STRESS-testing clinical activity and outcomes for a combined prison inreach and court liaison service:

A three-year observational study of 6177 consecutive male remands.

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Trinity College

IRISH PRISON SERVICE
Introduction: 15 minutes

• Service model for combined remand prison inreach and court liaison service (PICLS)

• Outcomes and activity of PICLS service over three years using Service Assessment Protocol
Co-workers

- DAMIAN SMITH
- FINTAN CADDOW
- MARTIN CADDOW
- FERGAL DUFFY
- MARY FITZPATRICK
- GRAINNE FLYNN
- PHILIP HICKEY
- RONAN MAHER
- FERGAL BLACK
- SEAN QUIGLEY
- RONAN MULLANEY
- CLARE McINERNEY
- ZETTI AZVEE
- LOUISE BRENnan
- MARY DAVOREN
- BRONAGH GALLAGHER
- MARK JOYNT
- CLAIRE KEHOE
- KATE MADDOCK
- BEN O’KEEFFE
- DIANE MULLINS
- LIZ OWENS
- HARRY KENNEDY
Severe mental illness in 33,588 prisoners worldwide: systematic review and meta-regression analysis

Seena Fazel and Katharina Seewald

- 109 samples from 24 countries, 1966-2010
- Pooled prevalence psychosis 3.6%
- Stable over time
• Enough cross-sectional prevalence studies
• Need longitudinal data

Pakes and Winstone (2010)

- Audited 101 prison mental health services across England
- Schemes do mental health assessments well but.....

  - lack of coherence in data collection
  - Sporadic proactive screening
  - Questionable sustainability

Coid and Ullrich (2011)

• Psychiatric services “fail to identify psychotic prisoners and provide after care”.

• Need for the public to be reassured that diversion is risk-appropriate

Psychosis (Cross-sectional)
0.8% active
2.7% six-month
3.8% lifetime

Psychosis (Cross-sectional)
4.5% active
7.6% six-month
12.4% lifetime

Psychosis (Longitudinal remands)
3.8% active (95% CI 2.2-6.6%)
5.1% six-month
9.3% lifetime
2006-2011 study:

1. Identified psychosis at predicted rate
2. Can achieve diversion to healthcare
3. Quality of service sustained over time

- More comprehensive approach required
- Timeframes
- Risk-appropriateness
- Outcome standards refined 2012-14:

Stress testing

“Deliberately thorough testing used to determine the stability of a given system to confirm intended specifications are being met and help determine modes of failure”.

- Used in
  - Engineering
  - Financial systems
  - Information technology
  - Healthcare

- In prison settings, the greatest turnover is in remand settings
PICLS: Service Model
Prison Inreach & Court Liaison Service (PICLS)

- **Cloverhill Remand Prison**
  - 60% remands nationally

- **Multidisciplinary Team**
  - Attends 5 days weekly
  - 1 Consultant Psychiatrist
  - 3 Forensic Mental Health Nurses
  - 2-3 Trainee Psychiatrists
  - Housing Officer (Hail Housing)
2-stage Screening (Daily)

**Stage 1: (Modified Grubin-7 items)**

1. Previous MHS contact (outside prison)
2. Previous antipsychotic/antidepressant medication.
3. Homicide charge
4. Current thoughts DSH
5. History of deliberate self harm
6. Physical Exam
7. Observed unusual behaviour/Placement requirements

**Stage 2: (MDT: Next working day)**

- Review of previous prison medical records
- Referrals
- Prioritise waiting list
D2 Vulnerable Wing

- Assessment
- Liaison
- Triage
- Court Reports
<table>
<thead>
<tr>
<th>Triage</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CMH Admission</strong></td>
<td>Major Illness/Major offence or High Risk</td>
</tr>
<tr>
<td><strong>Community Diversion</strong></td>
<td>Major Illness/Minor Offence</td>
</tr>
<tr>
<td><strong>Prison Management</strong></td>
<td>Minor or no illness</td>
</tr>
</tbody>
</table>
Interagency Meetings: Weekly

