A Neurobehavioural Rehabilitation Approach to the Management of Post-ABI Aggressive Behaviour Disorders

Professor Nick Alderman
Clinical Director, Neurobehavioural Rehabilitation Services
Elysium Neurological
In this session we will...

- Set the context – prevalence of aggression after ABI
- Aggression in NbR services
- Reduction of aggression – as a consequence of the therapeutic culture within NbR
- Reduction of aggression – as a consequence of additional individual interventions
Context of ever changing moral, ethical and legal back drop

- Mental Health Act
- Mental Capacity Act
- DoLS
- Political decrees
- Society attitudes
- Rights of the individual
- Growing culture of litigiousness?
Long-term Outcome

In studies conducted over many years, challenging behaviours have been recognized as posing a greater long-term impediment to community integration after TBI than physical disabilities.
Fleminger, Greenwood & Oliver (2003)

“Of the many psychiatric symptoms that may result from brain injury, agitation and/or aggression are often the most troublesome.”
Aggression after ABI

Baguley, Cooper & Felmingham (2006)

- Followed up TBI survivors (moderate – severe injury) 6, 24 and 60 months post-injury in Australia
- 25% demonstrated significant levels of aggression at each of these times, as defined by the researchers
- Concluded it was common and long-term following of TBI
Aggression after ABI

Kelly, Brown, Todd & Kremer (2008)

- Investigated challenging behaviour profiles of people with ABI in the community

- Aggression prolific
  - 86% verbally aggressive
  - 41% aggressive to people
  - 35% aggressive to objects

- Aggression was a long-term consequence of ABI
  (mean TSI 10 yrs, max 41 yrs)
Tateno, Jorge & Robinson (2003)

- Literature review
- Prevalence varied 11 – 96% studies
- In their study, 34% had engaged in significant aggressive behaviour within 6 months after injury, as defined by the researchers
Aggression after ABI

Variability in outcome data, uncertainty about proportion of people with ABI for whom aggressive behaviour is an issue...

*Tateno et al. (2003)*

Found prevalence varied

11-96% studies

Confounded by inconsistent use of different terminology and methodologies
Irritability
Agitation
Anger
Aggression
Aggression after ABI

Is Aggression after ABI Talked Up Too Much??
Figure 2. Endorsement of items on the subscales of the Overt Aggression Scale. Note: Legend refers to number of patients who ticked any item on the following Overt Aggression Scale subscales: verbal = verbal aggression; objects = physical to objects; self = physical to self; others = physical to others; any = any item at all on the Overt Aggression Scale. (More details about the Overt Aggression Scale and its subscales can be found in Appendix.)

From Baguley, Cooper & Felmingham (2006)
Figure 2. Endorsement of items on the subscales of the Overt Aggression Scale. Note: Legend refers to number of patients who ticked any item on the following Overt Aggression Scale subscales: verbal = verbal aggression; objects = physical to objects; self = physical to self; others = physical to others; any = any item at all on the Overt Aggression Scale. (More details about the Overt Aggression Scale and its subscales can be found in Appendix.)
How Characteristic is Aggressive Behaviour Typical of People Referred to Neurobehavioural Services?
Aggression in NbR Services

Percentage Admissions to NbR Services Whose SASNOS Domain Scores Are <1SD from Neurologically Healthy Norms

<table>
<thead>
<tr>
<th>Domain</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationships</td>
<td>87.8</td>
</tr>
<tr>
<td>Cognition</td>
<td>86.3</td>
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<tr>
<td>Inhibition</td>
<td>27.5</td>
</tr>
<tr>
<td>Aggression</td>
<td>26</td>
</tr>
<tr>
<td>Communication</td>
<td>19.8</td>
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</tbody>
</table>
Aggression inNbR Services

Aggressive behaviour exhibited by 108 participants in NbR over a 14 day period

5548 episodes
Aggression in NbR Services

Prevalence of Aggression in NbR Services

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Days</th>
<th>Total</th>
<th>None</th>
<th>&lt;50%</th>
<th>50% or more</th>
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<tbody>
<tr>
<td>Current study</td>
<td>76</td>
<td>28</td>
<td>4559</td>
<td>19.7</td>
<td>77.7</td>
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<tr>
<td>Alderman et al., 2002</td>
<td>46</td>
<td>14</td>
<td>3914</td>
<td>23.9</td>
<td>71.9</td>
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<td>Alderman et al., 2007</td>
<td>108</td>
<td>14</td>
<td>5548</td>
<td>26.9</td>
<td>69.1</td>
<td>4.0</td>
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<tr>
<td>Alderman et al., 2009</td>
<td>91</td>
<td>84</td>
<td>9804</td>
<td>17.6</td>
<td>74.7</td>
<td>7.7</td>
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</table>

