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Title: "Evaluation of an alternative model for the management of clinical risk in an adult acute psychiatric inpatient unit"

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Abstract

Despite their widespread use, typical visual observation practices are not evidence-based and adverse events – such as self-harm and absconding – still occur even under the most intense forms of observation. This study aimed to: (1) develop and implement an engagement-focussed systematised model of clinical risk management in an adult acute psychiatric inpatient unit and; (2) prospectively evaluate its effect on rates of violence, self-harm, absconding, sexually inappropriate behaviour and seclusion. A new model of engagement-focussed clinical risk management was developed using a participatory action research framework and implemented in an adult acute psychiatric inpatient unit. Using a mirror-image design, rates of violence/aggression, self-harm, absconding, sexually inappropriate behaviour and seclusion were compared before and after implementation and staff satisfaction levels were measured. The clinical engagement-based model was introduced and 1087 admissions before implementation (24 months) were compared with 965 admissions post-implementation (18 months). The new model was associated with significantly reduced rates of absconding (Pre: 10.5/1000 occupied bed days, 95%CI [9.0,12.1] compared with Post: 6.5/1000 occupied bed days [5.2, 8.1], $p<.001$) and seclusion (Pre: 43.7/1000 occupied bed days, 95%CI [40.6,46.9] compared with Post: 30.9/1000 occupied bed days [27.9, 34.1], $p<0.0001$). Rates of aggression, deliberate self-harm and sexually inappropriate behaviour were non-significantly decreased. Findings suggest that this engagement-focused model of clinical risk management in an adult psychiatric inpatient unit significantly reduced adverse patient events and was preferred by staff over current practice. Other psychiatric inpatient facilities may see a reduction in adverse events following the introduction of this well-tolerated risk management model.

Keywords: inpatient, patient engagement, psychiatric nursing, risk management. visual observation

Introduction

The transition of psychiatric nursing from principally an institutional custodial role (Cutcliffe and Barker, 2002) towards a therapeutic humanistic model emphasising consumer participation and empowerment (Bachrach, 1996) still requires the management of risk. In particular, a corollary of the increased transparency of managing psychiatric patients in general hospitals has been the increased attention on inpatient deaths and self-harm (Bowles et al., 2002, Slemon et al., 2017). The strategy commonly practiced to manage risk in psychiatric inpatient units is “visual observation” (Slemon et al., 2017, Curtis et al., 2013).

The practice, simply defined as sighting the patient, may be divided into two categories: *intermittent* observation, where patients are observed by a nurse at regular intervals for example 15, 30 or 60 minutely according to a pre-specified level of risk; and *constant* observation, where the highest risk patients are placed under constant observation by a dedicated nurse (Janofsky, 2009, Manna, 2010). Generally these do not specify further patient engagement, rather, the implied goal is to scan for overtly risky behaviour (Lees et al., 2014, Slemon et al., 2017) (Stewart et al., 2010, Lambert et al., 2018).

Despite being a core practice in acute psychiatric nursing, there is limited data supporting the efficacy of visual observation in the prevention of adverse events (Manna, 2010, Chu, 2016). This in part is due to the ethical constraints of conducting experimental research that systematically limits the surveillance of vulnerable patients (Russ, 2016). Thus, data is mainly restricted to a handful of descriptive studies with mixed results. One study of 135 randomly-selected wards in the United Kingdom reported higher use of intermittent observation was associated with lower rates of self-harm but no relationship was found with use of constant observation (Bowers et al., 2008b). Similarly, a UK study of three forensic mental health services reported a two to four times increase in adverse behaviours (such as self-harm, verbal abuse, or property damage) when patients were under constant visual observation than when not (Lambert et al., 2018), although whether this was a reaction to constant observation or better reporting of adverse behaviour was unclear (Lambert et al., 2018). Other studies have found no association between constant observation and self-harm (Stewart et al., 2009), with the exception that patients placed on constant observation *at admission* may have a reduced risk of suicide (Stewart et al.,

2012). One paper examining the factors involved in successfully circumvented suicide attempts noted intermittent checks may be effective in interrupting suicide and self-harming behaviour but could not exclude the effectiveness of nursing staff exercising their own clinical judgements when assessing patient risk (Bowers et al., 2011).

