



Pulmonary, Critical Care & Sleep

ASSOCIATES



BUSINESS SERVICES OPERATIONS RESEARCH EVENT

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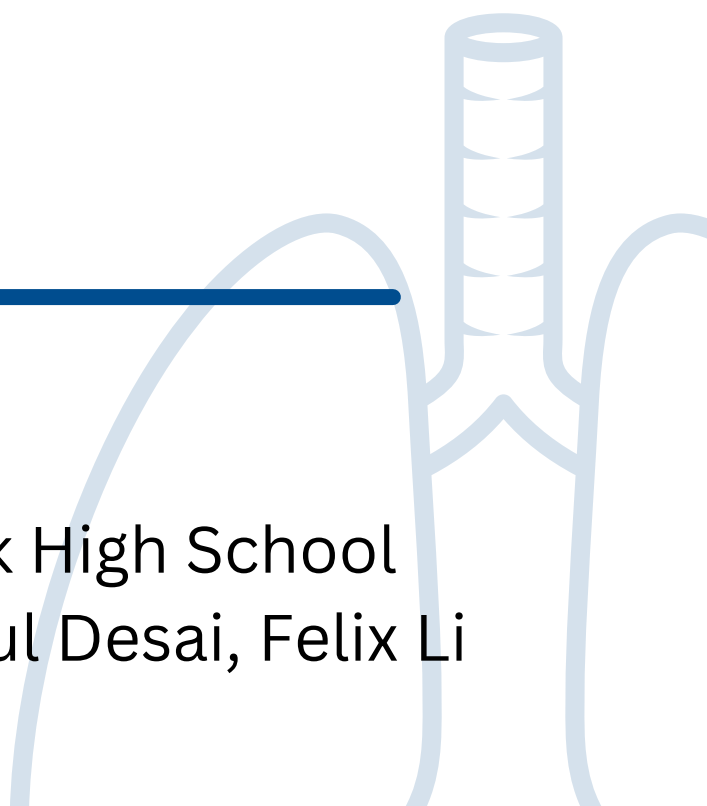


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I. Executive Summary

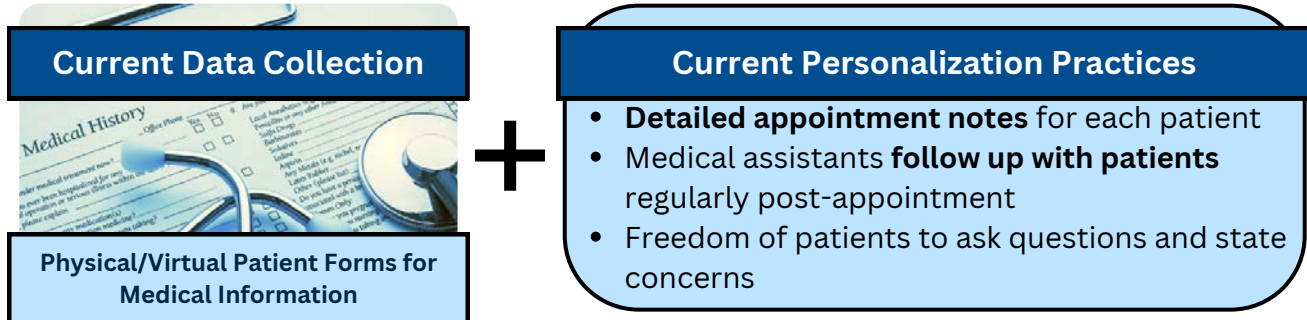
A. Description of Business

Pulmonary, Critical Care, and Sleep Associates (PCCSA), is a **clinic** that is dedicated to improving the lives of patients by **treating a wide range of pulmonary issues** (issues relating to the lungs), sleep disorders, and allergies. Generating around **\$4 million in revenue per year**, PCCSA is in its 15th year of treating patients with the **goal of enhancing the quality of life for those around them** in the **Conroe, Texas area**.

PCCSA Treats



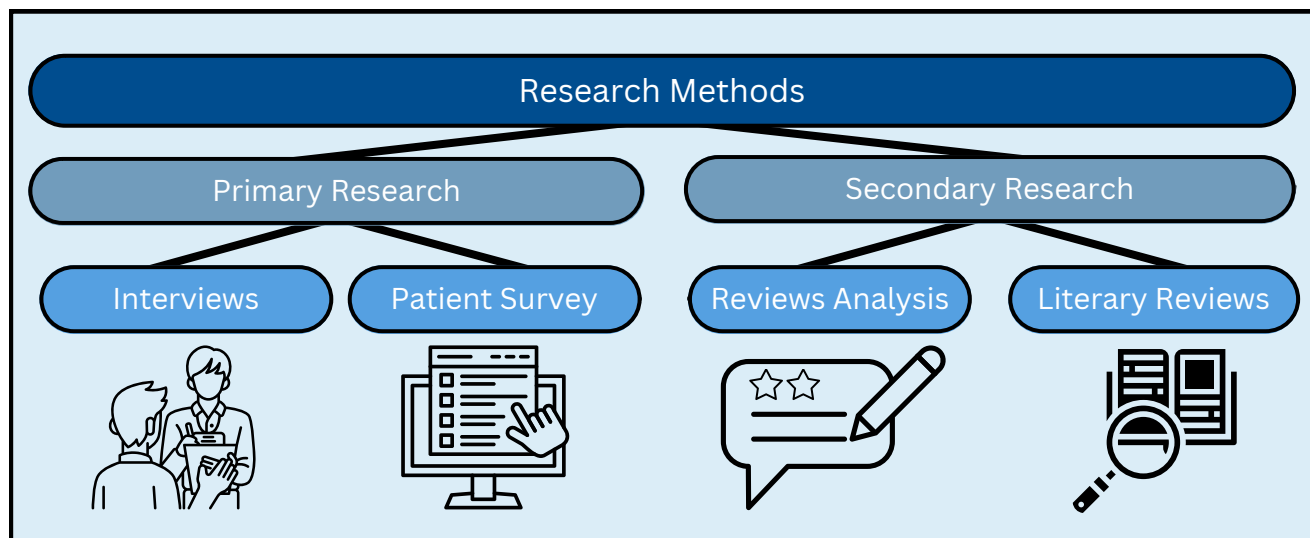
B. Current Business Situation



With an **increase in patient volume**, however, PCCSA is **struggling to provide a lasting, personalized experience** to each patient. This results in a **negative customer experience**, steering away from the clinic's goal of enhancing their patients' lives.

C. Research Methodologies

Comprehensive research was conducted on PCCSA to identify key problems, enabling us to develop a plan to personalize the experience of the patient. Primary and secondary research methods were utilized that collected **quantitative and qualitative data** from the clinic.



The primary research consisted of interviews with the doctor, manager, and a highly ranking medical assistant and patient surveys that asked patients a series of questions regarding personalization. The secondary research included an analysis of online reviews from patients and literary reviews that researched how to ethically incorporate artificial intelligence (AI) into the healthcare industry while addressing the concerns of the elderly.

