

# **Development and testing of a measure of model fidelity for Crisis Resolution Teams: the CORE CRT Fidelity Scale**

Presentation for ENMESH Conference 02/10/15

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# Developing a Crisis Resolution Team (CRT) Fidelity Scale

This presentation will discuss work from the CORE Study (CI: Sonia Johnson). It will:

- Describe the development of a CRT fidelity scale
- Present results from preliminary testing of its psychometric properties:
  - Inter-rater reliability
  - Criterion validity (relationship to patient satisfaction and staff wellbeing)

# Background: Crisis Resolution Teams (CRTs)

- CRTs offer short-term, intensive home treatment to people in mental health crisis ***as an alternative to hospital admission***
- Mandated in England in 2000
- Now 200+ CRTs in England, in every NHS region
- Government guidance but no highly specified service model

## The CRT service model

UK government guidance (DH 2001) specified for CRTs:

- 24/7 service
- “gatekeeping” role for hospital admissions
- Multi-disciplinary staff team delivering a range of care
- Brief, crisis intervention (typically <6 weeks)
- Collaboration with involved family and other carers is crucial

## CRTs: evidence for effectiveness

- Trial evidence suggests CRTs can reduce hospital admissions and increase patient satisfaction with acute care (Johnson et al 2005)
- But these benefits are less clear in evaluations of UK national implementation
  - Rates of compulsory admissions continue to rise (HSCIC 2014)
  - Effect of CRT introduction on local admission rates is unclear (Jacobs and Barrenho 2012)
- CRT service organisation and delivery is variable (Onyett 2006, Lloyd-Evans and Johnson 2014)

# Fidelity Scales: a service improvement tool

A fidelity scale can:

- Specify a model of best practice for a complex intervention
- Provide a means to assess service adherence to this model

Fidelity scales have formed a key part of a successful US service improvement project (McHugo et al. 2007)

There are well-established fidelity scales for many complex mental health interventions e.g. Supported Employment and ACT services

***But not CRTs***

# Development work for a CRT Fidelity Scale

## 1. Gathering evidence re CRT best practice

- Systematic Review (Wheeler et al. 2015)
- National survey of CRT managers (n=188) (Lloyd-Evans and Johnson 2014)
- Focus groups and interviews with CRT stakeholders (n=107) (Morant et al. submitted)

