



The State Hospital

Risk Assessment in Patients with Schizophrenia



Risk Assessment in Patients with Schizophrenia in a High Security Hospital

Michelle Davidson, Suzanne Allen,
Caroline Brett, Jonathan Steele, Rajan Darjee
Division of Psychiatry,
The University of Edinburgh

Aim

To test the validity of actuarial risk assessment measures and psychotic symptoms in the prediction of further violence and offending in patients with schizophrenia initially detained in a high security psychiatric hospital over a follow-up period of 8-10 years.

Method

Setting: The State Hospital

Sample: State Hospital Survey

n=169 patients with schizophrenia
resident 1992-3

St Louis criteria

Method: Risk Assessment Measures

- VRAG
- H-10 scale
- PCL-R

Retrospective examination of clinical records to 1/1/94 or date of transfer (30.2%)

Violence Risk Appraisal Guide

History of alcohol problems (.13)
Diagnosis of Schizophrenia (-.17)
Diagnosis of Personality Disorder (.26)
Psychopathy (.34)
Elementary school maladjustment (.31)
Separation from biological parents before 16 years of age (.25)
Age at index event (Young .26)
Non-violent offence history (.20)
Victim injury at index offence (-.16)
Female victim at index event (-.11)
Failure on prior conditional release (.24)
Marital status (Single .18)

Historical Scale: HCR-20

Previous violence

Young age at first violent
incident

Relationship instability

Employment problems

Substance use problems

Major mental illness

Psychopathy

Early maladjustment

Personality disorder

Prior supervision failure

Psychopathy Checklist - Revised

Glibness/Superficial Charm

Grandiose sense of self worth

Need for stimulation/proneness to
prevent boredom

Pathological lying

Conning/manipulative

Lack of remorse or guilt

Shallow affect

Lack of empathy

Parasitic lifestyle

Poor behavioural controls

Promiscuous sexual behaviour

Early behavioural problems

Lack of realistic, long-term goals

Impulsivity

Irresponsibility

Failure to accept responsibility for
actions

Many short-term marital relationships

Juvenile delinquency

Revocation of conditional release

Criminal versatility

Method: Psychotic Symptoms

- Manchester Rating Scale – interview
 - Depression
 - Anxiety
 - Coherent delusions
 - Hallucinations
 - Flattened affect
 - Incongruous affect
 - Psychomotor retardation
 - Poverty of speech
 - Incoherence & irrelevance of speech
- Persistence of Psychotic Symptoms – clinical records
Annually 1992-2001

Method: Outcome Measures

Aggressive Incidents – clinical and prison records

Recidivism – Scottish Criminal Records Office

| Outcome | Definition |
|--------------------|---|
| Incident | <ul style="list-style-type: none"> - Any aggressive incident involving physical contact with a victim - Any sexual incident (including exposure and touching) - Any episode of physical aggression towards property (including fire-setting) |
| Serious incident | <ul style="list-style-type: none"> - Any aggressive incident resulting in death or injury to the victim requiring hospital treatment - Any sexual incident involving contact with the victim - Any fire-setting |
| Conviction | <ul style="list-style-type: none"> - Any convictions (including non-violent offences) |
| Violent conviction | <ul style="list-style-type: none"> - Any convictions for assault, serious assault, fire-setting/raising or contact sexual offences |



Results: Excluded Patients and Missing Data

| | |
|----------------------------------|---------|
| Available sample | 169 |
| Died before 1/1/94 | 3 |
| Missing casenotes | 2 |
| Paucity of information for PCL-R | 3 |
| Incomplete clinical record | 21 |
| • Total risk assessment | 140 |
| • Manchester Rating Scale | 132/140 |
| • Recidivism | 135/140 |

Results: Setting

| | |
|------------------------------------|----|
| Remained in high security hospital | 33 |
| Other secure hospital | 94 |
| Open hospital | 68 |
| Community | 54 |
| Prison | 10 |

Results: Outcome

| | |
|-------------------------------|-------------------------|
| Incidents | 107 (76.4%) |
| - Mean number | 11.4 (S.D. 27.4; 0-243) |
| - Total number | 1823 |
| - 98.9% incidents in hospital | |
| | |
| Serious Incidents | 39 (27.9%) |
| - Mean number | 0.6 (S.D. 1.2; 0-8) |
| - Total number | 64 |

Results: Outcome

Offences 20 (14.8%)

- Total number 51

Violent offences 7 (5.1%)