D. Findings and Conclusions of the Study

Findings		Conclusions
Patients and the doctor at PCCSA mutually feel their visits are cut short, limiting the time in which both parties can form a personal connection .		Current healthcare workers at PCCSA must be trained to fulfill more tasks around the clinic to create more time for the doctor to spend with patients .
There is a poor effort to communicate with patients outside of PCCSA , restricting patient and staff relationships to only be formed within the clinic.		PCCSA must implement a method that allows patients and staff to actively communicate outside of visits .
PCCSA's staff is occupied by taking notes during a visit, causing patients to feel dissatisfied with the amount of attention directed toward notes than them.		PCCSA must automate the note-taking process to enable healthcare staff to provide their undivided attention to patients.
Patients cannot file complaints directly to the clinic, preventing the clinic from obtaining critical feedback to to make beneficial changes		Resources must be provided to PCCSA's patients that exclusively enable them to provide critical feedback directly to the clinic.

E. Proposed Strategic Plan

Overlying Goal: Medical visits can be stressful to patients due to an anticipation of a worrying diagnosis, poor prior experiences, being exposed to unfamiliar equipment, and other personal reasons. To ensure patients can be at **REST** while at PCCSA, a four pronged plan was constructed with a **focus on personalizing the patients' experience**.

 R	 E	 S	 T
Restructure Employee Training • Patient Communication Training • Pulmonary Function Test (PFT) Training • Sleep Apnea Test (CPAP) Training	Encourage Communication • Pre-Appointment Patient Surveys • Implement MyChart App	Strengthen Relationships • DeepScribe AI ◦ Initiation ◦ Demo ◦ Widespread Implementation	Track Patient Feedback • Anonymous Feedback Forms • Post-Appointment Surveys

Timeline: The REST plan will span over a **4 month long** time period.

Month	May 2023		June 2023		July 2023		August 2023	
R	Communication Training		PFT Training		CPAP Training			
E	Pre-Appointment Patient Survey							
	MyChart App Development							
S	DeepScribe Initiation	DeepScribe Demo	DeepScribe Widespread Implementation					
T	Anonymous Feedback Form							
	Post-Appointment Survey							

Goals and Metrics of the REST plan

Goal	Metric	Rationale
Restructure Employee Training	At least 80% of employees complete PFT, CPAP, and communication training	Ensures well over a majority of the staff is capable of handling various tasks
Encourage Communication	At least 75% of patients registered and actively using the MyChart app	Signifies the bulk of the clinic's patients are able to communicate with the clinic outside of visits
Strengthen Relationships	At least 80% of patients report being able to form more in-depth interactions during a visit	Indicates most of the clinic's patients have been able to engage in more personalized exchanges within their appointments
Track Patient Feedback	Average customer satisfaction test score of at least 80%	Places the clinic's average customer satisfaction score in the near-excellent tier

F. Proposed Budget for Plan

Component	Cost
Patient Communication	\$1,440.00
PFT Seminar	\$2,660.00
CPAP Seminar	\$2,440.00
Previsit Survey	\$1,560.00
MyChart App	\$4,400.00
DeepScribe	\$6,480.00
Feedback Forms	\$0.00
Post-Appointment Survey	\$2,400.00
Total Costs	\$21,380.00

Estimated Revenue

Patient Retention
+
Patient Referrals
+
Primary Care Doctor Referrals
\$27,525 of Total Revenue

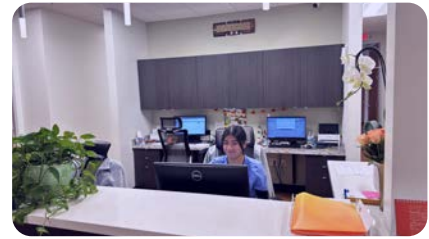
$$\begin{array}{l}
 \text{Net Profit (Revenue - Cost)} \\
 \hline
 \text{Investment (Cost)}
 \end{array}
 =
 \frac{\$27,525 - \$21,380}{\$21,380} \times 100 = 28.74\% \text{ ROI}$$

II. Introduction

A. Description of the Business or Organization

Background

Founded in 2010, Pulmonary, Critical Care, and Sleep Associates (PCCSA) is a healthcare provider that focuses on **internal care**. The clinic has its own office building in Conroe, Texas, which sees up to **50 patients a day, treating a variety of issues related to the lung. Among these treated issues include:**



Respiratory Illnesses

- COPD
- Asthma
- Cough
- Shortness of breath
- Pulmonary Fibrosis
- Lung Cancer

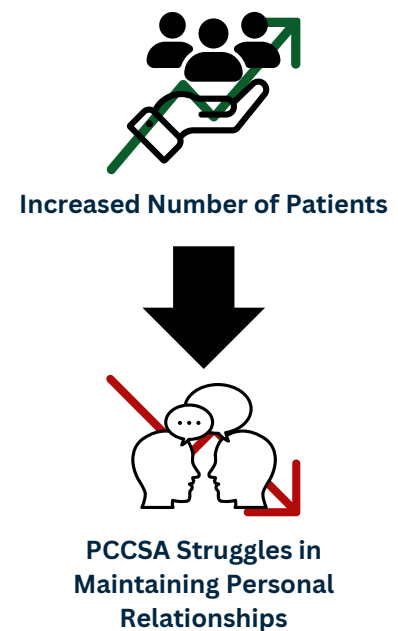
Sleep Disorders

- Obstructive Sleep Apnea
- Restless Leg Syndrome
- Narcolepsy
- Insomnia
- Sleep Walking

Allergies

- Pollen
- Dust mites
- Food
- Animals

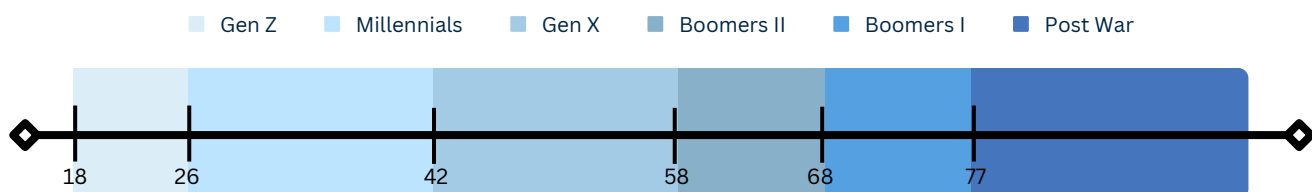
PCCSA has been **established for 15 years** and sees 15% of Conroe's 95,000 residents. Another significant portion of Conroe's residents visits Millennium, a main competitor to PCCSA, consisting of ten pulmonologists. While only having **one pulmonologist**, PCCSA is able to succeed as they offer a multitude of benefits to patients that other clinics such as Millennium do not provide. These **benefits** include their **patient and sick appointment turnover rates** being **extremely efficient** with patients getting appointments within 1 week and 24 hours, respectively, whereas **other clinics** can take **months** to accommodate these patients. Also, patients reportedly **enjoy PCCSA's fast response time** as the clinic calls patients immediately with test results, medications, and appointment information. Along with this, the healthcare workers attempt to listen and provide **high-quality care** to each patient, resulting in positive feedback. However, due to a **great rise in the number of patients, PCCSA has struggled to sustain these benefits that spark personal relationships with their patients.**



B. Description of the target market (Demographics and Psychographics)

Demographics:

The patients who visit PCCSA can be divided among six primary demographic groups. Among these include Gen Z (Ages 18-25), Millennials (Ages 26-41), Gen X (Ages 42-57), Boomers II (Ages 58-67), Boomers I (Ages 68-76), and Post War (77-94).



