Risk Assessment in Mental Health: Introducing a Traffic Light System in a Community Mental Health Team

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Abstract: *Aims*: To reports a study in which action research approach was utilised to introduce a new system of risk assessment, based on traffic lights, into a community mental health team.

Background: Risk management is a serious concern in community mental healthcare where there is less direct, real-time supervision of clients than in other settings, and because inadequate management of risk can have fatal consequences when service users are a risk to themselves and/or others.

Design: An action research design was undertaken, using three phases of Look, Think and Act.

Methods: Data were collected between January and March of 2012. In the action research phases, qualitative data were collected in focus groups with the team's multi-disciplinary mental health professionals. Data were transcribed verbatim and analysed thematically, which involved agreement of themes and interpretations by two researchers. The Look, Think and Act phases guided the development of the project; team members worked collaboratively on the traffic light system, implemented and evaluated it.

Findings: Themes were constructed that were discussed across the focus groups. These themes were: Ease of use; Risk identification and management; Legal status; Different teams' views of risk; Post-implementation evaluation.

Conclusion: Action research has been used to implement change in mental health risk management. Others internationally would benefit from considering a Traffic Light System, and in using action research to implement it.

Keywords: Risk management, risk assessment, community mental health, action research, traffic light system, qualitative research, focus groups.

INTRODUCTION

Risk is the potential for any particular event to happen, and exists in all areas of life [1]. Risk perception involves assessment of a specific type of accident occurring and the importance of its consequences [2]. Risk assessments are based on factors including an existing risk assessment, and experience; new information (regardless of its source) will change a person's perception of risk, however imprecision in estimating risk occurs when inadequate information is held by any assessor [1]. Without robust assessment tools, risk perception can be influenced by factors including gender and ethnicity [3], culture and the cultural group of the assessor [4] as well as clinical judgement and expertise.

Risk management is a concern to all involved in healthcare, but is a particular concern in community mental healthcare where there is less direct, real-time supervision of clients than in other settings, and also because inadequate management of risk can have fatal consequences when service users (SUs) are a risk to themselves and/or others [5].

Serious concerns exist worldwide about risk, its multi-axial form and its management in mental health, particularly where interventions occur as a result of risk identification [6]. A Canadian project [7] found that a complete assessment of risks requires standardisation and consistent application of assessment tools capable of recognising changing risks. In the United States (US), using National Institute for Mental Health (NIMH) data, classification of risk groups has been identified as important in reducing harm, costs, and to increase prevention or improve treatments [8]. Similarly, in the United Kingdom (UK) National Institute for Health and Clinical Excellence (NICE) guidelines highlight the importance of risk management [9, 10]. An Australian state recognises mental health risk as unpredictable and that its amelioration requires commonality and consistency in risk assessments, including risk to or from others and to self as well as the potential for systems and treatments to cause harm to the consumer [11].

Mental health risk management has been studied internationally. Recognition of risk is important in reducing its effect by identifying appropriate care pathways, particularly when risks are complicated (for example by co-existing substance misuse with a mental health issue). Thomas and Staiger [12] note that some Australian practitioners found asking personal questions difficult, resulting in risks being missed on initial assessment, and propose that a screening tool would help with questioning and build a better picture of the risks involved; and this may be useful internationally where risks include socio-economic

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deprivation, and poor rural access to metal health services [13], mental health and substance abuse co-morbidity [14], and unemployment causing the risk of maladaptive coping strategies such as the use of alcohol, tobacco and general self-neglect [15]. A certain degree of risk may be beneficial to SUs, who may otherwise become deskilled at managing facets of their own daily living [16, 17].

A recurring theme in international literature is the varied nature of sources of risk and the direction of its application [2, 14-17]. Risk is unpredictable and contextually driven for individual SUs and services, and arguably requires a broad-ranging assessment tool such as that employed in many care contexts based on 'traffic light systems' (TLS). TLS use familiar colour-coding with red for high risk, amber for medium, and green for low risk clients [18-21]. TLS have been postulated as having potential applications in mental health care [22] and have been implemented using a similar design to action research (AR) [20].

