



Requirement Document

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Accepted as baseline requirements for the project.

For the client: _____

For the team: _____

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Introduction

Industry Overview

The healthcare industry is always advancing and ever-changing. It is undergoing advancements that are centered around increasing accessibility and patient autonomy. Most importantly through the advancements of technology. One of those advancements includes photobiomodulation therapy, also known as (PBMT). This is a modern technology that utilizes infrared and red-light wavelengths to stimulate cellular repair like reducing inflammation and assisting with pain reduction. PBMT in recent years has gained traction in clinical settings but there is plenty of room for growth. The current development of PBMT consists of large devices that are expensive and cumbersome which limits accessibility. This has created a need for a user-friendly, cost-effective light therapy solution that can be utilized independently of health care settings. The goal is to help patients manage chronic pain and recovery on their own, easing the strain on overworked and understaffed healthcare workers.

Sponsor Introduction

Tensegrity Medical, the sponsor of the LightDose project, is a startup company dedicated to advancing healthcare using innovative therapies that are widely accessible. Specializing particularly in healthcare technology, our goal is to mend the gap between clinical level treatments and the needs of our everyday users. With LightDose, we aim to develop a user-friendly, compact PBMT device that gives the ability to manage their health in various different settings. Tensegrity Medical operates a workflow that combines medical research, product development and user tested designs. Our business fits into the broader healthcare industry by giving an affordable solution with advanced state-of-the-art therapeutic technology while offering affordable costs.

Current Solutions vs LightDose

Currently, red light therapy devices are often designed either for professional healthcare settings or as low-quality alternatives for mass sales on popular consumer websites. These low-quality options prioritize quantity over quality and improvements in user outcomes. The devices used in the professional healthcare setting are often heavy, bulky and require complex setups to be used as an at-home solution. This is a major cause for concern for patients because of the lack of accessibility. Patients with limited mobility, disabilities or restricted space cannot use PBMT. Furthermore, they often rely on large batteries, extensive wiring, and require significant storage space, making them impractical for home use. The wiring can also pose safety risks, such as tripping hazards or exposure to potentially dangerous wires. LightDose is developed specifically to address these issues. Equipped with infrared lights, sensors, and Bluetooth connectivity, LightDose is a portable and wireless solution that allows patients to track their progress comfortably and independently. LightDose does so by providing real-time data which makes it possible for users to monitor their health conveniently and for healthcare providers to alter their patient's treatment plan remotely through the patient portal portion of the application.

Big Picture and Key Goals

The LightDose project represents a major shift in photobiomodulation. The main goal is to make this technology affordable, accessible, and, most importantly, practical. This project involves multiple groups of engineers. We are working in collaboration with two other teams: mechanical engineering and electrical engineering. The mechanical and electrical engineering teams are responsible for functional design with all necessary features like Bluetooth and sensors for the device to transmit data.

The computer science team is tasked with developing an application that effectively and securely connects to the device via Bluetooth. Our tasks include:

- creating an application using Flutter
- Utilizing Firebase for data storage
- HIPAA-compliant data processing

Our application will gamify specific aspects of health tracking, aiming to encourage our users to engage with our device. We will do so by tracking metrics like usage time and treatment consistency. Also offering more features like secure data transmission, tracking and data visualization tends to motivate users in prioritizing their health. These features follow the project's goal of creating a reliable and accessible PBM solution that transforms how our users and patients engage with therapeutic technology.

Significance

LightDose has the opportunity to make a huge impact not only for individual care, but it can also act as a model for the healthcare industry's shift to accessible, versatile-at-home treatments. The integration of portability, user-friendly PBMT technology with HIPAA compliance and transmission, LightDose aims to work in conjunction with modern healthcare trends that focus on the remote aspect of personalized care. This innovative approach creates a new standard for therapeutic devices, which gives the power of therapy to our users.

Problem Statement

Tensegrity Medical's main goal is to enhance healthcare by offering an affordable, accessible PBM device that allows patients to improve their vascular health and aid pain relief independently. LightDose seeks to reduce the gap between medical settings and at-home therapy by developing a user-friendly device that is safe, secure and offers state of the art PBMT technology that is versatile.

Core Workflow and Service Challenges

The developmental process of LightDose involves various operational challenges within Tensegrity Medical's workflow:

1. **Device Usability and Setup**

The PBMT devices that are currently offered are typically designed for medical professional settings, making it difficult for patients to get the therapy they need. Simplifying the device setup is a priority in the developmental process to promote independent use.