Seniors and Elderly

Over the last 10 years, more than 70% of all patients at PCCSA are ages 58 and older. Correspondingly, people within this age sector are noted to have **increased chances to have pulmonary issues** such as pneumonia, bronchitis, and shortness of breath. These age-related issues lead to waking up an average of 3-4 times a night along with developing conditions such as insomnia and sleep apnea, resulting in an **overall worse quality of sleep**.

Gen X

This age group spanning the ages of 42-57 comprised nearly 20% of all patient visits over the last 10 years. Studies from GlobalData reveal that Gen X consistently displays poor health behaviors such as having a **greater likelihood to adopt smoking habits** with 42% admitting to regularly smoking. The UK's National Health Service links these smoking habits to an increased chance of suffering from anxiety and depression. The cumulative product of these behaviors is a **compromised respiratory system** and a **struggle to find adequate sleep**.

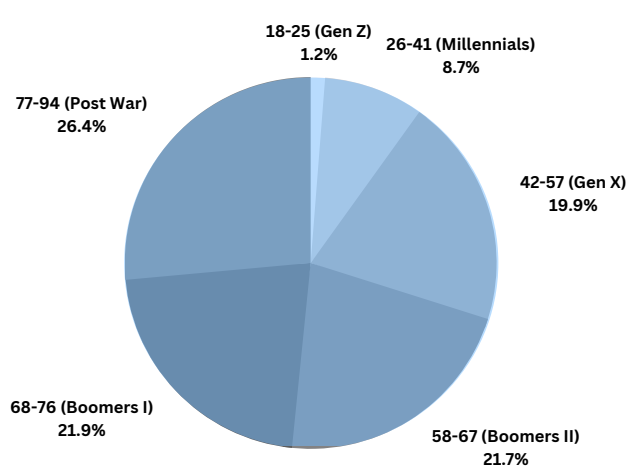


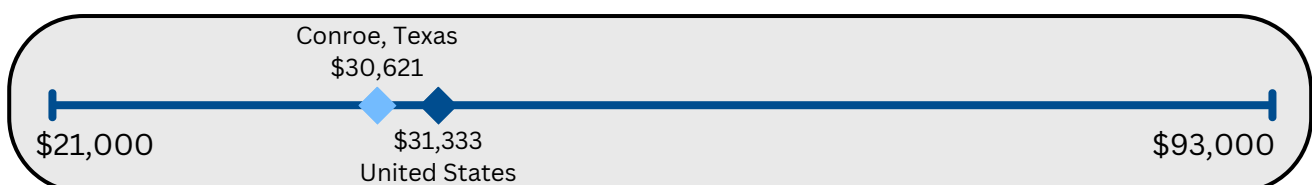
Figure 1.1
10-year Patient Breakdown

Early to Middle Adulthood

Ages 18-41 make up this group, comprising around 10% of all patient visits within the last 10 years. The people within this span of ages are considered the biggest vapers, as SingleCare reveals that **nearly 20% of people from this sector use vape products**. Furthermore, this age group is considered the most overworked as one out of every three members report being overburdened by their work responsibilities. This leads to **sleep deprivation being a norm** for them.

Demographics - Income

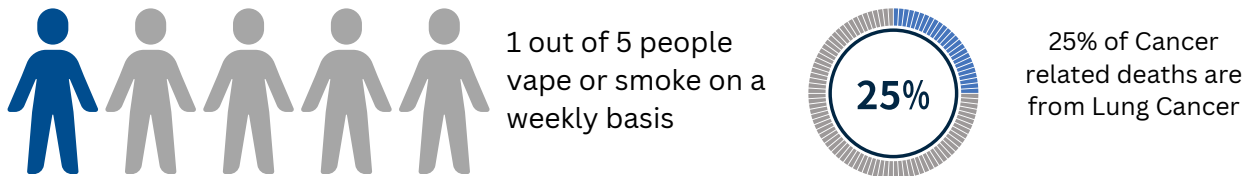
As recent as 2019, the median income per individual in the United States was **\$31,133**. PCCSA is found in Conroe, Texas, where the median income per individual is **\$30,621**. This places Conroe slightly **below** the nation in terms of median wealth. Knowing this, the patients who attend this clinic will most likely fall under the **low-medium income range**. The individuals who fall under this economic category often do not pay for **health insurance** and find themselves **paying out of pocket** more frequently. Due to the **high-cost** nature of formal clinical care, low to middle-class people stray away from regular checkups in favor of making visits only when their health becomes noticeably problematic.



Psychographics:

Lifestyle:

According to the Asthma and Allergy Foundation of America, nearly **25 million** Americans suffer from **asthma** and are encouraged to have two clinical checkups within a year to monitor the disease. Those with asthma are susceptible to recurrent **chest tightness** and **shortness of breath**, disrupting their sleep. Additionally, Americans are noted to regularly indulge in habits that are **detrimental** to their pulmonary and sleep health. The American College of Surgeons notes that **one out of every five** Americans vape or smoke on a weekly basis. Both habits are **strongly** associated with **lung cancer** which is responsible for **25%** of all **cancer-related deaths** in the United States.



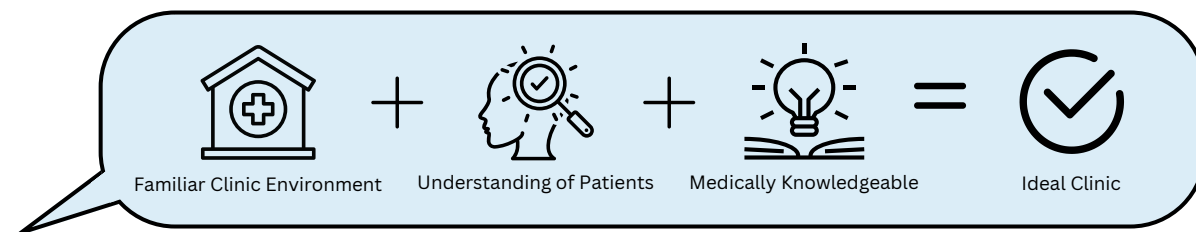
The National Heart, Lung, and Blood Institute further reveals that **35% of all Americans fail to sleep for the recommended seven hours a night**, linking this behavior to a cause of hypertension, kidney disease, and heart attacks.

35%

Americans fail to sleep for the recommended 7 hours a night.

Clinic Familiarity:

Surveys issued to American registered poll voters in 2017 by Family Medicine for America's Health indicate that patients desire a familiar clinic environment with physicians that understand their individual differences and needs. When gauging the extent to which patients value this physician relationship, 89% of around 23,000 respondents **valued being treated by a physician who is knowledgeable about their medical history and background**. This reflects an overall desire for a continuity of care that generally exists among all Americans.