MATERIALS AND METHODOLOGY

This study took place in a Community Mental Health Team in the South West of England, and was concerned with risk (accidents or adverse events) happening to SUs, and its management. A TLS was implemented to aid decision making in these complex situations and facilitate recognition of the many and varied potential risks to which SUs are exposed [20].

Aims and Objectives

The aim was to develop a TLS for risk management assessment that was informative but could quickly alert the team to changes (particularly increases) to risk level. There were two objectives: the first was to assist in matching the level of risk with the resources and support required; the second was to facilitate the development of new knowledge engendered by implementing TLS in this environment.

Design

An AR methodology was chosen for implementing and evaluating the TLS introduction because AR is a powerfully democratic study design which involves participants in identifying important issues and working together to bring about beneficial change [23]. AR makes use of participants' knowledge of their organisations and, rather than treating them as research subjects, engages them in collaboration as co-constructors of change [24]. It relies on the involvement of group members to voice their beliefs freely and for those voices to be treated equally [25].

A simple methodology adapted from Koch and Kralik [25] was employed, with consecutive phases: Look, Think and Act. Three focus groups (FGs) were employed; the initial FG (the 'Look' phase) identified problems involved with contemporary risk management arrangements and planning the alternative (a TLS), the second FG (the 'Think' phase) identified actions to be implemented, and the third phase ('Act') implemented and evaluated the ideas, so that each FG directly informed the next [24]. Table **1** summarises the activity and questioning that took place in each of the three AR phases.

In common with other action research approaches, the design was highly flexible and guided activity rather than

prescribed it [23], and thus the phases are not exclusive in their application.

Table 1.   Activity and Questioning in Each of the Three AR Phases

PHASE 1: LOOK
Introduction to Traffic Light System.
Discussion about the form of Traffic Light System and putting it into practice.
Putting Traffic Light System into practice with the team caseload.
Schedule of questions
1.   What does the group feel about the potential usefulness of using colours to identify risk levels?
2.   Can you think of any examples of when it might have been useful?
3.   Who should be allocated to the highest risk (red) group?
4.   If it is decided that a Traffic Light System would be a good idea, how should it be implemented?
STAGE 2: THINK
Review of how Phase 1 progressed.
Discussion of possible improvements to the system,
Running Traffic Light System with the improvements.
Schedule of questions
1.   Is there agreement on the colour coding as formulated between the last group and now?
2.   How should it integrate with the current planning meetings?
3.   Are there any 'additional information' inserts required?
4.   Are there any points that you feel haven't been discussed?
PHASE 3: ACT
Review the updated Traffic Light System.
Discuss any new problems with the system.
Run system within the team, continually looking for improvement.
Assist other interested teams with applying the procedure to establish a Traffic Light System.
Schedule of questions
1.   Have any benefits been noticed since team started using the Traffic Light System?
2.   Has the fourth colour been a useful addition?
3.   How does this version compare to any previous systems?
4.   What problems have been noted with this system?

Sampling

The ideal size of for a FG is between four and twelve members to enable a wide range of potential responses but avoid over-complexity and the risk of some members' views going unheard [26]. As team comprised 11 full-time members, all were invited. Data were collected between January and March of 2012. Table **2** indicates the staff numbers who attended each group and their grading.

The Band numbers refer to UK National Health Service pay scales. Bands 6-7 refer to staff with professional qualifications (Nurse, Social Worker, Occupational Therapist). In this case they are the Band 6s. Band 7s are Senior professionals and Team leaders. Band 3s are integral team members but do not have professional qualifications and in the community generally have the title of Support

Table 2.   Staff Attendance at Focus Groups

	Focus Group 1: Look Phase	Focus Group 2: Think Phase	Focus Group 3: Act Phase
Staff members attending	Team Leader Occupational Therapist Social Worker Community Psychiatric Nurse (2) Support Worker	Team Leader Occupational Therapist Social Worker Community Psychiatric Nurse (2) Housing Officer Support Worker	Team Leader Occupational Therapist Social Worker Community Psychiatric Nurse (2) Housing Officer Support Worker
Staff grades attending	Band 7, n = 1 Band 6, n = 4 Band 3, n = 1	Band 7, n = 1 Band 6, n = 4 Band 3, n = 1 Non-NHS, n=1	Band 7, n = 1 Band 6, n = 4 Band 3, n = 1 Non-NHS, n = 1
Total numbers	6	7	7

Worker. The Housing Officer works for the local council but was also member of the study team.

