

USE OF MEDICAL TRANSCRIPTION DATA FOR REAL WORLD CLINICOGENOMIC EVIDENCE GENERATION FOR MENTAL HEALTH DISORDERS IN US

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Background and Objective

- Genomic testing is increasingly becoming popular in many disease areas to help guide treatment decisions. However, treatment changes and trends as a result of genetic testing in mental health disorders is unknown
- We used Amplity Insights, a US nationwide transcription database to assess trends in genomic testing from 2008 to 2017 and understand treatment changes among patients due to testing

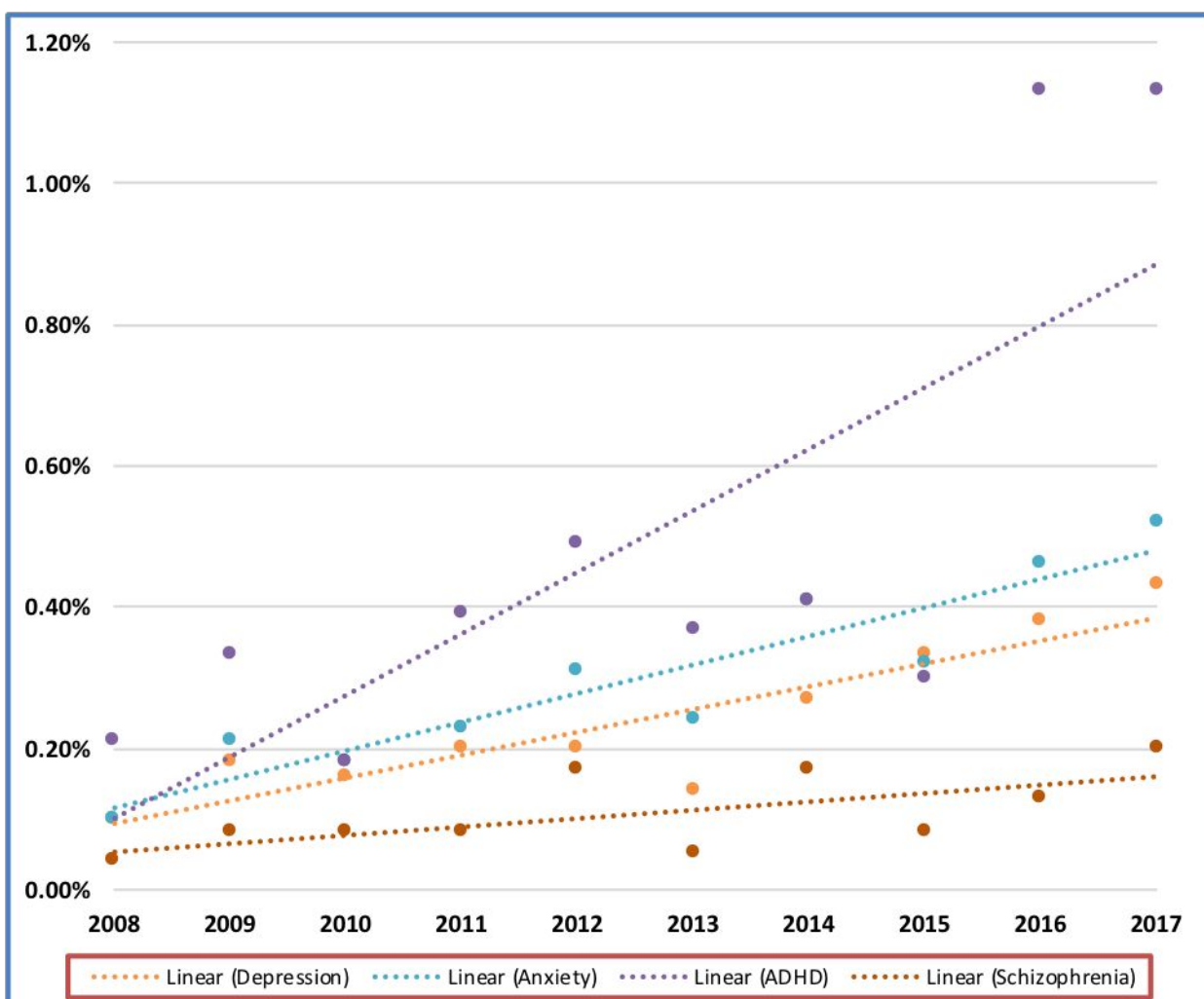
Methods

- Amplity Insights works with medical transcription companies across US to build a database of detailed narrative medical records, providing a unique perspective on patient conditions and physician interaction
- Using natural language processing, database was searched for mentions of genetic testing assay (e.g. Genecept®, Genesight®, Millennium PGT®) and depression, schizophrenia, anxiety and ADHD. Individual patient chart data was abstracted for diagnosis, demographics, testing date and treatment change as a result of genetic testing
- The GeneSight® tests how your genes affect your response to psychiatric medications by analyzing DNA to get a better understanding of what medication might work best based on genetic makeup
- The Genecept® tests includes 18 well-characterized, well-annotated genes, extensively supported in peer-reviewed publications to affect treatment for psychiatric conditions. It includes pharmacodynamic genes, which indicate the effect a drug has on the body and can inform drug candidate selection. It also includes pharmacokinetic genes, which indicate the effect the body has on the drug via metabolism and can inform drug dosage
- Millennium PGT® (Pharmacogenetic Testing analyzes clinically relevant genetic variants for 14 genes related to medication response to help clinicians individualize prescribing decisions