2. **Data Privacy and Security**

Processing and handling data that is health sensitive requires HIPAA compliance. Encryption, secure storage, and strict access are priorities to maintain our user's trust.

3. **Reliable Connectivity for Real-Time Tracking**

For us to ensure effective monitoring, LightDose needs the ability to ensure that a stable Bluetooth connection is used to track data. Problems like signal interference can cause issues in the flow of data processing which in return impacts user experience and remote monitoring accuracy.

4. **Cross-Platform Compatibility**

The LightDose application will need to ensure that the user has a friendly experience on both android and IOS operating systems. Regardless of having different OS hardware components, we will need to provide a consistent experience for all users.

5. **User Engagement for Therapy Consistency**

Encouraging our users to consistently use LightDose is of huge importance to the success of this project. Gamification is a method that we will use to motivate our users to engage and improve their overall health.

LightDose will keep these challenges in mind during the developmental process. We will do so by conducting a streamlined, versatile experience for our users to utilize for at home therapy. We want to contribute to Tensegrity Medical's mission which is to make healthcare accessible.

Solution Vision

The LightDose app is designed to be accessible to patients by providing a seamless and user-friendly interface for managing their personalized therapy. The primary goal of the app is to simplify the process of tracking your health, allowing users to track their progress through real time biometric data from the comfort of their own home. The app will work seamlessly with the LightDose device, using Bluetooth connection to securely transfer data from the device to the user's phone. This will allow both patients and healthcare professionals to monitor the data and act, accordingly, changing the treatment, as necessary.

A key objective in the app's development is to ensure it provides an easy and convenient experience for the user. The app needs to be compatible with multiple operating systems to guarantee accessibility for a wide range of different users. The app is being developed using Flutter, a cross-platform framework that ensures a consistent app experience across many platforms. This will also help the app's goal of being intuitive and accessible, offering key features like text-to-speech for the visually impaired.

The app will be handling sensitive patient data, so it needs to comply with HIPAA regulations to protect patient privacy. The app will use strong encryption methods for data at rest and in transit. Multi-factor authentication and role-based access control will be incorporated to ensure that only authorized users, such as patients and healthcare providers, have access. The app will also use a hybrid encryption approach, combining on-device and cloud encryption, to safeguard patient data during transmission and storage.

The LightDose system will use data from patients' biometric readings collected during therapy sessions. The data will include metrics such as heart rate, oxygen levels, and session details such as session duration and device location. Data will be collected in real time from the LightDose device and transmitted to the app through Bluetooth. The system will generate treatment data, which will show trends in their biometric data over time. Empowering the patient by giving them control over their health. Healthcare professionals will be able to adjust the treatment plans based on the data, allowing them to provide patients with effective remote care.

The main computational process will involve the data collected from the patients. The biometric data will be analyzed and then visualized for the patient, providing instant feedback to the patient, so they can understand their progress. The app will process substantial amounts of data to calculate trends and patterns. These will be compared against baseline data and alert patients and professionals if thresholds are met or in an emergency. Again, this will require efficient data handling and encryption to ensure the app is HIPAA compliant.

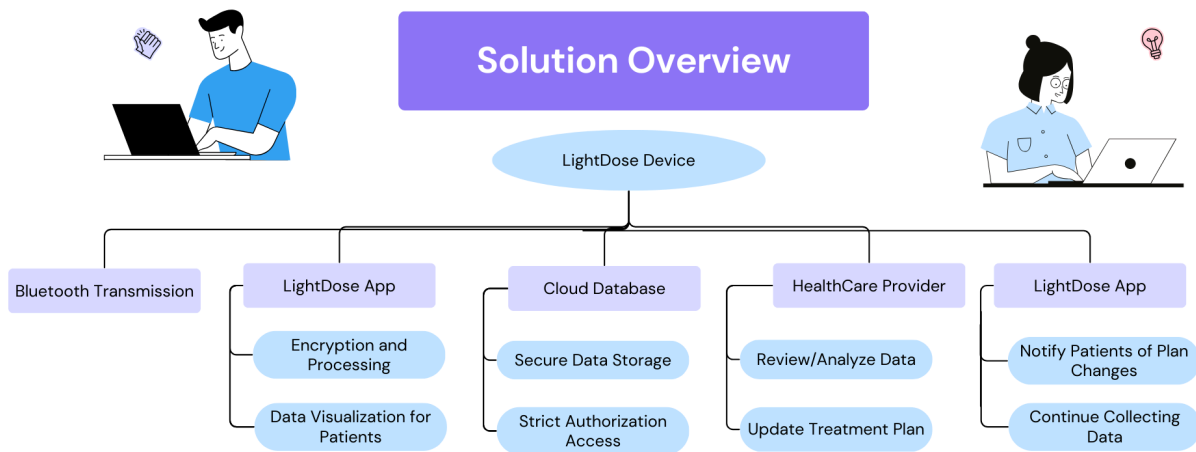
This app will have a major impact on our client, Tensegrity Medical. The client does not currently use an app and relies solely on in person visits using clunky infrared technology. The app, which is being developed in conjunction with the LightDose device, will allow the client to have remote sessions with their patients. It will also allow the patients to be more involved in their own treatment plans and see more of the benefits of the therapy. However, there are some tradeoffs, such as the client not being able to form personal connections like they were

