Staff training programmes for the prevention and management of violence directed at nurses and other healthcare workers in mental health services and emergency departments

Carolyn Doughty
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It was authored by Dr Carolyn Doughty (Research Fellow), who conducted the critical appraisals, prepared the report and coordinated the project.

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LEVEL OF EVIDENCE CONSIDERED IN TECHNICAL BRIEFS

Technical Briefs are rapidly produced assessments of the best available evidence for a topic of highly limited scope. They are less rigorous than systematic reviews. Best evidence is indicated by research designs which are least susceptible to bias according to the National Health and Medical Research Council’s (NHMRC) criteria (see Appendix 1). Where methodologically acceptable and applicable, appraised evidence is limited to systematic reviews, meta-analyses, evidence based clinical practice guidelines, health technology assessments and randomised controlled trials (RCTs). Where not available, poorer quality evidence may be considered.

CONFLICT OF INTEREST

None.
EXECUTIVE SUMMARY

Objective
To systematically identify and appraise international evidence for the effectiveness of staff training for preventing or managing violence directed at nurses and other healthcare workers in mental health services and emergency departments.

Data sources
The literature was searched using the following databases: Medline, Embase, Cinahl, Current Contents, Science/Social Science Citation Index, Cochrane Central Register of Controlled Trials, Index New Zealand and Te Puna-New Zealand Bibliographic Database. Other electronic and library catalogue sources searched included the Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effectiveness, the NHS Economic Evaluation Database, Health Technology Assessment Database and the ACP Journal Club. Wider searches of the Internet, hand searching of journals and contacting of authors for unpublished research were not be undertaken.

Searches were limited to English language material and published between 1985 and June, 2005 inclusive.

Study selection
Studies were included if they reported on a staff training programme or protocol aimed at healthcare workers for reducing the risk or short-term management of imminent violence in a mental health service (inpatient or outpatient) or emergency department. Staff training programmes that seek to reduce the incidence of assault or violence against healthcare workers by teaching them about de-escalation, safe use of calming and restraint techniques and any other strategies or alternatives to either seclusion or rapid sedation. Key quantitative outcomes were considered relating to the effectiveness of staff training interventions including any change in staff knowledge, any reported change in the incidence of assault or violence, any change or reduction in behavioural dyscontrol in a particular setting and any change in the incidence and/or severity of any other adverse events following the implementation of a staff training intervention. Only primary studies of controlled trials, cohort studies, case-control studies and before-and-after study with 10 or more participants were eligible for inclusion. Relevant systematic reviews or meta-analyses were also eligible for appraisal, principally as background information.

Excluded studies included articles that focused on programmes implemented in nursing homes or residences or studies that did not consist of 50% or more of participants (patients or staff) from psychiatric/mental health or emergency department settings. Studies that were on risk assessment and management or were on seclusion, physical restraint or rapid sedation but did not report or incorporate any associated training initiative or evaluation of staff training in their effective use were excluded. Furthermore articles on crisis intervention programmes or training after the incident rather than prior training were not formally appraised. Studies that focused solely on staff burnout or perceptions, attitudes and confidence in dealing with violent behaviour but lacked before-and-after data on outcomes were not included.

Data extraction and synthesis
A systematic method of literature searching, selection and appraisal was employed in the preparation of this report.

Of more than 730 potentially relevant articles/abstracts identified, 125 articles were retrieved as full text from which a final group of 24 were selected. Of these, four systematic reviews, one randomised controlled trial, three comparative studies and 16 before-and-after studies were identified as eligible for inclusion in this Technical Brief.
Key results and conclusions

Numerous studies have been carried out on the prevalence, causes and nature of violence in mental health units and emergency departments worldwide, however there have been few high quality studies which actually rigorously assess the effects of various staff training interventions in preventing or reducing violence. Most programmes do not specifically address the psychological and organisational costs associated with aggression in the workplace and there still needs to be research which addresses the multiple contexts in which violence occurs.

Overall the evidence for the effectiveness of staff training programmes for preventing violence is inconclusive. This reflects the fact that the quality of the evidence evaluating the effectiveness of staff training programmes for preventing or minimising violence to healthcare workers is relatively low according to the NHMRC hierarchy of evidence. The lack of published literature from New Zealand settings is also a major limitation of this Technical Brief.

There was some suggestion that staff training may lead to increases in staff knowledge of certain skills and techniques and in some but not all cases, a short-term reduction in the incidence of violence but without further controlled studies the evidence for this remains equivocal. Any longer term or sustained effect from training to date is unknown. No specific programme or particular approach can be recommended as more effective than another although most of the programmes appear to contain common elements.

Limitations of this report

The primary prevention and short-term management of violence in the healthcare workplace is multifaceted and is likely to involve the utilisation of a range of interventions, of which staff training is only one. Other interventions may include the development of well-planned physical environments (ward or department design and organisation), the use of strategies or measures that may help to anticipate and prevent violence (risk assessment, de-escalation, and possibly restraint and/or seclusion) and the use of medication in the context of violence (rapid sedation) (Royal College of Psychiatrists 1998).

It is important to emphasise that the scope of this report is highly limited. The restriction of the scope of this report to mental health services and emergency departments merely reflects the fact that the bulk of research to date has been conducted in these settings, and prevention of violence in these and a variety of other settings clearly warrants further research. Furthermore, a number of important contextual issues are of relevance also to this issue. These include but are not limited to:

- the confidence and ability of individual healthcare staff
- the quality and calibre of leadership and teamwork within specific settings, and
- the mix of groups (consumer and staff) in healthcare settings and how this is aligned with staffing skill, numbers of staff and gender balance.

These factors were not investigated in any of the primary studies on staff training appraised in this report.

MeSH headings

Health personnel, occupational exposure, workplace, violence, aggression, inservice training, teaching, education, program evaluation.

Additional key words

Patient assault, patient violence, verbal abuse, safety, workplace violence, hostility, threat, aggressive behavior, occupational safety, working conditions, occupational stress, train$, educat$, prevent$, intervention.
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BACKGROUND

This Technical Brief was requested by Dr Jeremy Skipworth, Deputy Director of Mental Health and Senior Advisor, Mental Health Directorate, Ministry of Health, New Zealand Government.

Violence is a serious occupational hazard in healthcare workplaces. Healthcare workers including nurses, physicians, psychologists and social workers sometimes face the risk of physical assault or verbal violence. Staff working in emergency departments and inpatient mental health settings appear to be among those at risk (Brasic and Fogelman 1999). Staff training is often recommended as an essential part of any comprehensive approach for preventing and managing work-related violence; yet there is a paucity of scientific evidence on the effectiveness of such interventions (Nachreiner et al. 2005). Suggested training topics or modules include teaching staff about: risk factors that cause or contribute to assaults, ways to prevent, diffuse or de-escalate volatile situations or aggressive behaviour, ways of developing and implementing workplace violence prevention policies and teaching staff procedures and policies for reporting and recording incidents.

The consequences for staff that are on the receiving end of violent, verbal or physical abuse can be far reaching, and in some instances may result in the staff member being no longer able to continue in their job and requiring psychological help. The aftermath of the experience of violence may include signs and symptoms of post-traumatic stress disorder including anxiety, impaired work performance and difficulties sleeping. Staff victims may also suffer from a subsequent loss of confidence and self-esteem (Hurlebaus and Link 1997; Rew and Ferns 2005). O'Connell et al. (2000) have suggested a specific association between aggression in the workplace and subsequent increases in sick leave and alcohol and drug usage. Both Goodykoontz and Herrick (1990) and Nabb (2000) observe that increased staff turnover and staff developing negative attitudes towards work or burnout are commonplace following aggressive incidents. Therefore high levels of workplace violence may adversely impact both on staff recruitment and on retention within an organisation.

McKenna (2002) has highlighted the need for nurses in New Zealand to become more skilled in risk assessment, particularly given the expansion in the scopes of practice for some nurses, which may extend nurses responsibility to include the overall management and care and treatment of patients, who in meeting legal criteria for involuntary treatment are deemed to be at risk of potentially harming themselves or others. A toolkit on risk assessment and management has recently been developed by an expert working group for future use and training of a variety of mental health professionals in New Zealand (Evans et al. 2004; Ministry of Health 2004), however this toolkit is not aimed specifically at reducing violence but at increasing the skill of clinicians to assess and manage the risk of self harm or harm to others. This package would require adaptation and further development or that it be used in conjunction with existing staff training programmes before explicit use in the context of violence prevention.

Another alternative approach to reducing the incidence of assault within healthcare settings is the use of programmes that address the sequelae of incidents of verbal or physical aggression. For example, the “Assaulted Staff Action Program” (ASAP) is a voluntary programme that has been utilised in the United States. It provides individual crisis intervention, group crisis intervention, staff victim support, staff victim family crisis intervention and individual referrals as required. This type of programme in itself may constitute a particular type of risk management strategy that can be implemented along with other types of staff training initiatives (Flannery et al. 2000). In its most comprehensive form it also includes pre-incident training for staff.

Rew and Ferns (2005) discussed the UK National Health Service – “NHS Zero Tolerance Zone Campaign” which sought to reinforce to the public that violence against staff working in the NHS was not acceptable and to reassure staff that violence and intimidation was unacceptable and would not be tolerated. Beech and Leather (2003) note that within the British context guidance around promoting or delivering appropriate ongoing training in communication skills and de-escalation techniques is relatively scant and to date conflict resolution training has been focused primarily at post registration (already qualified) staff. They recommend that a whole range of techniques should to be taught to those working within the health services and students on placements should not be excluded.
Comprehensive programmes should seek to incorporate a range of modules and include topics such as risk assessment and prediction, the use of physical and non-physical techniques, customer service and communication, recognition of warning signs, models of de-escalation and cultural awareness and safety.

Hence, the aim of this Technical Brief is to review what evidence exists on the effectiveness of staff training programmes for the prevention and management of violence directed at nurses and other healthcare workers. The scope of this report is limited to staff within mental health services (general adult, child and adolescent and forensic settings) and staff within emergency departments.
SELECTION CRITERIA

Study inclusion criteria

Publication type

Studies published between 1985 and June, 2005 inclusive in the English language, including primary (original) research (published as full original reports) and secondary research (systematic reviews and meta-analyses) appearing in the published literature.

Context

Studies reporting on staff training programmes or protocols for reducing the risk or short-term management of imminent violence.

Population of interest

Healthcare workers.

Setting

Mental health services (inpatient or outpatient) and emergency departments.

Intervention

Staff training programmes that seek to reduce the incidence of assault or violence against healthcare workers by teaching them about de-escalation, safe use of calming and restraint techniques and any other strategies or alternatives to either seclusion or rapid sedation.

Outcomes

Key quantitative outcomes relating to the effectiveness of staff training interventions including any change in staff knowledge, any reported change in the incidence of assault or violence, any change or reduction in behavioural dyscontrol in a particular setting and any change in the incidence and/or severity of any other adverse events following the implementation of a staff training intervention.

Study design

Systematic review or meta-analysis
Randomised controlled trial
Cohort study
Case-control study
Before-and-after study

Sample size

Studies with samples of at least 10 participants.
**Study exclusion criteria**

Studies were excluded if they:

- focused on programmes implemented in nursing homes or residences
- were on risk assessment and management but did not report on any associated training initiative
- were on seclusion, physical restraint or rapid sedation and did not incorporate an evaluation of staff training in their effective use
- evaluated a crisis intervention programme or training after the incident rather than prior training
- did not consist of 50% or more of participants (patients or staff) from psychiatric/mental health or emergency department settings
- focused solely on staff burnout or perceptions, attitudes and confidence in dealing with assaultive behaviour
- were not published in English
- were relevant descriptive studies but lacked before-and-after data on outcomes
- were “correspondence”, book chapters, conference proceedings, abstracts only
- reported studies or case series with samples of fewer than 10 participants
- did not clearly describe their methods and results, or had other significant discrepancies.

**MAIN SEARCH TERMS**

Details of the search strategy are presented in Appendix 2.

MeSH headings (Medline subject headings): exp health personnel, occupational exposure, workplace, violence, aggression, inservice training, teaching, exp education, program evaluation.

CINAHL subject headings (non-MESH): patient assault, verbal abuse, safety, workplace violence.

PSYCHINFO subject headings (non-MESH): hostility, threat, aggressive behavior, patient violence, occupational safety, working conditions, occupational stress.

Additional keywords (used in all databases): train$, educat$, prevent$, intervention.

**SEARCH SOURCES**

The NZHTA CORE Search was employed which covers major databases and secondary sources of published literature.

Searches were of material published from 1985 onwards. The searches were completed by July 2005.

A wide ranging search was done of bibliographic databases, review databases, evidence-based resources and guidelines websites.

References were also identified from a previous search on the minimisation of harm to health care workers in mental health settings and emergency departments. The bibliographies of retrieved papers were scanned for references that had not been identified in the search.

**Principal sources of information**

Bibliographic databases
- Medline
- Embase
- Cinahl
- Current Contents
Science/Social Science Citation Index  
Cochrane Central Register of Controlled Trials  
Index New Zealand  
Te Puna-New Zealand Bibliographic Database

Review databases  
Cochrane Database of Systematic Reviews  
DARE database  
NHS Economic Evaluation Database  
Health Technology Assessment Database  
ACP Journal Club

Hand searching of journals, contacting of manufacturers, or contacting of authors for unpublished research was not undertaken for this Technical Brief.

APPRAISAL METHODOLOGY

Summaries of appraisal results are shown in tabular form (known as Evidence Tables) which detail study design, study setting, sample, methods, results, reported conclusions and NZHTA reviewer conclusions/comments based on the limitations and validity of the study. The spelling of the original article is retained in the Evidence Tables.

The evidence presented in the selected studies were assessed and classified according to the NHMRC’s revised hierarchy of evidence (Appendix 1).

RESULTS

From the above search strategy, 737 potentially relevant articles/abstracts were identified of which 125 were retrieved. Of these retrieved articles, 101 were excluded. These papers, annotated with the reason for exclusion, are presented in Appendix 3. Studies retrieved in full text were excluded for the following reasons:

- narrative review or background article (n=12)
- editorial or commentary (n=7)
- no staff training component or trials (if a systematic review) were formally evaluated (n=39)
- they focused on risk prediction or assessment (n=1)
- they focused on characteristics of violent patients or prevalence of violence (n=3)
- participants in training were not staff, non mental health/emergency department setting (n=6)
- primary outcomes of interest were not evaluated (n=3)
- letter to the editor (n=1)
- post-crisis intervention (n=16)
- descriptive study (n=8)
- they focused only on perceptions, attitudes and confidence (n=5).

