



# Guelph Family Health Team

## Resurfacing an Integrated Electronic Health Record (iEHR)

A Guelph Health Link Project

# Presenter Disclosure

- Presenters: Kirk Miller, Justin Wolting and Jeff Tarr
- This program has no relationships with commercial interests
- This program has received no financial or in-kind support
- This program has no potential for conflict of interest

# SUMMARY

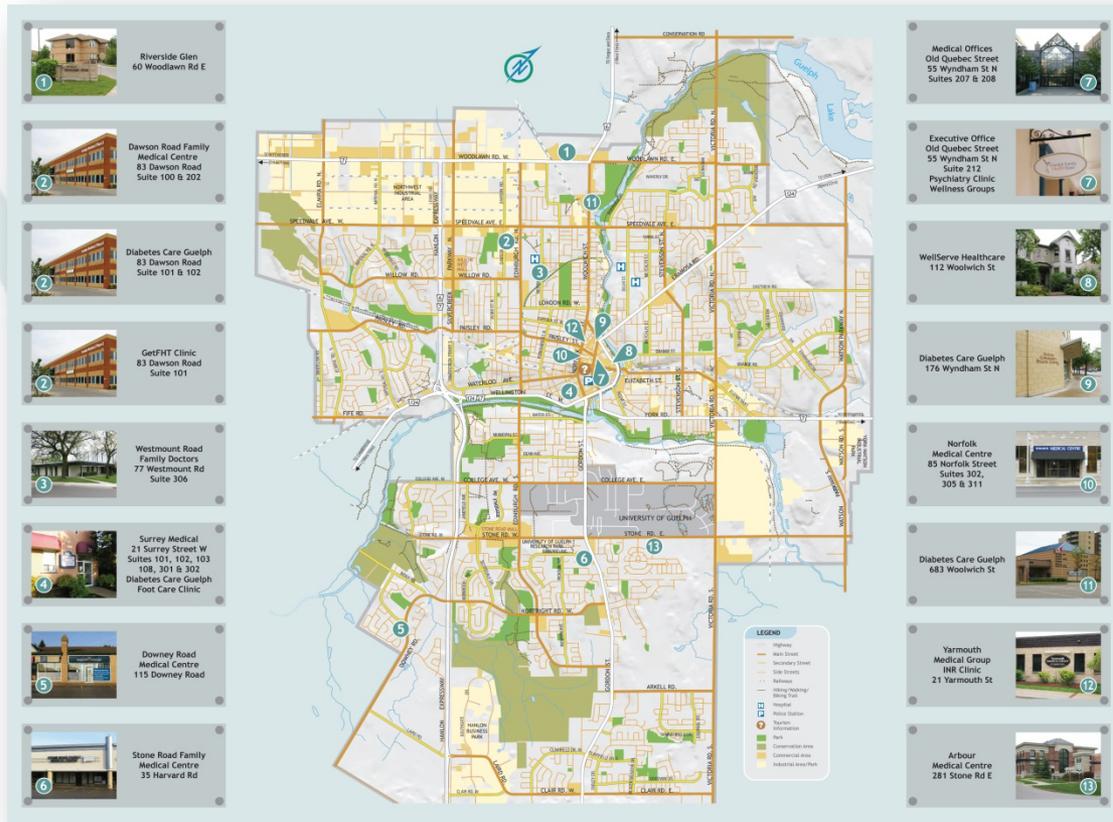
The long promised integrated Electronic Health Record (IEHR) is developing a new energy through the Health Link initiative.

A Guelph FHT IT Team explains a practical approach that provides patients and Health Link partners tools that support learning how to coordinate ongoing care in high use patients.

# What we want to accomplish today

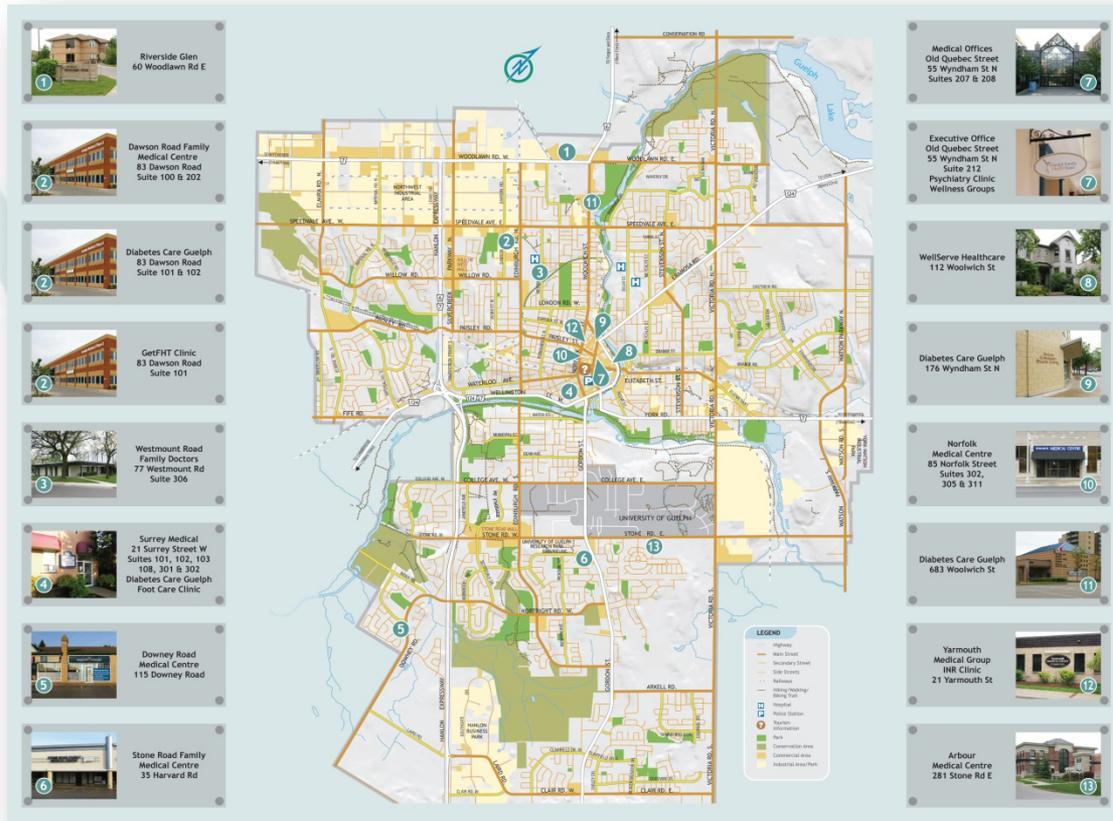
- Demonstrate a process used to create a community based IT solution for a shared “passport” record.
- To provide an understanding of the increasing role quality standards for encounter record data in the EMR will play in coordinated community care
- To show how this work aligns with an eHealth regional integration program connecting SOUTHWESTERN ONTARIO (cSWO).

# The Guelph Health Link Year 1 Plan



Key Fact: 1% of Roster consumes 30% of health system costs 5% consumes 60%

# The Guelph Health Link Year 1 Plan



Find 500 high use patients among 110,000 patients, 74 Physicians, 19 Partners

# The Guelph Health Link Plan



Work with our HL partners to:

- Share HL Patient information
- Demonstrate benefits of a coordinated care plan



# Meaningful Use

1. Improve quality, safety, efficiency, and reduce health disparities
2. Engage patients and families in their health care
3. Improve care coordination
4. Improve population and public health
5. All the while maintaining privacy and security



