Development and evaluation of a de-escalation training intervention in adult acute and forensic units: the EDITION systematic review and feasibility trial

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Scientific summary

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Scientific summary

Background

De-escalation techniques are recommended for averting potential violence in mental health settings without resorting to 'containment' interventions (e.g. physical restraint and seclusion) and are part of mandatory National Health Service (NHS) training. But existing training is non-evidence-based and containment interventions are used too often/too soon when conflict occurs. Containment interventions have low acceptability to patients, are potentially harmful and have limited evidence supporting their safety and effectiveness.

Objectives

EDITION's overall aim was to develop a feasible, acceptable, evidence-based de-escalation staff training intervention to reduce rates of conflict (e.g. physical aggression, self-harm) and containment in adult mental health inpatient settings. We had the following objectives:

(1) Understand the factors that enhance and inhibit de-escalation behaviours in adult acute mental health inpatient settings, psychiatric intensive care units (PICUs) and adult forensic, low-, medium- and high-security inpatient mental health settings.
(2) Develop with stakeholders an effective, acceptable and context-sensitive de-escalation training intervention for mental health staff.
(3) Establish the feasibility of embedding our intervention into secondary care mental health services by monitoring training uptake and engagement rates, and exploring, from multiple stakeholder perspectives, potential barriers and enablers to its implementation.
(4) Establish the feasibility of conducting a randomised controlled trial (RCT) to determine the clinical and cost-effectiveness of our intervention, by quantifying participant recruitment and retention, and identifying the optimal strategies to overcome any difficulties experienced.
(5) Examine the applicability (content validity) and acceptability (full and partial completion rates, sensitivity-to-change) of proposed trial outcome measures.
(6) Collect outcome data to help inform the parameters of a fully powered trial, including identification and standard deviation of the proposed primary outcome measure for sample size.

Methods

Three work packages (WPs) were completed to develop, deliver and evaluate an evidence-based staff de-escalation training intervention adaptable for use in different settings and patient populations. WP1 consisted of two systematic reviews and a large-scale (128 participants) qualitative inquiry in adult acute and adult forensic inpatient settings. The systematic reviews consisted of an update of the authors' previous review of de-escalation training effectiveness and acceptability in 2015 and a Theoretical Domains Framework (TDF)-informed qualitative evidence synthesis of barriers and enablers to the de-escalation of conflict in adult acute and forensic inpatient settings.

Work package 2 involved the development of the EDITION training intervention, which was guided by the Behaviour Change Wheel and followed the principles of Experience-based Co-design. The process consisted of five phases: (1) charting and synthesis of behaviour change targets; (2) stakeholder events to prioritise and organise behaviour change targets and generate intervention ideas; (3) intensive working with smaller co-design teams to map the stakeholder-generated ideas to formal behaviour

change techniques (using the Behaviour Change Techniques Taxonomy, v1) and develop an intervention draft; (4) stakeholder event to refine and finalise the intervention; and (5) reporting of the final intervention according to the Template for Intervention Description and Replication (TIDieR) guidelines for intervention description and replication.

Work package 3 involved a feasibility trial and process evaluation of the EDITION intervention which evaluated the impact, acceptability and feasibility in 10 purposively selected wards. The intervention was evaluated using an uncontrolled pre and post design (this was to ensure maximum variation in our understanding of contextual acceptability, feasibility and impact). Data were collected over 24 weeks: 8 weeks pre training, an 8-week period to embed the intervention and 8 weeks post implementation. Staff-reported outcomes were capability, motivation and opportunity to use de-escalation (COM-B model); rates of conflict and containment [Patient and Staff Conflict Checklist (PCC-SR)]; attitudes to containment [Attitudes to Containment Measures Questionnaire (ACMQ)]; attitudes to personality disorder [Attitudes to Personality Disorder Questionnaire (APDQ)] and the Violence Prevention Climate (VPC). Patient-reported outcomes were: Perceived Expressed Emotion in Staff (PEES) and coercion experience [Coercion Experience Scale (CES)]. The observer-rated de-escalation performance English-Modified De-escalating Aggressive Behaviour Scale (EM-DABS) was used to assess trainee performance pre and post training. Training acceptability was evaluated via the Training Acceptability Rating Scale (TARS) distributed to trainees at the end of each session.

The economic component of the feasibility study explored using the EuroQol-5 Dimensions, five-level version (EQ-5D-5L) to assess health status and quality-adjusted life-years (QALYs) and estimates of (1) the additional costs of providing and implementing the new training package, (2) costs of managing conflict and (3) the average costs of inpatient stay. The feasibility and acceptability of the EDITION intervention were also assessed through participant observation and semi-structured interviews with multidisciplinary team professionals, staff and patients in the implementation settings. Critical parameters for a future trial such as the feasibility and acceptability of recruitment strategies and the appropriate primary outcome were also assessed.