Twenty-four of the articles retrieved were critically appraised (listed in Appendix 4). The included papers are presented in the evidence tables below. Four systematic reviews were identified, although it is noted that these were not reviews of controlled trials. The primary studies selected for inclusion were all level IV and above according to NHMRC’s hierarchy of evidence, and included one randomised controlled trial, three comparative studies and 16 before-and-after studies.
Table 1. Evidence table of a secondary research appraised relating to staff training for the prevention and management of violence

<table>
<thead>
<tr>
<th>Authors Country</th>
<th>Study Design</th>
<th>Sample and Interventions</th>
<th>Methods</th>
<th>Results</th>
<th>Limitations and Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farrell and Cubit (2004)</td>
<td>Systematic review (but not only of controlled trials)</td>
<td>Review conducted at the Tasmanian School of Nursing. Setting and participants Staff who work in health services. Scope Staff training programs on aggression management.</td>
<td>The authors compared the content of aggression management programs (available in English) to a set of predetermined 12 content categories. An additional category of “costs to staff” was added as review progressed. Search Programs were sought via the Cumulative Index to Nursing and Allied Health literature using search terms ‘aggression management’, aggression and violence in nursing, aggression management programs, aggression management training. The internet search engine GOOGLE was also used with the same terms. Citation searching was conducted from published papers addressing aggression and violence in nursing, and nursing professional organizations in Australia, researchers and service providers consulted. Inclusion criteria availability to others to use delivered free or for a cost targeted to nurses (and/or others) targeted to aged care personal or extended care assistants face-to-face delivery and/or training manual/distance education. Exclusion criteria if they were developed solely for research purposes or were not freely available for others to use/avail themselves of the training.</td>
<td>A total of 28 programs were evaluated. Major content areas appeared to be causes (n=23), communication (n=22), and 20 programs included physical techniques, risk assessment and legal issues. Information on types of aggression (e.g. physical, verbal), dementia, mental health, disabilities was included in some programs (n=15), as was leadership, team work (n=14) and debriefing (n=14). Very few courses appeared to cover orientation such as policies, protocols and environment (n=9), pharmacological management of aggression (n=7), issues around the use of restraint (n=7), costs associated with aggression (n=4) or seclusion (n=4). The majority of programs reviewed covered personal safety issues for staff and patients, together with legal issues. The use of restraint, pharmacological management of aggression and seclusion were features of programs specifically addressing the needs of healthcare staff in mental health settings. Most programs appeared not to address the psychological and organisational costs associated with aggression in the workplace.</td>
<td>Limitations although articles describing programs have clearly been reviewed for program content no additional information is given about how the programs listed were evaluated, what was their study design, the outcome measures used etc acknowledgement of the lack of previous systematic evaluation was made but the evidence (or lack of evidence) for this comment is not clarified. Comments the review authors did not make any substantive conclusions, nor did they make a statement to suggest no conclusion could be made due to lack of rigorous evidence however there are several useful tables listing different programs and a brief indication of course content. Authors conclusions Few programs were based on a systematic evaluation of their outcomes. Suggestions for program development and their teaching are discussed.</td>
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Table 1. Evidence table of a secondary research appraised relating to staff training for the prevention and management of violence (continued)

<table>
<thead>
<tr>
<th>Authors</th>
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<th>Study Design</th>
<th>Sample and Interventions</th>
<th>Methods</th>
<th>Results</th>
<th>Limitations and Conclusions</th>
</tr>
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<tbody>
<tr>
<td>Flannery et al.</td>
<td>Boston, USA.</td>
<td>Meta analysis/Systematic review (but not of controlled trials).</td>
<td>Review conducted at the Massachusetts Department of Mental Health. Staff who work in mental health services. Scope Assaulted Staff Action Program (ASAP).</td>
<td>The authors conducted a meta-analysis of the effectiveness of ASAP in reducing frequency of assault. Search Relevant medical and psychological databases dating back to 1995 were accessed using the key word indicators Assaulted Staff Action Program, ASAP, Critical Incident Stress Management, CISM, and crisis intervention. Inclusion criteria: studies purporting to specifically assess the ASAP. Those incorporating behavioral outcomes (primarily patient assaults) rather than self-report variables. Exclusion criteria: conference proceedings.</td>
<td>A total of five programs looking at the effectiveness of ASAP were evaluated and statistically aggregated. Pooling all study outcomes using the ASAP model of crisis intervention yielded a significant (large) effect size, Cohen’s $d=3.175$ and fail safe number of $202$.</td>
<td>Limitations: predominance of single case experimental designs in study pool not clear from summary table of studies whether pre-incident training had taken place although authors introduction states “all staff were trained” or that “training and resources available to staff were similar to those in previous studies” this meta-analysis was conducted by the primary investigator of the five included studies. Comments: the ASAP program has an operational manual, though as this was not available information on training components is scant. Authors conclusions: The results of the aggregated studies assessing the ASAP intervention suggest that ASAP may be a useful intervention for reducing the frequency of assultive behaviour.</td>
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Table 1. Evidence table of a secondary research appraised relating to staff training for the prevention and management of violence (continued)

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<tr>
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<th>Results</th>
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<tr>
<td>Runyan et al. (2000)</td>
<td>Systematic Review (but not only controlled trials).</td>
<td>Review conducted at the University of North Carolina Injury Prevention Research Center. Setting and participants Employees of healthcare settings (mostly psychiatric facilities). Scope Administrative and behavioural interventions.</td>
<td>Two authors identified papers from abstracts for further review. A total of 41 articles discussed interventions, of which only 9 reported an evaluation. Search A systematic approach to literature searching was adopted. Databases searched included MEDLINE, EMBASE, Nursing and Allied Health, ERIC, PsycINFO, Sociofile and other occupational health, business, criminal justice, social science and government databases. Reference lists were checked and experts in the field consulted. Inclusion criteria: administrative and behavioural interventions directed at altering management practices (pre-placement screening, staffing patterns), worker practices (conflict management, restraint and control strategies) or both, for preventing workplace violence. Articles must have reported on victim, assailant, or social environmental interventions, and reported cognitive, behavioural, or injury-related outcomes related to the intervention. Exclusion criteria: interventions focused strictly on modifying the physical environment; interventions targeted at preventing sexual harassment or school-related violent events were excluded as well.</td>
<td>Of the 41 papers, recommended strategies were aimed at altering management as well as worker practices. Although the purpose of these papers was to suggest strategies for preventing workplace violence, many authors did not acknowledge that these strategies were not empirically evaluated nor did they suggest the need for further evaluation research to determine their effectiveness. Nine intervention studies were summarised, six of them in mental health settings. Two interventions employed post-event strategies directed at reducing negative psychological outcomes among staff that had been assaulted by patients at psychiatric facilities. Five papers evaluated training programs aimed at teaching hospital employees how to manage assaultive behaviours. Overall the research designs employed were weak and results inconclusive. None used experimental designs.</td>
<td>Limitations: although systematic, this review includes non-controlled study designs; the scope of this review extends wider than staff training initiatives. Comments: suggested interventions were categorized according to applicability to types of workplace violence and organized according to the Haddon Matrix. This matrix provides a conceptual framework, commonly used in injury control, to identify alternative and often complementary strategies for addressing potential injury problems. Authors conclusions: The lack of rigorous research to assess administrative and behavioural measures to address workplace violence represents a significant gap. Intervention research needs to draw on appropriate theoretical and conceptual frameworks, address the multiple contexts in which violence occurs, and employ strong evaluation research designs with attention to process, impact and outcome measures.</td>
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### Table 1. Evidence table of a secondary research appraised relating to staff training for the prevention and management of violence (continued)

<table>
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<tr>
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<th>Study Design</th>
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<th>Results</th>
<th>Limitations and Conclusions</th>
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<tr>
<td>Stirling et al. (2001)</td>
<td>Warwick, UK.</td>
<td>Systematic Review (but not only controlled trials). Level IV.</td>
<td>Conducted at the University of Warwick. Setting and participants Accident and emergency (A &amp; E) department staff. Scope Interventions relating to potential actions to minimise the risk of violence to staff.</td>
<td>Search A systematic approach to literature searching was adopted. Databases searched included Medline (1966-1999), BIDS, the Cochrane Library, Department of Health, the NHS Centre for Reviews and Dissemination and PubMed. Search terms included violence, abuse, safety, staff combined with emergency, department or MESH heading emergency medical services. Contact was made with people known to be interested in this field in the UK. All article titles and abstracts were reviewed for relevance. The full manuscript of each potentially relevant article was subsequently reviewed. Bibliographies of selected articles were scanned for relevant articles. Inclusion criteria • all studies with original data relevant to topic. Exclusion criteria • none stated.</td>
<td>This review had more of a focus on security with a comparative table listed of security measures from two studies. A second table listed 12 articles outlining proposals for action in dealing with violence (mostly descriptive studies or guidelines). A third and final table listed the security measures in place in US emergency departments.</td>
<td>Limitations • no information on the number of included versus excluded studies • no information on the study design/evidence level of included studies • staff training only mentioned in passing • strong focus on security. Comments • the introduction of restraint training for A&amp;E staff was noted in two studies, increasing from none in 1997 to 6.5% in 1999. Authors conclusions Numerous studies have been carried out on the prevalence, causes and nature of violence in emergency departments worldwide however there have been very few studies which actually assess the effects of various security interventions and other systems or interventions in reducing violence.</td>
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### Table 2. Evidence table of primary research appraised relating to staff training for the prevention and management of violence

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<tr>
<th>Authors</th>
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<tr>
<td>Arnetz and Arnetz (2000)</td>
<td>Uppsala, Sweden</td>
<td>Randomised controlled trial (cluster design)</td>
<td>Setting Healthcare workplaces including psychiatric (n=32) and emergency departments (n=5); The other sites included geriatric wards (n=7) and home health care (n=3). Participants Workplaces, n=47 Intervention, n=24 Control, n=23 Intervention Feedback programme/Training in recording. Written guidelines for regular feedback and group discussion of registered incidents. Control No intervention. Baseline differences Baseline analyses revealed no statistically significant difference with regard to self-reported violence in the past year.</td>
<td>A baseline questionnaire to staff at all workplaces to establish baseline data concerning experience with violence at work. A one-year period of continuous registration of violent events at all workplaces. At the intervention sites only a structured programme for regular discussion with staff was implemented. A one-month follow-up questionnaire to compare staff experience with violence during the project year with baseline data. Outcome measures The Violent Incident Form (VIF).</td>
<td>At the conclusion of the one-year period, the difference between groups was statistically significant (p&lt;0.05). Staff at the intervention work sites reported 50% more violent incidents than the control work sites during the year. Compared to the control group, intervention staff reported better awareness of risk situations for violence (p&lt;0.05), of how potentially dangerous situations could be avoided (p&lt;0.05), and of how to deal with aggressive patients (p&lt;0.05). Logistic regression analysis confirmed an increased risk for self-reported violence in the intervention group post-intervention (OR=1.49, 95% CI 1.07, 2.06, p&lt;0.05).</td>
<td>Limitations  • project did not outline guidelines for limiting activity at the control work sites  • researchers had no information as to how project coordinators were selected at the respective workplaces. It’s possible that an enthusiastic and motivated individual coordinator could influence staff participation and introduce a reporting bias  • greater loss to follow-up in the intervention group compared to the control group.  Comments  • The VIF instrument is a one-page checklist that focuses on the key aspects of the violent event, including time, place, perpetrator, activity and consequences without detailed descriptions  • training in the context of this study did not consist of a specific programme but an ongoing programme of recording monitoring, discussion and feedback. Authors conclusions The structured feedback programme seems to have improved staff knowledge of risks for violence in the intervention group.</td>
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### Table 2. Evidence table of primary research appraised relating to staff training for the prevention and management of violence (continued)

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<tr>
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<th>Limitations and Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bhui et al. (2001)</td>
<td>London, UK.</td>
<td>Before-and-after study (audit). Level IV.</td>
<td>Setting Two in-patient psychiatric units serving similar but geographically distinct deprived, inner city and multi-ethnic catchment areas. Participants There were 370 people responsible for 405 admissions. Violent incident and audit data were retrieved for 324 individuals. Although all ward-based staff were invited, 25 of 37 staff attended the training, those not attending suggested that time away from duties was the reason. Intervention Multidisciplinary training in the use of a risk assessment tool (1-day duration). A choice of 5 different days was offered to maximise the chance of staff on busy shifts being able to attend. Baseline differences No significant differences in diagnoses by ward. There were no significant differences across sites in the number of incidents as a percentage of the admissions.</td>
<td>There were four audit periods, each of three months spanning the duration of the project. The first captured activity for the three months prior to the introduction of the programme. For each of the periods the total number of admissions was also recorded. Clinical audit teams (project manager and ward-based staff) retrieved and examined notes of those admitted during the audit periods. Outcome measures Number of violent incidents, type of incident.</td>
<td>The organisational training programme and risk implementation strategy were begun after the first of four audit periods. A total of 56 incidents were reported during the study period, however 29 were excluded as they were not perpetrated against another person. This left 37 eligible incidents. The total number of incidents in each audit period did not decrease, but violent incidents among those admitted in each consecutive audit period, did decrease. However these findings were explained by a cohort effect. There appeared to be no actual reduction in violent incidents, partly as violence was unexpectedly uncommon on these wards (11.4%) such that the study did not have adequate power to detect a reduction.</td>
<td>Limitations • risk assessment completion did not enter routine practice due to lack of time • the length of the schedule, the time required to review notes, and the lack of time to ensure a multidisciplinary meeting around risk assessment were some of the limiting factors. Comments • the outcome of a reduction of violent incidents is difficult to demonstrate because of the low prevalence in community settings, although this is somewhat higher in a ward setting • staff not attending training still received information about project, guidelines and risk assessment schedule individually. Authors conclusions This study sought to implement guidelines seeking to improve the management of violent incidents. From this audit of practice it appears that the risk assessment tool was partially implemented following training but that the key factors influencing implementation were clinical judgements about priority and the rationing of clinician time. Overall there was no reduction in the percentage of violent incidents per admission for the same time period under observation.</td>
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### Table 2. Evidence table of primary research appraised relating to staff training for the prevention and management of violence (continued)

