Optimizing Patient Interactions to Improve Behavioral Health Outcomes

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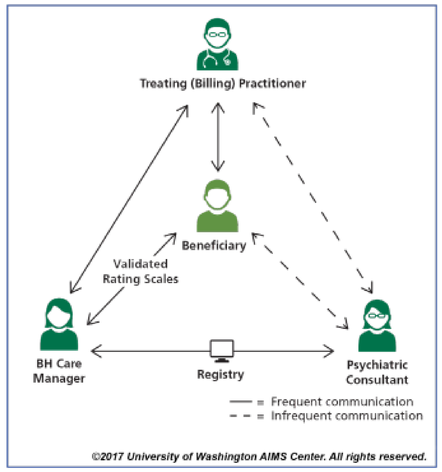
Background

Maintaining programs is resource-intensive, particularly for multi-disciplinary programs like the Integrated Behavioral Health (IBH) program where patients see multiple providers across specialties.



The objective of this study is to improve the quality of patient care at Froedtert's IBH clinics by redistributing resources towards specific treatment modalities that have the greatest impact on behavioral health outcomes. We will perform a retrospective analysis on how patients engaged with healthcare providers to determine which interactions are most efficacious and deserve more resource allocation.

Hypothesis: We predict that the best predictor of improved behavioral health outcomes is the number of interactions the patient has with their care manager since routine check-ins help patients stay on track with their treatment plan and meet their goals.

Methods

We plan on analyzing the following ways IBH patients engaged with their behavioral health care in 2021:

1. Care manager only (control)
2. Care manager + Psychiatrist
3. Care manager + Psychologist
4. Care manager + Psychiatrist + Psychologist

To measure behavioral health outcomes, we will analyze the patients' percent change in PHQ-9 score, between the first and last PHQ-9 captured in 2021.To explore how confounding factors may influence PHQ-9 changes, we will also analyze the following variables:

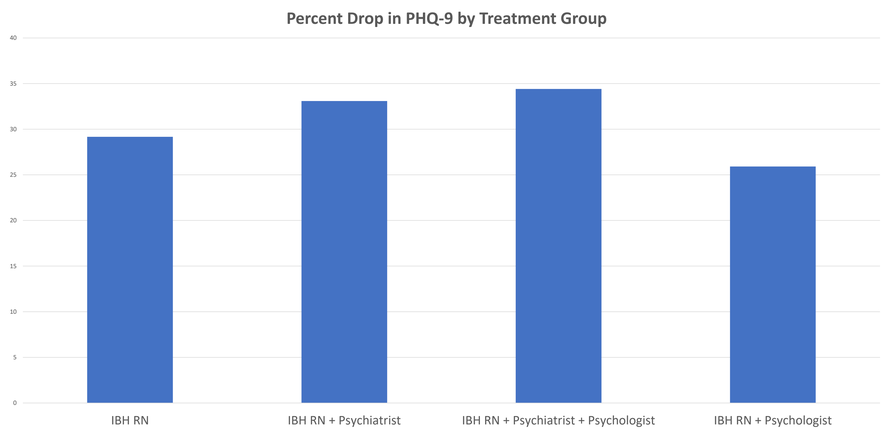
- Age
- Sex
- SES
- Ethnicity
- Number of medical comorbidities
- Number of psychiatric comorbidities
- Number of psychiatric medications