previously. The client had many sessions with their patients in their homes and was able to learn a lot about the patient. Although the app will allow the client and other professionals to offer remote care, it will not allow for a bond to form. With patient data now being extracted from the device, that allows for more data vulnerability than there was before.

While the LightDose app was always going to be the CS team’s solution, there were alternative solutions for the actual LightDose device. There were non-wearable devices considered, but we decided to use a wearable device for comfort and ease of use.

The LightDose system has the potential to shape the future of remote medical care. It may encourage more healthcare professionals to utilize remote treatment, leading to reduced healthcare costs and improved patient involvement. It could also inspire more innovation in remote biometric data collecting and data driven personalized care.

Figure 1: Solution Vision Chart



Project Requirements

The LightDose application will have a variety of requirements that will be listed out in this section of the document. These requirements will develop the foundation of the design and

development phases of the project and will ensure that all components of the application align with the project's objectives and intended use.

Domain-Level Requirements

The LightDose application is developed in order to provide our users with a flawless user experience in order to manage their PBMT sessions, which ensures accessibility, data accessibility, data accuracy, user engagement and most importantly data privacy. These high-level features will act as a blueprint for the design and implementation of our specific functions inside the app.

Domain-Level Requirements	
D1: Secure and Reliable User Account System	The system has to offer a secure login method that is robust. The account system will allow them to login, manage their account and ensure data protection.
D2: Consistent Device Connectivity and Real-Time Data Syncing	The application must ensure a stable Bluetooth connection to the wearable device is prevalent. With a secure connection, we can ensure the data syncing process operates as error-free as possible.
D3: Accurate Biometric Data Collection and Display	LightDose will have to display biometric data like heart rate to assist users in their health tracking journey.
D4: Cross-Platform Accessibility and User-Friendly Interface	For LightDose to be easy to navigate for most users, it is imperative that it can be accessible on IOS and Android systems, so all users are accommodated for their accessibility needs.
D5: User Engagement via Gamified Tracking	Implementing games and rewards as an incentive will help keep users engaged and consistent therapy use.
D6: Strong Data Privacy and HIPAA Compliance	To meet HIPAA standards and protect user information, LightDose will need to use secure data storage and access control.

Functional Requirements

D1: *Secure and Reliable User Account System*

D1.1: Secure Account Registration and Login

LightDose will offer a secure, easy to use registration and login process. Users need to meet the requirements of what constitutes a “strong” password (e.g., character length, special characters). A "Forgot Password" feature will allow users to reset their password in a secure process. LightDose will ensure that our customers' data and credentials are protected properly.

D1.2: Multi-Factor Authentication (MFA)

To enhance further security, MFA, also known as Multi-Factor Authentication, will be an optional extra layer of security for our users. This is an additional added layer of security that will either send them a one time code, or have the user enter their phone number and the system will send them a text message to their phone to confirm their identity.

D1.3: User Data Management and Profile Customization

Our users will have access to create a profile that will contain personal information like session history, progress, and it will customize their experience with other features like allowing for notifications.

D1.4 User Stories:

- "As a user, I want an easy, secure way to login to the LightDose app, ensuring my data is protected. This is my #1 concern."
- "As a healthcare provider, I need a secure patient portal that allows me to login and effectively view my patients progress."