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| Calabro et al. (2002) | Texas, USA. | Before-and-after study.       | Setting: An acute care psychiatric hospital (with 12 inpatient units). Participants: Study population was 180 hospital staff who attended the training. All staff who attended the 12-hour training were asked to participate in the study. Male and female patients in adult, geriatric, child, adolescent or substance abuse units. Average length of stay was 17 days. Intervention: Two programs. Nonviolent Crisis Intervention (CPI) that teaches staff how to prevent and control disruptive behaviour of clients. Handle with Care is a combination of self-defense skills and restraining methods for staff who work with potentially assaultive patients. | One group, pretest/posttest study design. Staff attended the one and a half day training with their team or hospital unit. Usually no more than 20 employees attended each session. The training was conducted by the staff trainers who completed facilitator courses provided by the program developers. Outcome measures: Purpose developed evaluation instruments. Four main variables were knowledge, attitude, self-efficacy and behavioural intention. | At posttest, all of the variables measured, including knowledge, attitude, self-efficacy, and behavioural intention showed significant changes by respondents. When mean pretest scores were compared to posttest scores, the staff's knowledge increased from 6.1 pretest to 7.1 posttest (p<.001). For attitude mean score improvement 18.6 to 16.8 posttest (p<.001). For self-efficacy 15.0 to 14.3 posttest (p<.01). For behavioural intention there was an improvement in the mean from 10.8 to 10.3 posttest (p<.05). The evaluation of staff responses demonstrated improvements for knowledge, attitude, self-efficacy and behavioural intention to use the training techniques. | Limitations:  
- no direct measure of the incidence of violence before and after training was reported  
- participants were exposed to two interventions and it is not really possible to distinguish specific effects for each program  
- a comparison group was not used as the investigators could not locate an institution with similar characteristics  
- potential nonresponse bias however there was no demographic data on nonrespondents.  
Comments:  
- one statement by authors suggests that during the four month period of the study reported injury events involving patient assaults and while staff were restraining patients decreased to historical levels (<130 reported injuries per annum) however the level prior was not explicitly reported in this article.  
Authors conclusions: The training program had a measureable, documented positive effect contributing to an improvement in the environmental safety of the facility. |
Table 2. Evidence table of primary research appraised relating to staff training for the prevention and management of violence (continued)

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<td>Carmel and Hunter (1990) California, USA.</td>
<td>Comparative study. Level IV.</td>
<td>Setting State forensic hospital. Participants Study population was nursing ward staff for 27 wards that were divided into two groups, 18 wards with low compliance (LC) for training requirements (&lt;60% staff) and nine wards with high compliance (HC). LC, n=500 nursing staff, 643 beds HC, n=244 nursing staff, 330 beds Intervention Training program for management of assaultive behaviour involving an initial orientation (16 hours) and ongoing training (6 to 8 hours every 2 years). Training in interpersonal skills and didactic and practical instruction in the management of violent patients.</td>
<td>Differences between the two ward groups were analysed by t-test. Data on individual compliance with training were calculated using the Fisher exact test. Outcome measures The rate of nursing staff compliance with training requirement, rate of employee injury from patient violence, and the number of aggressive incidents per bed.</td>
<td>This study presents information on both individuals and wards. The use of ward-level data for one year helps control for some of the hospital wide factors unrelated to training that could be associated with any observed decrease in violent events. This study also examines compliance with mandated training in an area unrelated to patient aggression which also helps to control for the content of the mandated training. The rate of injury from patient violence in the wards with low compliance with training (20.0 per 100 staff) was almost three times the rate in the wards with high compliance (7.4 per 100 staff), p&lt;0.005. Of 392 nursing staff in compliance with training requirements in managing assaultive behaviour 11% were injured but of 352 nursing staff not in compliance, 18.2% were injured. Fisher's exact test p&lt;.005.</td>
<td>Limitations • no random allocation to intervention • lack of a no intervention comparison group • minimal details on components of training program • baseline rate of injury or aggression not reported although data was collected for a year. Comments • a standard definition of injury was used, that is a condition resulting in “death, lost workdays, loss of consciousness, restriction of work or motion, termination of employment, transfer to another job, or medical treatment (other than first aid). Author's conclusions There were no significant differences between the low and high-compliance wards in the number of aggressive incidents per bed. There was no evidence of a relationship between staff compliance in training for management of assaultive behaviour by ward and incidents of patient aggression on the ward.</td>
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### Table 2. Evidence table of primary research appraised relating to staff training for the prevention and management of violence (continued)

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<td>Corrigan et al. [1995] Chicago, USA.</td>
<td>Before-and-after study. Level IV.</td>
<td>Study setting Extended care ward in a Mental Health Center. Participants Staff working on the day shift [n=22], 48.6% female, mean age (SD) = 46.2. The inpatient ward rather than the individual staff members or patients was the unit of analysis for the study. Intervention Interactive staff training (IST) is a staff training package that includes assessment of staff perceptions regarding program needs, selection of appropriate social learning strategies to meet these needs, decision making about aspects of the social learning strategy. The token economy incentive program involved staff handing out tokens for a targeted behaviour to eligible patients or staff working in the token store where patients could purchase back-up reinforcers that supported the token economy.</td>
<td>Multiple baseline design. After a 9-month period in which baseline data were collected, nursing and clinical staff were invited to participate in weekly IST meetings conducted by the trainers. Data was collected on two staff behaviours, participation in a token economy program and participation in a staff skills training program. Mean monthly participation of staff members in skills training classes was determined. Outcome measures Frequency of patient-related aggressive incidents formally reported by staff (patient injury, staff injury, fire, theft, damage to property and unauthorised absences). Number of times in which physical restraints were ordered to address aggressive incidents. Follow-up interval 15 months.</td>
<td>The frequency restraints were ordered per quarter decreased (41% reduction) but the reduction in aggression related incidents was not as dramatic (12.6% reduction). Data showed that the number of physical restraints remained low after introducing the skills training program. Aggression-related incidents per quarter for the tokens plus skills training condition diminished markedly from the token economy alone (26.8% reduction) from baseline. Staff attitudes about barriers to behaviour therapy improved with less philosophical opposition to behavioural interventions. Non-significant trends suggested staff believed institutional constraints less of an impediment to development of such programs.</td>
<td>Limitations • small sample • patients leaving and being replaced by other patients over the course of the 24 months of the study, effects of patient attrition would be even greater on an acute care ward. Comments • staff were considered to be participating in the training if they attended and remained for at least 30% of the class • one anonymous reviewer critiqued the report suggesting that staff and patient participation represent a process rather than an outcome variable hence this study showed that patients participated more but not whether this participation had improved outcome. Authors conclusions Ongoing examination of ward programming showed that IST significantly increased staff and patient participation in rehabilitation programming and decreased the rate of physical restraints and aggression related incidents.</td>
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<td>Cowin et al. (2003)</td>
<td>Before-and-after study. Level IV.</td>
<td>Setting Mental health acute unit (MHU). Emergency department (ED). Participants Time 1, n=21 nurse from the MHU n=33 nurses from ED Time 2, n=19 from the MHU n=30 from ED. Intervention De-escalation kit. In-service education session exploring important processes involved in successful de-escalation using case studies for group discussion. The kit also included a poster and staff survey.</td>
<td>Quasi-experimental study design. Posters were displayed in the workplace and a series of in-service discussions presented to nursing staff in both MHU and the ED. The scores from each survey were totalled to provide a total score for each participant. Outcome measures Change in knowledge and attitudes. Follow-up interval, 3 months.</td>
<td>Overall the results indicated an increase in de-escalation knowledge and awareness for nursing staff of the MHU though no significant changes were noted in the analysis of variance. The total scale mean score increased from 48.07 to 49.73 indicating some positive effect from the intervention. Increases were not consistent though across all items in survey. An overall non-significant increase in de-escalation knowledge and awareness was also apparent for the nursing staff of the ED. The differences between scores from T1 to T2 were less than those of the MHU, indicating less change.</td>
<td>Limitations • no tool existed so survey tool had to be developed as part of project • incidence of aggression was not monitored before and after training • small sample. Comments • the International Society of Psychiatric Mental Health Nurses recommends conflict resolution, problem solving and de-escalation are primary response tools for an escalating situation and that restraint and seclusion should be understood as a last resort. Therefore this project particularly sought to explore the tool of de-escalation. Authors conclusions The results of the de-escalation survey following in-service training revealed an improvement in knowledge and awareness for both ED and MHU nurses. This suggests educative processes for nurses can help raise both knowledge and awareness of therapeutic tools such as de-escalation.</td>
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Table 2. Evidence table of primary research appraised relating to staff training for the prevention and management of violence (continued)

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| Deans (2003) Ballarat, Australia. | Before-and-after study. Level IV. | Setting Emergency department (ED). Participants 45 equivalent full-time nurses representing 60 full and part-time staff. The program was offered during staff time on three separate days with 14 ED nurses attending the first two days and 12 attending the third day (n=40) which represented 66% of all emergency nurses. 80% female % in age category, 20-29 years (27%), 30-39 years (30%) in both), 50-59 years (13%). Intervention One-day training program focusing on awareness of work environment and responsibilities, types of behaviour that can trigger a reaction, colleagues strengths and weaknesses, causes and types of aggression, appropriate responses and options, factors that influence effective communication, avoidance and deflection techniques and other techniques. | Non-experimental, pretest/posttest design. Questionnaires were distributed by the ED unit manager to all 60 nurses employed. Thirty (75%) of the 40 nurses who attended the training program completed the pretest questionnaire two months prior to completing the program. A total of 22 (55%) completed the posttest questionnaire 3 months after the training program. Pre- and post-test questionnaires were identical and were unnamed. | The number of aggressive situations encountered by staff within the past three months was reduced from pretest (mean = 8.39) to posttest (mean=4.0), p=.06. While not statistically significant this is clinically significant in that the results also show the mean scores for effectiveness of the workshop increased from pre- to posttest (trend only with p=.09). Participants rated their knowledge (p=.001) and skills (p=.006) three months after the training higher as a result of the workshop. General confidence improved in regard to issues relating to aggression however staff felt less confident in management caring for them and the use of incident reports after undertaking the course. | Limitations  
- random sampling was not used  
- small sample size reduces generalisation of results to other ED nurses in other settings  
- absence of control group limits conclusions about effectiveness.  

Comments  
- this study was instigated following an Australian report suggesting that the health industry is the most violent in Australia with registered nurses second highest for number of compensation claims, higher than prison and police officers  
- knowledge, skills and attitudes relating to management of workplace violence were examined in this study.  

Authors conclusions  
This study demonstrated that a single one-day training program reduced violent incidents and increased staff confidence.
Table 2. Evidence table of primary research appraised relating to staff training for the prevention and management of violence (continued)

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<tr>
<td>Fernandes et al. (2002)</td>
<td>Before-and-after study. Level IV.</td>
<td>Setting: Emergency department (ED) in inner city hospital. Participants: ED staff on all shifts for seven alternate days in a 2-week period were surveyed. Mean age, 38±8.3 years Mean experience in ED, 7.2±6.5 years</td>
<td>Prevention and Management of Aggressive Behavior Program (PMABP) which is based on the NonviolentCrisis Intervention Model. This program enables staff to acquire skills in assessment and prevention of aggressive behaviour to improve care, safety, and security for patients and staff. It is interactive and uses a range of teaching methods including facilitative questioning, videotapes, role-playing, mini-lectures, non-verbal communication exercises and small group discussions.</td>
<td>Cross-sectional, prospective survey. A generalized estimating equation Poisson regression model examined the effect of the program on the numbers of physically and verbally violent events per shift per employee, after adjusting for covariates. Odds ratios (ORs) with 95% confidence intervals were calculated. Outcome measures: Total and mean number of physical and violent events per survey. Specifically the number of physically violent events per shift per employee, the number of verbally violent events per shift per employee, the proportion of employees reporting physical violence during their shift, the proportion of employees reporting verbal violence during their shift and staff perception of safety.</td>
<td>A total of 667 (84%) of the surveys were completed. Physical violence events per survey at baseline, 3 months post-training, and 6 months post-training were 0.27, 0.10, and 0.21, respectively. The number of reported violent interactions at the same intervals were 49, 19, and 46 (adjusted OR 1.0, 0.35 [95% CI 0.15, 0.84], and 0.79 [95% CI 0.48, 1.4], respectively. Verbal violence events per survey at baseline, 3 months post-training, and 6 months post-training were 0.85, 0.31, and 0.51, respectively. The number of reported interactions involving verbal violence at the same intervals were 154, 58, and 69 (adjusted OR 1.0, 0.31 [95% CI 0.21, 0.46] and 0.47 [95% CI 0.33, 0.66]), respectively.</td>
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Limitations:  
- a number of surveys were not completed (16.4%) but overall the response rate was reasonably high  
- unknown whether nonresponders were dissimilar to sample  
- could not account for confounding factors such as seasonal variation and the opening of a psychiatric and substance misuse unit within the ED during the study period  
- structured education was mandated to occur at a particular time so could not control for opening of unit with locked facilities  
- surveys were conducted on alternate days rather than randomly  
- may have been seasonal variation resulting from the different months in which the survey was completed  
- distinct patient incidents could not be separated from reporting incidents  
- some of the emotional and physical responses to an assault may be delayed so this type of study may miss long-term sequelae  
- without criterion standard such as videotape, authors point out it is difficult to differentiate whether results are caused by true behavioural change rather than change in how they experience their patients  
- recall bias may have affected data because staff completed surveys at the end of a shift rather than as incidents occurred.  

Comments:  
- a power analysis was conducted in this study, with sample size calculated to detect a 33% difference between survey periods in the average number of violent incidents per employee per shift, with a power of 80% and significance level of .05.  
- the program components are listed and explained in a detailed appendix that is appended to the article.  

