Tradeoffs of Different Data Collection Designs and Other Methodological Considerations in Measuring Recovery

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Presentation Goals

- Identify and illustrate some of the common data collection designs/strategies/issues for measuring recovery
- Review the strengths and limits of SAMHSA’s current data collection design for measuring recovery
- Illustrate how the common data collection designs could help SAMHSA to better measure recovery
- Show how multi-morbidity is common and impacts rates of remission, service utilization and costs
COMMON DATA COLLECTION STRATEGIES
## Some Common Data Collections Strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Questions they address</th>
<th>Pros</th>
<th>Cons</th>
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<tbody>
<tr>
<td>1. Duration Question</td>
<td>1a. Prevalence of various durations</td>
<td>Low burden</td>
<td>Potential recall bias</td>
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<td></td>
<td>1b. Change in facets of recovery over duration</td>
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<td>2. Multiple Intervals or Recency</td>
<td>2a. Prevalence of problems in different periods</td>
<td>Clear remission; Moderate burden</td>
<td>Pot. recall bias; Limited number of combinations</td>
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<td>2b. Prevalence of remission (lifetime but not past year).</td>
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<td>3. Event History</td>
<td>3a. Prevalence of various durations</td>
<td>Can be summarized multiple ways</td>
<td>Pot. recall bias; Burden rises rapidly with number of dimensions</td>
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<td></td>
<td>3b. Change in facets</td>
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<td></td>
<td>3c. Number/patterns of episodes</td>
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<td>3d. Trajectories and trends</td>
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<td>4. Repeated Measures</td>
<td>4a. Examine pattern of change within individuals</td>
<td>Low recall bias;</td>
<td>Logistically more difficult</td>
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<td>4b. Evaluate predictors of transition</td>
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Two other cross-cutting issues are:

- The role of multi-morbidity and quality of life
- The impact on above on service utilization and costs
SAMHSA’S CURRENT DATA COLLECTION DESIGN FOR MEASURING RECOVERY
Strengths and Limits of SAMHSA’s Current Strategy

- National Survey on Drug Use and Health (NSDUH) focuses on:
  - Very large cross-section sample by state planning districts
  - Prevalence, recency and frequency of substance use
  - Past year substance use disorder (SUD) symptoms by substance
  - Some symptoms of mood disorders
  - Prior diagnosis related to mood or anxiety
  - 7 measures of past year service utilization (arrest, substance use outpatient/residential, mental health outpatient/hospital, physical health emergency department/hospital)

- Some of the key things the NSDUH lacks:
  - Duration of abstinence, multiple time periods, event history, or repeated measures for SUD or Other Mental Disorders (OMD)
  - Measures of OMD related to internalizing (anxiety, trauma, suicide) or externalizing (attention, hyperactivity, gambling, impulse control) to calculate prevalence of condition or remission
  - Multi-morbidity and Quality of Life (QOL)
  - Detailed service utilization and cost
CSAT Government Performance and Results Act (GPRA) measure focuses on:
- Intake, 6 months, and discharge (records only) on patients served by grants
- Past month detailed days of substance use by substance and days of mental health problems by symptoms
- Past month days of service utilization on 12 areas self-reported (substance use, mental health, and physical health outpatient, inpatient, and emergency department; days of medication; arrest, incarceration) and for treatment episode from record in over 40 areas
- Lifetime trauma symptom screener
- Past 30 day social connectedness

CMHS GPRA measure focuses on:
- Intake, 6 months, and discharge (records only) on patients served by grants
- Past month likert measures of functioning, substance use, depression and trauma symptoms, perception of care, social connectedness
- Yes/no on 20 types of service utilization during the treatment episode
Some key limits:

