



Bringing Care to
Where People Are



Prevvy Family Health Assistant

ONC FHIR Challenge: [Consumer Health Data Aggregator Challenge](#)

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1 Prevvy Connected Health ecosystem

Prevvy is a cloud-based, connected health ecosystem that provides patients, families and providers 24/7 access to their medical records and personal healthcare information from any connected device. Based on the foundation of HL7 FHIR, Prevvy has been built using an open-standards, open-source framework. It can interface with any physician or hospital EMR system (that is Meaningful Use Stage 2 - MU2 - or later) offering **Direct Messaging or SMART-FHIR container support** allowing a patient to collect their health data from virtually any physician or provider they see in the US. Our security and data storage policies meet all HIPAA requirements.



A Connected Health Ecosystem where the patient *is* the INFORMATION HUB

Prevvy was developed in part to address the needs of Medicare's Chronic Care Management (CCM) program. Implemented by CMS in 2015, the program for the first time allowed physicians to bill for care coordination services for their Medicare patients with two or more chronic conditions. The demographics of the population that would use the service and the requirements of the program made us step back from the traditional PHR application and make Prevvy intuitive and simple to use. It also made us consider some of the special characteristics and needs of the Medicare users, one of which was the prevalence of family support and caregivers that are, *de facto*, an integral part of the patient's care team. Prevvy goes beyond the standard PHR app.

2 Prevvy Family Health Assistant

Healthcare is increasingly complex. Everything from prior authorization protocols to new therapies to having to make (potentially) life or death decisions under stressful circumstances requires tools that allow individuals to have the information they need at the time they need it. More often than not, the “mom” has become the CareManager. She is now required to manage not only the health of her children but also that of her parents, in-laws, or other elderly relatives. This is further complicated by the fact that families can be widely dispersed across the country. Children on sports travel teams could have medical issues thousands of miles away from their home provider. And adventure vacations have increased the likelihood of potential injury.

The Prevvy personal health assistant addresses these needs and puts relevant and actionable health information in the hands of the CareManager. This information, which is kept secure, is available 24/7, can be shared as needed with clinicians and care providers, and can be updated for return visits to the PCP.

Further, social media has changed the way we interact with the world around us, and healthcare is just starting to get on this bandwagon. Prevvy has functionality that allows users to digitally interact with providers with tools such as video and secure messaging, instant messaging, and focused social networks for individuals with certain conditions.

The use cases in section 3 demonstrate how Prevvy can be quickly put to use in real-world scenarios.

3 App functional description

3.1 Use Cases

The use cases listed below will demonstrate both the technical functionality of Prevvy and the practical uses it has for patients, their care teams, and providers.

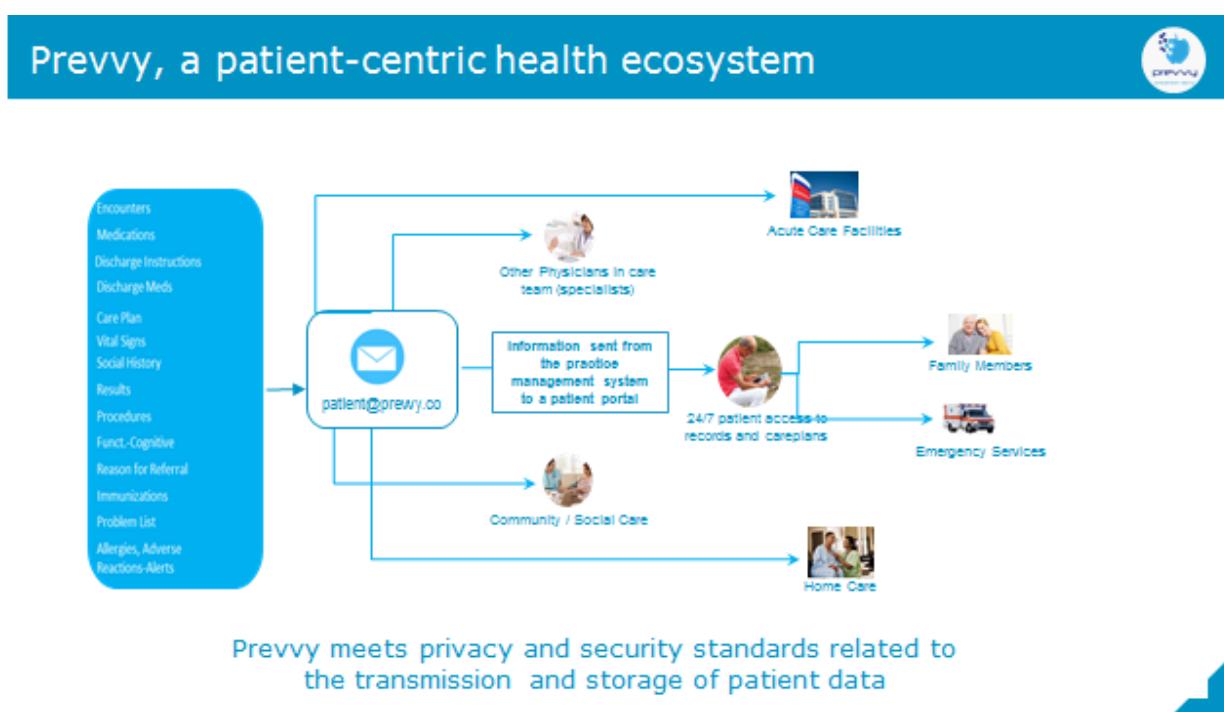
3.1.1 Use Case 1: Managing PHI for the family

A parent is usually the primary caregiver and care manager for their family, in fact, they are the de facto CareManager. And the term “Family” is not limited to the definition of a traditional nuclear family. It has become the norm for the mother or father in the “sandwich” generation to have to manage healthcare for themselves, their children, and their parents and other aging relatives. It is a difficult task under the best of circumstances, and incredibly complex when medical issues arise. And while this is never an easy task, Prevvy makes it manageable by allowing the family care manager to gather the health care information of each individual in their charge into a single platform that is accessible from any connected device. There is no charge for this service.

The process can take less than a few minutes for each person.

- 1) The Family CareManager signs up for a Prevvy account for themselves and their minor children. Each family member will have a Prevvy Address that can accept Direct Messages.
- 2) The Family CareManager contacts the family physicians, and provides the Direct Prevvy Address for each individual. Once the provider has this address, the information in the provider EMR can be sent to the Prevvy address, and the Prevvy PHR will be populated with information such as allergies, prescriptions, and conditions. The CareManager can then share the Prevvy PHR within the family circle as appropriate.
- 3) Other adults being “managed” by the Family CareManager can sign up for their own Prevvy accounts, and then following the steps in number 2 (above), can share their information with the Family CareManager.

With this completed, the CareManager will have all the information needed for nearly any medical event, no matter when or where it happens.



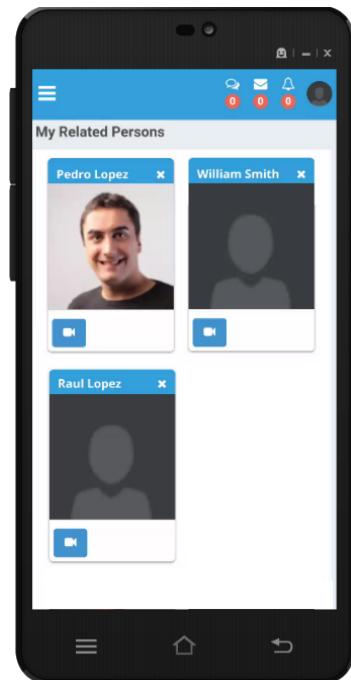
Prevvy meets privacy and security standards related to the transmission and storage of patient data

Patient Health Record

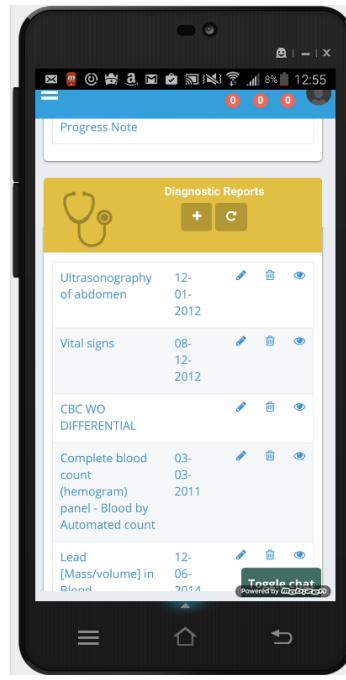
Sharing Options

- William Smith - Doctor
- Michelle Guzman - Doctor
- Steve Smith - Doctor
- Raul Lopez - Grandfather
- Pedro Lopez - Son

