Brain Injury, Suicide and Self Harm

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Mental Illness and Brain Injury

- Brain Injury is common - ~1.3 million / year. ~20k mod-severe.

- Psychological sequelae > physical sequelae Jennet B et al

- All mental disorders are more common following brain injury – anxiety, PTSD,psychosis, sleep disorders, depression

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Depression

- Common (~15% high income countries)and major cause of global disability. Peaks in 20-30s and again 50-60s
- Depression is characterised by the absence of a positive affect (a loss of interest and enjoyment in ordinary things and experiences), low mood, and a range of associated emotional, cognitive, physical, and behavioural symptoms. Present almost all of the time every day for at least 2 weeks.
- Classified as mild, moderate, severe, atypical dependent on frequency, severity / impact of symptoms, suicidal ideation / intent.
- Can present with psychosis – delusional beliefs, hallucinations, altered thinking.
- Dysthymia ; adjustment reactions

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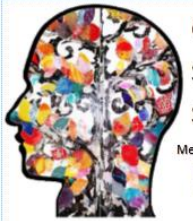

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Psychological Symptoms	Physical Symptoms	Social Symptoms
• Continuous low mood, or a nonspecific sense of sadness; • Feeling of hopeless and helplessness; • Low self-esteem; • Feeling tearful; • Feeling guilt-ridden; • Anxiety or constant worry; • Irritability and intolerance of others; • Loss of interest in previously enjoyed activities; • Persistent indecisiveness; • Having suicidal thoughts, or thoughts of self-harming.	• A slowing of movement and/or speech; • Changes in appetite or weight (usually decreases); • Constipation; • Unexplained aches and pains; • General lack of energy; • Loss of libido; • Menstrual cycle changes; • Disturbed sleep patterns.	• Doing less well at work; • Avoiding contact with friend; • Taking part in fewer social activities; • Neglect of hobbies and interests; • Having difficulties coping with home and family life.

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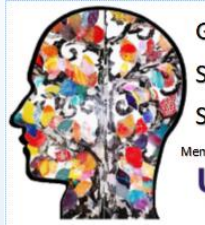

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Depression and brain injury

- Even more common – 56% 10 weeks post-TBI ; first year 57% major depressive disorder following mod to severe TBI
- under-diagnosis – atypical presentation; symptom masking
- Barriers to accessing mental health services – 60% not been asked about mental health in first 3 years following TBI;
- lack of specialist services and training for health staff
- exclusion criteria
- discharged for DNAs
- Bias; discrimination; attitude; stigma – “glad to be alive”

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Brain Injury and Suicide

- Large population-level studies have confirmed a **2x** to **3x** inflated risk of suicide following brain injury (Fann et al., 2002; Mackelprang et al., 2014; Fazel et al., 2014)
- Up to **25%** of people with brain injury think about suicide in the first year
- This is even higher for **adolescents** (Marsden et al., 2018)
- The increased risk is **lifelong** (Misono et al., 2008)
- Association with early mood symptoms, premorbid mental illness, limited education, previous suicide attempts
- Suicide associated with TBI has been the subject of numerous **UK Coroner's** Reports. A systematic review of deaths by suicide associated with TBI is currently under way (Holloway et al, written communication 2023).

"I think it took awhile before I realized...that I was going to be like this for the rest of my life, it gives me a really down feeling and it makes me think...why should I be around like this for the rest of my life?"
- VA Patient/TBI Survivor

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Suicide and Self harm following brain injury

More **severe** the injury the higher the risk….but also repeated mild TBI can lead to mood and personality changes

- Intimate partner violence
- Childhood trauma – physical abuse, neglect, emotional
- Contact sports
- Violent assaults
- Brain damage due to substance / alcohol misuse

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Why?

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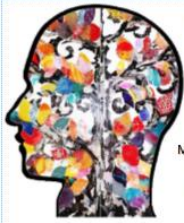

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Why?