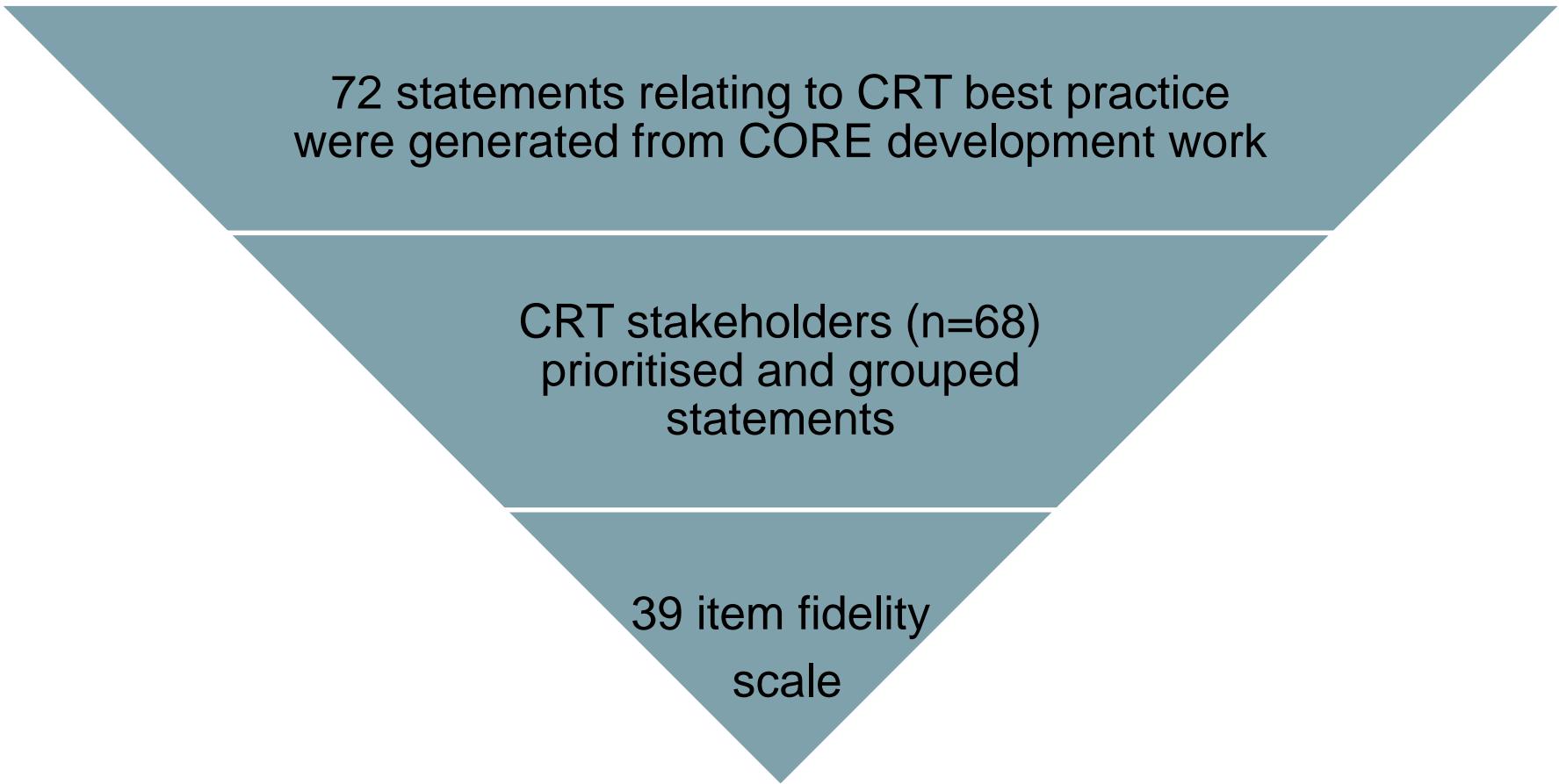
## 2. Concept Mapping

- Stakeholders (n=68) group and prioritise statements regarding CRT best practice
- Resulting cluster solutions and importance ratings of statements inform selection of fidelity scale items

## 3. Scale development and piloting

- Fidelity items selected and scoring anchor points developed
- Further consultation on complete fidelity scale
- Piloting with CRT teams (n=75), then further revisions to improve item clarity and address floor/ceiling effects

