

BRIEF CLINICAL REPORT

# Implementation of a case formulation to reduce restrictive interventions on a psychiatric intensive care unit: quasi-experimental single case evaluation

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## Abstract

**Background:** Despite the use of case formulation being encouraged for in-patient psychiatric care, there have been no previous examples and evaluations of this type of work on a psychiatric intensive care unit (PICU).

**Aims:** To evaluate whether a schema-informed formulation with a patient diagnosed with emotionally unstable personality disorder (EUPD), autism spectrum disorder (ASD) and mild learning difficulties was effective in reducing the use of restrictive interventions.

**Method:** A biphasic  $n = 1$  quasi-experimental design with an 8-week baseline versus an 8-week intervention phase. The restrictive outcomes measured were use of physical restraint, seclusion, and intramuscular rapid tranquilisation. The formulation was developed through eight one-to-one sessions during the baseline period, and was implemented via six one-to-one sessions during the intervention phase and discussion at the ward reflective practice group. The intervention encouraged better communication of schema modes from the patient and for staff to then respond with bespoke mode support.

**Results:** Incidents involving need for seclusion, restraint and rapid tranquilisation extinguished.

**Discussion:** The need for making access to psychological input a routine aspect of the care in PICUs and the necessity for developing a methodologically more robust evidence base for psychological interventions on these wards.

**Keywords:** aggression; formulation; in-patient CBT; schema modes

## Introduction

Psychiatric intensive care units (PICUs) are highly specialist 24-hour in-patient wards providing intensive assessment and comprehensive treatment to often legally detained patients with psychosis, mania or a neurodevelopmental disorder, presenting with heightened and unmanageable risks to self or others (Bowers *et al.*, 2008). A PICU is a locked and secure ward with access to seclusion rooms, low patient numbers and high patient:staff ratios. Treatment tends to be pharmacological with restrictive management methods (i.e. seclusion, physical restraint, and rapid tranquilisation) used to manage ongoing risks (Bowers *et al.*, 2008).

The updated national minimum standards for PICUs recommended access to psychological input being a core aspect of the PICU offer (Royal College of Psychiatry, 2019). Staff want this psychological input to be a blend of direct and indirect case formulation work, one-to-one therapy with patients, supervision of nurse-led interventions and staff wellbeing interventions. In terms of the evidence base for psychological interventions on in-patient psychiatric wards, the narrative

review by Evlat *et al.* (2021) found that most interventions were based in cognitive-behavioural therapy. The systematic review of Man *et al.* (2023) of indirect work on in-patient units found that case formulation was the most common aspect of this work.

The aim of the current study was to evaluate the effectiveness of implementing a schema-informed formulation (Fassbinder *et al.*, 2019) for a PICU patient. This has not been achieved before. Kennedy (2008) argued that in-patient formulations enable (a) a more compassionate understanding of presenting and underlying issues beyond the medical model, (b) map unhelpful patient/staff/context interactions, (c) enable collaborative management of crises and (d) constitute an intervention in and of itself. The current study evaluated the implementation of a schema-informed formulation on a PICU using a quasi-experimental  $n = 1$  methodology. The study hypothesis was that occurrence of incidents involving restraint, seclusion and/or intramuscular rapid tranquilisation would reduce after the formulation was introduced and supported by staff.

## Method

### *Design, context and ethical approval*

The participant gave their consent for the study to be reported and was shown a copy of the final report and agreed with the contents of the anonymised publication version. Ethical approval for the study was also granted (reference no. 041077). The study used a bi-phasic A/B single case design, tracking three outcome measures over a period of admission time. The study was conducted in routine practice in a mixed-sex five-bed PICU in a northern city in the United Kingdom. The formulation was developed and delivered by an assistant psychologist (AP) under the weekly clinical supervision of a consultant clinical psychologist (CCP). The 8-week baseline contained eight one-to-one sessions (i.e. total session time = 240 minutes, mean session duration = 30 minutes, session duration range 10–60 minutes). The 8-week intervention phase contained six one-to-one sessions (i.e. total session time = 208 minutes, mean session duration = 34.67 minutes, session duration range 3–60 minutes). The PICU had a weekly reflective practice group facilitated by the CCP in which the implementation of the changes by the multidisciplinary team (MDT) were discussed on six occasions.

