NNDC Research Update
Mood Outcomes Program

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Steering Team:
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• Peter Zandi, PhD - co-chair
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• Carolyn Turvey, PhD
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A Learning Health System

“...one in which progress in science, informatics, and care culture align to generate knowledge as an ongoing natural by-product of the care experience, and seamlessly refine and deliver best practices for continuous improvement in health and healthcare.”

--Institute of Medicine
Mood Outcomes Program

A learning health system to improve care for patients with depressive illness

Key Program Elements:

• Promote measurement based care by collecting “vital signs”

• Provide decision support tools for clinicians to help them tailor treatment to the needs of their patients

• Facilitate quality improvement at the clinic and population level

• Support ongoing research and NNDC programs

• Supports both direct and local data collection
Mood Outcomes Targets by year-end

- 2016: 2,000+ patients Achieved!
- 2017: 5,000+ patients Achieved!
- 2018: 10,000+ patients Achieved!
- 2019: 12,000+ patients Achieved!

Future Targets

- 2020: 16,000+ patients
- 2021: 20,000+ patients
- Next: 25,000+ patients
Mood Outcomes Adoption

In Discussion
- Florida State
- University of Pennsylvania

Ready to Launch
- Michigan State/Pine Rest
- Emory University
- University of Florida

Data Collected
- University of Colorado Anschutz Campus
- Mayo Clinic
- University of Michigan
- University of Iowa
- University of Illinois Chicago
- Penn State University
- Ohio State University
- Medical University of SC
- Johns Hopkins
- University of Louisville
- University of Texas - Houston
- University of Texas - Austin
Mood Outcomes provides flexible data collection and submission options:

1. **Patient Portal** – connect to the NNDC system to collect & submit patient reported outcomes in real-time.

2. **Local collection** – use your existing Redcap, EMR, or other data system to collect & submit de-identified patient data quarterly (yes, even if you are collecting on paper!)

3. **Epic Integration** – take advantage of the Mood Outcomes measures built directly into Epic!

Data Coordination Funding is available to assist with start-up & operating expenses.

Reach out TODAY to learn more and to get started!
Getting Mood Outcomes Started in Epic

Leadership  Regulations  Technology  Training

The Mood Outcomes Steering Team is here to help!
Sample Epic Workflow
## Mood Outcomes Program
### Aug-2020 Data Freeze

<table>
<thead>
<tr>
<th></th>
<th>Bipolar Disorder</th>
<th>Unipolar Disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>1515</td>
<td>7442</td>
</tr>
<tr>
<td>Mean Age (SD)</td>
<td>42.3 (15.4)</td>
<td>40.4 (16.2)</td>
</tr>
<tr>
<td>% Female</td>
<td>64%</td>
<td>68%</td>
</tr>
<tr>
<td>Mean 1\textsuperscript{st} PHQ-9 (SD)</td>
<td>11.3 (7.6)</td>
<td>12.2 (7.0)</td>
</tr>
<tr>
<td>Mean 1\textsuperscript{st} GAD-7 (SD)</td>
<td>9.5 (6.6)</td>
<td>10.3 (6.3)</td>
</tr>
<tr>
<td>Any positive response on PHQ-9 question #9</td>
<td>31%</td>
<td>33%</td>
</tr>
</tbody>
</table>
Breakdown of Unipolar Depression Subtypes

- Physical Condition: 1%
- Unspecified Mood Disorder: 2%
- Major Depression - Single Episode: 26%
- Schizoaffective Depressed: 1%
- Persistent MDD: 5%
- Recurrent Major Depression: 65%
- Major Depression - Single Episode: 26%
Breakdown of Bipolar Disorder Sub-Types

- Bipolar I: 44%
- Bipolar II Disorder: 29%
- Schizoaffective Disorder Bipolar Subtype: 5%
- Cyclothymia: <1%
- Bipolar Disorder-Other: 22%
Percent of Visits by Diagnosis

Bipolar Disorder
- 1 Visit: 10%
- 2 Visits: 34%
- 3 or More Visits: 56%

Unipolar
- 1 Visit: 14%
- 2 Visits: 41%
**Characteristics of Long-Term Follow-up**

<table>
<thead>
<tr>
<th></th>
<th>Bipolar Disorder</th>
<th>Unipolar Disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean # Visits</td>
<td>3.2 Visits</td>
<td>3.7 Visits</td>
</tr>
<tr>
<td>Mean # Days Follow-Up</td>
<td>175.1 Days</td>
<td>221.4 Days</td>
</tr>
<tr>
<td>Maximum # Days Follow-up</td>
<td>1663 Days</td>
<td>1699 Days</td>
</tr>
<tr>
<td>* Mean (sd) decline in PHQ-9 for those ( \geq 10 ) at Baseline</td>
<td>-4.8 (6.9)</td>
<td>-4.6 (6.6)</td>
</tr>
</tbody>
</table>

* population for long term follow-up is those with baseline phq-9 \( \geq 10 \) AND at least 1 follow-up visit
PHQ-9 Status at Last Follow-up

Notes:

- Active ≥ 10
- Response 5-9
- Remission 0-4

• population for long term follow-up is those with baseline phq-9 ≥10 AND at least 1 follow-up visit
GAD-7 Status at Follow-Up

Notes:

- Active $\geq$ 10
- Response 5-9
- Remission 0-4

- Population for long term follow-up is those with baseline phq-9 $\geq$10 AND at least 1 follow-up visit
Development of the National Network of Depression Centers Mood Outcomes Program: A Multisite Platform for Measurement-Based Care

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Future Developments

**Expanded Data Model** to accept additional elements characterizing patients, treatment, and course:
- Additional Demographic Variables
- Comorbidity (e.g. Problem List)
- Treatment Indicators

**Standard Epic Extract** to populate Expanded Data Model
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