Outcomes from Acquired Brain Injury and their Impact on Offending Behaviour

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Partnerships in Care
The Context

- Estimated 720,000 people in the UK live with the long-term effects of head injury
- Further 320,000 – 702,000 live with stroke associated disability
- Medical advances increase survival rates, with normal life expectancy, but also long-term disability
Acquired Brain Injury

Acquired Brain Injury (ABI) is damage to the brain acquired after birth that has resulted from illness (non-traumatic) or injury (traumatic):

**Non-traumatic**
- Stroke
- Tumour
- Haemorrhage
- Poison
- Lack of oxygen

**Traumatic**
- Penetrating or Open
  - gunshot wound
- Non-penetrating or Closed
  - road traffic accident
  - fall
Traumatic Brain Injury

- TBI can happen to anyone, anywhere, at anytime.
- 2012/2013 there were 423,413 A&E admissions in England with diagnosis of head injury (3.7% total).
- TBI mainly caused by motor vehicle accidents but many result from domestic and industrial accidents, sports and recreational injuries and from assaults.
- Effects on victims and their families can be devastating.
Males are two or three times more likely to have a head injury than females and the age group most at risk is between 15 and 29 years of age.
Traumatic Brain Injury

Increased Risk Factors:

- Age
- Gender – up to 80% male
- Alcohol/drugs – assaults and falls
- Employment/socioeconomic status
- Psychological disorders/psychiatric history
- Offending behaviour
- Previous ABI
Traumatic Brain Injury

Acceleration-deceleration Trauma

- Associated with motor vehicle accidents
- Closed, non-penetrating injury
- Focal and diffused
Outcomes after ABI

What are these??
Sources of Information for ABI Outcome

EastEnders
BBC

Top Gear
“Since the accident, my personality has changed and I am not the person my wife married or the dad my children knew.”
Comparison of Medical Conditions in the USA

- Traumatic Brain Injury: 1,500,000
- Breast Cancer: 176,300
- HIV/AIDS: 43,681
- Spinal Cord Injuries: 11,000
- Multiple Sclerosis: 10,400

- Occurs every 15 seconds
- Only 1 out of three familiar with term ‘brain injury’
The “Silent Epidemic”

- Devastating long-term consequences
- Even minor TBI can lead to pervasive difficulties with cognitive function and behaviour
- Because we cannot ‘see’ a TBI or notice its long-term effects, it is often referred to as a “silent epidemic”
- More people surviving but poor awareness of outcome means support and services are lacking
Almost half of adults with head injury suffer long term disability

BMJ Editorial 2000

Only about 15% of severe cases will return to work within five years

Outcome is variable

Younger people tend to do better
Outcome

From Jennett & Teasdale (1981)
Acquired Brain Injury

- Physical
- Cognitive
- Behavioural
- Psychosocial
Acquired brain injury rarely inflicts on a person just one identifiable problem.

Instead, people routinely acquire a range of cognitive, behavioural, physical and functional impairments that interact to produce unique symptom-led profiles of bewildering complexity.

Complex, non-homogenous population with a wide range of different needs.
Most Frequent Problems Reported by Relatives after TBI

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>1 YEAR</th>
<th>5 YEARS</th>
</tr>
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<tbody>
<tr>
<td>Personality Change</td>
<td>60</td>
<td>74</td>
</tr>
<tr>
<td>Slowness</td>
<td>65</td>
<td>67</td>
</tr>
<tr>
<td>Poor Memory</td>
<td>67</td>
<td>67</td>
</tr>
<tr>
<td>Irritability</td>
<td>67</td>
<td>64</td>
</tr>
<tr>
<td>Bad Temper</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td>Tiredness</td>
<td>69</td>
<td>62</td>
</tr>
<tr>
<td>Depression</td>
<td>51</td>
<td>57</td>
</tr>
<tr>
<td>Rapid Mood Change</td>
<td>57</td>
<td>57</td>
</tr>
<tr>
<td>Tension &amp; Anxiety</td>
<td>57</td>
<td>57</td>
</tr>
<tr>
<td>Threats of Violence</td>
<td>15</td>
<td>54</td>
</tr>
</tbody>
</table>