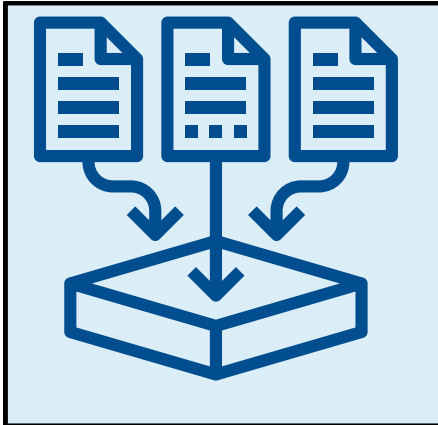


Confidentiality:

The healthcare system in the United States has standardized sharing of personal information with healthcare providers to enable care to be more tailored and efficient for each patient. While patients understand the necessity of this, the University of Washington School of Medicine reports that their **patients' biggest fear in the modern healthcare climate is their private information being breached**, exposing their medical history. Addressing this fear with proper data security measures, such as encryptions and keys, will establish transparency between healthcare providers and patients, establishing a more secure setting.

C. Overview of the business or organization's data collection practices for business decision-making

PCCSA has yet to update its technological capabilities to capitalize on hyper-personalization, a rapidly growing business strategy which can better serve its patients.



Current Data Collection Practices

In order to provide a personalized approach, any organization would need a sustainable method to collect data. However, the clinic is only able to **collect medical information through required patient forms and insurance**. This lack of data collection results in greater privacy for the patient, but **prevents the organization** to be on par with **current technologically-based personalization**. To be able to combat this problem, data collection that goes beyond required medical information is needed while still being mindful of the privacy concerns of patients.



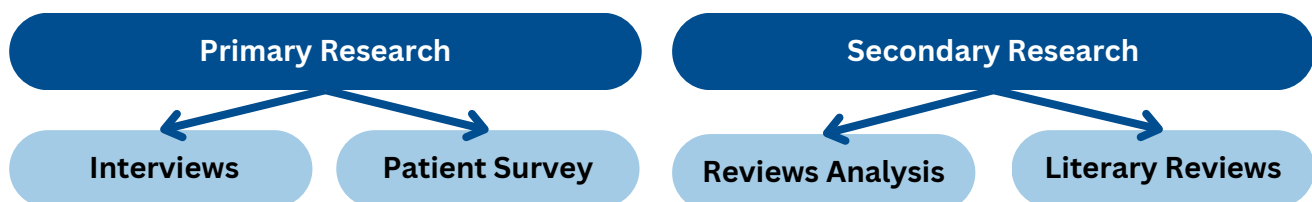
Current Patient Personalization

The current approaches for stimulating a more personal experience consist of **basic ideas which work with limited efficacy**:

- Taking detailed notes throughout an appointment so the patient is **well-informed** about their visit
- Medical assistants **personally reaching out** to inform patients of any unattainable information during the appointment
- **Follow-ups** with patients after their appointments
- Willingness to **answer concerns/questions** from the patient

III. RESEARCH METHODS USED IN THE STUDY

A. Description and Rationale Of Research Methods



Two major approaches were used when doing market research: primary and secondary research. The **primary research** involved more **direct interaction with the clinic** and its **active patients** which consisted of **interviews** with the PCCSA manager and employees and **surveys** administered to patients visiting PCCSA. The **secondary research** focused on sources of information either outside the clinic or apparent within its past which consisted of an **analysis of reviews** from previously discontent patients at the clinic along with **published research articles**.

Primary Methods:

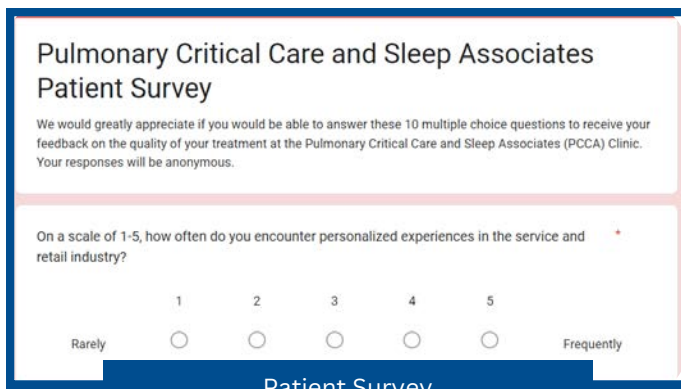
Employee Interviews

Description: A series of **three one-hour interviews** functioned as the first component of the primary research. The interviews were conducted on **PCCSA members** of different authority and **leadership roles**. Interviews were conducted with **one member at a time, to prevent response bias** from other colleagues' responses. Questions about the members' views on hyper-personalization and its incorporation within the clinic were included in all interviews.

Rationale: The purpose of these interviews was **to identify already existing approaches toward hyper-personalization** provided by members at PCCSA. This enables a greater understanding of the clinic's existing strategies revolving around creating a more personalized experience for their patients. Thus, it makes it possible to establish what current hyper-personalization practices are effective and ineffective at the clinic, allowing us to innovate upon already existing approaches or to develop our own.

Patient Survey

Description: An **anonymous** patient experience **survey** functioned as the second component of our primary research because of its simplicity to complete for the older generations and **ample amounts of responses to form generalizations**. The survey provided **unbiased** and thus **accurate patient responses** because all responses were anonymous and independent from others. In order to obtain the most valuable information from our survey results, we used **multiple-choice questions** to gauge the patient's experience and thoughts about PCCSA. These multiple-choice questions were organized through the **Funnel Method**, which consists of **broad questions at the beginning** and narrows in **specificity towards the end** of the survey. Patients could **easily access the survey** through **QR codes** placed around the clinic.



**Pulmonary Critical Care and Sleep Associates
Patient Survey**

We would greatly appreciate if you would be able to answer these 10 multiple choice questions to receive your feedback on the quality of your treatment at the Pulmonary Critical Care and Sleep Associates (PCCA) Clinic. Your responses will be anonymous.

On a scale of 1-5, how often do you encounter personalized experiences in the service and retail industry? *

1 2 3 4 5

Rarely ☐ ☐ ☐ ☐ ☐ Frequently

Patient Survey

Funnel Method

Broad questions referring to customer experiences with personalization



Specific questions about hyper-personalization within PCCSA

Rationale: The purpose of this survey was to **gain insight into how personalized patient experiences** are at PCCSA and to gauge the receptiveness of patients to the concept of hyper-personalization. The survey **first started off with how patients view personalization in general and then moved on to how they would view personalization at PCCSA**. The end of the survey concluded with questions asking the patients if they would be willing to provide more personal information in order to receive a more hyper-personalized experience.

Secondary Methods

Discontent Patient Reviews Analysis

Description: Using Google Reviews, all nine comments/ratings left by patients that were **below a 3 out of 5 score were analyzed**. The specific complaint presented by each patient was identified for each review.

Example of Discontent Reviews

sharma himangi
5 reviews
★★★★★ a year ago

I think Dr Ashesh's secretary needs to learn some over call manners. I called them to get an urgent appointment regarding an urgent health issue but she didn't even let me speak out my problem and she put my phone on hold, after 2 minutes when I asked her did you hear me ? My phone was on hold from your side, she said yeah we don't have any appointment. I said I was about to tell my urgent situation, she was again like we can't do anything. She was not bothered to listen to any of my question or situation.

Sohana Islam
2 reviews
★★★★★ a year ago

The Dr and stuffs are not friendly. I never get them on phone whenever I call them.

Rationale: By reviewing a historical record of complaints by patients at the clinic, various complaints from different people can be distinguished. Furthermore, **by identifying the complaints within each low-scoring rating, common problems** regarding patient experience can be **exposed** such as visits being too **brief** and not feeling **heard** by the doctor.