BIOLOGICAL	PSYCHOLOGICAL	SOCIAL
Premorbid brain health Severity of injury Location and Nature of injury – frontal lobe, **limbic system** **Role of neuro-inflammation** Complications – ICU, infections **Fatigue** **Apathy** **Epilepsy** **Sensory impairment** Disability **Pain** Substance use	**Apathy** Pre-morbid mental illness Memory Concentration and attention Decreased awareness of emotional state (uncoupling of cognition and emotion) Poor impulse control - disinhibition Poor social judgements, Reduced frustration tolerance Poor problem solving Inability to plan Concrete thinking PTSD, anxiety (social phobia)	Loss of function Loss of role Loss of relationships Social isolation Poverty Homelessness Crime

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Role of Pituitary damage

- Pituitary stalk damage – direct trauma, ischaemia,cerebral oedema, base of skull fractures, acceleration/deceleration shearing injuries, blast injuries, auto-immune (APA, AHA), cytokines
- Prevalence rates of hypopituitarism post- ABI is 30-70%. Majority in first 10 days – declines over time.
- Most common problem is Growth Hormone deficiency – but also hypogonadism, SIADH
- 50% with hypopituitarism in first 6 months recover normal function within a year. 15-20% CHP
- More likely to have chronic hypopituitarism if early panhypopituitarism.

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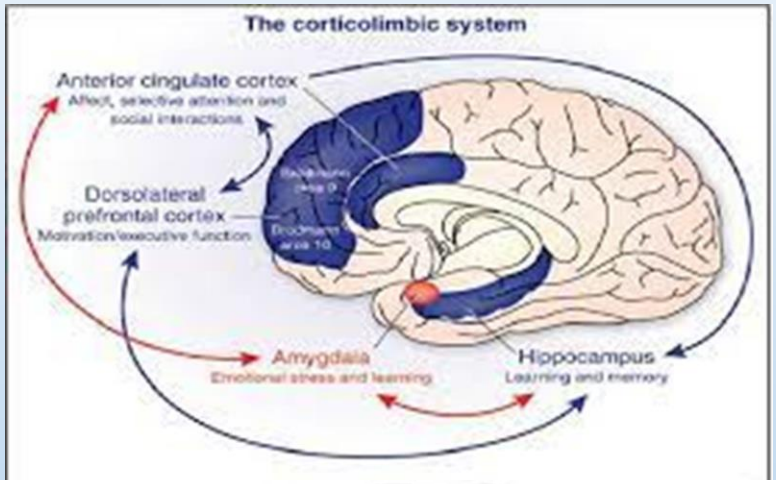
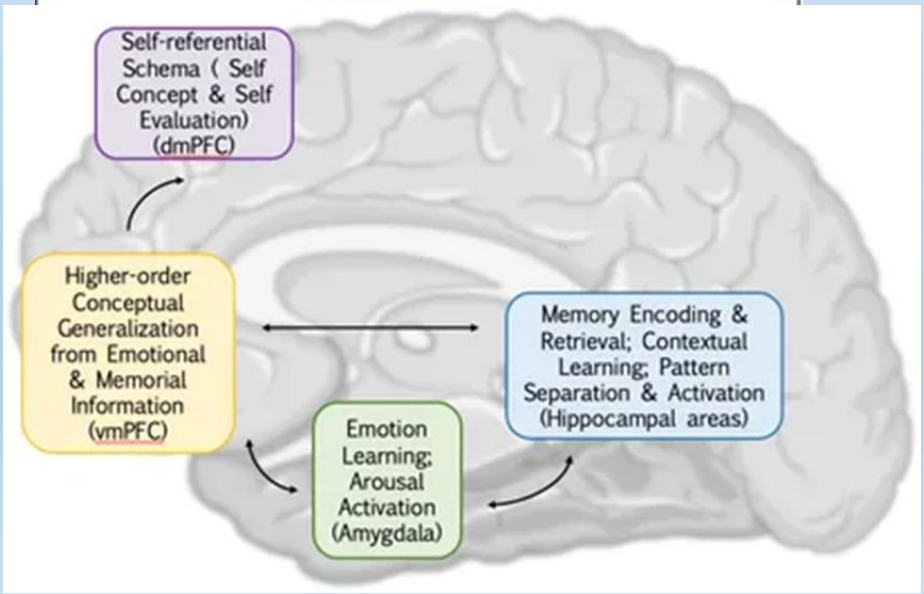
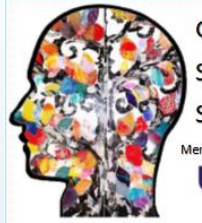
Pathway vs discrete structural lesion ?





