

Piloting electronic session-by-session monitoring in Child and Adolescent Mental Health Services:

1 A preliminary study

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Background: Recent UK initiatives have advocated the use of session-by-session outcome measurement in CAMHS. However, little is known about the feasibility of this approach. **Method:** The PROMPT study (Patient Reported Outcome Monitoring Progress Tracker) piloted an iPad administered brief session-by-session measure (5 × 5) related to the Strengths and Difficulties Questionnaire impact supplement in three CAMHS teams. We report adherence to electronic 5 × 5 monitoring and a preliminary analysis of sensitivity to change. **Results:** Adherence to 5 × 5 was 57%, which is higher than the completion rates for the standard set of outcome measures usually completed by clinicians and young people. 5 × 5 showed some sensitivity to change. **Conclusions:** Session-by-session monitoring in CAMHS is worthy of further pursuit.

Key Practitioner Message

- Government policy in the UK have highlighted the importance of using outcome measures to routinely monitor the work of CAMHS
- However, audits have revealed poor completion of time 2 measures, particularly for those completed by the patient
- Piloting electronic session-by-session monitoring showed good engagement from young people
- Session-by-session monitoring may allow clinicians to identify which cases are not making expected progress and alter their intervention strategy accordingly

Keywords: CAMHS; session-by-session; electronic outcome measures; feasibility; pilot

Introduction

Recent research and government policy in the United Kingdom have highlighted the importance of using outcome measures to routinely monitor the work of Child and Adolescent Mental Health Services (CAMHS; Department of Health, 2010; Hall et al., 2013a). Outcome measures should typically be completed as a minimum at baseline (time 1) and at 6-month follow-up (time 2). However, audits have revealed poor completion of time 2 measures, particularly for those completed by the patient (Batty et al., 2012; Hall et al., 2013b). Other research has provided a description of barriers to the use of outcome measures in CAMHS (Hall et al., 2013a), such as difficulties with patient engagement, lack of feedback from the measure, administrative burden and patients dropping out of treatment (Hall et al., 2013a). A session-by-session model of outcome measurement may overcome the difficulties in getting follow-up measures and lead to better patient outcome (Lambert, Whipple,

Smart, Vermeersch, & Nielsen, 2001). Despite some preliminary reports on the benefits of session-by-session monitoring in adult mental health services (Lambert et al., 2001; Worthen & Lambert, 2007), to date there has been little published research investigating the feasibility of this approach in CAMHS. Recent publications by the CYP-IAPT team have highlighted importance of patient reported measures to encourage collaborative working between the patient and clinician, and the team have specifically advocated the need for appropriate technology and infrastructure to facilitate the feasibility of this approach (Wolpert, 2013; Wolpert, Fugard, Deighton, & Görzig, 2012b; Wolpert et al., 2012a). A clinically led study (Timimi, Tetley, Burgoine, & Walker, 2013) reported that session-by-session monitoring in CAMHS helped improve therapeutic efficiency and shortened treatment length, and research by Bickman, Kelley, Breda, Vides de Andrade, and Riemer (2011) found that providing clinicians with weekly feedback on patients' progress improved patient outcome in

community youth mental health settings. These findings offer some preliminary evidence for the utility of routine patient reported outcome monitoring within CAMHS.

We report findings from the PROMPT study (Patient Reported Outcome Monitoring Progress Tracker) piloting an electronic version of the session-by-session measure (S × S) related to the Strengths and Difficulties Questionnaire ([http://www.sdqinfo.org/S × S](http://www.sdqinfo.org/S×S)). We aim to quantify adherence to session-by-session monitoring as a measure of feasibility, and to provide some preliminary findings on its sensitivity to change.

Method

Participant recruitment

This pilot study was carried out in three CAMHS out-patient clinics in Nottinghamshire. All clinicians who saw cases on a regular basis were invited to participate by the research team. Recruitment of parents and young people took place in the clinic over 6 months; participants were approached by the researcher or their clinician. Ethical approval was granted by the local Research Ethics Committee and Research and Development department of Nottinghamshire Healthcare NHS Trust.

Inclusion criteria

We included all cases where at least two session-by-session measures were completed by at least one informant, thereby providing outcome data (Hall et al., 2013a,b).

Outcome measures

Strengths and difficulties questionnaire. The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) is completed by the parent and/or young person and is a mental health screening questionnaire for use (in different versions) in the age range of 3 to 16 years.

The session-by-session measure (S × S). There are two versions of the iPad-administered S × S, one for completion by the young person (11–17-years) and the other by the parent/carer (full text at [http://www.sdqinfo.org/S × S](http://www.sdqinfo.org/S×S)). Both versions are related to the SDQ (Goodman, 1997, 1999), drawing on elements from the follow-up version and impact supplement. The measure consists of four questions; one which asks about change in the difficulties 'since coming last time', two which ask about distress and social impairment (S × S Impact) and a final question which asks the respondent 'how much better do you think you [your child] will be in a month's time'. Once completed in the clinic waiting area prior to an appointment, data were automatically uploaded and stored in a secure website; and a report was instantaneously generated. This graphed the scores from the questionnaire, displaying the current and all previous sessions.