Data Collection

Focus Groups were used to gather qualitative data. Each group was tape recorded, transcribed verbatim, and that transcript was used for subsequent analysis. FGs are a collective event, well-suited to the needs of AR as a participatory method [27]. Participants were not required to agree but to express themselves and this requires moderation and facilitation [26]. In this study, SG provided this moderation and facilitation, and GW observed the first two groups for quality assurance purposes.

Ethics

Ethical approval was secured from the NHS Integrated Research Ethics Service (IRAS), as was research and development governance approval from the local NHS trust. All participants were asked to sign a consent form, which they were given in advance to allow them to decide if they wanted to participate. Ground rules were agreed in the initial FG and re-stated subsequently, concerning allowing participation and fostering respect for one another's views, and this included anonymity from identification outside the group. (In common with many AR studies, it was not possible to offer personal anonymity in a group were participants are well-known, existing team-members) [28].

Data Analysis

A process of thematic analysis was undertaken and relevant text was drawn from the mass of the full transcript and assigned codes [29]. Codes were then categorised and given a theme heading under which text belongs so that the text's meaning is accessible [30]. To maintain faithful to AR group dynamics, a detailed process of repeated listening and reading of transcripts took place, where consideration was given to the questioning and to group responses [25, 31]. Verbatim quotes have been used to illustrate the emergent themes; these have been anonymised by replacing names with identification labels (in the presentation of findings below, F stands for facilitator, P for the participant number and FG for the focus group in which the data sequence was

generated). Data not directly relating to implementing or understanding the TLS have been omitted.

Rigour

Credibility, transferability and dependability are important when assessing rigour in AR [25]. Here, credibility is demonstrated by the use of verbatim quotes. Transferability is highlighted in the contextual international and local information that allows the reader to assess the relevance of this study to their own circumstances. Dependability is presented by having an audit trail and improved by member checks [30], and this was achieved by giving each participant an overview of the findings and obtaining feedback on the interpretations drawn from the FGs.

RESULTS

Data presentation reflects the AR phases and as there was similarity between discussions in each phase, some themes appeared in more than one FG. Table **3** summarises the themes from the phases of the action research study where they were discussed.

Table 3.   Themes from the Phases of the Action Research Study where they were Discussed

Action Research Phase	Theme
1 & 2	Ease of use
1, 2 & 3	Risk identification and management
2 & 3	Legal status
3	Different teams' views of risk
3	Post-implementation evaluation

Ease of Use

Ease of use was considered important but so was the need for comprehensiveness in complex situations. The TLS needed to retain all relevant information but remain a readily usable system for busy practitioners.

> *P1-FG1: It's a way of seeing at a glance isn't it; it's quickly identifiable.*

P2: Especially with our CPRS [computerised patient record system] we could be trawling through core assessments and risk assessments and everything. We need an initial front sheet, a marker.

It was important that the new system did not adversely affect existing routines for an already busy team as delays resulting from TLS usage would adversely affect their participation.

P1-FG3: You don't feel that it's taking up time. There is no additional time commitment. We've incorporated it into the planning meeting.

There was a desire to keep processes uncomplicated and the TLS as user-friendly as possible. This was continued by adapting the existing meeting schedule to fit the TLS. The entire caseload was reviewed at a weekly caseload meeting but often without any prioritisation or focus until the TLS was introduced there. Participants discussed how this would result in a more focussed identification of risk and resource allocation:

F-FG2: I don't know how it would pair up with the caseload meeting? How would it integrate with that?

P1: Wouldn't you automatically discuss those in red?

P3: That would help planning become more focused, because those who were allocated to green won't need to be discussed as urgently.

