

Dynamic support database clinical support tool: inter-rater reliability

Faye Bohen and Ceri Woodrow

Abstract

Purpose – The dynamic support database (DSD) clinical support tool structures the risk of admission rating for individuals with intellectual disabilities. This study aims to investigate inter-rater reliability between multi-disciplinary health care professionals within the North West of England.

Design/methodology/approach – A small-scale quantitative study investigated reliability between raters on the DSD clinical support tool. A data set of 60 rating tools for 30 individuals was used. Descriptive statistics and Kappa coefficient explored agreement.

Findings – The DSD clinical support tool was found to have strong inter-rater reliability between individual items and the differences between individual scores were spread suggesting variance found could not be attributed to specific questions. Strong inter-rater reliability was found in the overall ratings.

Research limitations/implications – Results suggest the DSD clinical support tool provides stratification for risk of admission ratings independent of who completes it. Future studies could investigate inter-rater reliability between organisations, i.e. health and social care professionals, and use a larger data sample to ensure generalisability. Replication of the study within child and adolescent services using the children's DSD clinical support tool is also recommended.

Originality/value – The DSD clinical support tool has been implemented within the child and adult intellectual disability services across the North West. As more teams across England consider its implementation, the study provides reassurance that coding agreement is high, allowing for stratification for risk of admission independent of the rater.

Keywords Intellectual disabilities, Learning disabilities, Risk register, Dynamic support database, Inter-rater reliability, Intensive support

Paper type Research paper

Faye Bohen is based at the Centre for Autism, Neuro-Developmental Disorders and Intellectual Disability (CANDDID), Community Learning Disabilities Team, Cheshire and Wirral Partnership NHS Foundation Trust, Cheshire, UK. Dr Ceri Woodrow is based at CANDDID, Greenways Assessment and Treatment Unit for Adults with a Learning Disability, Cheshire and Wirral Partnership NHS Foundation Trust, Cheshire, UK.

Introduction

As the Transforming Care Programme for people with intellectual disabilities comes to an end, services are reviewing the impact of what has been achieved and ensuring positive change is embedded in practice. The government focus on changing services for people with an intellectual disability and/or autism spectrum condition (ASC) who display challenging behaviour or have complex mental health difficulties ensured rigorous evaluation of services and changes in service delivery. This followed the panorama exposure of the Winterbourne View care home ([Transforming Care and Commissioning Steering Group, 2014](#)), where individuals with intellectual disabilities were subject to abuse and received poor quality care from staff within a residential home in England. The scandal triggered a national response to improve the care and support for people with intellectual disabilities and/or ASC ([Department of Health, 2012](#)). It highlighted that individuals were being admitted to the hospital for long durations and were placed at great distances from their family and home ([Transforming Care and Commissioning Steering Group, 2014](#)). The “building the right support” national plan suggested that admissions to the hospital could have been prevented if these individuals were able to receive the right support in the community. The plan emphasised that these individuals should have the same rights as

Received 11 September 2019
Revised 6 November 2019
5 December 2019
Accepted 9 December 2019

others; to live a good quality of life within the community, closer to their families (NHS England, 2015a). In May 2019 panorama exposed Whorlton Hall, Durham where service users with intellectual disabilities and ASC were again shown to be abused by staff (Triggle, 2019). National bodies continue to review residential and inpatient services to ensure appropriate care is provided within appropriate timeframes.

From the beginning of the Transforming Care Agenda, there was significant policy change including the introduction of the Care and Treatment Review (CTR) Policy (NHS England, 2015b), which focussed on individuals with intellectual disabilities and/or ASC within inpatient settings. The CTR policy stated that commissioners are expected to hold local databases of individuals thought to be at risk of admission into a mental health or intellectual disabilities assessment and treatment unit. Risk of admission maybe because of behaviours that pose significant challenges to manage within community settings or significant mental health deterioration. The policy discussed the varied range of local understanding held by clinical commissioning groups, and it was predicted that the register would provide commissioners with greater knowledge of individuals at risk of admission and those struggling within the community. In turn, this would positively support the commissioning process (NHS England, 2015b).

