5 years of CRIS at Camden & Islington

lessons, outputs and vision

Nomi Werbeloff, PhD

The Clinical Record Interactive Search (CRIS)

- Developed and Introduced at South London and Maudsley NHS Foundation Trust in 2008
- Extended to 4 additional Trusts in 2013:
  - Camden & Islington NHS Foundation Trust
  - Cambridgeshire and Peterborough NHS Foundation Trust
  - Oxford Health NHS Foundation Trust
  - West London Mental Health NHS Trust

Camden & Islington

- Two inner city London Boroughs
- ~470,000 residents
- Camden is the 74th and Islington is the 14th most deprived local authority in England

C&I NHS Foundation Trust

- C&I provides:
  - Mental health and substance misuse services to people living in Camden and Islington
  - Substance misuse services to Westminster
  - Substance misuse and psychological therapies service to Kingston

- Trust facilities include:
  - Two inpatient facilities - Highgate Mental Health Centre and St Pancras Hospital
  - Community based services throughout Camden and Islington

- The Trust does not provide child and adolescent mental health services

Records in database

Electronic health records from RiO and Carenotes (2008-2017)

- 126,769 patients
- 48% male; 52% female
- Average age=50 (IQR: 35-60)
- Largest ethnic group: White British (45%)

Overview of CRIS projects and applications

51 applications to use CRIS to date

-12 completed MSc projects

-7 papers published

-4 paper submitted for publication; 3 papers in preparation

Grants:

-Medical Research Council data pathfinder grant, Prof. David Osborn

-Dunhill Medical Trust grant, Dr. Juanita Hoe

-Wellcome Trust grant, Dr. James Kirkbride

Cross-Trust collaboration

Admission to acute mental health services after contact with crisis resolution and home treatment teams: an investigation in two large mental health-care providers

Nomi Werbeloff, Chin-Kuo Chang, Matthew Broadbent, Joseph F Hayes, Robert Stewart, David P J Osborn

Summary

Background Crisis resolution and home treatment teams (CRTs) offer an alternative to hospital admission for patients undergoing mental health crises in the UK. Few studies have been done to examine predictors of relapse and readmission after contact with CRTs.

Methods We used the Clinical Record Interactive Search to identify all patients receiving care from CRTs in two National Health Service (NHS) mental health trusts in London: Camden and Islington NHS Foundation Trust and South London and Maudsley NHS Foundation Trust. We used Cox regression models to examine rates and predictors of admission to acute mental health services within 1 year of contact with CRTs. Sex, age, ethnicity, marital status, social deprivation, severity of psychopathology, duration of index CRT episode, first contact with services, and diagnosis were extracted and examined as predictors of admission.

Findings Between Jan 1, 2008, and Aug 31, 2014, 17 666 patients were treated by CRTs—8759 patients in the Camden and Islington trust and 8907 patients in the South London and Maudsley trust. 53·9 patients per 100 person-years (95% CI 52·1–55·8) in Camden and Islington and 51·3 patients per 100 person-years (95% CI 49·6–53·1) in South London and Maudsley were admitted to acute services within 1 year of seeing the CRT. In both cohorts, non-affective psychotic disorders (adjusted hazard ratio [HR] 1·25, 95% CI 1·09–1·44 in Camden and Islington; 1·27, 1·17–1·38 in South London and Maudsley) and age older than 65 years (1·18, 1·01–1·37 in Camden and Islington; 1·32, 1·12–1·56 in South London and Maudsley) were associated with increased risk of admission, whereas first contact with services (0·57, 0·52–0·62 in Camden and Islington; 0·69, 0·63–0·75 in South London and Maudsley), anxiety disorders (0·81, 0·69–0·96 in Camden and Islington; 0·77, 0·67–0·87 in South London and Maudsley), and longer index CRT episodes (adjusted HR per day 0·996, 0·994–0·998 in Camden and Islington; 0·989, 0·987–0·991 in South London and Maudsley) were associated with reduced risk of admission.

Interpretation Past use of mental health services and a diagnosis of non-affective psychosis, which are markers of severity of mental illness, and older age, which is a marker of chronicity, are all risk factors for future relapse after interactions with CRTs. These findings might help clinicians and policy makers to offer more targeted and cost-effective services to reduce relapse rates.

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THE LANCET Psychiatry

Deploying CRIS across different Trusts

Does a tool which was developed to extract data from SLaM's bespoke EHR system - PJS - work equally well on a different EHR system?