Flynn and colleagues (2017) investigated 113 inpatient suicides which occurred in England and Wales over a seven-year period. While most were under intermittent observation, 5 deaths (4%) occurred while under constant observation and 34 deaths (30%) occurred after absconding. Key factors identified in these deaths included less experienced staff, failure to follow observation procedures, patient absconding, and understaffed wards. This is consistent with previous investigations that identified noncompliance with observation procedures as a frequent root cause of inpatient self-harm and suicide (Gournay and Bowers, 2000, The Joint Commission, 2014, Jayaram, 2014). Reasons for this noncompliance may include economic constraints, understaffing, inadequate risk assessment, and poor ward design (Bowers and Crowder, 2012, The Joint Commission, 2014). Therefore, the effectiveness of visual observation is unresolved and this is further compromised by its inconsistent application (Russ, 2016).

In addition to its lack of unequivocal efficacy, visual observation has been associated with a range of negative factors including its intrusion on patient privacy, eliciting distress, and exacerbating psychotic symptoms (Hamilton and Manias, 2008, Slemon et al., 2017, Cox et al., 2010). Furthermore, constant observation may increase aggression towards staff (Stewart et al., 2012), is perceived by many patients as punitive (Paterson et al., 2013), and it has been argued that time spent conducting observations draws already time-poor staff away from other important duties (Curtis et al., 2013).

A number of qualitative studies have examined nurses' and patients' attitudes towards observation practices (Stewart et al., 2015, Lees et al., 2014, Holyoake, 2013, Insua-Summerhays et al., 2018, Berglund et al., 2016, De Santis et al., 2015). A recurring theme is that nurses report struggling with the conflicting demands of adhering to safety protocols while maintaining a therapeutic environment for the patient (Lees et al., 2014, Insua-Summerhays et al., 2018). While observation activities are seen as necessary for maintaining patient safety, many nurses recognise the practice as intrusive, non-therapeutic, and potentially dehumanising and distressing for patients (Holyoake, 2013, Insua-Summerhays et al., 2018). Moreover, visual observation is adverse to a core concept

of recovery-focused care, co-production, which recognises the patient as an equal partner in care planning, rather than a passive recipient (Clark, 2015).

However, the element that appears from patient accounts to transform the practice into a beneficial experience is the degree of *positive engagement* with the observer. When observers were perceived as empathetic, non-judgemental and willing to help, the experience was seen as reassuring and therapeutic, while observation by persons who act bored, inconvenienced or do not interact at all with the patient was rated as highly distressing and objectifying (Insua-Summerhays et al., 2018, Berglund et al., 2016, Stewart et al., 2015). An Australian survey by Lees and colleagues (2014) noted that, while both nurses and patients recognised the importance of positive staff-consumer engagement as a therapeutic tool, they also reported that this engagement rarely occurred. Some obstacles to therapeutic engagement reported by nurses included a lack of time and patient behaviour, such as acting resentful or isolative (Lees et al., 2014). In line with other studies, this survey also highlighted that many nurses feel poorly equipped to engage with highly distressed or suicidal clients and fear it would be countertherapeutic to attempt to engage them (Awenat et al., 2017). Overall, both patients and staff report the belief that positive engagement is therapeutic and mediates the negative experiences associated with visual observation. Time constraints and a lack of specialised training are commonly cited barriers to engagement.

In recognition of this dilemma, a number of authors have recommended positive patient engagement as a less paternalistic means of managing risk (Bowles et al., 2002, Buchanan-Barker and Barker, 2005). While specific recommendations vary, the overarching goal of engagement is to interact with patients to develop a therapeutic relationship, ideally resulting in better information exchange as well as an improved ward experience for both patients and staff (Bowles et al., 2002). Indeed, government health guidelines released in Australia (Victoria Department of Health, 2013, NSW Department of Health, 2017) and the UK (Sussex Community NHS Foundation Trust, 2017), highlight the importance of patient engagement in the provision of inpatient psychiatric care.