A clinical support tool was created by the Cheshire and Wirral Partnership NHS Foundation Trust with the purpose of supporting clinicians to identify the level of risk of admission for those individuals with intellectual disabilities. The tool consists of 19 items that were derived from the factors that may place a person at risk of admission listed in the CTR policy (NHS England, 2015b, p. 24). Examples of these risk factors include significant life events, challenging behaviour problems, unstable or untreated mental or physical health condition. The items are weighted depending on their influence on admission. Once completed, the tool gives clinicians a “red”, “amber” and “green” (RAG) rating where “red” would indicate someone is at immediate risk of admission, “amber” would suggest significant deterioration in the community and “green” would indicate that someone is more stable but may have an unmet health need that could be supported by the team within the community without the need of an inpatient admission. A pilot of the tool was first conducted within an adult community intellectual disability team within the Cheshire and Wirral NHS Foundation Trust. Improvements were made following their feedback and then the tool was rolled out across three adult community intellectual disability teams within the same Trust. Feedback was again collated and adaptations to the tool were made before its wider dissemination. Further alternations to the tool were made 18 months after the wider dissemination of the tool from feedback gained when delivering training across the North West. Alterations to the clinical support tool will continue to ensure that the tool is reflecting the needs of individuals and their risk of admission.

The tool aims to standardise the stratification of admission risk and create a common language between multi-disciplinary professionals and commissioners. The RAG rating of the tool means early identification of people at risk (“amber”) prior to further deterioration (reaching “red”). The tool prompts clinicians in relation to the clinical process, for example, Care Programme Approach (CPA), where used, is applied, risk, care plan, formulation and positive behaviour support plan documents are reviewed for all rated at “amber” or “red” and an admission avoidance CTR should be requested for anyone rated at “red”, thus supporting the commissioners mandated database. Following a change in the name requested by individuals with intellectual disabilities and their families in the North West, this database is now called the dynamic support database (DSD); previously “at risk of admission register” (NHS England, 2017).

The Cheshire and Wirral NHS Foundation Trust provides support for a population of 1.2 million people. As part of the Trust services, community support, intensive support and inpatient support for individuals with intellectual disabilities are provided. The intensive support service (ISS) within the community teams, provides additional input to those at risk

of admission with the aim of supporting them within the community and negating the need for admission. The clinical support tool has been implemented within the community intellectual disability teams within the Cheshire and Wirral Partnership NHS Foundation Trust for approximately three years. An evaluation of the tool has already been conducted that showed the practicality, utility and face validity of the DSD clinical support tool was positively rated (Mottershead and Woodrow, 2019). The investigation of the validity of the DSD clinical support tool was important to ensure the tool was easy to use, made clinical sense and measured risk of admission.

As the tool is becoming more widely used and with the risk stratification (“red”, “amber” and “green” ratings) leading to pathway recommendations for clinical process, it is important that the ratings are consistent across areas, i.e. one individual rated as “red” holds the same degree of risk of admission as someone else rated as “red” no matter who has completed the tool. It, therefore, follows that reassurance is needed that the tool is completed in the same way by different people. The inter-rater reliability therefore needs to be strong. A score of 1 on the Kappa co-efficient would indicate perfect agreement, whereas a score of -1 would indicate perfect disagreement. To obtain a result of good inter-rater reliability the co-efficient needs to be above 0.8 (Hulley *et al.*, 2007). Other tools such as the historical clinical risk management (HCR-20) have had their inter-rater reliability evaluated and Cawood (2017) found their results represented a statistically significant result with a good level of inter-rater reliability. This paper emphasised the importance of accessing a tool’s inter-rater reliability to provide evidence to support its utilisation in clinical processes.

The paper investigated the inter-rater reliability between health care professionals in the rating of individual’s risk of admission within adult community intellectual disability teams across the Cheshire and Wirral Partnership NHS Foundation Trust using the DSD clinical support tool. To investigate this, this paper had three aims:

1. To evaluate the percentage agreement for each of the 19 items between 2 raters who were scoring items related to the same individual.
2. To explore the frequency of items scored differently between the raters.
3. To investigate the agreement overall in relation to ratings using the Kappa coefficient.

Method

Study design

A small scale quantitative study was taken to investigate the inter-rater reliability between clinicians on the DSD clinical support tool. The agreement was calculated in relation to the scoring of individual items within the tool then the agreement of overall tool rating was established.

Data collection

Clinicians within the Cheshire and Wirral community intellectual disability teams had used the DSD clinical support tool for approximately three years. The tool was therefore embedded within their process.