The piece of work was requested by the MDT because of the number of incidents of violence and aggression by the patient, and the associated stress levels this was creating in the MDT. Additionally, the MDT reported being confused by the changing nature of the patient's presentation. It was thought that a schema-informed case formulation would enable the helpful mapping of the differing modes and the switches between them, and this would then enable staff to better respond to and manage the patient. The patient had a positive behaviour support (PBS) plan already in place, but this was generic and so did not account for the modes that the patient presented in.

### *Measures and administration*

The three outcome measures were a daily number count of all incidents involving (1) the use of seclusion, (2) physical restraint and/or (3) intramuscular rapid tranquilisation. The study generated a 112 continuous day time-series dataset containing two phases (i.e. baseline 'A' versus intervention 'B'). The intervention phase (B) was initiated by the sharing of the case formulation with the staff team and the patient participant.

### *The participant*

The participant was a female with a diagnosis of emotionally unstable personality disorder (EUPD), autism spectrum disorder (ASD) and mild learning difficulties. The participant was not actively psychotic at the time of the study. The EUPD diagnosis was characterised by marked

emotional variability, including recurrent and high suicidal intent, impulsivity, self-harm and/or aggression towards others. The methods of self-harm were headbanging, cutting, burning and tying ligatures. The ASD diagnosis was characterised primarily by sensory difficulties, such as heightened sensitivity to loud noises. The participant had attended a specialist school for children with special educational needs/disabilities and the participant has been under learning disability services previously. The participant has experienced multiple traumas throughout childhood, including but not limited to sexual, emotional and physical abuse. The participant's parents separated during her childhood, and she reported strong feelings of loss and abandonment, due to feeling 'disowned' by her parents due to her learning disability. The participant also lost a sibling to suicide. The participant stated that she had not grieved for this loss and the loss was profound, as her sibling represented love and care to her.

The participant first had contact with services as a young child. Since an initial placement in a children's unit, the participant had consistent contact with and across over 20 mental health and residential units/wards. A pattern of placements breaking down was apparent over time, involving a deterioration in mood, resulting in an escalation in risky behaviours and disengagement from treatment, leading to a transfer to often increasingly more restrictive or specialist environments. The PICU admission was due to the breakdown of a residential placement, due to carrying weapons, threatening staff and refusing medication. The participant was initially admitted informally, but was then detained under the Mental Health Act. The section was due to acts of self-harm, frequent verbal abuse of staff, issuing physical threats to staff, extensive damage to the ward environment and inflicting injuries on staff (e.g. during one incident of restraint, a staff member was briefly strangled). Escalating risks led to the regular use of physical restraint involving large numbers of the MDT, use of the seclusion room and increasing resort to use of intramuscular rapid tranquilisation. The MDT reported finding the incidents difficult to manage, were burning out, and felt overwhelmed by the rapid mode shifting. The wellbeing and safety of both MDT and patient were, at times, compromised. The participant verbalised experiencing the restrictive practices as retraumatising.

### ***Developing the formulation***

The schema-informed formulation model was selected as this would enable the identification of differing schema modes to help both the patient and MDT to better recognise and then manage activation of differing schema modes. Modes presented as a constellation of predominant schemas and associated coping responses, with shifting between modes due to stress, and fragmentation between modes being maintained by dissociation. The formulation is presented in Fig. S1 (see online Supplementary material) and identified four dysfunctional child modes: (a) 'fleeing' as the desperate child mode, (b) 'destructive of care' as the humiliated child mode, (c) 'sulking' as the defiant child mode and (d) 'rage' as the impulsive/enraged child mode. The formulation contained one healthy adult mode (called the 'happy' mode) and an unmanageable feelings state (i.e. the maladaptive coping mode). Each mode was given an idiographic title to aid in patient recognition and contained the dominant feeling, physiology, thoughts and behaviours. The procedures linking modes were mapped and the MDT responses to each mode the participant experienced as 'unhelpful' were added. The formulation was built iteratively with the patient mode by mode. The MDT version and the patient versions of the formulation had the same content, but the patient version was more pictorial for ease of understanding due to their mild learning difficulties.

