GREEN CIRCLE HEALTH PROPOSAL

PROVIDER USER EXPERIENCE CHALLENGE

Abstract

This document explains the solution proposed to be developed by Green Circle Health in response to the ONC Provider User Experience Challenge.

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1 INTRODUCTION

In March of 2016 the Department of Health and Human Services issued a Challenge for Provider User Experience Challenge to spur innovations that will create innovative ways for healthcare providers to interact with aggregated patient health data. Green Circle Health, a startup company, wishes to participate in the challenge to solve the problem for providers by demonstrating how data made accessible to apps through APIs can positively impact providers' experience with EHRs by making clinical workflows more intuitive and actionable. Improving patient check-in process, the provider practices not only gain efficiencies but also reduce errors and get higher scores in patient satisfaction. With a highly functional and easy to use provider dashboard, the provider may remotely monitor a large group of patients or multiple groups of patients being treated for various chronic conditions with real-time patient generated data. This improves quality of care and brings better results for providers participating in pay for performance models like ACO and CPC+.

GCH sees an opportunity to build a commercially viable business in this area. This document outlines GCH proposal to build such a product and a service that will be foundation for a successful business.

1.1 Document Scope

This document explains the functional and technical specifications of the solution that Green Circle Health (GCH) is proposing to build in response to the Provider User Experience Challenge posted by the Department of Health and Human Services (HHS). The proposed functionality of the solution is explained in detail with the support of screenshots from an HTML prototype. The document also explains the business model and revenue and expenditure projections to justify business opportunity and viability. A list of health systems and primary care providers is included in the document showing interest from healthcare community in such development.

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1.3 Glossary

GCH	Green Circle Health
HHS	Department of Health and Human Services
ONC	Office of the National Coordinator for Health Information Technology
SHL	Simple Healthcare LLC.
HIPAA	Health Insurance Portability Accountability Act
HITECH	Health Information Technology for Economic and Clinical Health
AWS	Amazon Web Services

1.4 About Green Circle Health

Simple Healthcare is a Florida Limited Liability Company (SHL) with office in Pensacola Beach, Florida and is doing business as Green Circle Health (GCH). GCH is a health information technology provider with focus on improving healthcare outcomes and saving billions of dollars in healthcare costs by changing the paradigm of healthcare. GCH is developing an online communications gateway that enables the real-time collaborative exchange of patient vitals and health records among physicians, patients, family members, insurers and employees. The GCH platform extends its usefulness to a person from the prenatal stage of a person's

conception right through the senior years, thus becoming a complete health repository for a lifetime. GCH will take advantage of FHIR protocol to help patient gather personal records from health systems, making it easier to maintain such life long history. GCH will implement the necessary software for this challenge and build a business using this new workflow to facilitate the collaborative sharing of data and enhance health care providers' ability to proactively monitor, diagnose and treat medical conditions. GCH has already build some of the frame work necessary to support this project and expects to deliver a unique value proposition as defined in this document by conclusion of this initiative.

1.5 Vision

Green Circle Health vision is to improve heath of millions of people and save billions of dollars in healthcare costs. GCH sees an opportunity to improve healthcare outcomes and lower costs by:

- Changing the paradigm of healthcare from treatment to prevention
- Bringing families at the center of health and healthcare in collaboration with care providers

With the advent of digital health and the digitization of health records, we see new opportunities for better healthcare - however there is not enough involvement of families to become responsible users of healthcare. Green Circle Health intends to build a platform for patients and their families to manage their health records and interact with healthcare providers and payers. This will allow each provider to become a health coach and partner with patient families for their lifelong health and wellness enabling them to transition to a new paradigm of health.

1.6 Health IT Opportunities

In the current healthcare scenario, the EHR deployment and adoption for the providers has been painful. Instead of gaining efficiencies from the power of a new health IT system, they are

working extra hours just to do daily data entry and clerical work. They are not engaging patients in their own care and they do not have time and incentives to focus on prevention. They need a better user experience with the IT systems to benefit from digitization of health records and deliver high quality service without burnout. The patients are offered a patient portal by each provider to review their data. This leads to patients having too many separate accounts at various health care providers with no way for them to see all their medical information in one place. They also cannot edit or correct any errors they may see online without going through very labor intensive and time consuming process. Providers have the same problem when their health exchanges do not bring them all the information about a patient nor does it allow a patient to push data into the providers' systems. On the patient side, they have many personal activity tracking and vitals monitoring medical devices at home that work with the apps provided by respective device vendors. However, such health vitals do not reach their healthcare providers. Though the patient in this technological age is equipped with computers, tablets and smart phones, their medical records are not in their control. The home monitoring devices are more efficient and easier to use than those used by healthcare providers, but the data gathered at home is not meaningfully used for analysis or for providing timely care. With standardization of interface like one proposed in this Challenge, the user will be able to aggregate personal health records in one place like GCH. With the advent of Bluetooth and Wi-Fi technologies, platforms that store these patient generated data are slowly becoming available for customers/patients. It is common knowledge that better two-way communication between patients and providers with real time monitoring helps to avert life threatening situations and provides better adherence to treatment and wellness protocols. Letting the patient record and report their personal health data can also reduce the burden of data entry at hospitals, ERs and other healthcare centers. For physicians who are pressed for time and have limited capacity to see patients, prioritizing the patients who need immediate care can be very effective. Medical records and real-time vitals data can be provided by patients or their family members using activity monitoring devices and personal medical devices. Earlier, EHRs were mostly closed systems that were not easily accessible to patients. But with the advent of

standards and methods for interoperability and exchange of medical data, it gives new hope to patients to own and manage their medical data from the comfort of their homes. And once patients have such data, it is only logical that the most recent information must be available to their healthcare providers. Now the health system can evolve to be a real-time closed loop monitoring system with constant feedback and course correction from experts as needed.

By improving data interchange and interoperability, duplication of data entry and data errors will be reduced greatly. Patients are faced with forms for personal information, medical information, review of systems and medical history every time a visit is scheduled. In many health systems, such forms cannot even be sent beforehand or electronically, thus increasing time and resources spent on re- reporting and re-recording redundant data.

Patients today request second opinions and expert consultations before accepting treatments or procedures that are recommended by their primary healthcare providers. Patients need to access and share their medical history data from one provider with other healthcare providers whom they consult for expert opinions or for follow up treatments. Currently, patient does not have a platform that can aggregate their health data from multiple healthcare providers and add their own data from medical devices that lets them share that information with others whom they choose. Providers do not have EHRs that can receive such historic or real-time medical device data from patients and filter and use to provide better care. Such a solution can save time and costs while improving the overall outcomes and user satisfaction.

The healthcare system currently stands independent, which alienate the social aspect of communication, communities, population health and outbreaks. Other health systems catering to home care, elderly care, specialty care, surgical and ambulatory centers, and corporate wellness initiatives, occupational, behavioral and psychosomatic care are not connected. It is common knowledge that patient data does not reside in any one EHR system, but is spread across multiple systems. Pharmacies and diagnostics labs have their own systems with patients' records and they are not always connected.

A patient-centric approach to prevention and care in collaboration with patients and their healthcare providers is the future of healthcare. Prevention and ongoing care coordination requires ongoing monitoring of various health vitals and conditions. A Bluetooth or Wi-Fi enabled glucometer device can automatically alert the family member or the caregiver of a person's dipping blood sugar levels and a health platform that is capable to analyze the data can advise them to increase carbohydrate intake to maintain their blood sugar levels. Meanwhile in a fully integrated environment the out-of-bounds blood sugar reading can alert a provider who can pull up his medical history on the EHR system, look at complete medication data, see recent changes and trend related or unrelated to diabetes treatment, and attend to the patient in a timely manner to prevent medical emergencies and other adverse outcomes. This type of efficient care coordination needs a new collaborative platform that is designed for modern mobile population with latest devices.

1.7 Provider User Experience Challenge

The Office of the National Coordinator for Health Information Technology (ONC) under the Department of Health and Human Services (HHS) has announced the Provider User-Experience (UX) Challenge to spur the development of applications that use open, standardized APIs to enable innovative ways for providers to interact with patient health data. This challenge will focus on demonstrating how data made accessible to apps through APIs can positively impact providers' experience with EHRs by making clinical workflows more intuitive, specific to clinical specialty, and actionable.

The lack of interoperability among electronic health record (EHR) systems remains a significant barrier to the modernization of health IT. Fast Healthcare Interoperability Resources (FHIR), developed by HL7, is a standard designed to increase the liquidity of granular patient data. The FHIR API allows data to move between vendor systems both within and across different providers, not to mention through third-party applications for direct use by both clinicians and consumers. Among several opportunities now enabled by this interoperability standard are the new channels being opened up for improving a provider's user experience when interacting

with EHRs and the “consumability” of interrelated health data. An app that truly creates better experience for the providers and makes them more productive will be very useful to every provider and health system management.

The goals of the challenge are very much in line with the vision and mission of GCH. Therefore, GCH wishes to take part in this challenge and build innovative applications for healthcare providers to interact with patient health data. The proposed platform will be very attractive to physicians as well as case managers who manage a large population of patients with chronic conditions.

2 PROPOSED SOLUTION

2.1 Summary

The Health IT systems that are currently in use are not ready to support rapid changes taking place in the health delivery and payment models. The main challenges that the providers wish their EHR and other systems will address for them to take part in new payment models include the following:

- Increase the efficiency of their care processes – lower costs to treat each patient
- Improve the healthcare quality and overall outcomes
- Coordinate care to meet their obligations under new payment models
- Improve patient satisfaction – their own scores in various reports
- Reduce preventable medical errors

The cost of healthcare has continued to increase over the last few years. With Affordable Care Act for the first time many people are properly entering the care delivery systems. To contain costs and provide necessary care, the government and private insurance companies are experimenting with fixed cost models for healthcare transferring more risks to healthcare providers. To achieve desired results, the focus of healthcare has to change from episodic care, where patients are treated for specific diseases or conditions, to health, wellness, and prevention; and thereby improve the overall health of a population. Ongoing monitoring of a person's health and timely intervention from the physicians and care givers are required to prevent adverse outcomes and reduce emergency and urgent care visits. In order to achieve this, a comprehensive care management solution with remote monitoring is required to give the healthcare providers an efficient and intuitive view of the patient's health status in real-time.

Even with vast amount of investment in digitization of health records, all the health information for a person is not contained solely in any one provider's IT systems. One person during her

lifetime will obtain treatments and advice from a number of healthcare providers scattered across various places in different settings. The information and diagnostic records and reports from those different interactions are scattered across multiple health systems. In addition to the data available in those health systems, the person will also collect a lot of valuable health data using wearables, sensors, smartphones and other personal health devices and activity trackers at home; outside of clinical settings. In order to provide efficient and effective care, the providers need access to all these data in a easy to use platform.

GCH and other technology providers are working on developing solutions that will allow patients to aggregate all their health data from various providers, combine it with the data that they collect themselves using heath devices and activity trackers, and share it with their care providers.

However, providers today are not equipped to accept data from other EHR platforms, personal health records or patient generated vitals and activity reports. Such data could overwhelm the providers and their systems. To make this data useful, to reduce medical errors and improve efficiencies of their patient interactions and to bring better clinical outcomes and reduce the costs of treatment the new system must also give the providers a next generation user experience and help them manage a large volume of patient data in real-time across their entire population of patients. By monitoring real-time health updates from their patients, they can intervene early, prevent adverse outcomes and ensure adherence to the treatment protocols that they had recommended. It gives the providers access to complete patient health data as and when need. This solution also gives the providers consolidated views of data from their entire patient population organized and filtered to help them triage and identify the patients who need their immediate attention.

GCH wishes to build a comprehensive dashboard for the providers that will complement their existing workflow and care management from their EHR platforms with a modern user interface that will be device independent and available anywhere they have access to computers or smart mobile devices. With smart design and latest technology, the patients and the healthcare

providers will be in constant contact with most efficient intelligent sharing of data which would facilitate the following results:

- Faster patient check-in at provider facility – reduce data entry errors
- Access to complete patient history as well as recent data for providers
- Remote monitoring and real-time tele-communication to facilitate early intervention
- Reduce re-admissions
- Improve overall health of the patient population
- Reduce ER visits and adverse outcomes
- Control cost of providing healthcare by delivering care at home or in most cost efficient settings.

GCH will develop a HIPAA and Hi-Tech act compliant web application specific to their specialty or treatment work plans, designed for access by providers and their staff from anywhere they have access to network via devices with various screen sizes like PCs and laptops to tablets and smartphones. This ease of use with built in intelligence in the program to guide patients will allow the provider to manage a large pool of patients without incurring higher costs of staff and follow up visits.

2.2 Integration with EHR Systems

In general providers are not happy with their EHR platform due to amount of time they spend doing data entry. Even after all the efforts to connect EHR's using Health Information Exchanges, results are not very encouraging. It is very important for the healthcare providers to have complete patients records to make accurate diagnosis and prepare a good treatment plan. One of the major challenges faced by new and innovative health IT system developers is their inability to interface with multiple EHR platforms and match patient records and keep them in sync. Beyond technological barriers, there are policy and procedural issues and real and perceived risks in bringing patient generated data in the provider EHR platform. With this

Challenge initiative and leadership from HHS, for the first time the EHR providers have agreed to allow the patient data to flow freely in and out of their platform. Many of the major EHR systems that are used by providers today will support FHIR interface which will allow third-party solutions to integrate with the EHR system. Using the FHIR based interface GCH will interface with many health IT systems and move the data among various healthcare providers and patients. This will enable the providers to use GCH user interface via its dashboard and access not only the patient data but also use other features like care coordination that will make them more efficient and responsive to patients' needs.

Many of the EHR systems also allow third-party applications to run as a plug-in within the context of the EHR. The mockup screen in Figure 1 below shows how GCH dashboard with a patient data can be viewed within the EHR system of a physician.

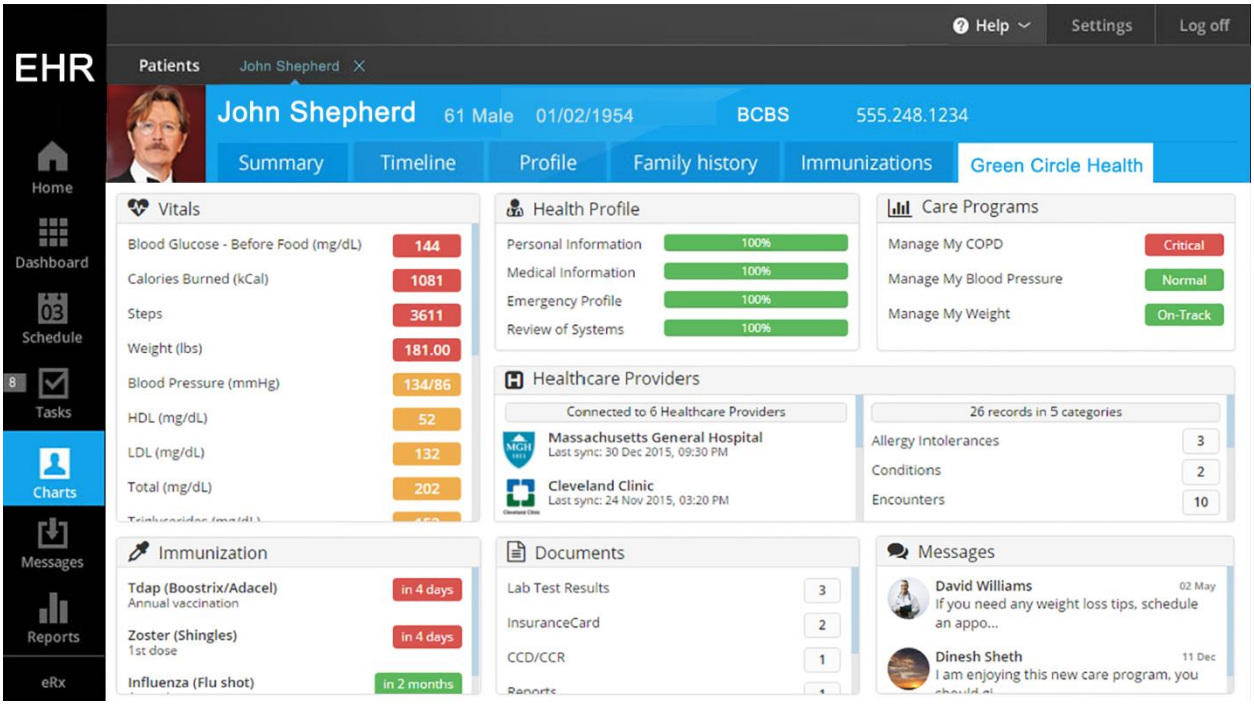


Figure 1: GCH Dashboard integrated and viewed within EHR system

2.3 Proposed Application Features

Following are the features that GCH proposes to build. Screenshots from HTML prototypes developed by GCH are also included to explain the functionality. Some basic screens for user registration, multi factor authentication, user preference set up, password management, messaging, alerts and reminders, error handling, and other common functions to such service are not shown in the wire frames for the service here but are available and can be provided if needed. A traditional feature of messaging with patient is highlighted later to show its additional utility in remote monitoring setting for tele-health purpose.