Personal Controlled Health Record



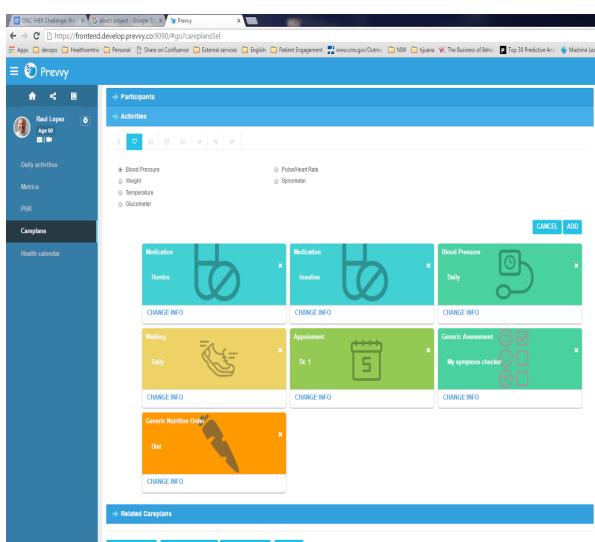
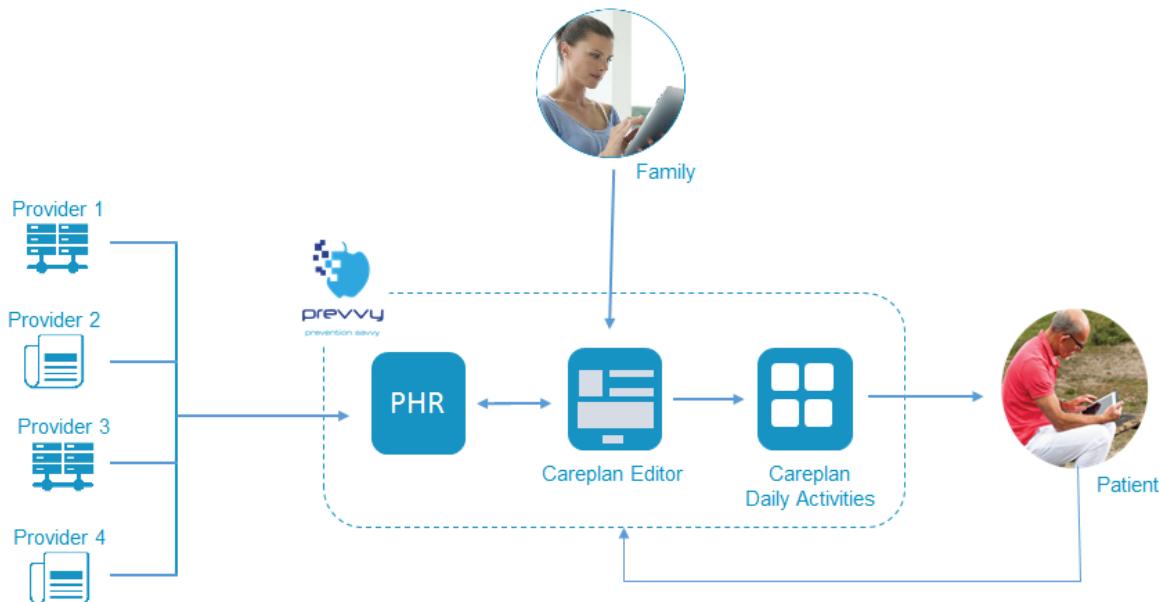
Related persons who have been given consent to access to their PHI for this family member



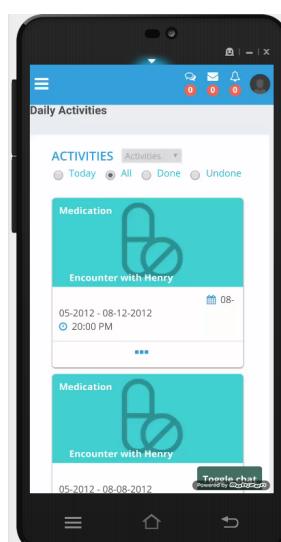
Diagnostics Reports
From different providers

3.1.2 Use Case 2: Care Coordination and Remote Family Members

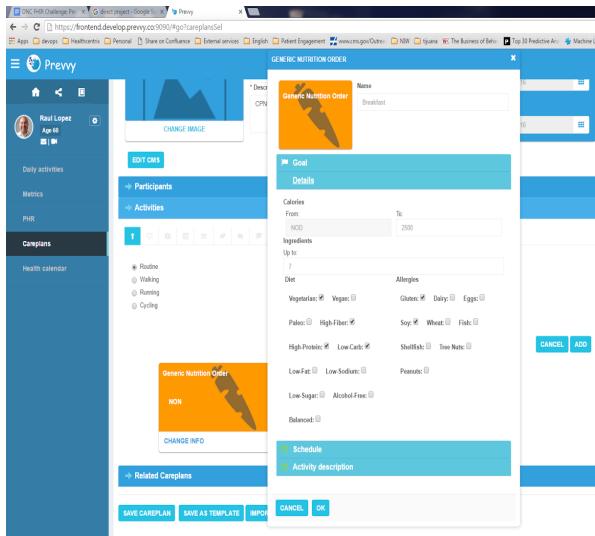
Family members don't always live nearby, and Prevvy provides them an opportunity to be an active part of the care team through the sharing function of Prevvy. For example, through permissions granted by the patient, a woman living in Minnesota can easily access the Careplan of her father, who is living in Miami. One of Prevvy's unique features is its ability to pull together care plans from across different providers. As a result, the daughter living 1000 miles away can monitor activities such as her father's medications and his adherence to activities. And when she has questions or concerns, she can digitally reach out (through Prevvy) to the providers caring for her father.



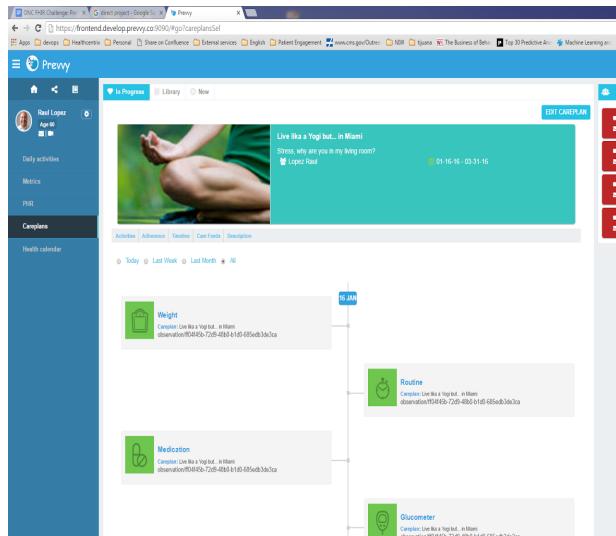
Patient / Caregiver Overview Page



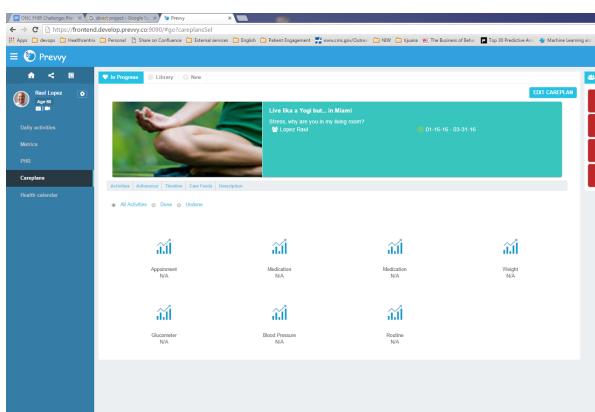
Visibility to medication regimens



Over 18,000 nutrition entries



Both snapshot and longitudinal views for compliance, exercise and lab values.



Activities adherence and Care team

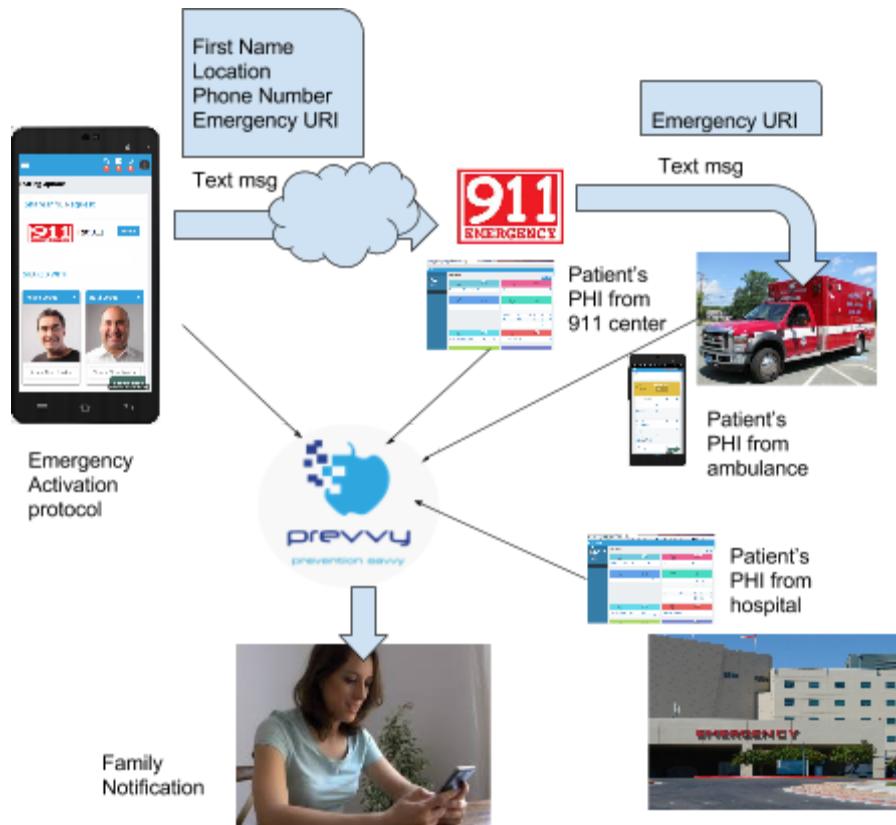


Patient metrics

3.1.3 Use Case 3: Sharing PHI in Emergency Situations - TXT911

Prevvy can make available to emergency services a patient's medical records - such as medications, allergies, or chronic conditions. Access to this information when the person is unable to speak for themselves could easily be the difference between life and death.

In an emergency situation, the patient or a family member could send a Prevvy emergency message to 911 emergency services, using a textTo911 feature now available in a growing number of municipalities. This feature will provide emergency service providers temporal access (a time-limited emergency URL address) to the patient's PHI in Prevvy.



A temporal emergency URL for Personal Health Information for the patient will give access to:

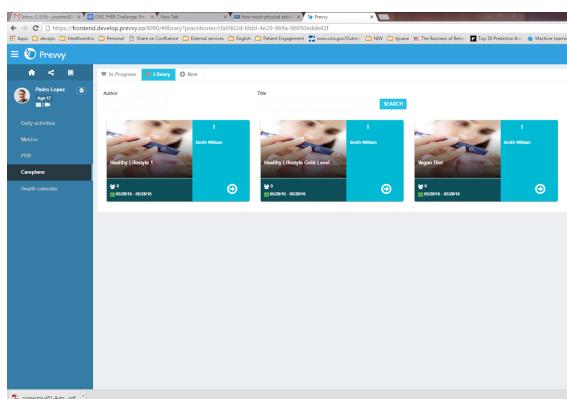
- Patient Demographics, Phone number, Map location (if available)
- Full access to Personal Health Record and Careplan
- Information on the patient's Care Team, including physicians and emergency contacts
- Digital communications with available care team members

The 911 service could then share the relevant information with emergency services, and emergency room staff. Prevvy Emergency services can also be configured to send messages to the patient's providers and emergency contacts.