D 2: *Consistent Device Connectivity and Real-Time Data Syncing*

D 2.1: Bluetooth Low Energy (BLE) Pairing and Connection Stability

LightDose will utilize Bluetooth Low Energy (BLE) in order to ensure a stable and efficient connection to the device. Instructions will provide users with a walk-through guide on how to connect to the device, showing them how utilizing BLE's low power consumption can maximize battery life. BLE will also ensure that the overall long-term use of the device is also maximized.

D 2.2: Real-Time Biometric Data Syncing and Display

When the device is connected, LightDose will transmit data during the therapy session. LightDose will collect real time data like heart rate and oxygen levels

which will be updated in intervals of every 5 seconds. This will provide continuous feedback to our users during the therapy sessions.

D 2.3: Connection Loss Handling and Recovery

In the case that the connection is lost, a notification to the user will be sent out and the therapy session will temporarily stop. Data previously connected during the session will upload to the database once connection is restored.

D 2.4 User Stories:

- "As a user, I would like my device to connect with ease, and I want the device to update my session information in real time without any or minimal effort."
- "As a healthcare provider, I want the ability to reliably receive my patient's data once the patient is done using the device."

D 3: *Accurate Biometric Data Collection and Display*

D 3.1: Capturing and Recording of Real-time Biometric Data

The LightDose application will need to connect through Bluetooth to the LightDose device in order to extract sensor data. This data will then be stored locally on the device and once processed it will be encrypted and stored in a cloud database for later access and further processing. The process of capturing and recording data is implemented to better calculate the treatment for a patient and help define the limits of light therapy. The data collected is the most important process in the application.

D 3.2: Evaluating Data to Remove Outliers

The data collector must go through an outlier formula that will determine if a point of data is likely to be possible or if the point of data could be the result of an inaccurate reading due to outside environments. This is to ensure that the data being collected, and later displayed, is accurate due to outliers oftentimes greatly skewing the data. If these outliers are confirmed as accurate data, the result would be that the patient and doctor can make incorrect assumptions in the best course of action.

D 3.3: Display Biometric Data Updates Every ~5 Seconds During a Session

The biometrics will be displayed/updated every ~5 -10 seconds to show the patient how the treatment works. By spacing out the intervals of updates in the data being displayed, the patient using the app will not get overwhelmed by the influx of data. Additionally, this real time display of data allows the patient to better evaluate the best course of action, if their condition worsens.

D 3.4: User Stories

- “As a patient, I want to see my real-time health data to monitor my treatment progress.”
- “As a doctor, I want to ensure that the data I retrieve is accurate, so I can provide my patients with a working treatment.”

D 4: *Cross-Platform Accessibility and User-Friendly Interface*

D 4.1: App Interface Adheres to WCAG 2.1 Guidelines for Text, Button Size, Etc.

To better comply with the Americans with Disabilities Act, the LightDose application will follow the WCAG 2.1 guidelines to make the application accessible to people with or without impairments. By following the guidelines, the application will be more straightforward and easier to understand how to use, requiring fewer manual directions to be in place.

D 4.2: Include Adaptive UI Elements for Visually Impaired Users

According to the CDC, blindness is one of the top ten disabilities in the United States of America for adults. As visually impaired people are common, the need for adaptive user interfaces is necessary, in modern applications. Modifications to the software for us to offer a solution is a read aloud description of the pictures. There needs to be read out-loud text options for every component used in the application because of the importance of providing care to visually impaired users.

D 4.3: The App Must Be Able to Run On a Wide Range of Devices

This aspect covers a different type of accessibility; the accessibility of economic classes. One goal of the LightDose application is to make the device and app accessible to all ranges of economic classes. By making the application cross platform, users with less modern technology can use the device and app.

D 4.4: User Stories

- “As a user with limited vision, I need text-to-speech options to interact with the app effortlessly.”

D 5: *Gamified Health Tracking & Engagement*

D 5.1: Gamification Through Goal Tracking and Rewards

LightDose app incorporates gamification to user’s treatment in order to give more personalized care while earning rewards. The app will track specific milestones such as consecutive daily sessions or the total number of sessions completed.

Users will be able to have visible feedback such as a streak counter and achievement badge, which will reward their consistency and help them stay motivated. Gamification will help the user’s therapy journey by making it feel more interactive and personalized, driving users to continue their therapy sessions to get longer streaks and unlock rewards, all while seeing the health benefits.