- Total number 15

49/51 (96.1%) offences by patients living in the community

Results: Risk Assessment Scales

VRAG

Mean 2.3 (S.D. 10.6)

Distribution

| | |
|-------|------------|
| Bin 1 | 0 |
| Bin 2 | 4 (2.8%) |
| Bin 3 | 28 (19.9%) |
| Bin 4 | 26 (18.4%) |

VRAG - distribution

| | |
|-------|------------|
| Bin 5 | 30 (21.3%) |
| Bin 6 | 26 (18.6%) |
| Bin 7 | 22 (15.6%) |
| Bin 8 | 4 (2.8%) |
| Bin 9 | 0 |

Results: Risk Assessment Scales

H-10

Mean 13.4 (S.D. 3.4)

Distribution

| | |
|-------|------------|
| 0-10 | 36 (25.5%) |
| 11-15 | 57 (40.4%) |
| 16-20 | 47 (33.6%) |

PCL-R

Mean 14.3 (S.D. 7.1)

Distribution

| | |
|-----------|------------|
| 0-9 | 39 (27.9%) |
| 10-14 | 27 (19.3%) |
| 15-24 | 65 (46.4%) |
| ≥ 25 | 9 (6.4%) |

Mean Predictor Scores and Outcome

| | Incident | Serious Incident | Conviction | Violent Conviction y/n |
|-------|-------------------------|------------------|----------------------------|----------------------------|
| H-10 | - | - | 15.94 / 12.89 ^④ | 16.43 / 13.08 ^② |
| VRAG | - | - | 10.39 / .45 ^④ | 12.14 / .88 ^② |
| PCL-R | - | - | 19.41 / 13.57 ^③ | 22.39 / 13.72 ^③ |
| Man | - | - | - | 1.50 / 7.27 ^② |
| PYPS | .619 / .47 ^① | - | - | - |

① p<.05

② p<.01

③ p<.005

④ p<.001

Mean Predictor Scores and Outcome

| | Left High Security y/n | Reached Community y/n |
|-------|------------------------|-----------------------|
| H-10 | - | 14.19 / 12.74 ① |
| VRAG | 3.22 / -1.00 ① | 5.56 / .85 ① |
| PCL-R | - | 15.86 / 12.53 ① |
| Man | - | - |
| PYPS | .51 / .81 ④ | .40 / .63 ④ |

① p<.05

② p<.01

③ p<.005

④ p<.001

Results: ROC analysis

| Measure | ROC curves: AUC values | | | | |
|------------------------|------------------------|-------|---------|--------|---------|
| | Man | PYPS | H-scale | VRAG | PLC-R |
| Any incident | .561 | .625* | .557 | .524 | .524 |
| Any serious incident | .556 | .539 | .527 | .549 | .544 |
| Any recidivism | .376 | .380 | .758** | .759** | .726** |
| Any violent recidivism | .167** | .307 | .792* | .798** | .825*** |

Significant at 0.05 level. ** Significant at 0.01 level.

Any incident

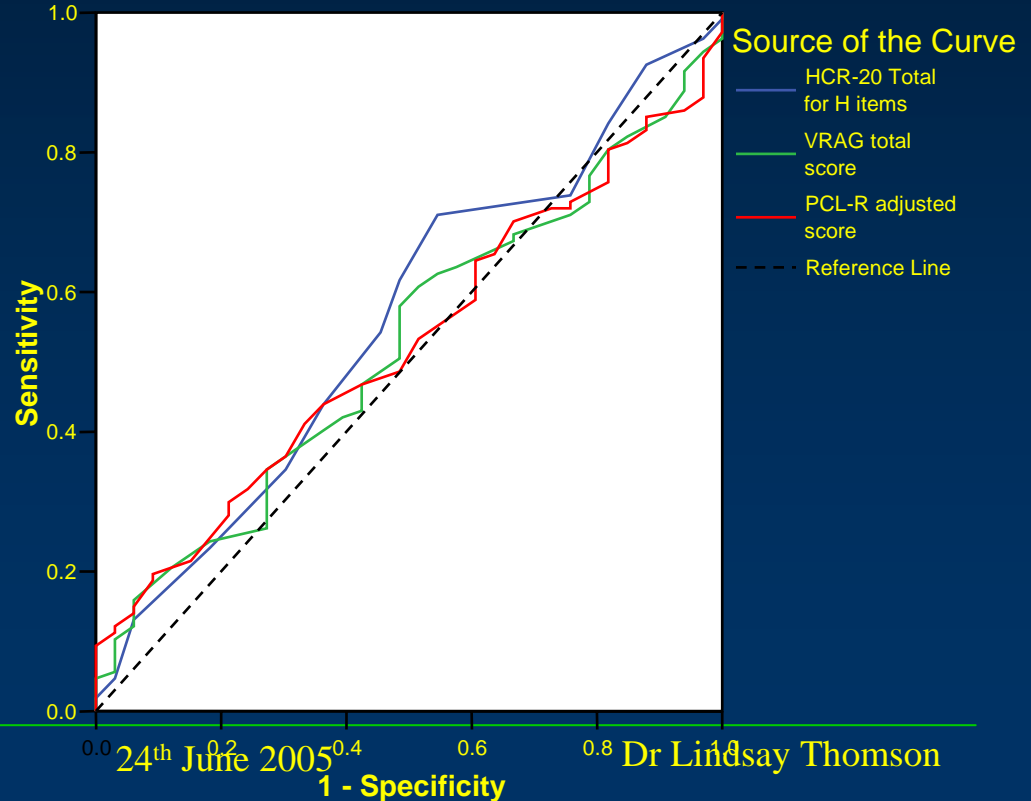
Involvement in any incident was here defined as:

- Any aggressive incident involving physical contact with a victim
- Any sexual incident including exposure and touching
- Any episode of physical aggression towards property including fire-setting

107 (76.4%) patients involved in a violent incident

All three scales failed to predict a positive outcome with greater than chance accuracy with AUC values of .557, .524 & .524.

ROC Curve: any incidents

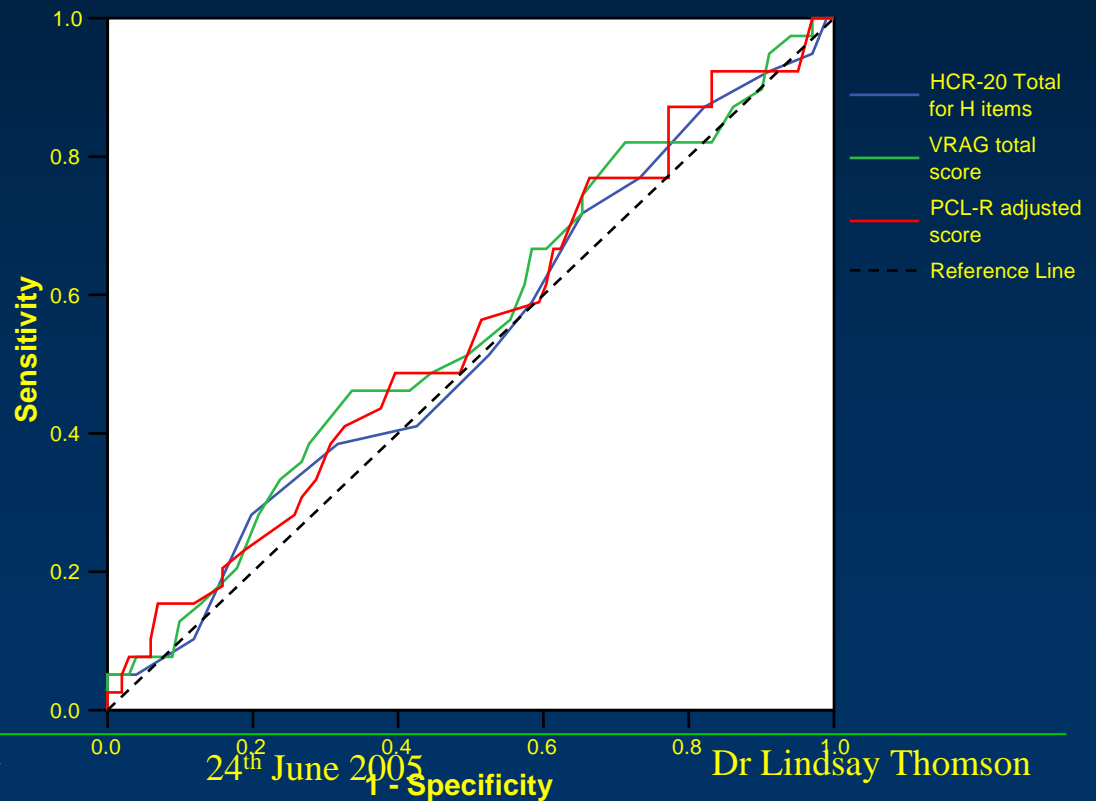


Any serious incidents

A serious incident was here defined as being any physical violence resulting in injury, any sexual contact incident and any fire-raising/setting, with data being aggregated from both case notes and SCRO data.