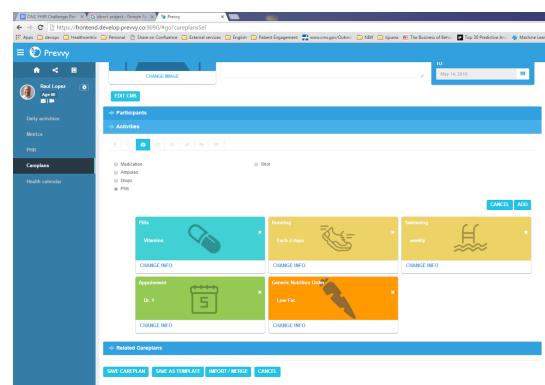
3.1.4 Use Case 4: My Wellness Plan

As an older adult, regular physical activity and healthy lifestyle are one of the most important things you can do for your health. It can prevent many of the health problems that come with age. It also helps your muscles grow stronger so you can keep doing your day-to-day activities without becoming dependent on others.

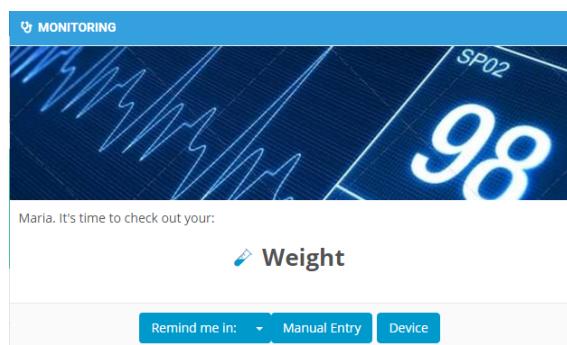
Prevvy will help you to select Health and Wellness plans available in the Care and Wellness Library which can be personalized for each individual. Reminders can be configured across your digital devices to help keep you on track.



Selecting some of Wellness programs available in the Prevvy Library



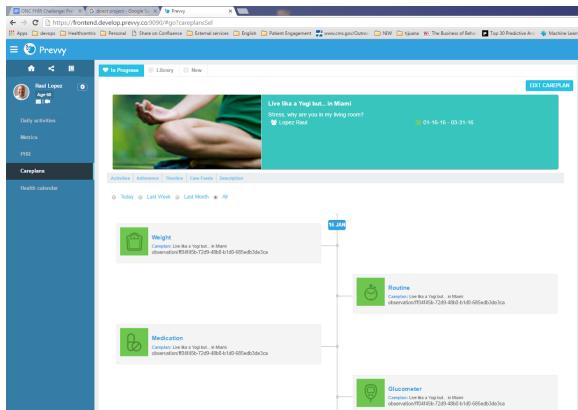
Personalizing My Wellness plan with diet, medication, monitoring, appointments, ...



Notifications



Connectivity with Bluetooth Devices



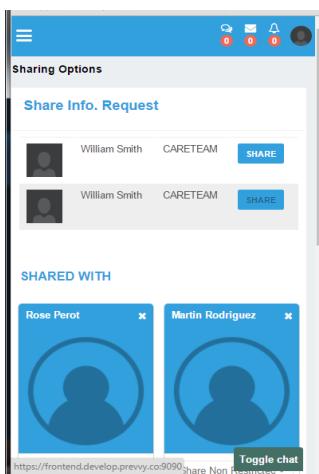
Checking Careplan timeline adherence



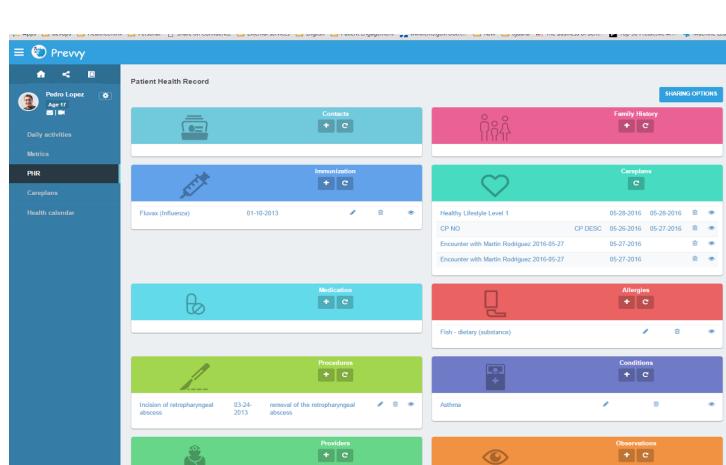
Metrics for my wellness performance

3.1.5 Use Case 5: Medical Emergencies while Traveling

Few things are as scary as having an emergency situation arise when traveling - unfamiliar care settings, new providers, and no clinical personnel that know your history. Prevvy addresses these issues, and allows any Provider to get a complete and unbiased overview of the patient they're seeing, not just the symptom presenting in front of them - while providing them in the same record the contact information for the primary provider. The patient can share their records with the new provider (via a direct message), show them their records on any connected device, or activate the emergency feature described above.



Patient send PHI Sharing Invitation to new Provider



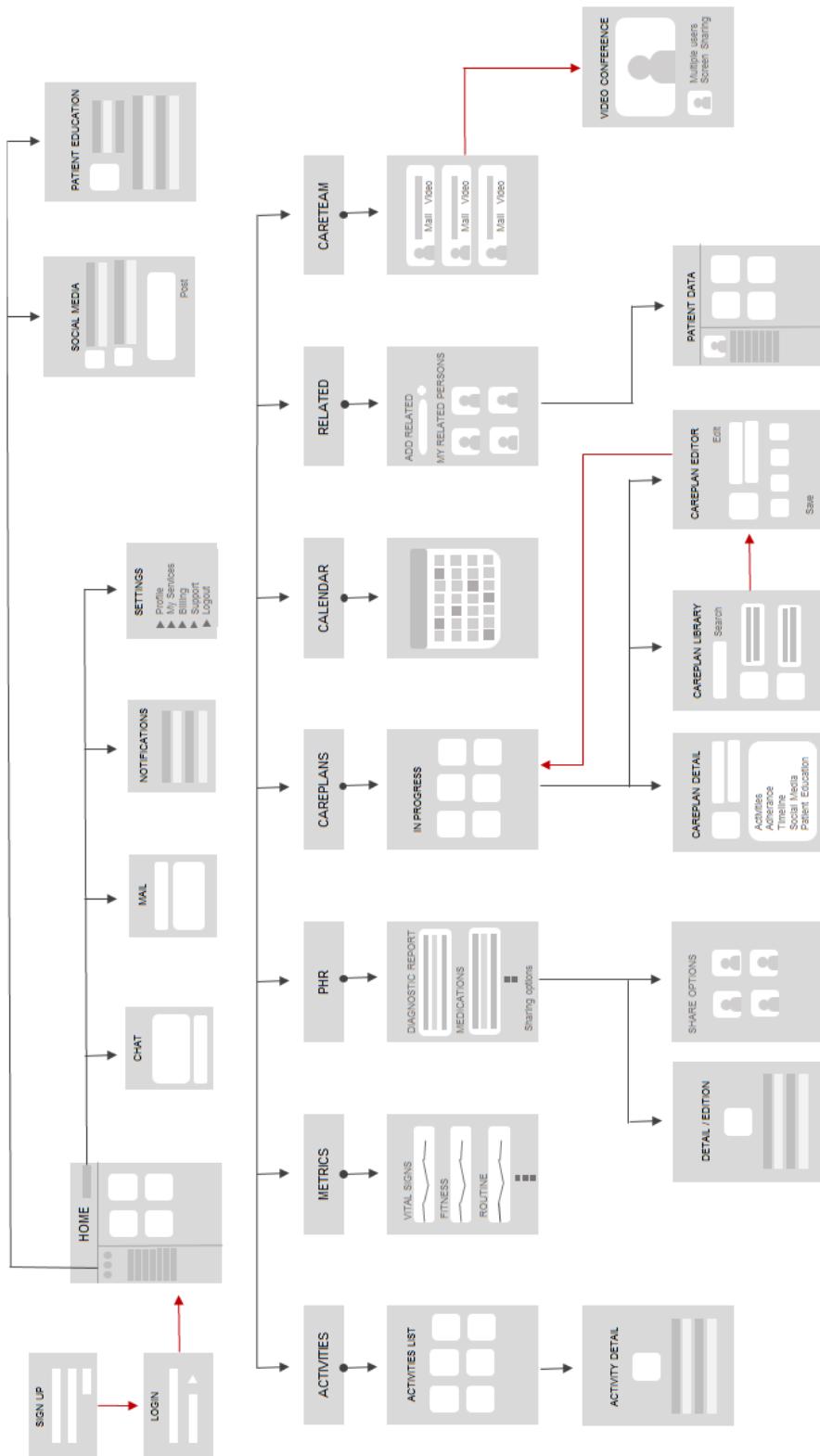
New provider has access to Patient's medical record and care team.