However, as for visual observations, data is limited and inconsistent because, in part, of the variability of the models tested. Dodds and Bowles (2001) found that modified ward protocols with reduced visual observations, increased engagement, and better staff communication produced significant reductions in self-harm, violence, absconding, and staff sick leave. Similarly, an anti-absconding program which included targeted nursing for

at-risk patients (in addition to other changes, such as patient sign-in/out books) was shown to reduce absconding in UK wards by an average of 25% (Bowers et al., 2003, Bowers et al., 2005). An intervention developed by the same group aimed to improve nursing practices through “positive appreciation” of patients, emotion regulation strategies for staff, and consistent ward rules and routines (Bowers et al., 2006). It was associated with decreases in aggression, absconding, and self-harm, as well as increased rates of staff-patient interactions (Bowers et al., 2006, Brennan et al., 2006, Flood et al., 2006). However, a replication study reported no changes in adverse events or containments following the intervention compared to control wards (Bowers et al., 2008a). A similar intervention designed to increase engagement on an inpatient ward was *not* associated with a reduction in adverse events, however these results were complicated by other ward factors, such as fewer beds and shorter stays (Bjorkdahl et al., 2007). Although not directly examining adverse events, Nasset and colleagues (2009) found that providing nurses with a three-week course in milieu-therapy – which included strategies for therapeutic engagement – resulted in improved ratings of ward atmosphere by service users.

A more recent study examined the effect of two engagement-based protocols for managing risky behaviour on the use of constant observation (Ray et al., 2017). It was found that strategies to minimise patient violence (focusing on environmental control, unobtrusive monitoring and individualised care plans) reduced the frequency of constant observations, however interactive strategies to reduce self-harming behaviour had no effect on observation. Overall, these studies present preliminary evidence to suggest that increasing nurse decision-making and formalising therapeutic strategies may reduce adverse events and, in turn, reduce reliance on more intrusive forms of visual observation.

The current study

In recognition of the limited, but promising evidence to suggest that visual observation practices may be improved through engagement, a novel model for managing clinical risk was developed to replace standard visual observation practices. This model was based on clinical engagement principles and was developed using a participatory action research framework involving staff and consumer focus groups. The model was then implemented

at a 25-bed adult acute psychiatric unit in Melbourne, Australia. A mirror-image research design (pre-post) was employed to compare rates of self-harm, violence, absconding, sexually-inappropriate behaviour and seclusion before and after implementation of the model. It was predicted that the model would be associated with a decrease in adverse events and an increase in staff satisfaction levels.

Method

The study was undertaken at a 25-bed acute adult (18-65 years) psychiatric inpatient unit in metropolitan Melbourne, Australia, that covers a catchment of approximately 300,000 people. The majority of patients were admitted involuntarily and with a primary diagnosis of a psychotic disorder. The project had ethics approval from the Melbourne Health Human Research and Ethics Committee.

Development of the Clinical Risk Management Initiative (CRMI)

Following a review of the literature, the CRMI was developed, refined, implemented and evaluated using a six-stage participatory action research framework (Kemmis et al., 1998) outlined in Figure 1. Briefly, the model underwent focus group consultation and review with staff and consumers before staff were trained in using the working model. The training allowed for refinement of the model based on user feedback. The model was piloted and subjected to further refinement before full implementation.

[Figure 1 here]

Final version of the CRMI

The CRMI (shown in Table 1) incorporates a protocol and clinical circumstances for conducting risk assessments and guidelines for managing risk based on risk assessment. Risk assessments were completed on admission, at first psychiatrist consultant review, and when mental status was noted to have changed. Based on the risk assessment patients were categorised into 'low', 'medium' or 'high' risk status. Regardless of risk level, risk assessments for every patient were documented at least once per week for discussion at the multidisciplinary clinical review meeting.

Patients in the low risk category were assessed on routine ward checks where a member of the clinical team would do a 'round' to check that all patients were present on the ward.

The frequency of these 'rounds' was increased so that in the absence of frequent 'visual observations' the ward was still monitored on a regular basis. The timing of 'rounds' was approximately 2-3 hourly and occurred at strategic times such as meal times and change of shift. Patients in this category would previously have been observed every 60 minutes or less frequently.

