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MERU HEALTH COST SAVINGS WHITE PAPER

Meru Health works with Stanford, Harvard to provide significant clinical results and cost savings for those suffering from depression and anxiety via a unique, holistic program

Significant improvements in depressive and anxiety symptoms lead to an estimated cost savings of over \$6000 per year for each enrolled participant



EXECUTIVE SUMMARY



THE PROBLEM

Depression and anxiety are associated with high medical costs and reduced productivity at work.

The CoVid-19 pandemic has increased depression and anxiety rates to startling heights, necessitating quick deployment of accessible and effective mental health care.



THE SOLUTION

Meru Health is an online mental health clinic with holistic care delivered by licensed clinical therapists via a smartphone app designed to help patients with depression and anxiety feel better.

The use of the Meru Health program reduces symptoms of depression and anxiety, leading to health care utilization and worker productivity-related cost savings



THE ANALYSIS

Meru Health participants who have PHQ-9 scores indicative of major depression (PHQ-9 of 10 or higher) at the start of treatment experience cost savings associated with feeling better at the end of treatment of:

\$3,018.64 in medical cost savings
+ \$4,151.51 in worker productivity improvements

for a total savings = \$7,170.15.



THE BOTTOM LINE

Accounting for the average cost of the Meru Health program of \$1,080, **enrollment in the Meru Health program is associated with a cost savings of \$6,090.15 per enrolled depressed participant per year.**

Major depression affects over 7% (17.7 million) of American adults each year with enormous health, social, and economic consequences.¹ The second leading cause of disability worldwide, major depression costs the U.S. an estimated \$210.5 billion per year.² Those costs are due to greater direct medical care of depression but also indirect costs. For example, people with untreated or undertreated depression are more likely to have comorbid conditions, decreased worker productivity and increased risk of suicide. For every \$1 spent on direct medical care costs of depression, an estimated \$1.90 is spent on indirect costs.

Now is a particularly important time in our history to provide comprehensive, effective, and accessible depression care. The stress and isolation caused by the CoVid-19 pandemic has led to a rise in mental health problems globally. People are reporting historical levels of both depression and anxiety symptoms, especially women, minorities, and people with preexisting health conditions. Effective mental health solutions are urgently needed to meet the needs and, because the U.S. has a shortage of mental health professionals, these interventions need to be creative and accessible to those in need.

The Meru Health Solution

Meru Health is an online provider for mental health care. Meru Health has developed a comprehensive treatment program to help people with depression and anxiety delivered via a smartphone app and guided by a licensed clinical therapist. The program combines several different treatment modalities such as cognitive behavioral therapy, behavioral activation therapy, and mindfulness meditation that are proven evidence-based techniques to reduce the symptoms of depression and anxiety. It also includes heart rate variability biofeedback (HRVB), and other holistic components based on sleep hygiene and nutritional psychiatry. During the 12-week program, participants access video-lessons and complete prescribed practices and exercises designed to help them feel better. The therapist oversees and supports participant progress and gives feedback via in-app chat and, when needed, phone or televideo calls. Because each therapist can oversee about 100 patients at a time, program is scalable in light of the mental health provider shortage. It also is a preferred solution over traditional employer offerings such as Employee Assistance Programs (EAPs), as shown in Figure 1. The Meru Health team has published several research papers that have demonstrated how well the program has worked for its participants³ and how engaged and satisfied its participants are with the care received.

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- 1 Substance Abuse and Mental Health Services Administration. (2019). Results from the 2018 National Survey on Drug Use and Health: Detailed tables. Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <https://www.samhsa.gov/data/>
 - 2 Greenberg, P. E., Fournier, A. A., Sisitsky, T., Pike, C. T., & Kessler, R. C. (2015). The economic burden of adults with major depressive disorder in the United States (2005 and 2010). *The Journal of clinical psychiatry*, 76(2), 155-162.
 - 3 Goldin, P. R., Lindholm, R., Ranta, K., Hilgert, O., Helteenvuori, T., & Raevuori, A. (2019). Feasibility of a Therapist-Supported, Mobile Phone-Delivered Online Intervention for Depression: Longitudinal Observational Study. *JMIR formative research*, 3(1), e11509.
Economides, M., Ranta, K., Nazander, A., Hilgert, O., Goldin, P. R., Raevuori, A., & Forman-Hoffman, V. (2019). Long-Term Outcomes of a Therapist-Supported, Smartphone-Based Intervention for Elevated Symptoms of Depression and Anxiety: Quasiexperimental, Pre-Postintervention Study. *JMIR mHealth and uHealth*, 7(8), e14284.
Economides, M., Lehrer, P., Ranta, K., Nazander, A., Hilgert, O., Raevuori, A., Gevirtz, R., Khazan, I., & Forman-Hoffman, V. (2020). Feasibility and efficacy of the addition of heart rate variability biofeedback to a remote digital health intervention for depression. *Applied Psychophysiology and Biofeedback*.