3.2 Features

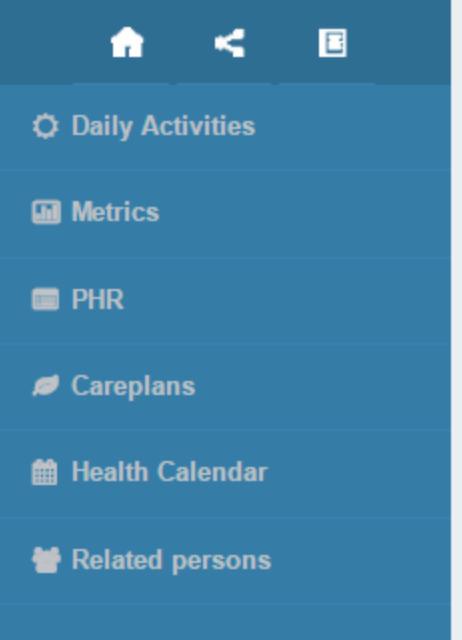
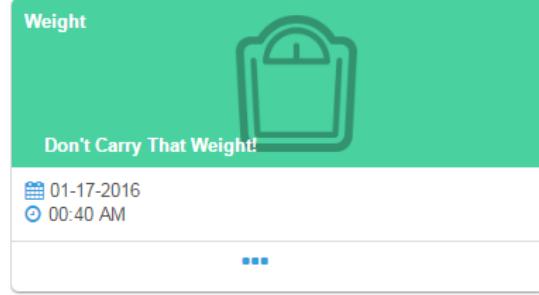
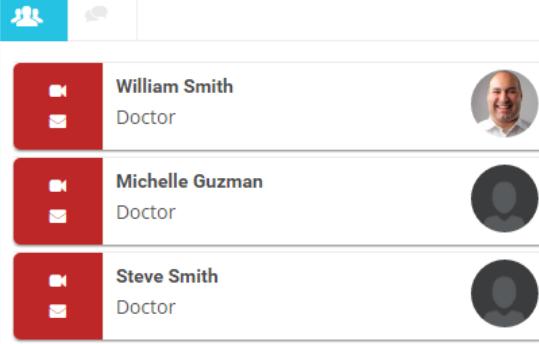
Feature	Feature description
Mobile App for patients and caregivers	Android and iOS mobile apps: managing PHI, careplans, calendars, careteams for families
Webapp for caregivers and practitioners	Web portal for managing PHI, careplans, calendars, careteams for families
Personal Controlled Health Record	Health data aggregator from different sources: EMRs, HIEs, and Patient generated data
Sharing PCHR	Enabling shared PHI with families, providers and emergency situations.
Careplan Management	Creation , assignment of wellness or care plans for a family member or patient
Careplan adherence management	Dashboards about careplans compliance activities adherence by patients.
Metrics	Dashboards about adherence, laboratories, signal vitals, ...
PHI Management for related persons	Access to PHI for patients who has given Consent for accessing their PHI
Care Team management	Provisioning and communication with care team members
Communication Tools	Secure messaging, Instant Messaging, Video conference, social network channels for diseases and careplans
Patient Education	Patient education syndication network with different Content providers like CDC syndication platform
Emergency Services	PHI Sharing in emergency situation

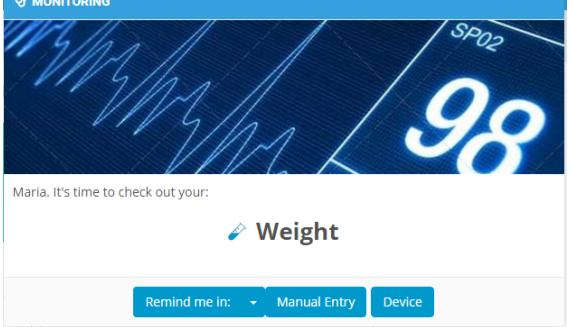
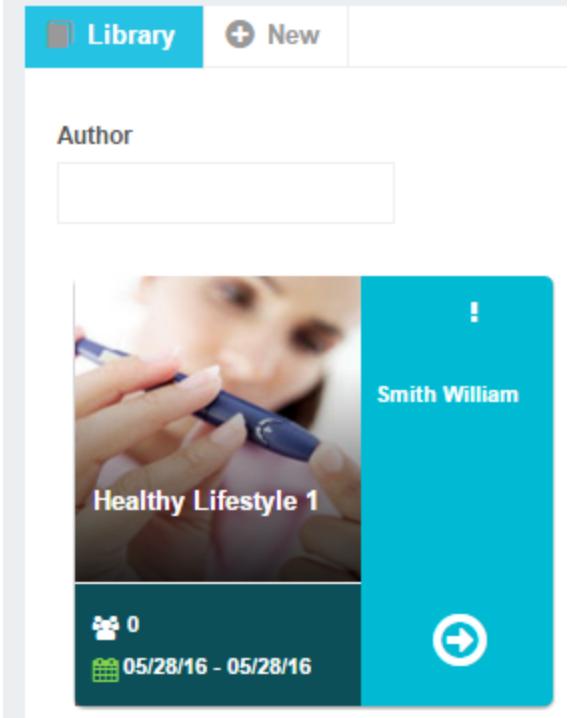
3.3 Wireframes for Mobile And Web App

3.3.1 App Navigation

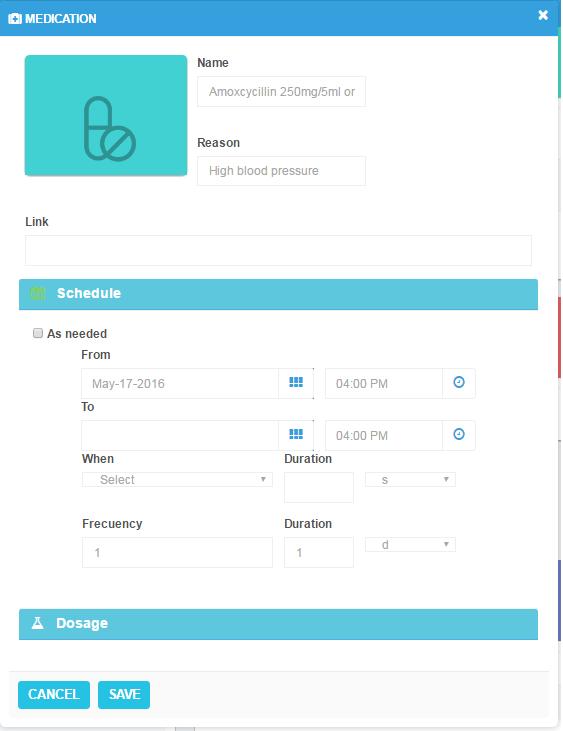
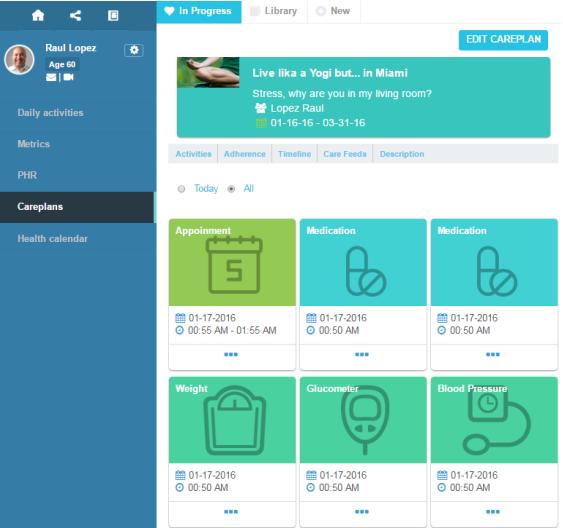
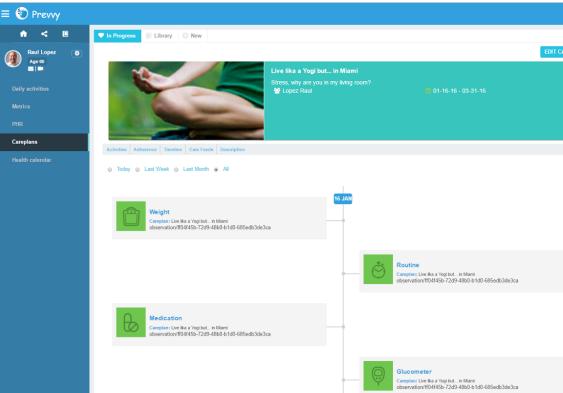


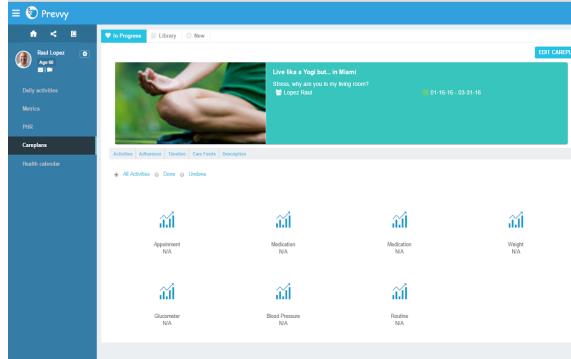
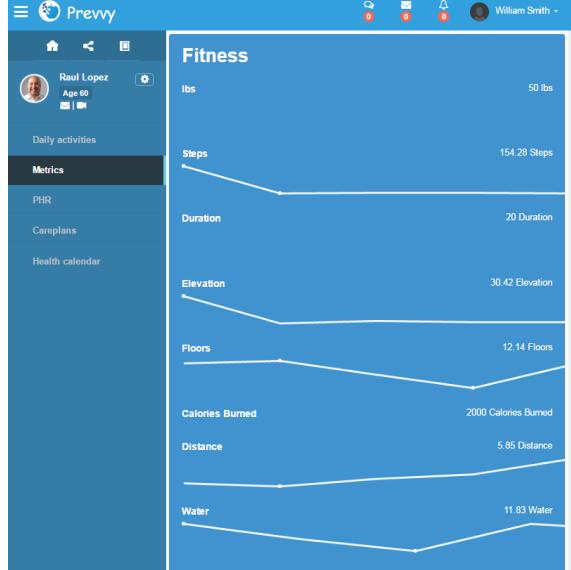
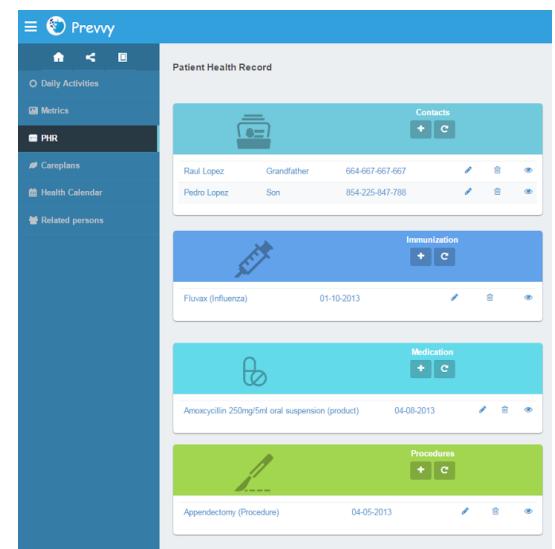
3.3.2 Layouts

