Team-based Treatment for First Episode Psychosis is Cost Effective: Implications for Policy and Practice

Tuesday, March 22, 2016– 2pm Eastern

COST EFFECTIVENESS of RAISE (Recovery After an Initial Schizophrenia Episode)-ETC: NAVIGATE (NAV) vs COMMUNITY CARE (CC) IN FIRST EPISODE PSYCHOSIS

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RAISE Early Treatment Program (ETP) Executive Committee

- John Kane, MD - Principal Investigator
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- Patricia Marcy, RN, Project Director

Specified Aims of RAISE ETP

- Develop a comprehensive and integrated treatment intervention (NAV) that will
  - promote symptomatic recovery
  - minimize disability
  - maximize functioning
  - be delivered in real world settings utilizing current funding mechanisms
- Provide high quality training to NAV staff
- Assess the overall clinical impact and cost-effectiveness of the intervention as compared to currently Community Care (CC)
Cost-Effectiveness: Conclusion

- NAV cost 27% more than CC over two years but significantly improved quality of life by 13%.
- Need to put a monetary value on quality of life benefits.
- Findings: monetary value of benefits is worth the additional costs.
  - Especially for patients with low Duration of Untreated Psychosis (DUP)
  - Esp. when current medications become generic
- Goal for today: What does this mean for real world practice and management?
- Science legitimizes policy but does not dictate policy

RAISE-ETP Site Distribution
35 sites, 21 States, 404 clients
Components of NAVIGATE (NAV) Intervention

- Personalized psychopharmacological treatment (COMPASS)
- Family psychoeducation (FPE)
- Supported education/employment (SEE)
- Individual resiliency training (IRT)

https://raiseetp.org/studymanuals/index.cfm

Average number of mental health outpatient visits per month
Were you asked to record your symptoms and side effects before you met with your psychiatrist or nurse practitioner? (% among responders: 44% in CC, 65% in N)

Have you met with a person who is helping you get a job in the community or furthering your education? (%)
Has your family met with a mental health provider to help them understand and address your situation? (%)

Have you had individual sessions with a mental health provider who helps you work on your goals and look positively towards the future? (%)

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Has your family met with a mental health provider to help them understand and address your situation? (%)

Have you had individual sessions with a mental health provider who helps you work on your goals and look positively towards the future? (%)

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Duration of participation in treatment: Time to last documented mental health visit

Time to First Hospitalization (Any)
Six-Month Total Health Care Including Training Costs

Two year total costs:
NAVIGATE: $34,224
Community Care: $26,876
Differences: $7,348/2 years
$3,674/year (+27.3%)

Average cost per 6-month period

Quality of Life Scale Fitted Model
Group by time interaction (p = 0.046)

Cohen's d = 0.257

<table>
<thead>
<tr>
<th></th>
<th>Improvement/6mo (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Care</td>
<td>2.359 (0.473)</td>
</tr>
<tr>
<td>NAVIGATE</td>
<td>3.565 (0.379)</td>
</tr>
<tr>
<td>Difference</td>
<td>1.206 (0.606)</td>
</tr>
</tbody>
</table>
PANSS (Symptom) Total Score (p<0.02)

ETP Trial: Site Randomization

Sites were randomly assigned to administer either the NAV Intervention or their current community care treatment program (CC).

Subjects are assessed for a minimum of 2 yrs.

ADVANTAGES
- Randomization Tests Causal Effects of NAV
- Minimizes contamination
- Simplifies Informed Consent

DISADVANTAGES
- Less statistical power
- Comparison sites (CC) are equally good general providers of community services
- Minimizes differences (very good CC)
ETP NAVIGATE Intervention
Team Roles (Structural Costs: Fixed)

- **Director (50%)(est. $66,000)**
  - Provides family psychoeducation
  - Supervises clinicians and SEE specialist
  - Manages the first episode program, runs meetings
  - Conducts outreach and engagement
- **Clinicians (2-4)($50,000; MD $100,000)**
  - Provide case management
  - Provide Individual Resiliency Training
- **Supported education/employment (SEE) specialist duties included above**
- **NOT how Cost Effectiveness Analysis was conducted**
- **Based on services delivered to each patient**

COST-EFFECTIVENESS: Do health benefits justify increased costs of innovative treatments scientifically?