Literary Review: AI in Healthcare: Data Privacy and Ethics Concerns

Description: The article was analyzed to **learn about the ethical implications of the storage of patient healthcare data** that is **collected from AI**. It covers how healthcare data from AI is especially valuable to **multinational corporations**, meaning it is vital to securely manage the data to where only the patient can access it.

Rationale: If PCCSA is to **implement AI** within the clinic and have it collect sensitive patient information, there must be **strict protocols** in place to **prevent the breach of sensitive patient data**. As a result, it is crucial to address the **ethical concerns** that come with introducing AI.



AI Detection



Selling customer data to pharma and biotech firms

Literary Review: Willingness of Older Adults to Share Data and Privacy Concerns

Description: This research paper was analyzed in order to **learn about how willing older adults would be to share private data** after using in-home sensor technology to constantly monitor them to detect health problems. The patient would then have the option to share this data with healthcare professionals, measuring their willingness.

Rationale: When looking at the demographics of the clinic, about **65% of patients are above the age of 60**, making **seniors a major demographic**. Because of this, it is critical to analyze how willing this population is to share online data as they were not raised with technology, causing them to be more **skeptical** towards it.



B. Process used to conduct the selected research methods



September 2022 - Met with PCCSA

- Established relationship with PCCSA and their staff
- Investigated types of illnesses/conditions treated by the clinic
- Reviewed patient data (i.e. age demographics)
- Developed insight as to how patients are seen and the clinic is run



September 2022 - Established Research Methods Used to Conduct Study

- Utilized information from initial meeting and research about the current industry to select the most feasible and appropriate research methods
- Finalized primary and secondary research methods, incorporating qualitative and quantitative data between both



October 2022 - Conducted Interviews

- Interviewed management at PCCSA
- Head pulmonologist was interviewed
 - Learned how much time is spent with each patient
 - Understood which processes he implements to treat patients
- Office Manager
 - How busy the clinic is each day
 - How many patients are seen in a typical day
 - Level of difficulty for patients to get in touch with the clinic
- High-Level Medical Assistant
 - If each patient receives enough time to express their concerns during their visit
 - If there are enough workers for the amount of patients the clinic receives



October 2022 - Conducted Surveys

- Provided finished survey to clinic management to distribute among patients
- Accumulate survey responses over a one week time period



October 2022 - Google Reviews Analysis

- Google Reviews from former patients that rated their experience at the clinic as below average were analyzed in order to identify previous sources of complaint



October 2022 - Literary Reviews

- Published articles and technical papers were discussed between the team in order to gain a better understanding of the applications of AI in the medical field along with presenting technology to resonate with elderly patients



November 2022 - Problems Identified

- Compiling qualitative interviews with the quantitative survey along with the Google Reviews analysis, clear problems became evident



November 2022 - Plan Developed

- Established measures to tackle all identified problems within the clinic, placing a focus on sparking patient hyper-personalization while maintaining a mindfulness of the privacy concerns expressed by patients

IV. Findings and Conclusions of the Study

A. Findings of the Research Study

Primary Method - Interviews

One-hour-long interviews were separately conducted with the doctor, office manager, and a medical assistant. The key response for each question was noted as follows:



Doctor Ashesh



Office Manager Hetal



Medical Assistant Elizabeth

How well do you feel your company caters to the needs of patients?

Doctor Ashesh: We try our best and take all questions from patients very seriously. However, sometimes we feel very overwhelmed due to an extreme amount of patients.

Do you feel as if the patients get an adequate amount of time with the doctor, or do you think their visits are rather rushed?

Doctor Ashesh: When there is a rush, I try not to push the patient out of the room and reassure them that any questions they have will be answered. Still, there are a few times that I feel like we could have spent more time with the patient to further explain medications and Sleep Apnea Test (CPAP) functions.

Have you ever experienced patients who were dissatisfied with the amount of care and attention?

Office Manager Hetal: Yes, we cannot satisfy everyone's needs. Patients do get dissatisfied with their treatment, but we do not currently have a method to record all of these complaints. Furthermore, our doctor must make notes throughout an appointment and log the visit, taking away time to engage in meaningful conversation, causing the patients to feel unheard.

Do you think hyper-personalization is a strategy applicable to the clinic?

Medical Assistant Elizabeth: This strategy would be applicable. If a new patient was willing to provide what exactly they want from our clinic, then we could be more efficient in satisfying those specific needs in a timely manner. It would also help the medical assistants tailor to their questions by knowing more background on the patient's medical history.

How would you expect your patients to react to a more personalized approach?

Office Manager Hetal: They would be appreciative. The patients would like a more personalized approach because most of the time in the medical field, doctors are overwhelmed and not able to give enough time for patients' individual needs.

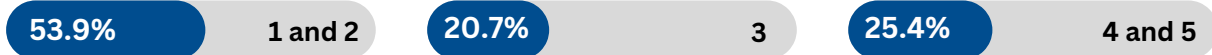
Primary Method - Patient Survey

Because the clinic sees almost **50 patients every day**, we decided that **1 week** of administering surveys would be enough to accumulate a large number of patient responses. Over the **1-week period**, there were **227 responses** collected. The survey consisted of questions that gauged **patients' views on hyper-personalization, privacy concerns, and their overall experience at PCCSA.**

First, the patients were asked to answer “On a scale of 1-5, how difficult is it for you to contact PCCSA healthcare providers outside of the clinic?”

1 - Very Difficult

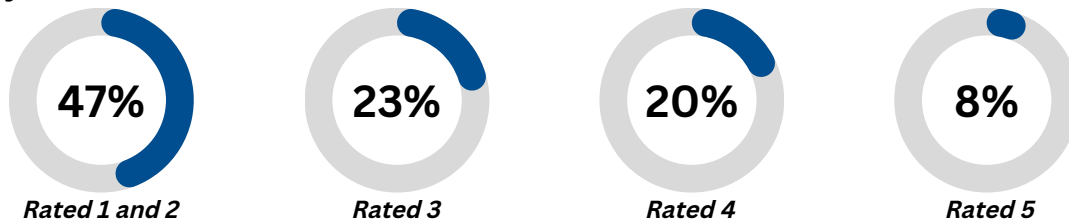
5 - Very Easy



Then the patients were asked “On a scale of 1-5, how rushed do you feel like your doctor visits are at the clinic?”

1 - Very Rushed

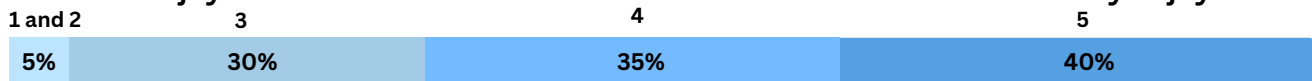
5 - Not Rushed at All



With the survey funneling from information about the experience at PCCSA to a more direct question geared towards hyper-personalization, the survey asked the patient “If PCCSA was to provide a more personalized experience, how would you react 1-5?”