Authors conclusions: Violent events are frequent in the ED. Education programs may reduce the number of events at least temporarily but clearly do not reduce violence in the long-term.
### Table 2. Evidence table of primary research appraised relating to staff training for the prevention and management of violence (continued)

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<tr>
<td>Grenyer et al. (2004)</td>
<td>New South Wales, Australia.</td>
<td>Before-and-after study. Level IV.</td>
<td>Setting Public health service staff (including mental health services and emergency department).</td>
<td>Training data was collected for each module to examine several outcomes. Outcome measures Satisfaction with training, knowledge and skills acquired during training, attitudes towards managing aggression, and confidence in dealing with aggression.</td>
<td>There were significant differences between pre- and post-measurement for four items examining attitudes towards managing aggression. Attitudes that should be endorsed: People strike out because they are afraid (p=.02). People become violent because they feel the only way to defend themselves is to attack first (p=.02). People threaten staff to get their own way (p=.01). I feel confident in my own ability to manage a person’s behaviour as it becomes more aggressive (p&lt;.01).</td>
<td>Limitations • It was outside the scope of this study to follow-up the effect of training in the workplace to assess its impact on aggression. • This study doesn’t tell us whether the training reduces violence and injury rates. • Pilot testing was conducted on experienced staff, results may not generalise to less experienced staff. • Small sample size on which each module was tested. • Developers conducted the training so they were highly familiar with the material, unclear if independent trainers are able to deliver the training using the same materials and achieve the same degree of satisfaction. • Difficult to develop a broad program encompassing the needs of both clinical and non-clinical staff.</td>
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<td>Participants Staff, n=48 Female, n=33 Male, n=15 Mean age = 39.15 years</td>
<td>Pre- and post-test comparisons were analysed using paired t-tests. Comparisons of pre-post confidence scores as they co-vary depending on number of training modules completed were computed as an analysis of covariance. In analyses, criterion for statistical significance was set at p&lt;.05.</td>
<td>For the 34 participants who completed only one module, there was a small but significant increase in confidence measured by the Confidence in Coping with Aggression Instrument (p&lt;.01). For the 15 who completed more than one module there was a greater increase in confidence (p&lt;.01). An analysis of covariance comparing the pre- and post-test scores for those completing more than one module was performed, controlling for the number of modules completed. This found that confidence scores were significantly influenced by the number of modules completed by the participant, such that the more modules, the greater the confidence.</td>
<td>Comments • 15 healthcare trainers completed a training workshop to deliver training to staff. • Staff were selected from one representative mid-sized health service within New South Wales, although this is not explicitly stated it appears to have been a mental health service.</td>
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<td>Intervention A safer place to work – preventing and managing violent behaviour in the health workplace program. Includes four modules on topics such as responding effectively to difficult or challenging behaviour; aggression minimization in high risk environments; aggression minimization for managers and aggression minimization refresher training.</td>
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<td>Authors conclusions This aggression and violence minimization program was found to improve staff knowledge, skills and confidence and attitudes toward dealing with aggression and violence in the workplace.</td>
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| Ilkiw-Lavalle et al. (2002)  | New South Wales, Australia.    | Before-and-after study, Level IV. | Four mental health units including an acute locked unit, an acute unlocked unit, an acute unit for clients with special needs, and an inpatient subacute unit. Of these a total of 37 registered nurses, four enrolled nurses and one nurse manager, 18 allied and medical health staff (nine mental health workers, four psychologists, three social workers and two medical officers), six security staff and 37 ancillary staff. Thirty-six staff members (35%) had never participated in an aggression management program. | Pre-test/post-test design.       | Nursing staff scored the highest on the pre-test compared to any other occupation. All occupational groups improved their knowledge evaluation scores significantly with ancillary staff improving with the largest effect size (2.25). There was no significant difference between the groups following training (p=.11). A repeated measures analysis of variance showed that staff with no prior training had greater improvements overall than staff with prior training. Although they made greater improvements their overall scores at post-test were still lower than for staff with prior training. There were no differences found between the different programs that staff had previously completed and pre-test scores. There was also no relationship between pre-training scores, previous training and the level of exposure to patient aggression suggesting it was the experience and training of the nursing staff rather than the level of exposure to aggression that was responsible for their baseline knowledge of aggression management training.                                                                 | Limitations:  
• recruitment into the training groups was staggered but may have increased the likelihood that staff who had not yet participated becoming aware of the study methods and aims  
• staff were not aware that the same knowledge questionnaire was administered at the end of training though they may have learnt this from other staff, this may influence their motivation to learn  
• actual skillfulness in managing aggression following training was not assessed, nor the retention and application of knowledge on the ward  
• incidence of violence were not reported.  
Comments:  
• program was targeted towards staff working in psychiatric care facilities, especially on inpatient, community and locked ward situations  
• although the program developer and trainer is an author, the research design and evaluation was conducted independent of the program developer and trainer to minimize allegiance bias.  
Authors conclusions: This study found the INTACT program was an effective training device, which may benefit from tailoring to specific groups. |

**STAFF TRAINING PROGRAMMES FOR THE PREVENTION AND MANAGEMENT OF VIOLENCE DIRECTED AT NURSES AND OTHER HEALTHCARE WORKERS IN MENTAL HEALTH SERVICES AND EMERGENCY DEPARTMENTS**
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<td>Jonikas et al. (2004) Chicago, USA</td>
<td>Before-and-after study.</td>
<td>Three psychiatric units of a university hospital. Participants 1602 patients in general psychiatry unit and 308 patients in the clinical research unit. Another 227 patients were treated in the adolescent psychiatry unit. Intervention Restraint reduction program. Training staff members in crisis de-escalation and non-violent intervention.</td>
<td>Quarterly restraint data were examined for a period of 2.5 years. Approximately one year before and one year after the program was introduced in all three units. Staff members from all three units studied a comprehensive training manual and viewed a 90-minute training video, which are part of a seclusion and restraint toolkit.</td>
<td>The adolescent unit experienced a 48% decrease in the restraint rate one quarter after the training occurred and a 98% decrease two quarters after the training. The rate remained low through the final two quarters of the year. The general psychiatry unit experienced an 85% decrease in the restraint rate one quarter after the training and a 99% decrease two quarters after the training. Once again the rate remained low during the evaluation period. The clinical research unit experienced a 51% decrease in the restraint rate one quarter after crisis management training and a 49% decrease in the quarter after non-violent intervention training. In the two quarters after both trainings had occurred the rate declined by 98% and remained low (at zero) for the final two quarters. Before the restraint reduction program was implemented the restraint rates on both the adolescent unit and the clinical research unit had been climbing and the general psychiatry unit rates had fluctuated considerably.</td>
<td>Limitations • not clear if there was also a reduction in incidence of violence or whether simply a different response to incidents by staff • no control, could not definitively tie the reduction in restraint rates to the training intervention • reduction could also be due to selection bias, regression to the mean, changes in staff members attitudes, specific unit environments, or other organizational or programmatic factors • could not verify that crisis management or non-violent crisis intervention procedures were used correctly and consistently, although all new staff members were trained immediately after their hiring and retraining occurred annually • potential unique effects of the non-violent crisis intervention versus crisis management could not be separated because two of the units introduced these procedures together. Comments • the rate was defined as the total number of patient-hours in restraints that quarter, divided by the number of patient days (the daily patient census summed for all days of the quarter). This number was multiplied by 24, then 1000 • the unit that implemented the two interventions separately experienced a significant decrease in restraint rates immediately after implementing the crisis management procedure but before implementing the non-violent crisis intervention procedure. Authors conclusions Findings suggest that involving patients and staff members in a partnership of safety may subsequently reduce the occurrence of restraint among both adolescent and adult patients. The intervention warrants more rigorous evaluation of its effectiveness.</td>
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<td>Martin (1995)</td>
<td>Before-and-after study. Level IV.</td>
<td>Setting Teaching hospital (affiliated to the Department of Psychiatric Nursing). Participants All staff were mandated to attend. Unit used was the number of aggressive incidents from patients, in: Year 1 (before), n=75 Year 2 (after), n=89 Year 3, (after), n=119</td>
<td>Data were collected for one year prior to the implementation of the program and then two consecutive years after its development. All incidents of level II and III aggressive behavior that occurred during the data collection periods were included in the analysis. Level I incidents were not included as by definition, no impending aggression had occurred. Outcome measures Number of aggressive incidents, other data collected included level of aggression, type of injury, number of missed work days and cost to Department of Psychiatric Nursing as a result of the injury. Data sources included the psychiatric emergency summary sheet, critical incident reports and work time summary sheets. Follow-up interval (two years).</td>
<td>The two years following the program showed an overall increase in aggressive incidents. The level of actual aggression began to drop after the implementation of the program despite an increase in total number of aggressive incidents. The occurrence of staff injuries improved only the second year after the program development. The number of injuries resulting in missed work days stayed the same over all the three years. Injuries were quantified and data shows a decline in number of missed work days and cost to system after the implementation of the aggression management program. The year before the introduction of the program revealed 413 total days of missed work as a direct result of injury to staff from patient aggression with total cost of US$173,960. For the following two years of the program 69 days and 33 days respectively of missed work occurred, representing US$2478 the second year and US$2414 the third year. This before-and-after study indicates a decrease in the severity of aggression-related staff injuries after institution of the formal program, as well as a reduction in time missed from work and cost to the system.</td>
<td>Limitations • not clear how many of the staff from the unit were in attendance • not clear from data whether aggressive incidents were from the same or different patients and how many staff were affected • small sample of staff injured • no statistical analyses presented.</td>
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<tr>
<td>London, UK.</td>
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<td>Intervention Aggression Management Workshop plus a video on verbal de-escalation techniques. The workshop focused on how and when staff intervened with potential or actual patient aggression.</td>
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<td>Comments • staff were also required to have a competence assessment through return demonstration of learned skills (within 2 months of workshop) and annual certification in each of the areas was required for all staff • all staff assaulted, no matter how small the injury were encouraged to go to Occupational Health Services for an evaluation • level II was potential aggression and level III was actual aggressive behaviour • all of the missed work injuries that occurred post-training were with staff who had not attended the program.</td>
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<td>Authors conclusions Findings support previous work showing that training in the management of aggressive patients is associated with improved staff safety, fewer aggressive incidents requiring physical management of patients and thus less injury to staff, less missed time from work and cost savings to the system.</td>
</tr>
</tbody>
</table>
Table 2. Evidence table of primary research appraised relating to staff training for the prevention and management of violence (continued)

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<tr>
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</tr>
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<tbody>
<tr>
<td>McCue (2004)</td>
<td>Before-and-after study. Level IV.</td>
<td>Setting Psychiatric inpatient service. Participants All clinical staff on the psychiatric inpatient service received training on crisis intervention techniques that can be used as an alternative to restraint. Discharged patients Pre-intervention, n=6517 Post-intervention, n=4236</td>
<td>Prospective study. Comparisons made between two one-year periods (same calendar months) before-and-after interventions were implemented to reduce the use of restraint. Outcome measures Monthly rate of assaults, total number of restraint episodes. An unpaired 2-tailed t-test was used to compare variables between the two time periods. A statistical level of significance was set at 0.05.</td>
<td>There was a significant decrease in the rate of restraint use (number of restraints/1000-patient days) after the restraint reduction initiatives were implemented (mean ± SD: before 7.99 ± 2.69, after 3.70 ± 1.93; p&lt;.0001). There was no significant change in the rate of patient-to-patient assaults (number of assaults/1000 patient days) after the implementation of the restraint reduction initiatives (mean ± SD: before 1.29 ± 0.71, after 1.00 ± 0.67; p=.12). There was a statistically significant increase in the rate of patient-to-staff assaults after the initiatives were implemented (mean ± SD: before 0.22 ± 0.25, after 0.48 ± 0.48; p=.015). However this can be accounted for by a peak in incidents immediately post-intervention. The difference is no longer statistically significant (mean ± SD: before 0.24 ± 0.25, after 0.35 ± 0.29; p=.17). There was no significant change in the rate of suicide attempts or gestures after the reduction in restraints (mean ± SD: before 0.08 ± 0.22, after 0.16 ± 0.17; p=1.86).</td>
<td>Limitations • study design limits certainty with which reduction in restraints can be attributed to the interventions used • multiple interventions used, it was not possible to separate effects • the number of staff trained and duration of training was not clearly stated. Comments • the goal of this project was to reduce the use of restraint in a public psychiatric inpatient service that serves an economically disadvantaged urban population • increase in assaults immediately post-intervention was due to one patient who was exceptionally assaultive • overall six initiatives/interventions were put in place including identification of restraint-prone patients, patient education, staff education, development of a crisis response team, daily review of all restraints and incentive system for staff. Authors conclusions The rate of restraint significantly decreased after the restraint reduction initiatives were implemented. The reduction was not accompanied by a sustained increase in incidents of assault, suicidal behaviour, or self-injury.</td>
</tr>
</tbody>
</table>
### Table 2. Evidence table of primary research appraised relating to staff training for the prevention and management of violence (continued)

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</tr>
</thead>
<tbody>
<tr>
<td>McGowan et al. (1999)</td>
<td>Fremantle, Australia.</td>
<td>Before-and-after study. Level IV.</td>
<td>Setting Two secure psychiatric intensive care wards. Participants Nursing staff, n=28 (pre-test) and n=15 (post-test). Intervention Safe physical restraint module. This includes training in defusing and debriefing of both patients and staff following a critical incident. It teaches a structured process if dealing with physical aggression and the importance of teamwork and assignment during the restraint process. Also teaches early recognition and management of antecedent behaviours and empowerment of patients to take control of their behaviour.</td>
<td>A pre-test/post-test questionnaire was administered. Nurses were invited to complete a questionnaire before-and-after completing the training. A 10-item self report questionnaire was used. The Wilcoxon Matched-Pairs Signed-Rank Test was used to compare differences. Outcome measures: Confidence, present level of training for handling physical or psychological aggression, ability to physically intervene, ability to psychologically intervene. Follow-up interval, 6 months.</td>
<td>All mean rating scores were significantly higher at post-test. Staff reported: How comfortable they felt working with an aggressive patient (p&lt;.001). How good their present level of training was for handling psychological aggression (p&lt;.001). Ability to intervene physically (p&lt;.001). How self-assured staff feel in presence of an aggressive patient (p&lt;.001). Ability to intervene psychologically with an aggressive patient (p&lt;.001). How safe they felt around an aggressive patient (p&lt;.001). The effectiveness of techniques they knew for dealing with aggression (p&lt;.001). How they were able to meet the needs of an aggressive patient (p&lt;.001). How they were able to protect themselves from aggressive patients (p&lt;.001).</td>
<td>Limitations: although 42 additional staff on a second ward completed a questionnaire at outset, no post-test data on this group was reported and no reason was given for why this occurred. All data was self-report. Data on incidence of aggression before-and-after the study was not provided. Small sample. Not clear from this study whether increases in confidence and knowledge actually lead to fewer incidents or a reduction in staff absenteeism. Comments: whilst this study is relevant, it does not directly address whether the training itself was an effective prevention tool. Authors conclusions: Results showed that staff in the hospital where regular training was undertaken were significantly more confident and able in dealing with aggression. Following the completion of a training module at the other hospital, staff reported a significant increase in their level of confidence that either matched or bettered the reports of their benchmark colleagues.</td>
</tr>
</tbody>
</table>
### Table 2. Evidence table of primary research appraised relating to staff training for the prevention and management of violence (continued)