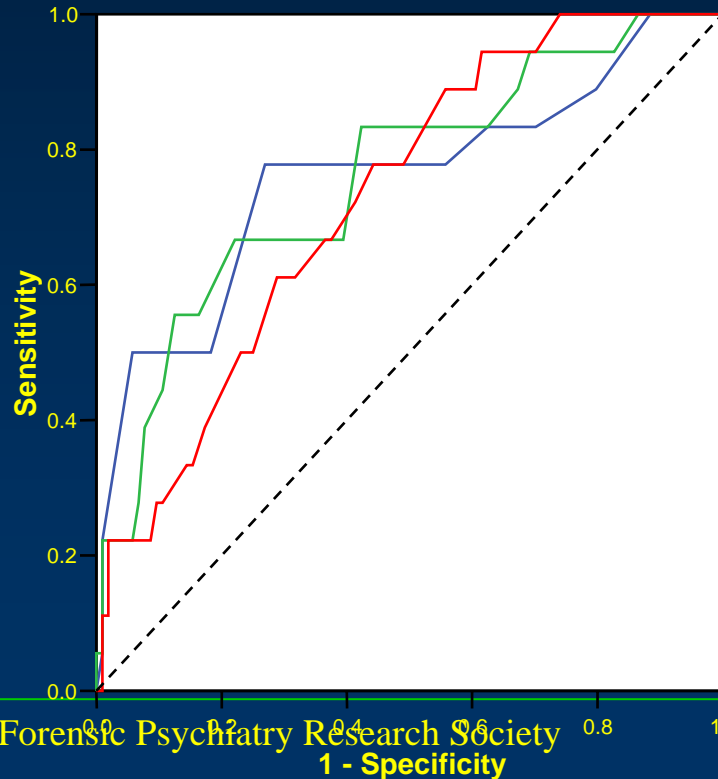
39 (27.9%) patients involved
 Again, all three scales failed to predict a positive outcome with much greater than chance accuracy with AUC values of .527, .549 & .544.

ROC Curve: any serious incident



Any recidivism

ROC Curve: any recidivism



Source of the Curve

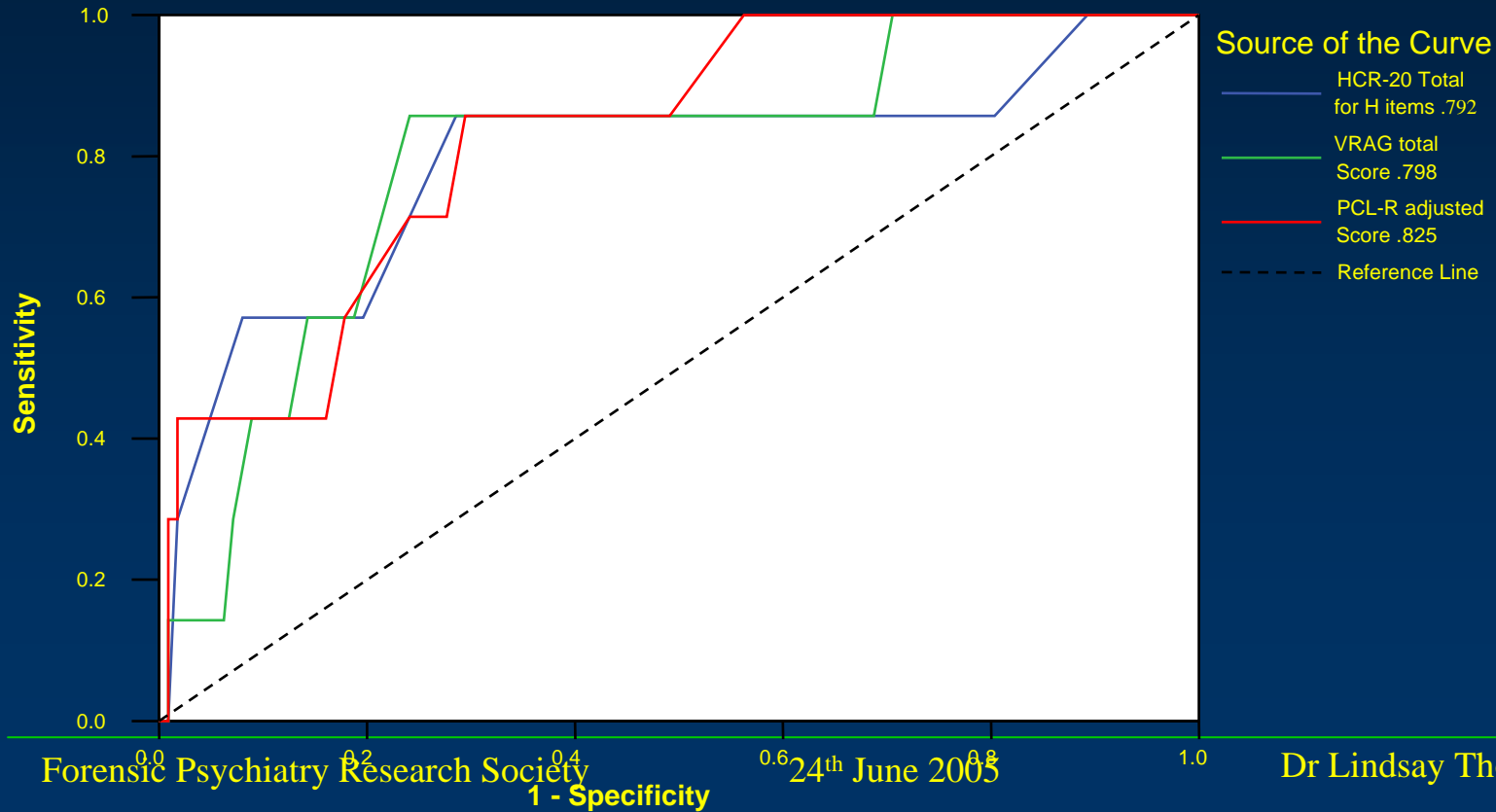
- HCR-20 Total for H items
- VRAG total score
- PCL-R adjusted score
- - - Reference Line