Attended by

- PICLS MDT
- Psychology
- Prison Nursing staff
- Prison Governor and D2 staff
- Addiction Counsellor
- Chaplain
- Others as required

• Agenda
  - Patients on D2 vulnerable wing: Risks, Care Plans
  - Self-harm episodes in past week
  - Waiting lists
Multidisciplinary Care Plan Meetings: Fortnightly

Attended by
- PICLS MDT

Agenda
- Discuss all patients on caseload
  - Care planning
  - Contingency planning
  - Triage

Update “Rolling record” of discharges
**“Rolling Record” of activities and outcomes**

<table>
<thead>
<tr>
<th>Descriptive Variable</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Birth</td>
<td>Date</td>
</tr>
<tr>
<td>Date of Committal</td>
<td>Date</td>
</tr>
<tr>
<td>Lifetime history of psychosis</td>
<td>Yes/no</td>
</tr>
<tr>
<td>Lifetime history substance misuse</td>
<td>Yes/no</td>
</tr>
<tr>
<td>History deliberate self harm</td>
<td>Yes/no</td>
</tr>
<tr>
<td>Homeless</td>
<td>Yes/no</td>
</tr>
<tr>
<td>History of contact with psychiatric services outside prison</td>
<td>Yes/no</td>
</tr>
<tr>
<td>Nationality</td>
<td>Code</td>
</tr>
<tr>
<td>Most serious index offence</td>
<td>Code</td>
</tr>
<tr>
<td>Violent index offence</td>
<td>Yes/no</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Process Variable</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date first assessed</td>
<td>Date</td>
</tr>
<tr>
<td>Date of Discharge</td>
<td>Date</td>
</tr>
<tr>
<td>Number of assessments</td>
<td>Count</td>
</tr>
<tr>
<td>Discharge primary ICD-10 diagnosis</td>
<td>ICD-code</td>
</tr>
<tr>
<td>Discharge outcome</td>
<td>Code</td>
</tr>
<tr>
<td>Last Dundrum 1 score before outcome</td>
<td>Score</td>
</tr>
<tr>
<td>Last Dundrum 1 score before outcome</td>
<td>Score</td>
</tr>
<tr>
<td>Self harm episodes during committal</td>
<td>Details/Dates</td>
</tr>
<tr>
<td>Active psychotic symptoms following committal</td>
<td>Yes/no</td>
</tr>
</tbody>
</table>
PICLS Model

2-stage screening
Referrals

Assessment, Collateral
And Liaison

Triage
Care Planning

Court Report and
attendance if needed

Treatment delivered in
appropriate location/Transport
Aims

• Examine quantitative measures of clinical efficiency and effectiveness of a prison in-reach and court liaison service over three years.

• Compare rates of identification of psychosis and diversion with previously-reported findings for the previous six years.

• Service Assessment Protocol divided into six domains of activity and outcomes: summarised by the acronym STRESS-Testing.
STRESS-Testing: Aims & Method
<table>
<thead>
<tr>
<th>Domain</th>
<th>Aim</th>
</tr>
</thead>
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• How many were assessed and taken onto the team caseload?  
• Is the caseload over time described in terms of diagnosis, co-morbid conditions and offence type?  
• Is the caseload described in terms of other factors including homelessness, whether or not known to have a past history of self-harm and whether or not known to have previous contact with psychiatric services outside prison.  
• Is the service identifying persons with the most severe acute symptoms, such as active psychotic symptoms at rates in keeping with expected rates based on the existing epidemiological literature? |
| Transfer of Care                           | • How many were diverted from the criminal justice system to mental health treatment settings?                                                                                                       |
| Risk-appropriateness of diversions         | • Were diversions to forensic inpatient settings, to general psychiatric inpatient settings and to outpatient settings justifiable in terms of risk and clinical need? |
| Efficiency and Productivity                | • What was the delay from committal screening to first comprehensive assessment?  
• Were persons identified as actively psychotic seen more rapidly than persons without acute psychotic symptoms?  
• What was the delay from committal and first assessment to diversion?  
• How many cases were managed and diversions achieved per whole time equivalent employed? |
| Self-harm                                  | • How many persons deliberately harmed themselves in custody over the study period?                                                                                                                                 |
| Service Mapping                            | • Can the service ‘map’ the flow of all patients through the system, with outcomes at the point of discharge and times to those outcomes?  
• Can the service map subsequent outcomes for persons admitted to the ‘parent’ forensic psychiatric unit? |
| Testing                                    | • How did the above activity and outcome data compare with previously published findings for the same service in the six years preceding this three-year study? |
**Screening, Identification, caseload description**