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Needham et al. (2004)</td>
<td>Before-and-after study.</td>
<td>Study setting: Two 12-bed acute mental health care inpatient wards (one urban, one rural) in German-speaking part of Switzerland. Participants: All patients admitted during the study period were eligible. Patients, n = 576. Admissions, n = 721. 41.3% female. Mean age = 38 years. Range 15-88 years. 61.5% involuntary admissions. Hospitalisation days, n = 7732. Interventions: Risk prediction was conducted using an extended version of the Brøset Violence Checklist (BVC). Aggression management training. A 5-day course (35 lessons) with a skill oriented, action-centred, and problem-centred educational programme incorporating experiential- and knowledge based elements (see comments).</td>
<td>Prospective, non-randomised study with before-after comparisons during a 10-month period. Following a 3-month baseline period the first intervention was introduced (risk prediction). During the seventh month, the nursing staff on both wards received a week training in the management of aggression. During the final 3 months of the study, both interventions were implemented concurrently. Outcome measures: Primary outcomes were frequency of aggressive and coercive measures using a standardised reporting form. Secondary outcomes were the severity of aggressive incidents recorded by the revised Staff Observation Aggression Scale (SOAR-R) and by a visual analogue scale.</td>
<td>Simple descriptive statistics with 95% confidence intervals for event ratios across the three study periods. Chi-square tests were employed to compare incidence rates of events, using hospitalisation days as the unit of analysis. Overall incidence rate of 3.51 (95% CI 3.10-4.00) aggressive incidents per 100 hospitalisation days, and 1.68 (95% CI 1.41-2.00) attacks against staff respectively. The incidence rate of violent attacks against person amounted to 15.6% per ward, or approximately one attack every 6 days. The basic analysis including all patients and using hospitalisation days as unit showed no significant reduction in the incidence rate of aggressive events and attacks against persons from baseline over the introduction of risk prediction to training the staff. Rates of coercive measures did significantly decline and remained significant when the two most violent patients were excluded from the analysis. Using the ward as the unit of analysis, there was a reduction in the percentage of days with attacks and the percentage of days with implementation of coercive measures.</td>
<td>Limitations: • the two wards showed differences as to the effects of the interventions • non-randomised • admission of patients with differing aggressive potential may produce selection bias • recording bias may have occurred if staff became less reluctant to record less severe events of aggression • staff characteristics, occupancy rates, treatment regimen of physicians, hospital policies and season are all possible confounders or mediators of any effect • hospitalisation days were treated as independent events thus omitting within-patient co-linearity. Comments: • teaching units included the nature and prevalence of aggression, violence and sexual harassment, the use of aggression scales, preventive measures and strategies, de-escalation techniques, post-incident care and support, ethical aspects of violence management and safety management. Practical skills such as holding methods, breakaway techniques, and control and restraint • because analyses did not take account of patients being “nested” within wards it was repeated with ward-days as the unit of analysis • this study was pilot to a proposed multicentre randomised trial. Author conclusions: A systematic risk assessment and a training course may assist in reducing the incidence rate of coercive measures on psychiatric acute admission wards. Further testing of the interventions is necessary to measure the effect of the training alone and to counteract ‘ward effects’.</td>
</tr>
<tr>
<td>Fribourg, Switzerland.</td>
<td>Level IV.</td>
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</table>
### Table 2. Evidence table of primary research appraised relating to staff training for the prevention and management of violence (continued)

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<thead>
<tr>
<th>Authors Country</th>
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<th>Limitations and Comments</th>
<th>Authors Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parkes (1996)</td>
<td>Before-and-after study. Level IV.</td>
<td>Setting Medium secure psychiatric unit. Participants All unit nursing staff received the course, and several members of other professional groups attended at their own request. During the period of the study there were n=113 admissions n=340 incidents of physical restraint.</td>
<td>Repeated measures design comparing incidents of restraint prior to staff receiving training with incidents after staff had received a course on control and restraint. During the 12-month period of the post-training data collection staff were offered 1-day refresher training at 6-monthly intervals. Outcome measures Nature of the incident, the number of staff involved, the number of injuries occurring, and staff feelings.</td>
<td>When comparisons are made between data pre-training and post-training then this is on the basis of an equal number of incidents. During the 12 months immediately following training there were 149 incidents involving restraint. These are compared to the 149 incidents preceding the commencement of the training courses. Of the 340 incidents studied restraint was initiated due to assault on staff on 97 occasions (28.5% of restraints). Nurses were the targets in 94 out of the 97 attacks. Prior to training, 22 staff injuries were recorded during the incident phase, post-training there were 25. There were no reports of a break-away technique being used during an attack. The number of staff injuries during the restraint phase increased following training. Prior to training there were 25 injuries, following training there were 38. This increase was statistically significant (p&lt;.05). Overall, there was a small increase in the number of staff injuries (51 prior to training, 68 post-training). This was not a statistically significant difference.</td>
<td>Limitations • the study did not address the effect of training on the overall number of incidents • this study does not examine the effectiveness of the non-touch elements of training • no comparison group. Comments • this study focused on the physical aspects of training given not because they were considered more important in a clinical setting but because they have been the subject of least evaluation • the nature of the patient population and the number of incidents occurring in any one year has been found to vary greatly, independent of any training initiatives • the training course studied here was modified after the completion of data collection for this study.</td>
<td>After training there were more staff injuries while restraining patients. There was no change in the number of injuries during other phases of an incident and there was no effective use of break-away techniques.</td>
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<tr>
<td>Wakefield, UK.</td>
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**STAFF TRAINING PROGRAMMES FOR THE PREVENTION AND MANAGEMENT OF VIOLENCE DIRECTED AT NURSES AND OTHER HEALTHCARE WORKERS IN MENTAL HEALTH SERVICES AND EMERGENCY DEPARTMENTS**
Table 2. Evidence table of primary research appraised relating to staff training for the prevention and management of violence (continued)

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<tr>
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<tr>
<td>Rice et al. [1985] Ontario, Canada.</td>
<td>Comparative study.</td>
<td>Setting Maximum security mental health ward and two medium and minimum security wards. Participants Nursing staff or assistants. Intervention, n=88 Crisis prevention and intervention training including cues and antecedents for aggression, physical and verbal approaches for calming and observation, verbal defusing techniques, physical techniques including self-defense, safe effective physical restraint, post-incident procedures. Comparator, n=37 No training.</td>
<td>Pre-test/post-test questionnaire. The 5-day course was presented to staff in groups of seven to nine. It was offered to staff from six wards, two at a time, with the two maximum security ward pairs receiving training first. Six-month intervals separated the three periods during which the course was presented. Control subjects were mostly run immediately before and after the courses were offered for the staff from that division. The assaulative incident data were analysed by means of a simplified time series analysis designed for studies with relatively few observations. Data collection began on all six wards a minimum of 18 months before the course and continued for the same amount of time afterwards. There were 18 30-day periods both pre and postcourse for each ward pair. Because of high variability within ward pairs, data was analysed by totalling the assaults in each 30-day period for all three of the ward pairs. Outcome measures Sensitive Situations Skill Test, Audiotaped Simulations Test, Physical Skills Test, Self-Defense and Patient Restraint Written Test, Self Report Measures, Assault Related Measures including the number of assaults on patients and staff, number of workdays lost due to patient-caused staff injuries, number of times sedative medication was administered on “as needed” basis. Patient measures including the Cooper-Smith Self-Esteem Inventory developed for adult corrections population. Follow-up interval 6 weeks and 15 months (for course feedback questionnaire).</td>
<td>The data of all the maximum security subjects were analysed together because the results of the first an second ward pairs were very similar. Separate analyses are presented for the subjects from the lesser security division because they differed from the maximum security subjects demographically, worked in quite a different setting, received a slightly different course and were assessed with somewhat different measures. Time series analyses revealed no trend over precourse period for assaults on patients, assaults on staff or total assaults. There was however a significant increasing trend in postcourse data for assaults on staff (p&lt;.05) and for total assaults (p&lt;.01). The trend for assaults on patients was in the same direction but was not significant. It was hypothesised that the course would reduce the number of assaulative incidents and workdays lost due to patient-caused injuries. On these measures, the course had modest but positive effects. On both measures the data revealed immediate postcourse decreases, followed by increases. For the workdays lost measure, the decrease in days lost in the postcourse period was significant relative to the changes on control wards. For the assaulative incident data, the line representing postcourse incidents had a steeper slope than the precourse line, possible explanations for this include unexpected staff turnover during the course of the study and reports from staff that the patients entering the hospital at this time were more assaulative than patients admitted prior to the course.</td>
<td>Limitations • no way of verifying staff reports that patients entering hospital in postcourse period were more assaulative • records of individual staff involved in incidents were not able to be kept • many staffing changes during course of the study may have influenced results. Comments • expert panels developed some of the scoring keys, where responses could not be scored reliably two independent blind raters were used and inter-rater reliability assessed • all staff who completed the course were also asked to complete a long-term follow-up questionnaire on original questions and also whether the course had prevented them, their co-workers, or patients from being injured • one of the few studies to use a comparison group • this study appears to be more methodologically thorough than many of the other studies examining similar issues • not all of the results on all outcome measures are presented here, please refer to the original article for more detail. Authors conclusions Compared to no-treatment controls, those who received training improved significantly on four tests of crisis-related tests and knowledge. Questionnaire and self-report measures from staff and patients on the training wards also indicated positive course effects. Assault frequencies decreased immediately after the course and staff injuries on experimental wards were reduced after the course relative to control wards.</td>
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</tbody>
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### Table 2. Evidence table of primary research appraised relating to staff training for the prevention and management of violence (continued)

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<tr>
<td>Sjöström et al. (2001) Göteborg, Sweden.</td>
<td>Before-and-after study. Level IV.</td>
<td>Setting University clinical department with responsibility for psychiatric care in a catchment area of approximately 205,000 inhabitants. Participants All patients at the clinic during the assessment period, n=211 (before) and n=175 (after). All the nursing-staff members in inpatient psychiatric care, n=185 (before) and n=144 (after). Intervention Training course with three levels (basic, administrators and ward). A key goal of the course was to improve staff competence by understanding the aggressive process, how aggression arises, be able to predict aggressive events and dangerous situations, be able to defend oneself with psychological and physical techniques and routinely follow-up assaults to gain experience. Baseline differences There was a significant decrease in the number of voluntary admissions (p=0.005) and a significant increase in the involuntary admissions (p=0.02) in the period after the training course. There was no difference for forensic patients.</td>
<td>All head nurses were trained in the use of the SOAS and the SDAS (see outcome measures below). Then they had to train their own nursing staff in using the SOAS and the assistant physician in using the SDAS. When a staff member experienced that a patient was aggressive towards them, they reported the incident using the SOAS. Assessments were made every other week by the head nurse and the assistant physician, in cooperation with the other staff members. Chi-square tests were used to compare differences in the number of patients who had been violent and the number of sick leaves before and after the training course. Outcome measures The Staff Observation Aggression Scale (SOAS) for continuous reporting of aggressive incidents. The Social Dysfunction Aggression Scale (SDAS) was used for every-second-week assessments of verbal aggression and violence, as well as behaviour preceding physically violent behaviour.</td>
<td>The response rate for the SDAS was 93% in both periods. There was no significant difference between the periods with regard to the numbers of patients who showed the various types of aggressive behaviours. There was a decrease in the number of incidents reported on the SOAS from 292 before, to 27 in the period after the training course. During the period before the training course, three of 182 and, during the period after the training course, five of 139 staff members were on sick leaves related to their work.</td>
<td>Limitations • a new system of patient care which included a 36% reduction in beds and large reductions in staff numbers coincided with the introduction of the training course • the large difference in the number of incidents reported on the SOAS before and after made it impossible to analyse the results of the assessments properly • it was not clear if the material on aggressive behaviour management taught in the training course was optimal, other techniques may need to be incorporated into the programme. Comments • this study also assessed the utility of several index variables for predicting aggressive behaviour. Authors conclusions The hypotheses that staff training reduces aggressive behaviour and injury-related sick leave were not specifically supported by this study. Perceived aggressive incidents were lower after the training course.</td>
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Table 2. Evidence table of primary research appraised relating to staff training for the prevention and management of violence (continued)

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<th>Limitations and Comments Authors Conclusions</th>
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<tr>
<td>Smoot and Gonzales (1995) Georgia, USA.</td>
<td>Comparative study. Level III-2.</td>
<td>Setting Two inpatient psychiatric units. Participants Staff on short stay adult inpatient recidivist unit. Intervention group, n=35 Staff communication training program designed to improve patient management skills and relieve staff stress. Comparator, n=37 Delayed training. Equivalence of staff characteristics between the two units at baseline was determined by comparing years of experience, daily hours of patient contact, and emotional exhaustion as determined by scores on the Maslach Burnout Inventory and the relationships dimension from the Ward Atmosphere Scale. No statistically significant differences between the two units were found.</td>
<td>Pre-test/post-test. Single case research design with two staff groups, one of whom served as a control. Ten staff members who participated in a pilot study became peer trainers using the train-the-trainer model. The 32-hour program was scheduled in sequential eight-hour sessions held once a week for four weeks. This allowed trainees time to practice new skills before the next lesson. Classes were generally small as only a few staff could be spared on any given day. Classes included staff from an inpatient unit that was not part of the study. Outcome measures Staff resignations and transfers, sick leave, incidents of restraint and seclusion, assaults on staff.</td>
<td>On the experimental unit, 19 of 35 staff members (54%) completed the training. No staff from the control unit received any training. Experimental unit (% change) Staff resignations and transfers= -63.5 Sick leave=-28.2 Incidents of restraint and seclusion=-30.0 Assaults on staff=-20.0. Control unit (% change) Staff resignations and transfers= +12.5 Sick leave=+6.4 Incidents of restraint and seclusion=+100.0 Assaults on staff=+15.0. Costs associated with staff and patient variables were also reported.</td>
<td>Limitations - whilst % change was reported no statistical tests were conducted - intervention was not focused specifically on prevention of aggression however change in the number of staff assaults was considered as an outcome. Comments - one of the few studies to present a cost benefit analysis - the major skill taught was accurate empathy, which was demonstrated by reflecting the meaning of the message back to the speaker, attending to patients’ communications, accurately reflecting both the content of the message and the feelings of the communicator, responding to a patients' requests, and making requests in a respectful and empathic manner. Authors conclusions Results suggest that staff training focused on improving empathic communication skills is a cost-effective approach to reducing staff turnover and improving both staff and patient outcomes.</td>
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</table>
Table 2. Evidence table of primary research appraised relating to staff training for the prevention and management of violence *(continued)*