18 (14.8%) patients received a conviction

When the outcome variable was further narrowed to incorporate only those patients who received a conviction during the follow-up period (i.e. one recorded in either case note or SCRO data), all three scales achieved moderate accuracy in predicting a positive outcome with AUC values of .758, .759 & .726 .

Violent recidivism

ROC Curve: any violent recidivism



Risk Assessment Measures

| <u>Author</u> | <u>Sample</u> | <u>Measure</u> | <u>Outcome</u> | <u>AUC</u> |
|--------------------|---------------|----------------|-----------------------|-------------|
| Cooke (2001) | Prisoners | H-10 | Viol. Recid./prison | 0.69 / 0.69 |
| | | VRAG | | 0.67 / 0.67 |
| Doyle (2002) | MSU | PCL:SV | Any violence | 0.76 |
| | | VRAG | | 0.71 |
| | | H-10 | | 0.70 |
| Gray (2003) | MSU | HCR-20 | Physical Aggression | 0.81 |
| | | PCL_R | | 0.70 |
| | | BPRS | | 0.84 |
| Gray (2004) | MSU | H-10 | Any offence / serious | 0.62 / 0.57 |
| | | PCL-R | | 0.66 / 0.58 |
| | | OGRS | | 0.71 / 0.71 |
| Daffern (in press) | High | LSI-R | Violence | 0.59 |