Patients in the medium risk category ('Enhanced Engagement and Observation') were those who previously would have been visually observed at frequent intervals (every 15, 30, or 60 minutes). Patients categorised as medium risk were now allocated a contact nurse who was responsible for ensuring that regular engagements occurred, and an individual Patient Safety Plan was tailored according to the clinical presentation. An 'engagement' was defined as a direct interaction with the patient that enabled the clinician to assess mental state and risk. Initial engagement each shift was expected to be comprehensive in nature and subsequent engagements were seen as a review to gauge any change from previous interaction. Engagement duration and depth would vary depending on presentation of the patient. The Patient Safety Plan described: possible early warning signs indicating change to risk; possible activities to decrease exacerbation of risk (identified by patient); and management strategies. The contact nurse, in collaboration with the treating team, completed an initial comprehensive assessment and then decided on the frequency of engagements at the start of the shift. The frequency of engagements changed with the patient's changing presentation, that is, increased frequency of engagements when the patient was at increased risk and decreased frequency of engagements when the patient was at lesser risk. Engagements occurred as needed but no less frequently than hourly. A patient who required engagement four or more times in an hour would be reviewed for a possible change to high risk whereas a patient requiring only hourly engagements for a period of time would be reviewed for consideration of a change to low risk. All engagements were recorded on the Patient Safety Plan.

Patients in the high risk category were managed in either a secure high care area (staff: patient ratio 2:5), or in the open ward with 1:1 nursing. Note that safety plans were not implemented for patients in this category because similar plans for high risk consumers were already standard practice at this inpatient unit.

Evaluation of the CRMI: Impact on Adverse Events

A mirror image (pre-post) design was used to compare rates of adverse events before and after implementation of the CRMI. Adverse events were defined as episodes of aggression/violence, absconding, seclusion, deliberate self-harm (including suicide attempts), and sexually inappropriate behaviour. These adverse event data were collected remotely and in a de-identified manner through the organisation's on-line incident reporting system. Each report was scrutinised to determine whether it occurred within the unit during the time periods and to exclude irrelevant or repeat reports. All reports for the two years prior and 18 months after implementation of the CRMI were collected and the events included and grouped for each of the above categories.

Analyses – Adverse event data were expressed per 1000 occupied bed days to control for variation in number of admissions and length of stay. Crude incidence rates (no. of events/total occupied bed days) were compared pre- and post-intervention. Conditional maximum likelihood estimates of risk ratios and two-tailed z tests were calculated using the Person-time two-rate module from the OpenEpi statistical calculator (Dean et al., 2013).

[Table 1 here]

Evaluation of the CRMI: Staff satisfaction surveys and focus groups

Data was collected in three stages: (1) at baseline through staff and consumer focus groups and a staff satisfaction survey; (2) consultation and feedback sessions with staff throughout the implementation phase were used to modify the CRMI; and (3) staff focus groups and staff satisfaction surveys were conducted 3 months after implementation.

Measures – Staff satisfaction surveys utilising a 5-point Likert scale were developed for this project (see Table S1 in supporting materials). The six questions addressed safe practice, personal satisfaction, patient safety and prevention of adverse events. Pre-implementation surveys asked staff participants to measure levels of satisfaction related to the use of Visual Observations. Post-implementation surveys asked staff participants to measure levels of satisfaction related to the use of the CRMI. Post implementation participants were also asked several questions that measured a comparison of standard visual observations to CRMI.

Analyses – Focus group data were thematically analysed. There were 28 participants in both the pre and post implementation focus groups. A focus group consisting of six service consumers were also consulted. Focus group responses were recorded and transcribed.

Data was coded, grouped into categories and subsequently named. There were three identified pre-implementation themes and six identified post-implementation themes. The consumer focus group identified a further four themes. The data from the staff satisfaction surveys were pooled and responses to each question were compared with the corresponding question from the pre-pilot survey using unpaired two-tailed Student's t-tests with significance set at the 0.05 level.

