

RESEARCH ARTICLE**Impact of Evidence-Based Psychotherapy on Employee Retention: A Cohort Study on Employer-Sponsored Mental Health Care****Authors**

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Abstract

Objective: To examine the relationship between mental health treatment and employee retention.

Study Design: Retrospective Cohort Study

Methods: 14 companies (184,715 employees) were studied evaluating retention among individuals who used an evidence-based mental health benefit. Among three companies who provided health plan claims (n=24,947), we compared 1,966 employees who used the evidence-based mental health benefit and 1,063 who had usual care. Survival analysis was used to compare the probability of staying at the company for the two cohorts. Cox Proportional Hazards Models were used to evaluate the hazard ratio of leaving the company for those who used the evidence-based mental health benefit versus usual care.

Results: Among 14 companies (184,715 employees) with the evidence-based mental health benefit, 11% who used the evidence-based mental health benefit left the company within 12 months, compared to 22% of those who did not. Among three companies who provided health plan claims, 12 month rates of employee turnover were 7% for the evidence-based mental health benefit versus 15% for health plan psychotherapy (p<0.005). Among the subgroup of employees with an anxiety diagnosis, the relative risk of employees leaving the company was 27% lower among those who used the evidence-based mental health benefit versus usual care (p=0.03).

Limitations: Employees have the option to choose between the evidence-based mental health benefit and usual care so we are not able to account for immeasurable differences between the two groups.

Conclusions: Use of an evidence-based mental health benefit over health plan mental health care (usual care) is associated with lower employee turnover.

Key words: Psychotherapy, Employee Assistance Program, Mental Health, Depression, Anxiety, Employee Turnover, Evidence-based treatment, Productivity

1 Introduction

Mental health diagnoses are common among employees, affecting 18% of United States adults¹. Left untreated, mental health conditions are associated with decreased productivity with a negative financial impact estimated at \$51.5 billion annually in the United States alone². Drivers of lost productivity include suboptimal workplace performance (presenteeism), increased absenteeism and short-term disability, and increased employee turnover (or decreased employee retention)^{3,4}.

Numerous prior studies document the relationship between poor mental health and increased employee turnover⁵⁻⁷. Lerner and colleagues found up to a seven-fold increase in turnover (12-15% six-month turnover among employees diagnosed with depression compared to 2% of controls) in a population of employed individuals identified from a primary care setting⁸. Reasons for increased turnover are likely multifactorial, including depressed or anxious employees being more likely to quit or lose their jobs due to worsened performance and difficulty managing time and managing others^{3,4}. It is estimated that employers incur over 50% of the departing employee's annual salary in replacement costs⁹.

In 2010, Greenberg and colleagues estimated that over \$38 billion was spent on direct treatment costs for Major Depression alone among employed individuals¹⁰. Despite this significant expenditure, employees continue to face significant challenges accessing timely, evidence-based care. With a decreasing number of mental health professionals accepting insurance, health plan behavioral health offerings have been described as "phantom networks" with patients facing long wait times to secure a first appointment¹¹⁻¹³. Patients seeking behavioral health care are 5.4 times as likely to pay out of pocket for an out-

of-network behavioral health provider compared to other outpatient visits¹⁴. Care quality also remains a significant issue with many behavioral health treatments shown to be ineffective or even iatrogenic^{15,16}. In contrast, evidence based treatments (EBTs) are those interventions that have been rigorously tested in randomized controlled trials and have demonstrated clinical efficacy when compared to a control or active treatment condition^{17,18}. Non-EBTs are prevalent in community psychotherapy and health plan networks. A study at a Los Angeles outpatient psychiatry clinic found that only 3.8% of anxiety patients received exposure based cognitive behavioral therapy (CBT) despite this being the gold standard treatment with 67% of anxiety patients receiving non-CBT psychotherapy¹⁹.

Given variable quality and limited access in most commercial networks, only 18% of clients achieve clinically significant improvement in Employee Assistance Programs (EAPs) and 24% in HMOs²⁰. Poor rates of clinical improvement may lead to lower than desired treatment-associated productivity improvements⁸. Simon and colleagues, using data from antidepressant treatment trials, found that after adjusting for baseline depression severity and medical comorbidity, patients with greater clinical improvement were significantly more likely to remain in paid employment. In their adjusted model, probability of paid employment was 15% higher at 12 months (85% versus 70%, $p=0.007$) among those achieving remission compared to those with persistent symptoms²¹.