The lead investigator attended 17 initial assessments within the community intellectual disability teams across the Trust over a period of three months as a second rater of the tool alongside the allocated qualified clinician. An initial assessment is the first meeting a person has with the community intellectual disabilities team following referral to identify their health needs and formulate the aims of input. A NHS Trust review approval was sought. Following the initial assessment, both the lead investigator and qualified clinician completed a separate DSD clinical support tool in regards to the person seen. The two completed tools could then be used for comparison.

The care-coordinators and one qualified clinician from the ISS were also asked to complete the DSD clinical support tool throughout the same three month period. If an individual's risk of admission changed, the DSD clinical support tool would be re-completed and the RAG rating score reviewed. In total, 13 sets of data were collected. These data sets consisted of individual's whose risk of admission changed between "green" to "amber", "green" to "red", "amber" to "red" and vice versa.

Data was collected from items that gave a score on the DSD clinical support tool. In total, 12 out of 19 items were, therefore, identified for inter-rater reliability (7 items do not contribute to the overall score).

Data sample (participants)

In total, 30 individuals' data was used in this study. These people were receiving care from the adult community intellectual disability teams within the Cheshire and Wirral Partnership NHS Foundation Trust. The data sample consisted of 12 women and 18 men from 19-66 years of age. The profession of the raters varied but included clinical psychologists, nurses, speech and language therapists, occupational therapists, physiotherapists and health facilitators.

Procedure

The procedure was divided into two pathways. Individuals referred to the Trust who attended an initial assessment were rated by the clinician leading the assessment and the lead investigator. Individuals already known to the Trust who's needs (and therefore, risk of admission) changed, were rated by their care coordinator and a member of the ISS. The two procedure pathways are described below.

Investigator – second rater

The allocated clinician and investigator attended an initial assessment. Consent was gained from the person using a participant information sheet and consent form in an easy-read format. If the individual did not have the capacity to consent then the best interest decision was conducted and the agreement was sought from their parent/carer. Once completed, the clinician was asked to complete the DSD clinical support tool for the person via the Trust's electronic records system. The lead investigator also completed a paper version of the tool for the same person.

Intensive support service – second rater

As individual's needs change, their risk of admission may change. For these individual's, their care-coordinator, as standard practice, completed the DSD clinical support tool via their electronic records system. For the purposes of the study, a staff member from the ISS was also asked to complete a paper version of the DSD clinical support tool.

Data analysis

Individual items. For all data, each individual scored item on the DSD clinical support tool was investigated separately to compare rater scores. Although the overall tool rating was analysed using the Kappa coefficient, it was felt that percentage agreement would be stringent enough when considering item agreement. Each item was, therefore, scored a 1 if it was rated the same between both raters, and it scored a 0 if the raters score the item differently.

Once this was completed, a total out of 12 was given and this figure was converted into an overall percentage indicating how many items the raters scored the same, per person. All total percentages for each person were then added together and an overall percentage for the tool across people was created.

Each item on the DSD clinical support tool was looked at separately across all data sets. A total for each item was created indicating the number of occasions where the two raters scores were inconsistent.

Overall red, amber and green rating. The overall person's RAG rating (i.e. "green", "amber" and "red") was investigated. If both of the raters agreed on the RAG rating for the service user then this would score 1. If each rater RAG rated the person differently (e.g. one "green" and one "amber") then this would be scored 0. Scores are converted to a RAG rating within the tool ("green" 0-4, "amber" 5-7 and "red" 8 and above). The inter-rater reliability analysis was conducted using Cohen's Kappa Coefficient (Cohen, 1960) to determine the consistency between raters in terms of their overall RAG rating. The Kappa coefficient was deemed advantageous as it adjusts for the possibility of a chance agreement between raters. A score of 1 on the Kappa coefficient would indicate perfect agreement, whereas a score of -1 would indicate perfect disagreement. To obtain a result of strong inter-rater reliability the co-officiant needs to be above 0.8 (Hulley et al., 2007; McHugh, 2012).

Results

Individual items

The analysis showed that 95 per cent of the time, the two raters filled out the items on the tool the same for each person when looking at the items individually.

Figure 1 shows the frequency of times clinicians scored differently on individual items on the DSD clinical support tool. In total, 8 out of 12 items were rated differently in the 30 data sets between the raters; this ranged between 1 and 3.

Overall red, amber and green rating

Individuals would receive their initial RAG rating at their initial assessment, as they may not be open to the community intellectual disabilities team beforehand. The other individuals who are already known to the Trust would move between "green," "amber" and "red" depending on their change in risk of admission. The completed tools were analysed to ensure a range of RAG ratings were reviewed.