2.3.1 GCH User-Interface Design

GCH Application is being designed to be accessed with ease from a wide range of devices like PCs and Laptops to Tablets and Smartphones with different screen sizes. The application UI will automatically adjust to fit the size of the screen.

The high-level layout of the GCH UI for devices with screen size 7” or larger is shown in the screenshot in Figure 2 below. It shows the branding and the various navigation options available for the user to access the system. For smaller screens the left navigation will become a dropdown list and top navigation will be retained. Top navigation functions of preference, account settings, help, FAQ, video tutorial, and notification are common features that are not elaborated in this document but details are available with GCH team should there be an interest to learn more about them.

The blank area in the screen is where the application functionality will be displayed based on actions selected. When the user navigates from one feature to the other, the corresponding functionality will be displayed in the blank area, while the rest of the page layout will remain unchanged. In order to focus on the functionality, the screen shots shown in the remaining document only depicts the functionality that will be displayed in the application functionality area.

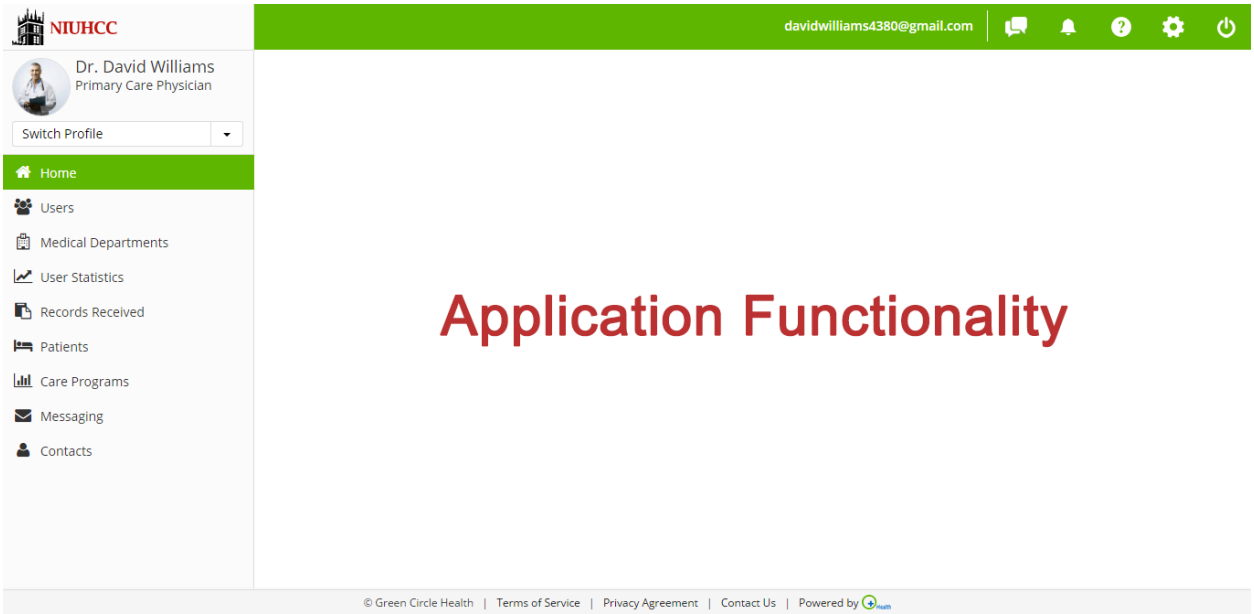


Figure 2: GCH User Interface Layout

2.3.2 Healthcare Provider Dashboard

The provider dashboard in the GCH platform will give the provider a comprehensive view of the health data from all their patients. The dashboard will have separate sections (tiles) for details like list of patients, status of various participants in different care programs, shared health records by patients (which will give summary about the number of records that has been shared with them by the patients), patient vitals and measurements (which will have charts and graphs showing the status of the vitals and other measurements reported by the patients), symptomatic questionnaires (which will show charts with status of the answers to symptomatic questionnaires from various patients), appointments (which will show summary of upcoming appointments with the patients using GCH service), care programs (which will show status and summary information about the patients participating in the care programs that are managed by the provider. Each of these tiles can be drilled down to access a more comprehensive page showing data about that particular feature and can access data to individual patient level.

The screenshot in Figure 3a below shows the consolidated GCH dashboard for a care provider or physician. It shows summary information about all their patients with GCH accounts. The patient - provider relationship should be established before the data for the patient is

accessible to the provider. This is done automatically when the provider enrolls the patient for GCH account. Alternately a patient who already has a GCH account can add setup and share their data with a provider who has a GCH account. A one-time token based authentication will be used between the patient and the provider to ensure data security and privacy.

The consolidated dashboard will have summary information about all the GCH patients who are connected to the provider. It shows summary and status of care programs (explained in detail in a subsequent subsection of this document), appointments, messages, notifications etc.

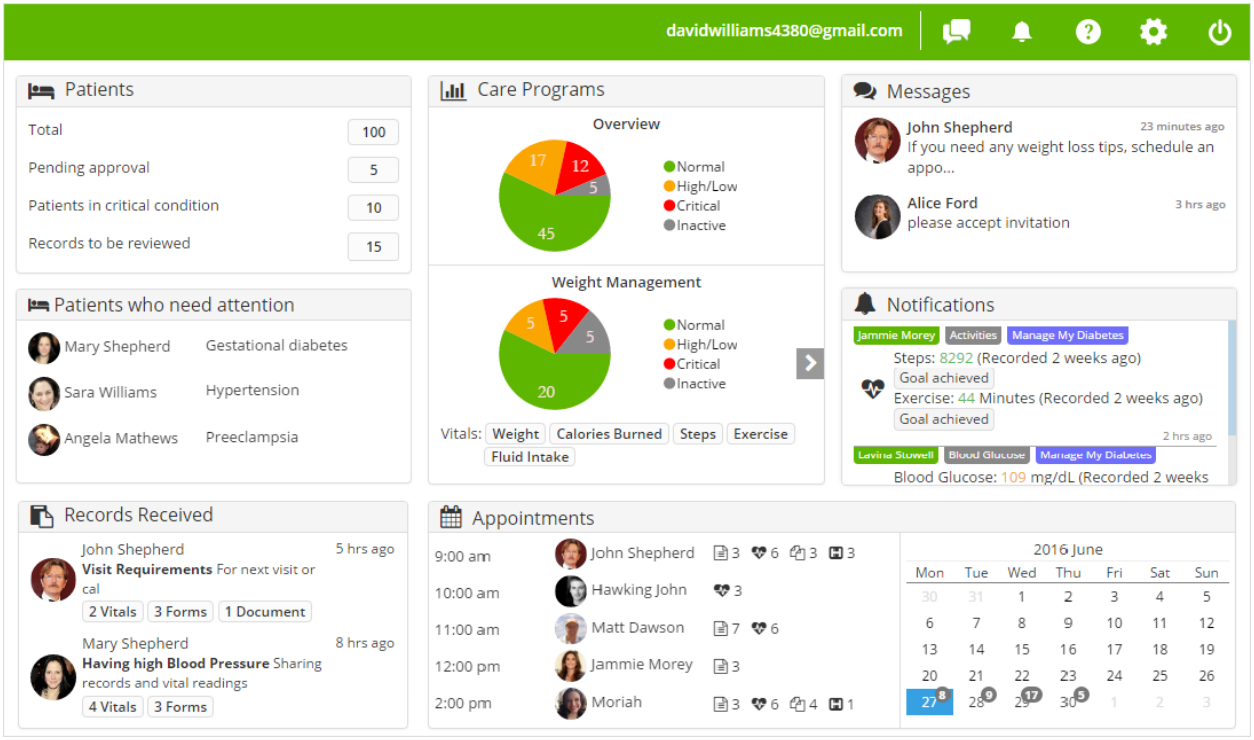


Figure 3a: Consolidated Care Provider Dashboard

Figure 3b shown above is a view of the provider dashboard shown in Figure 3a as seen on a smartphone.

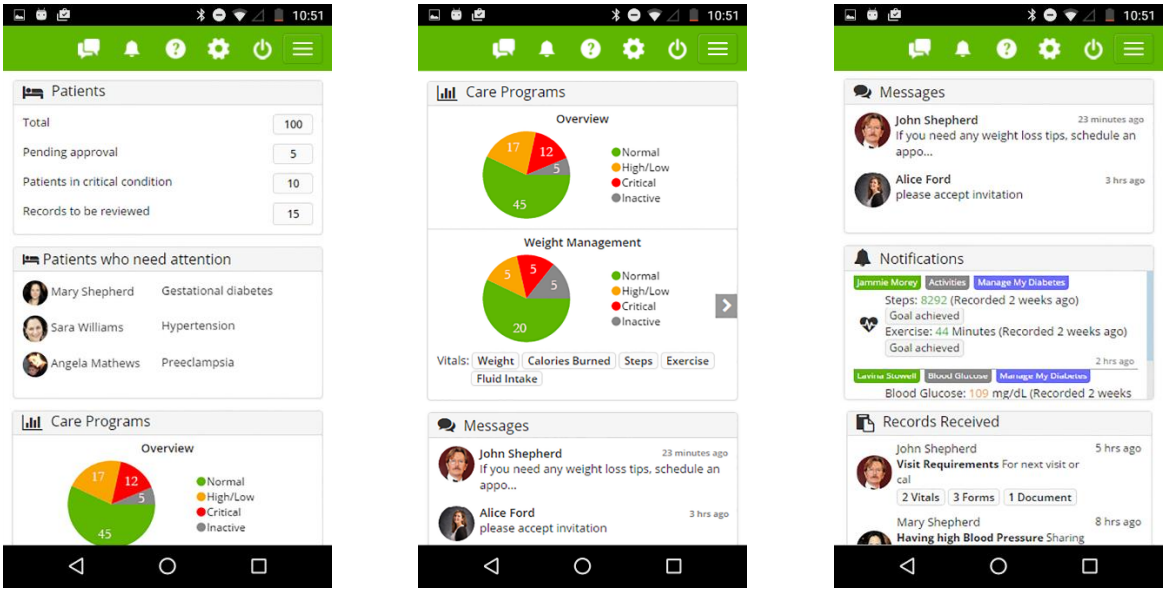


Figure 3b: Consolidated Care Provider Dashboard (Smartphone View)

From the consolidated dashboard shown above, the provider can drill down to see a list of patient who with a specific status. For example, from the status chart shown for Weight Management care program in the dashboard, clicking on a particular section of the pie-chart, which taken them to a listing of the patients in that category. Or by clicking on a section of the pie-chart for the overview of all care programs, they can see a list of all the patients falling in that status across all care programs managed by the provider.

The provider will also have the option to apply various filters to the patient list and by choosing the conditions for the filtering they can easily access the patients who might need their immediate attention from the total population of patients, thereby increasing their efficiency.

Figure 3c below shows a sample of patients list with all the filtering options shown on top which can be used to select the patients in whatever way they wish to handle based on their workflow. The patients list also shows values of key vitals reported by the patients. This allows the provider to identify patients who need immediate attention before going into more detailed information for the patient by selecting appropriate action.

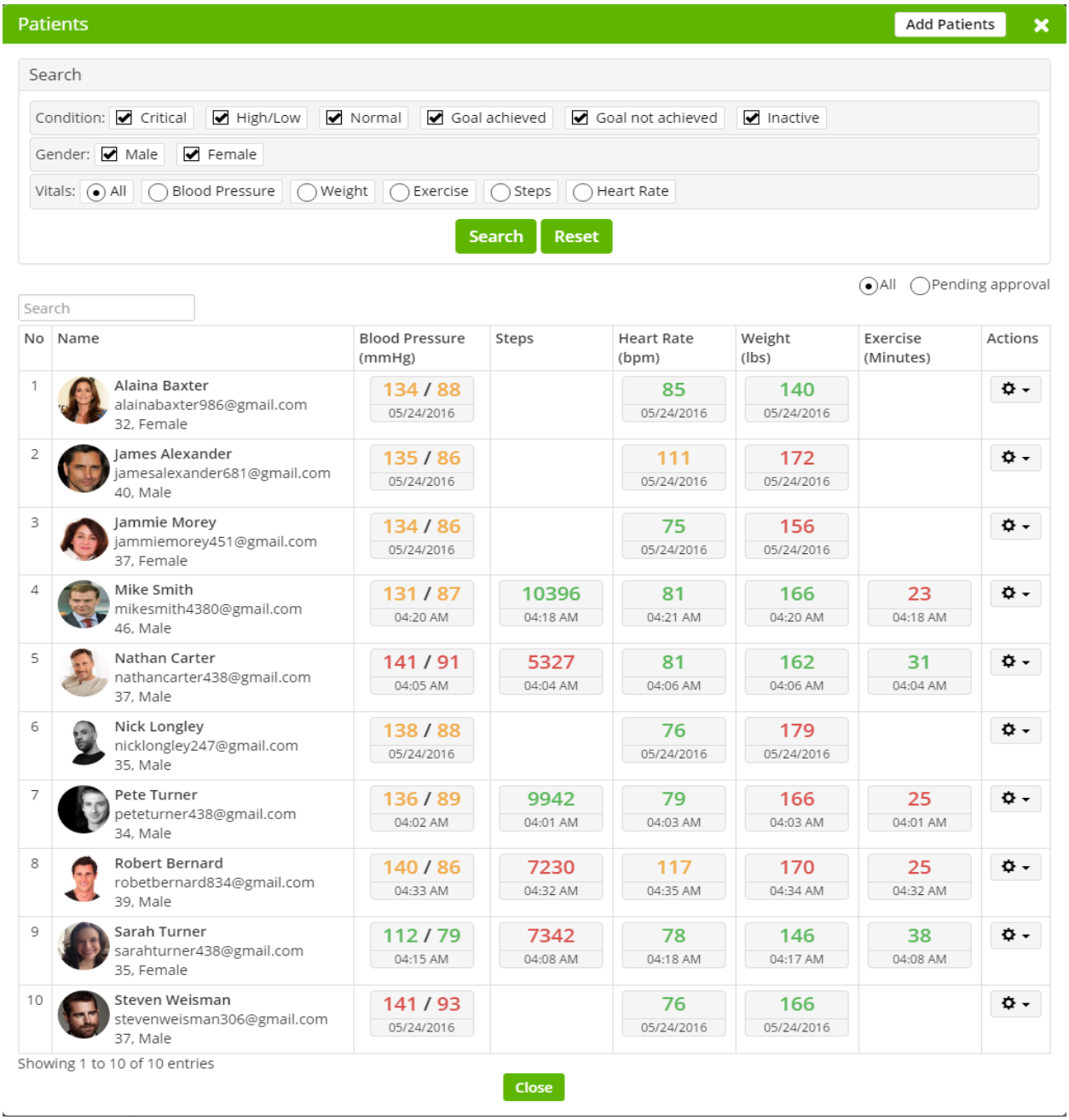


Figure 3c: Filtered Patients List

From the patients list the provider can drill down to see detailed information for a particular patient. Figure 4 below shows the mockup of a patient dashboard as seen by the provider.