**Aims:**

- How many remands were screened?
- How many assessed and taken onto caseload?
- Is caseload over time described in terms of diagnosis, co-morbid conditions and offence type?
- Is caseload described in terms of factors including homelessness, past history of self-harm and previous contact with psychiatric services outside prison.
- Is the service identifying persons with the most severe acute symptoms, eg active psychotic symptoms at rates in keeping with expected rates?
Screening, Identification and caseload description

Method:

- All new remand episodes to Cloverhill Prison from Jan 2012 to Dec 2014 screened.
- Sentenced episodes (unless also remanded) excluded
- ICD-10 [22] diagnoses based on clinical assessment and collateral, updated at regular multi-disciplinary care planning meetings, based on serial assessments.
- Active psychotic symptoms following committal
- Demographic, clinical and offending data based on collateral.
- Data presented where possible in binary (yes/no) format

Definitions:

- Remand episode: Committals on remand, trial, deportation and extradition.
- Psychotic symptoms: Current hallucinations, delusions and/or thought disorder.
- Violent offence: An act of physical violence on a person and included homicide, assault, robbery, aggravated burglary, contact sexual offences, false imprisonment, driving offences involving injury to others and arson where there was a possibility of injury to others.
- Homelessness: Not having regular accommodation, rough sleeping or residence in homeless shelters at the time of or identified during committal.
Screening, Identification and caseload description

Results:

- 6177 consecutive remand committals screened
  - 60.9% of male remand episodes nationally (6177/10,148)

- 1109 first assessments of 917 individuals
  - 2573 repeat “face to face” assessments
  - 10,504 case note entries

- 4.1% remand committal episodes actively psychotic
  - 251/6177 (95% C.I. 3.6-4.6)
Screening, Identification and caseload description

Results:

- 1109 remand episodes
  - All Male
  - Mean Age 32.8
  - 86% Irish
  - 35% Homeless
  - 23% Active Psychosis
  - 86% Substance Misuse
  - 65% History DSH
  - 35% Violent Index Offence

<table>
<thead>
<tr>
<th>Variable</th>
<th>Individuals on first remand episode during 2012-14 (N=917)</th>
<th>All remand episodes during 2012-2014 (N=1109)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number (% 95% CI)</td>
<td>Number (% 95% CI)</td>
</tr>
<tr>
<td>Irish nationality</td>
<td>772 (64.2% 81.7-86.0)</td>
<td>917 (85.8% 83.7-87.0)</td>
</tr>
<tr>
<td>Homeless</td>
<td>308 (33.6% 32.3-36.7)</td>
<td>388 (35.0% 32.2-37.9)</td>
</tr>
<tr>
<td>Lifetime Psychosis</td>
<td>252 (27.5% 23.6-30.5)</td>
<td>339 (36.6% 27.9-43.4)</td>
</tr>
<tr>
<td>Active psychosis</td>
<td>192 (20.9% 18.3-23.7)</td>
<td>251 (22.6% 20.2-25.2)</td>
</tr>
<tr>
<td>History substance misuse</td>
<td>751 (63.2% 82.7-87.4)</td>
<td>904 (86.0% 83.8-88.0)</td>
</tr>
<tr>
<td>History deliberate self-harm</td>
<td>571 (62.3% 59.0-65.4)</td>
<td>715 (64.5% 61.8-67.3)</td>
</tr>
<tr>
<td>Violent index offence</td>
<td>319 (35.5% 32.8-39.1)</td>
<td>384 (34.6% 31.8-37.5)</td>
</tr>
</tbody>
</table>