- **Dominant choice: Some programs cost less and are more effective. Implement!**
  - No First Episode Program has met this standard
- **If a program is more effective and costs more we need to determine the Incremental Cost Effectiveness Ratio (ICER):** Difference in cost/difference in benefits = Cost per unit of benefit.
- **Then we need to ask “Are health benefits ‘worth’ the additional cost?”**
Begin with the Conclusion and Steps to Getting There.

- Navigate cost more than standard community care.
- But we don’t JUST care about cost (cost minimization)
- Multiple steps
  - Compare costs
  - Compare benefits
  - Determine the cost to get a unit of benefit
  - Determine the monetary value of benefits (hard to do)
  - Address uncertainty: what is the probability that benefits justify costs.
- An extensive body of evidence shows that health benefits of Navigate are worth these additional costs.

ESTIMATING THE COSTS OF SERVICES FROM THE PERSPECTIVE OF THE HEALTH CARE SYSTEM
### Monthly Antipsychotic Drug Costs

- **Navigate**: $283/month
- **Community Care**: $179/month
- **Difference**: $104/month (+58%)
### Monthly Mental Health and Medical/Surgical Inpatient Costs

- **Navigate**: $607/month
- **Community Care (CC)**: $562/month
- **Difference (Diff)**: $45/month (+8%)

### Monthly Total Costs Including Health Services and All Drugs

- **Navigate**: $1,347/month
- **Community Care (CC)**: $1,122/month
- **Difference (Diff)**: $224 (20%)
- **Meds**: $97 (43% of increase)
- **OP MH**: $65 (29% of increase)
- **IP care**: $45 (20% of increase)
INDIRECT FIXED COSTS (I.E. NOT BASED ON SERVICES DELIVERED TO INDIVIDUAL PATIENTS): TOTAL COST PER NAVIGATE PATIENT AT PEAK WORKLOAD OVER 4 YEARS OF INTERVENTION

- **External Indirect Costs**
  - Training Conferences: $329/pt
  - Expert Consultation Calls: $171/pt

- **Internal Indirect Costs**
  - Program Director at each site: $2,510/pt
  - Weekly Team Meeting Time: $1,611/pt
  - Weekly staff supervision: $1,208/pt

- Total = $5,536/pt/48 months = $121/month

- Indirect$/Direct$ = $121/$1,347 = 9.0%

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**Six-Month Total Health Care Costs**

<table>
<thead>
<tr>
<th>Time Period</th>
<th>NAVIGATE</th>
<th>Community Care</th>
<th>Differences</th>
<th>Annual Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>$24,485</td>
<td>$24,482</td>
<td>-</td>
<td>$7,973</td>
</tr>
<tr>
<td>M06</td>
<td>$14,445</td>
<td>$10,840</td>
<td>$3,605</td>
<td>$7</td>
</tr>
<tr>
<td>M12 TIME</td>
<td>$8,445</td>
<td>$6,566</td>
<td>$1,879</td>
<td>$8,651</td>
</tr>
<tr>
<td>M18</td>
<td>$8,445</td>
<td>$6,566</td>
<td>$1,879</td>
<td>$8,651</td>
</tr>
<tr>
<td>M24</td>
<td>$8,445</td>
<td>$6,566</td>
<td>$1,879</td>
<td>$8,651</td>
</tr>
</tbody>
</table>

Two year total costs:
- NAVIGATE: $31,424
- Community Care: $26,972
- Differences: $4,452/2 years

Annual Differences:
- $2,226/year
- (+16.5%)
Six-Month Total Health Care Including Training Costs

Two year total costs
NAVIGATE: $34,224
Community Care: $26,876
Differences $7,348/2 years
$3,674/year
(+27.3%)