Extending the research linking clinical and productivity improvement, recent studies suggest that higher quality care may be associated with reduced employee turnover when compared to usual care. In a prospective, randomized controlled trial led by Wang and colleagues, employees randomized to an enhanced mental health program (specifically

a telephonic care management program) were more likely to remain employed at 6 months and 12 months compared to those who only had access to usual care through the employer-sponsored health plan (6 months: 96% intervention versus 90% usual care, $p=0.007$, 12 months: 93% intervention versus 88% usual care $p=0.07$ with pooled $p=0.02$)²². In another prospective randomized study, intervention patients who received psychotherapy or medication management after a quality improvement initiative were significantly more likely to be employed at 12 months (66% intervention versus 61% usual care, $p=0.03$)²⁵. This study builds on prior literature tying clinical improvement and care quality with reduced employee turnover by looking specifically at the impact of access to evidence based mental health treatment (EBT) on employee retention. We used a registry of employees who engaged with their EBT benefit and compared them to peers from the same set of companies who accessed psychotherapy through their employer-sponsored health plan (usual care). Our hypothesis was that use of EBTs would be associated with increased employee retention above and beyond that of usual care.

2 Methods

2.1 Study Design:

This is a retrospective, cohort study combining eligibility data with claims data aggregated across customers of an EBT psychotherapy benefit delivered by Lyra Health and its clinical partners. Our primary outcome of interest is employee retention defined as percentage of employees still with the company at 12-months as well as the hazard-ratio of retention controlling for age, sex, geography, industry. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist was used to guide study design and reporting.

2.2 Setting:

Lyra Health provides a behavioral health benefit that gives convenient access to mental health therapists who exclusively practice EBTs. All clinicians are thoroughly vetted for clinical quality, particularly adherence to and mastery of EBTs using extensive clinical interviews and a proprietary machine learning model based on aggregated public and private data. Historically, only 5% of therapists who apply to Lyra's network have been accepted. Network quality reviews occur weekly and focus on client improvement on validated clinical scales. 72% of Lyra clients show reliable clinical improvement on the PHQ-9 or GAD-7²³ compared to 18-24% in commercial EAPs and health plans²⁰.

2.3 Participants:

Participation in the EBT Psychotherapy benefit versus Health Plan Psychotherapy benefit was voluntary and guided by employee self-selection. Employees are eligible for the EBT immediately upon employment at a company partnering with Lyra. Employees are eligible for Health Plan psychotherapy if they elect for health plan coverage under their employer and choose the employer's PPO/EPO option.

2.4 Data Sources:

2.4.1 Eligibility Data

Eligibility data files were used to ascertain each individual's employment status. These files are updated weekly by employers and list all of the company's active employees. All 14 customer companies included in this study had the EBT Psychotherapy benefit available to all employees for at least 12 months across a total of 184,715 employees. The 14 companies launched at different times, so the eligibility data across all companies spans between calendar dates of January 2017 and October 2019.

2.4.2 Health Plan Claims Data

Health plan claims data provided by employers was used to determine whether an employee utilized psychotherapy through the employer-sponsored health plan. This data was available for a subset of 3 companies with a total of 24,947 employees. Psychotherapy utilizers were identified if they had one or more professional medical claims with a CPT code indicating a psychotherapy service (CPT codes: 90785, 90832, 90833, 90834, 90836, 90837, 90838, 90839, 90840, 90845, 90846, 90847, 90849, 90853). ICD-10 codes were used to ascertain the primary treatment diagnosis (Supplemental Table 1).

2.4.3 EBT Psychotherapy Utilization Data

The EBT cohort was identified through the EBT psychotherapy billing data as those individuals who had at least one EBT psychotherapy session. Clients who had psychotherapy sessions through both the EBT benefit and their health plan were omitted to isolate the separate effects of each (and represented less than 7% of the dataset). EBT therapists do not assign an ICD-10 code when billing, and instead assign a general diagnostic impression (Supplemental Table 1).

2.5 Bias:

Employees voluntarily self-select into using EBT versus health plan psychotherapy. It is unknown why an employee may choose psychotherapy through the EBT benefit versus health plan. While the EBT benefit offers the full range of office-based psychotherapy (including treatment of severe cases such as suicidality, psychosis, substance use disorder), it is possible that employees utilizing health plan psychotherapy may have more severe mental health needs. To reduce selection bias, we specifically examined a subset of employees who sought treatment for anxiety, thought to be the most comparable diagnosis across cohorts.