**Source:**
Aggression & NbR Services

- Neurobehavioural services are asked to manage very high levels of aggression
- Expert assessment of NBD including aggression
- Capability to manage and reduce aggression
- Structures and organisation promote rich, positive therapeutic climate that encourages success
- Therapeutic milieu acts as prosthetic that circumvents some neurocognitive and social drivers of aggression
- Comprehensive evidence base
Applications of Operant Learning Theory to the Management of Challenging Behavior After Traumatic Brain Injury

Rodger Li Wood, PhD; Nick Altmann, PhD

S A T E S T A T E M E N T O F A U T H O R S' D E T A I L S

STATEMENT OF AUTHOR INFORMED CONSENT

Rehabilitation Approaches to the Management of Aggressive Behaviour Disorders after Acquired Brain Injury

Nick Alderman,1,7 Caroline Knight,1,8 and Jennifer Brooks1

1 Brain Injury Services, Partnerships in Care, Graflyn NHS, UK
2 Brain Injury Services, Partnerships in Care, Graflyn NHS, UK
3 Brain Injury Services, Partnerships in Care, Graflyn NHS, UK
4 Brain Injury Services, Partnerships in Care, Graflyn NHS, UK
5 Brain Injury Services, Partnerships in Care, Graflyn NHS, UK
6 Brain Injury Services, Partnerships in Care, Graflyn NHS, UK
7 Brain Injury Services, Partnerships in Care, Graflyn NHS, UK

Abstract

Neurobehavioural disability (NBD) follows traumatic brain injury, which is defined as a loss of mental function or physical ability as a result of an injury to the brain. NBD can be classified as mild, moderate, or severe based on the extent of the injury. NBD can result in a range of symptoms, including memory problems, difficulty with attention and concentration, and changes in mood and behavior. NBD can also lead to difficulties in social interactions, communication, and daily functioning. The impact of NBD on individuals and their families can be significant, and interventions are needed to help manage these symptoms and improve quality of life. This review article provides an overview of the current understanding of neurobehavioural disability after traumatic brain injury and discusses the different approaches to managing this disability. The review focuses on the evidence-based interventions that have been shown to be effective in managing neurobehavioural disability after traumatic brain injury. The article also highlights the importance of individualizing treatment plans and the need for multidisciplinary approaches to improve outcomes for individuals with neurobehavioural disability after traumatic brain injury.
Outcomes from NbR

Reduction in Aggression on the OAS-MNR

• Percentage reduction in the AAS was 75.6% (61.7% previous year)
• Percentage reduction for discharged cases was just under 90%
• Remains superior to the benchmark figure of 53.2% for another major NbR provider
Why are NbR services able to manage and reduce aggression?

Suggest rehab participants require either:

1. A ‘standard’ NbR programme is sufficient...

...or...

2. A ‘standard’ NbR programme *plus* additional specialist intervention is required
What is ‘Neurobehavioural Rehabilitation’?
NEUROBEHAVIOURAL REHABILITATION

An approach inspired by Gavin Tennent and pioneered in the UK by Peter Eames & Rodger Wood
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 NbR

• Post-acute
• Neuropsychological model of rehabilitation
• Slow-stream rehabilitation
• Behaviour management capability
• Structured environment (incorporating systems of feedback & reinforcement)
• Transdisciplinary Team approach (TDT)
• Behaviourally-defined rehabilitation goals
• Community-based training
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
Learning Theory Underpins NbR

• Promotes and underpins a highly structured approach.
• Framework to understand NBD symptoms, and plan and deliver rehabilitation.
• Therapy interventions in every discipline draw heavily from learning theory, especially operant conditioning & procedural learning
• Practitioners need to have knowledge of these methods and supervision to devise effective rehabilitation interventions
• NbR programmes therefore typically led by clinical neuropsychologists rather than medical doctors
NbR in Practice – applying learning theory

- Contingency management
- Modelling
- Procedural learning
- Errorless learning
- Shaping, chaining
- Antecedent control