D 5.2: Interactive Feedback Based on Session Data

To keep users motivated and informed, the app will provide real time interactive feedback based on their chosen therapy milestones. After a user completes a session, the app will display encouraging messages, such as “Great job completing 10 sessions!” or “You’re making progress towards your goal!”. This continuous session-based feedback will boost user morale and offer positive reinforcement keeping users engaged with the app and motivated to reach their health goals.

D 5.3: User Story

- "As a user, I want to be motivated into maintaining consistent therapy sessions.”

D 6: *Data Privacy, Compliance, and Security Protocols*

D 6.1: Implement End-To-End Encryption for All Stored and Transmitted Data

Given the sensitive nature of the medical data, the LightDose app will use end-to-end encryption to protect patient information. Data will be encrypted locally on the device before transmission and will remain encrypted when transmitted through Bluetooth to prevent any unauthorized access during transit.

Once the data reaches the app's cloud storage, it will then stay encrypted, only to be accessed by authorized individuals. This approach will ensure that even if the data is intercepted, it cannot be read or tampered with, protecting patient privacy, and complying with HIPAA standards.

D 6.2: Role-based Access Control for Secure Data Management

The LightDose app will implement role-based access control, providing access to protected information only to authorized individuals, such as healthcare providers. Users will have a specific role with appropriate levels of access and permission for both the patients and the healthcare providers. Healthcare providers will be able to review patient data and update specified treatment plans, while patients can view their data without changing their medical records. This will guarantee security that inhibits unauthorized access to sensitive information, ensuring patient confidentiality and strengthening patient trust in the health system.

D 6.3: User Story

- "As a healthcare provider, I need secure data access to ensure patient confidentiality and trust."

The LightDose app will be designed for secure, accurate, and engaging management of photobiomodulation therapy treatments. It will offer a robust user account system with multi-factor authentication, ensuring data security for patients and healthcare providers. The app will use Bluetooth Low Energy for real time data syncing, displaying key biometric information such as heart rate and oxygen levels. To enhance accessibility, it will comply with WCAG 2.1 guidelines, providing text-to-speech options, and operating on both iOS and Android. Engagement will be driven through gamified goal tracking and rewards, motivating users with progress prompts and milestone achievements. To protect sensitive data, LightDose ensures HIPAA compliance utilizing end-to-end encryption and role-based access controls, safeguarding patient confidentiality and trust. This design supports secure and consistent therapy use and aligns with patients' health needs.

Performance Requirements

Because LightDose is designed as a health and wellness app, it is crucial that our performance requirement focuses on speed, accuracy, and accessibility for our users. The app's speed should allow patients to view their data in real-time and enable them to reflect and make lifestyle improvements based on the information. Given that the app will be tracking biometric data, data accuracy is essential to give our users reliable information to share with their doctors. According to the CDC, adults aged 75 and older have the highest prevalence of heart disease compared to younger age groups (CDC). Because of our target audience, usability is vital for the app where we focus on visibility, ease of use, and engaging design that accommodates their needs.

Taking into consideration all the requirements of the application and the needs of our target audience, the following are the list of measurable requirements:

- **P1:** *The app should display the biometric data within a minute of collection*
- **P2:** *The app should load fully within 5 seconds on mobile devices to minimize user frustration*
- **P3:** *Interface elements (i.e. font size and button dimensions) should meet at least 5 WCAG 2.1 guidelines for accessibility. This is to suppose users with limited vision or dexterity. The guideline states*
 - *Minimum font size should be 16px*
 - *Button size should be 44px by 44px*
 - *And more that can be found here:*
<https://www.webaccessibility.fi/requirements-of-the-act-on-the-provision-of-digital-services/wcag-2-1-legal-requirements/>
- **P4:** *Should be able to achieve at least 80% satisfaction rate in usability testing with users aged 55 and older where that are focusing on navigation, simplicity, and readability*
- **P5:** *The app should consume no more than 5% of batter per hour of continuous use of the app when the device is fully charged*
- **P6:** *Data synchronization should have a 99% success rate with the device and cloud storage.*

Environmental Requirements

The LightDose application has three environmental requirements that affect how the software must be built, including the functionality that the application must include. The main environmental requirement is the use of HIPAA compliant services which there is no silver bullet for. Specifically, to be HIPAA compliant, data transfers between devices and the server must be coded securely that prevents data from being tampered with or stolen. As mentioned earlier, there is no one software service that guarantees HIPAA compliance immediately, meaning that the application will require the use of encryption on both the LightDose device, and the LightDose application to enforce data transfer protocols. Additionally, this architecture must be able to be used on different hardware which is why the Arduino coding language will be used to code the hardware's program.