Time to diagnosis and treatment of bipolar disorder - comparison between C&I and SLaM cohorts

	C&I	SLaM
Residents in catchment area	470,000	1,200,000
Period of first presentation to Trust	1st January 2009 - 31st August 2014	1st January 2007 - 31st December 2012
No. of patients with bipolar disorder meeting inclusion criteria	467 (0.10%)*	1364 (0.11%)
No. of patients with bipolar disorder receiving appropriate treatment by end of follow-up	395 (85%)#	1206 (88%)
Median time to diagnosis (IQR), days	76 (17–391)	62 (17-243)
Median time to treatment (IQR), days	37 (5-194)	31 (4-122)

* Percent of residents in the catchment area who meet inclusion criteria
# Percent of patients with bipolar disorder who received appropriate treatment by the end of follow-up

Werbeloff et al. (2018). The Camden & Islington Research Database: Using Electronic Mental Health Records for Research. PLOS One, 13(1):e0190703.

Natural Language Processing (NLP)

NLP applications designed at SLaM to extract information from clinical notes have been applied at C&I:

- Diagnoses
- Medication
- Mini-Mental State Examination (MMSE) scores
- Addenbrooke's cognitive examination (ACE) scores
- Age left school
- Smoking
- Cannabis use

These applications are being tested and validated to ensure that they perform well across Trusts.

CRIS future plans

MRC Medical Research Council

MRC Mental health data pathfinder award

Advancing methodology and linkages in Electronic Health Records (EHRs)

Work package 1 - SNOMED- Enriching and improving data quality in CRIS

- Semantic annotation using structured dictionaries (such as SNOMED CT)

Annotated Term

Behavior and Behavior Mechanisms [F01]
Behavior [F01.145]
Behavioral Symptoms [F01.145.126]
Affective Symptoms [F01.145.126.100]
Aggression [F01.145.126.125]
Catatonia [F01.145.126.156]
Child Reactive Disorders [F01.145.126.159]
Delusions [F01.145.126.200]
Depersonalization [F01.145.126.300]
Depression [F01.145.126.350]
Encopresis [F01.145.126.837]
Enuresis [F01.145.126.856]
Hearing Loss, Functional [F01.145.126.875]
Human Coprophagia [F01.145.126.900]
Malingering [F01.145.126.925]
Mental Fatigue [F01.145.126.937]
Obsessive Behavior [F01.145.126.950]
Paranoid Behavior [F01.145.126.962]
Polydipsia, Psychogenic [F01.145.126.968]
Problem Behavior [F01.145.126.972]
Schizophrenic Language [F01.145.126.975]
Self-Injurious Behavior [F01.145.126.980]
Stress, Psychological [F01.145.126.990]
Wandering Behavior [F01.145.126.995]

EHR

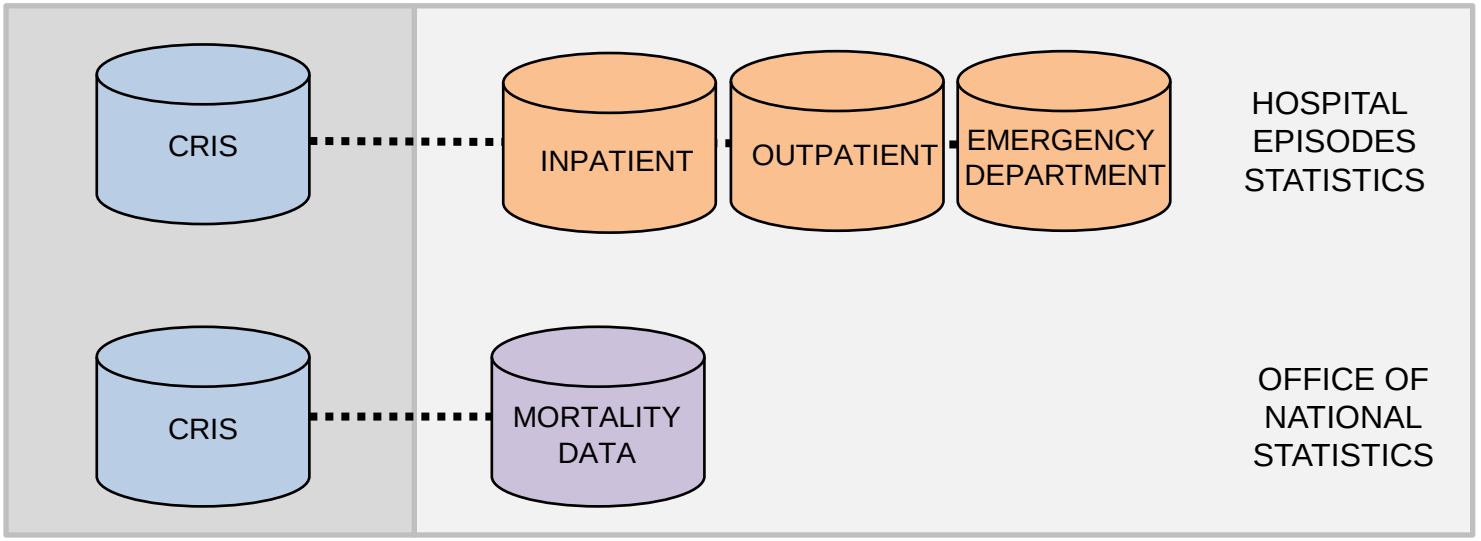
..patient previously suffered from recurrent persecutory delusions…

