

MENDmate™ Vision

Version <1.1>

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1. Introduction

The purpose of this document is to collect, analyze, and define the business requirements, i.e., high-level needs, desired ultimate business outcomes and features of MENDmate™ Pro, a progressive web application for online therapy homework. It focuses on the capabilities needed by the stakeholders and the target users, and why these needs exist in the first place. The details of how the MENDmate™ Pro application fulfills these needs are detailed in the use-case and supplementary specifications.

1.1 Background

A leading cause of cognitive behavioral therapy (CBT) failure for patients is non-compliance with their assigned therapeutic homework. The typical success scenario of CBT begins with patients scheduling an initial appointment with a therapist. After a baseline assessment, patients often schedule regular appointments with therapists, where they are assigned homework. Homework most often involves learning about or practicing coping techniques in daily life to improve well-being. Examples of said techniques include routine meditation, breathing techniques during times of intense stress, or routine physical activity to lower the release of stress hormones. Homework compliance is significantly correlated with benefits such as improvements in symptoms for depression and anxiety disorders, reduction of pathological behaviors resulting from psychotic disorders, and better treatment outcomes for substance use disorder. However, these positive mental health outcomes are limited by non-compliance. About 20%-50% of patients fail to complete assignments due to inconvenience, a lack of clear instructions, or forgetting to finish the assignment. Consequently, to improve compliance and increase therapy success for a greater number of patients, an online homework platform that increases compliance by addressing the main reasons for non-compliance is needed.

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1.2 References

[Supporting Homework Compliance in Cognitive Behavioural Therapy: Essential Features of Mobile Apps - PMC \(nih.gov\)](#)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8183976/>

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2. Business Requirements

Projects are launched in the belief that creating or changing a product will provide worthwhile benefits for someone and a suitable return on investment. In this document, the business requirements describe the primary benefits that MENDmate™ Pro will give the stakeholders, identified in section 3. These business requirements provide a clear sense of why the project is being undertaken, and influence which user requirements to implement and their priorities.

2.1 Business Opportunity/Problem Statement

The problem of	non-compliance with cognitive behavioral therapy homework
affects	therapists and their patients addressing mental health complications
the impact of which is	the limited ability of therapy homework to mitigate, reduce, and improve symptoms of mental health concerns such as depression, psychotic or anxiety disorders
a successful solution would be	providing a streamlined user experience for homework assignment and completion, which includes but is not limited to: progress monitoring, trend analytics, engagement reminders, and resources that aid in the completion of assigned therapy homework.

2.2 Business Objectives

Our current business objectives, as identified by the client:

BO-1: Generate \$450,000 in annual revenue within 2 years after completing the MENDmate™ Pro MVP.

(This assumes 250 providers pay \$150 subscription fee per month over one year.)

BO-2: Increase the percentage of therapy homework adherence for patients six months after initial market release by 20%.

BO-3: Increase each provider's annual revenue by \$29,000.

(This assumes private practice providers who see 200 unique patients per year.)

2.3 Success Metrics

Feasibility Metrics	Providers (Pro)	Time to Learn the System (self-report)	≤ 2 hours
Feasibility Metrics	Providers (Pro)	% Fully Onboarded in Week 1	≥ 90%

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Feasibility Metrics	Providers (Pro)	First Assignment Success Rate	≥ 95%
Feasibility Metrics	Patients (Pro)	Onboarding Completion Rate	≥ 85%
Feasibility Metrics	Patients (Pro)	First Activity Completion Time	≤ 15 minutes
Feasibility Metrics	Patients (Pro)	% Completing 3+ Activities in Week 1	≥ 70%
Usability Metrics	Providers (Pro)	System Usability Scale (SUS) Score	≥ 80 (out of 100)
Usability Metrics	Providers (Pro)	Tasks Completed Without Help	≥ 90%
Usability Metrics	Providers (Pro)	Navigation Satisfaction (1–5 scale)	≥ 4.2
Usability Metrics	Patients (Pro)	SUS Score (Patient Portal)	≥ 75
Usability Metrics	Patients (Pro)	Ease of Activity Completion (1–5 scale)	≥ 4.0
Usability Metrics	Patients (Pro)	Understands What to Do After Login	≥ 90%
Satisfaction Metrics	Providers (Pro)	Net Promoter Score (NPS)	≥ +40
Satisfaction Metrics	Providers (Pro)	Overall Satisfaction (1–5 scale)	≥ 4.2 average
Satisfaction Metrics	Providers (Pro)	Would Recommend to a Colleague	≥ 80% yes
Satisfaction Metrics	Providers (Pro)	Support Satisfaction	≥ 85% positive rating
Satisfaction Metrics	Patients (Pro)	Patient Experience Score (1–5 scale)	≥ 4.0 average
Satisfaction Metrics	Patients (Pro)	Helpfulness of Activities (self-report)	≥ 80% rate as helpful
Satisfaction Metrics	Patients (Pro)	Perceived Relationship Boost with Therapy	≥ 70% agree