Health of the nation outcome scale for children and adolescents. Health of the Nation Outcome Scale for Children and Adolescents (HoNOSCA; Gowers et al., 1999) is a clinician-completed outcome measure; in this study we analysed the results of the 13 items assessing behaviour, impairment, symptoms and social factors.

Children's global assessment scale. The children's global assessment scale (C-GAS; Shaffer et al., 1983) is completed by the clinician and measures psychological, social and academic functioning in children aged 4–16 years.

Procedure

Clinicians had a 2 month time window to complete the time 1 measures (HoNOSCA, C-GAS, SDQ) from the time they first saw the patient. From the second appointment, the PROMPT protocol invited the parent/carer and/or the young person to

complete the S × S measure in the waiting room and bring the iPad to the clinic room to discuss their progress with the clinician. Participants' start and end points were defined by completion of their first and last S × S during a 12 month time period. At the end of each family's participation in PROMPT, clinicians were given a 2 month time window to complete time 2 measures (HoNOSCA, C-GAS, SDQ).

Statistical analysis

Given our small sample size, the majority of analysis is in the form of descriptive statistics (Lancaster, Dodd, & Williamson, 2004). Where feasible, inferential statistical analyses (*t*-tests or Pearson's correlations) were conducted in SPSS; data from HoNOSCA, C-GAS and S × S Impact were treated as continuous data. Change scores on S × S Impact, HoNOSCA and C-GAS were derived by subtracting the time 2 score from the time 1 score. For S × S Impact, Time 2 was taken as the last completed measure. Trajectory plots were conducted using Stata.

Results

Sample characteristics

The term 'family' refers to the family grouping that took part in PROMPT: typically a young person and one parent/carer. Of the 63 families who were recruited to participate in PROMPT, 31 (49%) completed the S × S at least twice (involving at least one informant), thus meeting our inclusion criteria. Characteristics of the young people included in the sample are presented in Table 1.

Thirteen CAMHS clinicians (38%, 13/34 response rate) were recruited into PROMPT and completed questionnaires (HoNOSCA and C-GAS). Their professional backgrounds were: clinical psychologist (8), nurse (3), child and adolescent psychiatrist (2).

Adherence to session-by-session (S × S) monitoring

On average, families completed the S × S four times, although they attended an average of eight sessions illustrating a 57% adherence rate (Table 2).

Table 1. Characteristics of the young people who completed S × S (N = 31)

	Young People (n = 31)	
	No.	%
Gender		
Male	12	39
Female	19	61
Age		
Mean (SD)	15 years (2.1)	
Range	11–19 years	
Diagnosis		
Mood disorders (inc. depression)	13	42
Hyperkinetic disorders (inc. ADHD)	5	16
Autism Spectrum Disorder (ASD)	2	6
ADHD + ASD	2	6
Tic Disorders (inc. Tourette's Disorder)	2	6
Post-Traumatic Stress Disorder (PTSD)	2	6
PTSD + ASD	1	3
Obsessive Compulsive Disorder	1	3
Eating Disorder	1	3
No recorded diagnosis	2	6

ADHD, Attention Deficit/Hyperactivity Disorder.

Table 2. Adherence to Session-by-Session (S × S) monitoring

	S × S Adherence		
	Mean	SD	Range
Sessions in which S × S was completed ^a	4.4	3.6	2–17
Sessions in which S × S completed by parents/carers	3.6	3.8	1–17
Sessions in which S × S completed by young people	4.1	3.5	2–17
Time lapse in-between two S × S completions (weeks)	4.3	5.3	1–35
Number of sessions attended	7.7	5.0	2–21
Duration in S × S pilot (weeks) ^b	15.0	9.9	3–43
Adherence to S × S (%)	57%	–	20–100%

^aThis represents the number of sessions in which S × S was completed by any family member (either parent/carer or young person).

^bLength of duration in the study was calculated from time of recruitment into PROMPT to the completion of the final S × S.

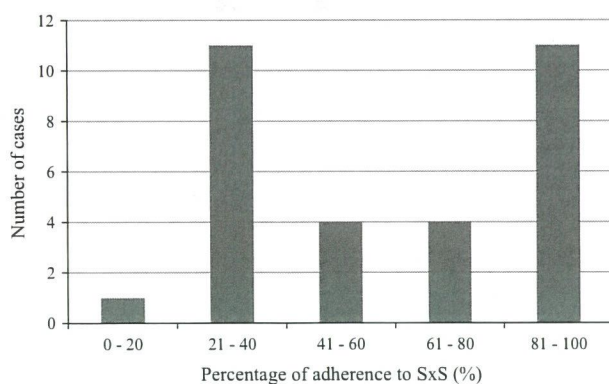
Figure 1 shows that adherence to the S × S measure was not normally distributed. Instead, there were two broad groups of cases; those who almost always completed S × S and those that completed it <40% of the sessions they attended.