P4: So the priority would be the ones that we're talking about the one at the start of the meeting.

Risk Identification and Management

The TLS was initially intended to reflect the SUs' current risk levels, however, the process of recording risk levels during the weekly caseload meetings meant that the TLS also provided a record of SUs' clinical progress; the TLS being as used an outcomes measure or audit tool was raised.

P4-FG1: I think for us to use it, what would be actually good is seeing the levels and how they're going up and down.

P1: Over time you mean.

P4: So you can actually get a pattern rather than trawling through CPRS notes and everything. With that, you can actually see [clinical progress and resource allocation] over the six months.

The TLS was also conceptualised as a means clarifying workload in relation to SUs in the case load and concerns about those in different inpatient or residential settings.

P1-FG1: The difficulty is that we have people in different types of hospital. So those in [acute hospital], we would need to be getting involved in ward rounds and regular visits that we might need to pick up quite quickly. But then someone who has been in [long term

setting] for a number of years, we've got a few of those haven't we?

P5: Then they become that fourth colour. After that, they can be red, yellow, green [which] is only for when we've actually got control [of the care].

P5: Some patients are only at a lower risk level because of any increased support they receive.

P4: So for instance if they went into [acute hospital] then you may well put them on red, because actually you know they're acutely unwell that's why they're in hospital; their risk levels are higher.

Levels of risk change over periods of time and recording these changes can reveal trigger events when there is an increase in risk but also extended periods of stability can indicate that the service user's zone will need review, even considering discharge from this team's services.

P5-FG3: My version of the TLS has got our clients over the last six to eight weeks and how our clients, with regards to risk, have gone up or down. It clearly shows to me whether that client is a true [service name deleted] client. I guess from the other point of view is the length of stability for those clients, with the purpose of looking at moving them on to another team.

F-FG3: Has the addition of the fourth colour blue, added anything or is it just...

P5: From my point of view I've just classed all the hospital clients blue and just written inside it 'Hospital' because they're being nursed throughout the day and the ward staff assess the risk. So I've just kept it as blue, I don't know about the other guys, whether they've used red amber and green? And just put 'Hospital' in it, I don't know?

After running the system for three weeks, the group considered how risk was viewed and scored by the team. Concern was also given as to whether or not the group's extensive experience in its specialist area of mental health and in depth knowledge of the SUs on its caseload affected how that risk was scored; specifically how the team's experience and knowledge might reduce the perceived risk compared to the actual risk.

P2-FG2: Does that [coded caseload sheet] raise any surprises for you?

F: I expected more reds, to be honest.

P1: How many greens have we got?

F: There could be a couple of reasons why there are so few reds, which may be because we've worked in this line for so long now. I wonder if there is a risk that we are under scoring the risk.

P1: Because we're all getting slightly complacent.

Even though the colour codes were allocated to represent current risk, historical influences could be present and in many cases with some justification, therefore it needed to be reflected in any assessment of current risk.

> *P2-FG2: I was just thinking how difficult people were finding it just looking at "the here and now"? When grading them, do we tend to start thinking about the past rather than actually thinking about "the here and now"? I don't know if anyone found that difficult? I know I tend to think about the past at times. Is it about seeing the bigger picture?*

> *F: We can't really ignore the past, especially if it is significant.*

> *P5: I think that some people will always have a different colour that doesn't reflect "the here and now".*

Benefits when new SUs came on to the team's caseload were discussed:

> *P3-FG1: I think what you said about when you have a lot of new people coming into the team at the same time; that would have been really useful.*

> *P2: There were huge gaps in the information, but the very fact that some of those might have been 'red' would have made them priority over the others. We had to find out the hard way when people rapidly went into crisis when we could have intervened.*

Legal Status

There is not necessarily a direct relationship between mental health and a forensic history (meaning a history of transgression against the law), but if such a relationship exists it can affect risk levels and add legal requirements for the care team. This required simple recognition in zoning:

> *P2-FG2: Wouldn't that be an amber because I notice that most of the ones that have something legal are already amber.*

> *P4: So the yellow [amber] would cover historical risk and legal status.*

> *P2: I like the amber about having that fifth thing which is the historical, and you can have your [criteria for amber coding] and you can add a fifth which is historical or you can write in the box 'H' or 'Historical'.*

Ease of use also meant that not all situations could be recorded as a separate colour or with individual indicators within the colour. In addition to the 'H' for historical issues, 'RES' was used to indicate that a SU, although allocated a risk colour was in a residential care setting at that time therefore some risks may be temporarily reduced. Thus the broad three zones were modified to reflect the specific needs of the client group and the team members' democratic decision making.