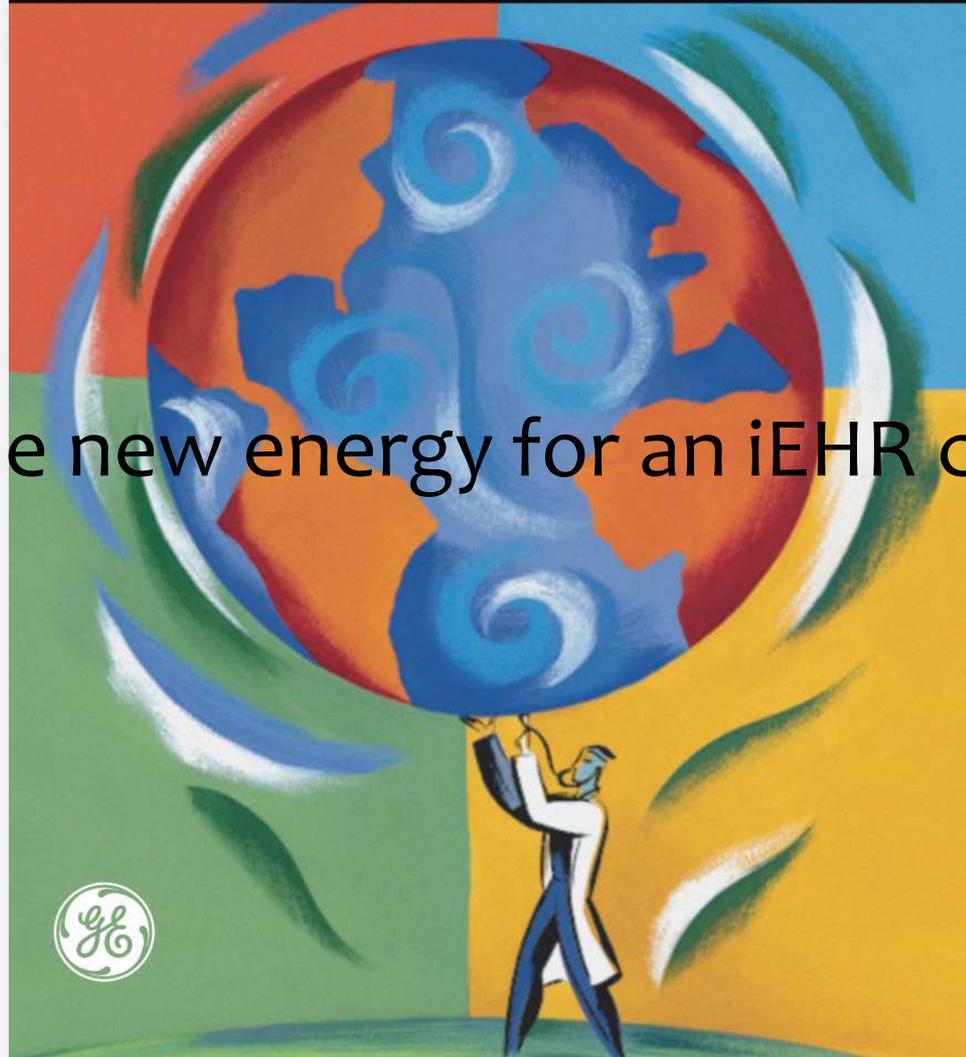
# Some Meaningful Use IT Basics

1. Information is **accurate and comprehensive**
2. Information gathering **workflows are sustainable**
3. Users are known as circle of care by **data share system agreements** and/or patient approval process
4. Information **exchange processes and networks** to external central systems **are possible and affordable**

# The Tipping Point in Healthcare

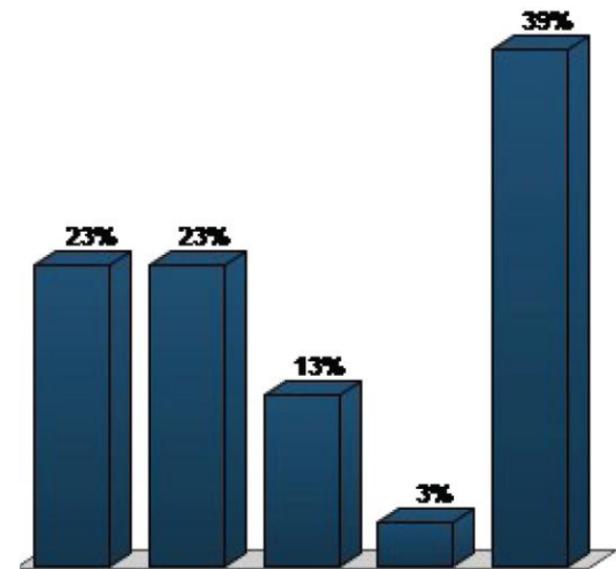
The tools now exist to transform healthcare and deliver it more efficiently and effectively to millions of people. What are we waiting for?

Where is the new energy for an iEHR coming from?

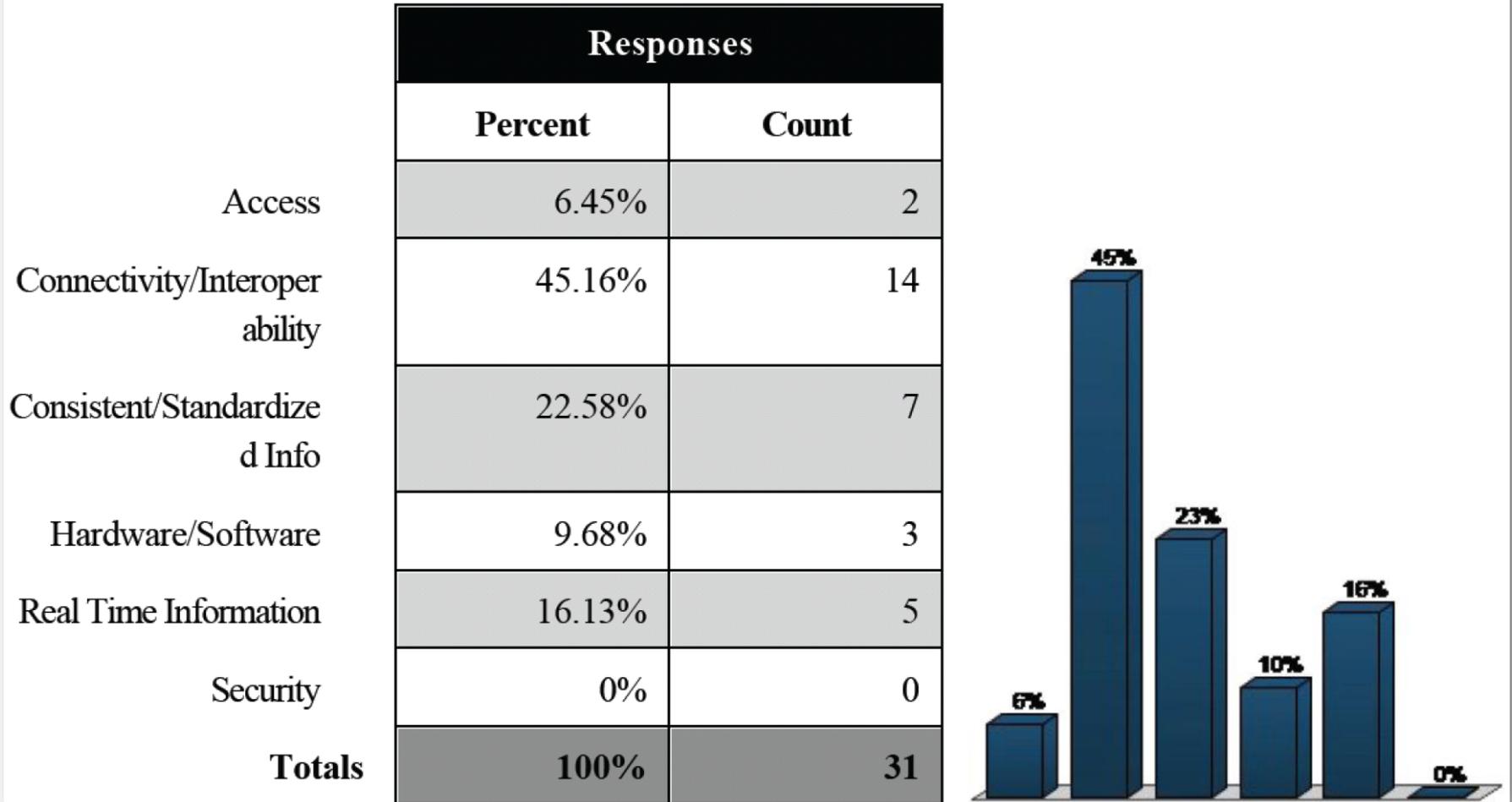


# What do you feel is the most significant barrier within your Health Link?

		Responses	
		Percent	Count
ID high User Cohort	Care Plan Development	22.58%	7
	Care Plan Implementation	22.58%	7
	Governance	12.9%	4
	Technology	38.71%	12
	Totals	100%	31