2.6 Study Size:

The overall study includes 184,715 employees. These employees were included because they worked at companies who had the EBT psychotherapy benefit available for at least 12 months and companies provided weekly eligibility files to track employment. The three companies that provided medical claims for analysis also allowed for analysis of cost, and yielded an EBT psychotherapy cohort (n=1966) and Health Plan psychotherapy cohort (n=1063). The EBT psychotherapy cohort includes individuals who had at least one psychotherapy session with a provider through the EBT benefit. The Health Plan psychotherapy cohort comparison cohort includes individuals who had at least one claim through the health plan since the EBT psychotherapy benefit launch. The data and analyses in the study are not human subject research therefore exempt from Institutional Review Board approval.

2.7 Statistical Approach

We began with an analysis looking at whether employees who used the EBT psychotherapy benefit were still employed at their company after 12 months following the company's launch of the EBT psychotherapy benefit compared to those who had not utilized the benefit. We calculated the percentage of people who left prior to the 12 month anniversary of a company's launching the EBT psychotherapy benefit, comparing those who had at least one EBT psychotherapy session to those who did not.

A Kaplan-Meier Curve was constructed to demonstrate the cumulative probability of active employment at a given number of days elapsed since launch of the EBT psychotherapy benefit (for employees who were already employed at the company) or employee start date (for employees who joined after the EBT benefit launch). Hazard ratios and 95% confidence intervals were calculated. To address potential selection bias, a sub-

analysis looking specifically at employees in treatment for a primary diagnosis of anxiety was done to confirm the robustness of our findings. A Cox Proportional Hazards model was used to compare the overall continued employment of EBT psychotherapy users versus routine care users, controlling for age, sex, geography (current residence in California v. another state) and industry. The Cox Proportional Hazards model was selected given that our study consists of units observed at some starting point and observed over time²⁴. The model estimates the hazard rate i.e. probability of an employee leaving the company at a given point in time. At any given point, an employee is at risk of experiencing an event which represents a transition or “failure,” after which the employee is no longer at risk and is removed from analysis. We consider time from the company’s launch of the EBT psychotherapy benefit to the time of dropping

out of the eligibility file, or electing Cobra. Employees who never experience the event of interest by the end of the observation period are right-censored. The model met the proportional hazard assumption thereby confirming that the ratio of the hazard for any two employees is constant over time and the Cox Proportional Hazards Model is an appropriate choice. All analyses were completed using the Python lifelines package.

3. Results

3.1 Descriptive Data:

From an overall population of 184,715 eligible employees, 9,618 used the EBT benefit across 14 customer companies. 11% left their company within 12 months of the launch of the EBT benefit compared to 22% (n=175,097) of employees who were employed at the company during the same time but did not utilize the EBT benefit (Table 1).

Table 1. Turnover among employee populations with access to enhanced EBT benefit

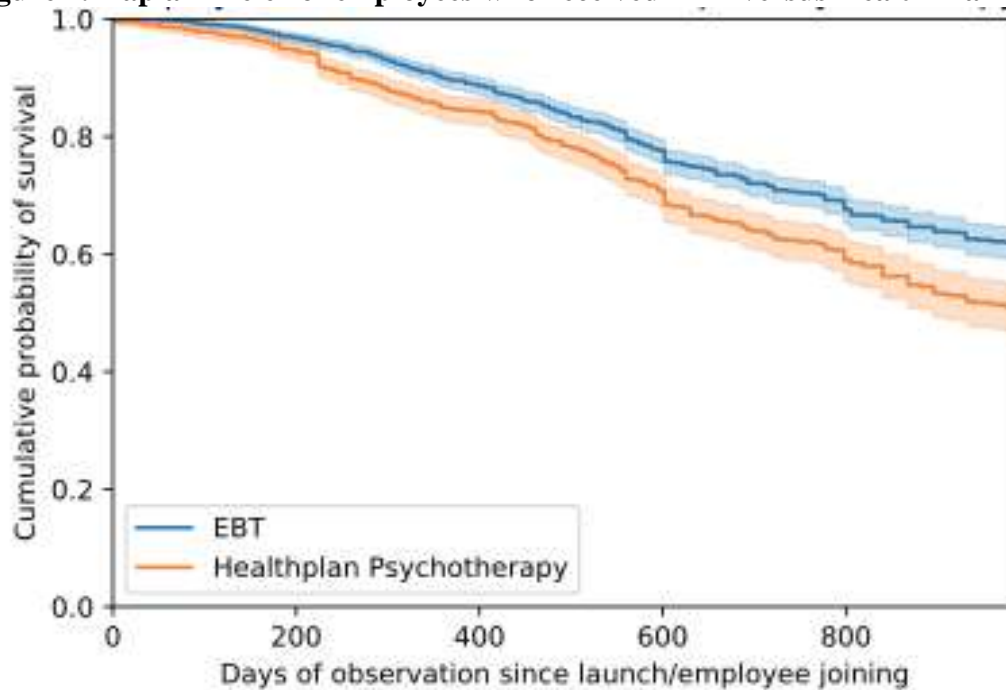
	% left within 12 months	n
Utilized EBT benefit	11%	9,618
Did not use EBT benefit	22%	175,097
Total		184,715