Results: ROC analysis for frequency of incidents and serious incidents

Any incident

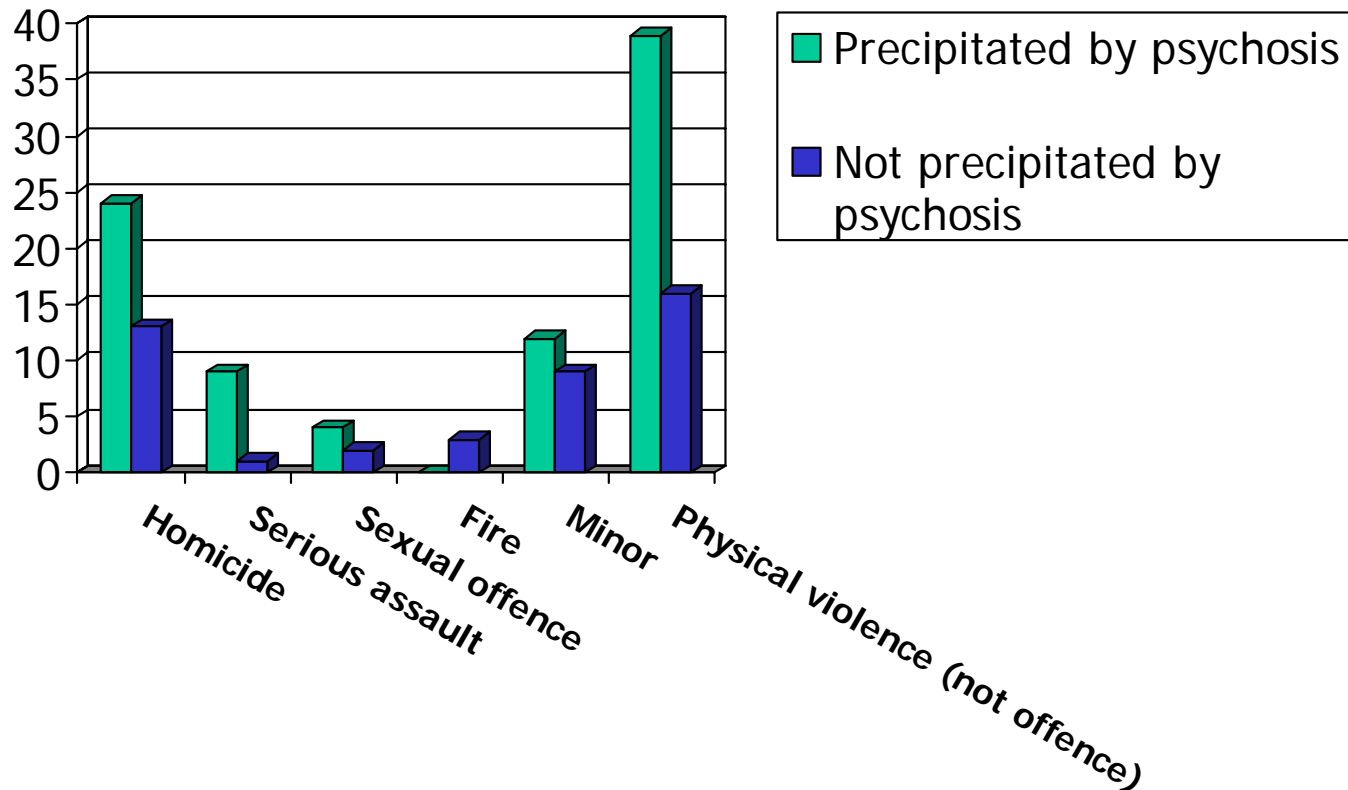
| Threshold/N | H-scale | VRAG | PCL-R | Man | PYPS |
|--------------------------------|---------|------|-------|-------|--------|
| Median/69 | .604 | .557 | .597 | .620* | .629** |
| 75 th percentile/35 | .551 | .545 | .564 | .641* | .709** |
| 90 th percentile/14 | .510 | .507 | .520 | .697* | .686* |

Any serious incident

| Threshold/N | H-scale | VRAG | PCL-R | Man | PYPS |
|--------------------------------|---------|------|-------|------|------|
| 75 th percentile/35 | .538 | .547 | .536 | .584 | .537 |
| 90 th percentile/13 | .617 | .612 | .616 | .515 | .532 |