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<th>Authors Conclusions</th>
</tr>
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<tr>
<td>Whittington and Wykes (2001) Chester, UK.</td>
<td>Before-and-after study. Level IV.</td>
<td>Setting Mental health. Two psychiatric hospitals in an inner-city area and providing specialist services for national referrals. Thirteen wards with the highest levels of violence across the two hospitals were selected for the study. Participants 155 nurses working on the wards at the time of the study. Attenders, n=47 Non-attenders, n=108 Intervention group Training package with two components, one dealing with the prevention of imminent violence and the other dealing with the possible psychological consequences of assault. Comparator No intervention. A higher proportion of attenders (22%) had been assaulted prior to training compared to controls (13%). After training twice as many attenders (19%) were assaulted compared to controls (8%).</td>
<td>During a baseline period prior to training, assaults on staff were counted. Following completion of the six training sessions, assaults on staff were counted in the same way as before. Scores of the experimental group (attenders) were compared with scores of a control group (non-attenders) on dependent outcome measure. Outcome measures Notified assaults on staff (28 days before and after training).</td>
<td>The overall rate of violence on the study wards was defined as the frequency of notified assaults on all nursing staff including agency and night staff that were excluded from the experimental groups. Such violence fell by 31% after the training, with 58 assaults notified in the month prior and 40 in the month after training. A comparison was made with the Violent Incident Register for the same months for the three previous years. The frequency of assaults in high compliance wards (where staff attended training) fell by more than two-thirds after training (from 40 to 12) whilst that on low compliance wards (where staff did not attend) increased by over a half (from 18 to 28).</td>
<td>Limitations • differences between groups in the number of attenders and non-attenders assaulted, though these differences did not reach significance • short follow-up period • attenders may be more likely to notify assaults because the training sensitises them to the problem of violence. Comments • higher assault rates may be accurate as attenders may be more likely to be expected to deal with any potential incidents sue to being viewed as more skilled • duration of ward training was only one day (8 hours).</td>
<td>This study provides preliminary evidence for the efficacy of a training package emphasising psychological techniques for the management of aggression.</td>
</tr>
</tbody>
</table>
OVERVIEW

**Overall quality of evidence**

Of the 24 articles appraised, four were secondary articles (see Table 1, pages 6-9) and 20 were primary studies (see Table 2, pages 10-29). The latter included one randomised controlled trial, three comparative studies (two Level III-2 studies and one Level IV study) and 16 before-and-after studies (Level IV). Of the three comparative studies two used a no training group and delayed training group for comparison, and the remaining study used one group which was split into groups representing high and low compliance with training.

### Table 3. Summary of design, levels of evidence, settings and interventions for primary studies

<table>
<thead>
<tr>
<th>Primary Study, Country</th>
<th>Design, Level of evidence</th>
<th>Setting¹</th>
<th>Characteristics of intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Arnetz and Arnetz 2000), Sweden</td>
<td>Randomised controlled trial, Level II</td>
<td>Public Health (79% from ED and MH)</td>
<td>Feedback programme/Training in recording and monitoring incidents.</td>
</tr>
<tr>
<td>(Bhui et al. 2001), UK</td>
<td>Before-and-after study, Level IV</td>
<td>MH - Inpatient</td>
<td>Multidisciplinary training in the use of a risk assessment tool.</td>
</tr>
<tr>
<td>(Calabro et al. 2002), USA</td>
<td>Before-and-after study, Level IV</td>
<td>MH - Inpatient</td>
<td>Nonviolent Crisis Intervention (NVI) and Handle with Care (self defence/restraint).</td>
</tr>
<tr>
<td>(Carmel and Hunter 1990), USA</td>
<td>Comparative study, Level IV</td>
<td>MH - Forensic</td>
<td>Training programme for management of assaultive behaviour.</td>
</tr>
<tr>
<td>(Corrigan et al. 1995), USA</td>
<td>Before-and-after study, Level IV</td>
<td>MH - Extended care,</td>
<td>Interactive staff training.</td>
</tr>
<tr>
<td>(Cowin et al. 2003), Australia</td>
<td>Before-and-after study, Level IV</td>
<td>Public Health (ED and MH)</td>
<td>De-escalation kit and discussion with staff.</td>
</tr>
<tr>
<td>(Deans 2004), Australia</td>
<td>Before-and-after study, Level IV</td>
<td>ED</td>
<td>Training programme to reduce violent incidents.</td>
</tr>
<tr>
<td>(Fernandes et al. 2002), Canada</td>
<td>Before-and-after study, Level IV</td>
<td>ED</td>
<td>Prevention and Management of Aggressive Behaviour Programme (based on NVI).</td>
</tr>
<tr>
<td>(Grenyer et al. 2004), Australia</td>
<td>Before-and-after study, Level IV</td>
<td>Public Health (ED and MH)</td>
<td>Aggression and violence minimization program.</td>
</tr>
<tr>
<td>(Jonkas et al. 2004), USA</td>
<td>Before-and-after study, Level IV</td>
<td>MH</td>
<td>Restraint reduction program.</td>
</tr>
<tr>
<td>(McCue et al. 2004), USA</td>
<td>Before-and-after study, Level IV</td>
<td>MH</td>
<td>Videotape training on “the Art of Setting Limits” and NVI.</td>
</tr>
<tr>
<td>(McGowan et al. 1999), Australia</td>
<td>Before-and-after study, Level IV</td>
<td>MH - Forensic</td>
<td>Safe physical restraint module.</td>
</tr>
<tr>
<td>(Needham et al. 2004), Switzerland</td>
<td>Before-and-after study, Level IV</td>
<td>MH - Acute</td>
<td>Aggression management training.</td>
</tr>
<tr>
<td>(Parkes 1996), UK</td>
<td>Before-and-after study, Level IV</td>
<td>MH - Forensic</td>
<td>Control and restraint training programme.</td>
</tr>
<tr>
<td>(Rice et al. 1985), Canada</td>
<td>Comparative study, Level III-2</td>
<td>MH - Forensic</td>
<td>Crisis prevention and intervention training.</td>
</tr>
<tr>
<td>(Sjöström et al. 2001), Sweden</td>
<td>Before-and-after study, Level IV</td>
<td>MH</td>
<td>Aggression management training.</td>
</tr>
<tr>
<td>(Smoot and Gonzales 1995), USA</td>
<td>Comparative study, Level III-2</td>
<td>MH</td>
<td>Staff communication training program.</td>
</tr>
<tr>
<td>(Whittington et al. 1996), UK</td>
<td>Before-and-after study, Level IV</td>
<td>MH</td>
<td>Aggression management training.</td>
</tr>
</tbody>
</table>

¹ Mental Health (MH) or Emergency Department (ED).
Four secondary studies relevant to the present review were identified. They were all systematic reviews of uncontrolled trials and included a range of study designs and levels of evidence.

The 20 primary studies that met inclusion criteria were conducted in a range of mental health, emergency department and public health settings. Of these, fifteen took place in mental health settings compared to just two in emergency departments and a further three studies took place in public health settings (mixed ascertainment with staff predominantly from mental health or emergency departments). Five studies specifically stated that they were in forensic or secure wards while three others described themselves as acute or inpatient wards. One study related to an extended care or longer term, mental health rehabilitation ward.

Research originated in six different countries: including studies from the USA (n=6), Australia (n=5), UK (n=4), Canada and Sweden (n=2 each) and Switzerland (n=1). No New Zealand-based studies met the predetermined inclusion criteria.

A range of programmes incorporating a variety of components or modules were considered, of these three programmes referred to their use of the Nonviolent Crisis Intervention Program or a variant of this programme. Most of the other programmes evaluated focused on a mixture of aggression management training and crisis prevention skills such as risk assessment, de-escalation, physical restraint and interpersonal communication.

Most of the studies (80%) were classified as Level IV, which is on the lowest level of the NHMRC hierarchy of evidence, see Appendix 1.

Summary of evidence for the effectiveness of staff training for prevention and management of violence

Secondary studies

The four secondary studies (see Table 1, pages 6-9) that met selection criteria are summarised below.

The majority of programmes reviewed by Farrell and Cubit (2005) examined either personal safety issues for staff and patients or the use of restraint, pharmacological management of aggression and seclusion by healthcare staff within mental health settings. Most programmes regardless of setting appear not to address the psychological and organisational costs associated with aggression in the workplace. Overall the authors of this review did not make any substantive conclusions on effectiveness. The report does however provide useful information about different programmes and a brief indication of varying course content.

A meta-analysis looking at the effectiveness of the Assaulted Staff Action Program (ASAP) (Flannery et al. 2000) yielded a large, statistically significant effect size of 3.1 suggesting that ASAP may be a useful intervention for preventing or reducing the frequency of staff assault.

Runyan et al. (2000) systematically reviewed a range of studies including uncontrolled studies, of administrative and behavioural interventions directed at altering management practices (pre-placement screening, staffing patterns), worker practices (conflict management, restraint and control strategies) and/or combination interventions aimed at preventing workplace violence. Runyan and colleagues concluded that the lack of methodologically sound intervention research that addresses workplace violence is a problem. They highlighted the need for future intervention research to draw on appropriate theoretical and conceptual frameworks, to address the multiple contexts in which violence occurs, and to utilise stronger evaluation research designs that focus on process, impact and outcome measures.

A review by Stirling et al. (2001) summarised a range of interventions seeking to minimise the risk of violence to accident and emergency department staff but the article content was not as relevant as the three other reviews to the scope of this report as the review focused more on issues of security than on staff training. The authors did note that although numerous studies have been carried out on the prevalence, causes and nature of violence in emergency departments worldwide there have been very few studies which actually assess the effects of various security interventions and other systems or interventions in reducing actual violence.
Primary studies

Twenty primary studies (see Table 2, pages 10-29) with a focus on staff training programmes met selection criteria and are summarised on the following pages.

Arnetz and colleagues (2000) conducted a randomised controlled trial that examined a programme that consisted of ongoing training of healthcare staff in recording monitoring, discussion of, and feedback on violent incidents within their workplaces. Staff at the intervention work sites reported 50% more violent incidents than the control work sites during the year. Compared to the control group, intervention staff reported better awareness of risk situations for violence (p<0.05), of how potentially dangerous situations could be avoided (p<0.05), and of how to deal with aggressive patients (p<0.05). Logistic regression analysis confirmed an increased risk for self-reported violence in the intervention group post-intervention (OR=1.49, 95% CI 1.07, 2.06, p<0.05). In summary, the programme seemed to improve staff knowledge of risks for violence in the intervention group.

In summary, the programme seemed to improve staff knowledge of risks forviolence in the intervention group.

A before-and-after study by Bhui et al. (2001) sought to improve the management of violent incidents in an inpatient setting. Multidisciplinary training in the use of a risk assessment tool (1-day duration) was provided to staff. Although all 37 ward-based staff were invited to attend, 25 staff participated, those not attending the training suggested that difficulty finding time away from their duties was the prime reason. From this audit of practice it appears that the risk assessment tool was partially implemented following training but that the key factors influencing implementation were clinical judgements about priority and the rationing of clinician time. No reduction in the percentage of violent incidents per admission for the same time period under observation was noted.

Calabro et al. (2002) present data on 180 hospital staff who attended training on two programmes, firstly, ‘Nonviolent Crisis Intervention (NVCI)’ that teaches staff how to prevent and control the disruptive behaviour of clients and secondly, ‘Handle with Care’ which teaches a combination of self-defence skills and methods of restraint for staff who work with potentially assaultive patients. A one group, pre-test/post-test study design was used and at post-test, all of the variables measured, including knowledge, attitude, self-efficacy, and behavioural intention showed positive significant change as reported by respondents.

A comparative study by Carmel and Hunter (1990) divided nursing staff from several forensic wards into two groups, those with low compliance (LC) for training requirements and those wards with high compliance (HC). Differences between the groups were compared after they received training that included didactic and practical instruction in the management of violent patients and training in aspects of interpersonal communication. In the following year, the subsequent rate of injury from patient violence in the wards with low compliance with training (20.0 per 100 staff) was almost three times the rate in the wards with high compliance (7.4 per 100 staff), p<0.005. There were no significant differences between the low and high-compliance wards in the number of aggressive incidents per bed and no evidence of a relationship between staff compliance in management of assaultive behaviour by ward or the number of incidents of patient aggression on the ward.

Corrigan et al. (1995) evaluated an interactive staff training (IST) package that included assessment of staff perceptions regarding programme needs, selection of appropriate social learning strategies to meet these needs, and decision making about aspects of the social learning strategy. Ongoing examination of ward programming showed that IST significantly increased staff and patient participation in rehabilitation programming and decreased the rate of physical restraints and aggression related incidents during a 15-month follow-up period.

A quasi-experimental study by Cowin et al. (2003) assessed the introduction of a de-escalation kit into both a mental health acute unit (MH) and into an emergency department (ED). The training component consisted of an in-service education session that explored the important processes involved in successful de-escalation using case studies for group discussion. Results of a before-and-after survey revealed an improvement in knowledge and awareness for both ED and MH nurses.

Only two studies in this report focused solely on emergency department settings. Both adopted a before-and-after study design.

Firstly, Deans et al. (2004) examined a one-day training programme focusing on creating an increased awareness of work environment and responsibilities, the types of behaviour that can trigger a reaction, causes and types of aggression, appropriate responses and options, and other selected issues. The number of
aggressive situations encountered by staff within the past three months was reduced from pre-test to post-test (p=.06). While not statistically significant this is clinically significant in that the results show a trend towards the mean scores measuring effectiveness of the workshop also increasing from pre- to post-test (p=.09). Furthermore, participants rated their knowledge (p=.001) and skills (p=.006) as higher as a result of the workshop.

The authors suggest that results from this study show that it is feasible for a single one-day training programme to both reduce violent incidents and increase staff confidence.

The second study set in an emergency department setting by Fernandes et al. (2002) used a cross-sectional, prospective survey administered before and after delivery of the ‘Prevention and Management of Aggressive Behavior Program (PMABP)’ to staff. This specific training is based on the Nonviolent Crisis Intervention Model, is interactive and enables staff to acquire skills in assessment and prevention of aggressive behaviour. A number of outcome measures were assessed including the total and mean number of physical and violent events per survey, the number of physically violent events and verbally violent events per shift per employee and the proportion of employees reporting physical violence or verbal violence during their shift. Although education programmes may reduce the number of events at least temporarily, results from this study show this change is not sustained. Fernandes and colleagues therefore question the likelihood that training is effective in reducing violence in the long-term.