Mediating effects of neurocognitive impairment
Well managed behavioural 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.
NbR in Practice

The Transdisciplinary Team (TDT)
The Transdisciplinary Team (TDT)

• Therapy does is not limited to timetabled *sessions*, with qualified *therapists* during the nine-to-five working day

• Interventions are continually applied

• Effort and achievements are reinforced through interaction with *every* member of the team

• The whole team are empowered to regard their role as that of agent for behaviour change
The overall effect of these structures is creation of a ‘prosthetic environment’ within which a person’s awareness and capacity for social learning are optimised (Wood & Worthington, 2001)

- Increases awareness
- Improves motivation
- Shapes behavioural responses into acceptable forms (Wood, 1990)
“Disinhibition is characterised by inadequate self-monitoring resulting in impulsive and inappropriate social behaviour”

(Becker & Vakil, 1993)

Programmed feedback may circumvent monitoring difficulties that drive behaviour problems
Effect of Scheduled Feedback on Inappropriate Interaction with Males in a 19 yr Old Female with Severe CHI

% appropriate interaction with males

Baseline
Half-hour Feedback
Evening Feedback

Days
Aggression Reduction in NbR

Creation of prosthetic environment that circumvents cognitive and other problems that drive/maintain DES behaviour problems

May be one reason why some aggressive behaviour disorders quickly resolve following admission to NbR or implementation of a system that emphasises feedback
Reduction of Overt Aggression Whilst Increasing Rehabilitation Expectations in NbR

Frequency aggression (OAS-MNR)

Expectations (NES)
Aggression Reduction in NbR

When a ‘Standard’ NbR Programme is not enough...
NbR in Practice

1. Assessment
2. Formulation
3. Intervention
4. Evaluation
5. Is behaviour challenging?
   - Yes
     - Goal achieved?
       - Yes: Consider generalisation, maintenance
       - No
   - No: End
NbR in Practice

1. Assessment
2. Formulation
3. Intervention
4. Evaluation

- Goal achieved?
  - Yes: Consider generalisation, maintenance
  - No: Is behaviour challenging?
    - Yes: End
    - No: Assessment

Number: 39
Consider the morality of behaviour change
What constitutes ABI ‘challenging behaviour’?

- *Is the behaviour ‘challenging’?*
- *Is it ‘right’ to intervene?*
Behaviour judged by many yardsticks...
...e.g. society norms vs. individual beliefs
Aggression in NbR Services

Aggression that is ‘acceptable’ vs. ‘not acceptable’ dependent on many factors:

- Age & gender
- Context
- Applicable norms
- Status of aggressor
- Perception and values of perceiver
Behaviours (inc. aggression) whose presence:

- Increases vulnerability
- Limits/delays access to community resources
- Constrains participation in post-acute neurorehabilitation leading to failure to exploit and attain the persons full potential for recovery

(Eames & Wood, 1985; Wood, 1987; Alderman, 2001)
Intervention Must be Preceded by Assessment

• Determine factors driving behaviour disorder

• ABI knowledge essential to understand these factors

• Knowledge of ABI, leaning theory and especially functional analysis provides a means of understanding symptoms of NBD

• Provides individualised approach
Why can aggressive behaviour be a consequence of ABI?
Aggression After ABI

Miller (1994)

• Neurologically mediated
  ✓ Orbitofrontal cortex and its connections, deprives cognitive functions of ability to suppress emotional reactions – has clear antecedents
  ✓ Episodic dyscontrol syndrome (EDS) – trivial antecedents, aggression out of proportion

• Exacerbation Negative Premorbid Traits
  ✓ Impulsive, inflexible, poorly developed self-control pre-injury, more evident post-injury
From Miller (1990):

“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)
Aggression After ABI

• Neurocognitive impairment
  ✓ executive function disorders especially
  ✓ lack of ‘error awareness’ results in frustration and aggression

• Environmental factors
  ✓ interaction with carers and clinicians

• Post-injury learning
  ✓ aggression serves avoidance/escape function
 ABI
Aggression

organic

learned response

cognitive impairment

environment

poor insight

premorbid traits

neuro-psychiatric

poor adjustment
Functional Assessment of Behaviour

Determining reasons that drive behaviour using conceptual framework provided by operant conditioning:

- Identify relationship of behaviour with environment
- Setting events?
- Antecedents that evoke behaviour?
- Reinforcing consequences that maintain it?
Assessment of ABI Aggression

Functional Assessment Methods

1. Direct Observation
   Observer records antecedents, behaviours & consequences

2. Informant Methods
   Interviews & Questionnaires

3. Functional Analysis
   Antecedents & consequences are manipulated to understand their effects
Assessment of ABI Aggression

- Whilst there are many measures of aggression, the OAS-MNR was specifically validated for use with ABI and NbR

- The OAS-MNR has known psychometric properties (Alderman, Knight & Morgan, 1997; Giles and Mohr, 2007)
OVERT AGGRESSION SCALE – MODIFIED FOR NEUROREHABILITATION (OAS-MNR)

Alderman, Knight & Morgan. 1997

1. BEHAVIOURS

<table>
<thead>
<tr>
<th>Verbal aggression</th>
<th>Physical aggression against objects</th>
<th>Physical aggression against self</th>
<th>Physical aggression against other people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Makes loud noises, shouts angrily, is not person directed. E.g. “Bloody hell!”</td>
<td>Slams doors, scatters clothing, makes a mess in response to clear antecedent</td>
<td>Pokes/scratches skin, hits self, pulls hair (with no/minor injury)</td>
<td>Threatening gesture clearly person directed, swings at people, grabs clothes, spitting at people</td>
</tr>
</tbody>
</table>

2. ANTECEDENTS

Set One Contributing Factors (coded 1-3)

1. Structured activity
2. Noisy environment
3. Had epileptic fit in last 24 hrs

Set Two Observed Directly Before Behaviour (coded 11-25)

11. Given direct verbal prompt to comply with instruction
12. Given verbal guidance/advice to assist completion of task/activity
13. Given verbal/visual feedback about performance
14. Direct response to other clients verbal behaviour
15. Request specifically denied by other person
16. Any other verbal interaction
17. Physical guidance/facilitation to complete a task
18. Direct response to other clients physically aggressive behaviour when directed at them
19. Direct response to other clients physically aggressive behaviour when directed at another person
20. During restraint
21. Given item e.g. food/therapy materials
22. Purposeful behaviour is ignored or “played down” by person to whom it is directed at
23. Obviously agitated or distressed
24. No obvious antecedent
25. Other (please specify on the back of the recording form)

3. INTERVENTIONS

Set One Contributing Factors (coded A-N)

A. Aggression ignored or “played down” completely
B. Talking to patient including prompts
C. Closer observation
D. Holding patient (physical restraint)
E. Immediate medication given by mouth
F. Immediate medication given by injection
G. Isolation without seclusion
H. Seclusion
I. Activity distraction
J. Injury requires immediate medical treatment for patient
K. Injury requires immediate medical treatment for other
L. Special programme
M. Physical distraction (leading the patient away)
N. Other (please specify on the back of the recording form)
<table>
<thead>
<tr>
<th>Categories</th>
<th>Severity</th>
<th>Behavioural Descriptors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal Aggression</td>
<td>1</td>
<td>Makes loud noises, shouts angrily, is not person directed. E.g. “Bloody hell”</td>
</tr>
<tr>
<td>Physical Aggression against objects</td>
<td>2</td>
<td>Throws objects down, kicks furniture without breaking it, marks the wall (without others being at risk of being hit)</td>
</tr>
<tr>
<td>Physical Aggression against self</td>
<td>3</td>
<td>Inflicts small cuts, bruises, minor burns to self</td>
</tr>
<tr>
<td>Physical Aggression against other people</td>
<td>4</td>
<td>Causes severe physical injury (broken bones, internal injury) to person aggression directed at</td>
</tr>
</tbody>
</table>