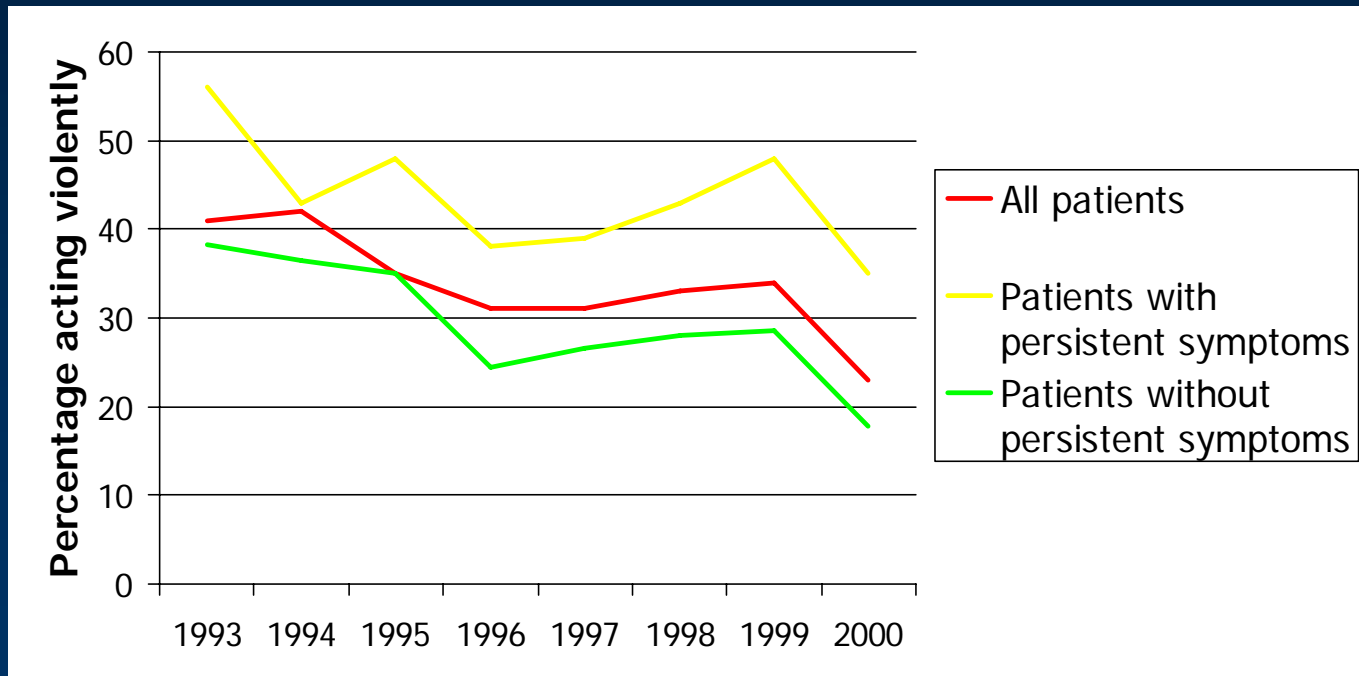
* Significant at 0.05 level. ** Significant at 0.01 level

Symptoms and Index Behaviour



Symptoms and Violence over 8 Years

Patients with and without persistent positive symptoms



Results: Symptom Severity and Persistence

Manchester Rating Scale

- Mean 7.04 (S.D. 5.12, n 0-19)
- Predicts frequency of incidents
- Average score significantly less if violent offence
- Predicts NOT committing a violent offence

Proportion of Years with Positive Symptoms

- Mean 0.584 (S.D. 0.350, 0-1)
- Average score significantly greater if incident
- Predicts any incident & frequency of incidents

Results: Risk Assessment Scales and Prediction of “Non-Psychotic” Incidents

| Measure | ROC curves: AUC values | | |
|----------------------|------------------------|------|-------|
| | H-Scale | VRAG | PCL-R |
| Any incident | .631 | .626 | .621 |
| Any serious incident | .604 | .651 | .578 |

Conclusions

- Incidents were common but serious violence was rarer
- PCL-R, VRAG & H10 predict recidivism and violent recidivism
- PCL-R, VRAG & H10 do NOT predict incidents or serious incidents
- PCL-R, VRAG & H10 may predict more frequently occurring serious violence
- Psychotic symptoms are more relevant to the prediction of incidents

Future Work

- Risk Assessment and Management Strategy
- Prospective Research
- Short term measures of assessment
 - Dynamic Appraisal of Inpatient Aggression
- Risk Management Authority



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Methodology

Original 1992-93

- n=241
- Case notes
- Drug charts
- Patient interview
- Psychiatrist & Psychologist
- RMO interview
- Key worker interview

Outcome 2000-01

- Follow-up n = 169
- Criminal records
- Psychopathology
- Treatment
- Progress
- Offending/violent incidents
- Social functioning

Left High Security: Logistic Regression

SHS 82.4%

- ↑ Drug abuse
- ↓ Current positive symptoms
- ↓ Index offence
- ↑ Socio-economic status unknown

SHS & Follow-up 82.4%

- ↓ Index offence
- ↑ Socio-economic status unknown
- ↑ Drug abuse
- ↓ Any incident
- ↓ Positive symptoms during follow-up

Any Incident: Logistic Regression

SHS 85.4%

- ↓ Serious index offence
- ↑ Violence leading to admission
- ↓ Stranger as victim
- ↑ Oral neuroleptic Rx
- ↑ Telephone calls
- ↑ DAS overactivity
- ↑ Property incidents

SHS & Follow-up 87.1%

- ↓ Serious index offence
- ↑ Violence leading to admission
- ↓ Stranger as victim
- ↑ Social Dysfunction and Aggression total

Serious Incident: Logistic Regression

SHS 77.4%

- ↑ Use of illicit drugs
- ↓ Grounds access
- ↑ Prescribed lithium – ever
- ↓ Previous violent convictions

