

Right Drug. Right Dose. Right Time.

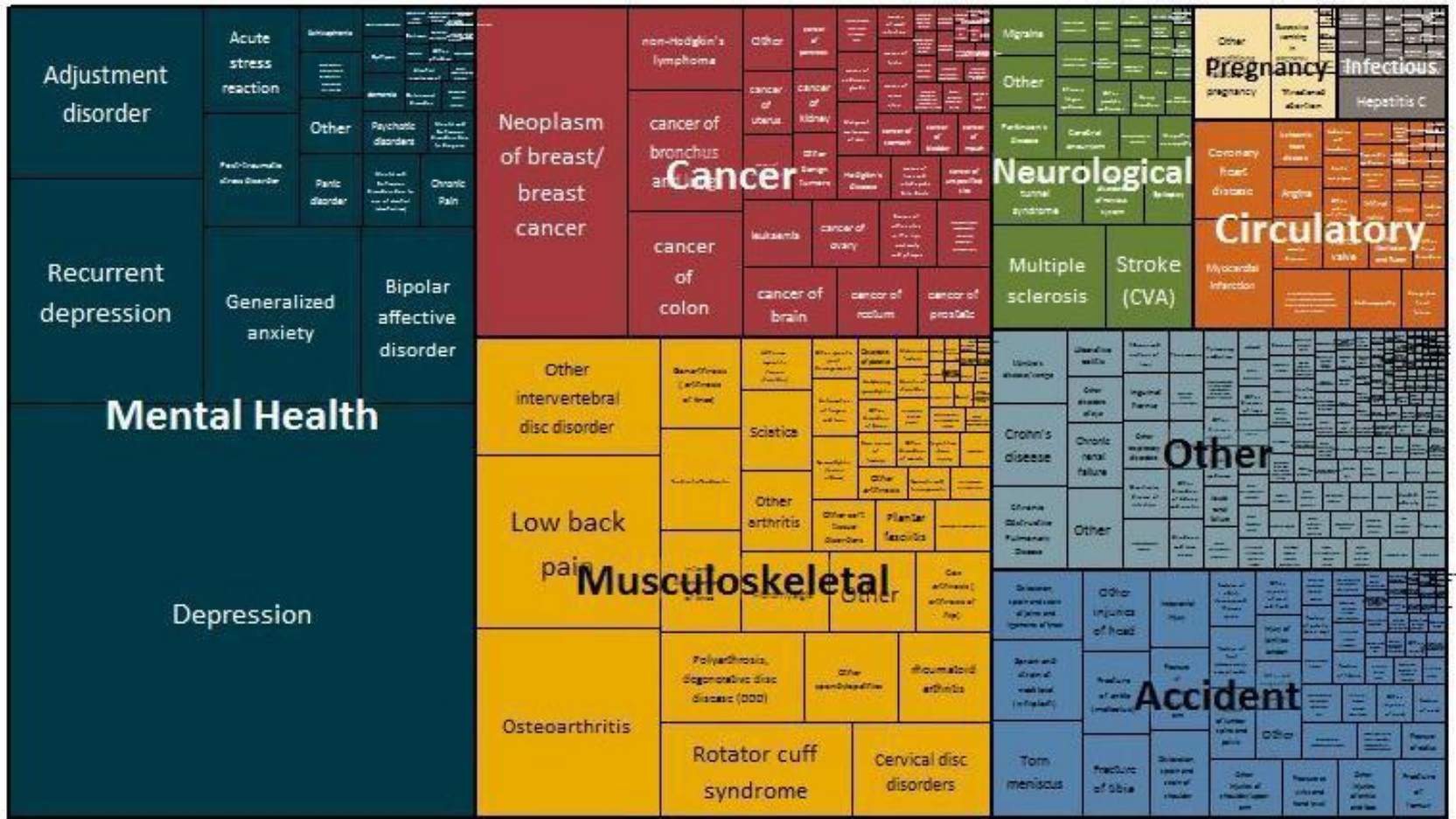
Pharmacogenomics in Disability Management