Results

Adverse events

The two-year period immediately prior to introduction of the CRMI from 17/10/05 until 16/10/07 served as the comparison period to the 18 months post-introduction (17/10/07-16/04/09). There were 1090 admissions in the control period (59.2% involuntary) and 965 post-implementation (54.7% involuntary; $X^2(1, N=2055)=4.16$, $p=.04$; *mean difference*= 4.5%). Of the admissions pre-implementation, 549 (50.5%) were for a psychotic disorder (schizophrenia F20.x, schizoaffective disorder F25.x or psychosis F29) compared to 500 (51.8%) post-implementation (, $X^2(1, N=2055)=.35$, $p=.56$; *n. s.*).

Comparison of rates of adverse events pre- and post-intervention are summarised in Table 2. Introduction of the CRMI was associated with significant reductions in rates of absconding (a 37.6% reduction in risk) and seclusions (a 29.3% reduction in risk). Rates of aggression, self-harm, and sexually inappropriate behaviour did not differ significantly between the pre- and post-intervention periods. However, it is notable that crude rates *decreased* for all adverse events following the intervention. Therefore, it cannot be argued that a lack of power is hiding a statistical *increase* in any of the events studied.

[Table 2 here]

Staff satisfaction surveys

Results for the pre- and post-intervention staff satisfaction surveys can be found in Table S2 in the supporting materials. Agreement with the statements, "*I am personally satisfied with the practice of visual observations in the management of patients who have been identified as being 'at risk'*" and "*Visual observations provide optimum care for the patients at [this psychiatric unit]*" increased significantly after the introduction of the

CRMI. No other differences attained statistical significance. Qualitatively, it is noteworthy that prior to the intervention, 18 of 28 staff members felt that visual observations did NOT provide optimum care for the patients at the inpatient unit. Following the intervention, 18 of 26 staff agreed that observation and engagement protocols contributed to safe practice at the inpatient unit.

Focus Groups

Members of the psychiatric ward staff, representing medical, nursing and allied health were involved in a pre-intervention focus group. Three main themes emerged:

1. Staff wanted some way to 'track' patients throughout the day.
2. Staff felt that 15-, 30- and 60-minute intermittent observations were unlikely to prevent adverse events.
3. The team needs to be able to assess and monitor patients who have some identified increase in risk.

An additional focus group conducted with consumers prior to the intervention implementation identified the following themes:

1. Time interacting with clinical staff is very important for safety and recovery.
2. 'Observations' should be more individualised.
3. Activities are needed to relieve boredom on the ward.
4. Patients should be involved in planning their own care, and the care provided should be explained to them.

A focus group of psychiatric ward staff interviewed *after* the implementation of the CRMI model identified the following six themes:

1. Improvements were reported in individualised patient care, documentation, safety and team function.
2. Attention to and documentation of risk in a systematised way is superior to the previous model of care.
3. Focus on engagement is positive.
4. Previous focus on visual observations was tedious, not patient centered and of doubtful clinical utility.
5. Criticisms of the new model included: increased work demands, the subsequent workload impacting on the transition of patients to low risk (i.e.: concerns that some

patients were moved to low risk to reduce staff workload), and concerns of decreased attention for low risk patients.

6. The new model had no positive or negative impact on the quality of patient care.

Unfortunately, due to challenges involved in targeting consumers who had experienced ward practices prior to *and* after the implementation of the CRMI, a post-intervention consumer focus group could not be arranged.

Discussion

The aim of this research was to develop, implement, and evaluate a new model for managing clinical risk in psychiatric units: the Clinical Risk Management Initiative (CRMI). This model replaced standard visual observation practices with protocols that emphasise frequent patient engagement and individualised patient risk management plans. Results of a mirror-image study revealed that rates of absconding and seclusions were significantly reduced following the introduction of the CRMI in a Melbourne adult psychiatric inpatient unit. Staff satisfaction surveys and thematic analysis of focus groups indicated a largely positive response to the new protocols.

Partially consistent with our predictions, implementation of the CRMI at an adult psychiatric unit resulted in a 37.6% reduction in risk of absconds and a 29.3% reduction in risk of seclusions. Unexpectedly, rates of other adverse events – including deliberate self-harm, aggression, and sexually inappropriate behaviours – remained unchanged.