# Developing a CRT Fidelity Scale: the concept mapping process



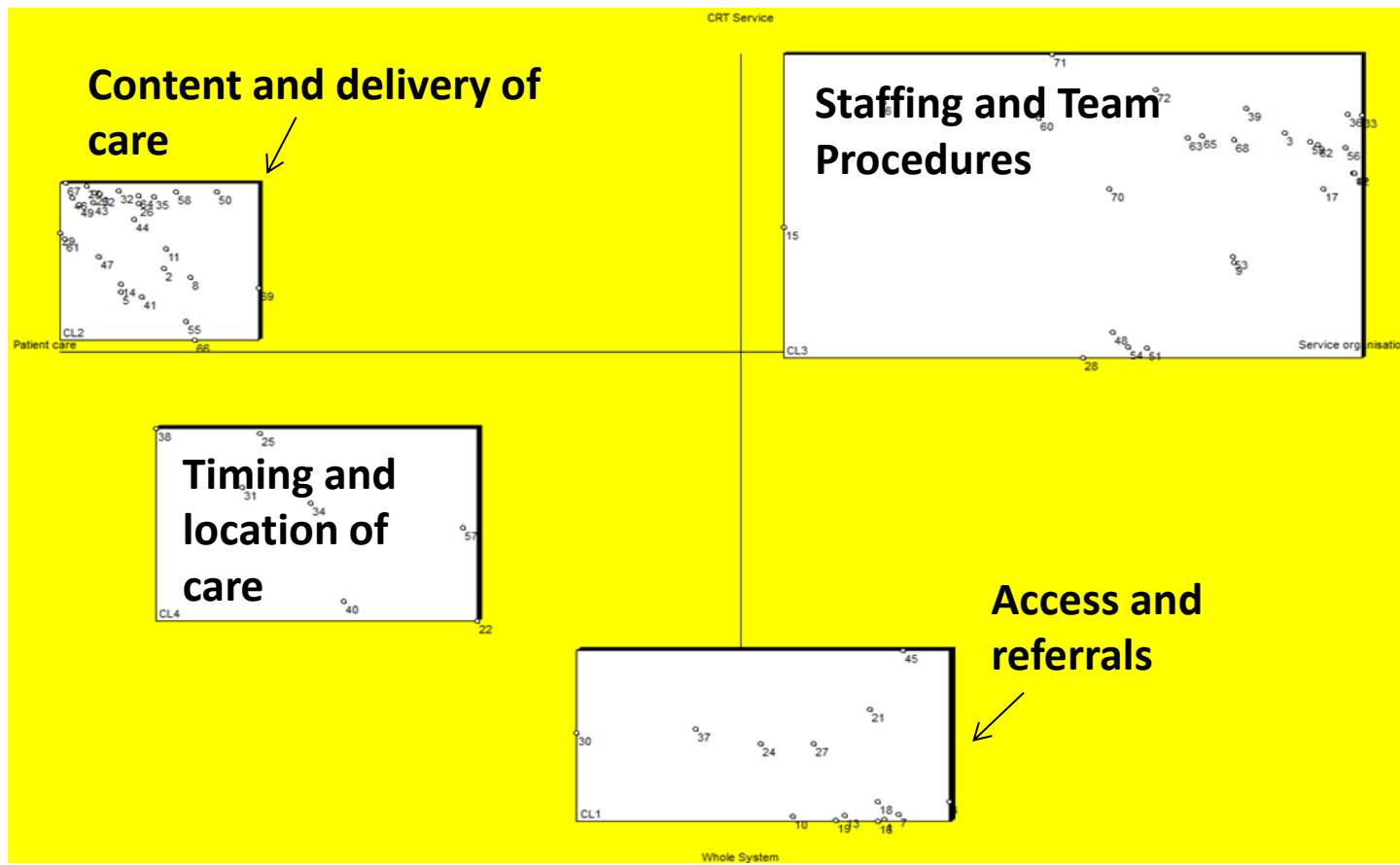
A funnel diagram illustrating the process of developing a CRT Fidelity Scale. The top section is shaded dark blue and contains the text "72 statements relating to CRT best practice were generated from CORE development work". The middle section is shaded medium blue and contains the text "CRT stakeholders (n=68) prioritised and grouped statements". The bottom section is shaded light blue and contains the text "39 item fidelity scale".

72 statements relating to CRT best practice  
were generated from CORE development work

CRT stakeholders (n=68)  
prioritised and grouped  
statements

39 item fidelity  
scale

# CORE CRT Concept Map



# **core** Crisis Resolution Team **Fidelity Scale** **Version 2**



Crisis Resolution Team Optimisation  
and Relapse Prevention

# Example fidelity item

## 1. Rapid response

- a) The CRT records and monitors response times to referrals and reviews breaches of response targets
- b) The CRT responds to the referrer within 30 minutes
- c) The CRT offers an assessment with the service user which takes place within 4 hours for at least 90% of appropriate referrals
- d) The CRT offers a same-day assessment for at least 50% of appropriate referrals made before 6pm
- e) The CRT offers a same-day assessment for at least 90% of appropriate referrals made before 6pm
- f) The CRT provides an immediate mobile response to requests for assessment from emergency services

## Item 1

Evidence sources: C = case notes review; P = paperwork review; M = manager interview, S = staff interview; SU = service user interviews; FF = Family/carer interviews; O = interviews with staff from other mental health services