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2.4 Vision Statement

For	therapists
Who	respectively assign and are assigned therapeutic homework
MENDmate™ Pro	is a Web-based application
That	provides therapists with the ability to assign and track patient completion of their homework, observe and analyze patient trends, and provide patients with a streamlined user experience for the completion of their homework, with self-monitoring capabilities, engagement reminders, and the convenient means to access educational and other beneficial resources towards mental health improvement.
Unlike	a therapist verbally assigning homework to the patient at the end of a session without verifying its completion.
Our product	provides the means to conveniently record and track assigned therapy homework and offers useful resources that aid in the completion of the homework.

2.5 Business Risks

BR-1: Patients are not willing to use the web application

BR-2: Therapists are not willing to use the application when working with patients

BR-3: Patients' data are not properly secured or protected, leading to privacy and security violations

2.6 Business Assumptions and Dependencies

AS-1: A correlation exists between homework compliance and positive mental health outcomes.

AS-2: Both therapists and their patients have access to the Internet.

AS-3: If a patient completes homework, they are engaged with it.

DE-1: HIPAA regulations

DE-2: SMART on FHIRE regulations

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3. Stakeholder Profiles and User Descriptions

This section provides a profile of the stakeholders and users involved in the project, and the key problems that they perceive to be addressed by the proposed solution. It does not describe their specific requests or requirements as these are captured in a separate stakeholder requests artifact. Instead, it provides the background and justification for why the requirements are needed.

3.1 Stakeholder Profiles

Stakeholder	Major value or benefit from this product	Attitudes	Major features of interest	Constraints	End user or not?
Therapists	A streamlined process for assigning therapy homework and gauging patient adherence.	Receptive	Remote therapeutic monitoring capabilities	None identified.	Yes
Patients	Improved process to complete therapy homework.	Receptive	UI streamlines homework progress with a task schedule that sends reminders and streamlines access to supporting resources	Patients need to have access to the Internet	Yes
Mend, LLC	Increased revenue by selling services to healthcare providers. (therapists)	Strong commitment through release and will provide support for the product	The product is primarily a web application that they can host	None identified.	No

3.2 User Environment

Services are remote and the environment depends on the user. Therapists have an office environment from which they can use our software on the web. Patients have access to a computer and mobile phone.

3.3 Alternatives and Competition

ALT-1: Maintain the current process of in-person or by email assignment of therapy homework.

Strength: Therapists may not have to pay extra to assign homework through our product.

Weakness: Patients may not have easy access to supporting resources or reminders.

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Competitive Software: BetterHelp, Talkspace, Wysa

4. Scope and Limitations

This section provides a high-level view of the product capabilities, interfaces to other applications, and system configurations.

4.1 Product Perspective

MENDMate will serve as a core component within a broader therapeutic ecosystem, not an isolated or self-contained system. It will rely on external services such as Electronic Health Record (EHR) platforms and OpenAI APIs to achieve its functionality.

- EHR Integration: MENDMate will interface with EHR platforms via APIs to share progress summaries, patient homework, and other therapeutic data, ensuring that therapists have access to patient progress between sessions.
- OpenAI API Integration: The app will utilize OpenAI's natural language processing capabilities to power an AI-driven chatbot. This chatbot will provide personalized therapeutic suggestions and feedback, offering patients real-time support based on their interactions with the app.

These interactions will form the backbone of MENDMate's ability to deliver value to users, both therapists and patients.

4.2 Major Features / Scope

The MENDMate is a platform that provides the connection between therapists and clients through the physical barrier. Thus, the platform needs to have a place where therapists can assign homework, and clients get a reminder of what they need to do every day and provide a place where clients can track their progress

Scope:

- User: therapist and patients have their interfaces and access levels
- Homework scheduling and reminders: allow for one-time or recurring homework assignments
- Questionnaire Customization: therapists should be able to adjust the follow-up questions based on different patients
- Language: English
- Platform support: The web application will be supported on web browsers such as Edge, Firefox, Chrome, or Safari. A mobile wrapper will then be developed to be more accessible to Android and IOS
- Integration: integrate with Google Calendar, etc for task reminders

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Major Features:

The Mendmate web application will consist of two portals: Patient and Provider. While some features of the app can be accessed by both portals, other features are separated into one of the two portals, creating a more streamlined experience for both patient and provider. Both portals will comply with data and privacy regulations such as HIPAA and contain educational content to be viewed by all users alike. Meanwhile, the provider portal contains the means to create therapy plans for and track the progress of patients, while the patient portal contains features such as a journal and calendar, allowing the patient to record their thoughts and keep track of their assignments. With patients' permission, providers can also view specific entries from their patients' journals, allowing providers to tailor a better plan for their patients.

