Patterns of Seclusion/Restraint Use at a State Psychiatric Hospital
Introduction

- Seclusion and Restraint use has been controversial since the time of Pinel (1794), but over the last decade ......
- Hartford Courant
- JCAHO
- CMS
- Psychiatric Services (2005)
- NASMHPD (Glover, 2005)
- SAMSHA
Seclusion/Restraint Use at Fulton State Hospital

- Fulton State Hospital (1856)
- Maximum, intermediate and minimum security facilities
- It is a good proxy measure of serious aggression
- We have good data on S/R
- 30% of all patient injuries are directly or indirectly related to S/R use
- 70% of all staff injuries are directly or indirectly related to S/R use
- Are patients who are ‘high utilizers’ of S/R both dangerous to self and dangerous to others?
- Injuries can occur to either patients or staff during the aggressive incident which triggers S/R use in the first place…. Or during the containment process which involves applying S/R
- Collateral injuries can also occur!
S/R as a ‘Proxy Measure’ of Aggression (and other issues)

- Passionate differences in opinion on some of these issues
- Do away with S/R altogether (inhumane, unnecessary) vs. some level of S/R use is a necessary component of a safe and effective ward milieu
- Clearly, S/R use represents a decision on the part of staff to employ S/R (what are the variables associated with making this choice)?
- What is the relationship between S/R use and aggressive behavior on the part of patients? Does one cause the other? Is ‘reciprocal augmentation’ involved?
- Could S/R use both increase and decrease patient aggression, depending on how S/R procedures are employed?
- Are there better ways of controlling patient aggression that S/R use?
The Current Project within the Context of These Issues

- Take a research oriented, objective view of this topic
- Are there discernable patterns of S/R use over time? In particular, are there identifiable groups of patients with characteristic S/R use patterns?
- If there are, what are the characteristics of these groups?
- Focus on a limited number of variables which might be associated with S/R use, in this case patient diagnostics, demographics, past history of S/R use and aggressive behavior in institutional settings
- Hope that this might provide us with some ways to reduce S/R use, as well as patient aggressive behavior via the identification of patients who are ‘high risk’ in the sense that they are more likely to end up in S/R, regardless of whether one feels that S/R is warranted or unwarranted, preventable or not.
- Acknowledge the relevance of a host of other variables which might account for important sources of variance, including variables associated with staff decision making, institutional policies and procedures, institutional atmosphere, etc.
Research on Seclusion/Restraint

- Hundreds of studies; a multitude of topics
- Characteristics of patients most likely to be secluded or restrained (building a ‘profile’ of a typical ‘high risk’ patient)
- Hold forth the possibility of early identification and intervention
- Disrupt the cycle of violence?
Traditional Approaches to S/R data analysis

- Aggregate (compute means) of S/R data over patients, wards, time periods
- Compare and contrast groups of patients formed in this manner, for instance...
- Patients secluded or restrained during a specified time period vs. those not secluded or restrained
- Use of arbitrary cut-off scores to create groups
- Plot aggregated S/R data over time...by ward, treatment program, treatment facility
An alternative approach…trajecories of change

- Traditional approaches have their place, but….
- Rather than immediately aggregating or averaging S/R data….which obscures individual differences
- An alternative strategy is to look at individual patient data sets, which consist of day-by-day records of the incidence or frequency of S/R use
- Not aggregated over patients, a single time period, treatment units, facilities, etc.
- Thus, the fundamental units of analysis consists of a series of individual patients’ ‘trajectories’
- Not defined based on arbitrary cut-off scores, or a single value derived from aggregating seclusion/restraint data from an arbitrarily selected time frame
Data Analysis Methods: A Two phase process

- Looking at data consisting of trajectories requires a non-traditional statistical approach (can’t use t-tests!)
- Growth mixture modeling/Latent class or profile analysis
- Phase 1: Find classes or ‘groups’ of subjects with relatively homogeneous trajectories (if they actually exist!)
- Phase 2: Look for class characteristics that could be used for the purposes of early identification (and therefore intervention)
Current Study (Beck et. al., 2008)

- Fulton State Hospital
- 622 patients
- Admitted after September 2001
- At least two months in hospital
- S/R data over a two year period, broken down into 12, two-month time intervals
- So imagine yourself this evening, with 622 individual subject graphs laid out on the kitchen table, asking the question ‘Is there a way I can sort these into meaningful groups?’
Average Number of S/R Episodes Per Client (traditional approach)
Average Number of S/R Episodes, by Class
Average Number of S/R Episodes, by Class
Average Number of S/R Episodes, by Class
Results

