- Assessment
- Physiotherapy Treatment
- Clinical pathway recommendations
- Summary



WHAT IS IT?

- FMD is a common condition where people experience abnormalities of control of movement, for example weakness of limbs, loss of balance, walking difficulties, tremors, jerks, abnormal movement or posture of the limbs (functional dystonia).
- The ‘basic wiring’ of the nervous system is intact and can work but there is a problem with how it is functioning.
- The problem lies in someone's ability to access or control their own body. Not ‘put on’ or ‘all in the mind’.
- Involuntary but learned habitual movement pattern driven by abnormal self directed attention.

BACKGROUND AND RESEARCH

Physiotherapy for functional motor disorders : a consensus recommendation, Nielsen et al, 2014

- Group of experts met with extensive experience in treating FMD.
- Produced a set of consensus recommendations based on current evidence and experience.

Concluded

- Physio has a key role in the MDT management of patients with FMD
- Specific techniques are useful in FMD but require evaluation

BACKGROUND AND RESEARCH

- Recommendations/specialist intervention tested –
  - **Outcomes of a 5 day physiotherapy programme for functional (psychogenic) motor disorders, Nielsen et al, 2014**
  - Cohort study of 47 patients
  - They conclude that specific treatment techniques are important and have the potential to improve physical function, quality of life and may prove to be a cost effective treatment for selected patients with FMD.
  - There is other evidence supporting physical therapy – both IP and OP

BACKGROUND AND RESEARCH

Randomised Feasibility Study of Physiotherapy for Patients with Functional Motor Symptoms, Nielsen et al, 2017

- 60 patients – intervention vs control
- Good results
- Outcome – RCT is needed

CURRENT – Physio4FMD (multi centre RCT)

- Walton involved
- Awaiting paper to published

KEY COMPONENTS OF PHYSIOTHERAPY

- Assessment
- Education
- Movement retraining
- Self-management
- Follow up

PHYSIOTHERAPY SUBJECTIVE ASSESSMENT – DON'T RUSH

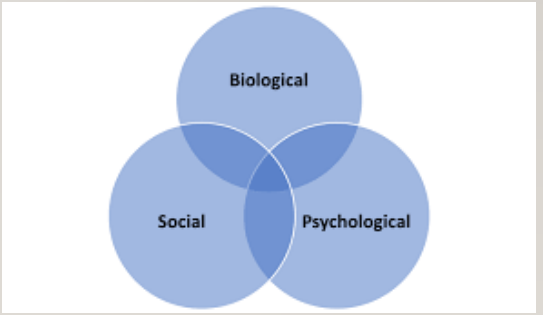
Aims

- To gain a greater understanding of range of symptoms experienced
- The effect on day to day function
- Patients understanding and level of confidence in the diagnosis – prognostic indicator
- Identifying goals for treatment and motivation to improve
- Gaining rapport – poor previous experiences

ASSESSMENT AS TREATMENT – AKA JOHN STONE

History

- Symptom onset and progression – how and when symptoms started may reveal triggering event.
- Explore symptoms – variability, severity, frequency, exacerbating and easing factors
- Other important factors - pain, fatigue, sleep, medication, mental health
- SH – stressors, children (LD), work, support network
  - 24 hour picture, aids and equipment, activity limitations and participation



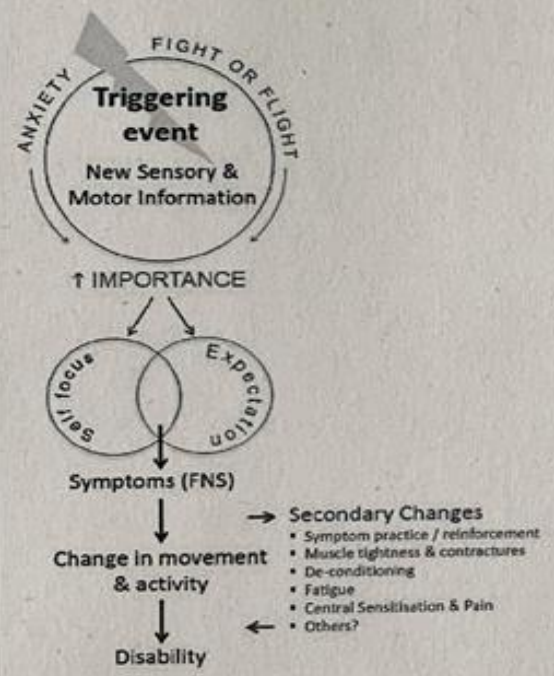
PHYSICAL EXAMINATION - VARIABILITY, DISTRACTIBILITY, INCONSISTENCY AND INCONGRUENCY.

