Presenters

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Professor, Dept. of Psychiatry and Human Behavior, University of California at Irvine

**Expertise:** Assistant Dean in the College of Medicine, Director of Medical Research for the Long Beach Veterans Affairs Healthcare System. Previously, held the position of the Chief of Mental Health, overseeing full service mental healthcare delivery to over 40,000 enrollees in the Long Beach VA Healthcare System.

**Education:** M.D., Virginia Commonwealth University, MBA, UCLA

Laurie Nelson
Group Product Manager - Analytics, Relias Learning

**Expertise:** Product Management in Analytics, Data Warehousing, and Business Intelligence for both government agencies such as DHHS and software technology companies such as Peoplefluent and Teradata

**Education:** BS Management Information Sciences and Marketing, University of MN
Today’s Agenda

• Who is Relias Learning?
• Analytics Introduction
• Population Health Management
• How can Relias Learning help?
• Case Studies
• Readiness Checklist
Our Mission

Relias strives to measurably improve the lives of the most vulnerable members of society and those who care for them.
Our Difference

We do this by hiring subject matters experts with experience in the field, and focusing our work not just on training, but also providing analytics and assessments to optimize that training.
The new world of healthcare is creating a critical demand for high-performing organizations.
Reimbursement Models Are Transforming

- **Pay-for-Volume**: Comply with mandatory requirements
- **Implement Clinical & Quality Processes**: Train on specific performance measures
- **Pay-for-Value**: Improve clinical outcomes, increase reimbursements
Relias Enables Organizations To:

- Measure their effectiveness and efficiency
- Assess the skills and learning needs of their staff
- Provide training to help their staff deliver better care and improve the bottom line

Mitigate risk • Quality outcomes • Maximize reimbursements • Well funded
Exceptional compliance • Reduce readmissions • Competent, compassionate caregivers
Best place to work • Respected industry leader • Improve care transitions
Introduction to Analytics
"First, we compress the data, then invert and defripple it, and then we send it to the 16th dimension with the little green men who visit me on Thursdays."
What is Analytics?

“analysis of data, typically large sets of business data, by the use of mathematics, statistics, and computer software.”

www.Dictionary.com
For real – what is Analytics?

“looking at a lot of information and figuring out what already happened, why it happened, what might happen next, and what to do about it.”

-Laurie Nelson, Feb 2017 Intelligence Report for CMT Healthcare, a Relias Learning company
Types of Analytics

**Descriptive**
Displaying gathered information to understand a situation

**Diagnostic**
Figuring out why something happened

**Predictive**
Using past information to predict future outcomes

**Prescriptive**
Providing insights about possible actions
Key Terms in Healthcare Analytics - Common Definitions

**Value Based Purchasing**: paying for population outcomes, not individual services.

**Population Health Management**: evaluating the health of an entire population and determining how to deliver care to improve health and financial outcomes across the group.

**Patient Registries**: Tracking and benchmarking information about patients to determine the magnitude of a clinical or health problem across a population.

**Risk Stratification**: Sorting the population by risk scoring of some type. Can vary from simple counts to sophisticated machine learning.

**Decision Support**: evidence based information to support clinical actions based on analytics.

**Benchmarking**: Comparing performance to some marker—base line, including other like providers, or industry standard expectations.
Population Health Management
The Reactive Model...starting with the individual

- Identify all the gaps in care
- Try to fix everything
- Inefficient
The Proactive Model...starting with populations

- Systematic and ongoing process
- Applied to many members of population
- Efficient
Population Health Management (PHM)

The Future of Healthcare Paradigm Shift

Today:
Reactive and Volume-based

The Future:
Proactive and Value-based

Health System
Population health management provides comprehensive authoritative strategies for improving the systems and policies that affect health care quality, access, and outcomes, ultimately improving the health of an entire population.

Educate me!
Encourage me!
Treat me holistically!
I will pay you!

Individuals are accountable for their health with the health system as their health advocate.

Health Reform
Affordability Gap
Triple Aim
Weight of the Nation
Reimbursement
Define Population:

The first step in the cycle is to choose a population of interest. The population is defined by various criteria such as diagnosis, service utilization or cost.