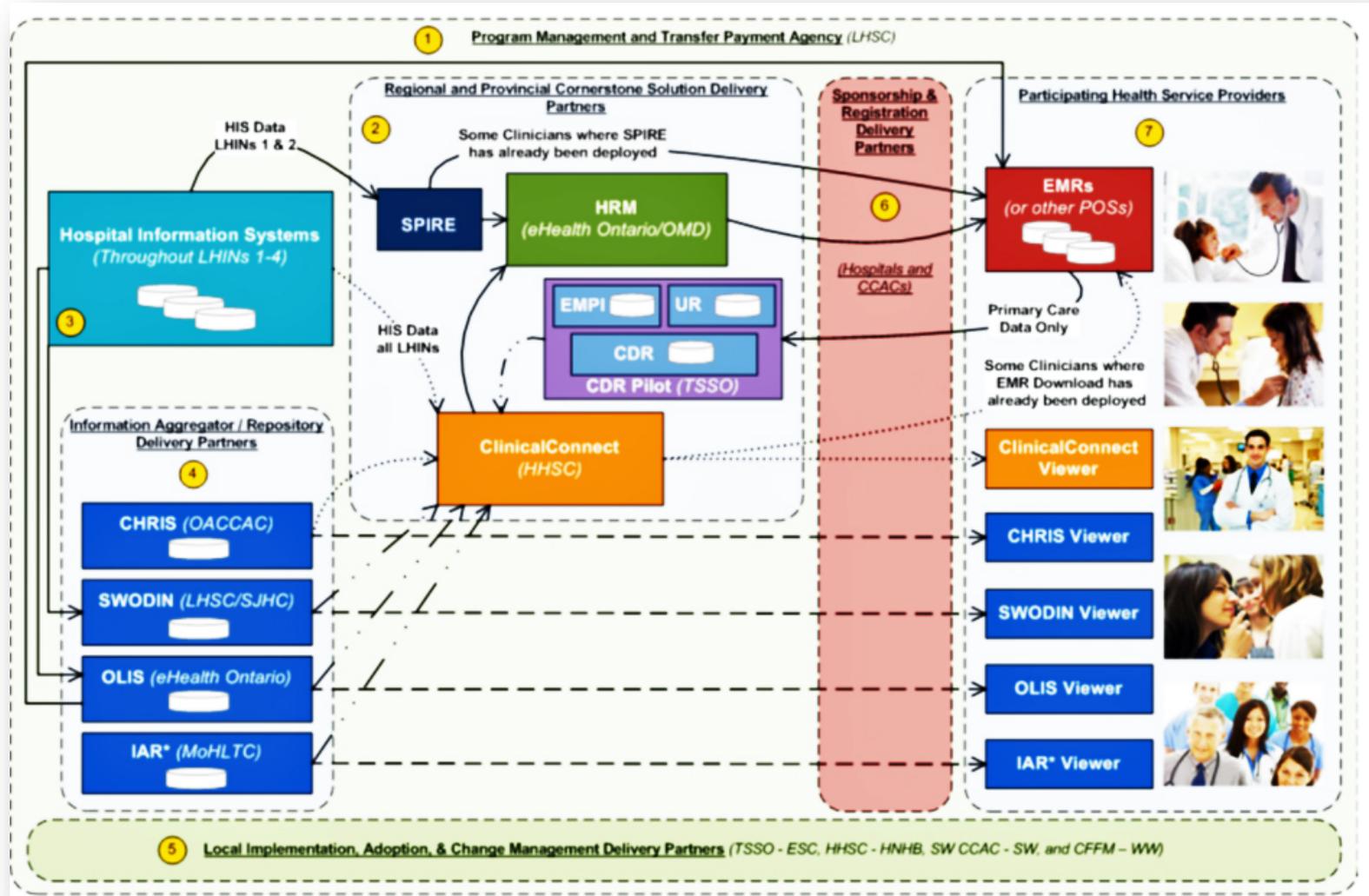


# Which of the following is the greatest barrier with respect to Technology?



Courtesy Health Link needs assessment workshop Sept 12, 2013

# Interoperability and cSWO





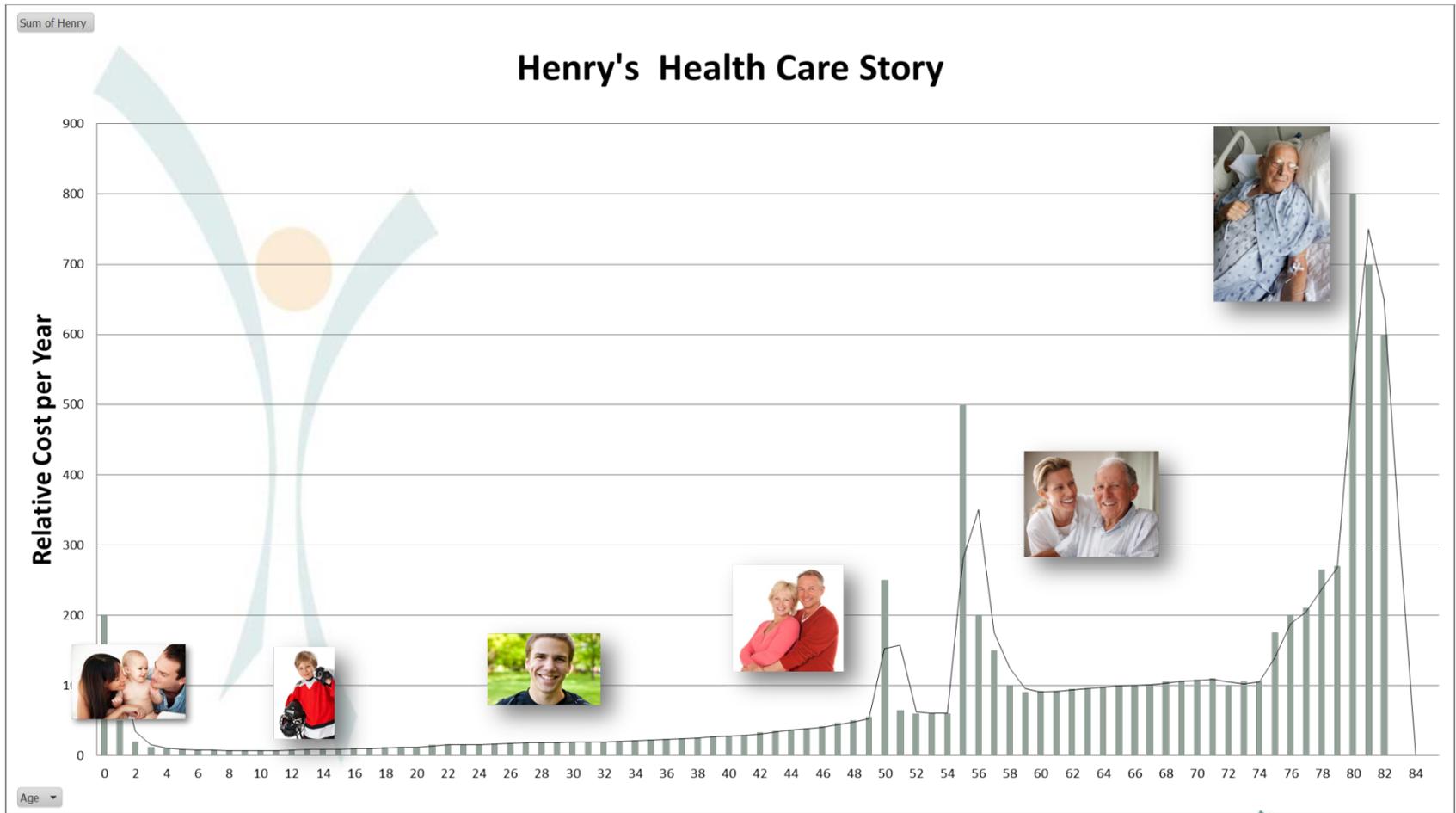
# PRIMARY CARE HL CHALLENGE

SHAPING A PATIENT'S STORY INTO A MEANINGFUL SHARED CARE PLAN

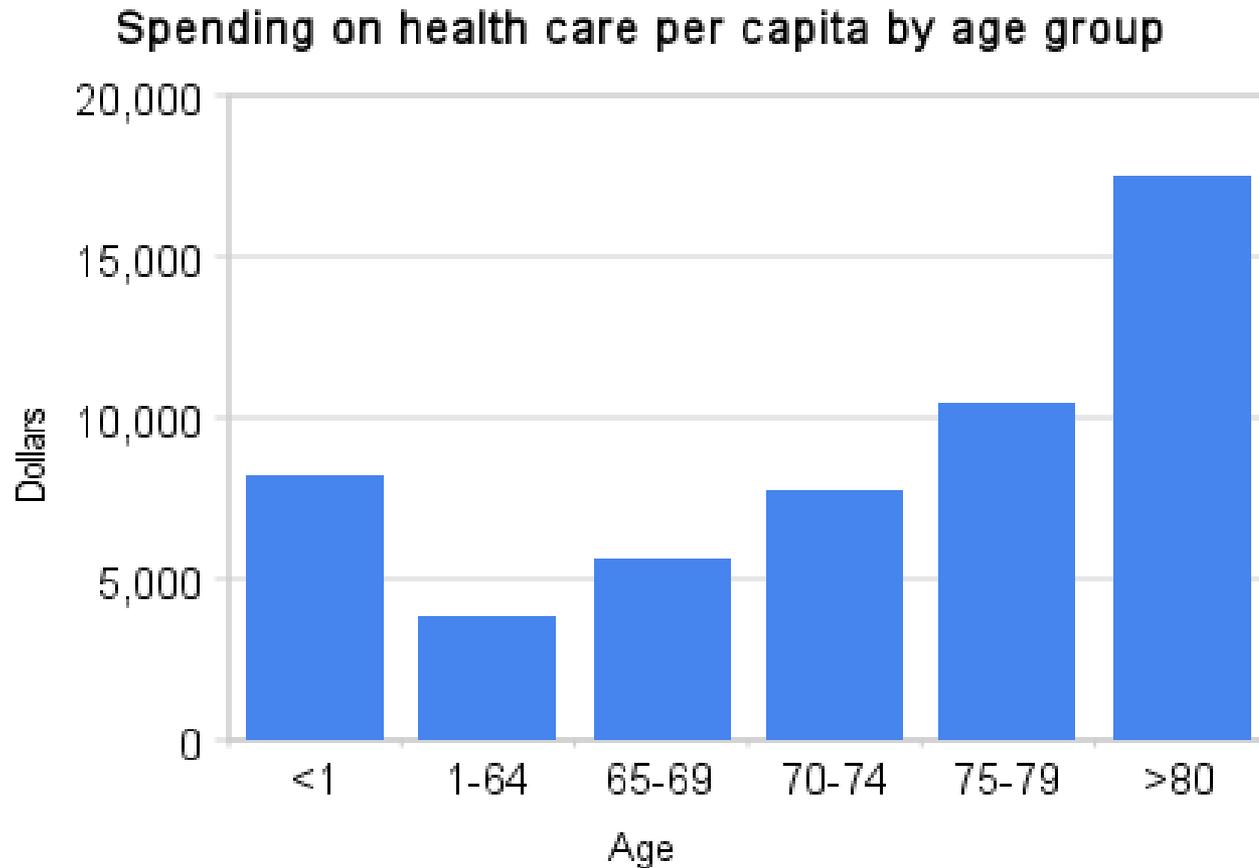