- Very strong evidence for the existence of three ‘classes’ of patients (not just the use of an arbitrary cut-off to create ‘groups’)
- High-Medium-Low (7%, 23%, 70%)
- Patients get ‘into’ their respective classes very quickly, certainly within the first few months
- High class consists of only 41 out of 622 patients
- High and medium classes appear to diminish in terms of S/R use over time, but even after two years, they remain somewhat distinct from the low class
### Injury Data and Class Membership

<table>
<thead>
<tr>
<th>Class Membership (n)</th>
<th>Mean Injuries During Hospital Course (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1 (443)</td>
<td>0.87 (3.05)</td>
</tr>
<tr>
<td>Class 2 (138)</td>
<td>9.18 (11.0)</td>
</tr>
<tr>
<td>Class 3 (41)</td>
<td>25.24 (20.90)</td>
</tr>
</tbody>
</table>
Class 3 Patients 75 times more likely to be Physically Abused

<table>
<thead>
<tr>
<th>Class Membership (N=622)</th>
<th>Physical Abuse (N=18)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class 1</strong> (443)</td>
<td>.2% (1/443)</td>
</tr>
<tr>
<td><strong>Class 2</strong> (138)</td>
<td>8% (11/138)</td>
</tr>
<tr>
<td><strong>Class 3</strong> (41)</td>
<td>15% (6/41)</td>
</tr>
</tbody>
</table>
Risks associated with Trajectory Class Three Membership

- 29 times more likely to be injured or cause an injury
- 7 times more likely to be abused/neglected
- 75 times more likely to be physically abused
Phase 2: Predictors of Class Membership upon Admission

- Age (younger = higher risk)
- Admission code (voluntary by guardian, transfers from jail / DOC)
- Previous hospitalization
- Marital status (never married)
- Employment history (never worked)
- Diagnoses: Borderline PD, Antisocial PD, & Intermittent Explosive Disorder; Alcohol/Drug (protective)
Accuracy of Prediction at Admission

<table>
<thead>
<tr>
<th>Actual class</th>
<th>Predicted class</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Low</td>
<td>418</td>
<td>23</td>
<td>1</td>
</tr>
<tr>
<td>Medium</td>
<td>Medium</td>
<td>93</td>
<td>36</td>
<td>6</td>
</tr>
<tr>
<td>High</td>
<td>High</td>
<td>11</td>
<td>19</td>
<td>10</td>
</tr>
</tbody>
</table>

- \( N = 617 \) clients; \( 75.2\% \) hit rate
Predictors of Class Membership after Two Months

- First two months of S/R use
- Admission code (voluntary by guardian, transfers from jail / DOC)
- Age (younger age)
- Previous hospitalization
- Marital status (never married)
- Intermittent Explosive Disorder
### Accuracy of Prediction after Two Months

<table>
<thead>
<tr>
<th>Actual class</th>
<th>Predicted class</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Low</td>
<td>438</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Medium</td>
<td>Low</td>
<td>48</td>
<td>81</td>
<td>9</td>
</tr>
<tr>
<td>High</td>
<td>Low</td>
<td>3</td>
<td>7</td>
<td>31</td>
</tr>
</tbody>
</table>

- \( N = 622 \) clients; 88.4% hit rate
S/R by Predicted Trajectory

Class: Admission/Two Month

- Class 1: 1.41 / 0.65
- Class 2: 3.21 / 7.89
- Class 3: 13.07 / 20.80
Use predictive equations to categorize new admissions (or currently hospitalized patients) and thereby permit early identification of intramural & treatment needs.

Develop interventions that are specific to individuals in the High Class (administrative segregation, diversion to other facilities?)

Provide specialized training for staff who work with these individuals (training in dispute resolution skills?)