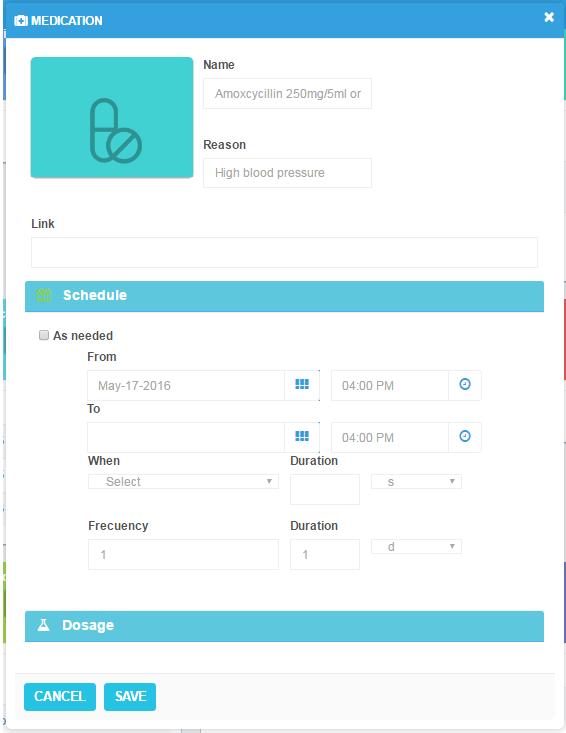
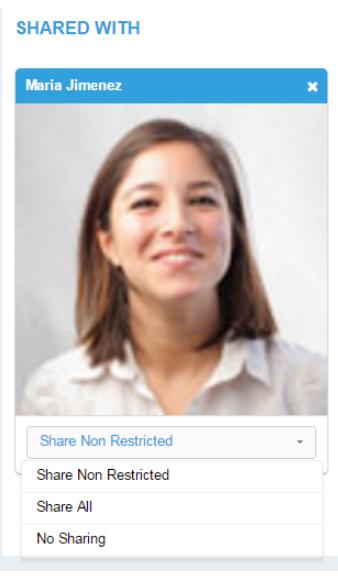
Functionality	Mockup Detail	Comments
Patient Menu	 <p>A screenshot of a mobile application's main menu. At the top are three navigation icons: a house (Home), a left arrow (Back), and a square with a circle (More). Below these are five menu items with corresponding icons: 'Daily Activities' (gears), 'Metrics' (bar chart), 'PHR' (medical chart), 'Careplans' (leaf), and 'Health Calendar' (calendar). At the bottom is a 'Related persons' section.</p>	Easy main menu that allows user access to the most important sections of the app or portal
Daily Activities	 <p>A screenshot of a 'Daily Activities' screen. At the top, there is a dropdown menu labeled 'ACTIVITIES' with options: Activities (selected), Adherence, and Timeline. Below this are filter buttons for 'Today' (radio button), 'All' (radio button selected), 'Done' (radio button), and 'Undone' (radio button). The main area shows a card for a 'Weight' activity titled 'Don't Carry That Weight!' featuring a scale icon. Below the card are the dates '01-17-2016' and time '00:40 AM'. A '...' button is at the bottom right.</p>	Activities can be grouped or listed in the care plan to meet the needs of the clinician / patient.
Careteam	 <p>A screenshot of a 'Careteam' screen. It shows a header with a video camera and email icon. Below is a list of three team members: William Smith (Doctor), Michelle Guzman (Doctor), and Steve Smith (Doctor). Each team member has a red video camera and email icon, a small profile picture, and a '...' button.</p>	Careteam members can be reached by secure email or videoconference (if that is offered on the provider side).

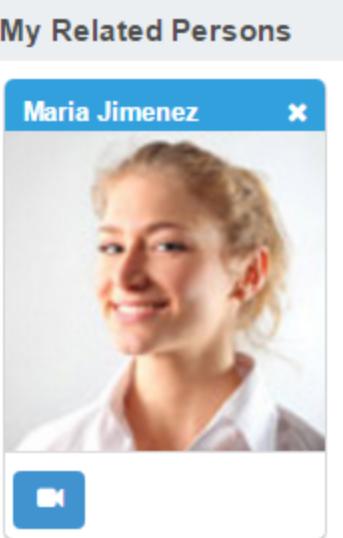
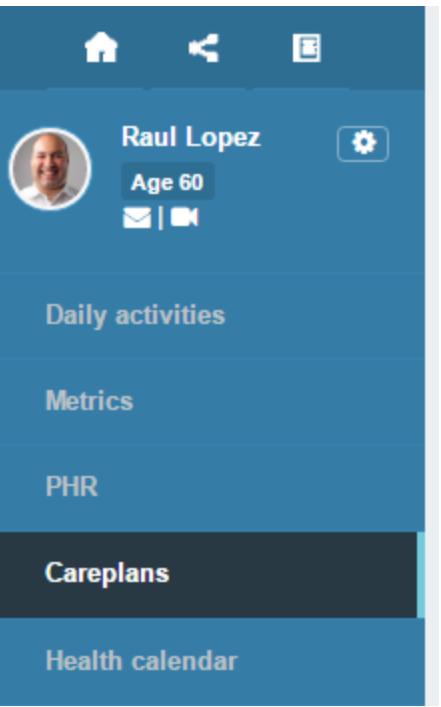
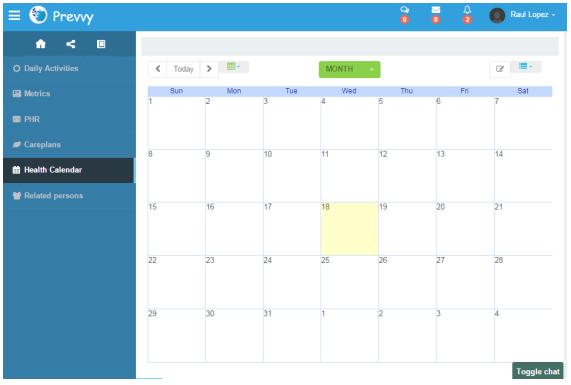
Notification		<p>The Prevvy Guidance system can send notifications (e.g., medication reminders) through multiple channels (mobile notifications, desktop notifications, emails). The system can be configured to require responses, ignore messages, and send notifications as agreed to by the patient and the care team.</p>
Careplans for a patient		<p>This section lists the careplan(s) in which the patient is participating, including the ability for patients to update status or activities.</p>
Careplans library		<p>Careplan templates based on condition can be created to use across populations, and then further customized to meet the needs and goals of each patient.</p> <p>Careplans and templates are saved to the library, where clinical users can select the most appropriate modules for their patient.</p>

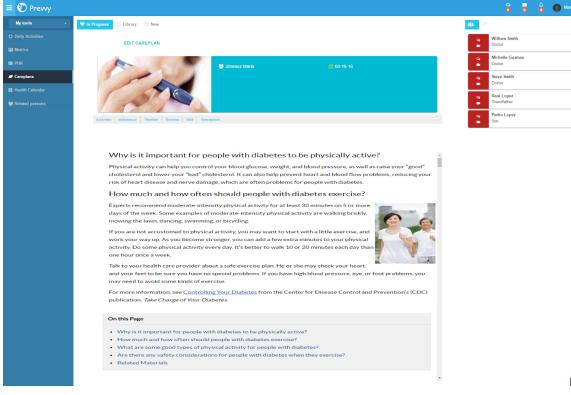
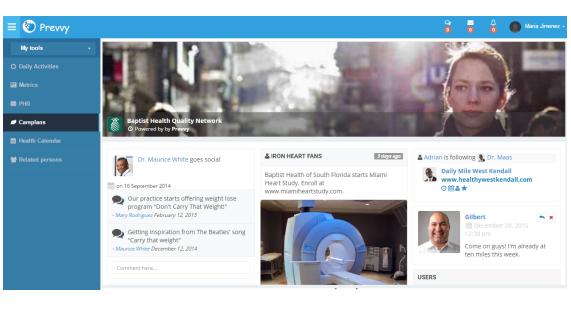
<p>Careplan Editor</p>	<p>Create a New Careplan !</p> <p>Category & Description</p> <p>CATEGORY <input checked="" type="checkbox"/> Health <input type="checkbox"/> Wellness <input type="checkbox"/> Lifestyle</p> <p>DESCRIPTION</p>  <p>CHANGE IMAGE</p> <p>* Name <input type="text"/></p> <p>* Description <input type="text"/></p> <p>FROM <input type="text" value="May 17, 2016"/></p> <p>TO <input type="text" value="May 17, 2016"/></p> <p>EDIT CMS</p> <p>Participants</p> <p>Activities</p> <p></p> <p><input checked="" type="radio"/> Blood Pressure <input type="radio"/> Weight <input type="radio"/> Temperature <input type="radio"/> Glucometer <input type="radio"/> Pulse/Heart Rate <input type="radio"/> Spirometer</p> <p>BLOOD PRESSURE  <input type="button" value="ADD INFO"/></p> <p>Related Careplans</p> <p>SAVE CAREPLAN SAVE AS TEMPLATE</p> <p>IMPORT / MERGE CANCEL Toggle chat</p>	<p>This powerful tool allows for the creation and editing of Careplans and Careplan templates.</p> <p>Careplans can incorporate an almost unlimited number of customizations, including date ranges, goals, nutrition plans, and educational contents / modules.</p>
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<h3>Activity Editor</h3>		<p>Each careplan element can be edited individually, or modified across all templates.</p>
<h3>Careplan viewer: Activities</h3>		<p>Overview of all of the activities included in the patient's careplan. This is especially useful for care coordinators tasked with monthly updating and monitoring.</p>
<h3>Careplan timeline</h3>		<p>Timeline to quickly identify completed and ongoing activities in a given period.</p>

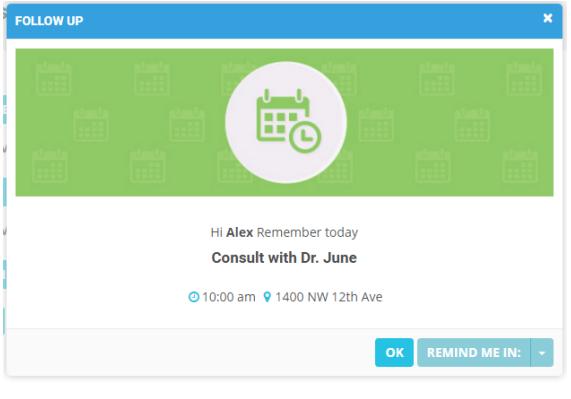
<h3>Careplan Adherence</h3>		<p>Timeline to quickly identify completed and ongoing activities in a given period.</p>
<h3>Metrics</h3>		<p>Every patient activity creates a graphic showing the values of the latest metrics. This graphs help the doctor to be aware of the ups and downs of a patient performance</p>
<h3>Personal Health Record</h3>		<p>Prevvy's electronic health record stores all of a patient's health information gathered from various health providers. This information is then used by clinicians and the care team to create a personalized careplan.</p>