- No formal measure of SUD or most OMD prevalence, multi-morbidity, or quality of life
- No lifetime, recency, duration or event history to allow estimation of severity or remission
- No measure (diagnosis or days) related to externalizing OMD (e.g., ADHD, CD) that are the most common for youth and still very common for young adults
- No published psychometrics, map onto existing literature, linkage to each others or NSDUH norms
- Both measures lack 6-month self-reported measures of utilization to cover the time of services provided and thus limit their utility for representing what is received or its costs (typically the most in the first 3 months that are missed) and their records measure miss what was received from others
- CSAT measure is long (to the point of often limiting the use of other measures) and has many redundant items
- CMHS measure has likert and yes/no items that may have difficulty measuring change and/or estimating service utilization/costs
1. DURATION

1a. Prevalence of various durations

1b. Change in facets of recovery over duration
Illustration of How the Duration of Abstinence Predicts the Risk of Relapse in the Next Year

After 1 to 12 months of abstinence, 2/3rds of people will relapse within the next year.

After 1-3 years of abstinence, 1/3rds will relapse within the year.

After 4-7 years of abstinence, 14% relapse within the year.

% Relapsing within the Next 12 Months

1 to 12 months: 64%
1 to 3 years: 35%
4 to 7 years: 14%

Duration of Abstinence
(based on event history, interviews, and urine testing)

Source: Dennis, Foss, & Scott (2007). An eight-year perspective on the relationship between the duration of abstinence and other aspects of recovery. Evaluation Review, 31(6), 585-612.)
Illustration of How the Duration of Abstinence is Related to Other Aspects of Recovery

<table>
<thead>
<tr>
<th>Duration of Abstinence</th>
<th>1-12 Months</th>
<th>1-3 Years</th>
<th>4-7 Years</th>
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<tbody>
<tr>
<td>More clean and sober friends</td>
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<tr>
<td>Less illegal activity and incarceration</td>
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<td>Less homelessness, violence, and victimization</td>
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<td>Less use by others at home, work, and by social peers</td>
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<tr>
<td>Virtual elimination of illegal activity and illegal income</td>
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<td>Better housing and living situations</td>
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<tr>
<td>Increasing employment and income</td>
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<tr>
<td>More social and spiritual support</td>
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<tr>
<td>Better mental health</td>
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<tr>
<td>Housing and living situations continue to improve</td>
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<tr>
<td>Dramatic rise in employment and income</td>
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<td>Dramatic drop in people living below the poverty line</td>
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Duration of “SUD Remission” is Related to Improved Quality of Life

The duration of remission works the same way – here compared to quality of life as continuous measures or endpoints.

The odds ratio (OR) relative to current disorder is significant for 1-3 years remission (OR=1.71, p<.05) and >3 years in remission (OR=1.95, P<.05).

Significantly different by group, F(2,1006) = 5.01, p <.01.

\( a \) Odds Ratio (OR) relative to current disorder significant for 1-3 years remission (OR=1.71, p<.05) and >3 years in remission (OR=1.95, P<.05)

\( b \) Significantly different by group, F(2,1006) = 5.01, p <.01.
2. MULTIPLE INTERVALS OR RECENCY

2a. Prevalence of problems in different periods

2b. Prevalence of remission (lifetime but not past year).
Remission Rates by Diagnostic Class and Diagnosis

Source: Dennis et al., (under review) The prevalence and rate of remission from DSM-IV substance use and other mental disorders in the National Comorbidity Survey Replication. Normal, IL: Chestnut Health Systems.
Remission rates also related to the number of disorders across classes.

Source: Dennis et al., (under review) The prevalence and rate of remission from DSM-IV substance use and other mental disorders in the National Comorbidity Survey Replication. Normal, IL: Chestnut Health Systems.
3. EVENT HISTORY

3a. Prevalence of various durations
3b. Change in facets
3c. Number/patterns of episodes
3d. Trajectories and trends
Event History Measures

- Can be frequency or quantity of use or problems by date on a calendar like a timeline follow-back / form 90
- Can also capture start and end dates for episodes of abstinence, treatment, incarceration or other things in more of a log format
- Can then be used to approximate repeated measures by summarizing across multiple combinations of time periods – e.g., rates per week or year

Key Limits include:

- They are typically time consuming to collect so the more dimensions you measure the longer they take.
- Can be difficult to have the right temporal order. Timing of predictors unless they are also collected with event history
4. REPEATED MEAURES

4a. Examine pattern of change within individuals

4b. Evaluate predictors of transition
There is an Ecological Fallacy When Understanding Change at the Cohort Level

At the group level, there appears to be a steady improvement, particularly around the time of treatment.

