

Supplementary Material

Article Title: Virtual Collaborative Care Versus Specialty Psychiatry Treatment for Depression or Anxiety

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DISCLAIMER

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Supplementary Table 1. Target trial protocol. Specification and emulation using observational data

Protocol component	Description	Specification	Emulation using observational cohorts
Eligibility criteria	Who will be included in the study?	Patients with an ICD diagnosis for depression or anxiety between April 1 st , 2020, to May 31 st , 2021; age ≥ 18 ; symptom measure ≥ 5 to < 15 ; no suicide intent in the last 30 days	Same as for specification. Required data for each person: primary diagnosis, age, screening eligibility, symptom screening, and treatment appointment status, treatment strategy assignment, symptom measure for depression or anxiety at baseline, suicide-related diagnosis or positive answer to question 9 of the PHQ-9 30 days prior to eligibility screening
Treatment strategies	What interventions will eligible persons receive?	1. Collaborative care for depression: Systematic symptom monitoring tied to treatment. Therapy frequency and medication addition determined based on symptoms and follows a recommended protocol. 2. Specialty psychiatry: Patient meets with a psychiatrist and treatment plan determined and scheduled based on clinical judgement	Same as for specification Required data: baseline appointment with one of the two interventions, clinical measurement of depressive or anxiety symptoms
Treatment assignment	How will eligible persons be assigned to the interventions?	Pragmatic trial without blind assignment.	Eligible persons will be assigned to the strategies with which

		Participants will be randomly assigned to either strategy and will be aware of the strategy to which they have been assigned.	their data were compatible at the time of eligibility. Inverse probability score weighing performed from eligibility screening to adjust for confounders to emulate the random assignment of treatment strategies.
Outcome	What outcomes in eligible persons will be compared among intervention groups?	Change in PHQ-9 or GAD-7 score from up to 6 months compared to baseline	Same as for specification. Required data: baseline and follow-up PHQ-9 and GAD-7 scores
Follow-up period	During which period will eligible persons be followed in the study?	Starts at baseline and ends at 6 months plus two weeks after baseline	Same as for specification. Required data: date of loss to follow-up
Causal estimand	Which counterfactual contrasts will be estimated using the above data?	Intention-to-treat effect (effect of being assigned to treatment)	Observational analogue of the intention-to-treat effect
Statistical analysis	How will the counterfactual contrasts be estimated?	Intention-to-treat effect estimated via comparison of 6-month PHQ-9 change in symptoms from baseline among individuals assigned to each treatment strategy. For patients without follow-up symptom measures, impute from the baseline symptom value (assumes a conservative null effect).	Same as intention-to-treat analysis

Supplementary Table 2. International statistical classification of diseases and related health problems, clinical modification (ICD-10-CM) diagnostic codes for depressive or anxiety disorders

ICD-10-CM	Description
Anxiety disorders	
F06.4	Anxiety Disorder Due To Known Physiological Condition
F10.280	Alcohol Dependence With Alcohol-Induced Anxiety Disorder
F12.180	Cannabis Abuse With Cannabis-Induced Anxiety Disorder
F12.280	Cannabis Dependence With Cannabis-Induced Anxiety Disorder
F13.980	Sedative, Hypnotic Or Anxiolytic Use, Unspecified With Sedative, Hypnotic Or Anxiolytic-Induced Anxiety Disorder
F15.280	Other Stimulant Dependence With Stimulant-Induced Anxiety Disorder
F16.980	Hallucinogen Use, Unspecified With Hallucinogen-Induced Anxiety Disorder
F19.280	Other Psychoactive Substance Dependence With Psychoactive Substance-Induced Anxiety Disorder
F40.9	Phobic Anxiety Disorder, Unspecified
F41.1	Generalized Anxiety Disorder
F41.8	Other Specified Anxiety Disorders
F41.9	Anxiety Disorder, Unspecified
F93.0	Separation Anxiety Disorder Of Childhood
Adjustment disorder with anxiety	
F43.22	Adjustment Disorder With Anxiety
Depressive disorders	
F32.0	Major Depressive Disorder, Single Episode, Mild
F32.1	Major Depressive Disorder, Single Episode, Moderate
F32.2	Major Depressive Disorder, Single Episode, Severe Without Psychotic Features
F32.3	Major Depressive Disorder, Single Episode, Severe With Psychotic Features
F32.4	Major Depressive Disorder, Single Episode, In Partial Remission
F32.5	Major Depressive Disorder, Single Episode, In Full Remission
F32.9	Major Depressive Disorder, Single Episode, Unspecified
F33.0	Major Depressive Disorder, Recurrent, Mild
F33.1	Major Depressive Disorder, Recurrent, Moderate

F33.2	Major Depressive Disorder, Recurrent Severe Without Psychotic Features
F33.3	Major Depressive Disorder, Recurrent, Severe With Psychotic Symptoms
F33.41	Major Depressive Disorder, Recurrent, In Partial Remission
F33.42	Major Depressive Disorder, Recurrent, In Full Remission
F33.9	Major Depressive Disorder, Recurrent, Unspecified

Adjustment disorder with depressed mood

F43.21	Adjustment Disorder With Depressed Mood
F43.23	Adjustment Disorder With Mixed Anxiety And Depressed Mood

Supplementary Table 3. Unadjusted patient depressive and anxiety symptom outcomes

	Depression N=8,166		Anxiety N=1,411	
	Collaborative care	Specialty psychiatry	Collaborative care	Specialty psychiatry
	(n=1,466; 18%)	(n=6,700; 82%)	(n=349; 24.7%)	(n=1,062; 75.3%)
Using last observation for follow-up				
Remission score*	632 (43%)	1,779 (27%)	11 (0.3%)	1 (0.1%)
Score 50% of baseline	806 (55%)	2,394 (36%)	80 (14%)	81 (10%)
Mean follow-up time, days	108		84	
	105	109	78	86
Mean baseline score	9.1	10.0	10.6	11.2
Mean last follow-up score in six months	4.9	7.6	8.8	10.8
Mean difference from baseline	-4.2	-2.6	-2.4	-0.9
Using all repeated observations for follow-up				
Mean time in treatment, days	73		67	
	61	78	56	71
Mean baseline score	9.3	10.3	11.2	11.5
Mean all scores in six months	6.1	8.7	9.9	11.4
Mean difference from baseline	-3.2	-1.7	-1.6	-0.5

* Remission defined as a score of <5 depression (as measured by the patient health questionnaire [PHQ-9]) or <5 anxiety (as measured by the generalized anxiety disorder scale [GAD-7]).

Population represents patients with follow-up measures only.