Needs-Based Planning & Demand Modelling

A tiered model for substance use severity and life complexity for the Victorian AOD sector

Fiona Barker
20 February 2015

Project Team:
Dr Barbara Hunter
Dr Michael Savic
Professor David Best
Professor Dan Lubman
Definitions

• Demand modelling
  • system-level analysis of demand and need for AOD services

• Needs-based planning
  • a comprehensive systems-level planning model or framework that is informed by population needs and is used to guide the allocation of resources
Our approach

• Model needed to:
  • reflect population health principles
  • consider both AOD issues and life complexity
  • use available data
  • be simple in the first instance

• Available data from the standardised AOD screen (online n=2314 and F2F n=583)

• Very little international research
The Rush Model - Canada

- Population health approach to AOD tx system
- Metrics that could translate to available data

**CORE SYSTEM PRINCIPLES FOR ACCESS AND INTEGRATION ACROSS FUNCTIONS**
- Any Door is the Right Door
- Simultaneous/Sequential Tier Involvement
- Graduated Integration
  - Linkages across Tiers & with other Service Systems

**TIER 1**
Population-based health promotion and prevention functions targeted at the general population

**TIER 2**
Early Intervention and Self-Management functions targeted to people at risk

**TIER 3**
Treatment planning, risk/crisis management and support functions targeted to individuals with identified problems.

**TIER 4**
Specialized care functions targeted to people assessed/diagnosed as in need of more intensive or specialized care.

**TIER 5**
Highly specialized care functions targeted to individuals with complex problems

**CORE SERVICE SYSTEM PRINCIPLES**
- Consumer Involvement
- Cultural Competence
- Determinants of Health
- Family Involvement
- Harm Reduction
- Psychosocial Supports
- Self-Management

Increasing problem severity and complexity

Increasing need for more intensive treatment
### The Rush Model - Canada

<table>
<thead>
<tr>
<th>Tiers</th>
<th>Ontario Tiers Model (Rush et al. 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Abstainers. Light to moderate drinkers/users. <em>Need no treatment, health promotion only</em></td>
</tr>
<tr>
<td>2</td>
<td>Heavy/binge drinkers or drug users. Few problems related to substance use. Do NOT meet DSM criteria for alcohol or drug dependence. <em>Early/brief interventions</em></td>
</tr>
<tr>
<td>3</td>
<td>≥4 substance use related problems OR meet DSM criteria for alcohol or drug dependence. <em>Primary treatment</em></td>
</tr>
</tbody>
</table>
| 4     | Several substance use related problems OR meet DSM criteria for alcohol or drug dependence AND  
1. positive response to “during last 12 months, was there ever a time when you felt you needed help for emotions, mental health or use of AOD but didn’t receive it?” OR  
2. utilized formal health services because of mental health or substance use issues within the past 12 months OR  
3. showed significant interference in some aspect of their lives from AOD use  
*Treatment with some case management* |
| 5     | In need of specialised and intensive medical/psychiatric service functions. Meet criteria for Tier 4 AND  
1. met DSM criteria for ≥2 (of 5) mental diagnoses), AND  
2. had ≥1 mental disorders with significant interference for at least one of these disorders, AND  
3. had a physical or mental condition that reduced ability sometimes/often in 1 of 4 areas (home, work, school, leisure)  
*Complex case coordination* |
Assessing complexity