1 - Less Enjoyable

5 - Very Enjoyable



Secondary Methods - Google Reviews

The first part of the secondary research consisted of observing reviews of the clinic taken from **Google Reviews** that **scored below a 3 out of 5 rating**. These **negative patient reviews provided explanations** on why each **patient** felt so **negatively** about their experience at the clinic. Through scrutinizing each review, **noticeable patterns** for causes of discontent were identified:



Mention being treated artificially by the clinic's staff



Mention not receiving enough time to communicate with the doctor



Mention struggling to communicate with the clinic outside of their visits

Secondary Methods - Literary Reviews

AI in Healthcare: Data Privacy and Ethics Concerns

AI is becoming widely used in the healthcare industry but **current laws are not enough to protect an individual's health data**. Genetic testing companies **sell customer data** to pharma and biotech firms. Also, major healthcare companies, such as Anthem Blue Cross BlueShield, have had data breaches affecting 70 million people. With this, it is crucial to make sure there are safeguards in place to make sure that patients' data is secure. First, companies must be **required to inform users** as to **how their data will be used**. Then, they **must encrypt the data** with 256-bit encryption, used by many healthcare entities, so that **only the appropriate party can access it**. Finally, the government must have a **legal framework to protect healthcare data**.

Willingness of Older Adults to Share Data and Privacy Concerns

In this study, **older adult participants** were surveyed about their **attitudes toward unobtrusive home monitoring** and computer use. The **objective** was to **find the willingness of the older population to share health data** with doctors and other healthcare providers. The results were quite promising as **72%** of the participants did **not** have any **problems** with the in-home and computer monitoring. The findings show a **high acceptance rate** of sharing data with the older population, **advocating** for the use of technology in this **community**.

B. Conclusions Based on Findings

1

The lack of healthcare workers at PCCSA forces patient interactions to be cut short, preventing patients and healthcare workers from establishing personal connections.

Surveys administered to patients overwhelmingly indicate that their experience at PCCSA would benefit from increased personalization. Furthermore, negative Google Reviews commonly complained that visits felt too brief, resulting in patient interactions with the doctor feeling formulaic. Through staff interviews, however, it is apparent that there is an inability to provide this desired patient experience as clinic visits must be kept short to ensure all patients can be seen by the few medical workers.

2

There are weak efforts toward communicating with the patient beyond the clinic, limiting the relationships formed to be only through appointments.

Personalization includes collecting information in order to improve the patient experience. However, through interviews with leadership at PCCSA, it was apparent that the clinic lacks a patient-clinic relationship beyond just informing patients throughout their appointment. This reduces possible opportunities to gather information to better tailor to the patient. Additionally, it can be seen through patient surveys and negative Google ratings that contacting the clinic outside of visits was troublesome for many patients.

3

The need for PCCSA's healthcare staff to manually maintain notes throughout the course of an appointment occupies their focus, causing patients to feel treated artificially in their visits.

Through the series of interviews, it was made apparent that the clinic's healthcare staff is obligated to record appointment notes throughout a visit, detracting from the workers' abilities to appear caring to patients as they are unable to perform simple gestures such as maintaining eye contact as a patient speaks. Negative Google Ratings view this neglect as being handled artificially by the clinic's staff, restricting patients and staff from cementing personal bonds throughout an appointment.

4

There is a lack of direct avenues for patients to express their complaints about their treatment at the clinic, preventing the clinic from receiving critical feedback that would enable it to better the experience of its patients.

As observed in the patient survey and negative Google Reviews, there are obvious sources of discontent held against the clinic. As made aware by the office manager, however, PCCSA currently has no formal complaint system for patients to file their complaints directly to the clinic. Instead, third-party platforms such as Google Reviews are the only way to formally write these complaints and are often ignored due to their indirect nature. The lack of a direct avenue for patients to file complaints hinders the clinic's ability to be conscious of ongoing issues.

V. Proposed Strategic Plan

A. Objectives and Rationale of the Proposed Strategic Plan

Principal Objective

The REST acronym seeks to innovate upon the existing infrastructure at PCCSA, enabling it to cater to its patients through improving its staff, fostering new methods of communication, building patient relationships, and incorporating critical feedback. This plan of action, REST, is relevant to PCCSA's service accommodations and emphasizes the relaxed nature patients should experience while at the clinic. Furthermore, it outlines four primary goals for staff at the clinic to be mindful about in order to improve patient experience through the strategy of hyper-personalization.

R

Restructure
Employee
Training

Objective: To address PCCSA's scheduling and appointment concerns by training current employees to be capable of handling more tasks for increased patient-doctor interaction duration.

Rationale: By restructuring employee training, employees will be able to take on more tasks around the clinic, reducing the doctor's need to rush to stay on schedule and ultimately resulting in a more personal interaction between the doctor and patient.

E

Encourage
Communication

Objective: To improve patient relations by utilizing a tool that enables patients and workers to have direct and asynchronous communication outside of PCCSA.

Rationale: By establishing a method of communication outside of the clinic, patients will be provided a resource to reach PCCSA outside of their visits to express any concerns or updates they have directly to the clinic even when unable to make a formal appointment.

S

Strengthen
Relationships

Objective: To spark more in-depth interactions between healthcare staff and patients through automating the note-taking process.

Rationale: Through automating note-taking, it will enable the clinic's healthcare staff to divert all of their attention toward the patient and engage in meaningful conversation. Knowing that their healthcare provider is attentively listening to them will provide patients with a feeling of comfort.

T

Track Patient
Feedback

Objective: To allow patient concerns and constructive criticism to be made aware by providing PCCSA patients with an avenue to file their complaints directly to the clinic's management.

Rationale: Allowing patients to have a direct way to pass on their criticism to PCCSA management ensures the clinic can be made aware of patient feedback. Through this, patients' needs could be better satisfied as the clinic would have more substantial information to base necessary changes.

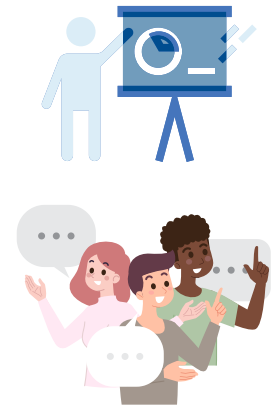
B. Proposed Activities and Timelines

Restructure Employee Training

As PCCSA's workload keeps on rising due to the increased number of patients every day, healthcare workers have limited time with patients. Because of this, restructuring employee training will focus on training employees to take on more tasks and refining their skills in order to make the clinic as efficient as possible. With a more efficient clinic, healthcare providers can spend more time with the patients, giving the patient a more personalized experience.

Patient Communication Training

Communication between staff and patients is extremely vital, however, as most of PCCSA's staff have never received proper training which leads to problematic interactions as exposed by many patients. By giving all healthcare workers patient communication training, PCCSA will have improved patient satisfaction along with a heightened perception of the healthcare workers' comprehension. This training will aim to educate workers on how to patiently respond to complaints, how to maintain a respectful tone in frustrating situations, how to develop conversations with patients, and what information should be conveyed to patients concerning PCCSA's programs. Each objective will consist of 2 sessions that are each 1 hour long, totaling to 8 hours of training spanning over a 2-week time period.



Pulmonary Function Test (PFT) Training

A PFT is a noninvasive test that aims to identify how well the lungs are functioning, measuring the volume, gas exchange, rates of flow, and capacity of the lung. In PCCSA, there are only two employees that can operate the PFT machine. If these two employees are working with a patient, PFTs cannot be conducted, and they would have to rush through their current patient interaction to operate the machine. To alleviate this dependency, training to operate and better navigate the PFT machine will be offered to PCCSA's healthcare staff. The training will transpire over a 2-week period, totaling 12 hours over 6 sessions, and will be taught by ResMed. These sessions will aim to cover the basics of administering the test and efficiently utilizing the machine.