Figure 1.

COMPARISON	Meru Health	EAP
Sustainable clinical results	Yes—Develop long term coping skills	No- incident-specific
Program length	12 weeks	Average 2.5 sessions per incident****
Average engagement time	20 hours	2.5 hours*
Average completion rate	89%	36.7%**
Average utilization rate	3-8%	2-4%***

Medical Costs and Potential Savings

The healthcare costs associated with depression are staggering. People suffering from depression get sick more often and, when they do, tend to get sicker and for longer than those without depression. They are likely to have increased risk of comorbid medical conditions like diabetes, cancer, and heart disease that can conversely be worsened by depression as well. In one study, 85% of those diagnosed with major depression had at least one additional serious chronic health condition and nearly 30% had four or more of these conditions. As a result, people with depression become higher utilizers of healthcare services than those without depression, which costs insurers, employers, and patients themselves. The Blue Cross Blue Shield Association (BCBS) recently compared the healthcare costs between those with and without a diagnosis of major depressive disorder (MDD) and found very striking differences in the number of outpatient visits, inpatient visits, emergency room visits, and prescription drugs taken between depressed and nondepressed people (see Figure 2). Other studies have also shown that people with higher depressive symptom scores tend to have more emergency room visits and hospitalizations than those with lower depression scores.

Figure 2:

- ✓ Outpatient visits 8 vs 21 per member per year
- ✓ Prescriptions 7 vs 22 per member per year
- ✓ ER visits 16 vs 42 per 100 members per year
- ✓ Inpatient visits 15 vs 49 per 100 members per year

Source: BlueShield, B. (2018). Major Depression: The Impact on Overall Health. Retrieved from: <https://www.bcbs.com/the-health-of-america/reports/major-depression-the-impact-over-all-health>

When the authors of this study added up all of the costs associated with these visits and prescriptions, they found that the average total cost of care for depressed patients was \$10,673 per year as compared with \$4,283 per year for nondepressed patients. That is, depressed people had an average \$6,390 more healthcare costs than nondepressed people every year.

* <http://chestnutglobalpartners.org/Portals/cgp/Publications/Trends-Report-April2017.pdf>

** <https://digitalcommons.du.edu/cgi/viewcontent.cgi?article=2456&context=etd>

*** <https://www.perspectivesltd.com/2014/09/11/eap-utilization-data-trends-2/>

**** Citation: Mahieu, K., & Taranowski, C. J. (2013). External Employee Assistance Program Vendors: A Study of RFI Data from 2009-2010. Accessed here: <https://archive.hshsl.umaryland.edu/bitstream/handle/10713/51111/EASNA-Research-Notes-Vol-3-No-3.pdf?sequence=1&isAllowed=y>

Using these BCBS findings and real-world data from the Meru Health program participants can provide an estimate of potential healthcare utilization cost savings associated with enrollment in the Meru Health program. An analysis of 453 Meru Health participants who started the program with a PHQ-9 depressive symptom score that indicated major depressive disorder (score of 10+) like those studied in the BCBS study indicated

a cost savings associated with decreased healthcare utilization of \$3018.64 per enrolled participant in the 12 months following the end of treatment.⁴

Productivity Loss and Potential Savings

In addition to increased healthcare utilization, depression typically reduces people's ability to be productive at work. This lost productivity costs the U.S. an estimated \$84 billion per year.⁵ Depressed people also are more likely to be absent from work, costing U.S. employers nearly \$6 billion per year. In the worst cases, depression can cause disability that prevents people from working at all. Those who are able to keep working suffer from productivity issues such as absenteeism—the having unplanned absences from work—and presenteeism—a worker being at work but not able to fully do his or her job because of an illness or injury like depression.