Edit and Viewer FHIR resources Composition Layout		<p>Prevvy's EHR allows the user to add or update health information not acquired via an electronic transfer (paper records update).</p> <p>The patient can also create their own "blocks" of information where relevant information is stored</p>
Sharing Options		<p>Patient's EHR information can be shared completely or partially with any careteam or family member.</p> <p>The person with whom the information is shared can see only that information to which the patient had granted access.</p>

Related Persons		<p>In addition to the careteam, patients can add relatives or other care givers to their prevvy account, and define, by person, the information the patient wants to share.</p> <p>Prevvy includes video conferencing capabilities for easy communication, and it can be used for remote patient visits.</p>
Navigation for PHI of related Person		<p>Authorized users, based on permissions, can monitor a patient's careplan and activities.</p>
Health Calendar		<p>Prevvy contains a calendar function where medical appointments and other health-related reminders can be stored.</p>

Journal	 <p>The screenshot shows a journal entry titled "EDIT CAREPLAN". The main content is an article from the Center for Disease Control and Prevention (CDC) about the importance of physical activity for people with diabetes. It includes a photo of a person using a blood glucose meter, a sidebar with user profiles, and a sidebar with related materials.</p>	<p>Prevvy contains a calendar function where medical appointments and other health-related reminders can be stored.</p>
Patient Social Network	 <p>The screenshot shows a social network feed titled "Baptist Health Quality Network". It displays posts from users like Dr. Maurice White, Adrian, and Gilbert, sharing their experiences with treatment, medications, and lifestyle changes.</p>	<p>Condition focused social networks where users can share their experiences with treatment, medications, and lifestyle with other patients that share the same conditions and concerns.</p>
Secure Messaging		<p>Patients and clinicians can receive and send encrypted health information through Prevvy just as they would send an email, complying fully with HIPAA regulations</p>

Mobile and Desktop Notifications

Layout	Mockup	Comments
Mobile and desktop Notifications	 <p>The mockup shows a green notification card titled "FOLLOW UP". It features a large calendar icon with a clock overlay. The text inside reads: "Hi Alex Remember today Consult with Dr. June". Below this, it says "10:00 am 1400 NW 12th Ave". At the bottom are two buttons: "OK" and "REMIND ME IN: [dropdown menu]".</p>	<p>Prevvy can be configured to provide reminders across all range of activities in the Careplan. Reminders can be sent based on user preferences.</p>

4 Technology

4.1 FHIR DSTU2 Resources used on Prevvy

The FHIR server implementation for Prevvy supports all FHIR resources defined in the FHIR DSTU2 specification. Our front-end layer (Prevvy Portal and Prevvy Mobile Apps) and our business logic layer (Prevvy Services) are built exclusively using FHIR DSTU2 resources. The resources highlighted in Green below are currently built into our front end and business logic layers. Our current implementation represents over 80% of those resources.

Clinical

General:	Care Provision:	Medication & Immunization:	Diagnostics:
AllergyIntolerance	CarePlan	Medication	Observation
Condition	Goal	MedicationOrder	DiagnosticReport
Procedure	ReferralRequest	MedicationAdministration	DiagnosticOrder
ClinicalImpression	ProcedureRequest	MedicationDispense	Specimen
FamilyMemberHistory	NutritionOrder	MedicationStatement	BodySite
RiskAssessment	VisionPrescription	Immunization	ImagingStudy
DetectedIssue		ImmunizationRecommendation	ImagingObjectSelection

Identification

Individuals:	Groups:	Entities:	Devices:
Patient	Organization	Location	Device
Practitioner	HealthcareService	Substance	DeviceComponent
RelatedPerson	Group	Person	DeviceMetric
		Contract	

Workflow

Patient Management:	Scheduling:	Workflow #1:	Workflow #2:
Encounter	Appointment	Order	ProcessRequest
	AppointmentResponse		

EpisodeOfCare	Schedule	OrderResponse	ProcessResponse
Communication	Slot	CommunicationRequest	SupplyRequest
Flag		DeviceUseRequest DeviceUseStatement	SupplyDelivery

Infrastructure

Information Tracking:	Documents & Lists:	Structure:	Exchange:
Questionnaire	Composition	Media	MessageHeader
QuestionnaireResponse	DocumentManifest	Binary	OperationOutcome
Provenance	DocumentReference	Bundle	Parameters
AuditEvent	List	Basic	Subscription

Conformance

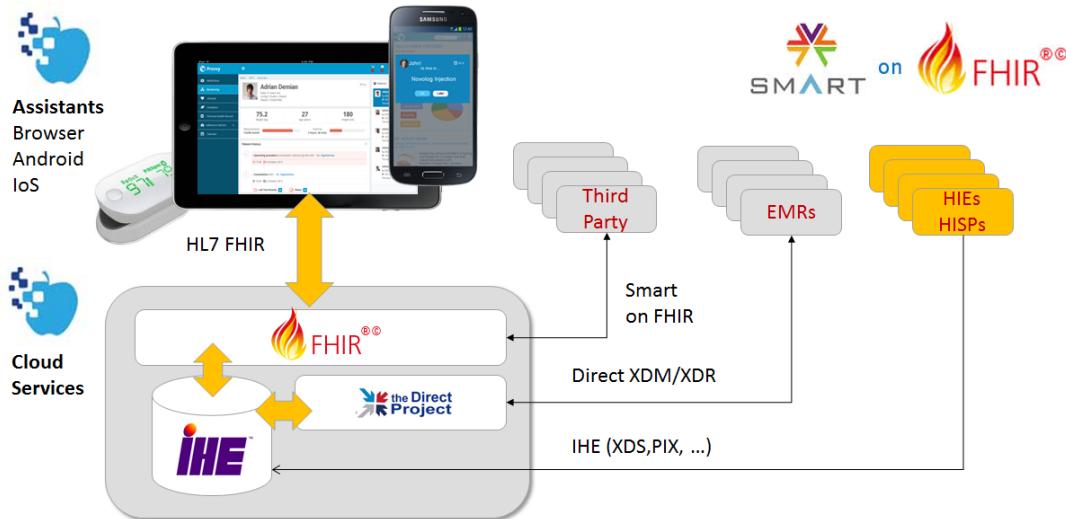
Terminology:	Content:	Operations Control:	Misc:
ValueSet	StructureDefinition	Conformance	ImplementationGuide
ConceptMap	DataElement	OperationDefinition	TestScript
NamingSystem		SearchParameter	

Financial

Support:	Billing:	Payment:	Other:
Coverage	Claim	PaymentNotice	ExplanationOfBenefit
EligibilityRequest	ClaimResponse	PaymentReconciliation	
EligibilityResponse			
EnrollmentRequest			

4.2 Health IT interoperability

Prevvy supports the latest Health IT standards such as those shown below:



PREVYY: Smart-FHIR framework for new Digital Health strategies

- **Prevvy Apps** (Web portal and iOS/Android mobile apps) are based on FHIR and FHIR messaging specs. Prevvy Apps could be started standalone or from SMART-FHIR containers; in this last option there will be a PHI syncing process between PHI stored in Prevvy and EMR.
- **Prevvy FHIR Server** is a FHIR implementation on top of **IHE specs** based on an **IHE XDS repository** which stores simultaneously CCDA documents and FHIR resources
- **Prevvy microservices**, which implements Prevvy business logic, are developed using FHIR messaging specs
- **Prevvy IHE repository** could be connected to different IHE Affinity Domains with other IHE repositories from an organization or Regional Health Information Exchanges
- Our **Prevvy HISP** provider, based on Direct project, is a Direct gateway between our repository and other providers using **Direct Messaging and IHE XDR gateway**
- **Prevvy FHIR2CDA service** is able to convert bidirectionally CCDA documents received from XDR/XDS/Direct protocols to FHIR Compositions composed of FHIR resources
- **Third Party Apps** could use Prevvy FHIR and Prevvy microservices based on SMART-FHIR authorization

4.3 SW architecture

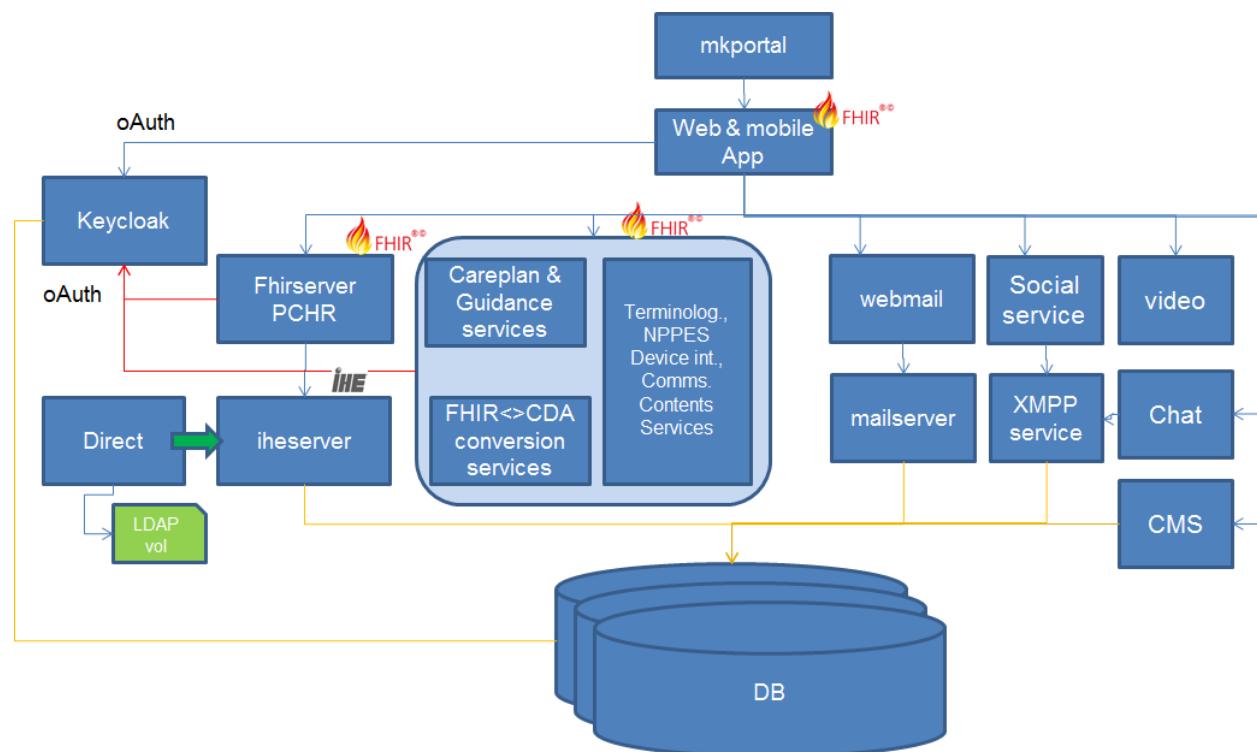
4.3.1 Prevvy Web and mobile apps

Patients, families, providers have access to Prevvy via the **Prevvy Web portal** and **Prevvy mobile apps (Android & iOS)**. Web and mobile apps are a unique development project where web responsive design and hybrid mobile apps technologies are used.