The second environment requirement is that the code for the LightDose device must be coded using the Arduino coding language. This requirement is due to two main factors: it is a coding language adapted by most hardware manufacturers, additionally, the hardware for the processing board, for the LightDose device, is often hard to obtain in mass quantities. These two factors result in the Arduino coding language being required, as most hardware will be compatible with a modified or original version of the language. This allows the code to be standardized, meaning if the main hardware processing board must be switched out, little to no code must be changed for the device to work. Due to the hardware of the LightDose being lightweight and small, the LightDose application must be able to control all features of the device.

The final environmental requirement is that the LightDose application must be able to create and perform a stable Bluetooth connection to the LightDose device. This is because the device needs to be small and lightweight, so the application must be able to turn on/off the device, detect irregularities in the device, control the lights sequence on the device, detect/report the battery charge, and all the user interface aspects of the application. The use of Bluetooth accomplishes this goal by allowing a one-to-one connection between the device and application, thereby allowing the application to directly read and write commands to the device without outside interference. The use of Bluetooth additionally has the advantage of being compatible with most mobile devices that the LightDose application will be running on.

Potential Risks

The success of LightDose relies on mitigating and identifying risks and issues that could impact our system's performance, user experience, and the overall goals of the project. Throughout this section, we will analyze the primary risks relevant to the developmental stage of our system, focusing on the significant risks that could affect the project's functionalities and, overall, the user experience.

Device connectivity and Integration Challenges: Our LightDose device uses Bluetooth connection to track data and transmit it to our LightDose app. This will allow users to monitor their progress and track their health stats remotely and effectively. One issue that can occur is signal interference. Signal interference can often come with compatibility issues and can limit various users across different platforms. Which can alter the user's experience and interfere with the intended benefits of using our application and device. To mitigate this type of issue, we will implement various error-handling tests and research the root causes of that issue across different platforms and environments. These tests and the research we will do will ensure that the connection is reliable, and the functionality of the app and device runs seamlessly.

Data Privacy and Regulatory Compliance: LightDose analyzes and processes health data that contains sensitive information. This requires strict data privacy protocols to be implemented. HIPAA compliance is a set of federal laws implemented to ensure that users of any form of health device's information is handled to the standards in place. Things like a security breach, unauthorized access and or a data leak could release personal information of our users which could damage their trust, and it could also lead to legal issues. Given the privilege to have our user's permission to track their health data, it will be handled to the highest of standards (HIPAA). Non-compliance with HIPAA regulations can lead to dire consequences. To mitigate this risk on all platforms, we will ensure that we are using the following: end-to-end encryption, secure data storage and transferring using the HIPAA guidelines and we will ensure that we have strict access control precautions in mind when developing LightDose. With all of these protocols in mind during the developmental stage, we will ensure that our users' security is always at the forefront of our application.

Cross-Platform Compatibility: LightDose is going to be developed in mind with both IOS and Android operating systems in mind. This will hopefully help maximize accessibility.

The two different operating systems, hardware specifications and app update schedules introduce some risks of inconsistent functionality, which in return could affect the experiences of our users. For example, an application update on one of the OS systems can change and offer new capabilities that the other OS does not. Given the moderate likelihood of compatibility challenges that could occur with OS updates that occur frequently, maintaining the consistency of our application working on both systems is essential to keep our device working as smoothly as possible. We will conduct cross-platform testing and updates to ensure our application performs reliably across all devices.

Project Plan

As previously mentioned, the LightDose app contains a wide variety of requirements that keeps both our client and our target audience in mind. Focusing on accessibility and usage of the application, in Figure 2 displays TenseMed Dynamic’s Gantt chart that plans our milestones for the upcoming semester. Each circle in the Gantt Chart represents a week within the corresponding month where it should be noted that January is only given 3 weeks because the semester begins January 13th. The app would be completed two weeks before the finals week but if there is a need to push anything back, there is more room to accommodate unexpected/unpredictable events.