However, it is possible that the relative infrequency of these events on this ward affected the power to detect statistically significant change. For instance, rates of absconding are associated with increased risk of suicide attempt (Bowers et al., 2010), and seclusion is typically prompted by aggressive behaviour (Jury et al., 2018), therefore it would be expected that reductions would be seen in all event types. Nevertheless, these findings are consistent with previous studies that reported reductions in adverse events following the introduction of similar engagement-based practices on inpatient wards (Dodds and Bowles, 2001, Bowers et al., 2005, Bowers et al., 2006). Importantly, modification of intermittent visual observations (e.g.: 15- or 30-minute checks) was not associated with an increase in *any* type of adverse event.

Encouragingly, results from staff surveys and focus groups indicated that the CRMI was generally well-received. This suggests that staff were able to adapt to the new protocols and perceived them to be more effective than previous practices. This finding agrees with

previous studies which found similar interventions to be reasonably well-tolerated by staff (Bowers et al., 2005, Brennan et al., 2006). Moreover, increased belief in the efficacy of the procedures being conducted may increase staff compliance with these procedures and, indirectly, improve patient care (Russ, 2016).

Focus groups also identified several criticisms of the CRMI. This included concerns about the increase in workload, and fears that placing risk assessment in the hands of nurses would lead to staff downgrading more patients to 'low risk' status in order to reduce staffing pressures. However, we found no evidence to substantiate this fear, and the demonstrated reductions in adverse events following the CRMI suggest that the quality of patient care had not declined under this new model. This is consistent with prior studies that also reported no decline in patient care following increased nurse decision-making (Kettles and Paterson, 2007, Ray et al., 2017).

A number of limitations must be acknowledged. First, the study design is open to observer bias, although the protracted timeframe for data collection may have mitigated this effect. Second, adverse event data relied on staff completing formal reports, therefore it is possible that certain events were underreported. Third, it was noted that a slightly greater percentage (4.5%) of patients were discharged under involuntary status during the pre-implementation period than during the post-implementation period. Although this may reflect a difference in patient severity between these time periods, it is important to note that this number includes patients who were routinely changed to involuntary status *due to* seclusion, and that the reduction in seclusions post-implementation may have contributed to the reduction in involuntary patients. Finally, delays in the provision of staff training and a limited ward activities program may have undermined the efficacy of the CRMI intervention. Future studies would benefit from a randomised design and more frequent staff training.

Conclusions

This paper presented a novel risk management model, the Clinical Risk Management Initiative, which aimed to replace standard visual observation practices with engagement-focused strategies and individualised safety plans. Results of a mirror-image design revealed that rates of absconding and seclusions were significantly reduced following the intervention of the CRMI model at an acute psychiatric ward. Staff surveys and focus groups suggest that the program was well-tolerated and perceived as more effective than previous risk management practices. These findings add to a growing body of evidence in

support of replacing traditional observation with therapeutic engagement strategies to effectively reduce clinical risk. This represents a step towards aligning acute psychiatric care provision with the standards of recovery-focused care exemplified by community-based mental health services.

Relevance for clinical practice

Clinicians working in acute psychiatric wards may benefit from implementing the strategies outlined in the CRMI model. The current study indicates that re-focusing staff responsibilities to formally highlight regular patient engagement may be an effective way to manage risk and, in turn, reduce rates of adverse events. Importantly, the implementation of these new procedures was well tolerated by staff and was not associated with any negative outcomes.

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Tables

Table 1

Summary of the CRMI clinical protocols for patients at each level of risk.