### ***Implementing the formulation***

The formulation aimed to help the MDT and the patient to work collaboratively to firstly recognise mode activation and then for the staff to intervene in ways that the patient had defined would be more helpful for that mode. The formulation was then updated (see Fig. S2 in online

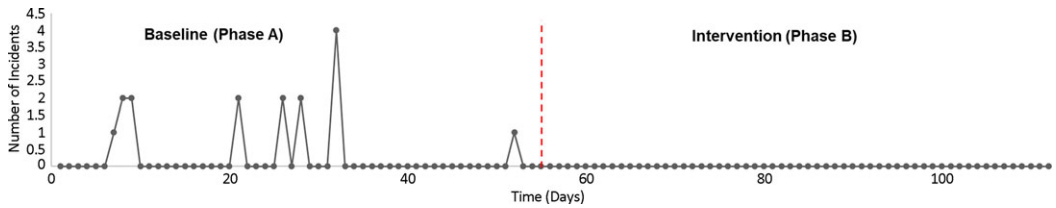


Figure 1. Number of incidents across the study phase.

Supplementary material) with a range of responses that the MDT could implement when certain modes were activated. Formulations were shared and discussed with the MDT during the ward weekly reflective practice sessions. A set of flashcards were developed, consisting of picture summaries of the various modes to help the participant ‘mode signal’ more effectively (again shared with the MDT). The participant’s role during the intervention phase was to recognise and then communicate to the MDT the mode she was currently in. The one-to-one sessions during the intervention phase supported the patient using the formulation, but were in no way schema therapy.

## Results

Figure 1 displays the restraint incident rate over the two study phases. The rate of incidents requiring the use of restraint during the baseline was 16; 10 required the additional use of intramuscular rapid tranquilisation and four the additional use of seclusion. The number of incidents requiring the use of restraint was 0 during the intervention phase.

## Discussion

This study was conducted because of the need to provide an empirical evaluation of outcome to start to build a PICU psychotherapeutic evidence base. The  $N = 1$  single case methodology was only quasi-experimental, due to lack of any experimental manipulation. The outcome measures used were sensitive to the PICU context, were easy to collect and did enable a pattern of change to be elucidated. Future research should implement a more robust experimental design (i.e. ideally with a neutral baseline) and take idiographic and nomothetic measures from both the patient and the MDT. The current bi-phasic comparison demonstrated that restrictive practices extinguished and so there was no need for a statistical analysis of the outcome, as the outcome variable extinguished.

This study provides encouraging, but only an initial, contribution to the evidence base regarding the effectiveness of psychological interventions in PICUs (Royal College of Psychiatry, 2019). In terms of the skills and competencies required to deliver the intervention, then the work of the AP was closely supported and supervised by the CCP. There is pressure on PICU beds nationally and national guidance suggest a maximum stay of 8 weeks, with an average length of admission of 26.5 days. Psychological input into the care of PICU patients offers the possibility of cost savings in the long-term due to shortening admissions, but economic evaluations are needed to support this.

The study clearly had limitations. The study only explored the impact of a psychological intervention for a single patient and generalisability may be poor. Future studies should evaluate outcomes with actively psychotic patients, who make up the majority of PICU populations (Bowers *et al.*, 2008). The study failed to index long-term durability. Assessment and development of the formulation co-occurred during the baseline period, which is a confounding factor. It is impossible to disassemble the therapeutic influence of the one-to-one sessions to support the

formulation during the intervention phase and the changes to MDT responding. There were no formal adherence checks performed on the MDT's use of the formulation, or the competency of the AP's input.

To conclude, supporting psychological change in PICU patients may well require bespoke blending of direct clinical work and indirect MDT organisational work and the clinical/organisational ratio will differ according to the needs of individual patients. The study demonstrates that a single case design is a practicable research methodology fit-for-purpose for the PICU clinical context and the study highlights the need to develop an evidence base for psychotherapeutic intervention.

**Supplementary material.** The supplementary material for this article can be found at <https://doi.org/10.1017/S1352465823000309>

**Data availability statement.** The data are available on reasonable request from the corresponding author.

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**Author contribution.** **Faye Cox:** Data curation (equal), Formal analysis (equal), Project administration (equal), Writing – original draft (equal); **Stephen Kellett:** Conceptualization (equal), Methodology (equal), Supervision (equal), Writing – review & editing (equal).

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**Competing interests.** The authors declare none.

**Ethical standard.** We have abided by the Ethical Principles of Psychologists and Code of Conduct as set out by the BABCP and BPS.

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