(From Brooks et al 1986)
Frequency & Severity Behaviour Change Over Time Following Severe Head Injury

(From Johnson & Balleny 1996)
Wood (2001)
Complex, subtle, pervasive constellation of cognitive-behavioural changes that characterise post-acute ABI
Neurobehavioural Disability

Symptoms of NBD

Social Handicap

NBD (inc. challenging behaviour) poses a greater long-term impediment to community integration after TBI than physical disabilities.
NBD and Social Handicap

Tam, McKay, Sloan & Ponsford (2015)

Reduced autonomy through ‘challenging behaviour’

• Expression of anger
• Overt aggression
• Socially inappropriate behaviour
• Repetitive behaviour dangerous behaviour
• Behavioural change secondary to cognitive impairment (e.g. impulsivity, egocentricity)
NBD and Social Handicap

Tam, McKay, Sloan & Ponsford (2015)

Longer term aversive consequences of CB

- Reduced social contact
- Increased stress (avoiding triggers)
- Dropping out of education
- Changes to vocational status
- Reduced living standards
- Changes in family dynamics and roles
Neurobehavioural disability has a major impact on long-term psychosocial outcome

- Capacity for independent living
- Relationships
- Employment
- Achieving rehabilitation potential
- Presence of NBD
- Contact with forensic services

Presence of NBD = poorer prognosis
Estimate of 1 per 300,000 per annum will present with severe persisting behaviour problems that will effectively exclude them from mainstream neurorehab services – will typically gravitate to placements that cannot rehabilitate/manage their TBI needs (care homes, forensic settings, mental health units); stress and burden on family members is immense.
ABI and Risk

- ABI population is inherently ‘risky’ due to awareness, disorders, NBD and associated social handicap
- Risks are multiple, causation complex
ABI and Risk

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- Risks are multiple, causation complex

- ABI (especially TBI) is especially prevalent amongst offenders and a risk factor in offending behaviour, especially violent crime
TBI, Offending & Violence

- <10% general population sustain TBI
- 50-80% offender groups have TBI
- Violence main cause
- TBI offenders receive custodial sentence 5 yrs. earlier
- TBI offenders incur more frequent prison sentences
- Higher incidence of mental health & addiction problems
TBI, Offending & Violence

- Risk of aggression after ABI frequent and pervasive (11-96% studies)
- TBI a ‘moderate’ risk factor for violence
- Violent crime overrepresented in offenders with TBI (8.8 vs. 3%)
Miller (1994)

• Episodic Dyscontrol Syndrome
  ▶ associated with damage to medial portion of the temporal lobe, contains limbic structures involved in regulating emotion & behaviour

• Frontal Lobe Damage
  ▶ reduced ability to inhibit/regulate emotional response, leading to lower threshold for aggressive behaviour

• Exacerbation Negative Premorbid Traits
  ▶ impulsive/inflexible cognitive style, poorly developed self-control pre-injury, more evident post-injury
“Hey, so I get drunk and start fights - what do you expect?

I was a mean mother ***** before my accident, and my brain damage has made me one biogenetically dangerous dude.”

(stated with a grin)
Neuroanatomical Correlates of Post-ABI Aggression

Damage to the frontal lobes has been associated with aggression.
cognitive impairment
premorbid traits
neuro-psychiatric

effective response
environment
poor insight
poor adjustment

ABI Aggression

organic
Risk of aggression after ABI frequent and pervasive (11-96% studies)

TBI a ‘moderate’ risk factor for violence

Violent crime overrepresented in offenders with TBI (8.8 vs. 3%)

Highly non-homogenous group but risk of violence associated with range of factors, including specific neurological damage, neurocognitive impairment, pre-morbid traits and post-injury learning
When Does Behaviour Become an ‘Offence’?