Average cost per 6-month period

COST-EFFECTIVENESS
### Incremental Cost-Effectiveness Ratio (ICER) Summary

- Total sample: $12,081/QLS-SD*
- Generic Drug Costs: $6,501/QLS-SD
- Low DUP: $1,035/QLS-SD
- High DUP: $41,307/QLS-SD

* = one standard deviation on the Quality of Life Scale

### What IS the value of 1 SD on the QLS?

- An algorithm has been developed to evaluate Quality Adjusted Life Years (QALY) from the PANSS and side effect measures (Lenert et al., 2004).
- An extensive literature has estimated the monetary value of 1 QALY ($117,000-$400,000 in current 2014 dollars)
- Equi-percentile linking shows 1 QLS SD = 1/7 (0.14) of a QALY.
How do our ICER estimates translate to $/QALY

- Entire sample: $84,567/QALY
- Entire Sample @ Generic Drug Prices: $45,507/QALY
- Low DUP: $7,245/QALY
- High DUP: $206,612/QALY
- Reasonable RANGE of Values for One QALY:$117,000-$400,000
- NAV IS worth the extra cost

Average six-month measures of service use over 24 months: Navigate vs Community Care (1)

Table 1. Average six-month measures of service use over 24 months: Navigate vs Community Care (1)

<table>
<thead>
<tr>
<th>Service Use (average nights or visits per patient per six month interval)</th>
<th>Community Care Mean (2)</th>
<th>Navigate Mean (2)</th>
<th>Difference</th>
<th>Pct Difference</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Inpatient/Residential Days</td>
<td>3.96</td>
<td>6.55</td>
<td>2.59</td>
<td>65.40%</td>
<td>0.31</td>
</tr>
<tr>
<td>Mental Health or Medical Surgical Inpatient Days</td>
<td>3.07</td>
<td>3.51</td>
<td>0.44</td>
<td>14.33%</td>
<td>0.74</td>
</tr>
<tr>
<td>Mental Health Inpatient Days</td>
<td>2.86</td>
<td>3.29</td>
<td>0.43</td>
<td>15.03%</td>
<td>0.75</td>
</tr>
<tr>
<td>Medical Surgical Inpatient Days</td>
<td>0.24</td>
<td>0.22</td>
<td>-0.02</td>
<td>-8.33%</td>
<td>0.92</td>
</tr>
<tr>
<td>Residential/Nursing Home Days</td>
<td>0.63</td>
<td>3.05</td>
<td>2.42</td>
<td>384.13%</td>
<td>0.16</td>
</tr>
<tr>
<td>Outpatient Visits</td>
<td>20.79</td>
<td>27.24</td>
<td>6.45</td>
<td>31.02%</td>
<td>0.08</td>
</tr>
<tr>
<td>Emergency Department Visits</td>
<td>0.53</td>
<td>0.42</td>
<td>-0.11</td>
<td>-20.75%</td>
<td>0.37</td>
</tr>
<tr>
<td>Medical Surgical Outpatient Visits</td>
<td>1.85</td>
<td>1.82</td>
<td>-0.03</td>
<td>-1.62%</td>
<td>0.98</td>
</tr>
<tr>
<td>Mental Health Outpatient Visits</td>
<td>18.44</td>
<td>24.97</td>
<td>6.53</td>
<td>35.41%</td>
<td>0.05</td>
</tr>
<tr>
<td>Clinical</td>
<td>5.02</td>
<td>7.01</td>
<td>1.99</td>
<td>39.64%</td>
<td>0.14</td>
</tr>
<tr>
<td>Rehabilitation</td>
<td>8.13</td>
<td>13.16</td>
<td>5.03</td>
<td>61.87%</td>
<td>0.0066</td>
</tr>
<tr>
<td>Family</td>
<td>0.43</td>
<td>3.21</td>
<td>2.78</td>
<td>646.51%</td>
<td>0.0005</td>
</tr>
<tr>
<td>Peer support, self-help group, and club house</td>
<td>4.51</td>
<td>1.39</td>
<td>-3.12</td>
<td>-69.18%</td>
<td>0.04</td>
</tr>
</tbody>
</table>
### Average six-month measures of health care costs over 24 months: Navigate vs Community Care (1)