- Both dopamine and serotonin pathways implicated.
- ? Structural reorganisation
- Role of neuro-inflammation – raised biomarkers post TBI assoc risk of depression , suicide and PTSD (Juengst 2014, 2015; Speer 2018)



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The primed brain……

- Other neurological conditions – epilepsy
- Repeated mild TBI
- Pre-existing mental illness
- Pre-morbid schizophrenia – x2 likely to have a brain injury
- Substance use

Brain injury following self harm – unknown numbers – attempted suicide by overdose, asphyxiation including ligatures, jumping from height, blood loss etc

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Suicide in Prisons

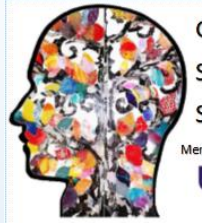
Suicides constitute **24%** of deaths in custody (Forrester et al., 2016)

Safety in Custody Statistics, England and Wales: Deaths in Prison Custody to June 2023 (MoJ) : there were 313 deaths in prison custody.Of these, 88 deaths were self-inflicted, a 26% increase from the 70 self-inflicted deaths in the previous 12 months (**28%**)

Prisoner suicide rates are between **3x** and **8x** the rates in the general population for males, and **10x** the general population for females (Fazel et al., 2017)

First 7 days highest risk (32%) J Shaw et al 2005

Many countries have an absolute suicide rate of **100 per 100,000** prisoners (Fazel et al., 2017)



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Self-Harm in Prisons

The annual prevalence of self-harm in prisons is estimated at **5-6%** of adult male prisoners and **20-24%** of female prisoners (Hawton et al., 2014)

There were 59,722 self-harm incidents in the 12 months to March 2023, up 11% from the previous 12 months, comprising of a 1% decrease in male establishments and a 52% increase in female establishments.

Comparatively, annual prevalence in the general population is estimated at **1%** (Klonsky et al., 2011)

A history of self-harm is associated with between **6x** and **11x** increased risk of suicide (Fazel et al., 2005)

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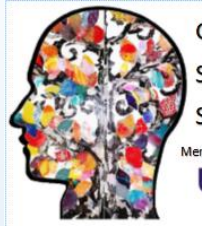

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In UK Prisons…

10% of prisoners are receiving mental health interventions

70% are estimated to be in need of mental health interventions

As found by the House of Commons Justice Committee (2021)

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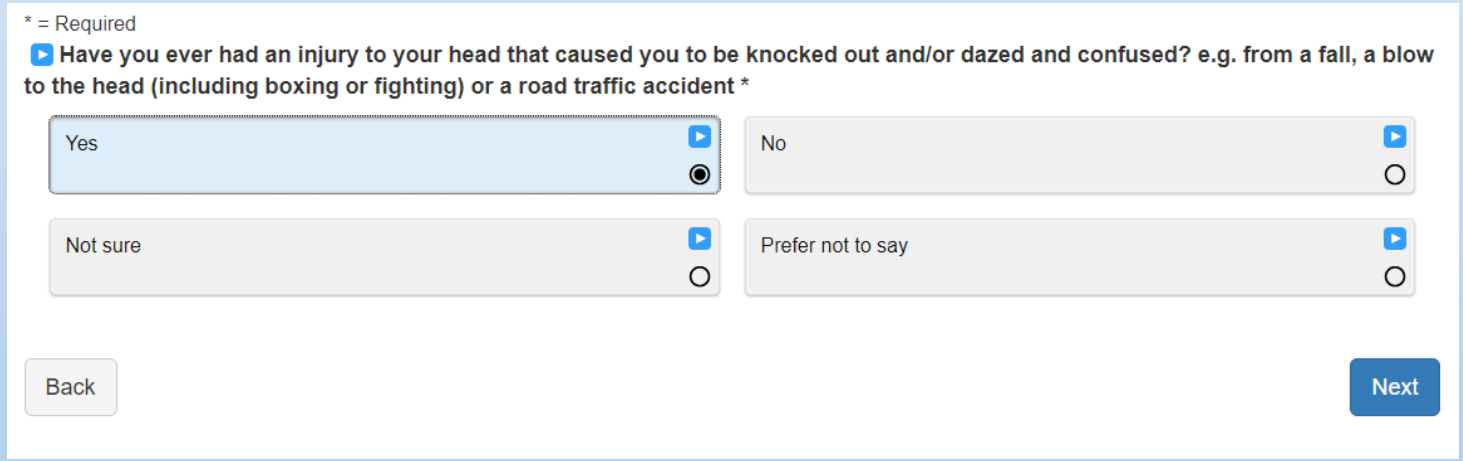
Study in HMP Parc, Wales