Table I shows the changes in RAG ratings for people known to the Trust. Inter-rater reliability showed statistically significant levels of agreement between the two scorers in both pathways of data collection, (N = 30 κ = +0.97)

Figure 1 Frequency of different clinician scoring

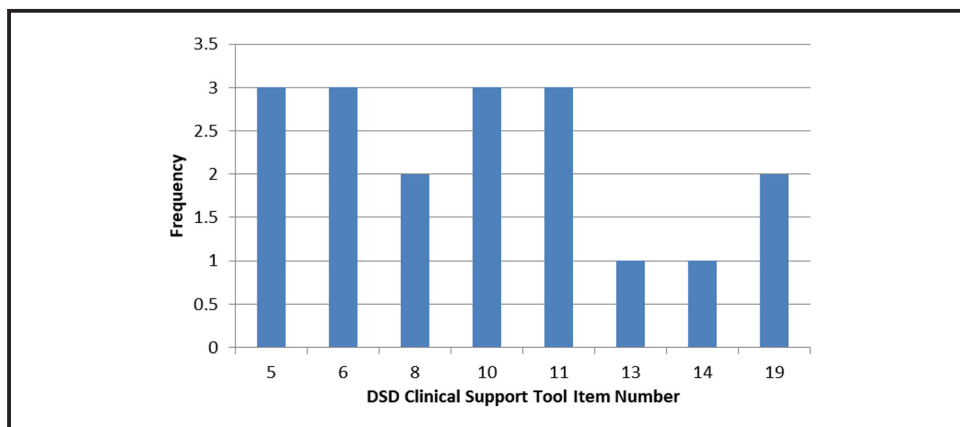


Table 1 Changes in RAG ratings

<i>RAG colours</i>	<i>Frequency</i>
Red to amber	2
Red to green	2
Amber to red	1
Amber to green	3
Green to red	2
Green to amber	3
Amber to amber	1
Total	13

Discussion

Summary of findings

The results showed that 95 per cent of the time two raters scored items for an individual in the same way. This would suggest that there is a consistent understanding of the use of the tool within these community intellectual disabilities teams.

Differences in item scoring for an individual on the tool were explored. The results showed that 8 out of 12 items were scored differently at some point within the data set of 30 individuals; any individual item was scored differently a maximum of 3 times. This would indicate that there is no individual item in the tool that appears to be leading to repeated inconsistency. Occasional differences in clinical opinion were spread throughout the tool but not to a significant degree.

The results showed that the data set contained a range of RAG ratings; “red”, “amber” and “green”. A spread of RAG rating change combinations was included (i.e. rating changes “green” to “amber”, “amber” to “red”, “red” to “amber” and “amber” to “green”). This would suggest a good distribution of data and greater generalisability of the results.

The Kappa coefficient suggests the DSD clinical support tool overall holds strong inter-rater reliability in that clinicians within the adult community intellectual disabilities teams within the Cheshire and Wirral Partnership NHS Foundation Trust are consistent in completing the tool in the same way reliably. As supported by [Cawood \(2017\)](#), concluding a good level of inter-rater reliability for a tool provides evidence to support the utilisation of the tool within clinical processes. As the tool would support standardisation of risk stratification in relation to the risk of admission into a mental health or assessment and treatment unit. The RAG rating has wider implications than mere admission; it supports an individual’s pathway within intellectual disability services. For example, individuals rated “amber” are placed on CPA, and have risk, care plan, formulation and positive behaviour support plan documentation reviewed. People rated as “red” also have the aforementioned tasks completed and an admission avoidance CTR held with commissioners gaining an understanding of need, which supports completion of their mandated database. With ratings supporting pathways in this way, consistency of ratings and agreement of the scoring of the tool is vital. The results of the study suggest that the tool can support this allocation of resources with consistency and clinical agreement.

Practicality and research implications

This study demonstrates that the DSD clinical support tool holds strong inter-rater reliability within a North West Trust. As the tool is in use across the North West, it is hoped that the results are generalisable; that individuals across the North West are being understood by

the clinicians providing their support in a consistent way in relation to their risk of admission into a mental health or assessment and treatment unit. In turn, this tool is hoped to be used nationally and support effective clinical decision making and support resource allocation.

