Software Requirements Specification (SRS)

1. Introduction

The Centralized Patient Respiratory Portal is a digital health platform designed to help individuals manage respiratory conditions effectively. It aims to provide timely access to medical data, facilitate communication with healthcare providers, and support personalized health tracking.

2. Purpose

The purpose of this document is to outline the software requirements for the Centralized Patient Respiratory Portal. It captures user needs, functional and non-functional requirements, and system features based on survey responses.

3. Scope

The portal will serve patients with respiratory conditions by offering features such as symptom tracking, medication reminders, spirometry data integration, telehealth support, and secure data sharing. It will be accessible via web and mobile platforms.

4. User Needs

- Exposure to air pollution, allergens, tobacco smoke, and occupational hazards can worsen symptoms or trigger flare-ups 2. Climate change has increased the frequency of wildfires and allergen exposure, further complicating disease management 3.Chronic respiratory diseases often lead to anxiety, depression, and social isolation, especially when symptoms limit daily activities or cause frequent hospitalizations

- Logging symptoms like shortness of breath, coughing, wheezing, and fatigue. Apps like MyAsthma, Propeller Health, or COPD Navigator help track daily health and medication use.Used especially by asthma patients to measure how well air moves out of the lungs. Helps detect early signs of worsening asthma before symptoms appear.Performed at clinics or with portable devices to assess lung function. Measures metrics like FEV1 (forced expiratory volume) and FVC (forced vital capacity).

- Symptom logging (e.g., breathlessness, coughing, wheezing) Medication tracking with reminders and refill alerts Peak flow and spirometry data input and visualization Oxygen saturation monitoring via connected devicesCondition-specific guides (e.g., asthma, COPD, bronchiectasis) Videos and articles on breathing exercises, inhaler techniques, and lifestyle tips Alerts for air quality, pollen levels, and weather conditionsCompatibility with smart

inhalers, pulse oximeters, wearables Syncing with fitness apps (e.g., Fitbit, Apple Health) Telehealth support for virtual check-insStrong data privacy controls Multilingual support and voice-assisted navigation Offline access for critical features

- Conditions like cystic fibrosis and alpha-1 antitrypsin deficiency are inherited. Family history of asthma or allergies increases susceptibility 2Air pollution (e.g., smog, particulate matter) Indoor pollutants like tobacco smoke, mold, and household chemicals Occupational exposure to dust, asbestos, silica, and chemical fumes (common in mining, farming, and construction jobs) 1Bacterial: Pneumonia, tuberculosis Viral: Influenza, COVID-19, RSV Fungal: Histoplasmosis, aspergillosis These can lead to acute or chronic respiratory conditions

- Elderly people with chronic obstructive pulmonary disease (COPD) and other chronic respiratory disorders frequently experience dyspnoea, fatigue, decreased exercise tolerance, peripheral muscle dysfunction, and mental disturbances.

- Currently, respiratory health is tracked through a combination of methods, including measuring respiratory rate, using lung function tests like spirometry, and monitoring air quality.

- Health monitoring systems rely on various sensors to track vital signs and overall well-being. Temperature sensors help measure body heat, while heart rate sensors monitor pulse activity. Blood pressure sensors assist in assessing cardiovascular health, and SpO2 sensors check oxygen levels in the blood.

- Respiratory system problems can stem from various causes including infections, smoking, allergens, pollutants, and genetics. Infections

- Managing a respiratory condition can be challenging due to difficulty breathing, frequent flare-ups, and the need for consistent medication and lifestyle adjustments.

- I currently track my respiratory health using a combination of symptom diaries, peak flow meter readings, and regular check-ins with my healthcare provider.

- In a centralized respiratory health portal, I would like features such as symptom and medication tracking, peak flow and spirometry data integration, personalized action plans, appointment scheduling, real-time alerts for worsening conditions, and secure communication with healthcare providers.

- The respiratory system can be affected by causes such as infections, allergens, pollution, smoking, genetic factors, and chronic diseases like asthma or COPD.

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- The respiratory system can be affected by causes such as infections, allergens, pollution, smoking, genetic factors, and chronic diseases like asthma or COPD.

- Sometimes it's hard to avoid dust and pollution

- I keep track by noticing the changes in my breathing

- A tracker to monitor respiratory health

- infections, allergies, smoking, pollution

- Hard to avoid things which make breathing worse, like dust, smoke

- Not tracking

- Dashboard which gives the health status

- Infections, allergies,..

