iSleep System Requirements

**User requirements definition**

1. iSleep shall contain in-app accounts to separate individual’s data and ensure specified air pressure based on the individual.

**System requirements definition**

1.1.Some people with sleep apnea require different air pressures during their inhale and exhale cycle to help them breathe more normally.

1.2. Accounts can ensure long-term and consistent data collection of users in order to see changes in the users sleep behavior.

1.3. iSleep accounts can allow for the same single hardware to be used between multiple people while still successfully tracking the current users data.

1.4. iSleep accounts should be able to be accessed on multiple devices at once in order for monitoring to be able to occur from at least 2 other people.

1.5. With the creation of the account, iSleep should prompt the user to answer some personalized account questions. Including if 911 should be called in the case of an emergency.

**User requirements definition**

1. iSleep should contain the option for a kids account that is integrated for children who suffer from sleep apnea or other serious conditions.

**System requirements definition**

2.1. The kids feature is aimed at children who suffer from pediatric obstructive sleep apnea. The goal of the feature is to create a sense of normalcy for the kids while simultaneously ensuring their safety.

2.2. In order to create a more normal and comfortable environment for child users, the kids account option should feature visual changes to the app that are selectable by the user.

2.3. The kids feature should allow for exclusive communication features that are meant for the child's supervisor (parent, caretaker, ect.) in case of a minor problem to the case of an emergency.

**User requirements definition**

1. iSleep shall contain an emergency feature that alerts select accounts and the user in case of any malfunction.

**System requirements definition**

3.1. In the case of hardware or any other malfunctions that interrupt iSleep’s data collection, iSleep through the app with the emergency feature shall alert the user of the malfunction, as well as selected accounts.

3.2. In the event that the user passes away, iSleep will be alerted based on the user’s breathing. In this case, if the user selected to call 911 in the case of an emergency in the creation survey of the account, 911 will be called. If not, emergency contacts and select accounts will be alerted.

3.3. iSleep will also offer minor alerts as well as the emergency feature. This is used to flag irregularities in the data and inform the user accordingly in case a change needs to be made. For example, an outside factor that can affect the patient's sleep could be room temperature.

**User requirements definition**

1. iSleep will consistently collect data throughout the entire period of time a CPAP machine is being used. This is done in order to ensure that all patients receive the correct type of air pressure that is required for them, while simultaneously storing the data collected.

**System requirements definition**

4.1 The point of this feature is for us to collect the patients' data and analyze/compare how the data can change, remain the same.

4.2 The data will be stored into our server. This is done in order to store our data, and is also useful in case of an emergency. For example, if the CPAP machine breaks, records of the patient’s data will still exist on the app.

4.3 iSleep also stores the data of outside features such as room temperature. This is done in order to see if any outside features are affecting the patient’s sleep. iSleep should notify the user accordingly.

**User requirements definition**

1. This feature is aimed towards the patients and is meant to relay information to them based on night in a graph form so the patient is able to identify what they need to do.

**System requirements definition**

5.1. The feature will provide the options of the user to select their desired graphs like bar, circle, line graph ect.

5.2. Every morning the machine will display a graph of data from the previous night before. Patients are then able to filter it so that it can clump the data into a week or month to be able to also display it.

**User requirements definition**

1. iSleep shall work with and integrate seamlessly into iOs mobile devices, Android mobile devices, macOS desktop devices, and Windows desktop devices.

**System requirements definition**

6.1. iSleep shall be compatible with iOS version 11 and above for mobile devices and macOS version 10.13 and above for desktop devices.

6.2. iSleep shall be compatible with Android version 7.0 and above for mobile devices and Windows version 10 and above for desktop devices.

6.3. iSleep shall have a mobile app that can be downloaded from the App Store or Google Play Store and a desktop application that can be downloaded from the iSleep website.

6.4. iSleep shall use secure methods for data transmission and storage, such as SSL/TLS encryption, to ensure the user's data is protected.

6.5. iSleep shall have a seamless integration with the operating system and user device, allowing for easy access and use of the application.

**User requirements definition**

1. iSleep shall give at minimum weekly cleaning alerts to the user indicating when the CPAP machine requires maintenance or cleaning

**System requirements definition**

7.1. iSleep shall send notifications to the user's device, either through a mobile app or email, to remind the user to clean their CPAP machine.

7.2. iSleep shall provide detailed instructions on how to properly clean the CPAP machine.

7.3. iSleep shall have the ability for users to log when they have completed their CPAP machine cleaning to ensure they stay on track.

**User requirements definition**

1. iSleep will send a message at a consistent time every morning and night such as 6:00 am and 9:00 pm for their corresponding time but can be changed

**System requirements definition**

8.1.The system will send messages through an app to tell them good morning or good night.

**User requirements definition**

1. iSleep will share collected data with health care providers to give accurate information to help further assess patient treatment progress.

**System requirements definition**

9.1.Health care providers can request to see the data at appointments.

9.2. Data will be collected and put into the database each morning and made specifically as a health care report showing any information providers would like to see.

9.3. Any irregularities and trends will be noted in this report.

**User requirements definition**

1. iSleep shall give an alert as a reminder for part replacement. Mask tubing and headwear often need to be replaced.

**System requirements definition**

10.1.In the case of leakage or other issues detected there will be an alert to tell the user to look into causes.

10.2. If there is no leakage but the patient has marked that they changed their tubing and mask and 3 months has passed, an alert will show that it is recommended that they exchange for new equipment.