--data is ideally in a registry type system that can be easily manipulated.

- Utilization Patterns
- Historical Medical and Pharmacy Spend
- Diagnostic Indicators (Hypertension, Diabetes, …)
- Care Gap Analysis
- Medication Adherence
- Behavior Patterns
- …And More
## Registries

### Bipolar Disorder Registry

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<th>Patient ID</th>
<th>First</th>
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<th>OPI QI Count</th>
<th>CM Measure Count</th>
<th>Adherence Count</th>
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<th>Comorbid Diagnosis Count</th>
<th>Hospital Count</th>
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<td>1</td>
<td>19</td>
<td>State General</td>
</tr>
</tbody>
</table>
Population Health Cycle Step 2

Identify Care Gaps:

Once a population has been identified further analytics are applied to characterize gaps in guideline based care.

*Must have method of translating guideline based care into measureable units.*

*Your data is then analyzed against these rules.*
Where do you find the evidence?
## Translating the Evidence into Measurable Criteria

### Examples of General Preventive Care Indicators

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Flu shot</td>
</tr>
<tr>
<td>No evidence of annual comprehensive preventive care assessment including physical examination.</td>
</tr>
<tr>
<td>On psychotropic medication with no evidence of psychiatric evaluation in the past year.</td>
</tr>
<tr>
<td>Dx of COPD/asthma and no record of annual pneumovax</td>
</tr>
</tbody>
</table>

### Behavioral Pharmacy Indicators

<table>
<thead>
<tr>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Use of an antipsychotic at a higher than recommended dose for 45 or more days</td>
</tr>
<tr>
<td>Multiple prescribers of any antipsychotic for 45 or more days</td>
</tr>
<tr>
<td>Failure to refill/fill a medication in a patient with multiple recent emergency department (ED) visits</td>
</tr>
<tr>
<td>Use of benzodiazepines at a higher than recommended dose for 60 or more days</td>
</tr>
<tr>
<td>No evidence of follow-up appointment or psychosocial intervention in a patient who has failed to refill/fill medication</td>
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</table>

### Chronic Disease Management Indicators

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetic with no evidence of annual foot exam</td>
</tr>
<tr>
<td>Diabetic with no evidence of annual urine test for protein/creatinine</td>
</tr>
<tr>
<td>Diabetic with no evidence of lipid monitoring</td>
</tr>
<tr>
<td>Diabetic with no evidence of HbA1c level in the last 6 months.</td>
</tr>
<tr>
<td>Diabetic with no evidence of statin if patient &gt; age 40</td>
</tr>
<tr>
<td>Diabetic with no evidence of annual eye exam</td>
</tr>
<tr>
<td>On atypical antipsychotic medication with no evidence of metabolic monitoring.</td>
</tr>
<tr>
<td>Dx of Cardiovascular Disease and no evidence of statin</td>
</tr>
<tr>
<td>Diabetic with use of high risk antipsychotics (clozapine, olanzapine, quetiapine)</td>
</tr>
</tbody>
</table>

Population Health Cycle Step 3

Stratify Care Gaps:

The next step is to stratify the identified care gaps based on criteria that can include high risk or prevalence. Strategies are then developed to address the most important care gaps.

Examples
- Risk analysis
- Financial analysis
Risk Stratification

• Consider
  • High frequency
  • High cost
  • Critical element
Population Health Cycle Step 4

Engage Patients:

Successful strategies to remedy care gaps include motivating and collaborating with patients to help them understand care plans and the importance of complying with recommended guidelines.

- Social media
- Text messaging
- Mobile phone apps
- Education
- Support groups
- One-on-one coaching
Manage Care:

Assignment of health team roles and responsibilities are made as the strategy is implemented.

- Care Coordination
- Provide tools for care team
Developing the Approach – Tiered Interventions

• One care gap does not mean the same approach for all.