Different Teams' Views on Risk

Different teams have different risk cultures that will affect how theirmembers score risk which, added to their own operational parameters, will result in those teams needing to develop their own criteria for TLS colour codes in a similar manner to this current study.

> *P5-FG3: My only concern would be that I think people see risk very differently and people rate it and you could get other teams that rate risk very differently to us.*

> *P1: It's very subjective.*

> *P4: So if there is criteria and other teams were using it and they followed those criteria that would help. That's quite important if it's going to be used by other teams.*

> *P1: The other teams, when they had someone that met the red criteria that needed at least two contacts, that's when they would refer to this team, isn't it? If we had something like that, that everybody had to follow and it was quite clear, but each team having their own criteria I think would be complex.*

Post-Implementation Evaluation

Participants in focus group three were asked if the system was beneficial.

> *F-FG3: It's [TLS] has been running for a couple weeks now, have there been any benefits noticed with use of the colour coding?*

> *P1: I personally think it's been good and I've found it useful when I've got Court reports to write and I've actually used that as one of the systems that we've got in place as a team. It just backs up things when we're talking about risk and prioritisation.*

> *P4: My understanding of the planning meeting is that it makes it more succinct, more focused. It helps to organise the caseload, it makes it clearer, easier to see where people are at in a really quite clear and visual way, you can see at a glance.*

> *P5: It's been extremely useful and beneficial. It's got our clients over the last six to eight weeks and with regards to risk, how they've gone up or down. It clearly shows to me whether that client particularly, is a true [service name] client. I guess from the other point of view is the length of stability for those clients with the purpose of looking at moving them on to recovery and independent living.*

The main uses of the TLS post-implementation were: as a report writing tool, bringing clarity and focus to planning meetings concerning risk levels and resource allocation, and as a historical record. The use of the colour blue as an additional zone was found to be helpful by removing SUs in long term in-patient care form the main operational planning part of the planning meeting.

In terms of its immediate impact, the system had already proved its use in clarifying the risk position of two people whose risk had been reduced. One SU had been placed in a secure unit out of area and the second SU was subject to a Community Treatment Order, and so the TLS showed that although these people represent theoretical risks if in the community or without additional support, they had *actual* risks that were significantly lower. Another person had the TLS used as evidence of level of risk and support in a Court report. It is important to remember that risk does not solely relate harm to others and the TLS was equally used to recognise a SU who needed support with medication and its correct use.

DISCUSSION

The FG discussions quickly moved away from looking at the TLS as a purely risk management system and on to its wider uses, although the level of risk is intrinsically linked to the level of support and resources required by the SU. This was facilitated by being able to discuss the colour coding during planning meetings, and the TLS was quickly accepted operationally by the team; the TLS implemented was similar to the work elsewhere [20, 22] and was adapted for the needs of the study team.

Initially there were some concerns that adding a fourth colour (blue), compared to the usual three colour TLS might make it too complex. Any system adopted had to simplify complex risk phenomena [1,17] and provide an increased level of precision on SUs' risk levels that would ensure practitioners were comfortable working with it [16]. One of the reasons for the positive reception given to this TLS was the clarity that it brought to complex and multi-faceted situations requiring decisions concerning how to allocate a colour to a community SU who had been admitted to hospital.

The study team was made up of Nursing staff, Operational Therapists (OTs) and Social Workers. Their training gave them exposure to different aspects of risks to SUs. This may lead to different prioritisations of risk, but knowledge and confidence in their own field may reduce these professional discrepancies as potential rectifications will be easier to identify and implement. For example, an OT may see a serious problem with a SU's Activities of Daily Living (ADLs) but be able to identify problem solving care, but a less serious Mental Health nursing problem may raise an OT's anxiety, until it is discussed with a Mental Health nurse.