Item	Evidence	Scoring criteria	met /unmet	Item definitions and scoring guidance
1. The CRT responds quickly to new referrals	P, M	a) The CRT records and monitors response times to referrals and reviews breaches of response targets		Criterion A: Score as met if the CRT provides a log of the time period between receiving a referral and providing a face-to-face assessment and the CRT manager clearly describes processes used to review breaches of response times.
	M, S, O (P)	b) The CRT responds to the referrer within 30 minutes		Criterion B: requires all-source agreement from the CRT manager, staff and managers of other services that the CRT always answers phone calls from referrers in person, or routinely responds to the referrer within 30 minutes (no more than one breach per month)
	M, S, O (P)	c) The CRT offers an assessment with the service user which takes place within 4 hours for at least 90% of appropriate referrals		Criteria B-E: Do not include early discharge clients for % meeting response times: an immediate response is less crucial for inpatient referrals
	M, S, O (P)	d) The CRT offers a same-day assessment for at least 50% of appropriate referrals made before 6pm		If no log of response times, all source agreement from CRT manager, staff and other community staff is required to assess criteria as met regarding response time to referrers and time to assessment
	M, S, O (P)	e) The CRT offers a same-day assessment for at least 90% of appropriate referrals made before 6pm		Criterion F: requires all-source agreement from CRT staff and manager and other service managers that the CRT will go urgently to assess someone at a police station, their home or in public if requested by emergency services (e.g. police or ambulance crews) + evidence from the CRT team of at least one example of this happening within the last month
	M, S, O (P)	f) The CRT provides an immediate mobile response to requests for assessment from emergency services		
Scoring	Score 5 if: 6 criteria are met Score 4 if: 5 criteria are met Score 3 if: 4 criteria are met Score 2 if: 3 criteria are met Score 1 if: 2 or fewer criteria are met		Item score	

# The fidelity review process

- A one-day audit
- 3-person reviewing team (including a practitioner and a service user or carer)
- Interviews with: CRT manager, staff team, managers of other services, service users, carers
- Review of case notes, service records and policies
- A written report with scores and feedback for each item provided to the CRT following a review

## CRT Fidelity Scale: testing inter-rater reliability

- Vignette exercise
- Raters ( $n=16$ ) independently review a set of mock fidelity review documents and score the service for each fidelity item
- Not in-vivo testing
- 1 set of fidelity review documents only
- Arguably a more rigorous test of reliability than the real review:
  - no consultation with colleagues
  - no consultation with CRT manager on a draft report

# Inter-rater reliability testing: results

- Agreement between raters on individual items is reasonably good:  $icc = 0.65$  (95 CI: 0.54 to 0.76)
- Agreement between raters on overall fidelity score is very high:  $icc = 0.97$  (0.95 to 0.98)
- Most variable items (#15, 22, 25, 35) covered: therapeutic relationships, equality and diversity, aftercare arrangements and medication support

# Team fidelity scores: relationship to patient and staff outcomes

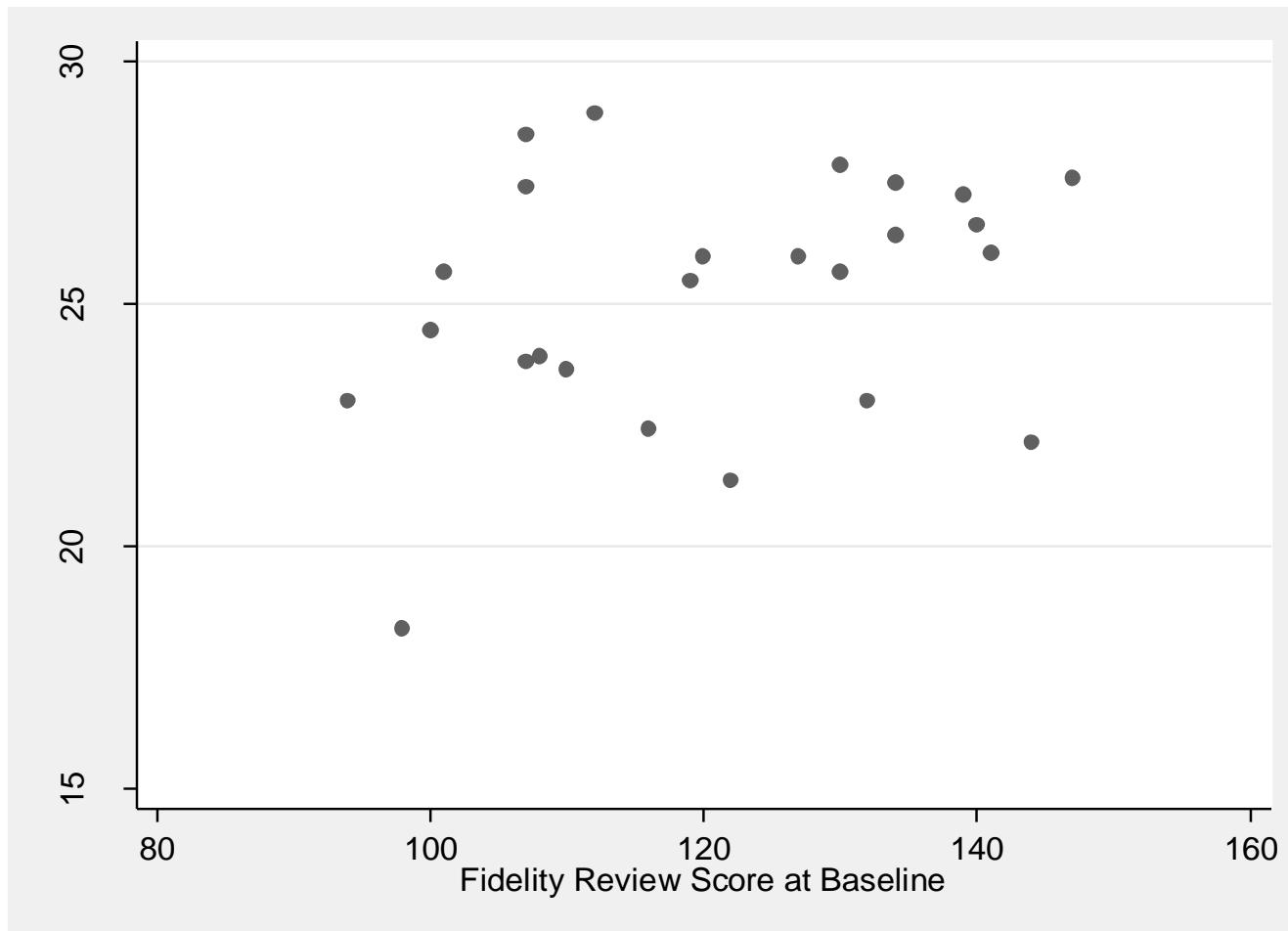
Baseline data for the CORE CRT Resource Pack trial provided:

- A fidelity score for each participating CRT (n=25)
- Patient-report data (CSQ) on satisfaction with the CRT (n=351)
- Staff report data on burnout (MBI emotional exhaustion subscale) (n= 440)

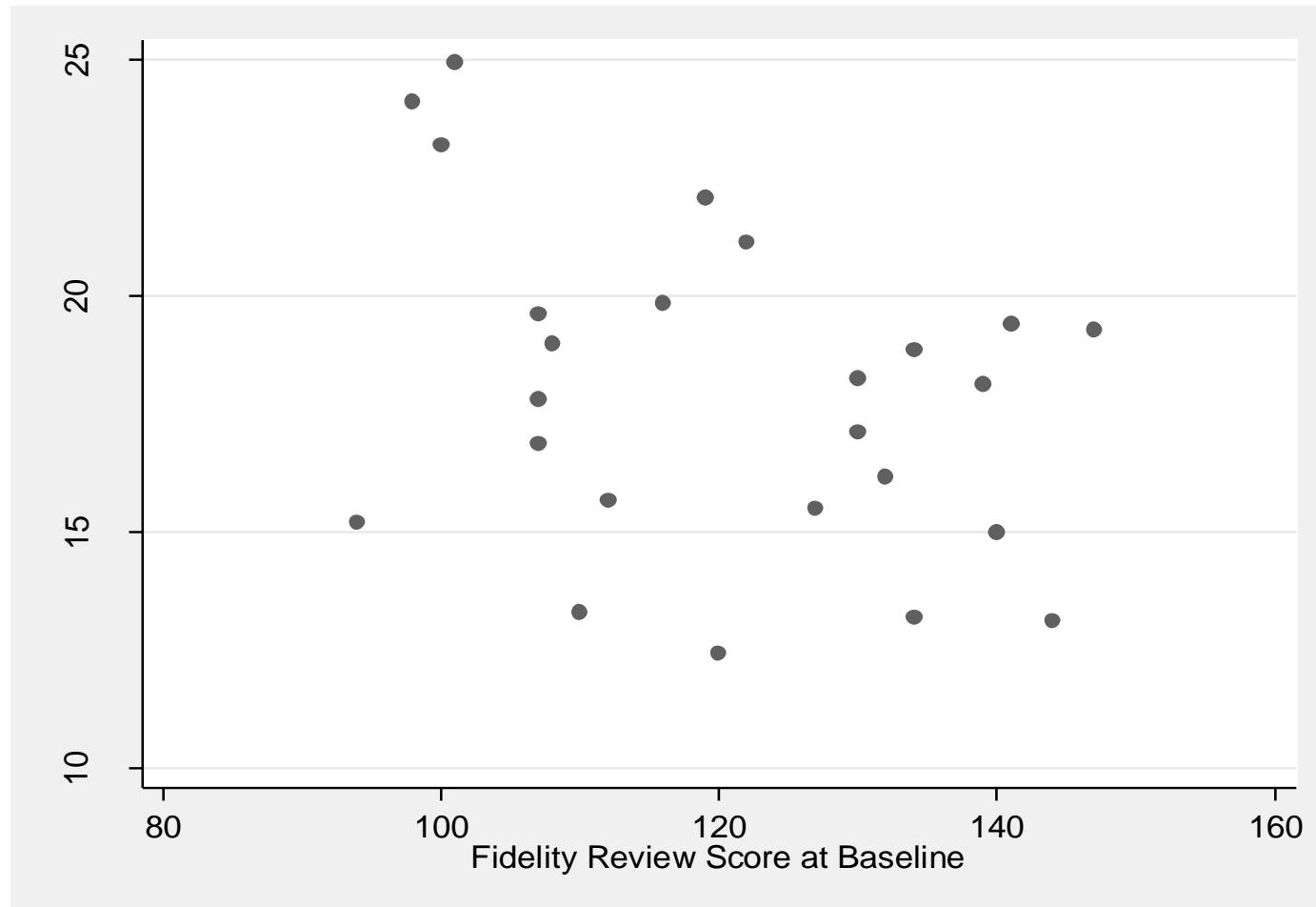
# Team fidelity scores - relationship to patient and staff outcomes: analysis