• Tiered Interventions
  • Method of conceptualizing interventions for sub-populations based on stratification of need.
Population Health Cycle Step 6

Targeted Members + The right intervention = ?
Clinical Pathway: Treatment of First Episode Psychosis

- What are the unique treatment recommendations?
  - Antipsychotic medications
    - All should be treated
    - Monotherapy
    - Avoid olanzapine and clozapine
  - Psychosocial interventions are essential
    - Individual resilience training
    - Family psychoeducation
    - Supported education/employment
- Preventive medical care
  - Metabolic monitoring
- Avoid cannabis

The 2009 schizophrenia PORT psychopharmacological treatment recommendations and summary statements. Schizophr Bull 2010; 36:71.

# First Episode Psychosis Registry

<table>
<thead>
<tr>
<th>PatientID</th>
<th>First Name</th>
<th>Last Name</th>
<th>DOB</th>
<th>Age</th>
<th>Status</th>
<th>Cohort</th>
<th>Info</th>
<th>Original Script Date</th>
<th>Latest Refill Date</th>
<th>Drug MPR</th>
<th>Drug PTR Alerts</th>
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<td>Smallwood</td>
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### Clinical Pathway: Treatment of First Episode Psychosis

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<th>Benchmark</th>
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<th>CPT CODE</th>
<th>Frequency of Problem</th>
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<td>Antipsychotic monotherapy</td>
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<tr>
<td>No high dose antipsychotic</td>
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<tr>
<td>No olanzapine</td>
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<tr>
<td>Poor medication adherence</td>
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<tr>
<td>No Cannabis Use</td>
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</table>

#### Population Identification Method
First Episode Psychosis ICD code + age criteria

#### Benchmark Categories
- Information Therapy
- Tiered Intervention

---

**Note:** This table outlines the key benchmarks and quality metrics for the treatment of first episode psychosis, along with the frequency of the problems associated with each benchmark.
Information Therapy

- Provide system wide education
  - direct to provider education
    - Direct mail educational Info Sheet

- Provide education for treatment team
  - Provide CME for prescribers
**Action Plan: Focused Education**

- Direct prescriber intervention
  - Focused education on triggered QI
  - Could include peer ranking data
Action Plan: High Intensity Focus

For The Few

Tiered Intervention

Peer to Peer
Clinical Pathway: Adherence in First Episode Psychosis

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<th>New Onset schizophrenia</th>
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<td>a. ICD code + b. age criteria</td>
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<table>
<thead>
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<th>Benchmark</th>
<th>Quality Metric</th>
<th>CPT CODE</th>
<th>Frequency of Problem</th>
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<td>No high dose antipsychotic</td>
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<td>No olanzapine</td>
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Develop Action Plan
Applying Adherence Quality Indicators

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<th>Value 2</th>
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<td>62%</td>
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<td>Failure to Refill a Medication in a Patient with a History of Alcohol or Another Substance Use Disorder</td>
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<td>812</td>
<td>Refill a Medication in a Patient with a History of Depression or an Anxiety Disorder</td>
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<td>53%</td>
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<tr>
<th>Name</th>
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<td>63%</td>
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</tr>
<tr>
<td>Jing</td>
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<td>10/9/1966</td>
<td>40</td>
<td>6</td>
<td>2</td>
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<tr>
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<tr>
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<td>63%</td>
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</tr>
<tr>
<td>Dallas</td>
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<td>10/9/1966</td>
<td>40</td>
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<td>2</td>
<td>10</td>
<td>10</td>
<td>43</td>
<td>63%</td>
<td>Active</td>
</tr>
</tbody>
</table>
# Adherence Drill Down: Service Utilization

<table>
<thead>
<tr>
<th>Event Category</th>
<th>Admission Date</th>
<th>Discharge Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER VISIT(s) with NO HOSPITAL</td>
<td>04/14/2017</td>
<td>04/14/2017</td>
</tr>
<tr>
<td>ER VISIT(s) with NO HOSPITAL</td>
<td>04/10/2017</td>
<td>04/10/2017</td>
</tr>
<tr>
<td>ER VISIT(s) with NO HOSPITAL</td>
<td>04/06/2017</td>
<td>04/06/2017</td>
</tr>
<tr>
<td>ER VISIT(s) with NO HOSPITAL</td>
<td>03/25/2017</td>
<td>03/27/2017</td>
</tr>
<tr>
<td>ER VISIT(s) with NO HOSPITAL</td>
<td>03/22/2017</td>
<td>03/23/2017</td>
</tr>
</tbody>
</table>

---

**RELIAS LEARNING**
Customizing the Action Plan: Adherence

- Use data analytics to drill down for more information.
- Are there indicators that reflect increased utilization of services?
  - Hospitalizations, ER visits
- Have prior efforts been made to address poor adherence?