Family Practice records a lifetime narrative

# The narrative has costs

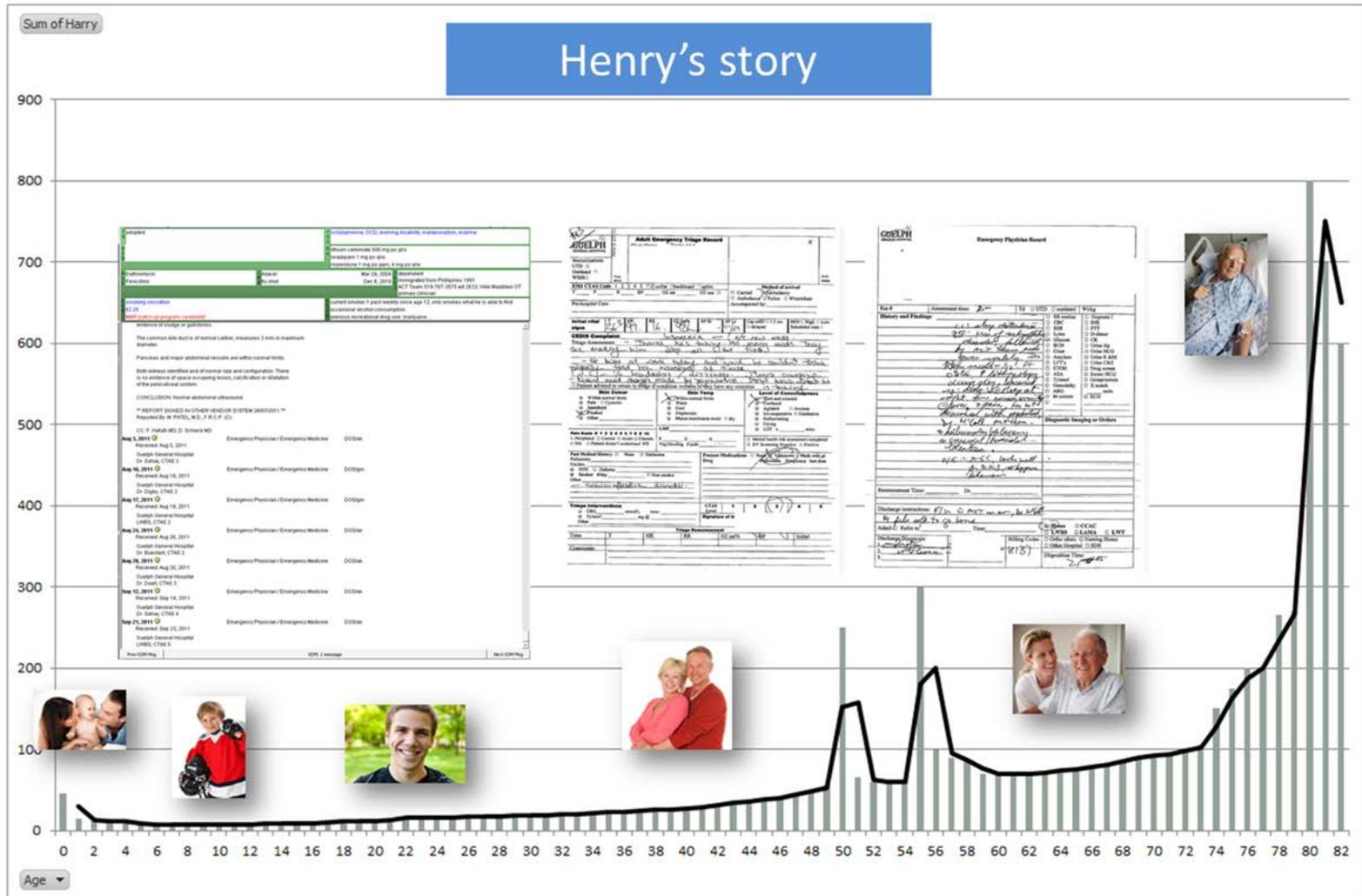


# The story costs are going up

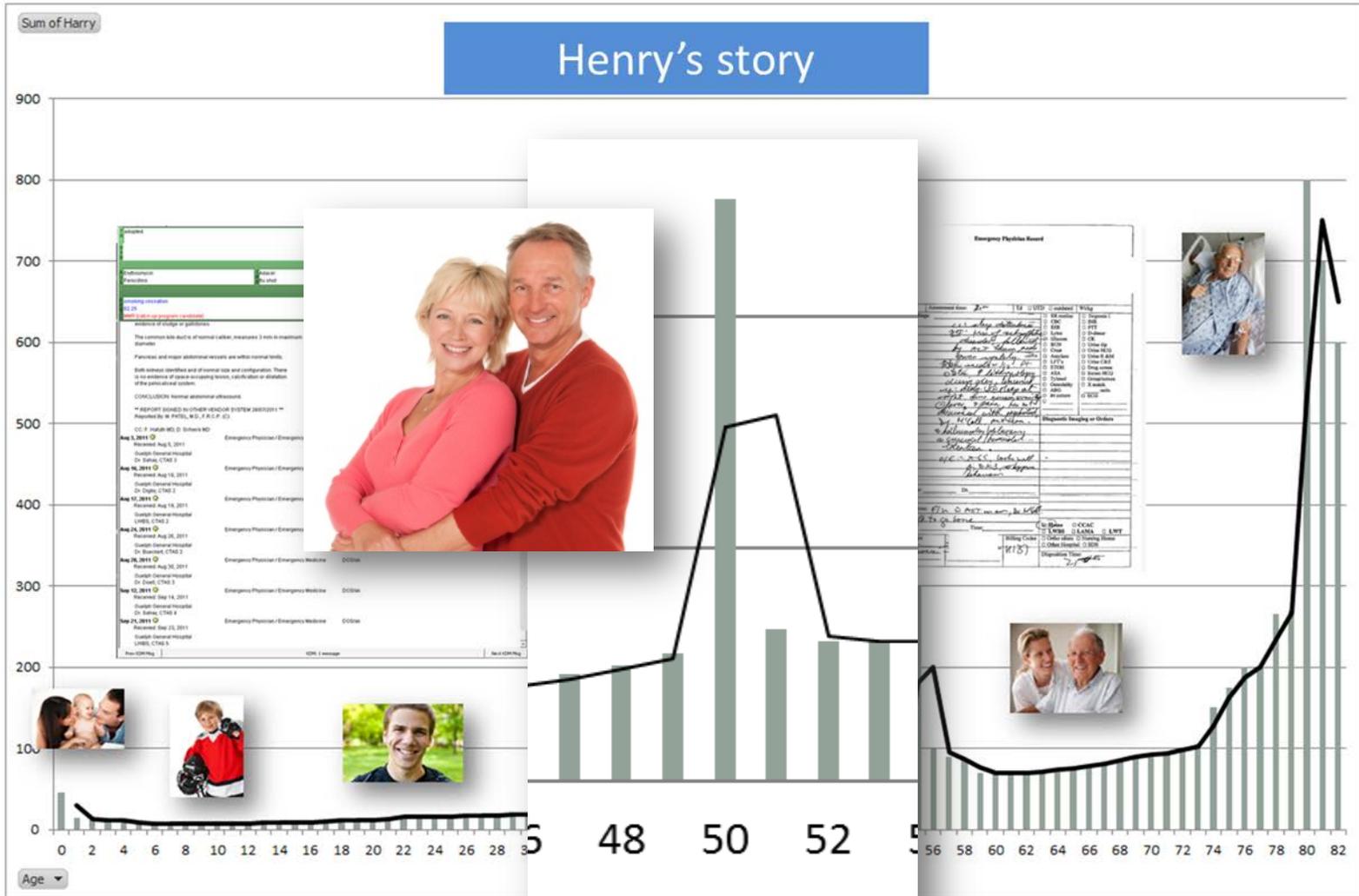


[http://en.wikipedia.org/wiki/Health\\_care\\_in\\_Canada#cite\\_note-CIHI\\_p.xiv-15](http://en.wikipedia.org/wiki/Health_care_in_Canada#cite_note-CIHI_p.xiv-15)