Two studies conducted by investigators based in New South Wales, Australia have compared outcomes following the implementation of different training packages for public health service staff (Grenyer et al. 2004) and for staff from several mental health units (Ilkiw-Lavalle et al. 2002). Grenyer and colleagues looked at ‘A safer place to work’ a health workplace programme that looks at preventing and managing violent behaviour in healthcare settings. Whilst this aggression and violence minimisation program was found to improve staff knowledge, skills and confidence and attitudes toward dealing with aggression and violence in the workplace it did not provide any data on whether the training reduces violence and injury rates. Some of the same researchers evaluated a two-day intensive training programme called the ‘INTACT Aggression Management Program’. Ilkiw-Lavalle et al. (2002) found that all occupational groups improved their knowledge evaluation scores significantly with ancillary staff improving the most but there was no measureable significant difference between the groups following training (p=.11). Again this study did not report actual skillfulness in managing aggression following training and the incidence of violence on the wards at follow-up was not reported.

Jonikas et al. (2004) examined a restraint reduction programme that focused on training staff members in crisis de-escalation and non-violent intervention. All three units experienced a decrease in the restraint rate for the first quarter after the training and the rate remained low through the final two quarters of the year. It was not clear whether there was also a reduction in the overall incidence of violence or whether it simply reflected a different response to incidents by staff. As there was no control group this study cannot definitively tie the reduction in restraint rates to the training intervention. The authors suggest that involving patients and staff in a partnership of safety may subsequently reduce the occurrence of restraint among both adolescent and adult patients but this specific intervention warrants more rigorous evaluation to determine its effectiveness.

Staff at a teaching hospital were mandated to attend an aggression management workshop plus watch an accompanying video on verbal de-escalation techniques. Martin et al. (1995) evaluated data collected for one year prior to the implementation of the programme and then two consecutive years after its development. The level of actual aggression began to drop after the implementation of the training programme despite an increase in total number of aggressive incidents. Findings from this study supported previous work showing that training in the management of aggressive patients is associated with improved staff safety, fewer aggressive incidents requiring physical management of patients and thus less injury to staff, less missed time from work and overall cost savings to the system.

A prospective study by McCue et al. (2004) and colleagues considered a training package aimed at reducing the use of restraint in a public psychiatric inpatient service. The training consisted of a videotaped series from the Crisis Prevention Institute that included “The Art of Setting Limits” and “Nonviolent Crisis Intervention”. The rate of restraint significantly decreased after the restraint reduction initiatives were implemented and this reduction was not accompanied by a sustained increase in incidents of assault, suicidal behaviour, or self-injury.
McGowan et al. (1999) used a pre-test, post-test questionnaire to assess a training module on safe physical restraint in two secure psychiatric intensive care wards. Nurses were invited to complete the survey before-and-after completing the training. Results showed that staff in the hospital where regular training was undertaken were significantly more confident and knowledgeable in dealing with aggression. Following the completion of a training module at the other hospital, staff reported a significant increase in their level of confidence that either matched or bettered the reports of their benchmark colleagues.

A five-day aggression management training course that included units on the nature and prevalence of aggression, and violence, the use of aggression scales, preventive measures and strategies, de-escalation techniques and other aspects of violence and safety management was investigated by Needham et al. (2004). This prospective study found no significant reduction in the incidence rate of aggressive events and attacks against persons from baseline over the period of introduction of risk prediction to training of the staff. Rates of coercive measures did significantly decline and there was also a reduction in the percentage of days with attacks and the percentage of days with implementation of coercive measures. The authors conclude that a systematic risk assessment and a training course may assist in reducing the incidence rate of coercive measures on psychiatric acute admission wards but further testing of the interventions is necessary to measure the effect of the training alone and to counteract ‘ward’ effects.

Parkes et al. (1996) evaluated a control and restraint training programme that included non-touch training, break-away techniques and the use of a team to restrain an individual. A before-and-after design was used for this study. Following the training there were more staff injuries reported while restraining patients but the study did not specifically address the effect of training on the overall number of incidents. The authors also reported no change in the number of injuries during other phases of an incident and no effective use of break-away techniques.

A study by Rice et al. (1985) compared a group of nursing staff or assistants that received training in crisis prevention and intervention with a group receiving no training. Compared to no-treatment controls, those who received training improved significantly on four measures of crisis-related tests and knowledge. Questionnaire and self-report measures from staff and patients on the training wards also indicated positive effects from the training course. The frequency of assault decreased immediately after the course and staff injuries on experimental wards were reduced after the course relative to control wards.

Sjöström et al. (2001) did not find evidence that a staff training programme reduced aggressive behaviour and injury-related sick leave. A key goal of this particular course was to try to improve staff competence by understanding the aggressive process, how aggression arises, be able to predict aggressive events and dangerous situations. The training also aimed to teach staff to be able to defend themselves using both psychological and physical techniques. Nevertheless this did not translate into any significant reductions in the outcome measures considered.

A group of staff working in two inpatient psychiatric units participated in a communication training programme designed to improve patient management skills and relieve staff stress (Smoot and Gonzales 1995). Staff resignations and transfers, sick leave, incidents of restraint and seclusion and assaults on staff were reduced compared to those in the delayed training condition. Results suggest that staff training focused on improving empathic communication skills is a cost-effective approach to reducing staff turnover and improving both staff and patient outcomes.

Finally, Whittington and Wykes (1996) investigated a training package with two components, one dealing with the prevention of imminent violence and the other dealing with the possible psychological consequences of assault. The frequency of assaults in high compliance wards (where staff attended training) fell by more than two-thirds after training whilst that on low compliance wards (where staff did not attend) assaults increased by over 50 percent. This study provides preliminary evidence for the efficacy of a training package emphasising psychological techniques for the prevention and management of aggression.
**Other studies looking at crisis debriefing peer-support intervention**

A series of more than 15 studies by Flannery and colleagues on the Assaulted Staff Action Program (ASAP) were formally excluded from the evidence table of primary studies due to their strong focus on minimising violence or assault via interventions that occur after any critical incident and the lack of clarity as to whether pre-incident training had actually taken place in each setting. Individual studies usually simply stated that data was gathered in the context of implementation of the programme but did not specify the range of particular pre-incident versus post-incident interventions implemented. The majority of the primary studies on ASAP do explicitly describe and evaluate the crisis intervention and post-incident response components of the programme but do not provide sufficient detail on the preventive training components. In its comprehensive form this manualised programme also sometimes referred to as Critical Incident Stress Management (CISM) does appear to include pre-incident training which focuses on setting appropriate expectations for risk of assault as well as providing information, and cognitive and behavioural resources for coping with aggressive outbursts. Training for staff on non-violent self-defence procedures, restraint and seclusion, and effective communication skills with patients is also provided. Healthcare workers are further instructed in the profiles of the categories of high risk patients as well as in the warning signs of impending loss of control (Flannery 2001).

In a narrative review summarising a decade of empirical support for ASAP (described in this article as a CISM approach), Flannery (2001) suggests that across 14 empirical studies looking at ASAP, a 25 to 62% reduction in staff assaults can be seen. This summary article cites five reports each with a different focus in regard to pre-incident training: these include two studies examining the characteristics of inpatient and community-based patients who were assaultive during the first ten years of the programme, and one study that looks at the characteristics of those repetitively violent patients who present an increased risk for assault. A fourth study examined the interrelationships between past violence toward others, personal victimisation and substance use disorder. Finally, one study looked at pre-incident training in conjunction with the time that patient assaults took place. Although these studies purportedly describe assault rates, pre-intervention and post-intervention they did not assess or report the specific contribution of pre-incident training in producing any reduction in the incidence of violence or assault.

**Methodological Issues**

**Study Limitations**

The specific strengths and limitations associated with each study are set out in the limitations and comments section in the evidence tables. Key points are very briefly discussed here. The vast majority of primary studies (80%) used a before-and-after study design (Level IV) which provides some information about the effect of training on a range of outcome measures assessed prior to and following the delivery of the training. Unfortunately many of these studies did not include any direct measure of the incidence of violence or assault and they generally had very small samples. Only four primary studies used any kind of experimental or quasi-experimental design. This greatly limits the extent to which any conclusions about training effectiveness can be made. Several of the programmes included more than one training programme or components so that it was not really possible to distinguish any specific effects for particular interventions. Minimal details were generally provided about the actual programmes although some training materials may be available in the public domain. Some programmes are licensed and information is only available if you attend training or purchase the associated resources.

Most studies were not able to account for confounding factors such as seasonal variation or internal changes within the health system in which they were located and few provided any data about potential bias from non-response. None of the studies reported measuring or assessing actual (compared with self-reported) skillfulness in managing aggression following training.

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1 A meta-analysis that evaluated the effectiveness of ASAP in reducing the frequency of assault was included in the evidence table for secondary studies, though it is noted that the studies of effectiveness appear to be on ASAP implemented post-assault or within 20 minutes of an assault on a staff member. It is stated that all staff were trained in nonviolent self-restraint procedures, alternatives to restraint and seclusion and communication.

2 A total of 17 of the 26 studies by Flannery and colleagues were retrieved. Not all of the primary studies were available for review but the majority were summarised in review papers by the same author.
The primary prevention and short-term management of violence in the healthcare workplace is multifaceted and is likely to involve the utilisation of a range of interventions, of which staff training is only one. Other interventions may include the development of well-planned physical environments (ward or department design and organisation), the use of strategies or measures that may help to anticipate and prevent violence (risk assessment, de-escalation, and possibly restraint and/or seclusion) and the use of medication in the context of violence (rapid sedation) (Royal College of Psychiatrists 1998).

Therefore it is important to emphasise that the scope of this report is highly limited. The restriction of the scope of this report to mental health services and emergency departments merely reflects the fact that the bulk of research to date has been conducted in these settings, and prevention of violence in these and a variety of other settings clearly warrants further research. Furthermore, a number of important contextual issues are of also of relevance to this issue. These include but are not limited to:

- the confidence and ability of individual healthcare staff
- the quality and calibre of leadership and teamwork within specific settings, and
- the mix of groups (consumer and staff) in healthcare settings and how this is aligned with staffing skill, numbers of staff and gender balance.

These factors were not investigated in any of the primary studies on staff training appraised in this report.

Ongoing Studies and Future Research

No relevant larger scale ongoing trials were identified in the course of this review, nor were any of the included studies based in New Zealand.

It is noted that as part of the Mental Health Workforce Development Programme a working group reviewed the 1998 assessment of violence guidelines (Ministry of Health 1998) and has subsequently developed a training toolkit (including a trainers manual) for use with mental health sector staff in New Zealand (Evans et al. 2004; Ministry of Health 2004). The training package focuses on assessment and management of risk (of harm or self-harm) and is targeted at clinical staff employed in the District Health Boards including roles within psychiatry, nursing, occupational therapy, psychology, social work and others areas (cultural, consumer advocacy, support staff) but it is emphasised that this package is not specifically aimed at reducing the incidence of violence. A formal evaluation of the toolkit is planned including a pre- and post-training questionnaire that will incorporate both qualitative and quantitative data. This study will include a three month review and follow-up at the end of the pilot and again at six months and any impact on practice will be assessed. Any other future initiatives in New Zealand specifically aimed at reducing the incidence of violence within services via staff training interventions would need to incorporate a range of additional skill training modules and also include formal evaluation.

Conclusions

Numerous studies have been carried out on the prevalence, causes and nature of violence in mental health units and emergency departments worldwide however there have been few high quality studies which actually assess the effects of various staff training interventions in preventing or reducing violence. The lack of rigorous research that addresses workplace violence represents a significant gap.

Findings across studies were mixed. Studies tended to report on one or a combination of the following outcomes: the number of reported violent incidents, assaults and/or staff injuries; the rate of restraint or use of coercive measures by staff; and self-reported change in staff knowledge, confidence and ability to deal with aggression.

Of ten studies considering the number of reported violent incidents, assaults and/or staff injuries, six reported fewer incidents after training but four reported no change or an increase. Five studies reported a reduction in the rate or use of restraint and at least seven studies reported improvements in staff knowledge and confidence.

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3 The number of studies does not sum to 20 due to the inclusion of more than one primary outcome for some studies.
The quality of evidence that is presented here was relatively low with only one study graded Level II (Arnetz and Arnetz 2000) and two studies Level III-2 (Rice et al. 1985; Smoot and Gonzales 1995). All other evidence, including the four systematic reviews appraised was graded as Level IV evidence. A number of factors limit the generalisability of this reviews findings: firstly, the lack of any relevant literature from New Zealand; secondly, that the published literature focused predominantly on mental health settings rather than emergency departments; and finally, that in almost half of the studies (n=8) nursing staff were specified as the sole occupational group receiving the training. The residual studies looked at training delivered to a variety of staff from different disciplines.

Overall the evidence evaluating the effectiveness of staff training programmes for preventing or minimising violence to healthcare workers indicates that their use may lead to increases in knowledge and some reduction in incidents of violence, at least in the short-term but this evidence is far from conclusive. Any longer term or sustained effect from training is unknown. No specific programme or approach can be recommended as more effective than another although most of the programmes appear to contain common elements. More empirical research using experimental designs that incorporate a comparison group not receiving the intervention and preferably random allocation to the intervention is required.
REFERENCES


National Health and Medical Research Council (1999). How to use the evidence: assessment and application of scientific evidence. Canberra: NHMRC.


APPENDIX 1: LEVELS OF EVIDENCE

Level I  Evidence obtained from a systematic review (or meta-analysis) of relevant randomised controlled trials.

Level II  Evidence obtained from at least one randomised controlled trial.

Level III. 1 Evidence obtained from pseudorandomised controlled trials (alternate allocation or some other method).

2 Evidence obtained from comparative studies (including systematic reviews of such studies) with concurrent controls and allocation not randomised, cohort studies, case control studies or interrupted time series with a control group).

3 Evidence obtained from comparative studies with historical control, two or more single-arm studies or interrupted time series without a parallel control group.