- Not necessarily a full neuro examination.
- Explore movement together and let them show you what's wrong
  - Task over impairment – posture, sit to stand, transfer, walking (look for variability)
- Demonstrate and discuss **+ve signs** which show potential for normal movement. Help to explain role of **attention** and **distraction**. Reinforces and can help confidence in diagnosis.
  - Hoovers/hip abd test
  - Distractible and entrainable tremor
  - Abnormal pronator drift
  - Functional gait

EDUCATION

- For some people most important component
- Understanding what it is and make sense of illness experience
- Real symptoms that are common
- Problem with function not structure
- Role of attention and expectation/motor control

SYMPTOM MODEL – NIELSEN ET AL, 2015



1. Most people (but not all) can identify an event that triggered their symptoms, such as injury, illness, reaction to medication, panic attack etc. It is different for everybody.
2. This event results in "novel data" or salient sensory and motor phenomena or symptoms. These may include pain, pins and needles, numbness, muscle twitching/ spasm/ cramping/ give-way, etc. Sometimes people experience these symptoms without an obvious trigger.
3. Due to the context of the triggering event or the unexpected appearance of the symptoms this is usually associated with a (normal) fight or flight (survival) response. For example shock caused by a sudden fall resulting in pain and pins and needles. Background stress or anxiety, the type that everybody experiences from time to time may also be present at this particular time and be a significant triggering factor. For example a very busy period at work, social conflict or stress from physical illness.
4. The fight or flight response changes the way the brain processes sensory and motor information.
5. The brain's attention is turned towards the symptom and the body part in a very intense way, as if looking for the danger.
6. Attention to the body impairs our control of movement. Movement should occur automatically without our conscious attention, but when we think too much about movement (or the body), it is no longer automatic and it starts to go wrong. This is the same as "choking in sport" when under pressure or actors "freezing" on stage.
7. The brain starts to expect movement to go wrong and effectively new unwanted movement patterns are subconsciously programmed and learnt by the brain.
8. *Self-focus* and '*brain-expectation*' drive the symptoms.
9. Due to the symptoms, we change what we do and how we do things. For example we may become dependent on a wheelchair to get around, we may avoid certain activities or positions due to pain, we may sleep more due to fatigue.
10. Over time secondary changes occur due to the symptoms and changes in our behaviour, for example - secondary weakness, muscle contracture, sensitisation of pain and exacerbation of fatigue.
11. The end result is increasing disability.

Fig. 1 Symptom explanation

ATTENTION OR SELF FOCUS

- New unexpected symptoms/information on a background of possible panic/anxiety
- Brains focus directed towards the symptom and body part
- **Attention -** Attention to the body impairs our ability to move normally.

Movement is an automatic process using automatic parts of the brain. Should happen without our conscious attention. When we think too much about movement (or the body) the thinking part of the brain interferes with the normal automatic control of movement.

Examples – choke in sport, freeze on stage.

EXPECTATION

- **Motor control –** The brain starts to expect movement to go wrong, and new unwanted movement patterns become subconsciously programmed and learnt by the brain. This causes the brain to choose the wrong motor programmes.
  - Movement is based on expectation or prediction.
  - Brain doesn't always get it right. Illusion. **(Video)** https://youtu.be/G-lN8vWm3m0
  - Body's representation (body map) in your brain changes all the time, this is called **neuroplasticity.** It is dependent on what information is fed into the brain and affects how we perceive our body.
  - Attention and brain expectation drive symptoms of FND.