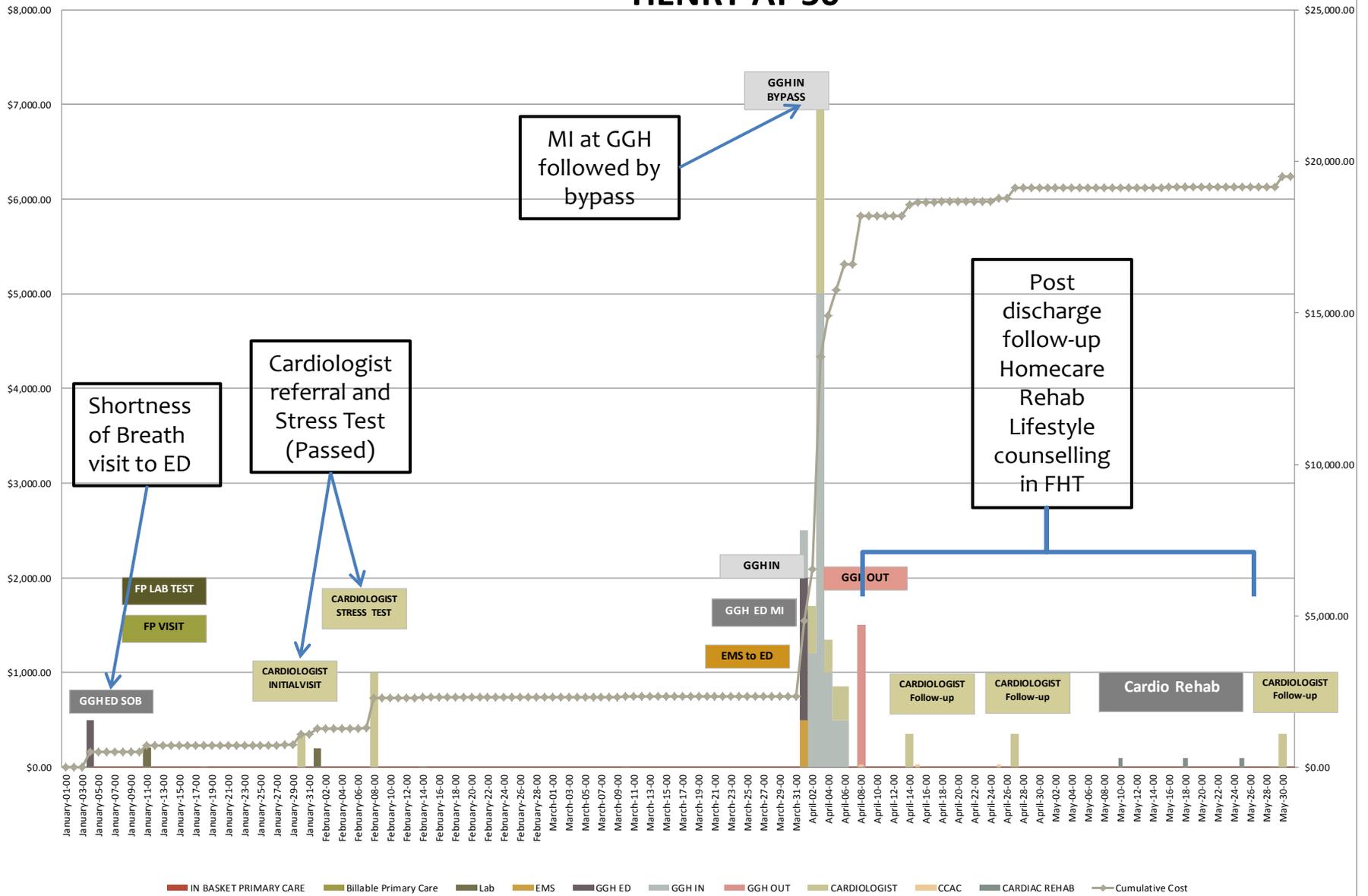
# How the story is recorded today



# What happened to Henry at 50?



# HENRY AT 50



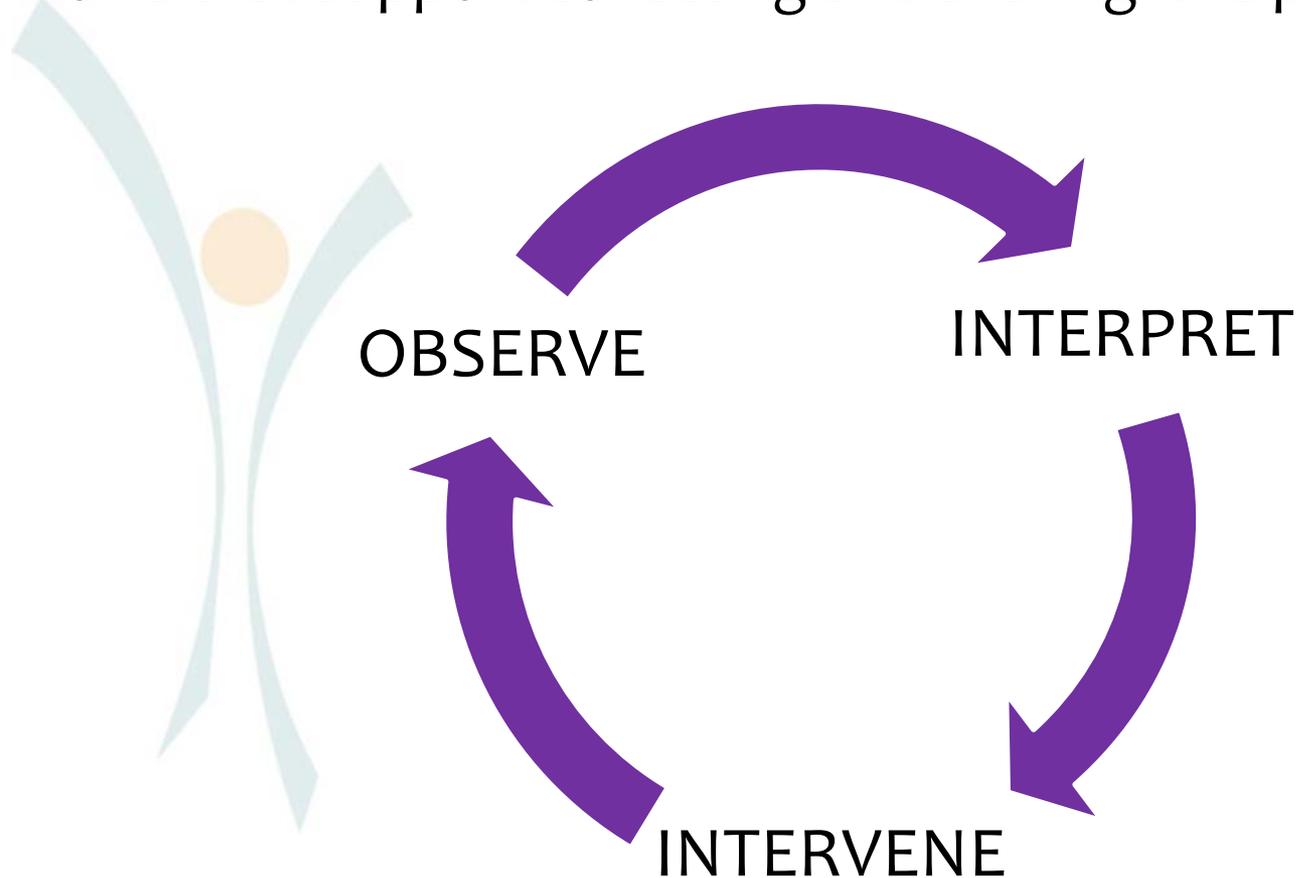


# A Bottom Up Approach to an iEHR

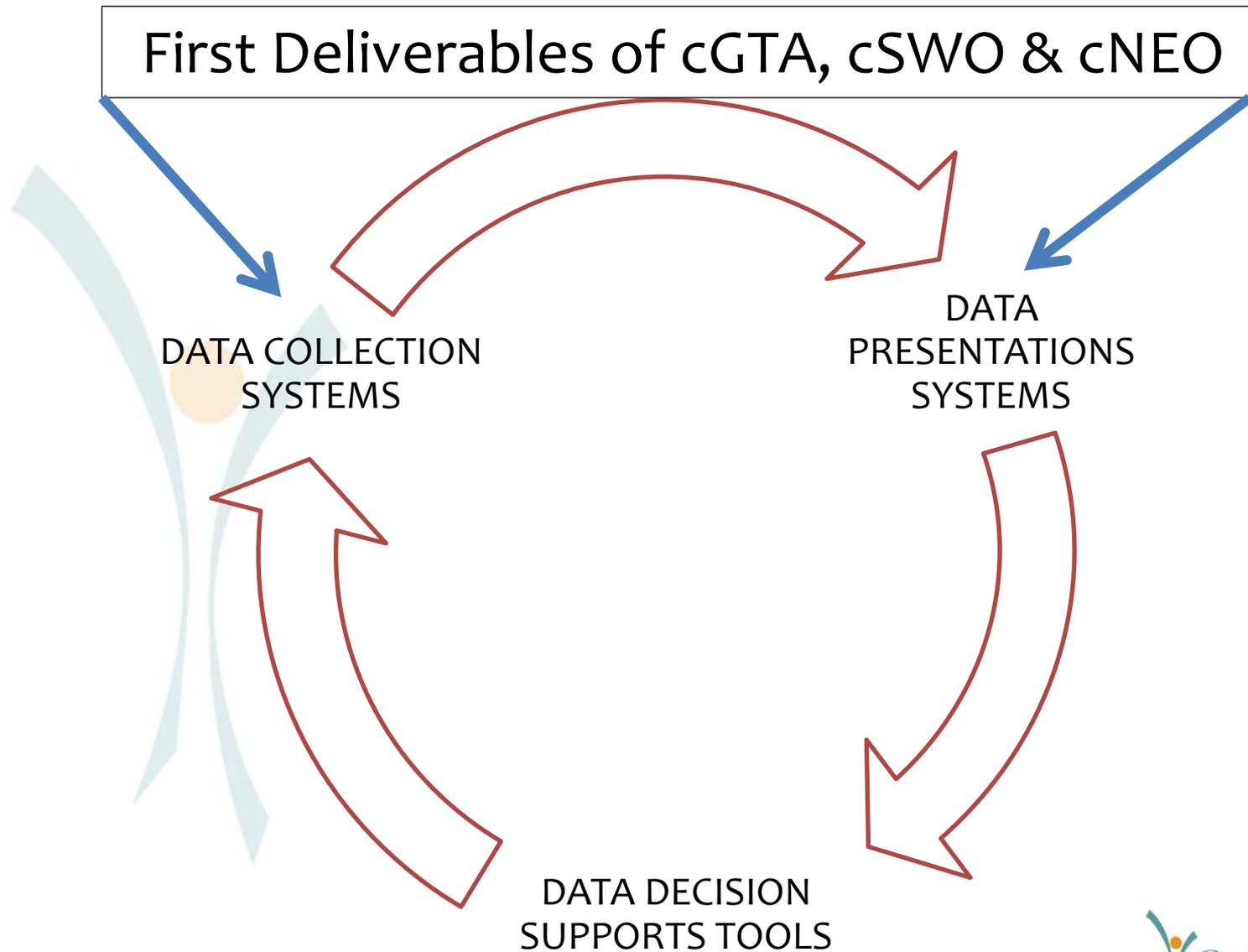
ADDRESSING THE CHALLENGES ONE BY ONE

# The Primary Care Opportunity

Use simple IT “Ecosystem” strategies to create real community workflows that support collecting and sharing the patient story

