Pharmacogenomics: Using Personalized Medicine to Improve Mental Health

Demystifying the medical science
The journey from the laboratory workbench to today’s workplaces

Why you should care
Health and productivity, temporary work disability, disability prevention

Mental Health
Examples: Anxiety, Depression

Physical Health
Examples: Neuropathic Pain, Cardiovascular, Cholesterol
3 Most Important Takeaways for You

1. Disability Prevention
   - Presenteeism?

2. Early Intervention
   - Stay at Work?

3. Recovery & Reintegration
   - Absenteeism?

Pharmacogenomic Impact

What’s in a Word?

Pharmacogenomics

Pharmacogenetics

Pharmacokinetics
Chemistry and Biology Basics

Human Genome Project

Genetic Variance in Drug Metabolism

Quicker Return to Function

Personalized Medicine
Precision Medicine
Personalized Healthcare

Safer – Less Adverse Events
Improved Compliance
Improved Outcomes
Quicker Return to Function
Like your fingerprint, your liver and the enzymes it contains is unique to you...

One Size Does Not Necessarily Fit All...
Healthcare services are not personalized

Evidence-Informed Practice (Evidence-Based Practice)

Based upon research conducted without genetic data

**Why is this Important for You?**

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<tr>
<th>5%</th>
<th>55%</th>
<th>30%</th>
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<tbody>
<tr>
<td>UM: Ultrarapid Metabolizer</td>
<td>EM: Extensive or Normal Metabolizer</td>
<td>IM: Intermediate Metabolizer</td>
<td>PM: Poor Metabolizer</td>
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*CYP2D6 Enzyme – Involved in 20% of all drug metabolism, not just SSRIs*
### Mental Health – Pharmaceutical Interventions

**Anxiety**
- **BENZODIAZEPINES** (Xanax, Valium, Ativan)
- **BETA BLOCKERS**
- **TRICYCLIC ANTIDEPRESSANTS** (Amitriptyline, Tofranil, Norpramin)
- **MONOAMINE OXIDASE INHIBITORS (MAOIs)** (Nardil, Parnate)
- **SELECTIVE SEROTONIN REUPTAKE INHIBITORS (SSRIs)** (Prozac, Zoloft, Paxil, Celexa)
- **SEROTONIN-NOREPINEPHRINE REUPTAKE INHIBITORS (SNRIs)** (Effexor)
- **ANTICONVULSANTS** (Lyrica, Neurontin)

**Depression**
- **TRICYCLIC ANTIDEPRESSANTS** (Amitriptyline, Tofranil, Norpramin)
- **MONOAMINE OXIDASE INHIBITORS (MAOIs)** (Nardil, Parnate)
- **SELECTIVE SEROTONIN REUPTAKE INHIBITORS (SSRIs)** (Prozac, Zoloft, Paxil, Celexa)
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### Drug Analytics – A Cautionary Tale

**Mental Health**
- Examples:
  - Anxiety
  - Depression

**Physical Health**
- Examples:
  - Neuropathic Pain
  - Cardiovascular, Cholesterol

**BENZODIAZEPINES** (Xanax, Valium, Ativan)
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Pharmacogenomics: Case Study in Personalized Medicine

Demographic: 42 year old male
Employment Status: FT, Professional
Employment Notes: Highly engaged, high achiever, no history of absenteeism/disability
Case Notes: Sudden onset of neuropathic pain
- Debilitating acute, episodic pain
- High degree of chronic pain
- Loss of nerve function in impacted areas
- No time lost from work, poster-child for presenteeism

A Pathway to Relief

These wasted costs, and time could have been avoided, with a much quicker return to function!
Pharmacogenomics: How Personalized Medicine Works

Worker was suffering from anxiety or depression? MDD? TRD?

Worker was not working during this time? Absenteeism vs. Presenteeism

What if co-morbidities developed?

What could the medication costs be?
What could the disability costs be?
Benefits to You

Plan Sponsors

Plan Members

Some Results – 13:1 ROI

Quicker Return to Function

7% on Drug Costs

1/3 Disability Duration
3 Most Important Takeaways for You

1. Disability Prevention
2. Early Intervention
3. Recovery & Reintegration

Presenteeism?
Stay at Work?
Absenteeism?

Pharmacogenomic Impact

Thank you
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