Mark Faiz, CEO

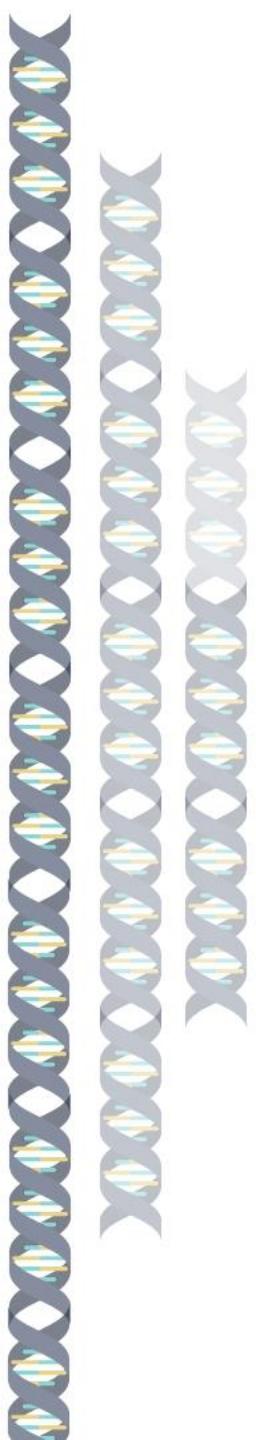
2019

Mental Health Disability Claims are a Big Issue

Breakdown of 2012/2013 LTD Approvals By Diagnosis



Source: Sun Life Financial Group Benefits Long