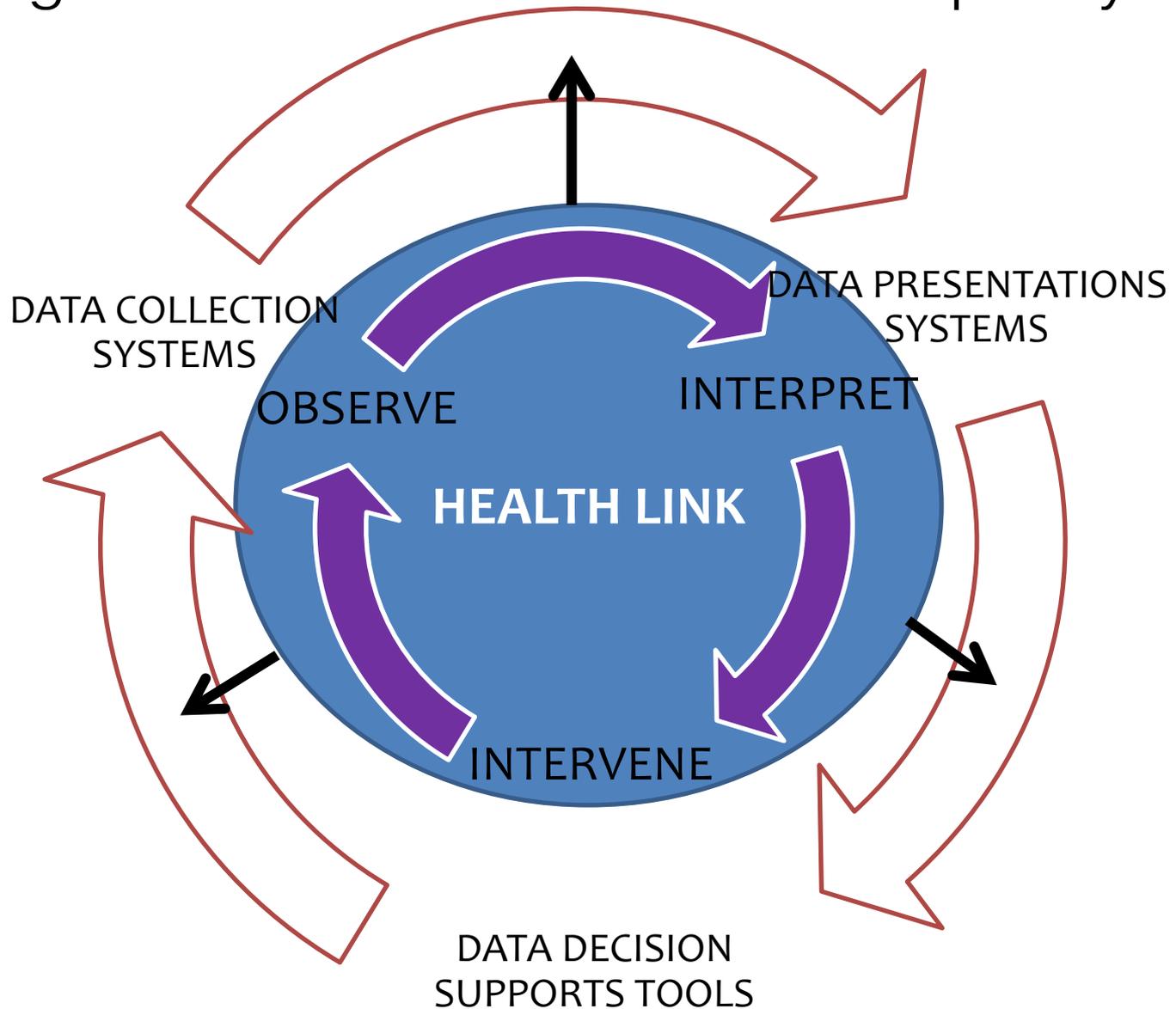


# eHEALTH has a province wide view



# Health Link meaningful use workflows

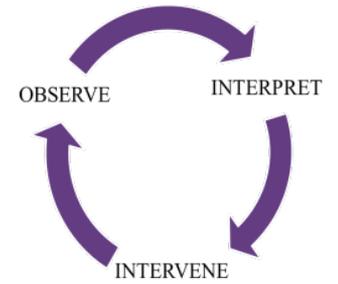
## Merge with eHealth and cSWO capacity





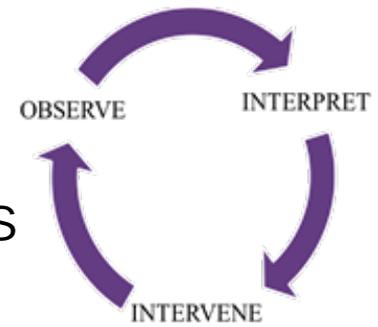
**A NEW APPROACH... BACK TO PAPER**

# PATIENT PASSPORTS



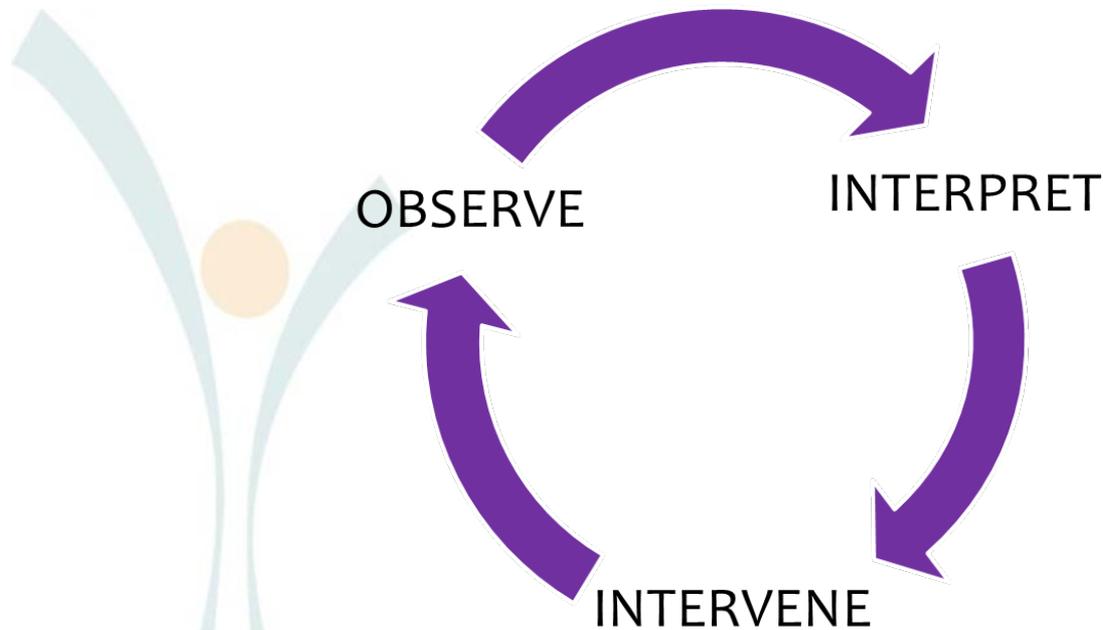
# PASSPORT a PAPER STORY

A tool to organize and share observations



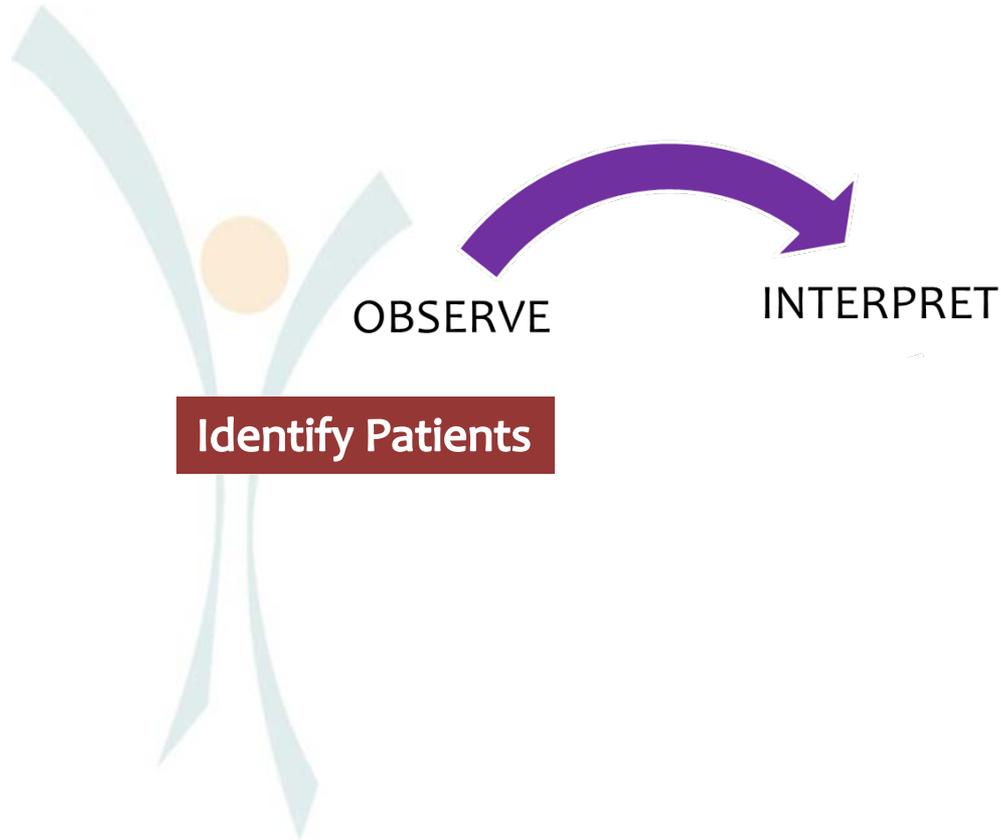
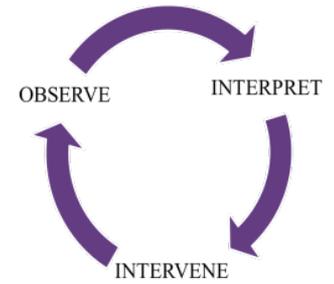
The Patient and  
HL Member's HL Guide  
(the chronic care focused RN)

# Publishing and distributing the paper story



Brings technical challenges

# Technology challenges



# Identification of Patients

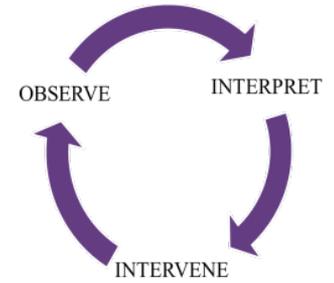
## A. Searching the EMR

- Use PS Suite *Custom Queries* to generate report mining data from EMR
- Criteria based on references in EMR to system use and weighted for cost impact
- Simple count of progress notes over a time period produced remarkably strong correlation with the weighted criteria approach

## B. Asking the providers

- Providers gave lists based on personal sense of “challenging” patients
- Providers asked to review and select from EMR Queries

# Technology challenges



**Patients' Data Collection**

OBSERVE

INTERPRET

**Identify Patients**

# Patient's Data Collection

- Multiple & changing stake holders, focus on internal Guelph FHT systems to begin and share information with partners
- Guelph FHT main systems using individual PS Suite system per clinic