Web and mobile app are developed with these technologies:

- Google Web Toolkit
- Javascript/Jquery/Bootstrap
- Phonegap for Android and IOS
- Mobile notifications based on AWS SNS, Google GCM, and Apple APNs

4.3.2 Prevvy Services:



Service	Description
FHIR service	Prevvy FHIR services is a FHIR DSTU2 implementation on top of IHE XDS repositories. Prevvy Apps are able to access to FHIR resources and additionally to CCDA documents through FHIR DocumentReference interface.

	<p>FHIR service security is based on:</p> <ul style="list-style-type: none"> • oAuth Token authorization • Patients Consents for connected users to requested PHI in FHIR server • Restrictions based FHIR Resources Security Labels
Authorization Service	Prevvy Authorization services is based on oAuth/OpenID services implemented in Keycloak project. Prevvy Apps, Prevvy FHIR and Prevvy microservices are using Prevvy Authorization Service to restrict access to apps and services from apps and users
IHE XD* Repository service	Prevvy IHE Repository is an IHE XD* implementation based on a light modification of HIEOS open source project. IHE Repository could be setup to connect to other HIE repositories.
HISP service	Prevvy HISP service is based on Direct Project open source project. Each Prevvy user will have a personal Prevvy Direct Address ; any Direct messaging to a provisioned Prevvy Direct address will be redirected through XDM/XDR interface of our IHE repository. Prevvy will use Organization Certificate signed by DigiCertMed CA and published in a public LDAP for discovery.
Prevvy FHIR microservices	<p>Prevvy business logic based on microservices development. Each Prevvy microservice is based on FHIR messaging specification invoking operations based on Messages. Each message is a FHIR bundle with FHIR Resources like parameters and a MessageHeader like operation.</p> <p>Prevvy microservices security is based on oAuth Token authorization.</p>
FHIR<>CDA Conversion Service	Prevvy Fhir2CDA converter is a microservice which is able to convert bidirectionally a CDA document to a bundle of FHIR resources. Any new received CDA document, from Direct or from other IHE repository in an Affinity Domain, will be transformed to FHIR resources; this new FHIR resources will be available for Prevvy Apps and Services.
Careplan based Guidance Service	<p>Set of microservices which offer creation of careplans and careplan templates to support different type of activities like fitness, routine, monitoring, medication, assessments, patient education, diets, communications, orders and other activities.</p> <p>A guidance system based on mobile or desktop notifications provides timely reminders to users for anything from activities (e.g., walking, taking medicine) or entering data (e.g., distance walked, weight). These reminders, combined with reinforcement from physicians and support from family members, can be a powerful behavioral change tool.</p>
Terminology services:	Prevvy Terminology Services offers translation for all supported vocabularies in NLM UMLS and CTS2 REST services. Prevvy FHIR TS implementation is based on these 2 API services.

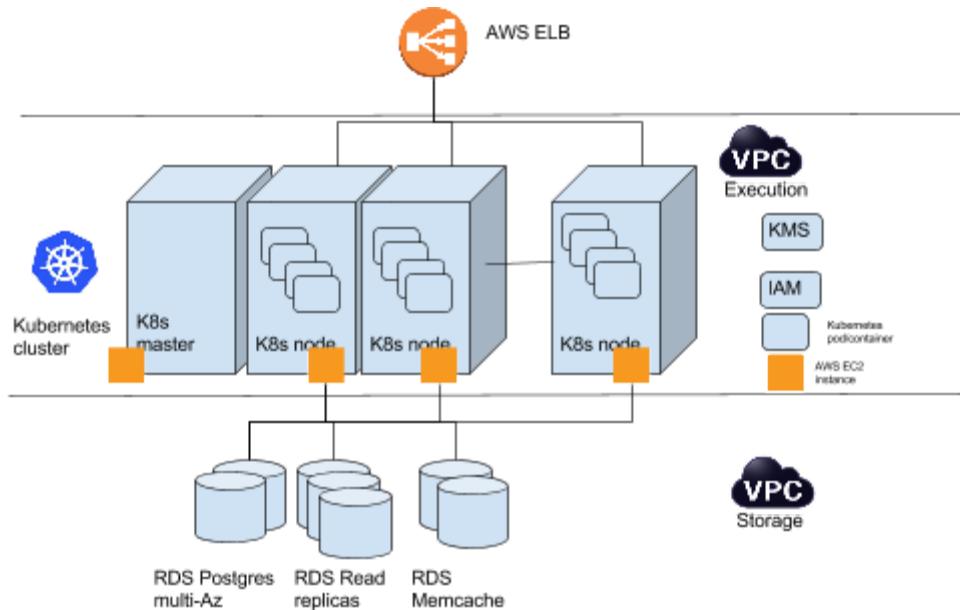
Monitoring Service - Biomedical devices integration	Prevvy Monitoring Service acquires Vital Signs and measures from different biomedical devices such as glucometers, scales, pedometers, and other devices. Monitoring Service integrates the FHIR Device concept with different Device Data aggregator platforms like Validic, iHealth, and Qualcomm Life.
Drug Interaction Service	Prevvy Drug Interaction Service is a microservice which detects Drug interactions for the set of medications for a patient. Service create FHIR DetectedIssues for each of them. The service is developed based on NLM Drug Interaction API
Secure Messaging Service	Prevvy users have a secure internal messaging service based on Apache James and Apache HUPA open source project.
Videoconference and sharing PHI	Prevvy users have multi video conference support based on the WebRTC platform. Prevvy users can discuss and share PHI in that session. Each user in the session just have access to authorized PHI based on their Consents and FHIR Resources Security Labels
Secure Social and Instant Messaging service	Careplan participants can communicate with each other through Careplan social channel and Careplan Instant Messaging channel. This is based on Buddycloud and Prosody open source projects.
Content Management System	Patient education for any Careplan activity is managed through Hippo Content Management system leveraging CMS and CDC content platforms.
NPPES service	FHIR interface to CMS NPPES database.

4.3.3 External services

Services	Description
Medline REST services	Information about medications and diseases
CDC Syndication API	Health topics from CDC syndication platform
NLM UMLS Service	ICD9, ICD10, SNOMED, RXnorm
Validic API Ihealth API	Data aggregator platforms which acquire data from biomedical devices
Edamam API	Diet Recipes and Recommendation API
Chargebee services	Billing services to manage suscriptions to Prevvy Connected Health Services
Authorize.net	Payments Platform

4.4 Systems Architecture

The following figure shows the containerized Prevvy architecture:



The main Prevvy architecture features are:

- Orchestration of containerized modules based on Kubernetes cluster and Docker containers
 - Horizontal replication and distribution of containers in distributed cluster
 - Discovery services
 - Internal load balancing
- Security:
 - Different levels of Key/Credential/Secrets
 - Kubernetes Secrets
 - Vault Management System
 - AWS KMS
 - Any communication between containers, layers, cloud system is based on SSL/TLS
 - Encryption of databases, system files with PHI
 - Audit IHE, FHIR AuditEvent
- Cloud Services
 - AWS EC2 instances
 - AWS Secure RDS Postgres multi-AZ and read replicas. Encryption of communications and storage.
 - AWS Secure ElastiCache for caching DB access
 - AWS Secure S3/EBS for storage
 - AWS KMS for Key management
 - AWS SQS for provisioning management
 - AWS SNS/ GCE GCM/ Apple APNs for desktop and mobile notifications
 - AWS SMS for outbound mailing
 - AWS Route53 for DNS Management

5 Privacy Model

5.1 Overview

Healthcentrix will sign HIPAA Business Associate Agreements (BAAs) with all of our provider partners, and a BAA with our cloud service provider. We want our physician partners and individual users to be confident that their data is transmitted and stored securely. Healthcentrix will therefore follow all applicable state and federal ONC MPN PHR privacy guidelines. We will be fully transparent with all of our partners and users with regard to how we store, transmit, and use data in the Prevvy system. Our model and approach on disclosures, storage, and security is outlined in the table below:

5.2 Disclosures, Data Storage, Security and Encryption

Issue / Question	Personal Data	Statistical Data	Comments
Do we release your PHR Data for these purposes? (Yes / No)			
• For marketing and advertising	No	No	
• For pharmaceutical research	Yes*	Yes	* Personal data may be shared with specific consent
• Allowing researchers at academic and non-profit institutions to access either identifiable or de-identified data	Yes*	Yes	* Personal data may be shared with specific consent
• For reporting about our company and our customer activity	No	Yes	
• For your insurer and employer	No	No	
• For developing software applications	No	No	
Sale of anonymized or de-identified data, with restrictions on re-identification	No*	Yes	* Personal data may be shared with specific consent

Sale of statistics aggregated from identifiable data	N/A	Yes	
Use of data by the original collector to market products to the consumer	No*	Yes	* Personal data may be shared with specific consent
Allowing third parties to use the data for marketing purposes	No	Yes	
Allowing government agencies to access the data, and for what purposes (such as law enforcement or public health)	Yes	Yes	Healthcentrix will follow all state and federal guidelines
Access to the data by employers, schools, insurance companies or financial institutions with or without the consumer's consent;	No	No	
Health technology developer stores information in the cloud or on the consumer's device	No	No	

5.3 Data Storage and Destruction

Issue / Question	Personal Data	Statistical Data	Comments
Is information stored by the company in the cloud (either the only copy of the information or a backup of the information)	Yes	Yes	Data is stored on a multi-cluster cloud database with backups for disaster recovery
In what country is the information stored?			All data generated in the US will be stored in the US.
Does the consumer have the ability to download a copy of their information at any point in time?	Yes	No	The consumer has the ability to download a copy of their information at any time. Once the relationship between the user and Healthcentrix is terminated, however, all data from that consumer will be destroyed and will be no longer accessible either by

			Healthcentrix or the consumer.
Retention or destruction of consumer data when the relationship between the health technology developer and consumer terminates			All data will be destroyed.