**OAS-MNR**
2. ANTECEDENTS

<table>
<thead>
<tr>
<th>Set One</th>
<th>Contributing Factors (coded 1-3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Structured activity</td>
<td></td>
</tr>
<tr>
<td>2. Noisy environment</td>
<td></td>
</tr>
<tr>
<td>3. Had epileptic fit in last 24 hrs</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Set Two</th>
<th>Observed directly before behaviour(Coded 11-25)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Given direct verbal prompt to comply with instruction</td>
<td></td>
</tr>
<tr>
<td>12. Given verbal guidance/advice to assist completion of task/activity</td>
<td></td>
</tr>
<tr>
<td>13. Given verbal/visual feedback about performance</td>
<td></td>
</tr>
<tr>
<td>14. Direct response to other clients verbal behaviour</td>
<td></td>
</tr>
<tr>
<td>15. Request specifically denied by other person</td>
<td></td>
</tr>
<tr>
<td>16. Any other verbal interaction</td>
<td></td>
</tr>
<tr>
<td>17. Physical guidance/facilitation to complete a task</td>
<td></td>
</tr>
<tr>
<td>18. Direct response to other clients physically aggressive behaviour when directed at them</td>
<td></td>
</tr>
<tr>
<td>19. Direct response to other clients physically aggressive behaviour when directed at another person</td>
<td></td>
</tr>
<tr>
<td>20. During restraint</td>
<td></td>
</tr>
<tr>
<td>21. Given item e.g. food/therapy materials</td>
<td></td>
</tr>
<tr>
<td>22. Purposeful behaviour is ignored or “played down” by person to whom it is directed at</td>
<td></td>
</tr>
<tr>
<td>23. Obviously agitated or distressed</td>
<td></td>
</tr>
<tr>
<td>24. No obvious antecedent</td>
<td></td>
</tr>
<tr>
<td>25. Other (please specify on the back of the recording form)</td>
<td></td>
</tr>
</tbody>
</table>

There are 18 antecedents numbered from 1 - 25

1-3 comprise possible ‘setting events’

for example

‘1’ – ‘structured activity’

11-25 are events observed immediately before behaviour - ‘antecedents’

for example

‘21’ – ‘given item’
### 3. INTERVENTIONS

<table>
<thead>
<tr>
<th>Set One</th>
<th>Contributing Factors (coded 1-3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Behaviour ignored or “played down” completely</td>
</tr>
<tr>
<td>B</td>
<td>Talking to patient including prompts</td>
</tr>
<tr>
<td>C</td>
<td>Closer observation</td>
</tr>
<tr>
<td>D</td>
<td>Holding Patient (physical restraint)</td>
</tr>
<tr>
<td>E</td>
<td>Immediate medication given by mouth</td>
</tr>
<tr>
<td>F</td>
<td>Immediate medication given by injection</td>
</tr>
<tr>
<td>G</td>
<td>Isolation without seclusion</td>
</tr>
<tr>
<td>H</td>
<td>Seclusion</td>
</tr>
<tr>
<td>I</td>
<td>Activity distraction</td>
</tr>
<tr>
<td>J</td>
<td>Injury requires immediate medical treatment for patient</td>
</tr>
<tr>
<td>K</td>
<td>Injury requires immediate medical treatment for other</td>
</tr>
<tr>
<td>L</td>
<td>Special programme</td>
</tr>
<tr>
<td>M</td>
<td>Physical distraction (leading the patient away)</td>
</tr>
<tr>
<td>N</td>
<td>Other (please specify on the back of the recording form)</td>
</tr>
</tbody>
</table>

There are 14 categories for recording interventions used to respond to/manage behaviour.

Each is coded with a letter ranging from A - N.

For example

‘M’ – ‘physical distraction’
**OVERT AGGRESSION SCALE – MODIFIED FOR NEUROREHABILITATION (OAS-MNR)**

Alderman, Knight & Morgan, 1997

Name: **Nick Alderman**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Observer Initials</th>
<th>Contributing Factors – tick if applies</th>
<th>Antecedents</th>
<th>Observed Directly Beforehand (1-25)</th>
<th>Agression (type, rating)</th>
<th>Interventions (A-N)</th>
<th>Multiple Recordings* (when multiple identical incidents take place in quick succession)</th>
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<tbody>
<tr>
<td>11/6</td>
<td>10:25</td>
<td>CK</td>
<td>Structured Activity</td>
<td></td>
<td>11</td>
<td>VA1</td>
<td>A</td>
<td>✓✓✓✓</td>
</tr>
<tr>
<td>11/6</td>
<td>10:30</td>
<td>CK</td>
<td></td>
<td></td>
<td>22</td>
<td>PP2</td>
<td>L</td>
<td>✓</td>
</tr>
<tr>
<td>11/6</td>
<td>10:36</td>
<td>CK</td>
<td>Noisy Environment</td>
<td>✓</td>
<td>16</td>
<td>PO3</td>
<td>D</td>
<td>✓</td>
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<tr>
<td>11/6</td>
<td>10:50</td>
<td>CK</td>
<td>Epilepsy prev 24 hrs</td>
<td></td>
<td>23</td>
<td>VA3</td>
<td>A</td>
<td>✓</td>
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<tr>
<td>11/6</td>
<td>11:00</td>
<td>CK</td>
<td>Structured Activity</td>
<td>✓</td>
<td>24</td>
<td>VA1</td>
<td>A</td>
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</tbody>
</table>