	Risk review protocol	Observation protocol
LOW RISK (previously 60 min visual observations)	Risk review conducted <i>each shift</i> by contact nurse and at each medical review and documented in progress notes	Routine Ward Check Not a clinical tool, a patient 'head count'. Task to be allocated to any member of the clinical team by the Shift Leader Staff member completing task should be observing for unusual or concerning behaviours that may alert the clinician to a possible change in mental status or risk. <i>Any changes to be reported to contact nurse or Shift Leader.</i>

		If patient not present on any check, contact nurse or shift Leader to be notified without delay
MEDIUM RISK (previously 15, 30 or 60 min visual observations)	<p>Risk review conducted <i>regularly throughout day</i> by contact nurse and documented on Patient Safety Plan.</p> <p><i>Daily review</i> by treating doctor and nurse; documentation in notes to include mental status, assessment of risk, and risk level.</p> <p>Strategies to manage/decrease risk, including tailoring of Enhanced Engagement & Observation, documented on Patient Safety Plan.</p>	<p>Enhanced Engagement & Observation</p> <p>Primary goal is for <i>all members of the clinical team to engage with the patient on a regular basis</i> to more rigorously assess, plan for, and prevent adverse outcomes related to risk.</p> <p>Engagement can include 1:1 contact, group discussions and planned ward activities.</p> <p>Patient Safety Plan to be completed daily or when management changes, in collaboration with patient wherever possible.</p> <p>Explanation to patient about planned interventions/ management strategies.</p> <p>Frequency of engagement should reflect mental state and current concern about level of risk.</p> <p>Process of engagement to include mental state assessment and risk review.</p>
HIGH RISK (managed previously in same setting: either High Care Area or Special Nursing)	<p>Risk review conducted <i>regularly throughout day</i> by contact nurse and documented in progress notes.</p> <p><i>Daily review</i> by treating doctor and recorded in progress notes or on form.</p>	<p>High Care Area/Nursing Special</p> <p>Patients in this group require the highest level of engagement, assessment and intervention.</p> <p>Patients will either be managed in the High Care Area or in the Low Dependency Unit (LDU) with 1:1 nursing. 1:1 nursing can be at two levels;</p> <ul style="list-style-type: none"> • ‘Constant Visual Observation’ – patient must be within sight of a nurse allocated for the care of that patient only at all times. • ‘Special Nursing’ – patient to be within arm’s length of special nurse at <u>all</u> times. <p>Patients making transition from high to medium risk should have a clearly documented plan for transition</p> <p>Patients should be encouraged to participate in activities that may reduce exacerbation of risk</p> <p><i>Primary focus of care is engagement.</i> Nurses to assess risk in an ongoing way.</p>

Table 2

Frequency of admissions and adverse events before (pre-) and after (post-) implementation of the Clinical Risk Management Initiative

	Pre- intervention	Post- intervention	Difference in rates [95% CI]	CMLE RR [95% CI]	Z score <i>p</i>
Occupied bed days	17304	12561			
Absconds	<i>n</i> =181	<i>n</i> =82			
Rate†	10.46	6.53	-3.93	.62	3.57
[95% CI]	[8.99, 12.1]	[5.19, 8.10]	[-6.01, -1.85]	[.48, .81]	<i>p</i> =.0004
Aggression	<i>n</i> =44	<i>n</i> =25			
Rate†	2.54	1.99	-.55	.78	.98
[95% CI]	[1.85, 3.41]	[1.29, 2.94]	[-1.64, .53]	[.47, 1.27]	<i>p</i> =.33
Seclusions	<i>n</i> =756	<i>n</i> =388			
Rate†	43.7	30.9	-12.8	.71	5.58
[95% CI]	[40.6, 46.9]	[27.9, 34.1]	[-17.2, -8.43]	[.63, .80]	<i>p</i> <.0001
Self harm/ suicide attempts	<i>n</i> =14	<i>n</i> =7			
Rate†	.81	.56	-.25	.69	.81
[95% CI]	[.44, 1.36]	[.22, 1.15]	[-.84, .34]	[.26, 1.69]	<i>p</i> =.42
Sexually inappropriate behaviour	<i>n</i> =12	<i>n</i> =5			
Rate†	.69	.40	-.30	.57	1.06
[95% CI]	[.36, -1.21]	[.13, .93]	[-.82, -.23]	[.18, 1.60]	<i>p</i> =.29

†Rate per 1000 occupied bed days. CI=Confidence intervals. CMLE RR=Conditional maximum likelihood estimates of risk ratios.

Figure legend

Figure 1: Development and implementation of the Clinical Risk Management Initiative utilising a Participatory Action Research Framework.

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