Implement Tiered Interventions

Case Management | All lower intensity interventions have failed
MI, CBT, Cognitive Assessment | Lower tier interventions ineffective
Adherence Assessment, Medication Evaluation | Increased utilization; symptomatic
Education, Lettering, Behavioral Tailoring, Reminders (mobile apps) | Single indicator
The ideal technology gives you power to

Study the population

...but also drill down to the individual
How can Relias help you use Population Health Management to compete in a Value Based Purchasing World?
Our Analytics Solution Helps You Identify Opportunities for Performance Improvement
Dashboard Analytics Example

NC Integrated Dashboard April 2015 through March 2016
HOSPITAL AND ED UTILIZATION

Relias Learning

43
Descriptive Analytics Example

List of Behavioral Rx Measures, including how many patients are flagged

List of Patients and associated information for each measure, based on selection above
Diagnostic Analytics Example

Patient Registry for Contraindicated Antipsychotic and additional Rx info on a per patient level
Predictive and Prescriptive Analytics Example

Predictive Analytics

“Olanzapine has the highest risk of weight gain and other metabolic side effects, compared to quetiapine, risperidone, ziprasidone, and aripiprazole (Leucht 2009a, Buchanan 2010).”

Prescriptive Analytics

If your patient is being started for the first time on olanzapine for a psychotic disorder and has medical conditions that make metabolic risk an important consideration, if you haven’t already, please consider medications that are less likely to induce weight gain, such as generic risperidone, aripiprazole, ziprasidone, and some first generation antipsychotics (Buchanan 2010; see Table on next page).
Putting Information into Clinicians’ Hands

Push measure alerts into the patient EHR.
Review Clinical Consideration at point of care
Case Studies
Opioid Use Reduction – Getaway Health Plan

Randomized control trial over 6 month period found statistically significant 21% decrease in triggering post intervention.

- Use of Opioids for 60+ Days in the Absence of a Diagnosis Supporting Chronic Use in Adults decrease of 17%
- Use of Opioids for 60+ Days in the Absence of a Diagnosis Supporting Chronic Use in Elderly Adults decrease of 14%
- Multiple Prescribers of Opioids Without a Malignant Cancer Diagnosis decreased by 11% (p=0.07)
Population Health Case Study Example: Missouri

Members of Missouri Behavioral Health Home
(approx. 17,000)

SMI + 1 or more chronic health conditions
(3700 not currently enrolled)
Service Claims Data
Identifying Members of the Population at risk

Who is at risk?

“Olanzapine has the highest risk of weight gain and other metabolic side effects, compared to quetiapine, risperidone, ziprasidone, and aripiprazole (Leucht 2009a, Buchanan 2010).”
Population Health Case Study Example: Missouri

Members of Missouri Behavioral Health Home
(approx. 17,000)

SMI + 1 or more chronic health conditions
(3700 not currently enrolled)
Service Claims Data

+ BMI > 30
(~9860)
EMR Data

+ 1 antipsychotic Rx
(~1975)
Pharmacy Claims Data

Contraindicated anti-psych Rx-weight gain
(~370)
Determine Intervention

Clinical Consideration

Consider a First Line Antipsychotic other than Olanzapine (Zyprexa®)