- Use ***Custom Forms*** for data entry and presentation
- Initial revision based directly on NHS criteria

# Basic requirements: A draft EMR solution



Kirk Miller - PSS

File Edit Style Settings Patient View Data Letter

**Gates, Steve**

Father: deceased MS  
Mother: DM, Dementia

DKA: Jul 2009, 249.11: Uncontrolled Secondary Diabetes Mellitus with Ketoacidosis (ICD-9)

Depression: Feb 2008, 296.3: Major Depression, Recurrent Episode (ICD-9)  
DM: Mar 2006, 250: Diabetes Mellitus (ICD-9)  
Hypothyroidism, 244.9: Hypothyroidism Not Otherwise Specified (ICD-9)  
COPD, D2-60000: COPD (SNOMED CT®)

NovoRapid 100unit 8 units bid  
docusate sodium 1 capsule once in the morning  
Novolin Pen 100u/ml use 28 units every morning and 15 units at bedtime  
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Bactroban Cream apply bid x 7 days

Codeine Contin-> cramps

Single - no children  
On disability

Guelph HealthLink: Registered Patient  
Declines DM education, foot care, referral

current smoker - 17 cigarettes/day ...  
rare alcohol consumption

Guelph HealthLink Toolbar

Passport EA External Resources Update CPP-PROB Ocean

ANTI-dsDNA 6

Ordering Physician: Tarr, Jeff

REFERENCE RANGE: IU/ML

NEGATIVE < 20  
BORDERLINE 20-25  
POSITIVE > 25

Dec 11, 2012 bp: 120/78  
May 5, 2013  
May 5, 2013  
May 5, 2013  
May 5, 2013

GuelphLinks-Medical Facts I Want You To Know (Click to expand) JT/KM  
GuelphLinks-Things to Update (Click to expand) JT  
GuelphLinks-People I Rely On (Click to expand) JT/KM  
GuelphLinks-People I Trust To Help Me (Click to expand) JT

