

Independent Decision Support with HIE of One

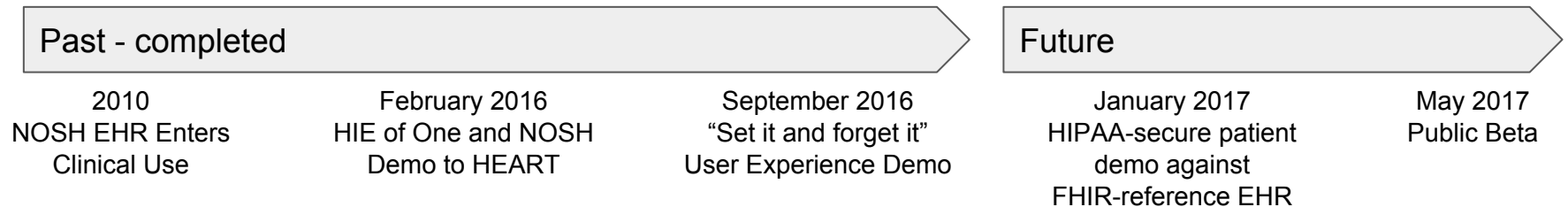
Move Health Data Forward Challenge

September 2016

HIE of One, PBC

Stage 3 of Meaningful Use Goal: Improve Outcome

- Who will control Decision Support? - **Physicians and Patients**
- Use HEART patient-directed exchange to **integrate decision support**
- HEART enables an **HIE of One** and a **patient-centered NOSH EHR**
- HEART **syncs many FHIR EHRs** with one patient-centered NOSH EHR
- Connect Decision Support into **peer-reviewable, open source NOSH EHR**
- Get secure Decision Support links **at the point of care in real time**



Competitive Advantages

- Prescriber, not EHR vendor, controls decision support
- Bypass EHR vendor and provider bureaucracy
- Patient-centered design avoids provider or EHR vendor lock-in
- Prescriber control is safer and eases regulatory challenges
- Accessible in real time at the point of care via mobile devices
- Keeps sensitive data out of gigantic hospital EHRs and HIEs
- Accessible to employed physicians that don't control their EHR
- Open Source Software is peer-reviewable for safety and trust
- Supports remote family caregiver of elderly patient

Two Use Cases

Elderly Mom with Family Caregiver

1. Mom is seen at local convenient care center with HEART-capable EHR
2. Mom is given a patient-centered pNOSH EHR and HIE of One
3. pNOSH is automatically updated via FHIR Subscription in the HEART EHR
4. Family caregiver monitors HIE of One via SMS and emails with secured links
5. Family caregiver can invite Mom's local pharmacist to access Mom's pNOSH directly

Cost Considerations in e-Prescribing

1. Patient is seen at large hospital system with HEART-capable EHR
2. Patient is offered a patient-centered pNOSH EHR and HIE of One
3. Physician enters a prescription in the EHR
4. pNOSH is automatically updated via FHIR Subscription in the HEART EHR
5. Patient receives Text message with secure link to choices and prices
6. Physician discusses and sends e-Prescription to chosen pharmacy

Actual Decision Support Screens (March 2016 version)

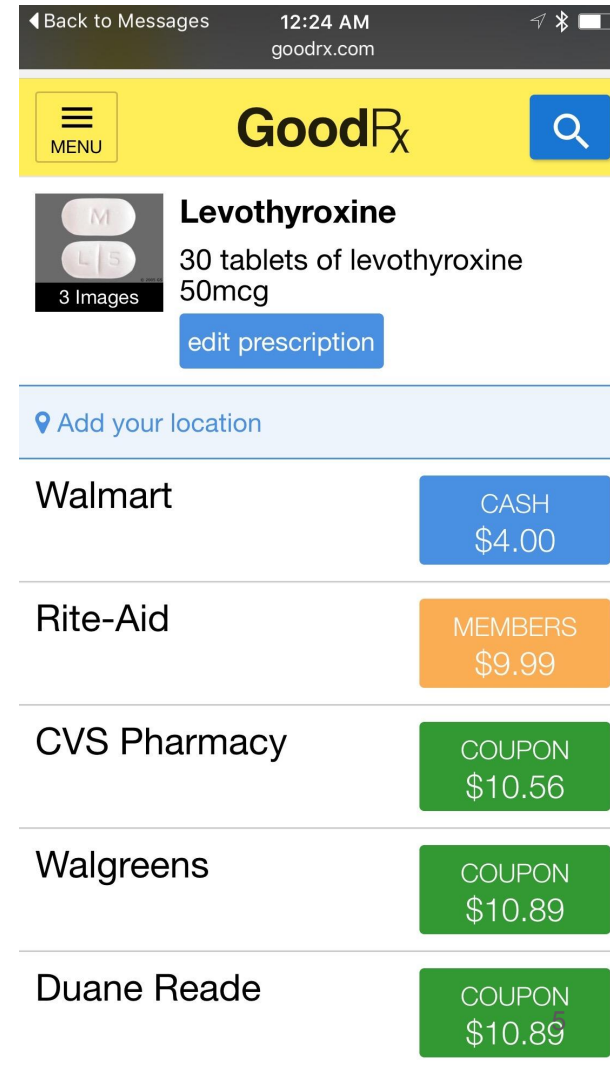
Prior to receiving this Message:

1. Prescription entered in EHR
2. Prescription is also accessible in physician's practice management system via FHIR and HEART standards
3. API call to GoodRx Decision Support to get link
4. Text message (near right) sent to patient by pNOSH
5. Patient clicks link to see pricing (far right)
6. Patient can discuss choices with prescriber at the point of care



Text Message
Thu, Mar 10, 6:06 PM

1 of 2
FRM:ABOUT FAMILY HEALTH LLC
SUBJ:New Medication
MSG:New Medication:
Levothyroxine Sodium, tablet;
<http://www.goodrx.com/levothyroxine?gr>
(Con't) 2 of 2
x_ref=api&strength=50mcg&for
m=tablet&label=levothyroxine(E
nd)



HIE of One and NOSH

- HEART enables patient-directed exchange among FHIR EHRs and more
- The HEART Authorization Server manages patient-directed exchange
- HIE of One is a Health Information Exchange for One Patient
- NOSH (New Open Source Health) is a professional EHR for One Patient
- HIE of One and NOSH are installed by “prescription” by MD office staff
- Patient or family provides a credit card, contact info, and picks a password
- Once installed, HIE of One is “set it and forget it” like any other HIE
- Via HIE of One, the patient can “opt-in” any HEART EHR to her NOSH EHR
- The patient and her doctors now control decision support via her NOSH

Before: EHRs Do “Everything”	After: HEART Distributes Technology
Hospital Technology	Hospital Technology
<ul style="list-style-type: none"> • Credentialing 	
<ul style="list-style-type: none"> • Authentication 	
<ul style="list-style-type: none"> • Practice Management 	<ul style="list-style-type: none"> • Practice Management
<ul style="list-style-type: none"> • Patient Records 	<ul style="list-style-type: none"> • Patient Records - HEART
<ul style="list-style-type: none"> • Patient Engagement 	<ul style="list-style-type: none"> • Patient Engagement - HEART
<ul style="list-style-type: none"> • Decision Support 	
Physician Technology	Physician Technology
<ul style="list-style-type: none"> • Education & Reference 	<ul style="list-style-type: none"> • Education & Reference
	<ul style="list-style-type: none"> • High Security Authentication - HEART
	<ul style="list-style-type: none"> • Practice Management
	<ul style="list-style-type: none"> • Decision Support - HEART
	<ul style="list-style-type: none"> • Patient Engagement - HEART
Patient Technology	Patient Technology
<ul style="list-style-type: none"> • none 	<ul style="list-style-type: none"> • Patient Records - HEART
	<ul style="list-style-type: none"> • Decision Support - HEART
Professional Society Technology	Professional Society Technology
<ul style="list-style-type: none"> • none 	<ul style="list-style-type: none"> • Member Credentials & Directory

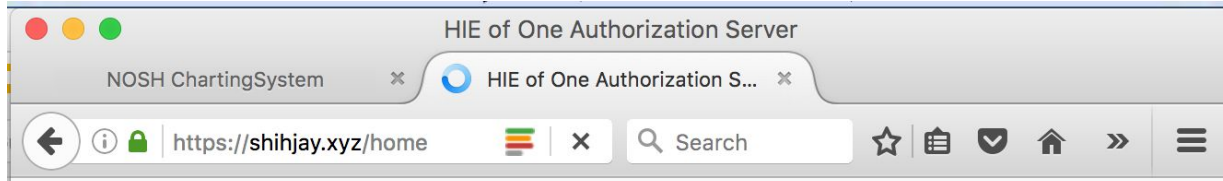
Business Model

- HIE of One and NOSH are Free and Open Source Software.
- This enables peer-review, community improvements, a commitment to standards, and promotes patient-centricity because there's no vendor lock-in.
- HIE of One is a B-corp that balances profit and social impact.
- HIE of One will sell:
 - end-user support services
 - HIE of One and NOSH hosting
 - an HIE of One and NOSH-enabled home appliance
 - registry and directory services to medical societies and health-related nonprofit organizations
- We will model successful Bitcoin startups that are almost all open source.

Proposed Workflow and *Deliverables*

1. A physician or a practice opens *HIE of One account*.
2. Physicians and staff install secure *authentication app* on their mobile.
3. Physicians recommend patient-centered health records to select patients.
4. Staff helps patient or family caregiver install secure authentication app.
5. Patient registers credit card for \$10 monthly *hosting* bill (Patient can change to a *home router appliance* at any time with no loss of data or continuity).
6. Patient “opts-in” to their HIE of One on any HEART-enabled provider EHR
7. Physicians and patients receive secure decision support messages direct to their mobile devices and practice management systems.

HIE of One and NOSH proof of concept software demo - Sept. 2016



My Resource Services

Patient NOSH for Tester Nosh, DOB: 1990-05-01 [Go There](#)

mdNOSH Gateway

Registered Resources

Resource	Edit
Demographics	
Conditions	
Medications	
Allergies	
Immunizations	
Encounters	
Family History	
Documents	
Observation	

User Permissions Table:

User	Permsnsions	Last Activity	Action
Group (login_google)	View, Edit	No previous activity	
Doctor Feelgood (noshchartingsystem@gmail.com)	View, Edit	2016-09-01	

Patient view of HIE of One
HEART-standard Authorization Server

Patient portal view of
NOSH patient-centered EHR

<https://github.com/shihjay2/hieofone-as>

<https://github.com/shihjay2/nosh-core>