MOVEMENT RETRAINING

- Not standard physio exercises.
- Shift focus away from the body – task not impairment.
- Speed, rhythm, change habitual resting postures and patterns of movement (automaticity)
- Repetition and feedback including video
- Graded progression to develop confidence, mastery and success (**can change**)

MOVEMENT RETRAINING

- Can be specific to symptom e.g. tremor/jerk/weakness/gait
- **Explore** – find movements and strategies that help normalise movement. Different patient to patient.
- **Distraction or redirect attention** – mirror, bilateral limb movements, competing movements, whole body movements, weight bearing, alternative resting postures (**examples)**

CASE STUDY 1 – HPC

- Symptoms started when 17 with DS
- As came round leg weakness
- Happened again a week later this time lost awareness and fell downstairs
- After one episode had a 3/52 hospital admission as couldn't move legs and numbness
- Normal MRI, LP and EEG
- Community therapy – mobile with 2e/c's and OT arranged aids and adaptations

HPC

- Numbness has continued below the umbilicus
- Lack of urge to pass urine
- Diagnosed with FND by Dr Burness
  - Positive hip abd test, sensory loss, functional gait and weakness
- Referred to neuro psychology and had 5 sessions. Mental health improved but physical symptoms the same.

SH/24 HOUR PIC

- Poor sleep - anxiety
- Fairly consistent routine helped by her daughter
- Can do some tasks in standing using worktop and perching stool
- Spreads activities out
- Plays with dog and daughter on floor
- Always with someone and feels dependent
- Mum cares for dad
- Enjoys doing beauty treatments and prev swimming.
- Stairs on bottom

CASE STUDY 2 - HPC

- Bilateral wrist tenosynovitis – pain. Noticed legs started wobbling when walking. Lasted few weeks then resolved.
- Started again. A+E then D/C
- Back to A+E – Incidental finding on MRI brain. Admitted and diagnosed FND.
- Continued with tremulous gait since. Stops when sits and variable in severity.
- Episode of slurred speech and word finding difficulties (headache exacerbates)
- Headaches, low mood, anxiety, brain fog, reduced memory and concentration, fatigue, poor sleep and pain left leg.

SH/ 24 HOUR PICTURE

- Physio 6-7 months. Walking continued to be tremulous. D/C as unsure what to do to help
- Private neuro psychology 20 sessions
- Works full time and can be stressful/long hours
- Lives mum and dad
- Enjoys going out for a walk and meditating
- Fully independent in all tasks. Walks outdoors with stick although limited ++ and effortful. Everything takes longer.

CASE STUDY 3 – HPC

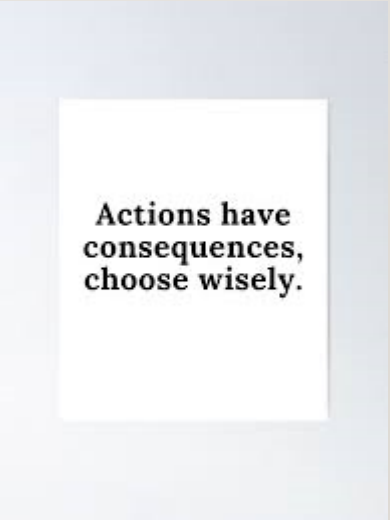
- Noticed change in voice and difficulty breathing.
- Admitted hospital. I+V. Trache. Diagnosed paralysed larynx.
- Made a good recovery physically but burdened by trache.
- Later that year developed right weakness and difficulty walking.
- Admitted hospital. Felt there was no clarification regarding diagnosis or explanation for symptoms. IP 3 months. Very difficult time. Made some progress physically on D/C
- Private neurologist who diagnosed PD. Very worrying and distressing. Second opinion – not PD
- Later diagnosed FND at Walton. Took roughly 1 year.
- Functional weakness and gait, blackouts (resolved), fatigue, poor concentration and low mood

SH/24 HOUR PICTURE

- Retired electrical engineer
- Lives with wife in a house
- Walks with quad stick and foot up splint. Stair lift. Roughly 5 falls last year.
- Reduced independence and function right UL
- Scooter but walks short distances outside but very slow and effortful and fatiguing (0.7 miles)
- Previously very active – long distance runner, pushes himself and high expectations (hard to accept current situation)
- Having neuro physio and awaiting counselling.