Clinical Issue

- The initial choice of antipsychotic medication or the decision to switch to a new antipsychotic medication should be based on the level of individual preference, prior treatment response, and side effect experience, adherence history, recent medical history and risk factors, individual medication side effect profile, and long-term treatment planning (Buchanan 2010).
- Clozaril has the highest risk of weight gain and other metabolic side effects, compared to quetiapine, ziprasidone, aripiprazole, and olanzapine (Liu 2010; Buchanan 2010).
- A large meta-analysis reviewing all available head-to-head comparisons of first generation antipsychotics (SGAs) determined that clozapine is only marginally more efficacious than risperidone, but is more efficacious than olanzapine, aripiprazole, and ziprasidone (Lurie 2004).
- Olanzapine, like other second generation antipsychotics that are not available as generics, is substantially more expensive than generic alternative medications.
- The Cochrane study found that clozapine was superior to both antipsychotics in patients with schizophrenia without a diagnosis of substance abuse in the past year. In patients with substance abuse, there was no difference among the antipsychotics (Goretti 2002).
- The Schizophrenia PORT study recommends to the absence of any evidence of significantly enhanced therapeutic benefits, the association of clozapine with significant mortality risks, suggests that clozapine should be considered as a last-line treatment for individuals responding to first-generation antipsychotics (Buchanan 2010).
- While first generation antipsychotics are used in younger and older patients, the adult population of the CORE and NCEP-CKD study consists, "no consensus exists for first generation drugs in elderly patients," and an adult as well as second generation drugs are more effective in the elderly population (Lurie 2004).
- On the next page is a table with the relative risks for selected antipsychotic side-effects, as published by the Schizophrenia PORT 2009 group (Buchanan 2014), and a guide to first generation antipsychotics.

Considered Intervention

- This module is for healthcare providers who, according to our data, have been started on olanzapine after not being on an antipsychotic in the preceding 10 years. Your patient may have previously been effective with the medication in the past. You realize that this is a reasonable criterion for initiating olanzapine with olanzapine.
- If your patient is being started for the first time on olanzapine for a psychotic disorder, you've already planned, alone and continue using prophylactic medication in a first generation antipsychotic which is likely to be more expensive than clozapine. This is especially true if your patient is using alcohol or substances (Griffin 2008).
- If your patient is being started for the first time on olanzapine for a psychotic disorder and two medical conditions that make metabolic risk an important consideration, if you haven't already, please consider medications that are less likely to induce weight gain, such as generic risperidone, aripiprazole, ziprasidone, and some first generation antipsychotics (Buchanan 2010; see Table on next page).

What should I do about it?

If your patient is being started for the first time on olanzapine for a psychotic disorder and has medical conditions that make metabolic risk an important consideration, if you haven't already, please consider medications that are less likely to induce weight gain, such as generic risperidone, aripiprazole, ziprasidone, and some first generation antipsychotics (Buchanan 2010; see Table on next page).
Members of Missouri Behavioral Health Home (approx. 17,000)

SMI + 1 or more chronic health conditions (3700 not currently enrolled)

Service Claims Data

+ BMI > 30 (~9860)

EMR Data

+ 1 antipsychotic Rx (~1975)

Pharmacy Claims Data

Intervention:
- Blood Pressure cusp and weight room in every CMHC
- Patient Medication Evaluation
- Staff Medication Education
- Medication Clinical Guidance for the Care Team

Contraindicated anti-psych Rx-weight gain (~370)
Population Health Case Study Example: Missouri

Members of Missouri Behavioral Health Home (approx. 17,000)

- SMI + 1 or more chronic health conditions
  - (3700 not currently enrolled)
  - Service Claims Data

- No Metabolic Syndrome Screen
  - (~15,000 members)
  - Service Claims Data
Outcomes | Metabolic Syndrome Screening Rate

Screening Rates

- 12% in Sep 2011
- 46% in Apr 2012
- 61% in Oct 2012
- 80% in May 2013
- 80% in Nov 2013
- 80% in Jun 2014
- 68% in Dec 2014

2.5 years
### Outcomes | Metabolic Syndrome Screening Impact

<table>
<thead>
<tr>
<th>Health Improvements (Feb 2012 - Jan 2014)</th>
<th>Reductions in Hospitalizations in the First Year</th>
<th>Cost Savings (after 1 year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Cholesterol</td>
<td>- 9.1%</td>
<td>Missouri Health Homes have saved an estimated $36+ million!</td>
</tr>
<tr>
<td>37%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Blood Pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Blood Sugar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
How does this relate to other solutions Relias has to offer?
Relias Offers a Multi-Solution Approach to Help You Meet the Demand for High Performance