Results

1. Comparison by IBH RN, IBH RN + Psychiatrist, IBH RN + Psychiatrist + Psychologist, IBH RN + Psychologist

	IBH_RN (N=92)	IBH_RN+Psychiatrist (N=117)	IBH_RN+Psychiatrist+Psychologist (N=55)	IBH_RN+Psychologist (N=36)	p value
age					0.4
Mean (sd)	47.087 (18.959)	44.128 (17.104)	43.927 (14.076)	48.333 (17.263)	
Range	19.000 - 91.000	18.000 - 92.000	20.000 - 69.000	21.000 - 83.000	
Median	46.5	40	45	44	
sex_c					0.509
Female	63 (68.5%)	85 (72.6%)	42 (76.4%)	29 (80.6%)	
Male	29 (31.5%)	32 (27.4%)	13 (23.6%)	7 (19.4%)	
race_c					0.771
Non-Hispanic White	55 (59.8%)	76 (65.5%)	31 (56.4%)	25 (69.4%)	
Non-Hispanic Black	29 (31.5%)	27 (23.3%)	17 (30.9%)	9 (25.0%)	
Hispanic/Non-Hispanic Other	8 (8.7%)	13 (11.2%)	7 (12.7%)	2 (5.6%)	
median_income					< 0.001
Mean (sd)	68704.703 (27367.043)	74154.623 (25519.460)	62672.444 (23283.018)	87248.529 (32711.847)	
Range	26339.000 - 135855.000	26339.000 - 170769.000	20575.000 - 130027.000	35573.000 - 170769.000	
Median	63862	67192	62886.5	86771	
Nmiss	1	3	1	2	
psych_meds					< 0.001
Mean (sd)	0.641 (0.482)	0.880 (0.326)	0.982 (0.135)	0.778 (0.422)	
Range	0.000 - 1.000	0.000 - 1.000	0.000 - 1.000	0.000 - 1.000	
Median	1	1	1	1	
medical					0.292
Mean (sd)	1.239 (1.161)	1.171 (1.132)	1.455 (1.136)	1.500 (1.207)	
Range	0.000 - 3.000	0.000 - 3.000	0.000 - 3.000	0.000 - 3.000	
Median	1	1	1	1	
behavioral					< 0.001
Mean (sd)	1.185 (0.645)	1.496 (0.596)	1.709 (0.629)	1.444 (0.558)	
Range	0.000 - 3.000	0.000 - 3.000	1.000 - 3.000	1.000 - 3.000	
Median	1	1	2	1	
first_phq					0.005
Mean (sd)	8.149 (6.850)	9.198 (7.475)	12.055 (8.547)	6.857 (6.869)	
Range	0.000 - 24.000	0.000 - 26.000	0.000 - 27.000	0.000 - 21.000	
Median	7	9	11	6	
Nmiss	5	1	0	1	
last_phq					0.092
Mean (sd)	8.038 (5.356)	6.871 (6.318)	9.224 (7.893)	5.792 (5.808)	
Range	0.000 - 20.000	0.000 - 26.000	0.000 - 25.000	0.000 - 21.000	
Median	8	5	6	4	
Nmiss	39	16	6	12	
treatment_days					< 0.001
Mean (sd)	90.457 (60.071)	135.735 (71.391)	133.436 (55.218)	92.833 (53.207)	
Range	0.000 - 237.000	13.000 - 326.000	35.000 - 329.000	28.000 - 238.000	
Median	75	119	135	74	
num_episodes					0.81
Mean (sd)	1.033 (0.232)	1.043 (0.275)	1.036 (0.189)	1.000 (0.000)	
Range	1.000 - 3.000	1.000 - 3.000	1.000 - 2.000	1.000 - 1.000	
Median	1	1	1	1	
phq difference					0.267
Mean (sd)	-0.038 (7.966)	-1.861 (7.680)	-2.837 (9.907)	-0.042 (6.362)	
Range	- 18 - 14	- 19 - 18	- 24 - 19	- 9 - 14	
Median	-2	-1	-1	-0.5	
Nmiss	39	16	6	12	
Percent Change Drop (%)					0.737
Mean (sd)	29.165 (36.265)	33.086 (36.477)	34.412 (38.719)	25.913 (33.371)	
Range	0.000 - 100.000	0.000 - 100.000	0.000 - 100.000	0.000 - 100.000	
Median	13.043	21.429	11.111	8.333	
Nmiss	39	16	6	12	

2. No significant difference in PHQ-9 changes were found between different treatment modalities



Discussion

We did not find a statistically significant difference between the percent drop in PHQ-9 scores between the 4 different treatment groups, suggesting that no one modality is more effective than the others. However, we did find the following statistically significant differences among the 4 groups ($p < 0.05$):

Median income

- Patients who only saw a psychologist had the highest median income while patients who saw both a psychologist and psychiatrist had the lowest median income

Number of psychiatric medications

- Patients who saw both a psychologist and psychiatrist had the highest number of psychiatric medications while patients who only saw the care manager had the lowest number of psychiatric medications

Number of behavioral comorbidities

- Patients who saw both a psychologist and psychiatrist had the highest number of behavioral comorbidities while patients who only saw the care manager had the lowest number of behavioral comorbidities

First PHQ-9 score

- Patients who only saw both a psychologist and psychiatrist had the highest first PHQ-9 score while patients who saw a psychologist had the lowest first PHQ-9 score

Duration of treatment

- Patients who saw a psychiatrist had the longest duration of while patients who only saw the care manager had the shortest duration of treatment

Patients who saw both a psychologist and psychiatrist are more ill at baseline. They have a higher initial PHQ-9 score, have the greatest number of behavioral comorbidities, and are on more psychiatric medications. They also have the lowest median income, which could suggest the negative impact psychiatric illness has on employment and ability to work. Patients who only saw the care manager were the least complex, with the least number of behavioral comorbidities and psychiatric medications. Patients who saw a psychologist had the lowest initial PHQ-9 and the highest median income, which could suggest that managing behavioral health positively impacts work.

References

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