The results do suggest that the databases held by commissioners within the Cheshire and Wirral NHS Foundation Trust, in relation to those individuals with an intellectual disability at risk of admission, are being understood in a consistent, standardised manner. It is thought this will also improve channels of communication between health care professionals and commissioners to help best meet the needs of the person prior to admission through improving input to individuals rated as “amber” prior to the crisis. As a result of this, ISS clinicians can support clinicians to proactively meet the needs of individuals within the community and potentially avoid the admission. This would support the Transforming Care Agenda; ensuring the right care is provided in the right setting with admissions being avoided where possible and safe to do so.

This study used real patient data of those accessing support from community intellectual disabilities teams within the Cheshire and Wirral Partnership NHS Foundation Trust. Therefore, this suggests the results have high ecological validity and can be generalised to the real world (Coolican, 2013) and reflect the working of clinicians within this Trust.

Limitations and future research

A limitation of this study was that only 30 data sets were collected, which could be considered as small. One possible reason for this was because there were a limited number of people across the teams who need to be changed significantly to cause a change of RAG rating within the suggested three month period. Some initial assessments were also felt inappropriate for the investigator to attend. For example, if having the investigator in the room was predicted to increase the person’s level of anxiety, it was deemed inappropriate for them to attend. Therefore, to increase the number of data sets, longer data collection periods could be implemented in future research. Further research comparing data across Trusts would also provide a better understanding of the tools generalisability.

This tool is being used across the North West of England in adult and child community intellectual disability teams. It would be beneficial if a comparable study was completed within child services to assess the replicability and reliability of the tool to increase how generalisable the tool is in other areas when the tool has been implemented consistently. Further research could also consider collecting qualitative research to support the quantitative data of this paper.

References

- Cawood, J.S. (2017), “The interrater reliability and predictive validity of the HCR-20V3 in common workplace environments”, *Journal of Threat Assessment and Management*, Vol. 4 No. 1, pp. 1-11, available at: <http://dx.doi.org/10.1037/tam0000071>
- Cohen, J. (1960), “A coefficient of agreement for nominal scales”, *Educational and Psychological Measurement*, Vol. 20 No. 1, pp. 37-46.
- Coolican, H. (2013), *Research Methods and Statistics in Psychology*, 5th ed., Routledge, New York, NY.
- Department of Health (2012), “Transforming care: a national response to winterbourne view hospital”, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/213215/final-report.pdf (accessed 26 May 2019).
- Hulley, S.B., Cummings, S.R., Browner, W.S., Grady, D.G. and Newman, T.B. (2007), *Designing Clinical Research*, 3rd ed., Lippincott Williams and Wilkins, Philadelphia.
- McHugh, M.L. (2012), “Interrater reliability: the kappa statistic”, *Biochemia Medica*, Vol. 22, pp. 276-282.

Mottershead, T. and Woodrow, C. (2019), "The practicality utility and face validity of the dynamic support database RAG rating support tool", *Advances in Mental Health and Intellectual Disabilities*, Vol. 13 No. 5, pp. 228-236.

NHS England (2015a), "Building the right support", available at: www.england.nhs.uk/wp-content/uploads/2015/10/id-nat-imp-plan-oct15.pdf www.england.nhs.uk/wp-content/uploads/2015/10/ctr-policy-guid.pdf (accessed 28 May 2019).

NHS England (2015b), "Care and treatment review: policy and guidance", available at: www.england.nhs.uk/wp-content/uploads/2015/10/ctr-policy-guid.pdf (accessed 28 May 2019).

NHS England (2017), "Care and treatment reviews (CTRs): policy and guidance including policy and guidance on care, education and treatment reviews (CETRs) for children and young people", available at: www.england.nhs.uk/wp-content/uploads/2017/03/ctr-policy-v2.pdf (accessed 30 May 2019).

Transforming Care and Commissioning Steering Group (2014), "Winterbourne View- Time for change, transforming the commissioning of services for people with learning disabilities and/or autism", available at: www.england.nhs.uk/wp-content/uploads/2014/11/transforming-commissioning-services.pdf (accessed 26 May 2019).

Triggle, N. (2019), "Whorlton hall: hospital 'abused' vulnerable adults", available at: www.bbc.co.uk/news/health-48367071 (accessed 28 October 2019).

Corresponding author

Ceri Woodrow can be contacted at: ceri.woodrow1@nhs.net

For instructions on how to order reprints of this article, please visit our website:
www.emeraldgrouppublishing.com/licensing/reprints.htm
Or contact us for further details: permissions@emeraldinsight.com