Among the three customers for whom we had health plan data, we identified 1,966 employees who received EBT psychotherapy and 1,063 employees who utilized Health Plan psychotherapy (Table 2). A smaller proportion of male employees utilized the EBT benefit compared to Health Plan psychotherapy (54% versus 63%, $p < 0.001$). Employees who used the EBT benefit were slightly younger with a mean age of 34 years compared to 38 years among those utilizing Health Plan psychotherapy ($p < 0.001$). EBT and Health Plan cohorts were equally likely to live in

California (48% versus 46%). Employees who utilized the EBT benefit were less likely to have received treatment for a diagnosis of depression (39%) than Health Plan utilizers (58%) ($p < 0.001$). A similar percentage (25%) of both EBT and Health Plan psychotherapy utilizers sought care for anxiety. Among those treated for anxiety, 484 people used the EBT benefit as compared to 261 who received Health Plan psychotherapy (Table 2) with similar demographics between the anxiety specific cohort and the all-diagnosis population.

Table 2. Characteristics of Employees Who Received EBT versus Health Plan Psychotherapy

Characteristic	EBT Psychotherapy (All diagnoses)		Healthplan Psychotherapy (All diagnoses)		p-value	EBT Psychotherapy (Anxiety only)		Healthplan Psychotherapy (Anxiety only)		p-value
	No. of cases	Mean or frequency (%)	No. of cases	Mean or frequency (%)		No. of cases	Mean or frequency (%)	No. of cases	Mean or frequency (%)	
Total Cases	1966		1063			484		261		
Sex										
Female	908	46%	395	37%	<0.001	233	48%	85	33%	<0.001
Male	1058	54%	668	63%	<0.001	251	52%	176	67%	<0.001
Age		34.18		37.79	<0.001		33.2		36.61	<0.001
Location										
Lives in CA	947	48%	493	46%	0.346	235	49%	135	52%	0.409
Does not Live in CA	1019	52%	570	54%	0.346	249	51%	126	48%	0.409
Diagnosis										
Depression	776	39%	619	58%	<0.001	--	--	--	--	--
Anxiety	484	25%	261	25%	0.968	--	--	--	--	--
Other	566	29%	183	17%	<0.001	--	--	--	--	--
Missing	140	7%	--	--	--	--	--	--	--	--
Company										
Technology	1190	61%	478	45%	<0.001	278	57%	109	42%	<0.001
Manufacturing	584	30%	355	33%	0.036	150	31%	99	38%	0.056
Consumer Goods	192	10%	230	22%	<0.001	56	12%	53	20%	0.001
Left Company	578	29%	399	38%	<0.001	137	28%	96	37%	0.018
Days of Eligibility		663.84		607.14	<0.001		668.89		621.94	0.017

Figure 1. Kaplan-Meier of employees who received EBT versus Health Plan psychotherapy

3.2 Outcome Data:

The average number of days of eligibility observed for the EBT group was 664 days, compared to 607 days in the Health Plan cohort ($p < 0.001$). At the end of the observation period (duration from benefit launch/employee joining to the end of the study), 578 (29%) of employees who used the EBT benefit had left the company, as compared to 399 (38%) of employees who used Health Plan psychotherapy. Among employees who utilized the EBT benefit, 578 (29%) left by the end of the observation period compared to 399 (38%) who used Health Plan psychotherapy ($p < 0.001$). Among those who utilized the EBT psychotherapy for anxiety, 137 (28%) left the company by the end of the observation period compared to 96 (37%) in the Health Plan psychotherapy cohort ($p = 0.018$).