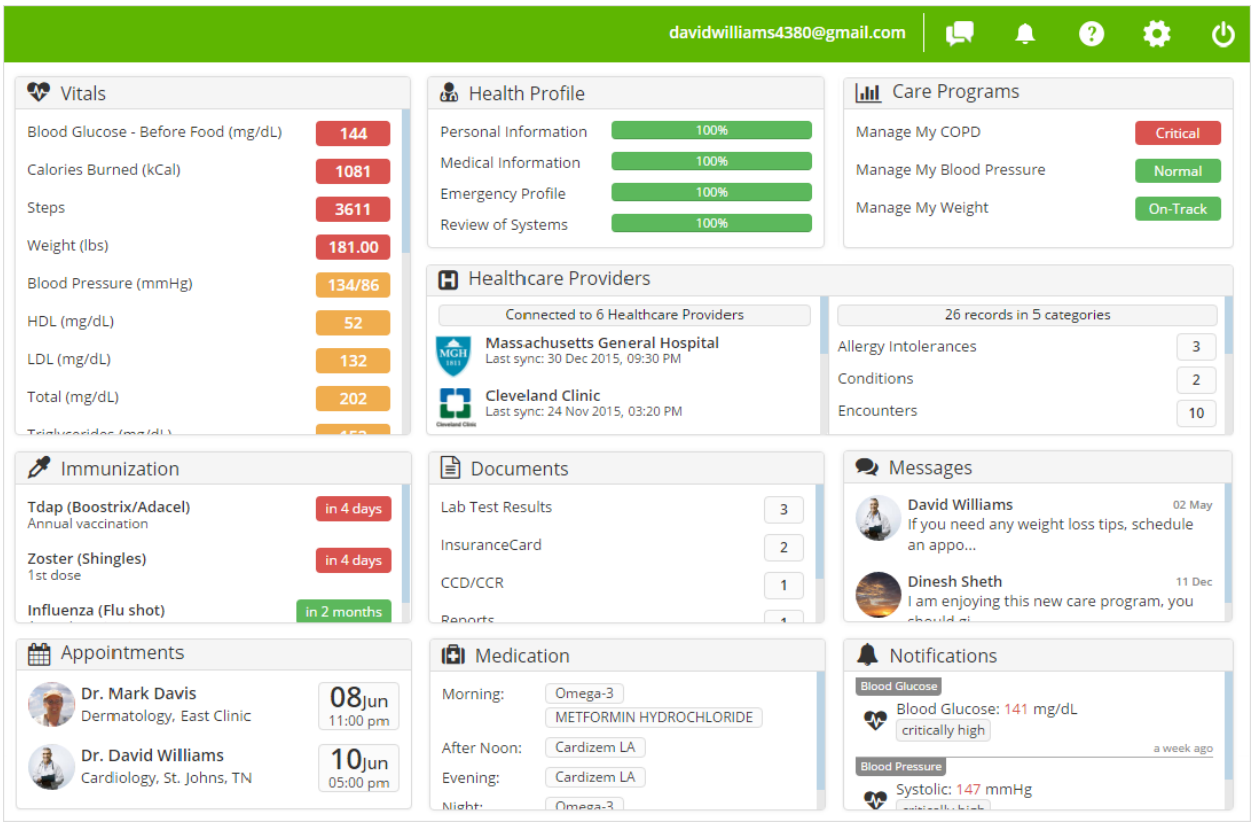


Figure 4: Patient Dashboard as seen by Provider

2.3.3 Provider-Managed Care Programs

GCH care programs will enable healthcare providers to remotely monitor and manage health, wellness and various medical conditions of their patients. These care programs supplement the treatment plans and protocols recommended by providers. GCH platform will enable providers to enroll their patients in treatment programs specific to their condition, which will improve their engagement with the patients and improve their adherence to treatment protocols defined by the specialists. This will help in early intervention and reduction in adverse outcomes, increasing utility of such services to case managers. Figure 5 shows a potential list of such care programs that different providers may configure for each patient depending on their own specialty and patient needs and invite their patients to use based on their conditions.

The screenshot below shows some of the standard care programs that GCH plans to develop for providers to offer to their patients. Providers can modify the standard programs offered by GCH

and implement their own care protocols within those programs by selecting Start Program and going into configuration settings. GCH will also offer to develop customized care programs for providers as per the specifications provided by them.

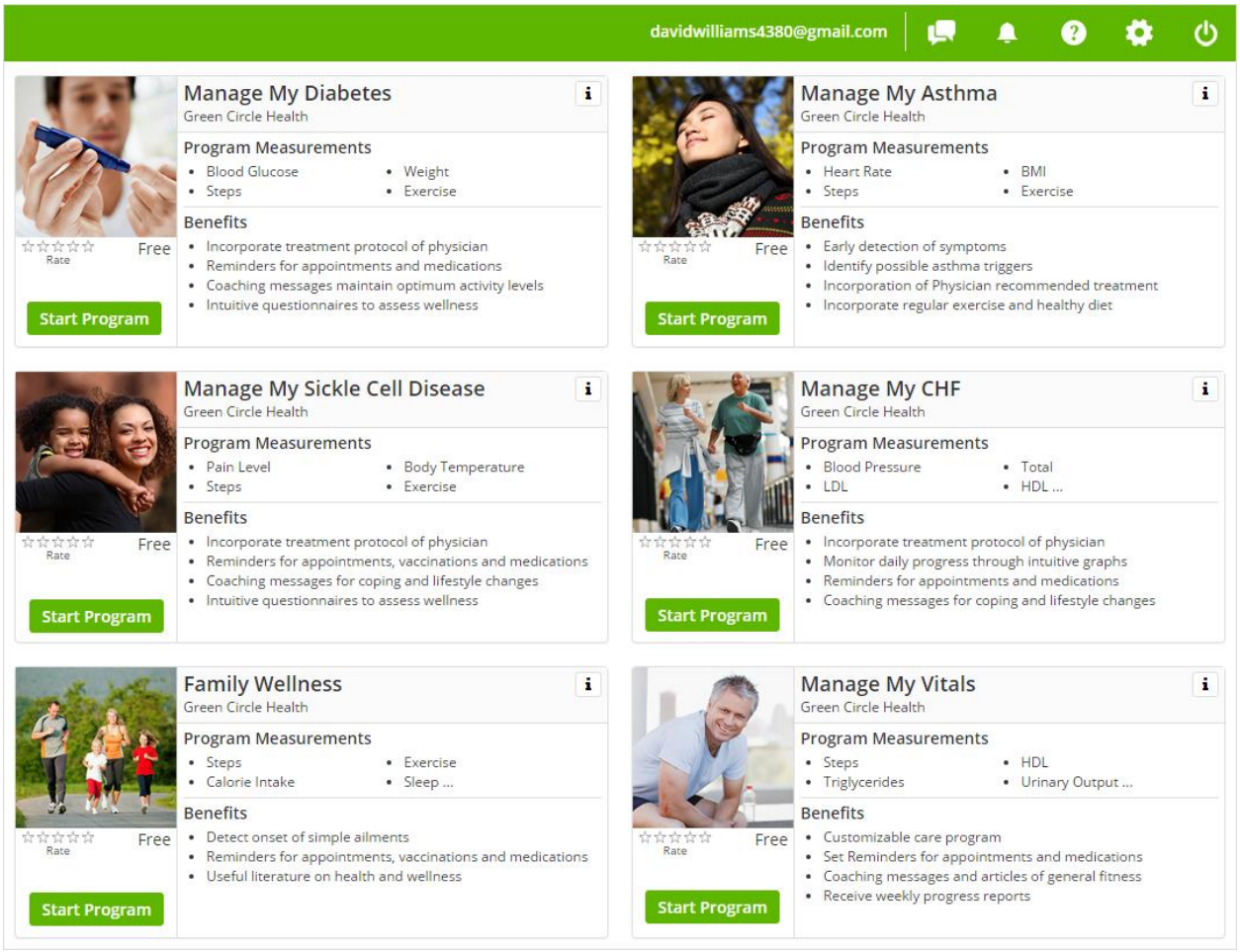


Figure 5: Listing of all the Care Programs managed by a Provider

Studies have shown that daily monitoring of activities and objective measurements of various health vitals have a favorable impact on healthcare outcomes. Patients often need to be reminded to take their prescription medications on time and do their recommended exercise and activities. Physicians and care providers can use these programs to implement their recommended care protocols, monitor the progress and keep the patient engaged in an effort to consistently improve the outcomes.

Participants in these care programs will measure and report vital signs like blood pressure, body weight, pulse rate etc. in addition to their daily activities. They may also answer symptomatic questionnaires and report symptoms such as dizziness, weakness, pain and nausea. The frequency of such reporting is based on the specific program protocols and the need of each participant. Vitals can be measured using activity trackers and personal medical devices like blood pressure monitors etc. Participants can either record the data from the devices manually or use devices that support Bluetooth or Wi-Fi to automatically upload the data into their GCH platform. Alerts and reminders will be sent to the patients and their family members or care givers according to their preferences. The physician and her staff may create various groups of patients and monitor them as per their own follow up workflow. A simple color coded dashboard makes it easy for them to identify and triage patients and take appropriate actions. They may acknowledge an alert condition, carry out a chat session or conduct a video tele-consult from the same interface all within a HIPAA compliant safe and secure environment. This enables them to handle far more patients effectively when any one of them needs their help. They may also post articles and group messages when appropriate for a set of patients in their specific condition's care programs. Another advantage of aggregated data shared by patients in this situation is that the physician does not have to go to various places or other systems to get information about the patient they are dealing with at a given time. They can do all from same friendly user interface available to them on any device at any place.

Figure 6a below shows a dashboard where a physician or her staff may easily monitor status of all the care programs that are offered by the provider. Figure 6b is a view of the dashboard shown in Figure 6a as seen on a smartphone.

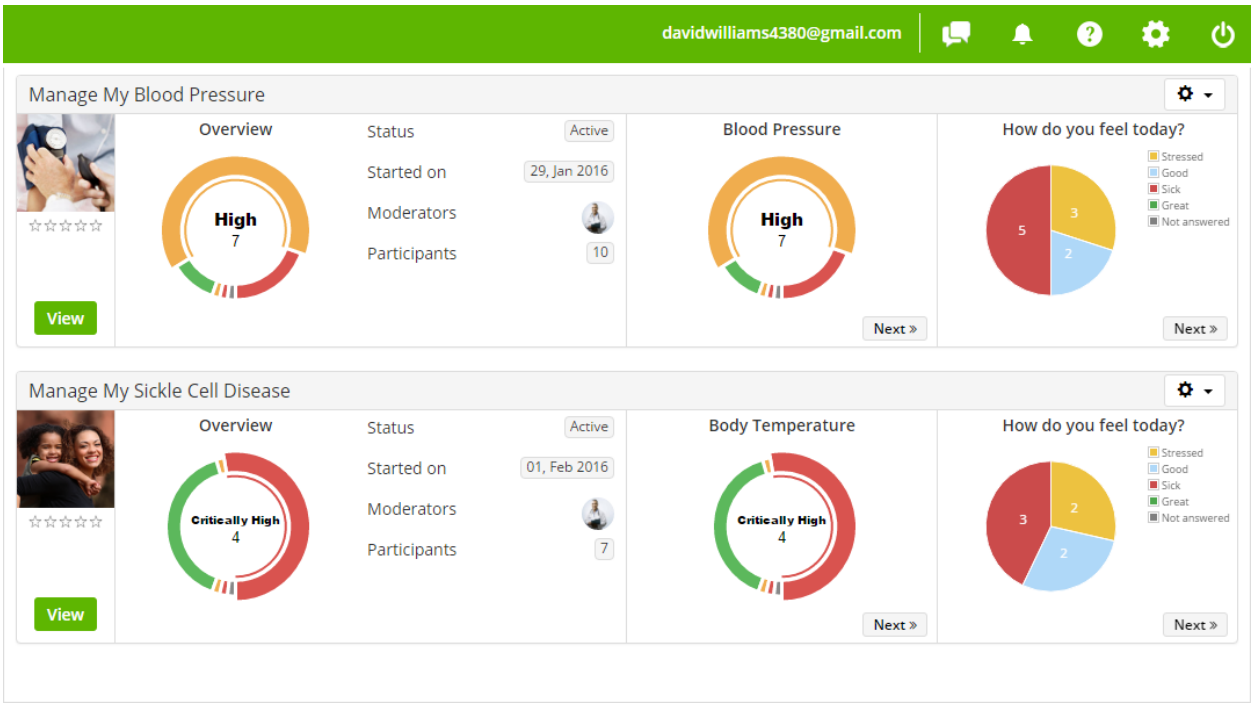


Figure 6a: Care Program Dashboard for Provider

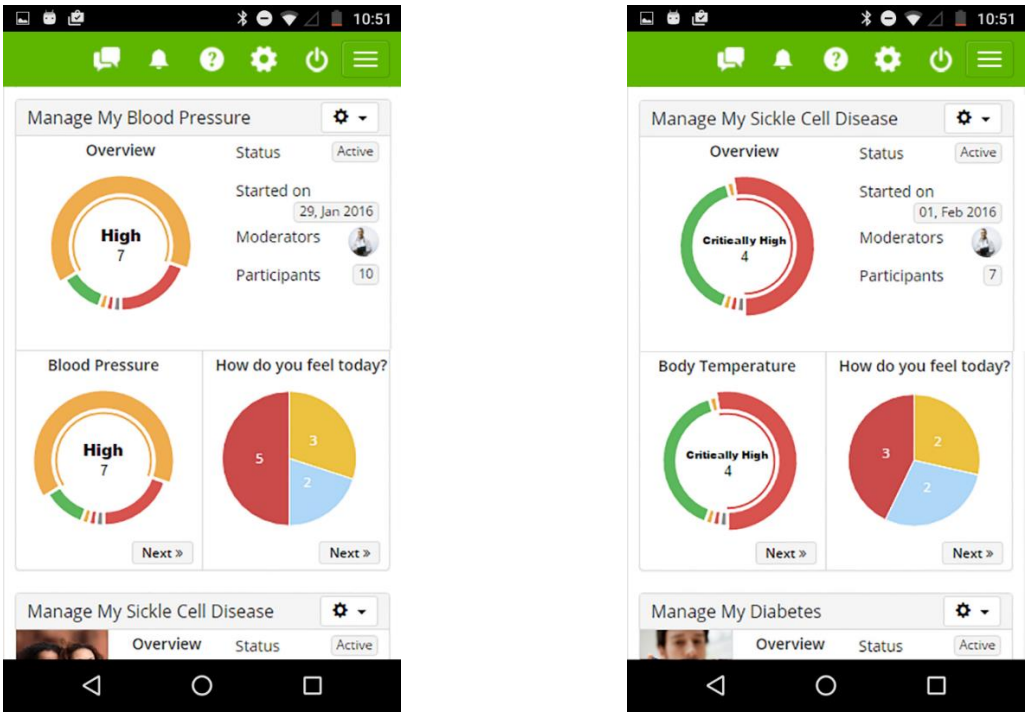


Figure 6b: Care Program Dashboard for Provider (Smartphone View)

From the consolidated care program dashboard shown above they can go into a more detailed dashboard for individual programs. The detailed dashboard for a care program will show summary information and status of all the patients participating in that program. Figure 7 below shows the mockup of the dashboard for a care program.