<table>
<thead>
<tr>
<th>New clients complexity category</th>
<th>Complexity score</th>
<th>Existing clients complexity category</th>
<th>Complexity score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnant</td>
<td>-5</td>
<td>Cocaine 1-3 days*</td>
<td>-5</td>
</tr>
<tr>
<td>In work 1-28 days*</td>
<td>-4</td>
<td>Cocaine 4-28 days*</td>
<td>-5</td>
</tr>
<tr>
<td>In education 1-28 days*</td>
<td>-2</td>
<td>In work 1-28 days*</td>
<td>-5</td>
</tr>
<tr>
<td>Physical health score &gt;=12</td>
<td>-2</td>
<td>Pregnant</td>
<td>-5</td>
</tr>
<tr>
<td>Psychological health score &gt;=11</td>
<td>-1</td>
<td>In education 1-28 days*</td>
<td>-3</td>
</tr>
<tr>
<td>Quality of life score &gt;=12</td>
<td>0</td>
<td>Physical health score &gt;=12</td>
<td>-1</td>
</tr>
<tr>
<td>Cocaine 1-3 days*</td>
<td>0</td>
<td>Psychological health score &gt;=11</td>
<td>0</td>
</tr>
<tr>
<td>Cocaine 4-28 days*</td>
<td>1</td>
<td>Male</td>
<td>0</td>
</tr>
<tr>
<td>Cannabis 1-19 days*</td>
<td>0</td>
<td>Quality of life score &gt;=12</td>
<td>0</td>
</tr>
<tr>
<td>Cannabis 20-28 days*</td>
<td>1</td>
<td>Amphetamines 1-6 days*</td>
<td>1</td>
</tr>
<tr>
<td>Amphetamines 1-6 days*</td>
<td>2</td>
<td>Cannabis 1-19 days*</td>
<td>2</td>
</tr>
<tr>
<td>Crack user (no TOP)</td>
<td>2</td>
<td>Amphetamines 7-28 days*</td>
<td>2</td>
</tr>
<tr>
<td>Current injector (no TOP)</td>
<td>2</td>
<td>Crack user (no TOP)</td>
<td>3</td>
</tr>
<tr>
<td>Housing problem</td>
<td>2</td>
<td>Current injector (no TOP)</td>
<td>4</td>
</tr>
<tr>
<td>Injector - non-daily</td>
<td>2</td>
<td>Hazardous drinker</td>
<td>4</td>
</tr>
<tr>
<td>Male</td>
<td>2</td>
<td>Injector - daily</td>
<td>4</td>
</tr>
<tr>
<td>Previous unplanned episode (1)</td>
<td>2</td>
<td>Previous unplanned episode (1)</td>
<td>5</td>
</tr>
<tr>
<td>Crack 1-6 days*</td>
<td>3</td>
<td>Amphetamines 7-28 days*</td>
<td>6</td>
</tr>
<tr>
<td>Referral from Criminal Justice</td>
<td>3</td>
<td>Crack 7-28 days*</td>
<td>6</td>
</tr>
<tr>
<td>Previous unplanned episodes (2 or more)</td>
<td>5</td>
<td>Referral from Criminal Justice</td>
<td>4</td>
</tr>
<tr>
<td>Amphetamines 7-28 days*</td>
<td>6</td>
<td>Hazardous drinker</td>
<td>4</td>
</tr>
<tr>
<td>Crack 7-28 days*</td>
<td>6</td>
<td>Injector - daily</td>
<td>4</td>
</tr>
<tr>
<td>Opiate user (no TOP)</td>
<td>13</td>
<td>Previous unplanned episode (1)</td>
<td>5</td>
</tr>
<tr>
<td>Opiate use - daily</td>
<td>15</td>
<td>Previous unplanned episodes (2 or more)</td>
<td>6</td>
</tr>
<tr>
<td>Opiate user - non-daily</td>
<td>15</td>
<td>Referral from Criminal Justice</td>
<td>4</td>
</tr>
</tbody>
</table>

* Refers to the number of days of work, education, or drug use in the past 28 days.