Table: Demographic and clinical variables for individuals at first remand and all remand episodes for individuals identified through 2-stage screening and referrals to PICLS team 2012-2014.
### Screening, Identification and caseload description

#### Results: Most serious Index Offence

<table>
<thead>
<tr>
<th>Primary index offence</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homicide</td>
<td>82</td>
<td>7.4</td>
</tr>
<tr>
<td>Assault</td>
<td>128</td>
<td>11.5</td>
</tr>
<tr>
<td>Robbery/aggravated burglary</td>
<td>96</td>
<td>8.7</td>
</tr>
<tr>
<td>Sexual offences</td>
<td>57</td>
<td>5.1</td>
</tr>
<tr>
<td>Arson</td>
<td>12</td>
<td>1.1</td>
</tr>
<tr>
<td>False imprisonment</td>
<td>5</td>
<td>0.5</td>
</tr>
<tr>
<td>Harassment/stalking/threats</td>
<td>30</td>
<td>2.7</td>
</tr>
<tr>
<td>Possession of weapons</td>
<td>44</td>
<td>4.0</td>
</tr>
<tr>
<td>Burglary, theft, handle stolen property, tax and fraud offences</td>
<td>271</td>
<td>24.4</td>
</tr>
<tr>
<td>Breach of barring, protection or safety order</td>
<td>72</td>
<td>6.5</td>
</tr>
<tr>
<td>Public order offences, criminal damage, trespass</td>
<td>190</td>
<td>17.1</td>
</tr>
<tr>
<td>Driving offences</td>
<td>35</td>
<td>3.2</td>
</tr>
<tr>
<td>Drugs offences</td>
<td>45</td>
<td>4.1</td>
</tr>
<tr>
<td>Extradition requests/international arrest warrants</td>
<td>15</td>
<td>1.4</td>
</tr>
<tr>
<td>Immigration offences</td>
<td>18</td>
<td>1.6</td>
</tr>
<tr>
<td>Failure to appear/contempt of court/other non-violent offences</td>
<td>9</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1109</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
Screening, Identification and caseload description

Results:

Primary ICD-10 Diagnosis

- 1109 remands
  - 23% Schizophreniform
  - 39% Substance misuse
  - 18% Personality Disorder
  - 14% other
  - 6% No illness
<table>
<thead>
<tr>
<th>Domain</th>
<th>Aim</th>
</tr>
</thead>
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| **Risk-appropriateness of diversions**      | • Were diversions to forensic inpatient settings, to general psychiatric inpatient settings and to outpatient settings justifiable in terms of risk and clinical need?                                   |
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| **Testing**                                  | • How did the above activity and outcome data compare with previously published findings for the same service in the six years preceding this three-year study?                                           |
Transfer of care:

Aims
• How many were diverted from the criminal justice system to mental health treatment settings?