One issue with using TLS in conjunction with other teams is that there are likely to be cultural differences between teams that influence the assessment and allocation of risk [4]. Different teams will develop their own attitudes to risk, based on their own normal operational risk levels, based on caseload profile. That is to say, teams operating in continually higher risk scenarios may have become more comfortable with those risks.

Similar to Clarke *et al*.'s [16] work, this AR study indicates a desire for greater certainty amongst these mental health practitioners; this TLS allowed them to review each SU's contemporary care with the care coordinator and offer advice to moderate or enhance the risk allocation if necessary. This support for the care coordinator may reduce restrictions to care by introducing – when safe – elements of positive risk taking, which can be empowering to SUs [17]. The TLS employed here also allows for coherent and consistent identification of changes in status over time and consequent changes in SU needs for care and support.

When reviewing the colour allocation participants tended to downgrade the risk levels associated with individual SUs. This was particularly the case if the SU had been with the team for a long time but also more generally as the team tended to work with more risky SUs as their caseload. This approximates to a cultural theory of risk [4] and how teams will develop views towards risk that may differ from another team's. Personal characteristics such as race and gender will also influence risk assessment, and it is likely that TLS will be susceptible to this [3].

Transferring of SUs between teams can be difficult when no clear criteria exist. One way of simplifying the process would be to show the current risk as perceived by the current team and although different teams may have different views on risk, it would provide a starting point for the transfer dialogue. No visual representation existed before the TLS was implemented on how a person's risk levels changed over time, but this can now be achieved by keeping a record of their colour coding on a week by week basis and annotating any significant events. One recommendation for further research would therefore be that it would be useful to compare and contrast the extent to which different clinical teams assess risk and allocate care and resources accordingly in context of a TLS.

LIMITATIONS

This study took place with a team that offered specialised community mental health services to SUs with complex needs. This means these findings are highly contextual however, this is usual in AR and can be a strength of this type of study design because it allows those embedded in the social and cultural context the opportunity to influence and 'own' the changes with which they must work [23]. This type of design has also been used successfully elsewhere to implement a zoning system in UK mental healthcare, and so we assert that AR is a robust design for implementing change in mental health teams [20].

It is clear that personal characteristics of SUs and cultural differences between teams influence risk management [3, 4] but there was not the opportunity to investigate these factors or how they might influence care and service delivery.

To fully benefit from the spiral cycles used in AR, arguably at least one more full cycle should have been completed with the team in this study [24]. As time did not allow for this to occur, we were not able fully elicit participant feedback concerning any sense of empowerment gained from their involvement.

As this study focused on staff perceptions concerning implementing TLS, we have not been able to quantify the differences that this TLS-based risk management may have had on adverse events for our clients and their carers. We have also not been able to examine SUs' and carers' views of differing levels of service delivery or care that may have resulted post-TLS implementation. We have also not been able to engage with how risk management using a TLS

might impact upon clients' and carers' control of any personal budgets for care of which they may be in receipt [32, 33]. These areas could usefully be investigated in further research studies in the context of TLS; in particular, it will be important to establish their impact on service users and carers.

CONCLUSIONS

In this study, an AR design was successfully utilised in implementing change in mental healthcare risk management. It is likely that others internationally who are interested in implementing new arrangements for SU risk management would benefit from considering a TLS system, and in using AR to implement it. International literature indicates that risk management is a complex phenomenon in mental health [7,13, 14, 15], that risk assessment is essential [12], and that introducing a TLS which is easy to understand, broadly familiar to clinical teams, cheap to implement, and flexible and responsive to improvements and deteriorations in clients' mental health can help [20, 22]. It has been well-received by this team and has provided a solution to this workplace problem by using the knowledge of those most intimately involved with that problem.

CONFLICT OF INTEREST

The authors confirm that this article content has no conflict of interest.

ACKNOWLEDGEMENTS

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