Same behaviour…

• Premorbid offending history increases probability behaviour is categorised as an offence = custodial sentence

• No premorbid offending history, more likely referred to hospital/psychiatric/NbR services
Rehabilitation

- Spontaneous recovery – up to 2 years
- Rehabilitation can have a significant impact on function at any time
- However, brain injury has been a 'Cinderella' condition for many years with treatment and care being under-resourced and of variable quality
- What's available for people with ABI in offending/forensic psychiatry settings?
## Offending Behaviour Programmes

Change attitudes and behaviour

<table>
<thead>
<tr>
<th>Programme</th>
<th>Description</th>
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<tbody>
<tr>
<td>R&amp;R</td>
<td>Reasoning and Rehabilitation</td>
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<tr>
<td>ETS</td>
<td>Enhanced Thinking Skills</td>
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<tr>
<td>SOTP</td>
<td>Sex Offenders Treatment Programme</td>
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<tr>
<td>ASOTP</td>
<td>Adapted Sex Offenders Treatment Programme</td>
</tr>
<tr>
<td>CALM</td>
<td>Controlling Anger and Learning to Manage it</td>
</tr>
<tr>
<td>CSCP</td>
<td>Cognitive Self Change Programme</td>
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“…cognitively intensive” *(Pitman, 2006)*
Challenges to Effectiveness with ABI

- Neurocognitive impairments constrain engagement
- ‘Offending’ behaviours have complex aetiologies
- Impulsiveness increases tendency to opt for immediate reward/gratification
- Executive dysfunction = difficulties with planning and envisaging consequences of behaviour
- Awareness disorders = poor empathy, alienation from consequences of behaviour
- Staff do not understand ABI and NBD, may misinterpret behaviour
THIS IS NOT THE APPROACH YOU’RE LOOKING FOR

YOU MUST LEARN

TO MASTER THE WAYS OF THE FORCE
Neurobehavioural Rehabilitation

Neurobehavioural rehabilitation attempts to alleviate social handicap arising from neurobehavioural disability.

Delivered in context that understands ABI, determines brain-behaviour relationships, and intervenes to maximise personal autonomy.
Characteristics of Neurobehavioural Services

- Post-acute
  - when neurobehavioural problems constrain rehabilitation potential/prevent reintegration with community

- Community or hospital based

- Psychosocial model of rehabilitation

- Transdisciplinary team approach
  - goals are social and functional, are client-centred and the responsibility of the entire clinical team

- Takes place in a structured environment
Social handicap arising from neurobehavioural disability improved through

1. The (re)acquisition of functional and social skills

2. Spontaneous and adaptive performance of these skills in the context of social behaviour

Learning theory is central to neurobehavioural rehabilitation as a means of understanding handicap and managing symptoms
Structures create a ‘prosthetic environment’ within which a person’s awareness and capacity for social learning are optimised

(Wood & Worthington, 2001)

- increase awareness
- improve motivation
- shape behavioural responses into acceptable form

(Wood, 1990)
Wood & Worthington (2001)

- Clinical teams deliver consistent treatment
- Rehabilitation is not ‘session bound’
- New skills acquired as new habits that are used throughout the day to encourage generalisation
- Environment is rich in frequent feedback
Neurobehavioural interventions:

• Change staff behaviour
• Encourage positive interaction
• Enable a consistent team approach
• Help develop a positive social climate

A positive social climate promotes therapeutic relationships and is highly predictive of good treatment outcomes.
What are the outcomes?

Robust evidence base supports effectiveness of neurobehavioural rehabilitation

Oddy & da Silva Ramos (2013)

- Cost-benefits per individual lifetime demonstrated of £1.13 million for those admitted within 1 year of injury and £0.86 million when admitted more than a year after injury
NbR provides a conceptual framework that has good outcomes for rehabilitation of NBD

Job done then?

Unfortunately not!
 NbR Programmes Need Forensic Input

- NbR provision in secure settings is lacking
- NbR is almost all provided in the non-public sector
- NbR programmes need to address other risk factors characteristic of offenders (e.g. subs/alc.abuse)
- No formal risk assessments (SPJ) conceptualised for ABI despite being a hazardous population
- Forensic treatment approaches potentially useful but need to be modified for ABI (e.g. Good Lives Model)
Key Messages

• Inadequate screening for ABI amongst offenders
• NBD underpins risk, range of drivers is diverse
• Neurocognitive impairment and NBD drivers mitigate against manualised programmes
• Need to use tools conceptualised for ABI
• NbR is effective but availability to offenders is lacking
• NbR services need to more widely address other factors associated with offending behaviour (sub/alc. abuse, mental health issues, lifestyle choices)
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