Method
• Final disposal outcomes were recorded for all cases.
• Diversion defined as transfer from CJS to mental health care.
**Transfer of care:**

**Results**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did not require psychiatric assessment</td>
<td>5068</td>
<td>82.0%</td>
</tr>
<tr>
<td>Discharge to prison GP/Addiction services</td>
<td>546</td>
<td>8.8%</td>
</tr>
<tr>
<td>Transfer to in-reach psychiatry service in other Prison</td>
<td>202</td>
<td>3.3%</td>
</tr>
<tr>
<td>Community outpatient diversion</td>
<td>208</td>
<td>3.4%</td>
</tr>
<tr>
<td>General admission</td>
<td>81</td>
<td>1.3%</td>
</tr>
<tr>
<td>Forensic Admission</td>
<td>60</td>
<td>1.0%</td>
</tr>
<tr>
<td>Overseas prison transfer</td>
<td>6</td>
<td>0.1%</td>
</tr>
<tr>
<td>Remained on PICLS caseload as at 9th April 2015</td>
<td>6</td>
<td>0.1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6177</td>
<td>100%</td>
</tr>
</tbody>
</table>
Risk-appropriateness of diversions

Aims:

• Were diversions to forensic inpatient settings, to general psychiatric inpatient settings and to outpatient settings justifiable in terms of risk and clinical need?

Method

• DUNDRUM Toolkit: Validated SPJ instrument (Kennedy et al)
  • DUNDRUM-1 (Security) and DUNDRUM-2 (Urgency) mean scores calculated on a weekly basis for persons placed on waiting lists.
  • Score as measured in the week prior to the outcome.
Risk-appropriateness of diversions

Results:

Mean combined Dundrum 1 and 2 Triage scores for remands diverted to inpatient and outpatient settings 2012-14 (with 95% Confidence intervals for mean)
Risk-appropriateness of diversions

Results:

<table>
<thead>
<tr>
<th></th>
<th>D-1 triage security score</th>
<th>D-2 triage urgency score</th>
<th>Total (D-1 + D-2) triage score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>95 % CI</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Forensic admission</td>
<td>2.39 (0.07)</td>
<td>2.25–2.53</td>
<td>2.01 (0.07)</td>
</tr>
<tr>
<td>General admission</td>
<td>1.44 (0.05)</td>
<td>1.35–1.53</td>
<td>1.19 (0.06)</td>
</tr>
<tr>
<td>Outpatient diversions</td>
<td>0.77 (0.03)</td>
<td>0.71–0.82</td>
<td>0.26 (0.02)</td>
</tr>
</tbody>
</table>
Efficiency & Productivity

**Aims:**

- Delay in days from committal screening to assessment?
- Psychotic patients prioritised?
- Delay to healthcare diversion?

**Method**

- Medians were calculated to moderate the distorting effect of outliers, although means were also calculated.
Results:

- Median delay from screening to assessment:
  - Psychotic patients: 2 days
  - Non-psychotic: 3 days

- Median delay to healthcare diversion
  - Forensic admission: Median 19.5 days from committal (17 from 1st assessment)
  - General Admission: 15 days (13)
  - OPD: 15.5 days (11)

- Cases and Diversions per WTE?
Self-Harm

Aims

• How many persons deliberately harmed themselves in custody over the study period?

Method:

• Episodes of self-harm recorded in the prison healthcare medical records system by prison staff.

• Cross-checked on a weekly basis at weekly interagency meeting, with bimonthly review at interagency suicide prevention meetings.
Self-Harm

Results:

• 70 incidents by 48 individuals (range 1-5 episodes)
• 0.8% remand episodes followed by one or more episode DSH
• 0.9% of individuals harmed themselves on one or more occasions
Service Mapping

**Aims:**

- Can the service ‘map’ the flow of all patients through the system, with discharge outcomes and times to those outcomes?
- Can the service map subsequent outcomes for persons admitted to the ‘parent’ forensic psychiatric unit?