Term Disability approvals by diagnosis (July 2012 - June 2013)



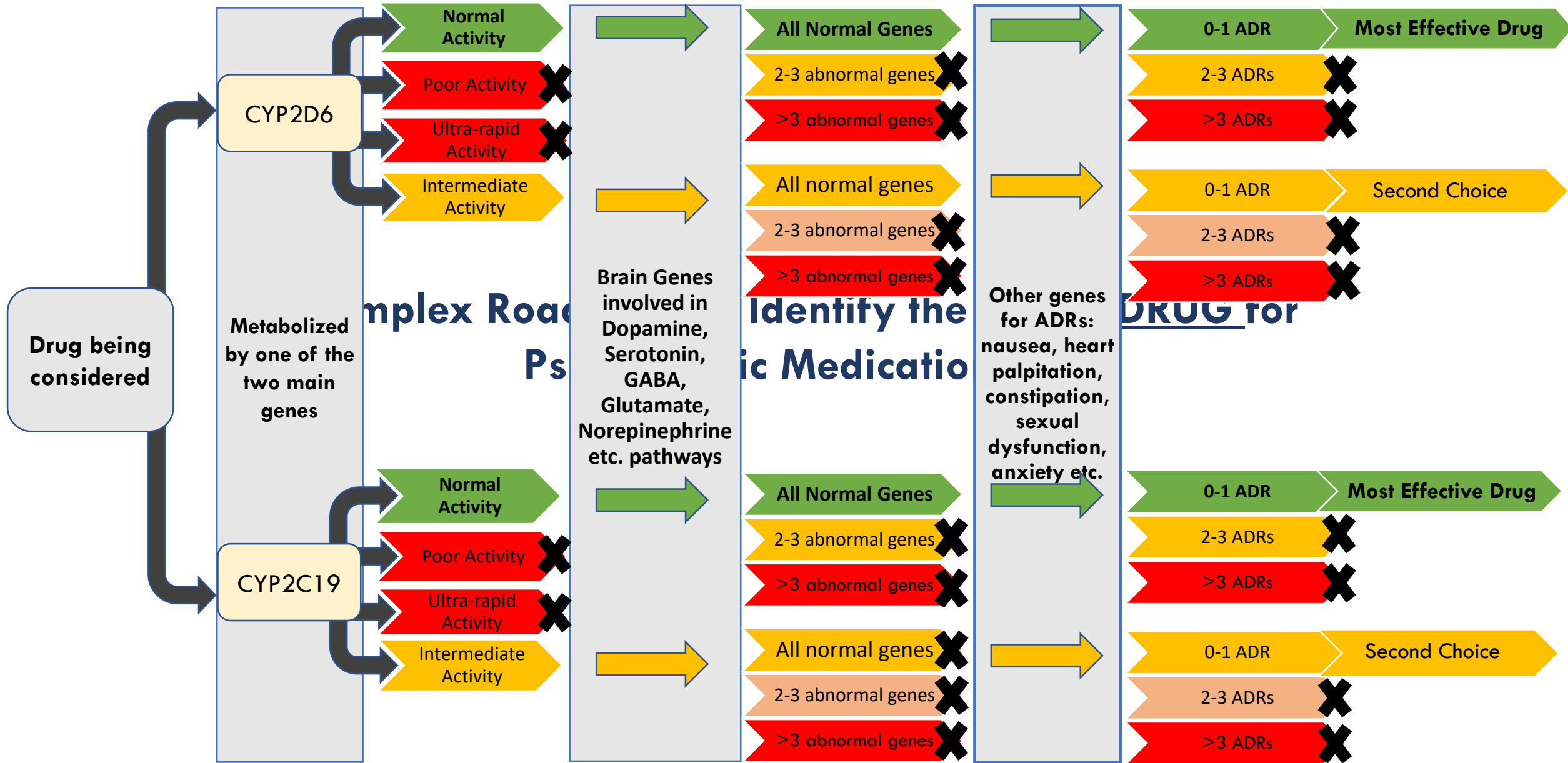
- **Psychotherapy is definitely the first step in treatment, but**
- **Often Medication is needed**