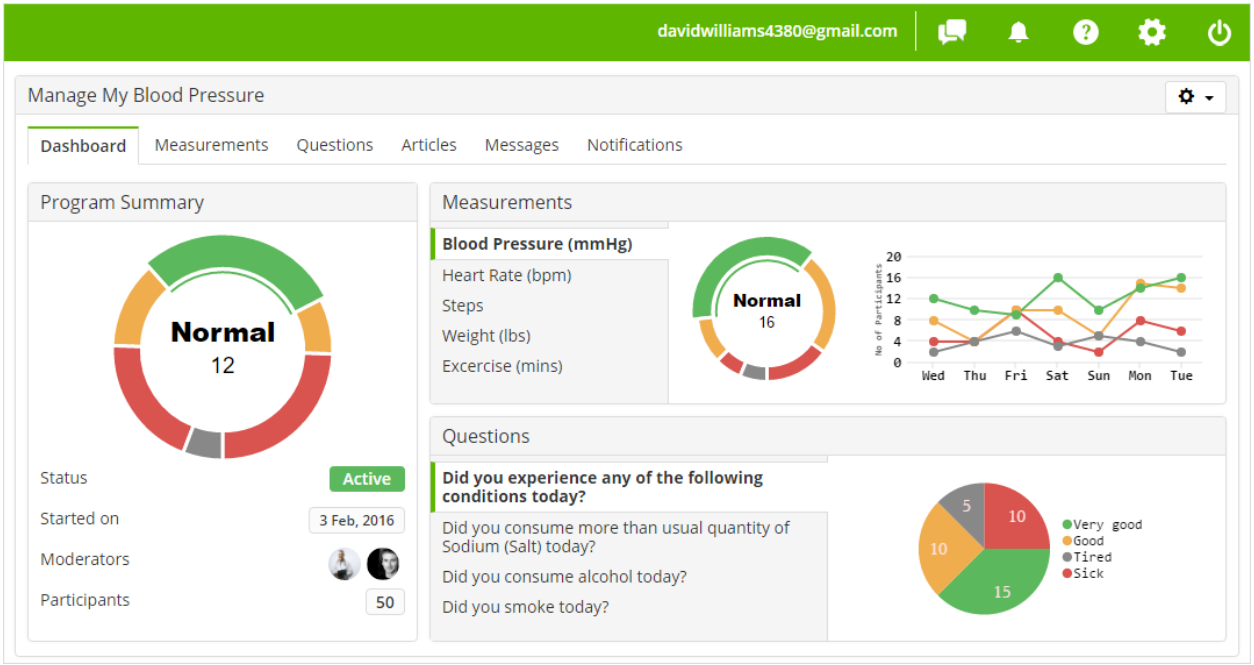


Figure 7: Care Program Dashboard for Provider for a single care program

The dashboards shown in the screenshots above have charts and graph showing the status of the vitals and other data reported by the patients participating in the program. Providers can drill down from those charts to see details of individual patients. When they click on a particular section in a chart, a list of all patients who fall in that category is shown and from that list they can access an individual patient's record.

When the provider selects to view the details for a particular patient who is participating in a care program, a view of the patient's care program dashboard is shown to the provider. Figure 8a shown below shows the view of a patient's care program dashboard as seen by the provider.

Figure 8a: Care Program Dashboard for a Patient as seen by the Provider

Figure 8b shown below is the patients care program dashboard for the provider shown in Figure 8a as seen on a smartphone.

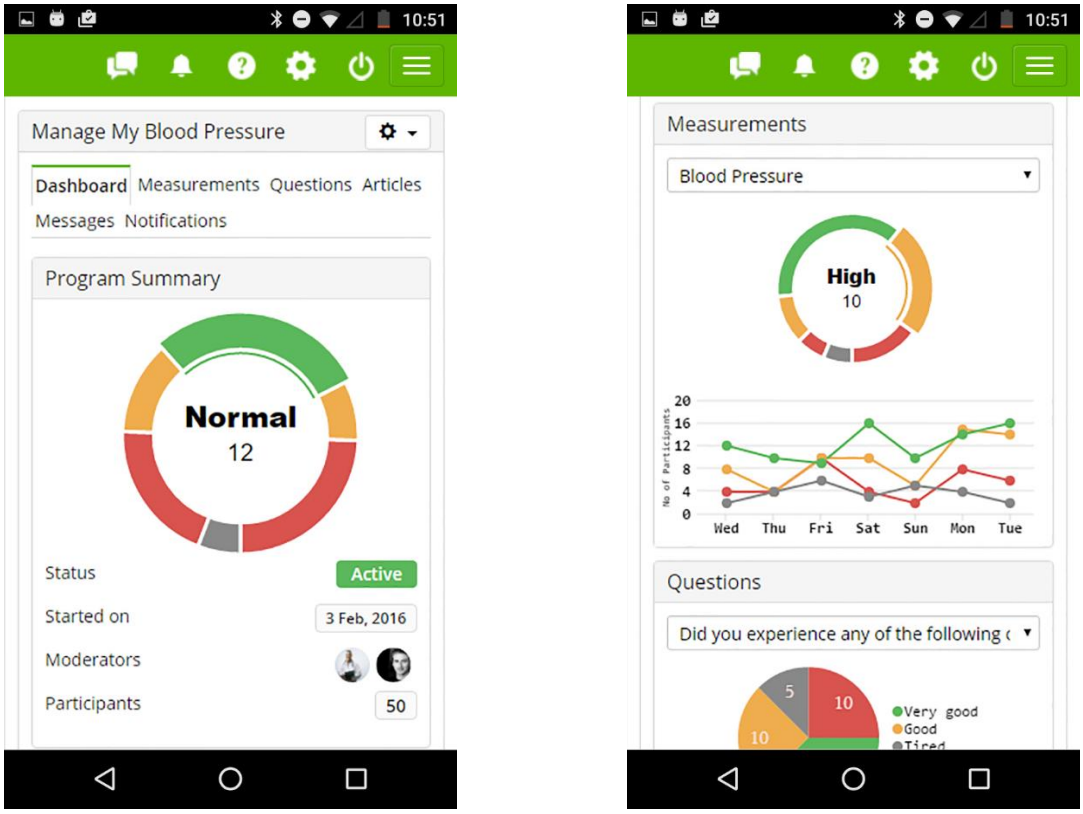


Figure 8b: Care Program Dashboard for a Patient as seen by the Provider (Smartphone View)

2.3.4 Continuous Monitoring and Notification

This feature gives the provider consolidated view of all the vitals, activities and answers to symptomatic questionnaires reported by their patients. Various ranges like Critical, High, Low and Normal can be set for each vital per patient and the patients with each status will be grouped and shown in charts and tables. The provider can drill down from each status or category and view details about the patients with that status and then further drill down to each patient level and that patient's medical data. This will help the providers to identify and focus their attention on the patients who need their immediate attention without manually retrieving and reviewing the data from all their patients.

GCH will also send out various notifications to alert the care provider / physician about critical data that is reported by the patients and also about patients who fail to report the data on time and follow care protocols. This enables the providers to take corrective actions or follow up

with those patients and thereby prevent re-admissions, emergency visits and other adverse outcomes. This type of remote monitoring will allow the providers to reduce readmission after a hospital stay or reduce the need for patient to come to the clinic for a follow up visit if patient is recovering well. On the other hand, with early warning, the provider could remotely consult with the patient, take corrective actions and prevent a visit to ER.

Figure 9 below shows the screen that gives the provider a consolidated view of all the vitals reported by all the patients. Charts are shown on top for each vital to show the number of patients who are in each range of values. By clicking on a particular section of a chart a list of all the patients who are in that status is displayed. They can also do search and filter based on various criteria as shown in the screenshot to generate list of patients that match the search criteria.

The ability to filter the patients based on the status of various vitals gives the provider the ability to easily identify the patients in need of immediate attention. This greatly increases their efficiency and also ensures that the critical patients get timely attention of the care providers and thereby improve the outcome and reduce adverse conditions.

From the list of patients, the provider can access detailed information for a particular patient. That will give the provider the history of all the vital entries reported by the patient and they can view the data as charts and tables for a particular date range of their choice.

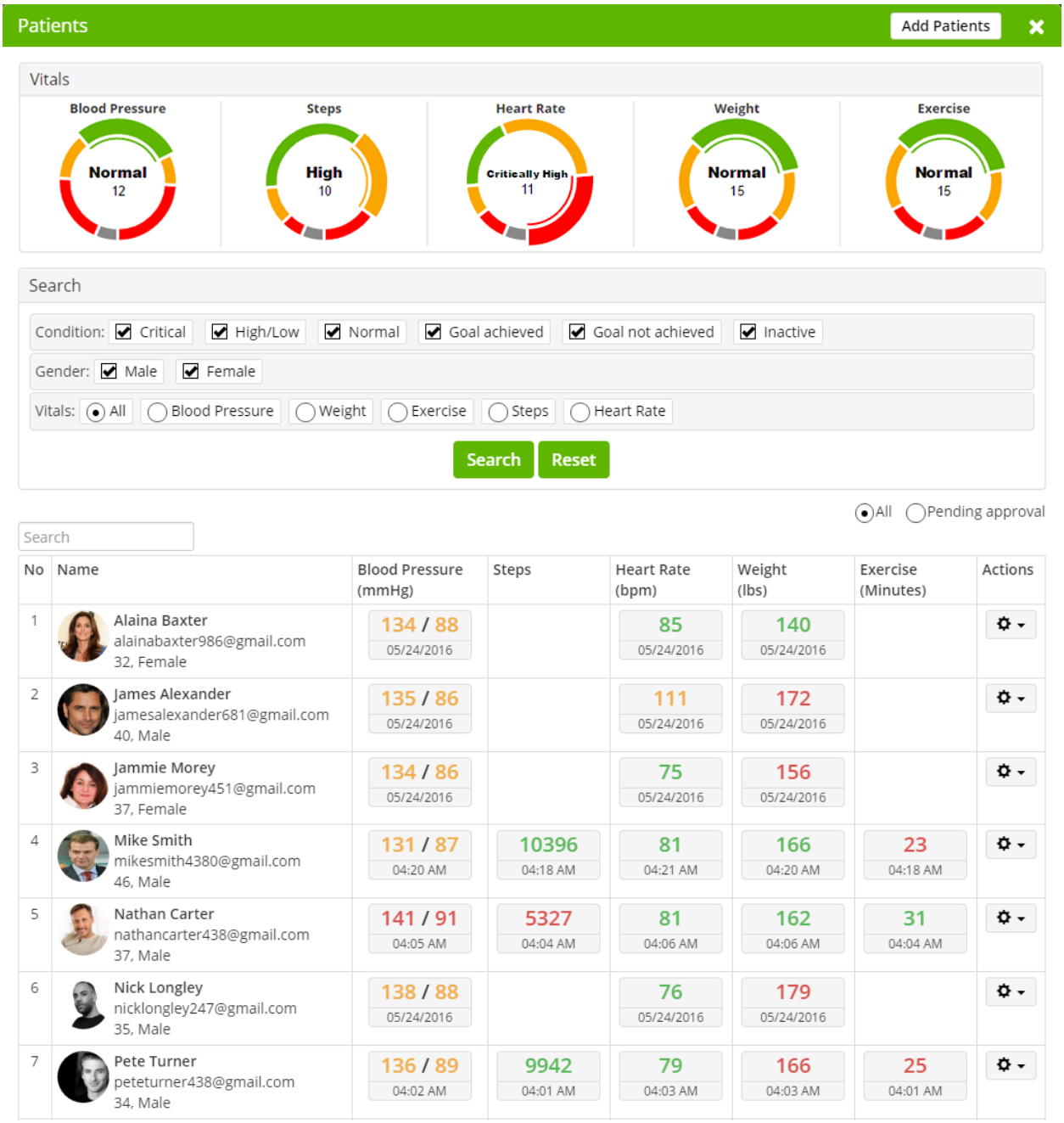


Figure 9: Providers Vitals Dashboard with consolidated patient view

Figure 10 below shows the detailed view of all the vitals for a particular patient as seen by the provider.

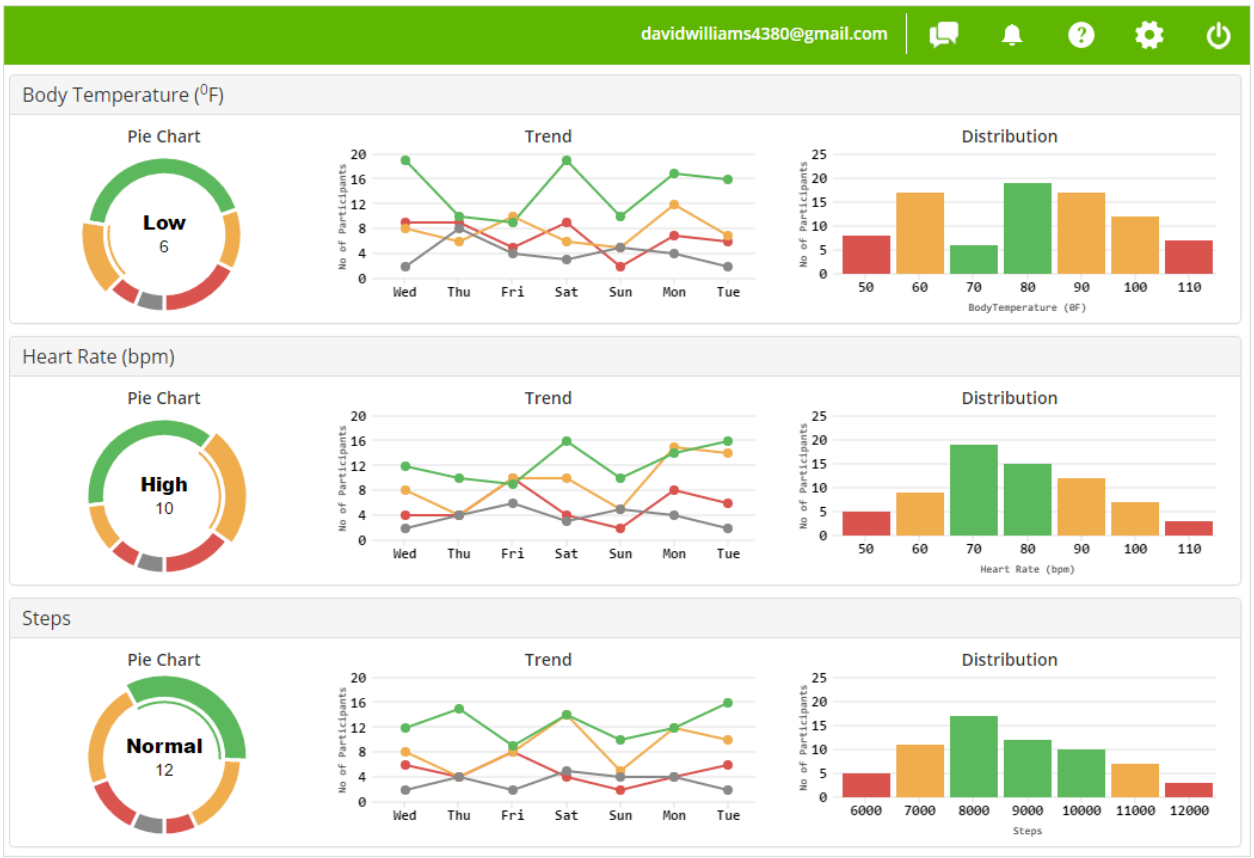


Figure 10: Patient Vitals as seen by Provider

2.3.5 Fast Patient Check-in & Sharing of Medical Data

While adding a new patient to the platform could be done via batch upload, a provider may add one patient at a time while dealing with such a patient. Every time a patient visits a care provider for treatment, the patient is required to manually fill a set of forms and provide a lot of personal data as well as details about their medical history, family medical history and lifestyle. This is a repetitive and very time-consuming and at time error prone process for both the patient as well as the provider. GCH will offer a feature which will allow the user to store all their medical information and recent condition and share that with their physician prior to showing up for their upcoming healthcare appointment. They may just walk in with a bar code on their phone generated from such a service and check in at the clinic by scanning that code and proceed to see their physician.