- **852** adult male prisoners were screened on entry to HMP Parc in Wales, UK
- Screened as part of usual practice using the **Do-IT profiler**



https://doitprofiler.com/

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Results

12% reported a history of suicidality

11% reported historic self-harm

8% reported both

9% reported a traumatic brain injury

21% reported substance use problems

34% were homeless or marginally housed

16% said they were bullied at school

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Factors associated with suicidality

- Historic brain injury – **3.3x** increased odds
- Substance use – **1.9x** increased odds

- Functional disability
- Mood disturbance
- Relationship difficulties


WHAT ARE WE GOING TO DO NOW...
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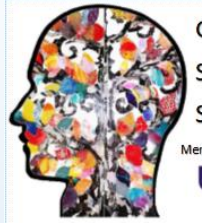

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What can you do?

- **ASK** – Asking about suicidal thoughts and self harm does not increase risk of suicide. S Wessely et al 2014 "Our findings suggest acknowledging and talking about suicide may in fact reduce, rather than increase suicidal ideation, and may lead to improvements in mental health". And ask the carer too! Therapeutic impact of the conversation and disclosure. Screening tools – PHQ-9; BDI-II; ASQ (suicide). Risk assess. Crisis plan.

- **Inform and educate** - Name it. Diagnosis can come as a relief. Signpost client and carer to information – Headway, Brainkind …Collaborate.

- **Understand** – bio/psycho/social model – be aware of the cognitive difficulties and sensory impairments that may impede engagement

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Back to the Why?