SHS & Follow-up 79.3%

- ↑ Use of illicit drugs
- ↓ Grounds access
- ↓ Previous violent convictions
- ↑ Social Dysfunction and Aggression total
- ↑ Akathisia

Recidivism: Logistic Regression

SHS 90.9%

- ↑ Telephone calls
- ↑ Alcohol / drug dependence
- ↓ Symptoms on discharge
- ↓ DAS overall behaviour
- ↓ PSE incoherent speech
- ↓ Previous sexual crime

SHS & Follow-up 90.9%

- ↑ Telephone calls
- ↑ Alcohol / drug dependence
- ↓ DAS overall behaviour
- ↓ PSE incoherent speech
- ↓ Previous sexual crime
- ↓ Symptoms on discharge



Conclusions

- Transfer
 - symptoms and index offence
- Incidents and Serious Incidents
 - on going social dysfunction & aggression, and symptoms
- Recidivism
 - alcohol and drug abuse

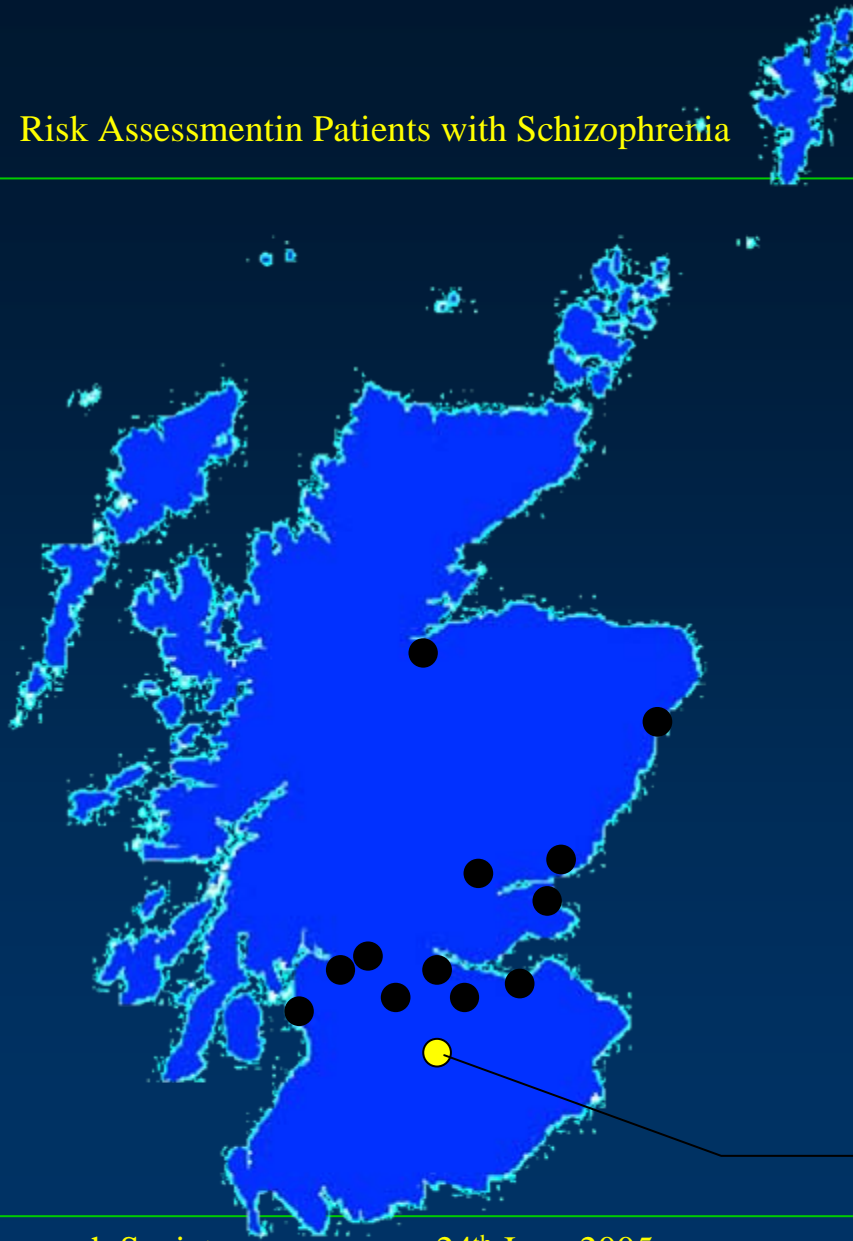
Future Work

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Schizophrenia and Violence: An Outcome Study

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HIGH