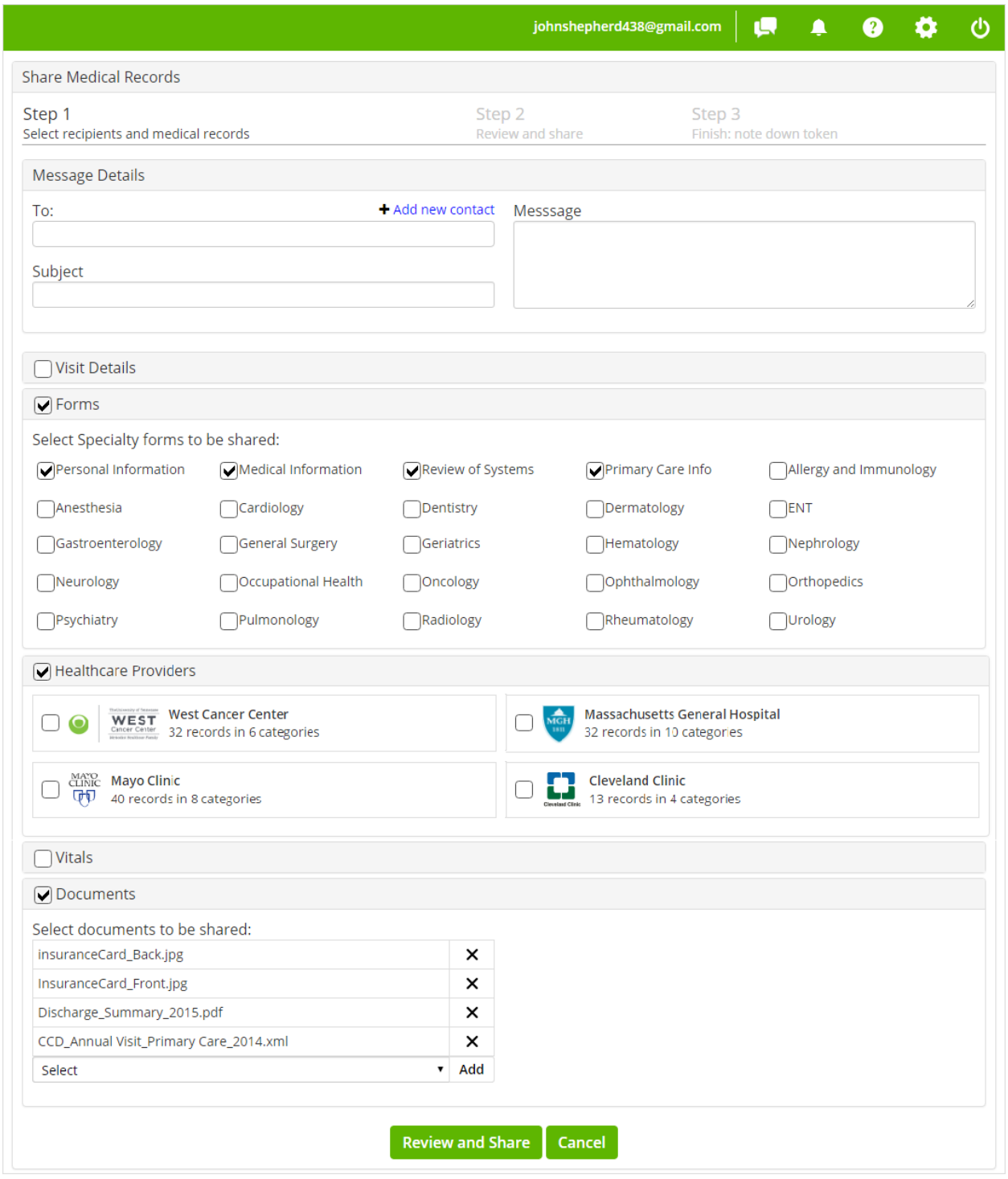


Figure 11: Screen where patient selects the data to be shared with provider

Figure 11 above shows the screen which will be used by the patient to select the data to be shared with a provider.

Here the patients update and share relevant information from their personal GCH account including medical history, vitals, documents, aggregated data from other providers and any other data as needed with the provider ahead of the visit. This enables the provider and their staff to review the data, ensure it is complete and accurate and merge that data with their electronic health record that exists in the provider's health IT system. The providers no longer have to make the patients fill out many forms and questionnaires at the time of each check-in. This will reduce the time spent in data entry and allow the provider to focus on patient and engage in treatment dialogue with each patient. While using this workflow, the data is first imported in the provider platform from GCH and later it is merged using FHIR interface with EHR to minimize impact on that platform. This fast check-in also improves patient satisfaction and provider score in various reviews and reports.

2.3.6 Messaging - Secure 2-Way Multimode Communication

This feature will allow the provider to securely communicate with their patients. They can send, receive and manage the messages received from the patients. The provider will have the ability to send messages to individual patients or to a select group of patients. Patients and providers will often need to share health data while communicating with each other and using regular emails will not ensure data security and privacy. GCH being implemented as a HIPAA compliant platform, the concerns about data privacy and security will be adequately addressed. The same messenger function will also support ability to open a real-time chat, audio call or video call. This is very powerful for the providers who now can use their GCH dashboard to not only monitor their patients' health and wellbeing but when needed can talk to them or see them in a virtual visit. This also solves their technology problem by not having to invest and learn yet another platform for tele-consult. They can also use this function from any device – phone, PC, tablet they use to get to their GCH dashboard, and instantly begin a session or join a scheduled session. This simplicity of user experience will help providers move in the new paradigm of managed care with comprehensive primary care model of risks and rewards.

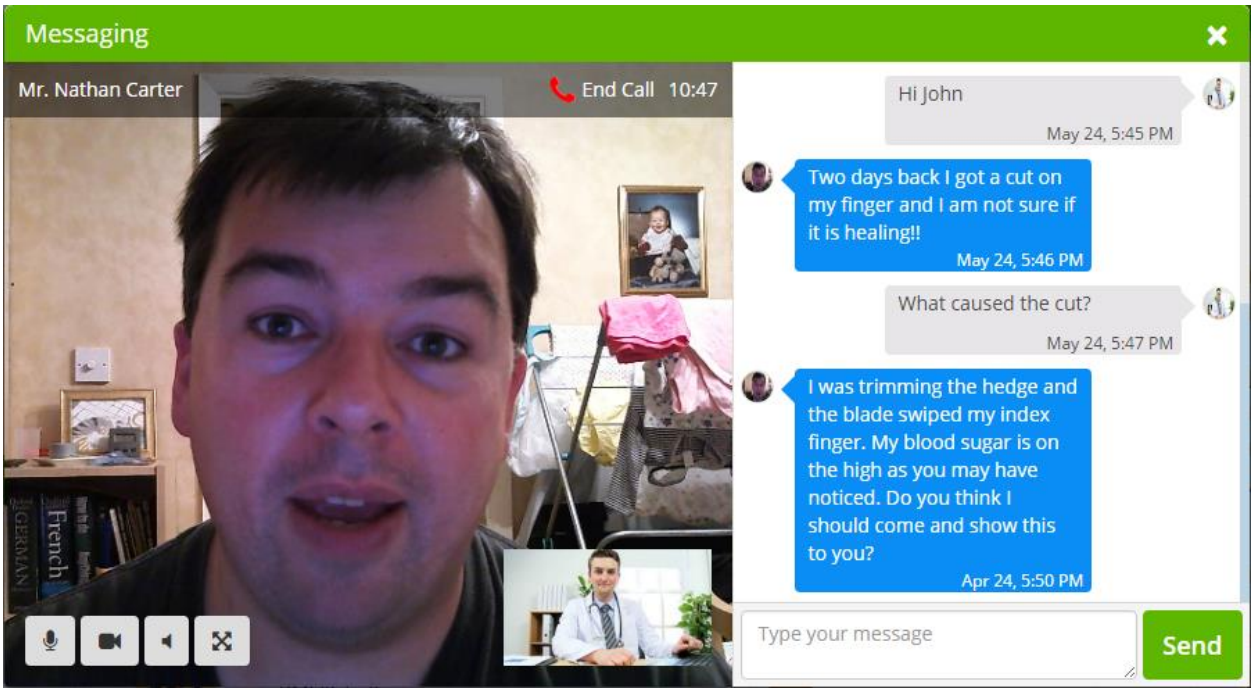


Figure 12: GCH Secure Messaging with Chat and Video Consulting

Figure 12 above shows how the GCH messaging screen will look like. On the left side of the screen there is a video consulting taking place between the provider and the patient and the right side of the screen shows the messaging feature. GCH will keep records of all these communications and the provider and patient can access it anytime.

2.3.7 Patient Education and Literature

Using this feature the specialists can share healthcare related articles and other literature related to specific conditions with the patients. These will help to educate the patients about their specific conditions and how to manage the conditions better. All the available literature can be and categorized and organized within GCH library and patients can access those at any time.

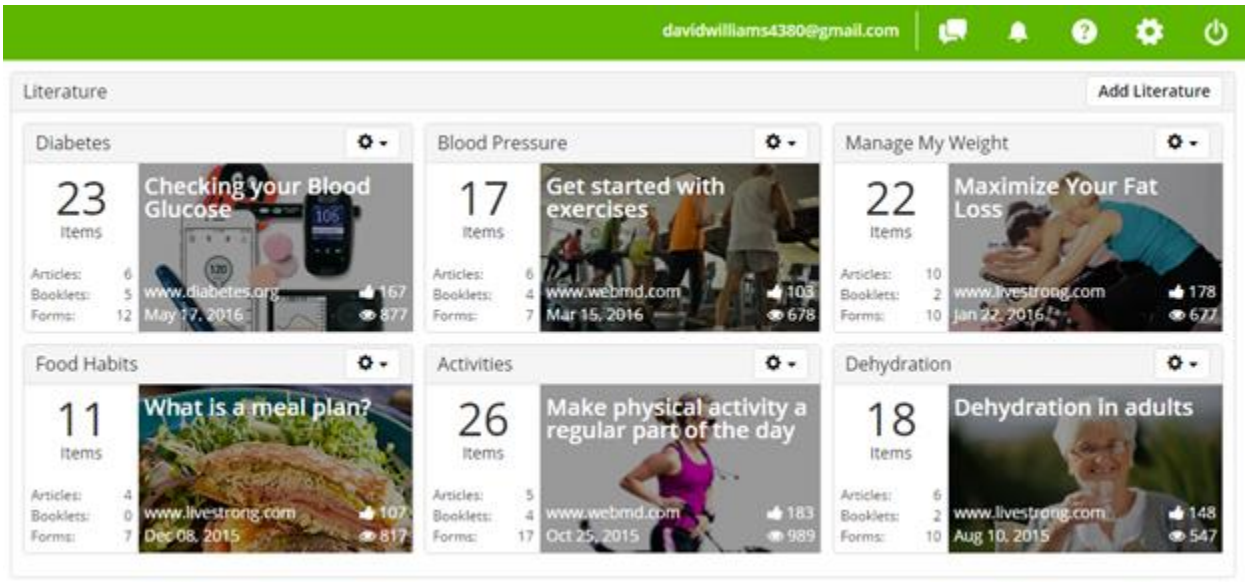


Figure 13: GCH Literature Dashboard for Provider

Figure 13 above shows the GCH Literature Dashboard of a healthcare provider. It will show a summary of all the literature and articles that the provider has published to the patients. The items are classified into various sections. As shown in the screenshot there can be separate sections for different diseases or conditions. While publishing the literature, the provider can select the target audience for it. For example, it can be published to all patients or only to patients who have enrolled for a particular care program or to any other select list of patients filtered using various conditions and vital readings etc.

By drilling down into each category, they can view a detailed listing of all the items under that category. Figure 14 below shows how the detailed screen for a single category would look like.

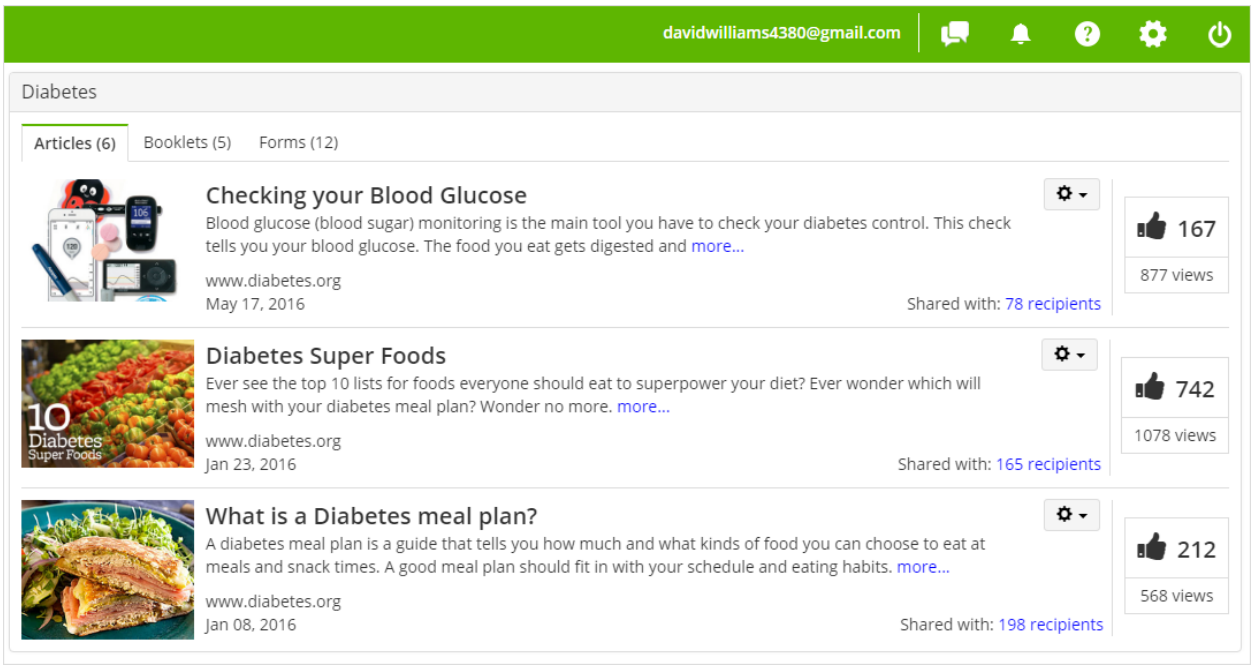


Figure 14: GCH Literature – Single category view

The provider can perform functions like edit/delete to manage the literature from this screen. They can also republish an item to the same or new set of patients from this screen.

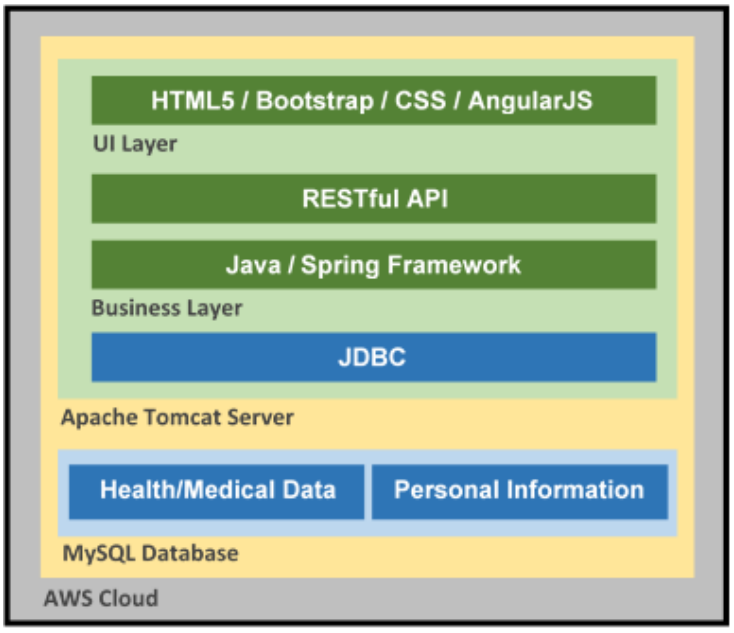
3 TECHNICAL SPECIFICATIONS

GCH Platform is being developed using Java, Bootstrap, MySQL and other open source technologies and the application will be hosted on HIPAA compliant secure Amazon Cloud - AWS. Consumer personal information and health information will be stored in encrypted databases. The web application will support various environments and form factors like smartphones, tablets, laptops and PCs. Native smartphone applications for both Android and iOS environments will also be developed with functionality to allow users to access their emergency profile, to review and record daily vitals and to answer health and lifestyle related questionnaires. However, no medical history and other personal information will be stored in the phone or tablet for user security and compliance with HIPAA requirements.