Identifying the RIGHT Medication for Mental Illness is Challenging

- 40-50%* of psychiatric medications fail the first time.
- Adverse reactions are common and can be severe.



*Why don't antidepressants work in some patients?
European College of Neuropsychopharmacology (ECNP)



Pharmacogenomic Test

- Pharmacogenomics provide information on how our unique and individual genetic make-up influences our responses to medications.
- A Pharmacogenomic test helps to select the right drug and dose on the outset of condition and minimizes trial and error process.

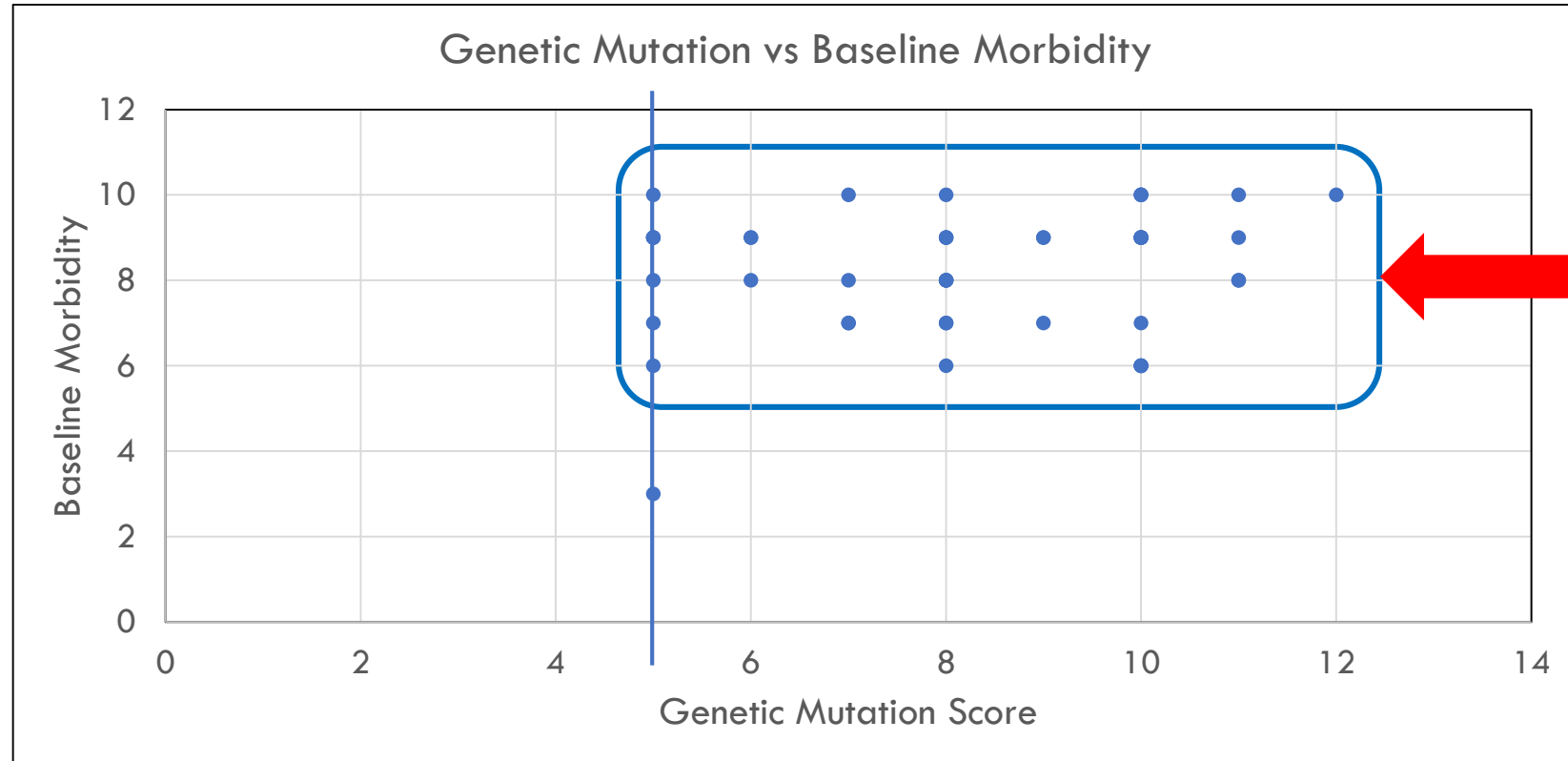


Comprehensive Pharmacogenomics Service

- Most extensive test panel in Canada-
 - a. > 50 genes
 - b. >150 drugs
 - c. proprietary
- Pharmacist interprets the results of the test
- Comprehensive Summary Report by Pharmacist
- **Personalized Drug Evaluation Service (PDE)***
- Follow-up with patients/ employees
- Continuous support for patients/ employees and their physicians



Genetic Mutation Scores & Morbidity of Employees with Disability



Higher Morbidity & Genetic Mutation Score

Genetic mutation score: number of mutated genes

Baseline Morbidity score: side-effects and baseline function at home and at work based on pre-test questionnaire