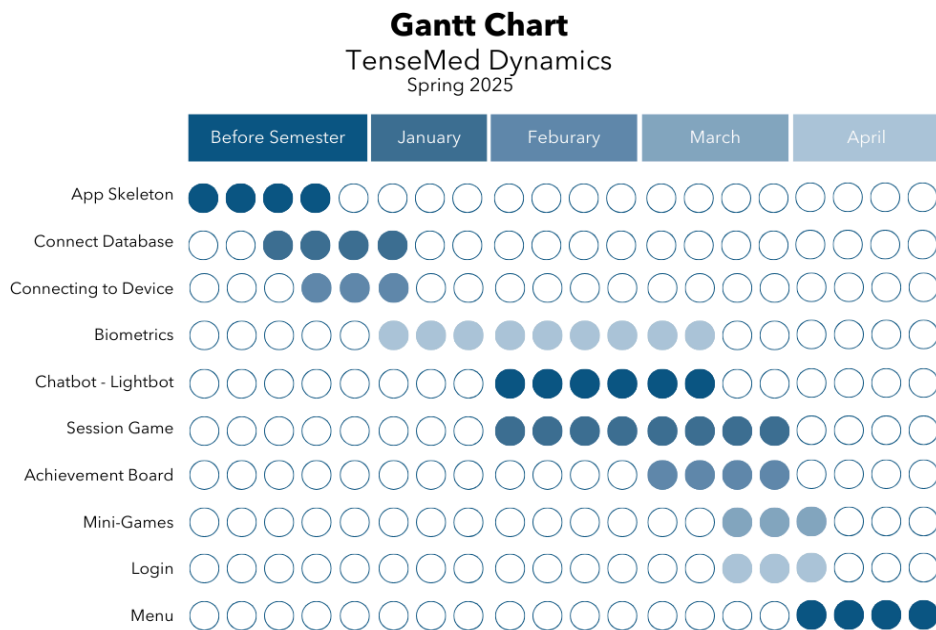


Figure 2: TenseMed Dynamic’s LightDose App Gantt Chart for Spring 2025

Milestones	Descriptions
App Skeleton	The basics of the app are up and running (i.e., buttons work, simple screens in place, etc.)
Connecting to Database	The app should be full connected to the database and should tested that the app is taking in inputs displaying it in the database
Connecting to Device	While this section is dependent on other variables and may need to adapt accordingly, the app should have the capability to connect via Bluetooth to the LightDose device. This should be confirmed with either a message on the screen or an indicator on the device itself letting the user know the device is connected.
Biometrics	<p>Similarly to “Connection to Device,” this milestone may need to adapt accordingly as it is dependent on other variables but by the end of the semester, the app should be able to track at a minimum oxygen level in the bloodstream.</p> <ul style="list-style-type: none"> ● This milestone is longer than others as the biometrics should be <ul style="list-style-type: none"> ○ saved in the system’s database ○ the user should be able to access their data through the app ○ The user should be able to download the data
Chatbot	<p>The chatbot should ask the user questions about their day and how they are feeling. This should be made into a report alongside the biometrics for doctors to reflect on.</p> <ul style="list-style-type: none"> ● If time allows it, users should be able to... <ul style="list-style-type: none"> ○ customize their chatbot avatar ○ interact with their chatbot through mini games
Session Game	While the patient is using their LightDose device for their light treatment, they should also be able to play a game to keep the patient sitting still and entertained. A single dedicated game will be created that is easy to learn and entertaining to play for the users to stay consistent in their sessions. Other features of the app may also work towards this goal, but the session game should be the main activity for our users to learn.

The other milestones on the Gantt chart are adaptable to the schedule because they are simpler to implement and are not vital to the MVP. Placing them towards the end of the semester ensures that the most important part of the app is completed.

Conclusion

This document is filled with details about the LightDose project which is developing an application that connects to a wearable photo biomodulation or (PBM) device. The device is designed to offer affordable, at-home light therapy that is used for pain management and improve the overall health of its users. Current PBMT devices are often bulky and only offered for usage in a clinical setting. LightDose addresses these by offering an application that is easy to use and in conjunction with connecting to the device itself, it is an effective device that aids the overall health of its users. The app's key features include secure account management, strong Bluetooth connectivity, real-time data tracking, and the ability to operate on both Android and IOS devices. Data privacy is prioritized by complying with HIPAA's guidelines in mind. Gamification is also used in the application to encourage users to improve their health. Challenges such as connectivity, privacy, accurate data tracking and accessibility are all addressed throughout this document. These challenges will be addressed in support of Tensegrity Medical's overall mission to make healthcare more accessible. LightDose aims to offer state-of-the art PBM technology that empowers its users to take control of their wellness in a versatile and accessible way.

Glossary

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