1. Team-level associations between CRT fidelity score and:
  - i) Mean service user satisfaction score (CSQ); and
  - ii) Mean staff burnout score (MBI EE subscale)
  
2. Multi-level models fitting team fidelity score to
  - i. Service user CSQ scores, adjusting for age, gender and ethnicity
  - ii. Staff MBI EE scores, adjusting for age, gender, ethnicity, professional group, role, and years in service

# Team fidelity scores and mean CSQ scores



# Team fidelity scores and mean staff burnout



# CRT Fidelity scale validity exploration: analyses

Modest team-level associations:

Fidelity score and CSQ: spearman's rho = 0.29

Fidelity score and MBI EE: Pearson's correlation = -0.35

Mixed model: relationship of fidelity score to outcome variables (adjusting for participant characteristics)

Outcome	Regression Coefficient	95% Confidence Intervals	significance
Patient satisfaction (CSQ)	0.05	(-0.008 to 0.114)	p = 0.08
Staff morale (MBI EE subscale)	-0.10	(-0.177 to -0.016)	p = 0.02

# Why were relationships with service user satisfaction not stronger?

- Fidelity scales have limited ability to measure “clinical competence”?
- Diluted effect: not all fidelity items focus on patient experience?
- Measurement error – in fidelity scores or unrepresentative CSQ samples?

# The CORE CRT Fidelity Scale

- Rigorous development process: the scale reflects best available evidence and stakeholders' priorities
- Extensively piloted for clarity and feasibility
- Evidence of adequate inter-rater reliability
- Preliminary evidence of (weak) associations between team fidelity and good service user and staff experience

***The best available quality assessment tool for CRTs?***

## Next steps

Further exploration of the scale's validity:

- Associations with other outcomes (admission rates, readmissions)
- Exploring team level relationships with change scores
- Possible scale refinement to follow (V3)

Using the scale:

- Surveying CRT fidelity nationally in the UK (The CORE Survey)
- Using the scale to support a service improvement initiative (The CORE CRT Service Improvement Programme Trial)
- Testing its international applicability (current Norwegian study: CI Torleif Ruud)

## Further Information

The CORE CRT fidelity scale is publicly available on the CORE Study website:

[www.ucl.ac.uk/core-study](http://www.ucl.ac.uk/core-study)

For further information about the CORE Study, please contact: [b.lloyd-evans@ucl.ac.uk](mailto:b.lloyd-evans@ucl.ac.uk)

# Acknowledgement

*This presentation presents independent research funded by the National Institute for Health Research (NIHR) under its Programme Grants for Applied Research programme (Reference Number: RP-PG-0109-10078).*

*The views expressed are those of the author and not necessarily those of the NHS, the NIHR or the Department of Health.*