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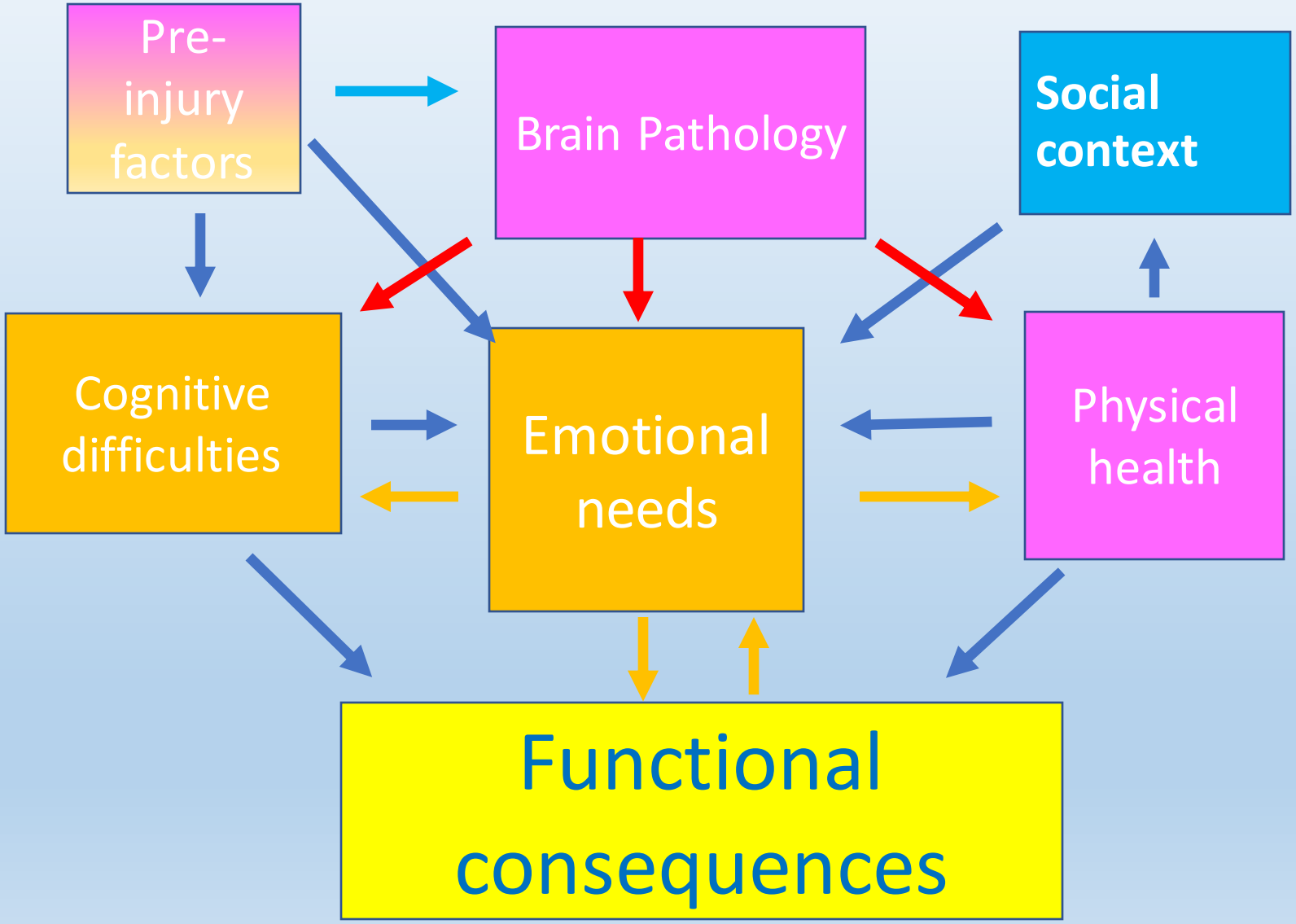
Rehabilitation Formulation



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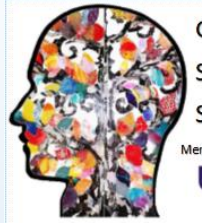

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What can you do?

- Treat – treatment is same – underlying and comorbid conditions, meaningful activity, talking therapies (CBT, DBT, schema therapy) and medication – but **adapt** therapy for cognitive impairment ; integrate cognitive rehabilitation strategies; often better individual than in groups. Define goals – what is the desired outcome. Likely to be functional outcome rather than emotional.
- Carer support.
- Crisis plan (again!)
- Positive Behaviour Support Plan

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Lets talk about medication…

- Less effective for TBI depression (Fann et al)but conflicting studies – one study no effect on depression but improved memory and QOL (Kumar et al 2018). Other study improvement if given in first 6 months. (SSRIs)
- First line SSRIs – can take 4-6 weeks to see if effective. **Adapt** dose – more likely to have adverse effects – drowsiness, sensitivity, seizure threshold – start low, go slow. If ineffective dose increase or switch – be aware of withdrawal effects and increase risk of suicidal ideation when withdrawing. Seek advice.
- If suicidal ideation caution with some medications –

esp TCAs and Venlafaxine – fatal in OD

- Medication interactions – anti-epileptic drugs
- Alcohol and illicit substances

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Future……

- Structure vs pathway vs inflammation → treatments
- Deep Brain Stimulation
- Role of AI and guided self help
- Early intervention / preventive
- Predictive / at risk groups – elite sports, IPV, ACEs, CJS ….
- Starts with a conversation

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Thank you!

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