Fast-track those who are in the Low Class

Facility design and construction
Directions for Future Research

- Multi-institutional, statewide study
- Studies of trajectory class three patients (Hammer et al, in press)
- Additional Sources of Variance; staff/patient interactions
Additional Sources of Variance

- Patients
- Staff
- Ward atmosphere and treatment milieu
- Institutional leadership and policies
- 2, 3 and 4 way interactions involving these variables
- Eg. staff/patient interactions
Interactional patterns characteristics of staff who had been assaulted vs. those not assaulted

Staff blame patients (psychosis)/Patients blame staff (aversive staff/patient interactions)

SRIC (Paul and Lentz, 1977)

26,000 hours; 10 years

Compared staff who had been assaulted to those who had not been assaulted on 105 variables

Limit Setting

Activity Demand

Denial of Requests
S/R Incident Coding

- 2 raters, 90% agreement
- Physical Aggression/staff: 69%
- Verbal Aggression/staff: 15%
- Physical Aggression/patients: 22%
- Verbal Aggression/patients: 12%
- Self-Harm: 29%
- Not mutually exclusive categories!
NMPRC 2-Class Solution

Days since admission vs. aggressive incidents for NMPRC High and NMPRC Low.
The graph illustrates the Composite 2-Class Solution with data representing different classes: NMPRC High, NMPRC Low, FSH – S/R excluding MHO. The x-axis represents the days since admission, while the y-axis shows the number of aggressive incidents. The graph displays trends over time for each class, indicating how the number of aggressive incidents changes as days since admission increase.
Hundreds of the nation’s most vulnerable have been killed by the system intended to care for them.

Deadly Restraint

A FIVE-PART SERIES
Directions for the Future

- Bootstrap and cross-validate the model (Durrett et al, in preparation); (new sample of 666 subjects from Fulton)
- ‘Mine charts’ and other records to improve predictive accuracy (past history of persistent institutional misconduct, history of persistent self harm, suicidality)
- 90 day staffing (both prospective and retrospective)
- Classify and code S/R events (aggression vs. self-harm)
- Staff/Patient interactions (Newbill et. al., Psychological Services)
Review of the Literature

- Way and Banks (1990)
- 23 Psychiatric Hospitals in the State of New York
- Reviewed seclusion/restraint records over a four week period
- 657 patients secluded/restrained, 22,929 not secluded restrained
- Younger, female, involuntarily hospitalized
Jonikas et. al. (2004)

Three psychiatric units at a University Hospital

Aggregated seclusion/restraint data by ward, then plotted data over time

Examined the results of an intervention program and documented decreases associated with program introduction
Trajectory Class Membership and Abuse/Neglect

- Six categories (Physical, Sexual, Verbal; Neglect 1 and 2, Misuse of funds or property)
- On 622 patients during the course of the study, 305 abuse/neglect allegations were filed
- ...and 63 of these were substantiated (about 10%)
<table>
<thead>
<tr>
<th>Class</th>
<th>Total Reports (305)</th>
<th>Substantiated Reports (63)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1 (443)</td>
<td>19%</td>
<td>5%</td>
</tr>
<tr>
<td>Class 2 (138)</td>
<td>38%</td>
<td>21%</td>
</tr>
<tr>
<td>Class 3 (41)</td>
<td>66%</td>
<td>37%</td>
</tr>
</tbody>
</table>
Methodology

- Examine hypotheses pertaining to the existence of latent groups, identifiable via discernable patterns in the variable(s) of interest.
- If there is strong evidence to support the existence of reasonably discrete latent groups, proceed with the use of multivariate statistical procedures which attempt to predict class membership, a la’ our existing work on S/R.
- And if not, proceed directly to multivariate statistical procedures to build ‘profiles’ of high risk patients.
- Almost universally encountered outcome; two groups of subjects (eg., predict positive, predict negative) with dramatically different rates of the behavior in question, eg., 30% vs 1-2%, in a total sample with a baserate of 10-20%.
Risk?

- Behaviors which place self, others (or both) at risk of physical or psychological injury
- Role? Victim/Perpetrator/Bystander
- Aggressive behaviors
- Self-injurious behaviors
- Inappropriate sexual behaviors
- Elopement or attempted elopement
Demonstration

TJ demonstration.mdb
Average number of S/R episodes per client, by class

High Class (7%, 41)
Medium Class (23%, 138)
Low Class (70%, 443)
Extending Multivariate Prediction Models to other Settings

- Identify data sets which reliably encode consumer behaviors associated with high risk to self/others, such as.......
- Self-harm behaviors, aggressive behaviors, inappropriate sexual conduct behaviors, incident/injury reports, abuse/neglect reports
- Large Ns, reasonably high base rates, recorded over extended time periods