#### Table 2. Average six-month measures of health service-related costs over 24 months: Navigate vs Community Care (1)

<table>
<thead>
<tr>
<th>Costs (per six months)</th>
<th>Community Care</th>
<th>Navigate</th>
<th>Difference</th>
<th>Pct Diff</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Mental Health and Medical Surgical Inpatient Costs</td>
<td>$3,780</td>
<td>$3,694</td>
<td>-$86</td>
<td>-2.28%</td>
<td>0.95</td>
</tr>
<tr>
<td>Residential and Nursing Home Costs</td>
<td>$38</td>
<td>$159</td>
<td>$121</td>
<td>318.42%</td>
<td>0.16</td>
</tr>
<tr>
<td>Outpatient Service Costs</td>
<td>$1,826</td>
<td>$2,100</td>
<td>$274</td>
<td>29.15%</td>
<td>0.09</td>
</tr>
<tr>
<td>Emergency Department Costs</td>
<td>$68</td>
<td>$54</td>
<td>-$14</td>
<td>-20.59%</td>
<td>0.37</td>
</tr>
<tr>
<td>Medical Surgical Outpatient Costs</td>
<td>$180</td>
<td>$175</td>
<td>-$5</td>
<td>-2.78%</td>
<td>0.95</td>
</tr>
<tr>
<td>Mental Health Outpatient Costs</td>
<td>$1,379</td>
<td>$1,870</td>
<td>$491</td>
<td>35.61%</td>
<td>0.05</td>
</tr>
<tr>
<td>Total Service Costs (excluding medications)</td>
<td>$5,534</td>
<td>$5,948</td>
<td>$414</td>
<td>7.48%</td>
<td>0.79</td>
</tr>
<tr>
<td>Total Medication Costs</td>
<td>$1,292</td>
<td>$1,957</td>
<td>$665</td>
<td>51.47%</td>
<td>0.02</td>
</tr>
<tr>
<td>Antipsychotic medication</td>
<td>$1,060</td>
<td>$1,739</td>
<td>$679</td>
<td>64.06%</td>
<td>0.01</td>
</tr>
<tr>
<td>Psychotropic medications</td>
<td>$102</td>
<td>$114</td>
<td>$12</td>
<td>11.76%</td>
<td>0.75</td>
</tr>
<tr>
<td>Non-psychotropic drugs</td>
<td>$140</td>
<td>$102</td>
<td>-$38</td>
<td>-27.14%</td>
<td>0.33</td>
</tr>
<tr>
<td>Total Medication Costs using generic costs for antipsychotics</td>
<td>$350</td>
<td>$362</td>
<td>$12</td>
<td>3.43%</td>
<td>0.88</td>
</tr>
<tr>
<td>Antipsychotic medication using generic costs</td>
<td>$102</td>
<td>$137</td>
<td>$35</td>
<td>34.31%</td>
<td>0.01</td>
</tr>
<tr>
<td>Total Costs (services and medication)</td>
<td>$6,743</td>
<td>$7,856</td>
<td>$1,113</td>
<td>16.51%</td>
<td>0.44</td>
</tr>
<tr>
<td>Total Costs (services and medication plus training costs)</td>
<td>$6,719</td>
<td>$8,556</td>
<td>$1,837</td>
<td>27.34%</td>
<td>0.22</td>
</tr>
<tr>
<td>Total Costs (services and medication using generic APS costs plus training costs)</td>
<td>$6,019</td>
<td>$7,088</td>
<td>$1,069</td>
<td>17.76%</td>
<td>0.53</td>
</tr>
</tbody>
</table>

### High and Low Duration of Untreated Psychosis (DUP)
Quality of Life Scale: Effects of Shorter vs Longer Duration of Untreated Psychosis (DUP; p< 0.03)

 Costs by DUP(Mean 6 mo costs)