The GCH Platform will be compliant with the Health Insurance Portability Accountability Act (HIPAA) and the Health Information Technology for Economic and Clinical Health (HITECH) Act.

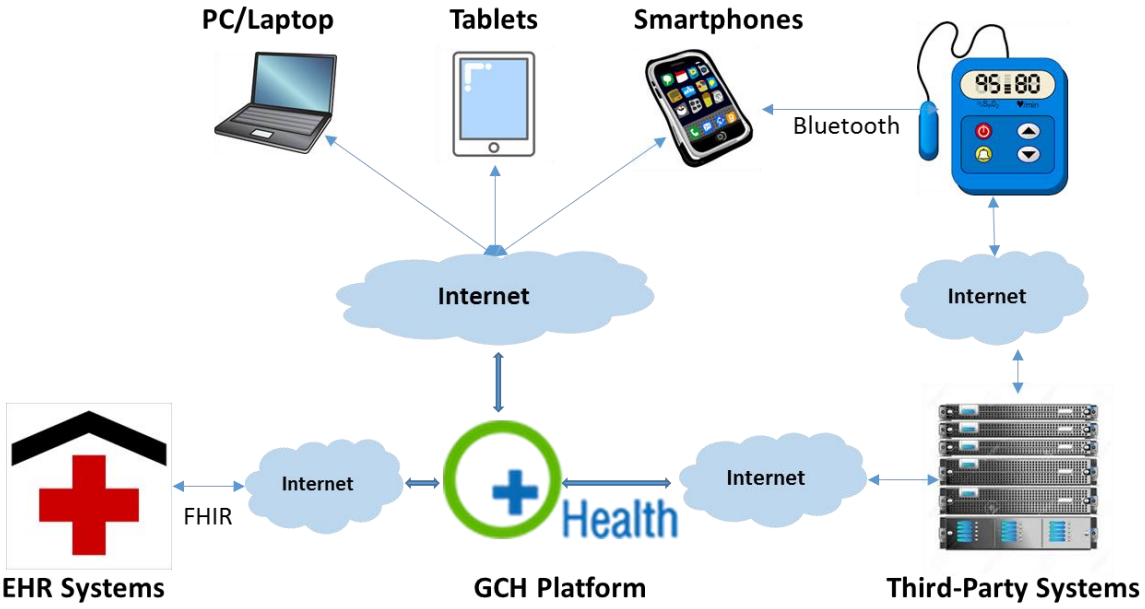
FHIR Draft Standard for Technical Use 2 (DSTU2) will be used to transfer patient data from EHR systems to GCH.

3.1 Product Architecture



GCH will be developed using a multi-tier architecture. The UI layer is being developed using HTML5, Bootstrap, CSS, AngularJS and jQuery. The business layer will be implemented using the Java-Spring framework. The UI layer connects to the business layer through RESTful API. The application will be hosted on Apache Tomcat servers. MySQL database will be used as the storage layer. The personal data of the users like personal and demographic information will be separated from the medical records within the database. For added security. All sensitive information stored in the database will also be encrypted. GCH platform will be hosted on a secure Amazon Cloud using Amazon Web Services (AWS).

3.2 GCH Interfaces



The GCH platform interfaces with a variety of other external systems. GCH users access the platform over the internet using secure SSL protocol from various types of devices like PCs and laptops to tablets and smartphones. GCH also interfaces with EHR systems implemented at various hospitals and other care providers. The communication between GCH and EHR systems will take place via SSL over the internet using FHIR Standards. In addition to the EHR systems GCH will also interface with various other external systems using standard and proprietary secure communication channels. Where possible, the access to GCH dashboard for the

providers will be within the EHR system as shown in Figure 1, so that providers do not have to log into GCH when they are already logged into EHR. However, if this is not possible/allowed with a given setup, all GCH features listed here will still remain available from its own secure login process.

3.3 Data and Information Security

The GCH platform will be fully complaint with HIPAA and HITECH Act to ensure data and information security. The service will be hosted in secure Amazon Cloud and the servers will be protected by firewalls and intrusion detection and prevention mechanisms.

The user data that is stored within GCH are hosted in robust and secure database servers. All sensitive data like medical records and other personal information of the users that is stored in the database will be encrypted and no GCH staff shall have access to the user data. Any development and support related activity shall be fully disclosed to specific user at the time of access if required for system maintenance.

User access to GCH platform will be restricted using multi-factor authentication which included username, password and an additional level of authentication using a challenge question and answer or a one-time password that will be sent to their cell phone or email. The users will have to select passwords that are strong (with a combination of alphabets, digits and special characters) and the users will have to change their password every 60 days.

While importing medical data from EHR systems, the patient record will be matched with the GCH profile of the user before data import is allowed to proceed. GCH will implement proprietary patient matching algorithms to match the patient records. The FHIR connection from the GCH platform to provider health IT system will use SSL protocol and will be authenticated using access credentials provided by the EHR systems.

4 BUSINESS PLAN

4.1 Business Description

GCH will offer a platform for healthcare providers to thrive in the changing paradigm of healthcare. Health care system in the US is currently challenged with an ageing population, upwardly spiraling costs, rise of chronic conditions and lack of prioritization for critical care. There are approximately 32 million Americans who are uninsured, and of the many insured Americans, most of them face significant increase in premiums and out-of-pocket and co-pay costs. There is broad evidence that often patients do not get the care they need at the required instant as they try to save the expenditure now even though more money will be spent later for differed health care as conditions go undetected or get worse before getting attention. High deductible insurance plans have resulted in unintended consequences of people delaying needed tests and treatments. Preventive care is not given the incentive, education and value that it needs to be given, thus amounting to higher costs on preventable, chronic and advanced diseases. Patients with chronic diseases such as blood pressure disorders, heart diseases, COPD, Sickle Cell disease and blood glucose disorders delay getting timely and effective treatments. Patients ignore or fail to fill their prescriptions, follow a recommended care plan, and learn from useful medical literature to help them more effectively manage their chronic conditions. This lack of timely intervention, communication and coordination of care for patients increases the likelihood of complications of chronic diseases leading to preventable hospitalization. The current health systems and providers are not ready for new reimbursement models. They will need to take advantage of newer, secure and flexible technologies for health care providers to coordinate across different delivery models to effectively improve patient care and reduce lifetime costs. GCH platform will allow providers to continue using the EHR they have invested in and at the same time offer them a new vehicle to have better user experience, reduce operating costs and generate new revenues.

4.2 Value Proposition

This challenge enables GCH to build a new experience for healthcare providers in dealing with patients and patient generated data. As patients are gathering data from personal devices and building their aggregated view of medical history from all providers, this challenge is enabling us to build a platform that will make it easier for the providers to take advantage of all this data to guide their patients and improve their practice.

Over past several years, after investing almost 35 billion dollars in digitization of health records, and training entire health delivery establishment on new workflows and new software, providers and patients are not happy with the results. Now there are new payment models asking providers to take on more risks and be responsible for outcomes but they do not have need influence or control over patients' behavior. These regulatory changes are asking them to shift away from a model of medical service delivery that was volume and number of patient encounters for services provided and move towards being accountable for overall cost and quality of care. The current system creates incentives for performing more tests and procedures and attending intensive treatments, with little regard to the effectiveness of these treatments in terms of improving health at the lowest possible costs. Healthcare providers are now being incentivized to offer easily accessible real-time care and efficiently addressing less severe conditions and performing only necessary tests and procedures, consequently more time being available to attend to critical patients and provide quality care in appropriate settings.

GCH will lower the cost of healthcare by improving patient health and making it possible to deliver healthcare at the doorstep of the patient. GCH will be a patient to provider communication gateway with remote monitoring capabilities to enable lifestyle changes and early detection of medical conditions as well as management of existing conditions. These services will be offered by accountable care organizations to healthcare providers and health systems that include hospitals, primary care centers, surgical centers, ambulatory centers,

hospices, to lower their overall costs, manage chronic conditions and reduce readmission rates, thereby, making them more profitable in the new at risk payment models.

4.3 Company Background and Management

Green Circle Health is founded by its CEO with successful track record of building software as a service business in a highly regulated industry. With his team of chief technology officer who has worked together for over 15 years and a chief medical officer who is a leading pediatric cardiologist and business development executive with a legal and business development background, GCH has the capacity to not only deliver the solution defined in this document but also has the experience to build a very successful business. The solution proposed here is an extension of work started by this team and addresses one of the main concerns expressed by providers to learn yet another platform and how to deal with large volume of patient generated data in real-time and how to handle patient aggregated data to improve their workflow.

4.4 Market Opportunity

With the adoption of Affordable Care Act (ACA), and HITECH act and related changes in regulation and incentives, most of the major healthcare providers are now using health IT systems and patient records are digitized. With over 20 million new insured patients and a limited supply of primary care providers, there are incentives in place to make sure patients move towards preventive care and not rush to emergency rooms without proper justification. From pioneer Accountable Care Organizations (ACO) to next generation ACO, the success of such models depends on providers focusing on the whole life of a patient and not just episodic patient care model. There is a new focus to address patient care at home and at places where the appropriate care could be delivered at lowest costs, encouraging use of remote monitoring and telemedicine. With shared savings, comprehensive primary care and comprehensive primary care plus (CPC+) models, greater incentives are in place for care providers to engage in coordination of care and management of health and wellbeing of the patients. This creates an

opportunity to build a platform that will engage families and patients to become responsible consumers of health care and focus on their own health.

Technological advancements have removed the cost barrier, and brought consumers and technologies together and has made the consumers well informed about their personal health. Vital readings received from health monitoring devices are comparable to hospital monitoring devices. This enables the health provider to make a remote diagnosis or schedule an in-person or tele visit. Home monitoring devices are proving to be extremely useful for the management of chronic diseases like hypertension, diabetes, obesity etc. Regarding chronic conditions, the U.S. Department of Health and Human Services states that the resource implications for addressing multiple chronic conditions are immense: 66% of total health care spending is directed toward care for the approximately 27% of Americans with multiple chronic conditions. Increased spending on chronic diseases among Medicare beneficiaries is a key factor driving the overall growth in spending in the traditional Medicare program. Individuals with multiple chronic conditions have faced substantial challenges related to the out-of-pocket costs of their care, including higher costs for prescription drugs and total out-of-pocket health care.

There are applications like GCH proposed here, that will make it possible to change the paradigm of health towards prevention and early detection. Patients can take data from existing health IT systems (EHR) and break the silos of digital health records across multiple organizations and allow families to manage their own healthcare records, and augment those records with personal medical device data, activity data, and current health status or questions. Such information will be analyzed by the system to provide virtual coaching and guidance as well as it can be routed to a care provider for remote evaluation and consulting. This will create a delightful patient and provider experience in dealing with the health system and its policies, as well as allow the care providers to deliver more effective treatment, quicker, to those who need it most, when they need it. This allows the providers to participate in CPC+ and shared savings model as now they have tools to coordinate care across various organizations and engage patients to be responsible consumer of healthcare services.

Now, prevention will take precedence over procedures, and finally the cost curve of health and healthcare will bend. This will encourage health systems to support the initial expenses involved in deployment of such a solution including education, training and development of incentives to engage providers and patients in quality and timely care.

4.5 Target Market

As explained above, given opportunities for keeping patients and their families healthy and reducing the cost of healthcare, the market for GCH may include:

- Health Systems (Hospitals)
- Clinics (Physicians, Urgent-care and Walk-in clinics)
- Accountable Care Organizations or Coordinated Care Organizations

GCH has come to understand that the adoption cycle is slow in the healthcare industry and it may be difficult to measure success of a program to demonstrate return on investment. However, we continue the pursuit for becoming the harbingers of change and propose to focus on remote monitoring, chronic condition management and reduction of readmission rates. We will also work on helping providers improve check-in process and this better patient experience with efficiency gain may become a source of greater success for GCH. Patients and families will have to use the service for a while for care management and wellness before the costs of healthcare starts to come down because of better health, and patient and providers have to change their mode of interaction and behavior, which will take time.

Following sections give an overview of size of these markets and our opportunity to achieve measurable results in these areas.

Health Systems (Hospitals)

Death due to chronic diseases like hypertension and associated heart disease, cancer, COPD and diabetes account for seven out of ten cases in the United States, and costs approximately 75 cents of every dollar spent on health care. Almost 50% of the population in the US lives with a chronic condition and only 56% receive recommended care. The US health system was built

to deliver healthcare services to patients requiring episodic care, and not for patients who are chronically ill and in need of daily medical care. So while episodic care takes precedence over treating chronic conditions, it is all the more important for patients who have one or more chronic conditions to be prescribed an efficient treatment protocol with focus on managing the conditions effectively by strict adherence to medications and maintaining a healthy lifestyle. The changes and payment models will drive a shift from treatment to prevention. Readmission rates are highest for patients with chronic diseases. Through the patient-provider communication gateway technology platform, GCH wishes to address this phenomenon of population health wherein readmission rates are reduced and the population has a tool to manage their health and seamlessly and proactively connect to care providers remotely.

As per the American Hospital Association records there are over 5600 registered hospitals in US. Large majority of those are community hospitals. Following table shows the statistics of the registered hospitals in US.

Type of Hospital	Number of Hospitals
Community Hospitals	4926
Federal Government Hospitals	213
Non-federal Psychiatric Hospitals	403
Non-federal Long-term Care Hospitals	75
Institutional Hospitals (Prison, College etc.)	10
Total	**5627**

SOURCE: American Hospital Association

Another classification of hospitals is based on their ownership. Many of the hospitals in US are under the ownership of Multi-Hospital Systems (MHS). Following table shows the number of MHS and Non-MHS hospitals.

Type of Hospital	Number of Hospitals

MHS	3,367
Non-MHS	1,847
Total	**5214**

SOURCE: www.statista.com

The number of people employed by a hospital is proportional to the number of staffed beds. Table below shows the estimated number of beds across the various types of hospitals.

Type of Hospital	Total Beds	Avg. Beds per Hospital
Community Hospitals	786,874	160
Other Hospitals	115,328	164

SOURCE: American Hospital Association

The number of employees under each category for MHS and Non-MHS hospitals is shown in the table below.

Employee Type	# Emp./Bed (MHS)	# Emp./Bed (Non-MHS)
Staff Physician	0.34	0.54
Resident Physician	0.38	0.29
Registered Nurses	0.47	0.93
Physician Assistants	0.13	0.29
Registered Pharmacists	0.14	0.20
Occupational Therapists	0.08	0.15
Inhalation Therapists	0.21	0.31
Physical Therapists	0.16	0.28
All Other Employees	6.00	8.99

SOURCE: www.statista.com

Based on the above statistics, the total number of employees in each category across all hospitals can be calculated as follows.

Employee Type	Total # Emp. (MHS)	Total # Emp. (Non-MHS)
Staff Physician	**183,165**	**159,581**
Resident Physician	**204,714**	**85,701**
Registered Nurses	**253,198**	**274,834**
Physician Assistants	**70,034**	**85,701**
Registered Pharmacists	75,421	59,104
Occupational Therapists	43,098	44,328
Inhalation Therapists	113,131	91,611
Physical Therapists	86,195	82,746
All Other Employees	3,232,320	2,656,725

In a hospital environment, in order to provide care for the patients effectively, typically the following categories of employees would need access to GCH platform:

- Staff Physicians
- Resident Physicians
- Registered Nurses
- Physician Assistants

Based on all the above considerations the following table shows the size of the potential market size of for GCH in hospitals:

Type of Hospital	Number of Hospitals	Avg. # Users /Hospital
MHS	3,367	211
Non-MHS	1,847	328

Clinics (Physicians, Urgent Care, Walk-in Clinics)

There are over 240,000 clinics and private practices in the US today. In recent times, single practices are coming together to form group practices to implement more organized ad managed care. Patients visit urgent care centers and walk-in clinics typically due to easy access to care, especially on weekends or evenings when their primary care physicians are not available.