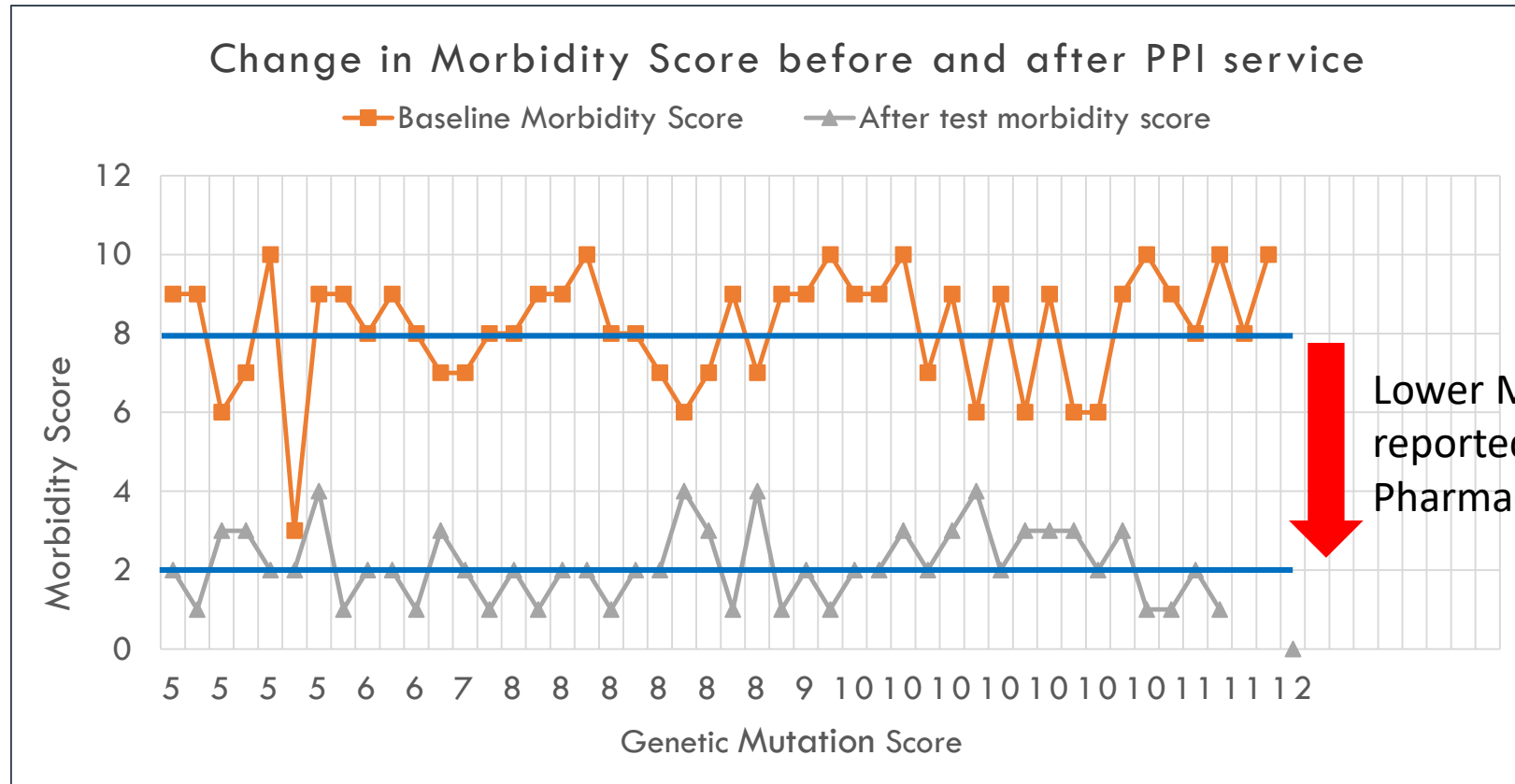
Personalized Drug Evaluation (PDE)

- PDE is a consultation with our pharmacists
- The pharmacists discuss and explain-
 - ✓ employee's medication issues with them
 - ✓ a pharmacogenomic "drug compatibility" test could shed more light on the employee's drug issues, possibly helping the employee get better
 - ✓ The Genetic Non-discrimination Act, 2017, clearly to address employee's apprehension about genetic test
- PDE helps pharmacists to gain confidence of employees