AIDS AND ADAPTATIONS

- Careful consideration and balance as can have a negative impact on movement and function
- Reinforce the problem and can disable the person further
- Can lead to secondary problems – pain, fatigue, symptom practice, deconditioning
- Sometimes unavoidable
  - Joint decision
  - Teach to use well
  - Opportunities to move without
  - Plan of how to monitor and progress



OTHER FACTORS – EDUCATION

Pain

Fatigue

Sleep

Medication

SELF-MANAGEMENT

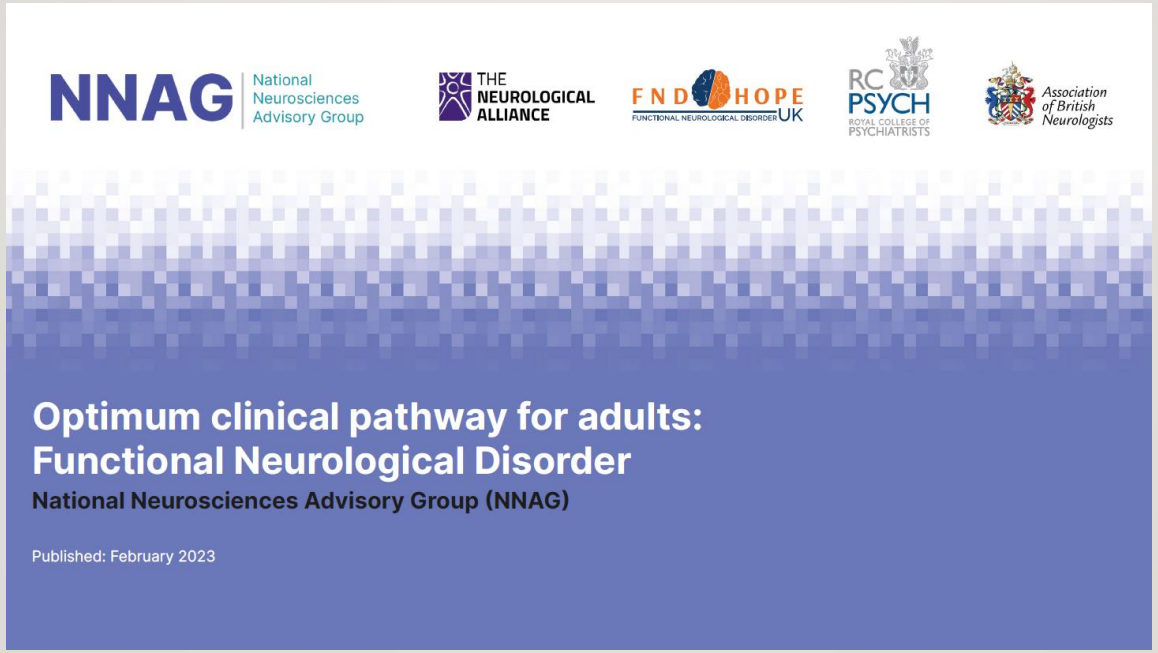
- Education and understanding
- Reflection – well, difficult, do differently
- Reinforce change with outcomes and videos
- Identify strategies that help and improve (Tool box)
- Management of pain and fatigue
- Ongoing goals with a plan of how to achieve
- Plan for difficult days and setbacks

HOW IT HELPS?

- Not great evidence
- Increased understanding through education and movement
- Positive neuroplastic changes
- Lifestyle (QOL)
- Motivation and known benefits of activity
- Alter illness perception
- Increase confidence in movement and reduce threat value
- Less attention and movement more automatic
- Change the brains expectation and beliefs

Does it really matter?

OPTIMAL CLINICAL PATHWAY FOR ADULTS



https://nnag.squarespace.com/optimal-clinical-pathway-adults-fnd-functional-neurological-disorder

MY REFLECTIONS

- Patient selection key – movement based therapy, high intensity. Limiting factors (pain, fatigue)
- Confirmed diagnosis, patient acceptance and investigations ended
- Physio vs psychology
- Rapport and knowledge in condition – previous negative experiences
- Readiness for change and maintaining factors
- Good outcomes with good patient selection

SUMMARY

- Heterogenous group
- MDT gold standard – doesn't really exist currently
- More funding and development of specialist services
- Different treatment options are necessary – not one size fits all
- Physical rehab can help – refer patients
- Education
- Movement retraining with redirection of attention to change expectation
- Self-management

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