Table 3 illustrates the number of clinician-completed measures obtained. HoNOSCA and C-GAS were almost always completed as a Time 1 measure (97% and 94% respectively), dropping slightly (77% and 74% respectively) at follow-up. Completion of the SDQ was less frequent, with only 52% of cases having a completed SDQ at time 1 and no cases having a follow-up SDQ. Therefore, we did not include the SDQ in any subsequent analyses.

Change scores

Table 4 shows the change scores as measured by HoNOSCA, C-GAS, and S × S Impact. Scores on all measures indicated some positive change at Time 2 compared to Time 1. Only changes in scores on C-GAS and young person-reported S × S Impact were statistically significant.

Despite similar trends in change scores between S × S and the other measures, there were no significant correlations for changes in HoNOSCA and S × S Impact scores (parent $r = 0.048$, $p = 0.85$; young person,

**Figure 1.** Distribution of rate of adherence to Session-by-Session (S × S) monitoring across the cases (N = 31)**Table 3.** Completion of baseline and follow-up measures

	Time 1 (baseline) N = 31	Time 2 (follow-up) N = 31	Time 1 & Time 2 N = 31
	HoNOSCA	30	24
C-GAS	29	23	21
SDQ (parent & young person)	16	0	0

HoNOSCA, Health of the Nation Outcome Scale for Children and Adolescents; C-GAS, children's global assessment scale; SDQ, strengths and difficulties questionnaire.

$r = 0.03$, $p = 0.89$) or changes in C-GAS and S × S impact scores (parent $r = 0.43$, $p = 0.08$; young person $r = 0.02$, $p = 0.92$). Additionally, there were no significant correlations between change on impact rated by the parent and young person.

Discussion

Our pilot of electronic session-by-session outcome monitoring in CAMHS provided a unique method of gaining patient and parent opinion throughout the clinical intervention, measures which are usually very difficult to obtain. Overall family adherence rate to the S × S was 57%. In a separate study (Hall et al., submitted) we interviewed many of the participants in PROMPT and found that factors decreasing adherence included time constraints, variable degree of priority given by clinicians to outcome measures, difficulties in remembering a new system, and technological issues.

In line with previous research, our findings showed a poor completion rate for the SDQ (Batty et al., 2012; Hall et al., 2013b). However, our study found higher completion rates for the young person-completed S × S than for all other measures (see Tables 2 and 4), suggesting better engagement of young people in electronic session-by-session monitoring (Greenhalgh, 2009; Lambert et al., 2001). This system may allow clinicians to identify which cases are not making expected progress and alter their intervention strategy accordingly (Worthen & Lambert, 2007).

The study sample was small and limited to three CAMHS sites; our interpretation of the findings should be taken as tentative. The findings relating to correlations between measures and differences in change scores are not conclusive and are likely to have resulted from the small sample size. The data are presented to provide a springboard for further research. As participation in the pilot was optional, our sample may contain families and clinicians who were particularly motivated to complete outcome measures. Future research might investigate whether cases that are more regularly monitored show more improvement in impact scores, and the tool requires external validation.

Conclusion

The combination of good engagement from the young person, with some preliminary evidence indicating that the S × S measure may be sensitive to change demonstrates the potential value of session-by-session monitoring in CAMHS and a topic worthy of further research.

Table 4. Changes in HoNOSCA, C-GAS and S × S impact scores from T1 to T2

	T1 Mean (SD)	T2 Mean (SD)	Change score	Significant change <i>p</i> value (<i>t</i> -test)
HoNOSCA (scored 0–52) <i>N</i> = 23	14.4 (7.4)	13.2 (7.9)	1.2	<i>t</i> = 1.3, <i>p</i> = 0.22
C-GAS (scored 0–100) <i>N</i> = 21	51.6 (11.2)	59.5 (14.4)	7.9	<i>t</i> = 2.8, <i>p</i> < 0.01
S × S Impact (P) (scored 0–15) <i>N</i> = 21	8.8 (3.2)	7.8 (4.8)	1.0	<i>t</i> = 1.2, <i>p</i> = 0.24
S × S Impact (YP) (scored 0–15) <i>N</i> = 29	7.7 (3.4)	6.0 (4.6)	1.6	<i>t</i> = 2.3, <i>p</i> < 0.03

P, parent; YP, young person; HoNOSCA, Health of the Nation Outcome Scale for Children and Adolescents; C-GAS, children's global assessment scale; SDQ, strengths and difficulties questionnaire.

T2 is taken as last completed measure for S × S.

For C-GAS higher scores represent better functioning.

This system of measurement appears to be particularly acceptable to young people.

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