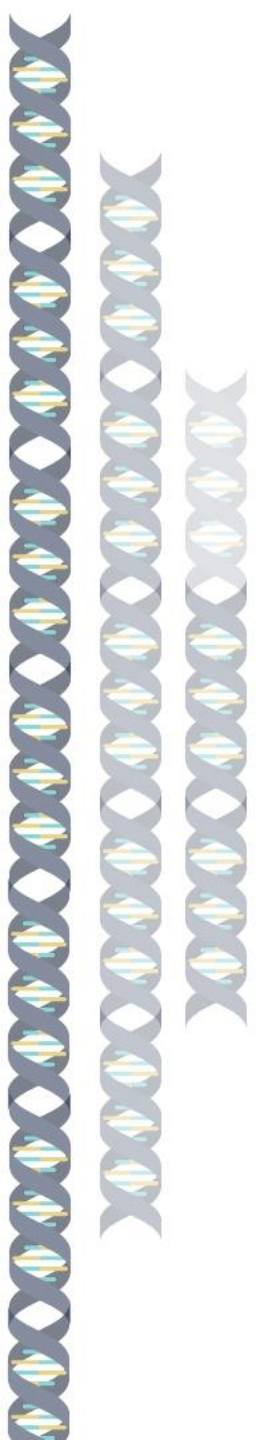
Success of Pharmacogenomics

- Our pharmacogenomic test results show all employees with disability have a high mutation score
- 70% of the employees were recommended to change their medication and 30% were recommended to adjust doses and manage side-effects
- >95% of physicians have adopted our medication recommendations
- Most patients reported an improvement in their well-being after changing the medication, many that we followed up with, have reported that they returned to work.

Change in Morbidity of Employees with Disability after a Pharmacogenomic Test



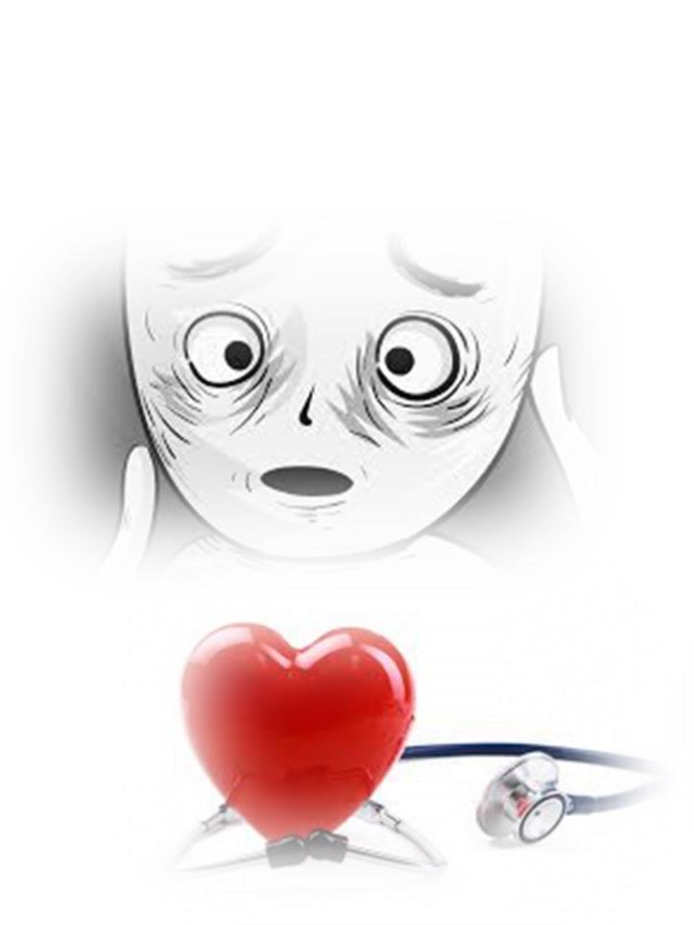
Lower Morbidity reported after a Pharmacogenomic Test



Case Studies

Case Study: Anxiety & Depression

- **Patient:** 30 years, Female
- **Conditions:** Anxiety & Depression, Heart condition (enlarged ventricles), Asthma, Tobacco Use Disorder
- **History:**
 - ✓ As soon as she started medications (Cipralex, Venlafaxine), she felt even more anxious and her heart condition worsened (i.e. dizziness and fainting spells that resulted in hospitalizations and days lost from work).
 - ✓ Patient's also uses her asthma rescue inhaler >3 time/week due to shortness of breath.
- **Test Process:** Employee called PPI, pharmacist gathered comprehensive history and ordered pharmacogenetic test.



Case Study: Anxiety & Depression

- **Test Result:** Patient had **genetic risk factors** (HTR2A and CYP2D6) and clinical risk factors (structural heart abnormality) for her side-effect
- **Pharmacist Interpretation:**
 - ✓ Certain antidepressants (i.e. **Venlafaxine** and **Citalopram**) can cause changes in electrical activity in the heart, which can increase risk of heart palpitations and heart malfunction
 - ✓ The patient's chronic use of Ventolin can further increase adrenaline, heart palpitations and anxiety.
 - ✓ Bupropion was recommended instead of Venlafaxine and Flovent inhaler for asthma.