Improve performance, outcomes and reimbursements using a unique integration of analytics, assessments, a learning platform, and learning content, all developed and owned in-house by Relias.
Preventing Readmissions

Identify Readmission Problem with Analytics

Pre-Assessment

Hospital Readmissions and the Ambulatory Care Provider

Care Management in Ambulatory Care

Post-Assessment

Preventing Readmissions through Preventative Care

Preventing Readmissions through Medication Management

Brain Sparks

Monitor Readmission Problem with Analytics

3 ProAct Measures

6 ProAct Measures

2 ProAct Measures

5 ProAct Measures
## Subset of Targeted Measures

<table>
<thead>
<tr>
<th>ProAct Measure #</th>
<th>HEDIS/Community Health Measure Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>902</td>
<td>Adherence to Antipsychotic medications for individuals with Schizophrenia (SAA)</td>
</tr>
<tr>
<td>904</td>
<td>Presence of a diabetes screening test during the measurement year for a patient diagnosed with schizophrenia or bipolar disorder who was dispensed an antipsychotic medication</td>
</tr>
<tr>
<td>931</td>
<td>Presence of a HbA1c and LDL-C tests during the measurement year for a patient diagnosed with schizophrenia and diabetes.</td>
</tr>
<tr>
<td>932</td>
<td>Presence of a follow-up visit within 30 days after hospitalization for mental illness</td>
</tr>
<tr>
<td>933</td>
<td>Presence of a follow-up visit during the 30 day initiation phase for 6-12 year old prescribed ADHD medication</td>
</tr>
<tr>
<td>936</td>
<td>Use of two or more concurrent antipsychotic medications in children 1-17 years of age</td>
</tr>
<tr>
<td>940</td>
<td>Presence of metabolic testing in children 1-17 years of age that had two or more antipsychotic medications</td>
</tr>
</tbody>
</table>
## Custom Training Plans for Targeted Measures

<table>
<thead>
<tr>
<th>Targeted Measures</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
</table>
| • Presence of a diabetes screening test during the measurement year for a patient diagnosed with schizophrenia or bipolar disorder who was dispensed an antipsychotic medication  
• Presence of a HbA1c and LDL-C tests during the measurement year for a patient diagnosed with schizophrenia and diabetes. | • A First Look Into Integrated Care for Primary Care Staff  
• Managing Medicaid Members with Chronic Behavioral and Physical Health Conditions  
• Building Care Teams and Establishing Check Points: Diabetes  
• Payer Perspective: Diabetes Management | 1.25  
0.75  
0.75  
1.00 |
| • Presence of a follow-up visit within 30 days after hospitalization for mental illness | • Preventing Unnecessary Hospital Admissions and Readmissions                 | 1.00   |
| • Adherence to Antipsychotic medications for individuals with Schizophrenia (SAA) | • Psychotropic Medications: Antipsychotics and Beyond  
• Medications Related to Schizophrenia and Other Psychotic Disorders | 1.00  
1.00 |
| • Presence of a follow-up visit during the 30 day initiation phase for 6-12 year old prescribed ADHD medication | • ADHD: Diagnosis and Treatment                                               | 2.00   |
|                                                                                 | Training Hours:                                                               | 8.75   |
Are you ready to use Data to manage your Population?
Readiness Checklist

- Access to Aggregate Data
  - Clinical Digital Data
  - Claims Data
- Access or Capability to Build a Patient Registry Tool
  - Spreadsheet
  - Technology Based Vendor Solution
- Knowledge of Important Risks Relative to Performance Measures
  - Clinical
  - Financial
- Staff or External Resource with Statistical/Applied Math/Informatics Expertise
  - In House Statistical Analyst
  - Clinician/Physician as Data Scientist
  - Capable External Vendor
- External Validity
  - Tools that Allow you to Validate your Stratification/Predictive Model Outside of Your Own Data
THANK YOU