For the physicians and staff in clinics, GCH will offer the following services:

- Faster Check-in – Patients are required to fill up a lot of forms with personal and medical information at the time of every visit. This is a very time consuming, repetitive and error-prone process for the patient as well as the staff at the clinic. Using GCH the patients can complete those forms in advance and share them with the providers. This saves a lot of time for the providers and will also provide better and more relevant data at the time of visit. Also in walk-in clinics and urgent care center, typically they do not have time or process to collect full medical history, but if patient can share such details, many errors could be avoided and better outcomes will improve quality of care.
- Sharing of medical records – GCH allows patients to aggregate their medical records from multiple provider systems into one place. By adding other data like vital measurements and activities that the patients collect outside of the clinical setting using personal health devices, GCH will contain a very comprehensive record of all the medical data related to each patient. GCH allows patients to share those data with their providers prior to their visits. This would give the providers complete information about their patients which will enable them to provide more effective care, especially in the case of patients with some chronic illnesses.

The following table shows the total number of clinics in each US State:

State	Number of Clinics
Alaska	670
Alabama	3,985
Arkansas	2,844
Arizona	3,628
California	20,479
Colorado	5,408
Connecticut	3,148
District of Columbia	1,263
Delaware	706
Florida	9,798
Georgia	6,294
Hawaii	1,338
Iowa	3,805
Idaho	1,455
Illinois	10,243
Indiana	5,839
Kansas	3,485
Kentucky	3,569
Louisiana	4,563
Massachusetts	7,377
Maryland	6,798
Maine	957

Michigan	6,837
Minnesota	4,212
Missouri	6,283
Mississippi	2,777
Montana	1,187
North Carolina	5,406
North Dakota	675
Nebraska	1,994
New Hampshire	804
New Jersey	10,712
New Mexico	1,307
Nevada	1,484
New York	14,786
Ohio	9,105
Oklahoma	3,440
Oregon	3,579
Pennsylvania	12,952
Rhode Island	778
South Carolina	3,138
South Dakota	918
Tennessee	4,110
Texas	15,111
Utah	1,555

Virginia	5,863
Vermont	690
Washington	7,922
Wisconsin	3,531
West Virginia	1,698
Wyoming	580
Total	**241,086**

Accountable Care Organizations (ACOs)

Accountable Care Organizations (ACOs) are groups of doctors, hospitals, and other health care providers, who come together voluntarily to give coordinated high quality care to the patients they serve while lowering costs. Coordinated care helps ensure that patients, especially the chronically ill, get the right care at the right time, with the goal of avoiding unnecessary duplication of services and preventing medical errors.

One of the main ways the Affordable Care Act seeks to reduce healthcare costs is by motivating physicians, hospital systems and other health care providers to form networks that coordinate patient care and become eligible for bonuses when they deliver that care more efficiently. ACOs don't do away with fee for service, but they create an incentive to be more efficient by offering bonuses when providers keep the costs down. Doctors and hospitals have to meet specific quality milestones, focusing on prevention and managing patients with chronic diseases. In other words, providers get paid more for keeping their patients healthy and out of the hospital. If an ACO is unable to show cost savings, it would have to bear the cost of infrastructure and resources that it setup to improve care management.

ACOs usually employ care managers who check on the patients regularly to make sure that they are following their treatment protocols and in the event of any adverse symptoms, they will

take preventive actions and provide timely medical advice to the patients and thereby reduce hospital admissions and emergency care visits.

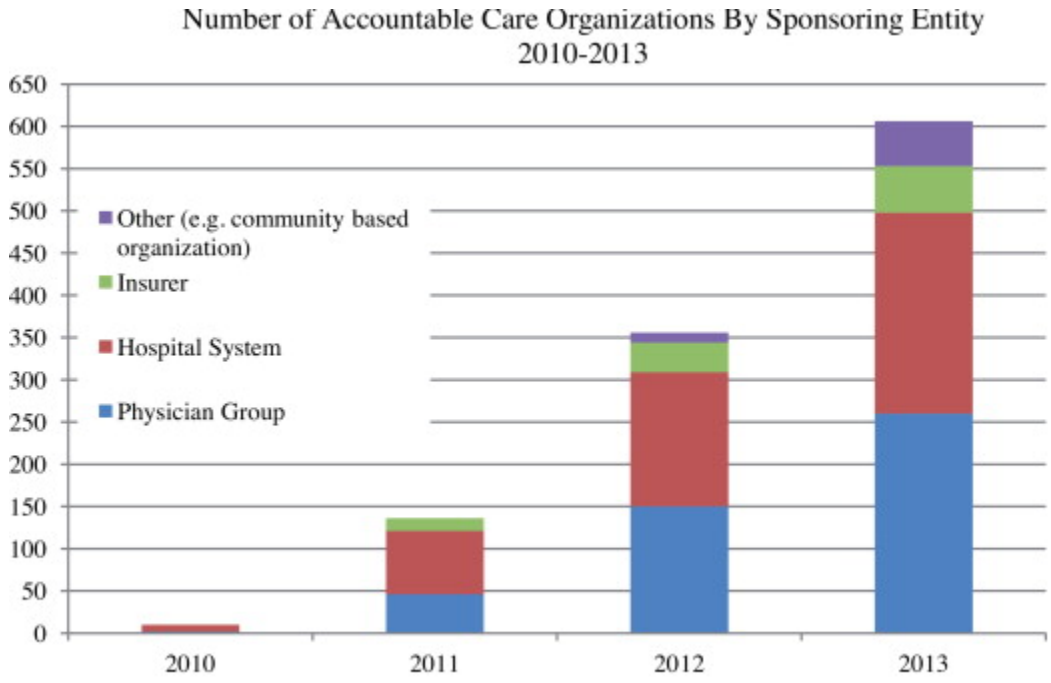
GCH platform will help ACOs in managing chronic conditions, improving adherence to physician prescribed treatment protocols and lower the overall costs of managed care. GCH offers care programs for various chronic diseases and heath related conditions. Care managers can enroll their patients into these GCH care programs. The enrolled patients will record daily vitals, confirms medication consumption and provide other data required as per the treatment protocols. The data reported by the patients are accessible to the care managers. This enables the care managers to easily identify the patients who need immediate attention and through timely intervention they can avoid adverse outcomes and reduce cost of healthcare. In the process, it also ensures that the overall health of the patients improves and helps the ACOs achieve their goals. This will also make the care managers more efficient and enables them to manage more patients.

Recent reports show that there are over 600 ACOs in the US today and they manage the health of over 20.5 million people. Over 400 of these ACO's are Medicare ACOs (have Medicare contract with the government) and they cover over 6 million lives.

ACOs are classified based on the entities that manage them. ACOs are mainly managed by the following:

- Independent Physicians and Physician Groups
- Hospital Systems
- Insurers
- Other (E.g. Community-based Organizations)

The chart below shows the distribution of ACOs across the above types:



Muhlestein D. 2014. Accountable Care Growth in 2014: A Look Ahead. *Health Affairs*

The actual number of care managers employed by the ACOs is not known and varies from one ACO to another. But the most widely recommended ratio of patients to care managers, especially for Medicaid ACOs, is 1500:1. Based on this assumption, the market for GCH among ACOs can be summarized as shown in the following table:

Total ACOs	Lives Covered	Avg. Lives/ACO	Avg. Care Managers/ACO
626	20,500,000	32,747	22

4.6 Business Viability and Sustainability

One of the biggest challenges that health IT product players like GCH faced was the inability to penetrate into closed EHR systems that hospitals and other health systems employ. But with the recent initiatives for interoperability using FHIR standards and open APIs that allow to connect to health systems, there is an environment being promoted for free flow of data. Our business case is made from the fact that ours HIPAA compliant secure platform connects both patients and providers with health data from multiple sources – devices, EHRs, patients, providers, pharmacies and other health systems. Need is the biggest factor that makes our

product viable while inertia is our biggest challenge. Current reforms advocate compensation models for quality care management and reduction of costs for chronic diseases. Green Circle Health programs can assist families, their care providers and health systems to better manage chronic care protocols. The increased adoption and utilization of the GCH care programs is beneficial for the patients, health systems and insurers. The cost savings realized with prevention and better management of chronic disease will lower cost of healthcare for individuals, health systems, and insurer; and incentivize the care providers under the current federal reform. The telehealth features on the GCH platform will aid in more communication between patient and care provider in chronic condition care; the patients can securely share their vitals from home monitoring devices, review of systems, records and chat, talk or video consult with their providers. GCH can also augment mobile health (mHealth) solutions that includes health education, information or other services via a mobile device.

In states where there are large rural populations, telehealth has emerged as an efficient time and cost saving solution replacing physician visits or examinations between provider and patient, this reduces the burden in terms of time, costs and physical difficulty for aging adults and home bound patients. In around 48 states and the District of Columbia, Medicaid reimbursement for telehealth services exists.

In indirect channels, GCH will work with distributors and technology providers who will see great benefits from adding GCH to their portfolio. For example, to reach out to VA and DoD hospital systems, GCH is in discussion with a veteran run entity which has GSA contracting vehicle and knowledge to deliver such solutions to government military organizations.

4.7 Revenue Model

GCH will follow a software as a service (SaaS) revenue model. GCH revenues are derived from health systems or member organizations and the primary revenue driver is the number of users. Typical deployment will have one-time setup or installation fee, annual maintenance or license fee and per user per month usage fees. Within a given health care system, as the user volume grows, total revenue will grow but per user cost will decline.

4.8 Marketing Strategy

In addition to identifying the markets for GCH, it is very important that the marketing strategy and tactical plan are clearly defined. GCH intends to take part in challenges put through by government advocates. GCH intends to showcase its platform at key conferences in the US. Following is a list of some of the conferences that may be worth showcasing our platform.

- Digital Health Conference
- Digital Health Summit
- International Conference on Clinical Trials
- Government Health IT Summit
- HIMSS Annual Conference and Summit
- National Healthcare Innovation Summit
- Mayo Think Big Challenge and Clinic Transform
- American Telemedicine Association Annual Conference
- AMA Annual Conference

Networking contacts made through seminars, conferences and meets can be capitalized further to market to through email, follow up meetings and social media contacts. GCH intends to use social media to effectively promote its marketing efforts. Twitter and LinkedIn are focused platforms to give mileage for ideas, stories and product information to probable users and key personnel in organizations. GCH intends to promote video tutorials over YouTube that educates the providers and key stakeholders of the health industry on the features of the GCH platform.

Currently, GCH takes part in media discussions on the current health IT scenario and promotes articles and media advisories on relevant subjects through its media partners. The GCH product that we envision can help millions of people when distributed by their care providers and this is

the message that we wish to resonate in in the media publications like Physicians Digest, Hi-Tech Answers etc.

4.9 Revenue

4.9.1 Market Penetration

The following table shows the potential market sizes and the estimated market penetration for the first 3 years of operation.

Organization Type	#of Org.	# Users (Avg.)	Setup Fee	Annual Fee	Usage Fee /User/Month	Projected Market Penetration		
						Year 1	Year 2	Year 3
MHS Hospitals	3,367	211	$50,000	$20,000	$500	0.000%	0.500%	1.000%
Non-MHS Hospitals	1,847	328	$50,000	$20,000	$500	0.000%	0.500%	1.000%
Clinics	241,086	1	$10,000	$5,000	$1,000	0.020%	0.500%	1.000%
ACOs/MCOs	626	22	$50,000	$20,000	$500	1.000%	2.000%	3.000%

4.9.2 Revenue Projections

Based on the estimated market penetration numbers, the projected revenues for 3 years is shown in the table below.

Organization Type	Year 1 Revenues				Year 2 Revenues				Year 3 Revenues			
	Setup Fee	Annual Fee	Usage Fee	Total Rev.	Setup Fee	Annual Fee	Usage Fee	Total Rev.	Setup Fee	Annual Fee	Usage Fee	Total Rev.
MHS Hospitals	0.00	0.00	0.00	**0.00**	0.84	0.00	1.78	**2.62**	1.68	0.34	3.55	**5.57**
Non-MHS Hospitals	0.00	0.00	0.00	**0.00**	0.46	0.00	1.51	**1.98**	0.92	0.18	3.03	**4.14**
Clinics	0.48	0.00	0.05	**0.53**	12.05	0.24	1.21	**13.50**	24.11	6.03	2.41	**32.55**
ACOs/MCOs	0.31	0.00	0.07	**0.38**	0.63	0.13	0.14	**0.89**	0.94	0.25	0.21	**1.40**
Total Revenue	0.80	0.00	0.12	**0.91**	13.98	0.37	4.63	**18.98**	27.65	6.80	9.20	**43.65**
All amounts in Million USD												

4.10 Expenditure

4.10.1 Assumptions

In order to achieve the market penetration and revenues estimated in the previous section, the estimated number of employees that will be required and the corresponding payroll expenses for the first 3 years is shown in the table below.

Employee Type	Year 1			Year 2			Year 3		
	# Emp.	Avg. Salary	Payroll	# Emp.	Avg. Salary	Payroll	# Emp.	Avg. Salary	Payroll
Management	3	150,000	450,000	4	175,000	700,000	5	200,000	1,000,000
Marketing	2	60,000	120,000	4	70,000	280,000	5	75,000	375,000
Sales	10	100,000	1,000,000	15	110,000	1,650,000	20	120,000	2,400,000
Technical	2	100,000	200,000	4	105,000	420,000	6	115,000	690,000
Support	5	75,000	375,000	10	80,000	800,000	15	85,000	1,275,000
Admin/Ac	1	45,000	45,000	2	50,000	100,000	3	55,000	165,000
Total	**23**	**95,217**	**2,190,000**	**39**	**101,282**	**3,950,000**	**54**	**109,352**	**5,905,000**

4.10.2 Estimated Expenditure

In addition to the payroll expenses GCH would also incur other expenses for its operations. The total estimated expenses for 3 years is shown below.

Expense Type	Year 1	Year 2	Year 3
Payroll	2.19	3.95	5.91
Benefits	0.72	1.30	1.95
Marketing	0.01	0.19	0.44
Sales	0.05	0.95	2.18
Travel	0.01	0.19	0.44
Consultants	0.40	1.00	1.50
Operations	0.30	0.60	1.20
Rent	0.06	0.10	0.15
Office Expenses	0.02	0.05	0.08
Conferences	0.03	0.06	0.09
Miscellaneous	0.03	0.06	0.08
Total Expenses	**3.83**	**8.44**	**14.00**
			All amounts in Million USD

4.11 Profit & Loss

As per the revenue and expense projections explained in the previous sections, GCH is expected to become a profitable business in the third year of operation. The P&L projections for 3 years based on the projected revenue and expenditure is shown in the table below.

Year	Revenue	Expense	P/L
Year 1	0.91	3.83	**(2.91)**
Year 2	18.98	8.44	**10.54**
Year 3	43.65	14.00	**29.65**
Total	**63.55**	**26.27**	**37.28**
			All amounts in Million USD

4.12 Conclusion

Green Circle Health has an experienced management team and availability of technical resources to build the platform. GCH team has deep experience in building user interface and user experiences with software solutions that will delight providers and patients. GCH will meet o exceed objectives of this Challenge for Provider User Experience. However, we think the business case for challenge will remain difficult till the health systems make their platform open and allow third party platform like GCH to integrate without requiring one-on-one development and deployment agreement. GCH believes it has experience to survive and thrive in a market which has huge potential but will grow slowly as attitude towards open environment and usability changes.