3.3 Main Results:

Kaplan-Meier analysis of the overall EBT versus Health Plan psychotherapy cohorts showed that at 12 months, an employee who had utilized at least 1 session of EBT

psychotherapy had a 90% probability of still being employed at the company compared to 85% for an employee utilizing health plan psychotherapy (log-rank test with $p < 0.005$).

To extend our survival analysis, we used a multivariate Cox Proportional Hazards model for all diagnoses as well as well as anxiety-only to assess the hazard ratio for the EBT versus Health Plan psychotherapy controlling for age, sex, geography, industry. These covariates were chosen as they may relate to tenure at a company. For example, California-based employees may have higher baseline rates of turnover as their employers face more external competition. Similarly, older workers may favor stability and be less inclined to leave their jobs than younger workers who have fewer dependents. In the group including all diagnoses, a Cox Proportional Hazards model yielded a hazard ratio of 0.71 ($p < 0.005$) comparing those who utilized EBT treatment to those who utilized the health plan. In the anxiety cohort, the model calculated a hazard ratio of 0.73 ($p = 0.03$) for the EBT benefit controlling for age, sex, geography, industry.

The results show that at any given point in time, an employee in EBT psychotherapy treatment for a primary diagnosis of anxiety

has significantly reduced odds of leaving their company compared to someone who uses the Health Plan benefit.

Table 3. Results from the Cox Proportional Hazards Model Examining the Association Between EBT benefit and the Risk of Employee Turnover for people with an Anxiety Diagnosis While Adjusting for Patient Demographics (n=745 with 233 people leaving the company)

Model 1 (no controls)			
Predictor variable	Hazard Ratio	95% Confidence Interval	P-Value
EBT vs Health Plan (usual care)	0.7	0.54 - 0.90	0.01
Model 2 (with controls)			
Predictor variable	Hazard Ratio	95% Confidence Interval	P Value
EBT vs Health Plan (usual care)	0.73	0.56 - 0.97	0.03
Female (compared to male)	1.08	0.82 - 1.43	0.56
Age	1.01	0.99 - 1.02	0.52
Living in CA (compared to outside of CA)	1.01	0.76 - 1.36	0.92
Consumer goods employer (compared to technology)	1.74	1.16 - 2.60	0.01
Manufacturing employer (compared to technology)	1.14	0.79 - 1.64	0.48

4. Discussion:

Mental illness is a common cause of morbidity and productivity loss among employees. In this study, we found that use of an evidence-based mental health benefit was associated with significantly reduced employee turnover at 12 months (10%) compared to health plan psychotherapy (15%) (hazard ratio=0.71, $p<0.005$). These findings were consistent for the sub-group of employees specifically treated for anxiety, with 12 month rates of employee turnover of 7% for the EBT benefit versus 15% for Health Plan psychotherapy (HR=0.73, $p=0.03$). As an example of the

magnitude of this association, a 35-year old employee with anxiety who has used the EBT benefit through their employer is 27% more likely to remain employed at their company at any point in time as compared to an employee who has used psychotherapy through their Health Plan. These findings are particularly striking in an environment of very low unemployment pre-Covid-19 pandemic and recession. Because of the additional stress of Covid-19 and the resulting changes to how work is done with the recession, we believe that EBT benefits may be even more substantial.

These findings are consistent with and build on prior research that treatment decreases mental health-related employee departures, and that the effect of high-quality, timely treatment is greater than that of “usual care”^{22,25}. EBTs have been shown in rigorous clinical studies to drive higher rates of clinical improvement, directly supporting research tying better clinical improvement with lower employee turnover^{17,18,19}. Beyond clinical improvement, those receiving mental health treatment may experience improved performance and job satisfaction³ translating into fewer departures. Access to quality treatment in itself may have a broader impact on employee morale and lift “intent to stay”, “resiliency”, and “satisfaction with employment and benefits”²⁶. Anecdotally, since the majority of EBT psychotherapy providers are not contracted with traditional health plan or EAP networks, there may be increased employee retention because of concerns of losing access to their therapist if employees leave for another company not offering the EBT benefit.