Sleep Apnea Machine (CPAP) Training

A sleep apnea machine, commonly referred to as a CPAP machine, helps treat sleep apnea by delivering air through tubes and into a mask which helps keep a patient's airway open while they sleep. Helping the patient set up this machine is a time-consuming process and only a few employees can set up the machine. To address this concern, another 2-week training will be offered to the healthcare staff that will consist of 4 sessions, accumulating to a total of 8 hours. The first 2 sessions will be structured as a teacher-student setting, allowing the healthcare staff to familiarize themselves with the smaller machine. The last 2 sessions will refine the CPAP setup process to ensure comprehension.

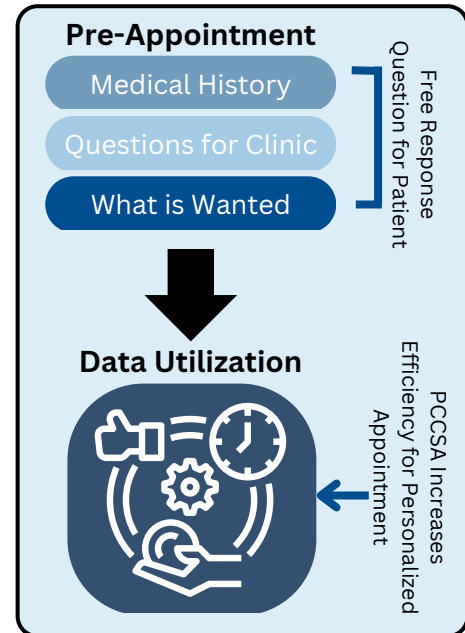
All training sessions will take place after work hours and all overtime hour wages will be accounted for to ensure participation.

Encourage Communication

The lack of communication with patients beyond the clinic needs to be addressed in order for improvements in experience for all patients. By increasing communication and interaction with the patient, the following would all proportionally increase: patient data collection, patient involvement, and the extent of a clinic-patient relationship. These increases direct the clinic to be able to provide the patient a more tailored experience.

Pre-Appointment Patient Survey

A pre-appointment patient survey would be utilized for the purpose of helping all PCCSA employees tailor their approach for each patient. The survey would include 3 free response questions that would ask the patient to provide what they expect from the clinic, their medical history, and any questions regarding their appointment. These free-response questions would allow for PCCSA employees to be more efficient in satisfying those specific needs. In order to implement the information collected from the surveys, these surveys would be given to the patient using an easy-to-access link during the scheduling of an appointment. The survey would then automatically store each individual response, which will be viewed 1 day prior to the patient's scheduled appointment.

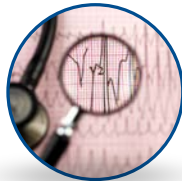


MyChart App

PCCSA will implement the MyChart App which will facilitate two-way communication between the clinic and patients. The MyChart App is currently used by many major healthcare systems and allows patients to immediately access:



Health Summaries



Test Results



Appointment Notes



Messaging the Clinic

PCCSA will be able to take advantage of MyChart as they can upload medical records within the same day of the patient visit. Because of this, patients can view their information and get answers to questions without needing to go through the trouble of communicating with the clinic by phone. In addition, the MyChart app would also manage medications and other personal data allowing the clinic to care for the patient beyond the clinic. This will include PCCSA providing sets of instructions to the patient on how to administer medication and virtually tracking their progress toward their health goals. While MyChart does collect personal medical information, the app is explicit to users in the data it collects and limits data collection to what the product requires.

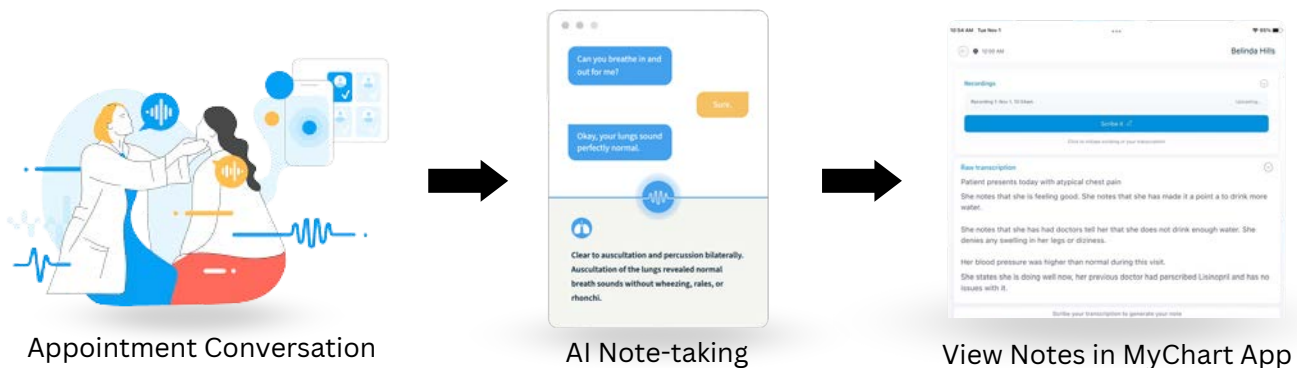


Strengthen Relationships

With patients at PCCSA feeling neglected due to the clinic's healthcare personnel being obligated to maintain detailed notes during a visit, Strengthen Relationships will align the staff's focus to be geared toward attentively listening to their patients by automating the note-taking process. Through automating this tedious process, all attention can be directed to the patient in order to provide them with a more comfortable environment and emphasize that they are being listened to. This will lead toward a closer relationship forming between the healthcare personnel and patients.

DeepScribe Artificial Intelligence

DeepScribe is an AI that works in the background of a patient-doctor interaction and takes notes of the entire conversation, allowing the doctor to maintain face-to-face communication with the patient. DeepScribe utilizes medical-grade natural language processing and speech recognition technology, giving it the ability to filter non-essential information, handle multiple speakers, and effectively summarize the information into readable paragraphs. Along with this, DeepScribe seamlessly syncs notes directly to the MyChart application, giving patients easy access on platforms that the clinic will utilize. Based on various case studies done on the effectiveness of DeepScribe, clinics have reportedly saved up to 2.5 hours on documentation, reducing the note-taking time during clinic hours by 25%. As mentioned before, PCCSA only has one pulmonologist who sees around 50-60 patients a day. This results in the pulmonologist spending around 3-4 hours a day on note-taking alone. DeepScribe would reduce the amount of pressure on the pulmonologist to take notes, thus allowing him to spend more time with patients, and giving them more personal interaction during the appointment.



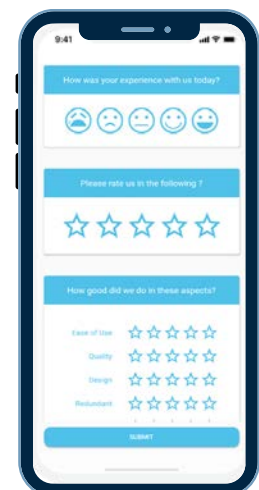
As DeepScribe takes notes of very sensitive patient material, it is very crucial to make sure that the AI manages the data it receives safely. Because of this, DeepScribe is 100% HIPAA compliant, utilizes multi-factor authentication, and end-to-end data encryption, meaning that patients are at a very low risk of a data leak.