5.3 Security and Encryption

Issue / Question	Personal Data	Statistical Data	Comments
Is consumer information encrypted when transmitted and what level of encryption is used?	Yes	No	Web and mobile apps access: TLS/256 Direct Messaging HISP: X.509 Organization digital certificate DigiCert. In progress for belonging to NATE and DirectTrust bundles
Is information encrypted when stored and what level of encryption is used?	YES	Yes	AWS RDS 256b encryption
Does Healthcentrix have access to the unencrypted information?	No*	Yes	* Access to unencrypted PHI will be granted by the Privacy officer based on specific operational needs based on HIPAA guidelines.
Will any third parties (e.g., a cloud provider) have access to unencrypted information?	No	No	
Does the company subscribe to any particular information security framework (e.g., ISO 27001) and, if so, the identification of such a framework?			In progress

6 Business Model

6.1 Overview

Prevvy is a cloud-based, connected health ecosystem that provides patients and providers 24/7 access to their medical records and personal healthcare information from any connected device. This, combined with the sharing capabilities built into the Prevvy system, opens a world (literally) of opportunity for Prevvy to enter new service areas where both providers and patients can be paid subscribers.

The basic Prevvy business model is a Software as a Service (SaaS) model. Our go-to-market is simple and can be divided into two parts. The first is to offer this SaaS service to physicians to allow them to bill CMS for care coordination services (work they had been doing without reimbursement to improve their patient's care) under the Chronic Care Management (CCM) program. Under this program, a primary care physician (PCP) with a typical patient panel size and makeup (about 2100 patients, 29% Medicare eligible) can augment their base income by 50% or more (when compared to average PCP salaries) with only average enrollment in the program. In this way Prevvy has mutually aligned incentives with our physician partners - we earn our fees as they are able to bill for CCM services. The second part of our strategy is to offer Prevvy free to patients through which patients could opt for higher level premium services (e.g., emergency notification services).

6.2 Free Connected Health Services for patients

Service	Description	Pricing
Basic Patient	Family PHI management Family Care and Wellness Management	Free

6.3 Premium Services for Patients

Service	Description	Provider	Pricing
Prevvy Premium patient with Emergency Services & Remote Monitoring	Txt911 with PHI, location, and phone Device Management	Prevvy	5\$ PPM

Telehealth Services	Videoconference with Doctors for convenience	Doctor	\$\$ from provider
Wellness & Careplans made by MDs, nutritionists,	Disease, Diets, Concierge Careplans from different providers	Doctor	\$\$ from provider

6.4 Premium Services for Providers

Service	Description	Pricing	Billing
CMS Chronic Care management for Medicare FFS patients with 2+ chronic conditions (70% of Medicare population)	Shared PHI with careteam (provider, family, Assessment, Drug Interaction, Adherence, Time Tracking, Async communication, Billing) A doctor could earn up \$200,000 new revenues per year with this new CMS revenue lines. Our revenues will be 15% of doctor's revenues.	\$6 PPM \$35 patient setup fee	\$42.5 PPM from Medicare
Remote monitoring services	Device management	\$8 PPM \$35 patient setup fee	\$52PPM from Medicare
Transition of Care services	Share PHI with careteam Care Coordination and Careplan Management	\$25 PP (hospital)	Reduction of penalties
Telehealth Services	Video conference, PHI from patient Screen sharing	\$8 per visit	Can work on a self-pay or

	Careplan Management		insurance model.
Wellness Services	Wellness plans	\$2 PPM	From employees
Concierge Services	Shared PHI with careteam (provider, family, Assessment, Drug Interaction, Adherence, Time Tracking, Async communication, Billing)	\$5 PPM	From patients

6.5 Premium Services for Pharma Companies

Service	Description	Pricing
Medication as a service	Pharma companies could utilize Prevvy to offer Careplans (in coordination with physicians) for a range of biotech, oncology, and other high-priced therapies	To be determined.

7 Business Model

7.1 Overview

Prevvy is a cloud-based, connected health ecosystem that provides patients and providers 24/7 access to their medical records and personal healthcare information from any connected device. This, combined with the sharing capabilities built into the Prevvy system, opens a world (literally) of opportunity for Prevvy to enter new service areas where both providers and patients can be paid subscribers.

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8 Involved Providers and EMRs

8.1 Participants

Provider	EMR	Comments
Medicine on Call	Care360, Aprima, Carecloud, ADS, Chronos	Medicine On Call is hospitalist group with 8 internist specialist working for Tenet facilities
Tenet South Florida Hialeah Hospital	Cerner	Main Medical and Hospital group at South Florida
Baroma Health Partners ACO NG	22 different EMRs in more than 200 locations: Allscripts Cerner Care360, Aprima, AdvanceMD, ..	Baroma ACO has more than 1400 PCPs participating in new ACO Next Generation Program

8.2 LOIs

Javier Perez MD
Medicine on Call, Inc
651 East 25th Street
Hialeah, Florida 33013

Re: Letter of Intent to participate in the Consumer Health Data Aggregator Challenge Grant

Dear Mr. Olmo

Please allow the following to serve as a Letter of Intent as requested by Jose Maria Olmo, CEO of Healthcentrix.

This letter of intent, between **Healthcentrix Inc.**, a Florida company based in Miami (**Healthcentrix**) and **Medicine on Call Inc.** (Organization), and together referred to as the Parties, are entering into this letter of intent for joint participation in the grant proposal entitled **The Consumer Health Data Aggregator Challenge** (the Challenge), issued by **Challenge.gov**. **Challenge.gov** is an official U.S. government website, administered by the U.S. General Services. Details of the challenge can be found here: <https://www.challenge.gov/challenge/consumer-health-data-aggregator-challenge/>

Objective of the Challenge Grant. The Consumer Health Data Aggregator Challenge is intended to spur the development of third-party, consumer-facing applications that use open, standardized APIs to help consumers aggregate their data in one place and under their control. This challenge will focus on solving 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

Overview of Prevvy. Prevvy is a connected-health ecosystem that was built using HL7 FHIR specifications. It is built to interface directly with any physician (or hospital) EMR system that has been certified as Meaningful Use Stage 2 (MU2) or later. The Prevvy system provides patients (and other individuals identified by the patient, e.g., other physicians, social care agencies, caregivers, relatives) access to their medical histories. Prevvy is cloud-based and when commercialized will be sold on a Software as a Service (SaaS) basis. Patients will be able to access their data 24/7 from any connected device.

In furtherance of this Letter of Intent, the Parties agree to the following:

1. Healthcentrix will provide its Prevvy software solution (Prevvy) free of charge to **Organization** physicians participating in the challenge.
2. Physicians participating in the challenge agree to work with Healthcentrix in completing the transmission of data between the physician EMR systems and Prevvy. To this end, physicians will direct their internal staff to establish secure transmission / exchange of credentials between the physician EMR system and Prevvy. The following table describes Organizations and EMRs systems will be integrated in this pilot jointly with Medicine On Call:

Organization	Role	EMRs (HISPs)	Interoperability
Medicine On Call Inc	Medical group	Care360 Carecloud (Updox) Aprima (Nitor) ADS (Updox) Chronos PracticeFusion	Direct messaging, CDA
Baroma Health Partners ACO	ACO	Care360 PracticeFusion	Direct messaging, CDA
Tenet Hialeah Hospital, Inc	Hospital	Cerner	Direct messaging, CDA, Smart FHIR

3. Initial data feeds will utilize non-identifiable patient data, and testing will be done to confirm the proper ingestion of data into the Prevvy system.
4. Any patient identifiable data received by Healthcentrix will be stored in accordance with all applicable federal and state privacy regulations (specifically HIPAA). **Organization** and its physicians will be responsible for obtaining any patient-specific required permissions, as **Organization** or the participating physicians believe is necessary.
5. Once tests are completed, the Parties may mutually decide to expand the pilot to include PHI and patient access to the Prevvy system through their own individual accounts so that patients can view their medical records and any other information available to the patient on the Prevvy system (e.g., a Care Plan).
6. Neither Party nor the physicians participating in this challenge grant will submit billing to any payor (public or private) that is based on the use of the Prevvy platform.

Confidentiality. The parties acknowledge that their discussions and implementation of the Pilot Program may entail the exchange of confidential information, including technical specifications for the Software and information about business methods, operations and prospects, costs, markets, pricing policies, technical processes and applications and confidential patient records ("Information"). Each party agrees that, subject to the exceptions set forth below, for five years after the date hereof, it will (a) keep all information confidential, (b) refrain from disclosing any Information to any person or firm, other than their respective employees and agents having a need to know and refrain from using any information, directly or indirectly, for its own benefit or the benefit of any affiliate.

For purposes of this undertaking, Information shall not include information that (a) is in the public domain at the time of disclosure to a party, (b) becomes part of the public domain after disclosure to a party through no fault, act or failure to act, error or breach of this undertaking by the recipient, (c) is known to the party at the time of disclosure, (d) is discovered by the party independently, (e) is required by order, statute or regulation of any government authority to be disclosed to any court or other body, provided that the party shall notify the other party thereof to provide or afford it the opportunity to obtain a protective order or other relief, or (f) is obtained from a third party who has acquired a legal right to disclose the specific information.

In addition to any other remedies for breach of the foregoing confidentiality undertakings, the parties will be entitled to equitable relief in the event of any breach or threatened breach thereof. In the event of litigation relating thereto, the prevailing party shall be entitled to recover the reasonable legal fees incurred in connection therewith, including any appeal therefrom.

This document represents the whole of the agreement between the parties. Please acknowledge your acceptance of this letter of intent on the foregoing terms by countersigning a copy of this letter in the space provided and returning the countersigned copy to us.

MEDICINE ON CALL, INC

SignedJAVIER PEREZ, CEO

Name and Title

04/25/2015

Date

HEALTHCENTRIX, INC.

SignedJOSE MARIA OLMO, CEO

Name and Title

04/25/2015

Date