As a result of presenteeism and absenteeism, people with depression cost their employers millions of dollars in lost productivity per year.

Participants enrolled in the Meru Health treatment program are asked to complete a questionnaire called the Worker Productivity and Activity Impairment (WPAI) scale before and after the Meru treatment program. This scale allows Meru to estimate the amount of absenteeism, presenteeism, and total lost productivity due to depression for each person enrolled in the program. This also applies to each employer Meru works with and allows Meru to give employers an employer-specific Return On Investment (ROI) amount for their total population treated by Meru Health.

Among the 453 Meru Health participants who started the program with a depressive symptom score described above (PHQ-9 of 10 or higher), we found a mean increase of 9.48% in worker productivity

Taking the 9.48% improvement in worker productivity together with an estimated salary of \$49,764 per year (which was the US average in the first quarter of 2020 according to the U.S. Bureau of Labor and Statistics)⁶ yields **an estimated cost savings associated with improved worker productivity of participants enrolled to the Meru Health program of \$4,151.51 in the 12 months following the end of treatment.**

4 Among 453 participants who started the Meru Health program with a PHQ-9 symptom score that indicated major depressive disorder (MDD) like those in the BCBS study (score of 10 or higher), about half (214 or 47.24%) no longer had symptoms indicative of MDD (PHQ-9<10) at the end of the program. Using the BCBS study findings, this means that per 1000 participants with MDD, 472.4 will get better, each saving \$6390 in the 12 months following treatment. $472.4 \times \$6390 = \$3,018,636$ in cost savings per enrolled participant per year.

5 Evans-Lacko, S., & Knapp, M. (2016). Global patterns of workplace productivity for people with depression: absenteeism and presenteeism costs across eight diverse countries. *Social psychiatry and psychiatric epidemiology*, 51(11), 1525-1537.

6 <https://www.bls.gov/news.release/wkyeng.t03.htm>

Total Cost Savings of the Meru Health Program

Taking the medical costs savings and worker productivity cost savings together and assuming a Meru Health program costs of \$1,080 yields an

overall cost savings of \$6,090.15 per participant per year. Table 1 below shows some estimates of various total cost savings of implementing the Meru Health program, depending on the size of the organization.⁷

Table 1.

Size of organization	Estimated number with major depression (7% ⁸ of population)	Cost savings per participant per year	Total cost savings per year
500	35	\$6,090.15	\$212,070.25
1,000	70	\$6,090.15	\$424,140.50
10,000	700	\$6,090.15	\$4.24 million
100,000	7,000	\$6,090.15	\$42.4 million

⁷ Taking the medical costs savings and worker productivity cost savings together: \$3,018.64 + \$4,151.41 = a total cost savings of \$7,170.15 per worker enrolled in the Meru Health Program in the 12 months following the end of treatment. Assuming the program costs \$1,080, this is a cost savings of: \$7,170.15 - \$1,080 = \$6,090.15 per participant per year. Table x below shows some estimates of various total cost savings of implementing the Meru Health program, depending on the size of the organization.

⁸ Substance Abuse and Mental Health Services Administration. (2019). Results from the 2018 National Survey on Drug Use and Health: Detailed tables. Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <https://www.samhsa.gov/data/>



CONCLUSION

Depression is associated with high medical costs and reduced productivity at work. Now more than ever, with the CoVid-19 global pandemic causing rising rates of depression and anxiety, unique, accessible mental health solutions are urgently needed that address some of the issues with traditional types of care like face-to-face therapy and Employee Assistance Programs. Meru Health is an online mental health clinic with holistic care delivered by licensed clinical therapists via a smartphone app designed to help patients with depression feel better. Several analyses have demonstrated the success of the Meru Health treatment program in reducing symptoms of depression and anxiety that should lead to significant cost savings.

The results of this analysis show that Meru Health participants who have PHQ-9 scores indicative of major depression (PHQ-9 of 10 or higher) at the start of treatment experience sizable savings of both medical and productivity costs. It is estimated that these participants reduce their medical costs by \$3,018.64 and problems with worker productivity by \$4,151.51—for a total savings of \$7,170.15 per year. Taken together with an average cost of the program of \$1,080, enrollment in the Meru Health program is associated with a net cost savings of \$6,090.15 per depressed participant per year.