Track Patient Feedback

With an inability for patients to express their concerns directly to PCCSA, Tracking Patient Feedback will establish clear resources to enable patients to do this. Providing direct patient criticism to PCCSA allows the clinic to adapt more proactively based on the needs of their patients, creating a more personalized experience for them.

Anonymous Feedback Form

Implementing an anonymous feedback form provides an option for patients to write personalized comments about any aspect of their experience at PCCSA without fear their comments can be traced back to them. These forms will consist of a single open-ended prompt asking the respondent to provide any critical feedback regarding their treatment at the clinic. This form will be made available through QR codes placed throughout the office, allowing patients to have convenient access to it. At the end of each day, all responses to the form can be viewed by clinic management and the sources of complaint can be addressed.



Post-appointment Survey

Another option created to enable patient feedback about their visits to PCCSA is a post-appointment survey. The survey would consist of four multiple-choice questions requesting the patient to numerically rate different aspects of their visit and a single free-response question allowing the patient to detail any specific problems they encountered throughout their appointment. This survey will be sent to each patient immediately following their visit through an automated email or text message, providing them with an easy-to-access link to reach the survey. After each week, healthcare workers can reflect on the accumulated patient assessments related to their own appointments.

R.E.S.T. Initiative Timeline

Month	May 2023		June 2023		July 2023		August 2023	
Half of Month	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half
Restructure Employee Training	Patient Communication Training		Pulmonary Function Test Training		Sleep Apnea Machine Training			
Encourage Communication	Pre-Appointment Patient Survey							
	MyChart App Development							
Strengthen Relationships	DeepScribe Initiation	DeepScribe Demo	DeepScribe Widespread Implementation					
Track Patient Feedback	Anonymous Feedback Form							
	Post-Appointment Survey							

C. Proposed Metrics or Key Performance Indicators to Measure Plan Effectiveness

Restructure Employee Training



80% of Employees Trained

Key Objective: Have at least 80% of employees trained

After giving training opportunities to the employees throughout a four-month timeline, PCCSA will target having **80% of employees complete PFT, CPAP machine, and patient communication training**. In addition, **80% of employees along with the doctor** should report that they are able to **spend more time with patients** as a result. This ensures staff proficiency with various tasks around the clinic along with their satisfaction with changes.

Encourage Communication



75% MyChart Participation



Statistical Significance from Survey

Key Objective: Have at least 75% of patients utilize the MyChart app

With the introduction of the MyChart App, PCCSA will aim to bring **75% of all patients to register and actively use the app** by June 2023. Furthermore, the survey given to patients in the beginning of experimentation will be readministered and reevaluated using a **chi-square test** to determine if the communication modifications elicited **statistically significant changes** in how patients view the clinic's effort to communicate with them outside of the clinic. This guarantees that a majority of the clinic's patients have the ability to easily communicate with the clinic and that they are satisfied with communication focused changes.

Strengthen Relationships

 80% Patient Interaction Improvement

Key Objective: Have at least 80% of patients report an improvement with interactions
After working in tandem with DeepScribe for a one-year time period, the clinic's **head pulmonologist** and **80% of healthcare staff** should report being able to **engage more actively with the patients** they are tending to. Patients visiting during this period will also be issued a survey via email following the duration, with a **goal of over 80% of them indicating an improvement in the depth of interaction** between them and the clinic's healthcare workers. This will support the notion that the implementation of DeepScribe has positively affected both the clinic's healthcare staff and patient's ability to communicate throughout a visit.

Track Patient Feedback



Avg. CSAT Score of 80%



75% Report Improved Inclusion

Key Objective: Generate a CSAT score of at least 80%

Following a one-year time period, a **post-change survey** will be emailed to all patients who have made multiple visits to the clinic within the time period aiming for **over 75%** of all patients **indicating they feel more included** within the clinic's decision-making process. Furthermore, all patients visiting the clinic in the final two weeks of this duration will be asked to provide a customer satisfaction score (CSAT). A CSAT is a commonly used indicator that quantifies customer/patient satisfaction with a product or service. An **average CSAT score of at least 80%** will be targeted. This will prove that patients feel their opinions are valued by the clinic and place the clinic in the near-excellent tier in regards to their score.

VI. Proposed Budget

Restructure Employee Training

Training	Costs
Patient Communication	\$1,440.00
PFT Seminar	\$2,660.00
CPAP Seminar	\$2,440.00
Total	\$6,540.00

Strengthen Relationships

Platform Implementation	Costs
DeepScribe	\$6,480.00
Total	\$6,480.00

Encourage Communication

Communication Method	Costs
Previsit Survey	\$1,560.00
MyChart App	\$4,400.00
Total	\$5,960.00

Track Patient Feedback

Form	Costs
Feedback Forms	\$0.00
Post-Appointment Survey	\$2,400.00
Total	\$2,400.00

TOTAL COSTS

Program	Cost
Restructure Employee Training	\$6,540.00
Encourage Communication	\$5,960.00
Strengthen Relationships	\$6,480.00
Track Patient Feedback	\$2,400.00
Total:	\$21,380.00

Restructure

Cost Rationale

Patient Communication - (12 healthcare workers x 8 hours lost x 15 an hour) (*Cost of overtime*) = **\$1,440.00**

PFT Seminar - \$500 (*initial seminar cost*) + (12 healthcare workers x 12 hours lost x 15 an hour)(*Cost of overtime*) = **\$2,660.00**

CPAP Seminar - \$1000 (*initial seminar cost*) + (12 healthcare workers x 8 hours lost x 15 an hour)(*Cost of overtime*) = **\$2,440.00**

Encourage

Previsit Survey - \$130 * 12 (*months*) = **\$1,560.00**

MyChart App - \$4,400 (cost of app subscription a year) = **\$4,400.00**

Strengthen

DeepScribe AI - \$540 (monthly subscription fee) * 12 (*months*) = **\$6,480.00**

Track

Feedback Form - Google form (*no cost as no sensitive patient information*) = **\$0.00**

Post-Appointment Survey - \$200 per month (*sends an automated secure text message or email as patient information needs to be kept private*) = **\$2,400.00**

Total Cost: \$21,380

Return on Investment

After consulting with the office manager of PCCSA, the proposed plan, **REST**, will have an approximate **revenue** of **\$27,525** within one year. Because it is difficult to determine the exact revenue generated for each component of REST, factors such as **patient retention** and **increases in patient referrals** along with **primary care doctor referrals** were used to calculate the amount of revenue earned. Based on this revenue, the predicted **Return on Investment (ROI)** for REST will be **28.74%** after **one year**. Furthermore, with this implementation, there will be more **recurring** patient visits, **raising** the **overall ROI** in the **future**. As REST only consists of a **small 0.475%** of PCCSA's **\$4 million** per year revenue, it is a **low-risk** investment that will bring **comfort** and **satisfaction** to patients, resulting in a more **relaxed** clinic experience.

Calculations

Net Profit (Revenue - Cost)	\$27,525 - \$21,380	
Investment (Cost)	\$21,380	
	=	× 100 = 28.74%

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