Translating our findings into financial savings, significant direct costs are incurred by separation, recruiting, and hiring a new employee (estimated to be 50% or more of the annual salary for a given role) in addition to indirect costs such as lower productivity due to temporary support, shifting work to other employees, onboarding a new employee, lowering organizational morale and losing institutional knowledge (estimated to be an additional 90-200% of a salary)⁹. The magnitude of these findings suggest that broader treatment with EBTs, if scaled, has the potential to save billions of dollars each year through reduction in employee turnover. As an example, a typical 10,000 person company with an average employee salary of \$75,000 per year and 5% employee psychotherapy usage in the health plan could see \$1,500,000 in direct savings from reduced turnover within a 12-month period (assuming 15% turnover in

the health plan versus 7% with the EBT benefit).

Because thousands of employees across multiple employers are included in this analysis, which results in greater generalizability and significance over previous studies which were limited to <300 employees each^{4,8,25,21,22}. Many prior studies use primary care data which may lack external validity as participants may be more complex than the average employee seeking mental health treatment^{21,25}. Finally, whereas prior studies looked at the relationship between clinical outcomes or quality improvement initiatives with employee turnover, this is the first study specifically looking at EBTs, extending the literature already establishing their superior clinical efficacy.

There are several potential limitations to our approach. Our data set cannot distinguish between measurement of voluntary and involuntary departures. We rely specifically on the measure of whether someone left the company, without more detail of why they left the company. With more nuanced data flagging these two types of departures, we would be able to explore involuntary turnover versus termination as separate measures. While it is possible that there are more terminations among individuals struggling with mental health than in the overall population, we do not believe that this biases our final results given that we compare individuals who have mental health issues to each other when analyzing the anxiety cohort. It is possible that the EBT benefit, which is tied to employment at select companies, motivates people to stay at that specific company whereas a Health Plan benefit is less exclusive and therefore does not dissuade people from making voluntary departures. There may be other confounding differences between the Lyra and Health Plan populations like client motivation that we cannot measure. We are

limited from exploring this further in our current dataset, however future researchers may want to qualitatively assess the factors that influence employee's choices to leave to understand the nuances of employee motivations. As previously noted, the EBT psychotherapy billing data does not include ICD-10 diagnoses. As such while we are able to map ICD-10 codes to broad diagnostic categories (Supplemental Table 1), we are unable to take advantage of the complexity modifiers in ICD-10 to further match EBT psychotherapy clients to Health Plan clients taking into account baseline clinical severity. EBT psychotherapy billing codes do include a separate diagnostic category for stress versus anxiety, with providers instructed to reserve anxiety for those meeting a DSM-V criteria. Given this, we believe our anxiety sub-analysis isolates a comparable clinical population for those who received care through EBT psychotherapy or the Health Plan. The size of the data set, the robustness of findings, and the internal consistency with a similar magnitude of improved retention observed across analyses all point to the minimal effects of any potential selection bias.

5. Conclusions

As employers bear the cost of offering enhanced mental health treatment for their employees, it is important to consider financial

offsets and business-related returns for such offerings. These findings are particularly important to understand as employers grapple with Covid-19 challenges. Excess turnover as employers try to adapt their business could be even more costly since recruiting processes need to be rebuilt to work virtually.

This study provides the first evidence that timely access to evidence-based mental health treatment can yield significant financial savings through improved employee retention. Future research should look at the impact of EBTs on other dimensions of employer productivity (such as presenteeism and absenteeism) to quantify the full impact of evidence-based mental health treatment on employee productivity. Given that mental disorders impact millions of employees every year, costing employers billions of dollars, research on interventions that drive clinical improvement and financial savings remains critically important.

Transparency

Declaration of Funding: This study was funded by Lyra Health, Burlingame, CA

Acknowledgments: The authors would like to express their appreciation to the therapists in the Lyra network who work every day to support clients in leading happier, more fulfilling lives.

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Supplemental Table 1.

ICD-10 codes that Map to EBT Diagnostic Impressions of Anxiety and Depression

EBT Diagnostic Impression	ICD-10
Anxiety	F064, F4000, F4001, F4002, F4010, F4011, F40210, F40218, F40220, F40228, F40230, F40231, F40232, F40233, F40240, F40241, F40242, F40243, F40248, F40290, F40291, F40298, F408, F409, F410, F411, F413, F418, F419, F428, F430, F488, R452, R453, R454, R455, R456, R4581, R4582, R4583, R466, R4681
Depression	F0630, F0631, F0632, F0633, F0634, F310, F320, F321, F322, F323, F324, F325, F328, F3289, F329, F331, F332, F333, F3340, F3341, F3342, F338, F339, F340, F341, F348, F3489, F349, F39, F4320, F4321, F4322, F4323, F4324, F4325, F4329, F438, F439, R4586