UK complexity score (Public Health England, 2013; North et al., 2014)
Preliminary Victorian model

- Problem severity = AUDIT and DUDIT scores
- Life complexity = unemployment, housing insecurity and high psychological distress (K10)

### Tier Description Complexity

<table>
<thead>
<tr>
<th>Tier</th>
<th>Description</th>
<th>Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>COMPLEX/HIGH SEVERITY</td>
<td>2+</td>
</tr>
<tr>
<td></td>
<td>likely dependence</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>CHRONIC HARM</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>likely dependence</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>RISK/HARM</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>likely dependence</td>
<td></td>
</tr>
<tr>
<td>1/2</td>
<td>LOW TO MODERATE RISK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>early intervention and prevention</td>
<td></td>
</tr>
</tbody>
</table>
Preliminary testing

- help-seeking populations (T1 & T2) dominated by online
- treatment-seeking populations (T4 & T5) dominated by Face-to-Face
Evaluating the model

**Tier rank vs. wellbeing**

Strong relationship between tier and wellbeing

Linear regression: ATOP score significant predictor of tier ($p<0.001$)

Relationship between tier and Total ATOP wellbeing score (solid dots represent mean values and grey shaded area represents ±1 sd).
Application to other datasets

Proportion of clients in each tier by dataset.

Datasets:
- Face-to-Face 1: 583
- Face-to-Face 2: 230
- Forensic: 238
- DDAL: 52
- Online: 2314

Appropriate segmentation
Preliminary model

- Limited to available datasets
- Restricted to matched variables and therefore only 3 measures of complexity
- Limited clinical input

- *Significant relationship* between tier and measures of wellbeing suggesting that the model adequately captured elements of severity and complexity
- Model intended as a first step in exploring the application of the tiered model to Victorian data and therefore further revision required
Refining the model

- Literature review of complexity factors
- Survey of AOD sector
- Refine complexity score while:
  - maximising use of existing data sources
  - minimising additional burden on I&A
- Test revised model with other datasets (e.g. pilot test with consortia)
Revised Tiers Model

- Complexity score increased from 3 to 8 factors (factors drawn from AOD screen)
- Complexity score thresholds revised
- Measures for substance dependence remain unchanged

These changes address key concerns about the sensitivity of Tier 5.
1. Poor mental health
   • Is the client’s total K10 score 30 or greater?

2. Lack of meaningful activities
   • Is the client currently unemployed and not involved in study or training?

3. Housing issues (yes to at least one question)
   • Is the client homeless? Does the client have housing issues (e.g. living in a boarding house)? Has the client been homeless in the last 4 weeks? Has the client been at risk of eviction or living in a place that is not safe?

4. Pregnant
   • Is the client pregnant?

5. Gambling
   • Is the client concerned about their gambling?

6. Legal issues (yes to at least one question)
   • Does the client have legal issues? Has the client been arrested in the last 4 weeks?

7. Children
   • Does the client have care of children?

8. Poor physical health
   • Is the client’s physical wellbeing score less than 6?
Revised tier thresholds

- Tiers 1, 2, 3 – no change
- Tier 4 – from 1 to 1-3 complexity factors
- Tier 5 – from 2+ to 4+ complexity factors

<table>
<thead>
<tr>
<th>Tier</th>
<th>Description</th>
<th>Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>COMPLEX/HIGH SEVERITY likely dependence</td>
<td>4+</td>
</tr>
<tr>
<td>4</td>
<td>CHRONIC HARM likely dependence</td>
<td>1-3</td>
</tr>
<tr>
<td>3</td>
<td>RISK/HARM likely dependence</td>
<td>0</td>
</tr>
<tr>
<td>1/2</td>
<td>LOW TO MODERATE RISK early intervention and prevention</td>
<td></td>
</tr>
</tbody>
</table>
How are we testing this model?

• Screening and assessment data (consortia)
  • evaluate applicability / feasibility of model
  • assess demand and need
• Outcome monitoring data
  • assess client outcomes
• Linkage data
  • develop methods to assess client outcomes and trajectories
Acknowledgements

• Turning Point acknowledges:
  • the support of the Victorian Government
  • the advice and guidance provided by Professor Brian Rush, CAMH
  • technical support for the online screen provided by the HealthLink - Anthony Denham, Orson Rapose and Rick Loos
References

Fiona Barker
Research Fellow
Treatment and Systems Research
T: 03 8413 8423
FionaB@turningpoint.org.au