Experiencer
- Self

% Negation
- None found

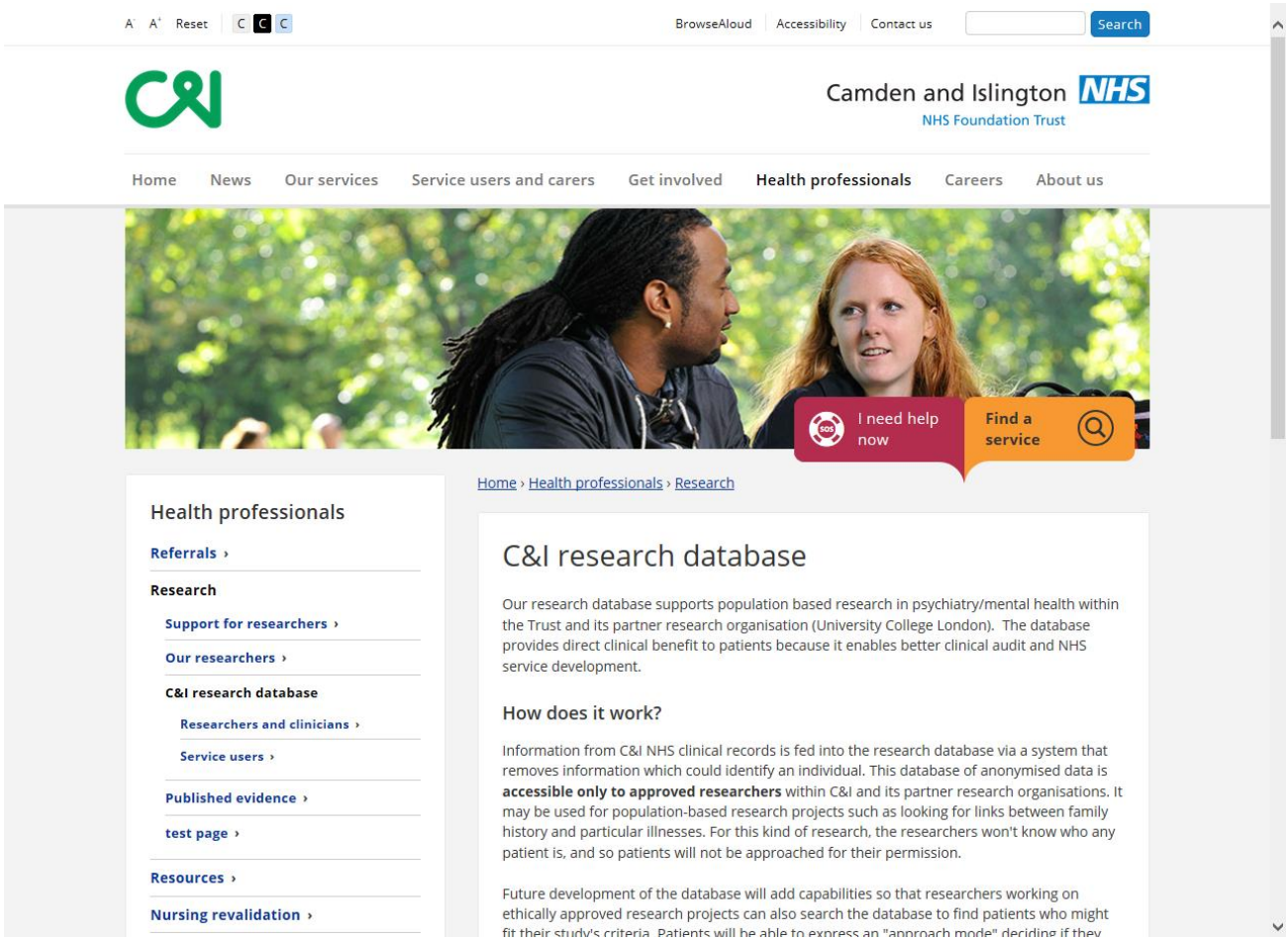
Temporality
- History of

Work package 2 – CRIS/HES ONS – Data linkage



More information?

Search for Research Database on the C&I website



CRIS board members

Prof. David Osborn - academic lead

Prof. Gill Livingston

Dr. Vincent Kirchner

Dr. Joe Hayes

Dr. Johan Thygesen

Ms Lynis Lewis

Service user representatives

C&I Information team

C&I Information governance