**Method:**

- All remands were mapped to show final transfer of care arrangements and the time to assessment and diversion.
- We also recorded subsequent placement arrangements for persons admitted to the Central Mental Hospital to 9<sup>th</sup> April 2015.
Mapping: Counting in, counting out
5,068 did not require psychiatric assessment

6,177 remand episodes of 5,472 individuals screened

5,068 did not require psychiatric assessment

1,109 initial assessments of 917 individuals,

23.5 days

6 On Cloverhill case load at April 2015

8 days

202 Transfer to in-reach team in other prison

188 days

95 Discharged to Prison Addiction Services

6 deported or extradited

451 Discharged to Prison GP

6,177 remand episodes of 5,472 individuals screened

2 days

81 Community Inpatient

• 16 Voluntary
• 65 Involuntary MHA

15 days

1,109 initial assessments of 917 individuals,

8 days

208 Community Outpatient

• 140 General Psych OPD
• 20 Addiction Psych OPD
• 12 Homeless Psych OPD
• 36 Primary Care

19.5 days

60 Forensic Inpatient

• 11 Voluntary S 15.1
• 48 Involuntary S 15.2
• 1 N.G.R.I.
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<thead>
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Testing:

Aims:

• How did the above activity and outcome data compare with previously published findings for the same service in the six years preceding this three-year study?

Method:

• Compare with findings from 2006-2011 study
• Identification of Psychosis and diversion
• NB Case-mix similar other than increased homelessness
<table>
<thead>
<tr>
<th>Identification and Diversion as proportion of all remands: 2006-2011 and 2012-14</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total 2006–2011</strong></td>
</tr>
<tr>
<td>Number taken onto PICLS caseload</td>
</tr>
<tr>
<td>• Percentage (95 % CI)</td>
</tr>
<tr>
<td>Number identified as having active psychotic symptoms</td>
</tr>
<tr>
<td>• Percentage (95 % CI)</td>
</tr>
<tr>
<td>Number admitted to forensic Hospital</td>
</tr>
<tr>
<td>• Percentage (95 % CI)</td>
</tr>
<tr>
<td>Number admitted to General Hospital</td>
</tr>
<tr>
<td>• Percentage (95 % CI)</td>
</tr>
<tr>
<td>Number diverted to community outpatient facilities</td>
</tr>
<tr>
<td>• Percentage (95 % CI)</td>
</tr>
<tr>
<td>Number admitted to any hospital (General or forensic)</td>
</tr>
<tr>
<td>• Percentage (95 % CI)</td>
</tr>
<tr>
<td>Number diverted to any location (forensic hospital, general hospital or OPD)</td>
</tr>
<tr>
<td>• Percentage (95 % CI)</td>
</tr>
</tbody>
</table>
Testing: Identification of Psychosis: 3-year aggregates 2006-2014
Testing:
All diversions: 3-year aggregates 2006-2014

Percentage of new remands diverted to mental health care outside prison 2006-14

- Mean
- Upper CL
- Lower CL

Inpatient diversions: 3-year aggregates 2006-2014

Percentage of new remands diverted to inpatient mental health care outside prison 2006-14

- Mean
- Upper CL
- Lower CL

Period 1 2006 - 2008
Period 2 2009 - 2011
Period 3 2012 - 2014
Discussion

Longitudinal data collected as part of normal governance can assist service evaluation. Presented as binary as far as possible.

- Identification of active psychosis within limits expected based on Curtin et al.
- Times to assessment satisfactory. Times to diversion not.
- DUNDRUM Toolkit scores indicate diversions to appropriate levels of security.
- Self harm rates low.
- Counting in, counting out.

Stress may be indicated by evidence of:

- Missing cases
- Delayed assessment/diversion
- Increasing risk-inappropriate diversions based on DUNDRUM Toolkit scores.
Limitations: Future research

- Male sample only
- Remands only
- Not full national sample
- Recidivism
- Outcomes, not standards
- Changes in general and forensic bed provision over time.
- Arrangements not the same as outcomes
Summary and Conclusions

• 2-stage screening and referral process can enable identification of acute psychosis in keeping with expected rates.

• Identification and risk-appropriate diversion can be sustainably achieved in remand settings.

• Service evaluation model may assist development of outcome standards for other, similar services.
Thank You!

Questions/Comments

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