- Managing my respiratory condition can be challenging due to occasional breathlessness, fatigue, and the need to avoid environmental triggers

- I currently track my respiratory health by monitoring symptoms like breathlessness and fatigue, keeping a log of medication use, and attending regular check-ups with my doctor

- , I'd like features such as symptom tracking, medication reminders, access to test results, teleconsultation options, and personalized health insights

- Respiratory system diseases can be caused by a variety of factors, depending on the specific condition

- Asthma

- I have regural check ups

- I want to be able to see all my past conditions and history

- Genetic

5. Functional Requirements

The system shall:

- Allow users to log symptoms and medication usage.

- Integrate peak flow and spirometry data.

- Provide alerts for air quality and environmental triggers.

- Enable secure communication with healthcare providers.

- Support appointment scheduling and teleconsultation.

- Offer personalized health insights and action plans.

6. Non-Functional Requirements

The system shall:

- Ensure data privacy and security.

- Be accessible on smartphones and web browsers.

- Support multilingual and voice-assisted navigation.

- Provide offline access for critical features.

- Be user-friendly and intuitive.

7. System Features

- Dashboard for health status overview.

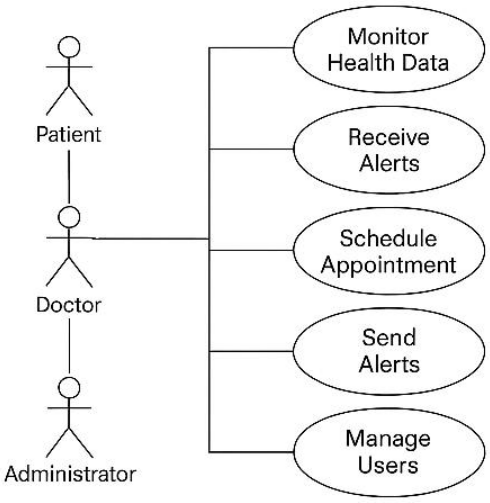
- Integration with smart devices (e.g., inhalers, pulse oximeters).

- Syncing with fitness apps like Fitbit and Apple Health.

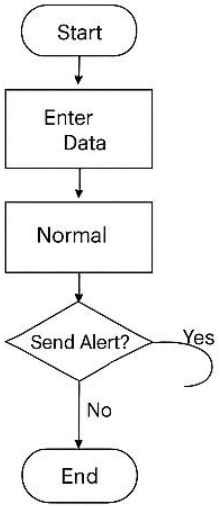
- Educational resources including videos and articles.

- Real-time alerts and notifications.

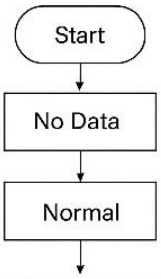
Use Case Diagram



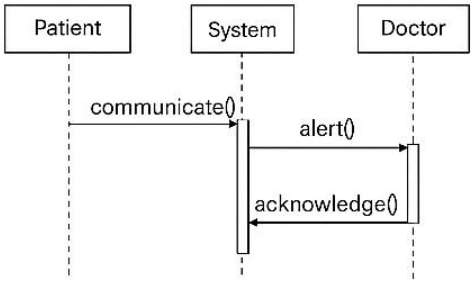
Start



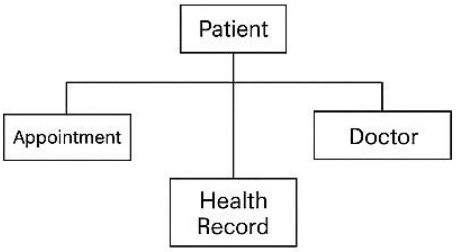
State Machine Diagram



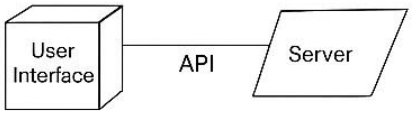
Sequence Diagram



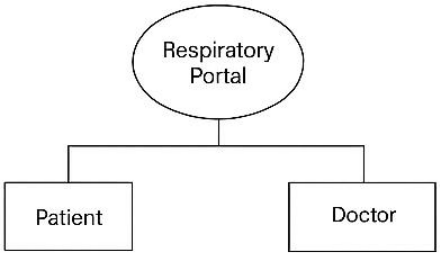
Data Modelling



Component Diagram



Data Flow Diagram - Level 0



Data Flow Diagram – Level 1