Results

The updated systematic review of de-escalation training effectiveness and acceptability identified 10 eligible studies published since the last search (August 2014). Synthesising these new data with the findings of our original review did not change its conclusions. The methodological quality of prior evaluations is weak and there is stronger indication of effects on training outcomes (e.g. knowledge and skills demonstration) than improvements in clinical or safety outcomes. The TDF-informed qualitative evidence synthesis of barriers and facilitators to the de-escalation of conflict identified and synthesised the findings of 62 eligible qualitative studies. WP1 qualitative data from adult acute and adult forensic mental health inpatients were composed of 60 individual interviews and 11 focus groups with 46 patient participants, 54 ward staff participants, 10 carer participants and 18 multidisciplinary professional participants (128 participants in total). These data revealed de-escalation was conceptualised by participants as an intersubjective process occurring in the context of intense, social encounters between (generally) a lone patient and either a single member of staff or a group of staff. Both staff and patients described paying vigilant attention to the behaviour of the 'other' during these encounters and making efforts to both regulate their own internal state (cognition, affect, arousal) as well as making efforts to regulate the internal state of the other party (e.g. by distraction or re-framing perceptions). These regulatory actions were by no means unidirectional (staff de-escalates patient). Indeed, patients provided many examples of de-escalating dysregulated staff behaviour. As such, de-escalation was characterised as a collaborative 'process' rather than the application of a discrete set of staff skills.

Both staff and patient accounts agreed that their capacity to engage in the regulatory processes involved in de-escalation is often influenced by factors that are extraneous to the immediate situation. Moreover, they agreed that if staff or patient ability to appreciate context (consider alternative interpretations, weigh the costs and benefits of courses of action) is overwhelmed by their internal state, an impulsively violent action occurs (e.g. an assault, a physical restraint). Patient and staff accounts were consistent in the sense that they both indicated that any intervention aiming to enhance de-escalation must first address the key sources of interpersonal and environmental stress that limit patient and staff capacity for self-regulation when encounters requiring de-escalation occur.

For staff, capacity for self-regulation was influenced by their individual skill levels, their knowledge of the patient/s involved in the encounter, cultures of contempt for vulnerability within staff teams, common, ideological representations of mental health problems (especially personality disorder) constructed in teams and organisations, and punitive organisational cultures where blame and sanction deter staff willingness to take positive risks. For patients, capacity for self-regulation was influenced by illiberal ward regimes (myriad rules, enforced inflexibly), environmental signifiers of threat and disrespect (visible evidence of coercion, organisational messaging demanding unconditional patient respect for staff), disempowering and dehumanising conduct of key clinical and ward processes (ward rounds, handovers, prescribing, waiting times, medication rounds, mealtimes, admission) and patient community conflict (lack of staff in communal areas to influence/intervene, lack of opportunity to escape distressing behaviour).

Synthesis of WP1 learning identified 44 discrete behaviour change targets for consideration by the expert stakeholder groups (RRPI specialists, academics working in the field of violence reduction, clinicians, service users and carers). The process of organising and prioritising behaviour change targets revealed that the intervention should aim to meet its outcomes via the following five mechanisms: (1) enhancing de-escalation skills and modifying staff attitudes, knowledge and understanding of patients; (2) changing power dynamics (service user involvement, increased democratisation of inpatient services); (3) changing the environment (sensory modulation, reducing visible evidence of coercion); (4) changing clinical systems and organisational context (systems to ensure a culture of de-escalation, that is reducing blame, increasing accountability); (5) changing attitudes to vulnerability within staff teams.

The expert stakeholder groups generated 16 distinct intervention components that they felt would enhance de-escalation. These were reduced to 11 final components once the voting process according to the APPEASE criteria (affordability, practicability, effectiveness and cost-effectiveness, acceptability, side effects/safety and equity) had been concluded. The final EDITION intervention included 11 behaviour change components, including de-escalation training; two novel models of reflective practice ('Negotiated Boundaries' and 'Conflict Formulation'); post-incident debriefing and 'Symmetrical Feedback' (an intervention designed to enhance the quality of staff and patient feedback on clinical practice); collaborative prescribing and ward rounds (interventions to involve patients in prescribing decisions and reduce patient distress in ward rounds); three interventions to improve practice around admission, shift handovers and the social and physical environment; and, finally an intervention to enhance support planning and the availability of sensory modulation to patients.