There is Actually a Complex Course of Relapse, Incarceration, Treatment, and Recovery at the Individual Level

- In the Community Using (53% stable)
- In Treatment (21% stable)
- Incarcerated (37% stable)
- In Recovery (58% stable)

P not the same in both directions

Over half change status annually, moving in all possible directions

Treatment is the most likely path to recovery

There is Actually a Complex Course of Relapse, Incarceration, Treatment, and Recovery at the Individual Level

**Probability of Transitioning from Using to Abstinence**
- mental distress (0.88) + older at first use (1.12)
- ASI legal composite (0.84) + homelessness (1.27)
  + # of sober friend (1.23)
  + per 8 weeks in treatment (1.14)

There is a Probability of Sustaining Abstinence
- times in treatment (0.83) + female (1.72)
- homelessness (0.61) + ASI legal composite (1.19)
- number of arrests (0.89) + # of sober friend (1.22)
  + per 77 self help sessions (1.82)

ACCOUNTING FOR THE EFFECTS OF MULTI-MORBIDITY, SERVICE UTILIZATION AND COSTS TO AVOID MODEL SPECIFICATION ERRORS
Prevalence of Six Common Past Year Problems in the NSDUH

Any Health Problems: 36%
Missed Any Work: 15%
Any Mental Health Problem: 14%
Any Substance Use Disorder: 9%
Any School Problem: 8%
Any Justice System Involvement: 4%
Any Violence: 2%

No. of Problems:
- None: 40%
- One: 41%
- Two: 15%
- Three - Six: 5%

Source: 2011 NSDUH
SUD Severity is Strongly Related to Multi-Morbidity

Source: 2011 NSDUH
SUD Severity is Also Related to Health Care Utilization Costs (2012$)

Source: 2011 NSDUH
Comorbidity Even More Related to Health Care Utilization Costs (2012$)

Number of 6 Common Problems

- None: 13% $7,600+
- One: 19% $1 - $7,599
- Two: 28% $0
- Three to Six: 36% $0

More likely (OR=3.8) to have high health care costs

Source: 2011 NSDUH
Service Utilization and Cost

- Mental health research has consistently shown that multimorbidity (3+ diagnoses) is the norm among those who present to treatment and the primary distinction between who gets services or not.

- While program evaluation and even clinical trials comparing evidenced based practices often have similar clinical outcomes – their cost and cost outcomes are typically significantly different.

- NIH common data workgroup (www.phenx.org) recommended a common set of 15 measures of service utilization (from the GAIN) and quality of life (from EQ5D) that already have extensive norms and that economist have already valued.
CONCLUSION
Key Take Away Messages

- Recovery is a process where it is important to understand how long it lasts and how facets change over time.

- Measuring remission (lifetime but not past year) is feasible but requires at least two periods, recency or repeated measures.

- Because people cycle through multiple periods of using, incarceration, treatment and recovery, it is important to examine change within person and the predictors of transition.

- Multiple morbidity is common and impacts the rates remission, service utilization and cost—suggesting it is important to measure and understand.

- It would be useful if NSDUH and GPRA better supported program evaluation—suggesting the need for more integration, norms and cross validation.
Recommendations

- On a subset oversampling those with disorders/likely to show to services, add a longitudinal component to the NSDUH
  - Only if not viable, collect event history data

- Create national norms from NSDUH (including relative to change), examine construct/predictive validity, and compare to other measures so that it can support program evaluation

- Have a subset of common measures in the NSDUH and two GPRA measures so that the above benefits the later

- Add/expand Phenx recommended or similar measures of:
  - Duration of abstinence
  - Recency of symptoms for SUD, internalizing and externalizing disorders to allow estimation of remission
  - Quality of life
  - Service utilization