Results

- Of the 724,813 depression patients, 2359 underwent genetic testing such as GENECEPT®, GENESIGHT®, Millennium PGT® etc (Figure 1)
- The number of patients with genetic testing increased four fold from 2008 (0.1%) to 2017 (0.4%)
- Similar trends were observed for patients diagnosed with Anxiety (N=2827, 0.1%-0.5%), Schizophrenia (N=104, 0.04%-0.2%) and ADHD (N=773, 0.2%-1.1%)

Figure 1 : Summary of Genetic Testing trend between 2008 to 2017 for patients with Depression, ADHD, Anxiety, and Schizophrenia



Results (continued)

- We extracted 30 patients records that included 11 male and 19 female patients with a mean age of 30.3 years from RealHealthData database and reviewed for mention of genetic testing and treatment changes
- Among the 30 abstracted records for mental health patients, 50% switched treatment, 16.7% had dose change, 10% stopped treatment and 23.3% started a new treatment (Table 1)

Table 1: Impact on treatment changes as a result of Genomic Testing among mental health patients

Changes to treatment (N=30)		N (%)
Dose Change		5 (16.7%)
Treatment Switch		15 (50%)
Treatment Stop		3 (10%)
New Treatment Start		7 (23.3%)

Impact of Genomic testing on treatment of mental health patients (N=30)	Changes to Treatment	Disease
Dose change (N=5)	Tapered off Abilify	MDD
	Tapered off Prozac	Depressive Disorder; ADHD
	Increase in doses of Abilify	Depression, Anxiety
	Tapered of Zoloft	Depression, Anxiety
	Tapered of Abilify	Anxiety, ADHD, Bipolar
Treatment switch (N=15)	Change from Abilify to Geodon	OCD, depression
	Change from Fluoxetine to Citalopram	OCD, depression
	Change from Wellbutrin to Effexor	ADHD, Depression, Bipolar
	Change to Zoloft	Depression, Anxiety
	Change from Lexapro to Cymbalta	Depression
	Change from Sertraline to Effexor	Depression
	Change from Zyprexa to Remeron	Depression, Anxiety
	Change from Lexapro to Effexor	Anxiety
	Change from Saphris or Seroquel to Invega	Depression, Anxiety
	Change to Effexor and Rexulti	Depression, Anxiety
	Change to SNRI	Depression, Anxiety
	Change to Pristiq	Depression, ADHD
	Change to Perphenazine and Trilafon	Schizophrenia, Anxiety
	Change from Concerta to Strattera	ADHD, Bipolar
	Change from Lorazepam to Paliperidone	Schizophrenia, Anxiety
Treatment stop (N=3)	Stopped Prozac, Prazosin and Abilify	Anxiety
	Stopped Celexa and Zoloft	Major Depressive Disorder, anxiety, Bipolar Disorder, Insomnia
	Stopped Abilify	Depression, Anxiety
New Treatment start (N=7)	Started to Prozac	Depression, Anxiety, Eating Disorder
	Started Wellbutrin	Bulimia Nervosa, PTSD, Depression, ADHD
	Suggestion to start Venlafaxine	Anxiety
	Started Prozac	Depression, Anxiety
	Started Abilify	Depression, Anxiety
	Started Deplin	Depression, Anxiety
	Started Wellbutrin	Schizophrenia

Limitations

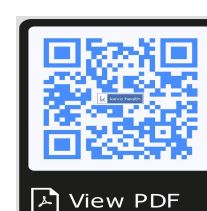
- It is difficult to attribute treatment changes to a specific disease, since patients can have multiple diseases
- Genetic test results are limited to genes that were tested as part of the GENECEPT®, GENESIGHT® and Millennium PGT® assay only
- Observed trends and treatment changes due to genetic testing are limited to data received by RealHealthData from transcription companies

Conclusion

- The slow but increasing trends in genetic testing among patients and treatment changes suggest the growing importance of personalized medicine in mental health
- Medical transcription data can provide early insights into clinicogenomic evidence in patients with psychiatric disorders
- This data alongside claims, EMR and genomic data can provide valuable insights into the precision HEOR field, guide treatment decisions in psychiatric disorders and further provide insights to conducting clinicogenomic outcomes research studies

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