*Each separate incident recorded in this way must be separated by at least 2 seconds.*

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Assessment of NbR Aggression

<table>
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<tr>
<th>Antecedent</th>
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<tr>
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<td>3</td>
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<tr>
<td>Verbal prompt</td>
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<tr>
<td>Verbal guidance</td>
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<td>0</td>
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<tr>
<td>Feedback</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Other residents verbal</td>
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<td>29</td>
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<tr>
<td>behaviour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Request denied</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other verbal interaction</td>
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<td>0</td>
</tr>
<tr>
<td>Restraint</td>
<td>3</td>
<td>0</td>
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<tr>
<td>TOOTIS</td>
<td>1</td>
<td>0</td>
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<tr>
<td>Obviously agitated/distressed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No obvious antecedent</td>
<td>0</td>
<td>0</td>
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<td>Other</td>
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<td>0</td>
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<td>29</td>
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**Bar Chart**

```
Count

<table>
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<tbody>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
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<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>8</td>
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</tbody>
</table>
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62
NbR in Practice

1. Assessment
2. Formulation
3. Intervention
4. Evaluation
5. Goal achieved?
6. Consider generalisation, maintenance
7. Is behaviour challenging?
8. End
Case Formulation

A hypothesis about the causes, precipitants, and maintaining influences of a person's psychological, interpersonal, and behavioural problems.

This hypothesis drives intervention.
Formulation

Draws on assessment data and information from multiple sources:

• Neuropsychological Assessment
• Neuropsychiatric Assessment
• Functional Assessments
• Informants
• History
• ABI Literature
Effect of Both Situational and Individual Characteristics on Aggressive Behaviour

Do these interact?
Aggression may be a function of complex interactions between individual and situational variables.

Severe neurobehavioural disability \( \times \) more structured activity + verbal prompt = frequent aggression

Predictable, planned intervention possible, more risks may be taken in rehab

(Alderman, 2007)
Aggression may be function of complex interactions between individual and situational variables

Unpredictable, more reactive management, greater challenge to rehab services

\[ \text{language impairment} \times \text{less structured activity} \times \text{no overt antecedent} = \text{most frequent aggression} \]

\[ \text{severe neurobehavioural disability} \]

(Alderman, 2007)
NbR in Practice

- Assessment
  - Formulation
  - Intervention
  - Evaluation
    - Yes: Consider generalisation, maintenance
    - No: Goal achieved?
      - Yes: Consider generalisation, maintenance
      - No: Is behaviour challenging?
        - Yes: Formulation
        - No: End
Intervention

learning theory

principles that influence learning

specific techniques and procedures

treatment programme

operant conditioning

positive reinforcement

DRI, DRL, DRO

intervention (care plan)
Intervention

• Contingency Management
  (*Rodger Wood, Peter Eames, Nick Alderman*)

  Vs. (??)

• Positive Behaviour Support
  (*Mark Ylvisaker, Tim Feeney, Gordon Muir-Giles*)
Intervention

Positive Behaviour Support

- Systematic gathering of relevant information
- Conducting a functional assessment of behaviour
- Highlights involvement of the person concerned
- Designing support plans (proactive strategies, early warning signs, reactive strategies, managing the aftermath)
- Implementation and ongoing evaluation
Intervention

Multicomponent Interventions are the Norm

Combination of methods is ideally suited to meeting the complex needs of people with ABI
'Example of a PBS Approach'
Rothwell, LaVigna & Willis (1999)

Actually a multicomponent intervention employing: functional assessment; positive programming; environmental modification; behavioural contingencies; & reactive strategies
Differential Reinforcement Procedures

NbR Services have a culture in which:

• Desirable behaviour is reinforced at *every* opportunity

• Undesirable behaviour is downplayed as much as possible (TOOTS)
Differential Reinforcement Procedures

Positive Reinforcement

Ensuring a pleasant consequence increases the likelihood the same behaviour will occur again in the future.

If frequency/duration of target behaviour subsequently increases, it has been positively reinforced.
Differential Reinforcement can be very useful in the management of ABI aggressive behaviour disorders

Differential Reinforcement of...

• Incompatible behaviour (DRI)
• Other behaviour (DRO)
• Low rates of responding (DRL)
Differential Reinforcement Procedures

Differential Reinforcement of Incompatible Behaviour (DRI)

Substitute a Behaviour

Reinforcement delivered when engages in behaviour incompatible with target behaviour

Core characteristic of NbR Environment
Case LM
Alderman, Davies, Jones & McDonnel (1999)

• ‘Very severe’ TBI through RTA

• Poor memory, impaired executive functions, significant expression/comprehension difficulties

• History frequent, severe physical assaults

• 72% physical assaults, 60% ‘severe’

• 66% followed attempts to engage in rehabilitation (verbal prompts, guidance, feedback)

• 15 minute DRI programme, including feedback, throughout the day
NbR in Practice

1. Assessment
2. Formulation
3. Intervention
4. Evaluation
5. Goal achieved?
6. Consider generalisation, maintenance
7. Is behaviour challenging?
8. Yes
9. No
10. End
Evaluation, Generalisation & Maintenance

Evaluation

• Continuous evaluation within behavioural approach
• Monitoring of data
• Online adjustments to maximise gains
NbR in Practice

1. Assessment
2. Formulation
3. Intervention
4. Evaluation
5. Is behaviour challenging?
   - Yes
   - No
       - End

- Goal achieved?
  - Yes: Consider generalisation, maintenance
  - No

Circled step: Evaluation
Differential Reinforcement Procedures

Differential Reinforcement of Low Rates of Behaviour (DRL)

Reduce a Behaviour

Reinforcement delivered when target behaviour is performed less often
Differential Reinforcement Procedures

Differential Reinforcement of Low Rates of Responding (DRL)

• Define and measure target behaviour
• Collaborate with participant of intervention
• Set target low to ensure success from onset
• Increase expectations whilst maintaining success
• Reduce target to lowest rate possible, ideally move to fixed interval DRI with zero target & fade out
• Or maintain minimum structure that supports participant in long-term
FS: reduction in aggressive outbursts during hygiene routine using DRL

(Alderman & Knight, 1997)
Case JH
Watson, Rutterford, Shortland, Williamson & Alderman (2001)

DRL Intervention

• OAS-MNR - 200 episodes, 4-55 p/day

• 4 opportunities to earn a star throughout day

• Earned if did not exceed target of being aggressive (initially) >18, VA2 or above

• Feedback about programme and performance at end of each interval

• Rehab team played down response when aggressive

• Stars exchanged for items from reinforcement menu at end of day or banked for more substantial reward
Figure 1. Reduction in the frequency of JH’s aggressive behaviour using DRL. Key: ‘A’ - number of stars to earn increased from four to five, and increase in functional/physical expectations; ‘B’ - Clopixol reduced from 10 mg three times a day to twice a day; ‘C’ - transferred from the neurorehabilitation unit to a satellite group home. (Note: pre-treatment frequency count compiled from the last 7 of the 11 day period behavioural analysis conducted in; frequency aggression taken from all recordings made on the OAS-MNR.)
Differential Reinforcement Procedures

Particularly relevant when:

• Inappropriate behaviour/inability to acquire new skills are function of poor monitoring

  "Reinforcement programmes improve monitoring by creating systems that provide participants with systematic feedback about performance that enables learning"

• Challenging behaviour previously reinforced in settings where people routinely ignored

  "Reinforcement programmes reverse these contingencies by compelling carers to engage in positive ways with participants, creating positive relationships"
NbR Services Reduce Aggression

- Enriched environments that change behaviour
- Create positive social climate
- Promote therapeutic relationships
- Encourage new learning, skill acquisition
- Promote independence, increased autonomy

“...giving people more choice, control, and freedom as they progress.”

Wood & Alderman (2011)
Gladstone House, Stoke-On-Trent

Create new NbR services that set the bar re quality, reputation, cost effectiveness and outcomes

NbR pathway to be created over 3 floors:

• Ground floor
  *Acute neurobehavioural rehabilitation*

• First floor
  *Mainstream neurobehavioural rehabilitation*

• Second floor
  *Supported & independent living*
Thanks for Listening!
Potentially Useful References