4.3 Deployment Considerations

The solution will be hosted via Microsoft Azure, leveraging its cloud infrastructure for scalability and high availability. In addition, the system will integrate with existing Electronic Health Record (EHR) platforms to allow seamless access to patient data. However, the potential for future scaling is not yet determined. We anticipate that Azure's flexible infrastructure will allow us to adapt as the system grows, utilizing services like Azure App Services and other scalable resources as demand increases.

Users will be distributed across multiple time zones, requiring 24/7 access to ensure global availability. The application will be web-based, and accessible through standard web browsers. Additionally, a mobile app wrapper will be implemented to provide a seamless mobile experience by directing users to the web app. Both web and mobile access will be available at all times, ensuring constant availability for all users.

At this stage, no significant infrastructure changes are anticipated beyond the initial setup within Microsoft Azure. Azure's resources for capacity, network access, and data storage will be sufficient for the foreseeable future.

Since this is a new system, training will focus primarily on ensuring therapists and their patients are familiar with the web and mobile interfaces. Basic user guides will need to be created to provide adequate training for system users. Additionally, the app and its therapists must comply with HIPAA regulations to ensure that patient records are secure.

5. Other Product Requirements

The MENDMate app must follow many important standards and legal requirements to ensure that it can be properly deployed. An absolute necessity is ensuring that our app is HIPAA compliant, meaning patient data is secure and private. This is a top priority, as our app will run into legal trouble and lose trust if our users' data is not secure. If we decide to expand to Europe, we must also comply with GDPR rules to handle user data properly. While complying with these regulations may be cumbersome, it's essential for operating smoothly

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and legally, despite the initial effort it may take to familiarize ourselves with these regulations and laws.

MENDMate needs to be available across all major platforms—no matter what device users choose, be it a PC or mobile device, the app should be accessible. This is a must-have so both patients and therapists can easily use the app, no matter what device they prefer. Although this takes some extra development, the payoff of convenience for our users is worth the effort. Also, since our app relies on cloud-based infrastructure, it must be stable and reliable. Users will lose motivation to use the app if it crashes or loses their work. It's all about keeping things smooth and accessible.

When it comes to performance, the app needs to be efficient; ideally, users would have to wait less than 200 milliseconds for interactions. Additionally, we want our app to be available almost constantly, with a 99.9% uptime target. These two metrics are instrumental in preventing users from getting frustrated with delays or downtime. Processing real-time data for content like homework progress and mood tracking is also pivotal to the functionality of our app. Therapists need up-to-date info to help make the best decisions for their patients, so developing our app to be efficient and smooth is key.

Environmentally, the app relies on a stable internet connection. Without the internet, MENDMate cannot function. So, while this is a high priority, it's pretty straightforward—most people are connected, but we must keep it in mind nonetheless.

For usability, the app must be simple to use for everyone, whether they're tech-savvy or not. This is crucial for our app because if it's not user-friendly, users will not stick around. We also want to make sure the app is accessible to people with disabilities, following WCAG 2.1 guidelines. Making the app inclusive opens the door for more users which can help our app stand out among competitors.

In terms of fault tolerance and robustness, we've got to make sure that the app automatically backs up data and has a solid recovery plan in case something goes wrong. Losing patient data is unacceptable. It will take plenty of effort to implement, but it's crucial for building trust. Also, error handling needs to be clear and helpful—users should not see a “something went wrong” message without any explanation. We want users to feel confident that they're in good hands, even if something unexpected happens.

Last but not least is our documentation; we must make sure that there is a comprehensive user manual and detailed online help available so both patients and therapists can get the most out of MENDMate. This is a medium priority because it helps users get up to speed quickly. A clear installation guide, especially for therapists, is a top priority—if it's too complicated, it might slow down adoption. And, of course, therapists need detailed and accurate reports from the app. These reports should be clear, easy to understand, and provide useful insights so therapists can make the best decisions for their patients.

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