<table>
<thead>
<tr>
<th>DUR</th>
<th>NAV</th>
<th>CC</th>
<th>Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>IP costs</td>
<td>$2,883</td>
<td>$6,661</td>
</tr>
<tr>
<td></td>
<td>OP costs</td>
<td>$2,096</td>
<td>$1,499</td>
</tr>
<tr>
<td></td>
<td>Medications</td>
<td>$2,189</td>
<td>$1,460</td>
</tr>
<tr>
<td></td>
<td>Total+Trng</td>
<td>$7,168</td>
<td>$9,620</td>
</tr>
<tr>
<td>HIGH</td>
<td>IP costs</td>
<td>$4,709</td>
<td>$2,889</td>
</tr>
<tr>
<td></td>
<td>OP costs</td>
<td>$2,807</td>
<td>$1,808</td>
</tr>
<tr>
<td></td>
<td>Medications</td>
<td>$1,943</td>
<td>$1,189</td>
</tr>
<tr>
<td></td>
<td>Total+Trng</td>
<td>$9,459</td>
<td>$5,886</td>
</tr>
</tbody>
</table>
Anticipating Generic Drug Costs (mean 6-month costs)

<table>
<thead>
<tr>
<th></th>
<th>NAV</th>
<th>CC</th>
<th>Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entire Sample</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Drug</td>
<td>$8,556</td>
<td>$6,719</td>
<td>$1,837</td>
</tr>
<tr>
<td>Generic Drug</td>
<td>$7,088</td>
<td>$6,019</td>
<td>$1,069</td>
</tr>
<tr>
<td><strong>LOW DUP</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Drug</td>
<td>$7,894</td>
<td>$9,262</td>
<td>- $1,368</td>
</tr>
<tr>
<td>Generic Drug</td>
<td>$6,074</td>
<td>$8,160</td>
<td>- $2,086</td>
</tr>
<tr>
<td><strong>HIGH DUP</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Drug</td>
<td>$9,812</td>
<td>$5,973</td>
<td>$3,839</td>
</tr>
<tr>
<td>Generic Drug</td>
<td>$8,257</td>
<td>$5,189</td>
<td>$3,068</td>
</tr>
</tbody>
</table>

Conclusion

- Navigate cost more than standard community care over two years
- Evidence shows the health benefits are worth these additional costs.
  - Even more so with low DUP patients
  - and when current medications become generic
Limitations

• CC sites were all capable of implementing NAVIGATE thus minimizing treatment group differences.
  • NAV readmission at 1 year (20%) was lower than Raise Connection (32%) and STEP (23%), but so was CC.

• CEA in a trial vs. real-world practice
  • Real-world practice may have lower staff/higher case loads/less training -- to lower agency costs.
  • Reduced cost may reduce effectiveness.

• Sample size N=404 is small for CEA and clustered (limited power)

Comparison of Inpatient Use in RAISE and other FEP samples (RAISE: 20% rehosp. In 1st year; mean LOS= 6.3 days)

• Iowa First Episode study (Andreasen, 1987):
  • 49% rehospitalized 1st 6 months after entry;
  • 47% rehospitalized second 6 months.
  • Mean hospital utilization = 4 weeks.

• Lower base readmission rates in RAISE sample limited opportunities for cost savings.
### Costs of Other Effective Medical Treatments/Other Public Services

(NAVIGATE = $3,674/year/patient)

- **Cancer Chemotherapy (average): $24,000/year**
  - *Avastin*: $100,000/year
  - *Herceptin*: $70,000/year

- **On-Patent Antipsychotics/Year (Walmart)**
  - *Zyprexa ®*: $6,900
  - *Abilify ®*: $15,600

- **Statins (Walmart)**
  - *Lipitor ® (1 year supply)*: $3,288

- **Assertive Community Treatment (ACT)**
  - *VA 2009*: $9,200

- **Incarceration in US (1 year)**: $32,000

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### Questions???

Please note that an archived recording of this webinar will be available on-line within 10 days at:

[www.nasmhpd/webinars](http://www.nasmhpd/webinars)