Work package 3 trialled the intervention in 10 adult acute and forensic inpatient wards. All wards except one completed the full 24 weeks of data collection (one ward withdrew at 13 weeks due to COVID-19 impacts on staffing). Two hundred and seventy-six mental health staff in total were trained in the EDITION intervention (214 ward staff, 62 multidisciplinary professionals). For patient clinical outcomes, 81% (283/350) of the recruitment target was met across the seven time points [excluding remote data collection due to COVID-19, this rose to 88% (283/320)]. For staff-reported clinical outcomes, 68% of the total recruitment target was achieved [excluding remote data collection due to COVID-19, this increased to 75% (135/180)] across the four time points. The proposed primary outcome for a full trial (the PCC-SR) had a completion rate of 62% (2360/3780). However, when wards that required remote data collection (due to COVID) were excluded, the completion rate increased to 68% (2343/3444).

Importantly, the completion rate increased in the post-intervention period. Excluding the wards where remote data collection was required, completions increased from 65% (876/1344) in the pre-intervention period to 76% (855/1120) in the post-intervention period, strongly indicating that the strategies to increase completion that the research team tested throughout data collection were becoming optimised in the follow-up data-collection period. The staff-reported clinical outcome measures had good full completion rates between 80% (ACMQ) and 100% (COM-B). The patient-reported clinical outcome measures also had good full completion rates except the CES, which was just 53%. The other patient measures [Violence Prevention Climate (VPC) and perceived expressed emotion in staff scale (PEESS)] had full completion rates of > 80%.

The TARS outcomes (n = 214) indicate that the de-escalation training was acceptable, with most participating 'strongly agreeing' that the training was generally acceptable. In terms of preliminary evidence of effect, the embedding and follow-up phases of the study were associated with a reduction in conflict incidents: the embedding phase had a 45% reduction in incidents and the follow-up phase saw a 55% reduction in incidents compared with baseline. Compared with baseline, the follow-up phase also saw a 20% reduction in number of containments.

No effects on the secondary outcome measures for either staff or patients were detected. Most of the intervention components were in consistent use in the post-intervention follow-up periods. However, there were important exceptions. The collaborative prescribing intervention was only used by 2/10 participating wards' psychiatrists and only 2/10 wards had the sensory modulation and support-planning intervention implemented. While the lack of engagement with the latter intervention was, partially, explained by concerns over infection risk in the context of COVID-19, our process evaluation revealed that the lack of engagement with the prescribing intervention was centred on more fundamental value clashes between the psychiatrists and the proposed intervention.

The costs of the training intervention were estimated from two sources. Firstly, ward-level data reported the number of staff attending training, by agenda for change (AfC) band, at the start of the embedding period. Secondly, intervention diaries were completed by champions leading the components of the intervention during the embedding period. Overall, the average (mean) number of staff and cost per day for the initial training were similar in the two trusts, with training attended by staff across AfC bands 2–7 in each trust. The overall number and costs of staff on the ward and conflict/containment episodes per shift were estimated from the PCC-SR measure. Published unit costs of conflict/containment episodes from a single source were used to estimate the costs of these events. Exploratory regression analyses suggest that shift, ward and follow-up period may be important factors to consider in the design of an integrated clinical and economic effectiveness trial, in terms of data collection and analysis methods. Data about discharges and inpatient length of stay were limited to patients discharged and were collected from the trusts for the pre- and post-intervention periods. The data indicate that it is feasible to collect information about inpatient stay from trusts. The EQ-5D-5L indicates that it is feasible to collect the data from staff and from patients.

Conclusions

The EDITION study developed an evidence-based and co-designed training intervention to enhance de-escalation in adult acute and adult forensic mental health inpatient settings. The intervention was informed by evidence synthesis of 108 primary research studies and qualitative inquiry with 128 participants. Co-design of the intervention resulted in a complex intervention with 11 behaviour change components delivered by Reducing Restrictive Practices Instructors, ward staff and patients, psychiatrists, clinical psychologists, nursing leadership and occupational therapists. The training was very well engaged with, with 275 professionals and paraprofessionals from 10 participating wards completing training. Conducting a RCT of the EDITION intervention is likely to be feasible. The strategies to enhance completion rates of the PCC-SR (proposed primary outcome) were successful (rising from 65%

in the pre-intervention to 76% in the post-intervention phase). Recruitment rates for secondary outcomes were also good: 81% of the target for patients was met and 68% for staff. The secondary outcome measures had excellent full completion rates except for the CES (patient-reported), which may need to be removed in a full trial. It was feasible to collect resource use and health status data to inform an economic analysis of the intervention in a full trial.

Trial registration

This trial is registered as ISRCTN12826685.

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Research objectives

1. Confirm the key components and mechanisms of effective de-escalation and explore variations across different service settings.
2. Develop with stakeholders an effective, acceptable and context-sensitive de-escalation training package for mental health staff.
3. Evaluate training package effects on use and effectiveness of de-escalation and rates of conflict and containment.
4. Explore the processes underpinning training implementation and impact and understand the individual and organisational factors inhibiting or enabling routine use.

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This report

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