*PocketDoc*: Continuously Connected Care

**The Executive Summary**

It is difficult for physicians to manage the treatment of noncompliant patients who do not adhere to the medication or miss scheduled appointments. Physicians rarely have time to create deep relationships with patients who struggle with managing their health in modern models of healthcare, and this noncompliance is also extremely costly. Hospitals and practices lose thousands or even millions of dollars as they lose revenue from services for patients and induce costs as patients develop more serious illnesses without adhering to scheduled visits and treatment modalities.

Our product, *PocketDoc,* is an application where physicians can input specific diseases with daily or semi-weekly notifications, called presets, that will remind the patient about the treatment plan they were given and encourage them to continue their treatment. Specific reminders for the patient, such as their medication and dosage, their next appointment time, and other goals such as an exercise regimen, will be pre-populated by the healthcare team responsible for the patient so the patient does not have to go through the hassle of filling out the app. This way, patients will be reminded daily and weekly about their goals, feel motivated and encouraged by their providers, and improve compliance because they will have consistent reminders detailing what they need to do when needed. Our competitive advantage is that patients will not have to create reminders themselves, the app will already have them inputted by the provider.

We will sell our product to the providers through a monthly subscription service so that patients will not be stuck with the cost of the application, which would decrease trust in the provider and discourage compliance. Our product will be affordable and streamlined, providing a simple and efficient way for a healthcare team and the patient to communicate with each other about the effectiveness of the treatment modality.

**Finance Section**

**Financial Appraisal**

|  |  |  |
| --- | --- | --- |
| **Outflows** | **Description** | **Amount** |
| Investment costs | Initial capital needed at the outset of the project | $5,000 |
| Operating costs | On-going costs for a project (utilities, labor, material, accommodation costs, administrative costs) | $20,000 |
| Start-up costs | Preliminary studies, consulting, training, R&D, design, planning | $10,000 |
| **Inflows** | **Description** | **Amount** |
| Operating revenues | Revenue from charges/licensing | $50,000 |

**Project Definition**

**Background Information**

* Problem: Missed appointments and non-compliant patients create an immense cost for providers in terms of time and money. Patients will increase their risks of post-operation complications without follow-up and may need close monitoring if at-risk for certain illnesses.
  + Cost of missed healthcare appointments every year is around $150 billion. Each open, unused time slot costs physicians 60 minutes of wasted time and $200 on average.
  + In some areas, there are no-show rates as high as 30%.
  + Non-compliance with medication causes nearly 125,000 deaths, 10% of hospitalization, and costs the healthcare system between $100-289 billion a year
* Non-compliance from patients is extremely inefficient and costly. It plagues every section of healthcare, ranging from routine, yearly visits to the primary care provider to physical therapy sessions for post-operation recovery.
* These problems have been associated with healthcare since its inception and are in dire need to be fixed in order to provide a more cost-efficient and patient-centered plan.

**Objectives**

* Our goal is to provide a system of reminders and a platform for conversation where the patient will be able to keep up with their medications, treatment plans, and appointment times via our product, *PocketDoc*
* We will have the patient download the application *PocketDoc* on their phones, input their information (including their family members’ if they involve their family in their care)
  + We will integrate their *PocketDoc* account with their Epic/EHR patient information in order to customize their reminders and alerts.
  + We will also include presets for their condition:
    - For example, patients with Diabetes Mellitus Type 2 will be given reminders asking if they’ve taken their prescribed dosage of medication (like Metformin), hours of aerobic activity per week, and blood sugar levels.
    - These will pop up in the phone notification during a time that they prefer, either daily or semi-weekly.
    - These notifications will involve replying back with words or numbers and can include a conversation about how they are feeling, both mentally and physically.
    - In this way, we can analyze how often they follow their treatment and how they feel on a routine basis without coming to the office.
  + We will also incorporate machine learning to understand which patients are at risk of non-compliance and send more frequent and specialized reminders to encourage these patients with their treatment.
* Sustainable competitive differentiators include the scale and customizability of our application.
  + This app can integrate with Epic and other EHRs, so it will be easily integrated into clinics and hospitals wherever there are EHRs being used. It can also be used outside of EHRs just as a general tool for reminders for medication and appointments.
  + Physicians and other health professionals can customize the presets and the illnesses that need to be followed per patient.
* Ultimately, the patient must feel like he/she can trust the provider and believe in the treatment process, otherwise, he/she is prone to non-compliance. Keeping a daily or semi-weekly reminder for the patient provides a constant stream of care where the patient will not forget the physician’s instructions and feel like they are not forgotten in the system.

**Benefits and Limitations**

* Benefits: Once the patient adapts to the routine care or treatment model provided by the physician and is consistently reminded by the application, the patient is less prone to forget about medication or miss appointments, leading to a more efficient use of time and resources available to the provider.
  + This, in turn, reduces cost and increases revenue for plans and providers, as more people will use the services of clinics and hospitals without needing emergency services that are used when patients with chronic illnesses do not get the support they need and their condition becomes critically dangerous.
* Limitations: *PocketDoc* is an application so there are limitations to its uses.
  + First, there are people who either do not have a phone or do not know how to use their phone in order to use the app.
  + Second, there are possibilities for the patient to ignore the app and its reminders because they can turn off its notifications or lie about taking their medication.
  + This would prevent some of the benefits mentioned earlier; however, the goal of this application would be to provide better communication to the patient, which is accomplished by providing a consistent stream of reminders and treatment information.

**Market Trends and Implementation**

* We are leveraging machine learning to understand patients who are at a high risk of non-compliance and adapt their notification system to improve their chances of compliance.
* We will sell the solution to providers, private clinics, and hospitals, where the healthcare team will organize and personalize the app with the help of our training staff.
  + This will benefit the patients, who are already struggling with the costs of appointments and medication because they will not have to pay for this application.u

**Competition**

* Our competition consists of applications that can create reminders based on plans that patients must input, including reminders for patients to continue follow-ups and medications.
  + Such apps include Apple Health, Huddle, Med Minder, and more
* Our product is different because we emphasize a system of reminders to our patients, where they do not have to access the app first in order to use it; the physician will create a plan that will send notifications to the patient based on their specific treatment modality.
  + We also create a communication system with the patient that will feel like a daily conversation and remind the patient to take his/her medication and remind them of future appointments. Through our specific style of messages, the patient will feel familiar and comfortable with our model of care and continue to return to the clinic or hospital.

**Business Model**

* We will monetize our product through a subscription-based model where the practice will pay on a monthly basis. Patients will have access to these services through an authorization code that is specific to each provider.
* We believe that we are providing a service to patients that is supposed to encourage them to monitor their health and treatment progress; however, forcing the patients to pay for the app would place distrust and frustration onto the provider and discourage the patients from partaking in the maintenance of their care.
* We would also want to provide the full service to the providers because we want to encourage them to customize their presets for individual diseases and continue adapting treatment options for their patients. Therefore, a freemium revenue model would be sub-optimal for our purposes.
* Lastly, providers should pay for this subscription because the increase in compliance will reduce costs and increase revenue for the practice or hospital so if our product works appropriately, the institution should generate more profit in the long run.

**Project Organization**

**Project Governance**

* Omid: Lead Software Architect
* Nick: Medical and Business Consultant
* Samson: Data Scientist
* Michael: Systems Engineer
* Madeline: Front-end Developer
* Consultants: The mentors who provided advice and feedback during the Hackathon