Level IV  Evidence obtained from case series, either post-test or pretest/post-test.
APPENDIX 2: SEARCH STRATEGY

**Medline**

1  exp health personnel/ (240832)
2  occupational health/ (10378)
3  occupational exposure/ (23123)
4  workplace/ (4820)
5  ((health adj2 worker$) or (healthcare adj2 worker$)).tw. (11989)
6  violence/ (14471)
7  aggression/ (17284)
8  (danger$ or assault$ or threat$ or hostility or aggress$ or violen$).tw. (154445)
9  verbal abuse.tw. (185)
10  (safety adj manage$).tw. (240)
11  ((risk or harm) adj (reduce$ or reduction)).tw. (5239)
12  or/1-5 (277853)
13  or/6-11 (171653)
14  INSERVICE TRAINING/ (11887)
15  (educat$ or train$).mp. (478392)
16  TEACHING/ (28715)
17  exp Education/ (385141)
18  or/14-17 (567975)
19  12 and 13 and 18 (1904)
20  pc.fs. (585016)
21  prevent$.tw. (473487)
22  20 or 21 (905130)
23  19 and 22 (734)
24  (bioterrorism or biological or hiv or sharps or agricultural or farm).tw. (338271)
25  23 not 24 (669)
26  from 25 keep (selected references) (16)
27  violence/pc (2424)
28  12 and 27 (688)
29  28 not 25 (480)
30  domestic.tw. (22790)
31  29 not 30 (478)
32  (train$ or educat$).mp. (478392)
33  intervention.tw. or program evaluation/ (145709)
34  32 or 33 (596473)
35  31 and 34 (25)
36  from 35 keep (selected references) (9)
37  19 and program evaluation/ (104)
38  37 not (25 or 41) (48)
39  from 38 keep (selected references)(8)

**Embase**

1  exp health personnel/ (155473)
2  occupational health/ or occupational exposure/ or occupational safety/ (38314)
3  workplace/ (7519)
4  exp violence/ or assault/ (24730)
5  aggression/ or aggressiveness/ or hostility/ or threat/ (13765)
6  (danger$ or aggress$ or assault$ or violen$).tw. (73399)
7  harm reduction/ (186)
8  safety/ (32470)
9  or/1-3 (192973)
10  or/4-8 (124515)
11  exp VIOLENCE/pc [Prevention] (743)
12  9 and 10 (8470)
13  9 and 11 (162)
NURSE TRAINING/ or TRAINING/ or STAFF TRAINING/ (32332)
12 and 14 (526)
(domestic violence or intimate partner violence or child abuse or hiv or sharps or agriculture).tw. (113748)
13 not 16 (122)
15 not 16 (488)
from 17 keep (selected references)
from 20 keep (selected references)
program evaluation/ (34523)
12 and 22 (574)
(education or train$.ti. (42050)
23 and 24 (28)
(staff and (train$ or education) and (violence or aggression or assault)).ti. (9)
from 26 keep (selected references)

Cinahl
1 exp health manpower/ or exp nurses/ (126695)
2 occupational exposure/ (4885)
3 occupational health/ (4280)
4 workplace.tw. (4807)
5 exp violence/ (13220)
6 aggression/ (1226)
7 patient assault/ (994)
8 verbal abuse/ (350)
9 safety/ (2834)
10 (safety adj manage$).tw. (63)
11 (hostility or threat$ or danger$ or aggression or assault$ or violence).tw. (21779)
12 ((harm or risk) adj (reduce$ or reduction)).tw. (1360)
13 pc.fs. (89482)
14 workplace violence/ (1028)
15 1 and 14 and 13 (142)
16 (education or train$).mp. (179940)
17 14 and 16 and 1 (53)
18 1 and 7 and 16 (68)
19 15 or 17 or 18 (229)
from 19 keep (selected references) (27)
or/1-4 (137178)
or/5-12 (33298)
23 21 and 22 (4123)
24 16 and 23 (1053)
25 limit 24 to abstracts (854)
26 25 not 19 (767)
27 (domestic violence or intimate partner violence).tw. (1566)
from 28 keep (selected references)

PsycINFO
1 exp health personnel/ or exp mental health personnel/ (49457)
2 exp violence/ (27638)
3 aggressive behavior/ or aggressiveness/ (14824)
4 exp patient violence/ (606)
5 verbal abuse/ (55)
6 hostility/ (2977)
7 threat/ (2596)
8 exp dangerousness/ (790)
9 (danger$ or threat$ or aggression or assault$ or violence).tw. (89942)
or/2-9 (101053)
11 1 and 10 (3139)
12 occupational safety/ (1063)
13 working conditions/ (7792)
14 occupational stress/ (9236)
15 or/12-14 (16813)
16 11 and 15 (184)
17 from 16 keep (selected references)
18 (train$ or educat$).tw. (258762)
19 11 and 18 (722)
20 19 not 16 (680)
21 (prevent$ or manage$).tw. (133554)
22 20 and 21 (217)
23 (domestic violence or intimate partner violence or child abuse).tw. (9497)
24 22 not 23 (187)
25 from 24 keep (selected references)
26 17 or 25 (26)
27 20 not 24 (493)
28 limit 27 to journal article (371)
29 from 28 keep (selected references)
30 17 or 25 or 29

Cochrane Central Register of Controlled Trials

As Medline.

Current Contents and Science/Social Science Citation Index:

1. Patient* SAME assault*
2. Patient* SAME violen*
3. Patient* SAME aggrress*
4. #1 OR #2 OR #3
5. train* OR education*
6. #4 AND #5
APPENDIX 3: EXCLUDED RETRIEVED PAPERS


Prospective study. Focus on risk prediction but no staff training component evaluated.


Retrospective study. Focus on demographic data and prevalence of incidents but no staff training component evaluated.


Prospective study. Focus on risk prediction but no staff training component evaluated.


Narrative review. Focus on risk prediction and management but no staff training component evaluated.


Guideline. Brief comment on need for staff training.


Commentary. Components of training in assault prevention listed but no staff training component evaluated.


Prospective longitudinal study. Some retrospective data used. Focus on risk prediction but no staff training component evaluated.

*Retrospective study. No staff training component evaluated.*


*Case-control study. Focus on characteristics of violent patients.*


*Longitudinal study with pre-test/post-test design. Students not staff and all of the data analysed was based on scenarios rather than real patients.*


*Narrative review. Good background article that recommends that all clinicians should receive training on how to manage violent patients.*


*Case-control study. Aggression reported as an outcome but no staff training component evaluated.*


*Narrative review. Background article with focus on strategies for how to deal with assaultive patients.*


*Retrospective study. Patients were the unit of study and no specific staff training component or program was evaluated. This study did perform a comparison of the (self-reported) prevention and management of assaults training programs attended by victims and non-victims. Attendance at a variety of types of programs was reported by nurses with those who were not victims receiving more training in identifying risk factors of assaultive patients and seclusion and restraint techniques than staff members who were victims.*


*Cross-sectional study. Focus on risk assessment.*

*Descriptive, longitudinal cohort study. Focus on establishing incidence of violence. Recommendation for education but no staff training component evaluated.*


*Editorial.*


*Retrospective study. Focus on prevalence of aggression in an Australian forensic setting.*


*Prospective study. Focus on risk assessment and management but no staff training component evaluated.*


*Before-and-after study, quasi-experimental with pretest posttest data collected. Multiple, hospital wide setting. Outcomes of interest not evaluated.*


*Narrative review. Focus on risk assessment and management but no staff training component evaluated.*


*Letter to the editor.*


*Narrative review and descriptive study. No staff training component evaluated.*

*Editorial. Focus on hostility between staff.*


*Retrospective study. Focus on incidence and no staff training component evaluated.*


*Quasi-experimental study of educational intervention. Nursing home setting.*


*Describes peer-help post-crisis intervention programme evaluation and preliminary data.*


*Review of risk factors. The need to establish training initiatives is discussed in a section on implications for mental health administrators.*


*Multiple-baseline design of crisis intervention training. Some before-and-after data on episodes of patient assault presented.*


*Peer-help post-crisis intervention programme evaluation but no staff training component evaluated.*


*Background about programme.*

Peer-help post-crisis intervention programme evaluation but no staff training component evaluated.


Before-and-after-study (single-case design) on peer-help post-crisis intervention programme.


Before-and-after-study (single-case design) on peer-help post-crisis intervention programme.


Narrative review of previous studies. Pre-incident staff training not specifically evaluated.


Prospective study. Focus on characterising the types of assaults but no staff training component evaluated.


Prospective study. Focus on describing the use of restraint for management of assault but no staff training component evaluated.


Focus on staff characteristics rather than effectiveness of programme.


Prospective study. Peer-help post-crisis intervention programme but no staff training component evaluated.

*Retrospective study. Focus on presence of safety skills as risk management strategy but no staff training component evaluated.*


*Retrospective study. Focus on precipitants of violence.*


*Cohort/Case-control study but before-and-after data on relevant outcomes not reported. Peer-help post-crisis intervention programme but no staff training component evaluated.*


*Narrative review.*


*Prospective longitudinal study. Focus on risk prediction but no staff training component evaluated. Concludes that actuarial prediction is more accurate than clinical prediction.*


*Prospective longitudinal study. Focus on risk prediction but no staff training component evaluated. Accuracy of prediction was estimated retrospectively.*


*Post-training survey. Focus on risk assessment but evaluation occurred after the training only. No data on incidence of assault.*


*Cohort/Case-control study. Focus on physical and non-physical violence to nurses but staff training was not included as a variable in analyses.*

*Before-and-after study. Four part inservice programme on dealing with aggressive behaviour. Primary outcome reported was level of staff burnout before and after programmes. Very minimal data was presented on incidence. Eg. Fewer incidence reports were noted in the 4-month period following the training (n=6) compared to the months prior to training (approximately n=6 per month).*


*Retrospective survey. No staff training component evaluated.*


*Retrospective study. Focus on risk assessment and prediction but no staff training component evaluated.*


*Prospective study. Focus on risk assessment and prediction but no staff training component evaluated.*


*Narrative review.*


*Prospective study. Focus on risk prediction but no staff training component evaluated.*


*Non-systematic review. Describes pilot testing of a training curriculum but does not provide specific pre-test, post-test data on outcomes.*

*Descriptive survey on current practice. No staff training component evaluated.*


*Narrative review. Focus on rapid sedation/chemical restraint and no staff training component evaluated.*


*Before-and-after/quasi-experimental study. Focus on nurses perceptions before and after the training. Not clear whether training was associated with any decrease in the incidence of assaults in the workplace.*


*Case-control study. Although this study examined the impact of staff training in aggression control on the incidence of patient assaults no baseline data on the frequency distribution of assaults prior to training was collected. Of the 31 staff members who had received training, only one was assaulted; of the 65 untrained staff, 24 were assaulted, a statistically significant difference. The trained staff member who was assaulted did not sustain an injury, yet 19 of the 24 untrained staff who were assaulted were injured.*


*Before-and-after-study. The only outcome assessed was staff confidence in dealing with aggression. No data on incidence of assault. There was a significant increase in staff confidence among those who had participated in the training.*


*Retrospective study. Training intervention but methods state that specific training on violence prevention was not given during the study period.*


*Narrative review but did provide some details about its methodology. Focus on risk factors in all settings and no staff training programmes evaluated.*

*Clinical Practice Guidelines. Article provides relevant background. No staff training component was evaluated and these guidelines did not attempt to summarise previous studies.*


*Cross sectional study. Retrospective, descriptive data only.*


*Cross sectional study. Although the focus is on staff training no before-and-after data on relevant outcomes is presented. Self-reported confidence in ability to use techniques they have been taught was found to be related to whether they had been trained in the core curriculum and not to the duration of training. Where core elements are taught training was more likely to include theoretical aspects of the prevention and management of violence, as well as safety and ethical aspects.*


*Before-and-after study. The focus of this study was on staff attitudes towards violence but the possibility of a decrease in the frequency of violent incidents due to the training was not specifically evaluated.*


*Non-systematic review. Focus on risk prediction not implementation of staff training.*


*Before-and-after study. Novel study using behavioural intervention that showed a significant reduction in total assaults as well as fewer staff injuries resulting in loss of time from work. No staff training component evaluated.*


*Editorial. Focus on risk assessment.*

*Editorial.*


*Narrative review. Focus on risk assessment rather than staff training on risk assessment and management.*


*Retrospective study. Focus on risk assessment but no staff training component evaluated.*


*Cross-sectional study. Focus on risk prediction but staff training was not included as a variable in analyses.*


*Case-control study. This large study was part of the Risk Factors for Violence Among Nurses (RFVAN) study. Over 40% of nurses reported being trained about occupational violence, involving seven different training topics. Although at univariate level, an increased risk was identified for nurses trained in managing assaultive/violent patients, no statistically significant results remained at the multivariate level. The authors suggested this lack of protection of training was consistent with previous research though the reasons for the lack of effects are unclear. This study was excluded as less than 15% of those interviewed worked in psychiatric or emergency department settings.*


*Systematic Review. No outcome data on staff training.*


*Randomised controlled trial. Focus on perception and attitudes towards patient aggression.*


*Narrative review. Focus on risk assessment and management but no staff training component evaluated.*

*Descriptive study. No staff training component evaluated.*


*Prospective study describing incidence only.*


*Validity study. English abstract but article in Spanish language. Not focused on implementation of staff training.*


*Background.*


*Editorial.*


*Randomised controlled trial. This study examined training in nonviolent self-defense skills for dealing with potentially assaultive patients. Three groups of male staff received didactic training, didactic training and physical skills training or no training. Although all measures were administered before-and-after the intervention, incidence of assaults was only reported post-test.*


*Qualitative study. Focus solely on service users and not healthcare staff.*


*Narrative review.*

*Retrospective survey. Nurses self-reported their level of training. Nurses with no training were more likely to face events of violence than nurses who received some training.*


*Prospective study. No staff training component evaluated.*


*Systematic review. All trials identified were excluded. No trials on staff training on the use of seclusion or restraint evaluated.*


*Background.*


*Narrative review. Background only.*


*Qualitative study. Focus on risk prediction not implementation of staff training.*


*Multiple-baseline study. Not conducted in a general mental health or emergency department setting.*


*Narrative review. Background only.*

*Prospective study. No staff training component evaluated.*


*Randomised controlled trial. No staff training component evaluated.*


*Descriptive study. A brief report about the “Utilizing a Safety and Violence Education (SAVE)” curriculum which uses a preventative strategy to train case managers to identify warning signs of impending violence and to safely engage patients in community settings.*


*Systematic review. Focus on prevalence and not implementation of staff training.*


*Non-experimental study on an educational programme. Non mental health or emergency department setting.*


*Background.*


*Narrative review.*


*Cross-sectional survey. Respondents retrospectively reported self-reported training and practice. The response rate on this survey was low at 36%.*

Randomised controlled trial with focus on interpersonal violence. No staff training component evaluated.
APPENDIX 4: APPRAISED RETRIEVED PAPERS