Case Study: Anxiety & Depression

Follow-up Result:

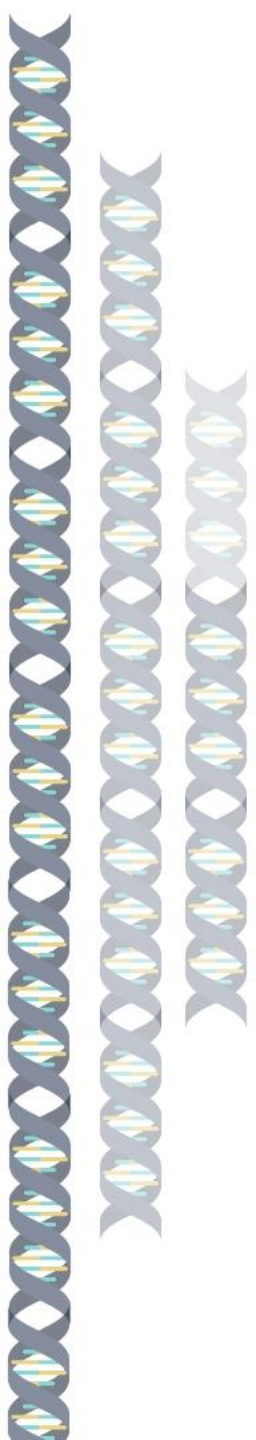
- The pharmacist called Jane for a **follow-up discussion** (a month later), and Jane informed the pharmacist that the physician has discontinued the Venlafaxine and has started her on the Bupropion and Flovent inhaler.
- Jane experienced decreased anxiety and increased motivation and she was able to reduce the number of cigarettes that she smoked/day.
- Though Jane still experienced bouts of dizziness, she no longer had any fainting spells, and could function well at work.
- Jane was informed that the pharmacist is available at any time, if she needed more help with smoking cessation.

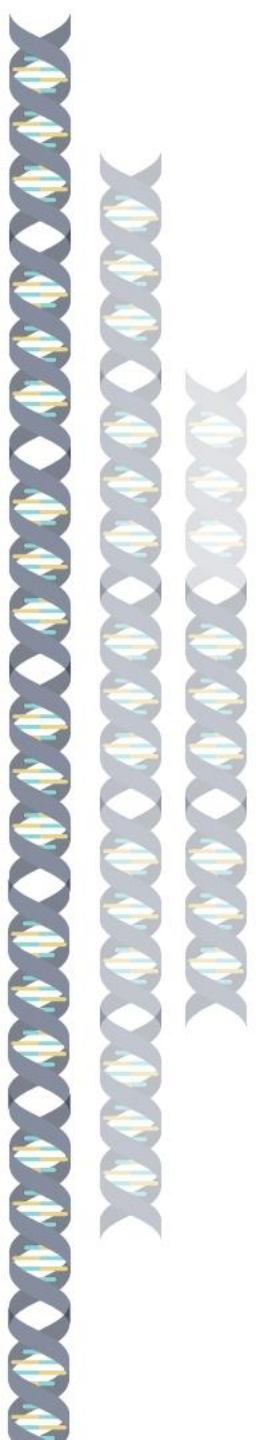
A Real- Life Testimonial

- Brian Berry was experiencing persistent daytime sleepiness, anxiety, and depression. His inability to function at home had cost him his marriage.
- His work was also affected as he was not able to keep up with his workload. He was taking multiple medications, and nothing seemed to work.
- He spoke to Personalized Prescribing Inc. on how his life changed after the Pharmacogenomic Test.



"I cannot say enough; it changed my life. I am so thankful for the opportunity and for what it has done for my life in a short period."- Brian Berry





Thank You!

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