5 APPENDIX A: EHR SYSTEM PARTNERS

GCH has contacted a number of healthcare providers as part of the Consumer Health Aggregator Challenge to connect to their EHR systems and import the data from them into users' GCH account. Some of the providers have responded positively to GCH and are in the process of signing a letter of interest to work with GCH to build new platform and share their knowledge for this Challenge. The following section shows four healthcare providers who have offered GCH a letter offering their support to GCH in this Challenge. As anticipated by HHS and discussed during last few months, one of the biggest barrier to consumer in getting their data remains lack of cooperation from health systems to openly share this data. We are still working, but do not have confirmation from health systems with three of the top ten health IT platforms to list them here. As this standards-based interface could improve the technical process, there are still barriers for third party platform like one being proposed here and consumers to readily access their data.

We have partnered with a set of healthcare providers and insurers who are most likely to help build a community of care delivery organizations, see the benefit of liberating patient data, use such service and are likely to be early adopters.

We welcome any and all the help HHS may provide so that to get patient their own data from health systems, the application like GCH should not be signing a one on one agreement with each healthcare system through such a letter of intent. Any consumer should be free to go to any healthcare systems with any of top 10 or any other certified health IT system, and get the data through this FHIR interface in GCH type platform. If each third party developer has to do one-on-one interface, the benefits of such deployment will be slow and limited and patients will not have data liberated for their benefits and they will not use such platforms.

5.1 Christ Community Health Services

Christ Community Health Services (CCHS) is one of the largest Christian Health Centers in the nation and the largest primary healthcare provider in Shelby County, TN. Their health centers

server over 57,000 patients with over 162,000 visits annually. Christ Community delivers medical care to highly disadvantaged population with very limited resources. Christ Community recognizes that aggregating medical data from various healthcare providers would help their patients in managing chronic conditions more effectively. Their patients move in and out of CCHS care and go to other major health systems in the area. The local Health Information Exchange has not worked for them.

5.2 Magnolia Health

Magnolia Health is a long-term solution to help the State of Mississippi enhance care for Medicaid recipients while most effectively managing Medicaid funds. Magnolia is one of the two coordinated care organizations the Mississippi Division of Medicaid has contracts who are responsible for providing services to the Mississippi Medicaid beneficiaries who participate in the MississippiCAN program. Magnolia also servers CHIP members. Magnolia is backed by its parent company, Centene Corporation, which has over 25 years of experience in Medicaid and other government programs. Magnolia believes that by allowing patients to play an active role in managing their health and to aggregate and share medical records when they visit new providers, it will help them to ensure proper continuity of care and better outcomes. Magnolia works with health systems and providers who are part of the Mississippi Coordinated Access Network (CAN)

5.3 Peyton Manning Children's Hospital

Peyton Manning Children's Hospital offers family-centered care that is focused on the unique needs of children and family. They are dedicated to providing extraordinary patient care for the children of Indiana. The hospital offers 24-hour physician coverage in various specialties and provides complete continuum of care to children of all ages, from new born to late adolescents.

By implementing the solution proposed by GCH, Peyton Manning Hospital will be able to get the children with various chronic conditions and their families more engaged in the care plan and thereby improve over health of the patients and reduce adverse outcomes.

5.4 Lebanon Pediatrics

Lebanon Pediatrics is a private practice for the children in the Lebanon area in Indiana. Lebanon is a small town of about 15,000 residents located 25 miles from major health center of Indianapolis IN. This independent practice with its E-MD platform provides a unique opportunity to explore use of our system in rural setting. By enabling patients to aggregate medical data from various providers when they visit specialists in other areas and share that information with their primary care pediatrician at the Lebanon Pediatrics, they will be able to ensure proper coordination of care for the children. And as these children grow up and move to college towns, they will be able to take their own medical records with them where ever they may choose to attend college and settle down.

6 APPENDIX B: LETTERS OF INTENT FROM HEALTHCARE PROVIDERS

6.1 Christ Community Health Services

May 23, 2016

Dinesh Sheth
Green Circle Health

(Sent via Email)

As I understand, Green Circle Health (GCH) is proposing to build an application in response to the Consumer Health Data Aggregator Challenge by the Department of Health and Human Services (HHS). This application will solve the problem that many consumers have today – the ability to easily and electronically access their health data from different health care providers using a variety of different health IT systems. GCH solution will also address the second HHS challenge initiative for Provider User Experience that will create health provider apps that sync consumers' data.

Christ Community is one of the largest Christian Health Centers in the nation and the largest primary healthcare provider in Shelby County, Tennessee. Combined, our health centers serve over 57,000 patients with over 162,000 patient visits annually. At each of our centers, our staff works with the patients and the community to actively address health issues within the areas severed while serving as a resource for health education and community support. Christ Community Health Services is an FTCA deemed facility.

With focus on primary care, aggregating medical data from various service providers is important to our medical service providers. An application that enables patients to play an active role in managing their health and allows them to take their medical data with them when they see a new provider helps to ensure continuity of care for patients with chronic diseases. Our patients are referred to local specialists and hospitals where such service will be very helpful to patients and providers.

GCH participating in this HHS driven initiative and working together with other systems will allow GCH to build a platform for patient centered care. GCH will be developing and testing this application working with our staff that will have an opportunity to interact with the GCH platform and provide direct input to improve workflow and its practical utility for patients and case managers.

Christ Community delivers medical care to a highly disadvantaged population with very limited resources. When such a platform is ready for deployment, we see an opportunity to benefit our patients and community; however, we will need to find financial sponsor to support such an effort for entire community. We see our involvement with the company at this stage as a mutually beneficial partnership in the community. We look forward to help you with these HHS Challenge opportunities.

Sincerely,

Edwin Roberson
Chief Executive Officer
Christ Community Health Services

6.2 Magnolia Health Plan

magnolia health

111 E. Capitol St.
Suite 500
Jackson, MS 39201

May 23, 2016

Dinesh Sheth
Founder & CEO
Green Circle Health

(Sent via Email)

As I understand, Green Circle Health (GCH) is proposing to build an application in response to the Consumer Health Data Aggregator Challenge by the Department of Health and Human Services (HHS). I believe that the proposed application could solve a problem that many consumers have today - the ability to easily and electronically access their health data from different healthcare providers using a variety of different health IT systems. GCH's solution will also address the second HHS challenge initiative for Provider User Experience by creating health provider apps that sync consumers' data.

Magnolia Health (Magnolia) is a long-term solution to help the State of Mississippi enhance care for Medicaid recipients while most effectively managing Medicaid funds. Magnolia is backed by its parent company, Centene Corporation, which has over 25 years of experience in Medicaid and other government programs.

Using activity trackers, at-home medical devices and smartphones, some of our members have begun collecting data outside of clinical settings. Merging this data with clinical data across different providers will improve coordination of care for patients and providers. An application that enables patients to play an active role in managing their health and allows them to take their medical data with them when they see a new provider helps to ensure continuity of care for patients with chronic diseases.

GCH's participation in this HHS driven initiative and work with other systems will allow them to build a platform for patient centered care. Pending Mississippi Division of Medicaid approval, Magnolia intends to partner with GCH in its effort to develop and test this application. As a part of this engagement, Magnolia will have an opportunity to interact with the GCH platform and provide direct input to improve workflow and practical utility for patients and case managers. When this platform is ready for deployment, we believe that it will provide a real benefit to our members. We look forward to helping you in any way we can with these HHS Challenges.

Sincerely,

Aaron R. Sisk
President & CEO
Magnolia Health Plan

6.3 Peyton Manning Children's Hospital

Peyton Manning
Children's Hospital
St. Vincent

8333 Naab Road, Suite 320
Indianapolis, IN 46260
(317) 338-3000 Phone
(317) 338-5057 Fax
stvincent.org/peytonmanning

May 26, 2016

To,
Mr. Dinesh Sheth
Green Circle Health

Dear Mr. Sheth:

It is my understanding that Green Circle Health (GCH) is proposing to build an application in response to the Consumer Health Data Aggregator Challenge by the Department of Health and Human Services (HHS). This application will solve the problem that many consumers have today – the ability to easily and electronically access their health data from different health care providers using a variety of different health IT systems. It is also my understanding that the solution proposed by GCH will also address the second HHS challenge initiative for Provider User Experience that will create health provider apps that sync consumers' data.

Children's Heart Center at St. Vincent Hospitals, Indianapolis is part of a multi-speciality physician group – the St. Vincent Medical Group. The Children's Heart Center includes four physicians, cardiothoracic surgeon and nurse practitioners. We are a very sizable program and our physicians generate about 30,000 work RVUs every year. We also have seven satellite offices across the state of Indiana.

We participate in the care of children and adults born with complex congenital heart disease who often have multiple congenital anomalies or multi-system health problems and therefore receive care from several health care providers. Due to our focus on tertiary and quaternary care in pediatric cardiology, aggregating medical data from various other service providers is important to us. An application that enables patients to play an active role in managing their

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health and allows them to take their medical data with them when they see a new provider will help ensure continuity of care for patients with such chronic diseases.

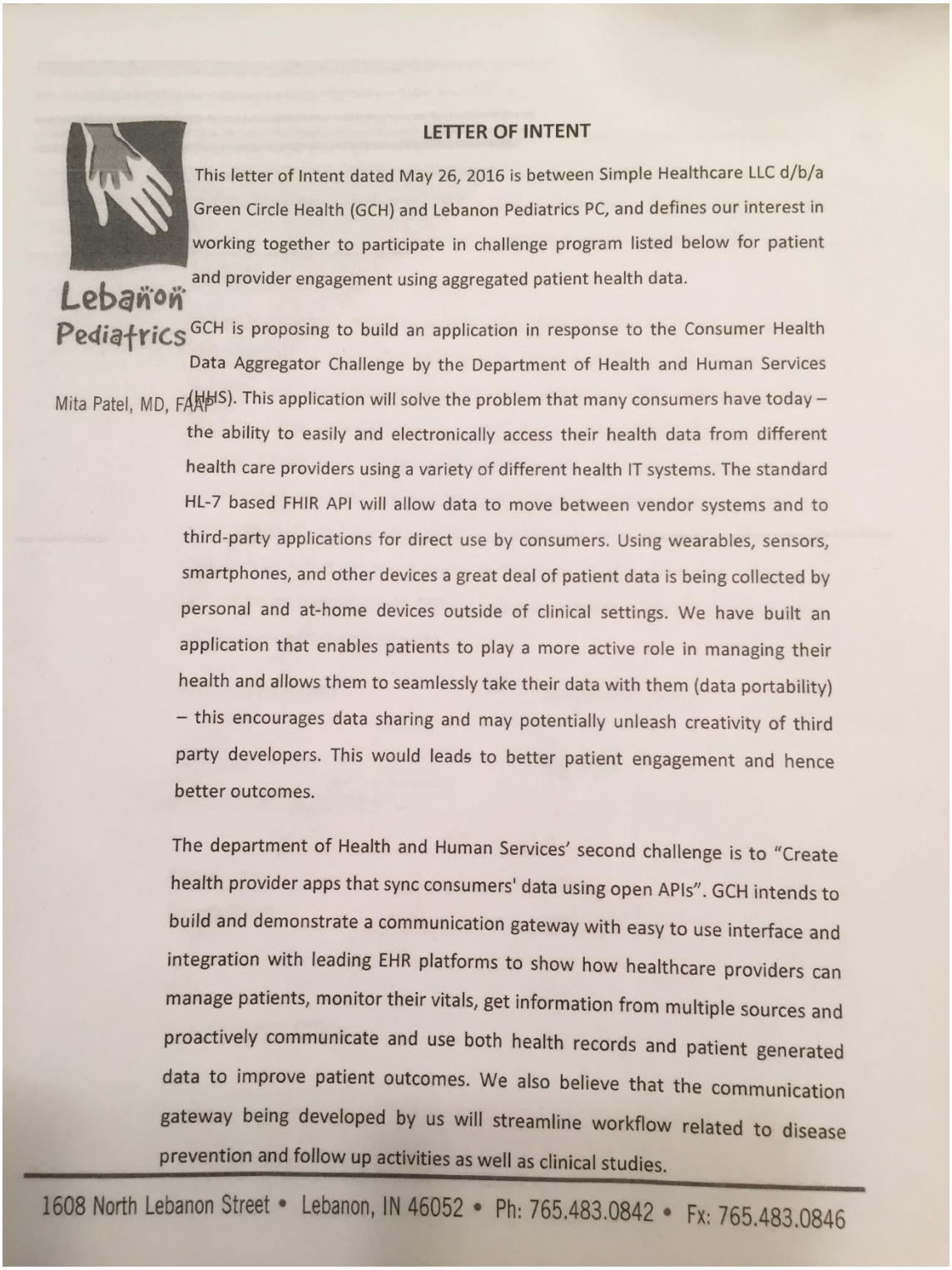
We currently use the AthenaHealth electronic health record platform. We envision that GCH participating in this initiative and working together with other like-minded systems across the state and beyond, will allow improvements in patient centered care with better engagement among patients and healthcare providers. This letter confirms our intent to participate with GCH in developing and testing this application. We envision that our staff will have an opportunity to interact with the GCH platform and provide direct input to improve workflow and its practical utility for patients and their caregivers.

Children's Heart Center delivers medical care to a highly complex subset of patients, some of whom have very limited resources. When such a platform is ready for deployment, we see an opportunity to benefit our patients and community at large. We see our involvement with the company at this stage as a mutually beneficial partnership that will help us improve patient care. We look forward to helping you with these HHS Challenge opportunities.

Sincerely,

Sanjay Parikh, MD
Medical Director, Pediatric Cardiology
St. Vincent Hospitals, Indianapolis.

6.4 Lebanon Pediatrics



Lebanon Pediatrics

Mita Patel, MD, FAAP

LETTER OF INTENT

This letter of Intent dated May 26, 2016 is between Simple Healthcare LLC d/b/a Green Circle Health (GCH) and Lebanon Pediatrics PC, and defines our interest in working together to participate in challenge program listed below for patient and provider engagement using aggregated patient health data.

GCH is proposing to build an application in response to the Consumer Health Data Aggregator Challenge by the Department of Health and Human Services (HHS). This application will solve the problem that many consumers have today – the ability to easily and electronically access their health data from different health care providers using a variety of different health IT systems. The standard HL-7 based FHIR API will allow data to move between vendor systems and to third-party applications for direct use by consumers. Using wearables, sensors, smartphones, and other devices a great deal of patient data is being collected by personal and at-home devices outside of clinical settings. We have built an application that enables patients to play a more active role in managing their health and allows them to seamlessly take their data with them (data portability) – this encourages data sharing and may potentially unleash creativity of third party developers. This would leads to better patient engagement and hence better outcomes.

The department of Health and Human Services' second challenge is to "Create health provider apps that sync consumers' data using open APIs". GCH intends to build and demonstrate a communication gateway with easy to use interface and integration with leading EHR platforms to show how healthcare providers can manage patients, monitor their vitals, get information from multiple sources and proactively communicate and use both health records and patient generated data to improve patient outcomes. We also believe that the communication gateway being developed by us will streamline workflow related to disease prevention and follow up activities as well as clinical studies.

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Lebanon Pediatrics currently uses the e-MDs electronic health record platform. We envision that GCH participating in this initiative and working together with other like-minded systems across the state and beyond, will allow improvements in patient centered care with better engagement among patients and healthcare providers.

Lebanon Pediatrics

While both parties intend to make a reasonable effort to build and demonstrate the platform in time allocated by HHS for the challenge, all the application development and testing work will be responsibility of GCH. Lebanon Pediatrics physicians and staff will have an opportunity to interact with the platform and provide direct input to improve workflow and its practical utility for their patients and providers. This is a non-binding letter of intent between these two parties through the rest of year 2016 and there is no guarantee by either party that such an effort will result in any particular product, service or solution to be utilized on an ongoing basis. Either party may terminate this LOI anytime with a written notice to the other party.

Mita Patel, MD, FAAP

Green Circle Health	**Lebanon Pediatrics**
Signature: Dinesh Sheth	Signature: Mita Patel
Name: Dinesh Sheth	Name: Mita Patel, MD
Title: Chief Executive Officer	Title: President

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