**TOOLBAR**

Based on PSS 5.2.300

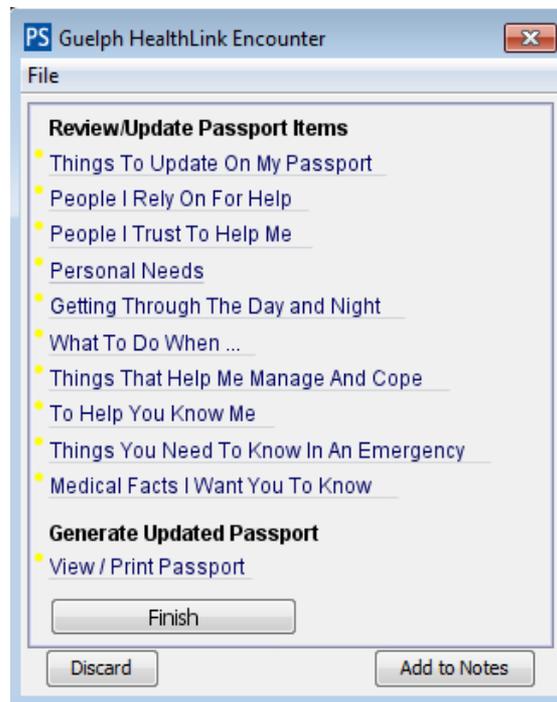


## Working with HealthLink Passport

1. Select the **Passport EA** button from the *Guelph HealthLink Toolbar*.



2. The **Guelph HealthLink Encounter** window will open over the patient's record.



## Appendix A: Guelph HealthLink Passport Custom Forms



### Things To Update On My Passport

**Name:** automatically populates from Patient window information

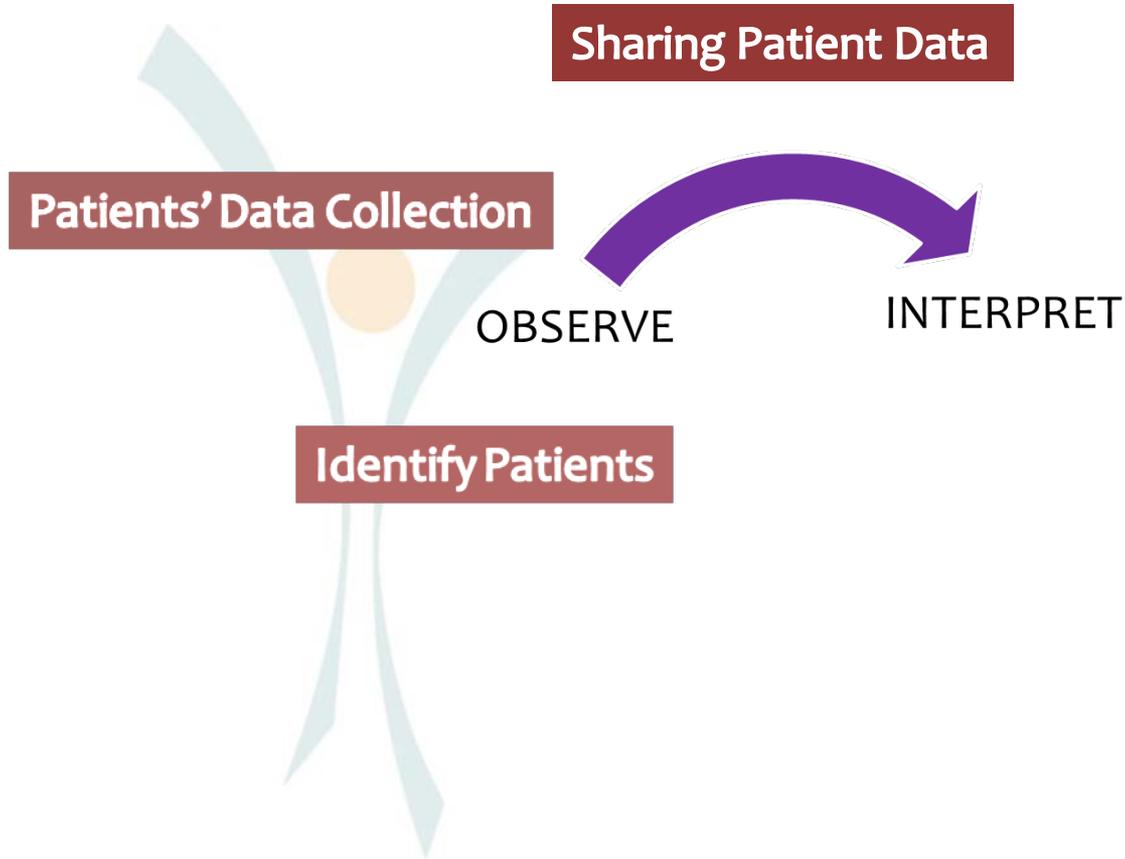
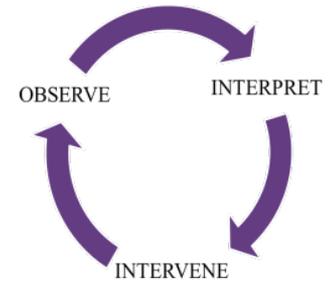
**Last Updated:** automatically populates with the system date when the form is opened

**Additional Notes:** text field for entering information automatically populated if previously completed

All information from this form will auto-populate within the *Guelph HealthLink Passport*

The screenshot shows a software window titled "GuelphLinks-Things to Update". The window has a menu bar with "File" and a close button. The main content area features the HealthLink logo (Guelph Health Link, Let's Make Healthy Change Happen) on the left and a teal header with the text "THINGS TO UPDATE ON MY PASSPORT". Below the header, there are two teal boxes: the first contains "Name: Steve Gates" and the second contains "Last Updated: Sep 12, 2013". Underneath is a section titled "Additional Notes:" followed by a large text area containing the text "This is a text area for notes" and a vertical list of asterisks. At the bottom of the window are two buttons: "Discard" on the left and "Add to Notes" on the right.

# Technology challenges

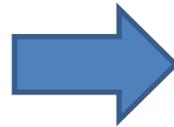


# Sharing Data

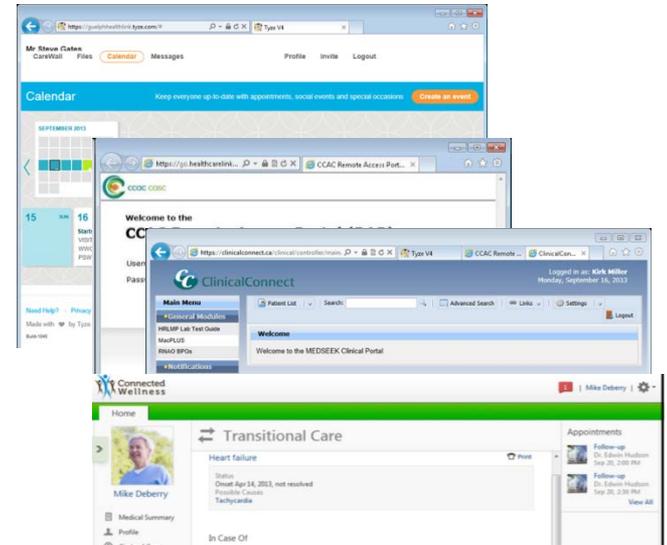
Mid to Long term game plan is MOHLTC eHealth platforms cSWO, CGTA, CNEO

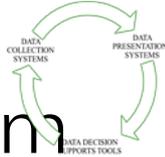
## Our Short Term Plan

Upload passport PDF to Existing Shareable Sources



1. Clinical Connect
2. PHR
  - a) TYZE
  - b) Nexj
  - c) Telus
  - d) McMaster





# Using the EMR to launch the sharing platform

Kirk Miller - PSS  
 File Edit Style Settings Patient View Data Letter  
 Gates, Steve next visit: not booked age 38 yr 166

Father: deceased MS  
 Mother: DM, Dementia

DKA: Jul 2009, 249.11: Uncontrolled Secondary Diabetes Mellitus with Ketoacidosis (ICD-9)

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Guelph HealthLink: Registered Patient  
 Declines DM education, foot care, referral

current smoker - 17 cigarettes/day ...  
 rare alcohol consumption

Passport EA External Resources Update CPP PROB Ocean

AMTI-dsDNA 6  
 Ordering Physician: Tarr, Jeff

REFERENCE RANGE: IU/ML  
 -----  
 NEGATIVE < 20  
 BORDERLINE 20-25  
 POSITIVE > 25

Dec 11, 2012 bp: 120/78 JT

May 5, 2013 GuelphLinks-Medical Facts I Want You To Know (Click to expand) JTKM  
 May 5, 2013 GuelphLinks-Things to Update (Click to expand) JT  
 May 5, 2013 GuelphLinks-People I Rely On (Click to expand) JTKM  
 May 5, 2013 GuelphLinks-People I Trust To Help Me (Click to expand) JT  
 May 5, 2013 GuelphLinks-Personal Needs (Click to expand) JT  
 May 5, 2013 GuelphLinks-Getting Through The Day And Night (Click to expand) JT  
 May 5, 2013 GuelphLinks-What To Do When (Click to expand) JT  
 May 5, 2013 GuelphLinks-Things That Help me Manage and Cope (Click to expand) JT  
 May 5, 2013 GuelphLinks-To Help You Know Me (Click to expand) JT  
 May 5, 2013 GuelphLinks-Things You Need To Know In An Emergency (Click to expand) JT  
 May 5, 2013 Guelph HealthLinks Passport (Click to expand) JT

Aug 1, 2013 Alert: Guelph HealthLink: Registered Patient, active as of Aug 1, 2013; ends on Aug 31, 2014 JT  
 Aug 1, 2013 Alert: Declines DM education, foot care, referral, active as of Aug 1, 2013; ends on Nov 1, 2013 JT

Sep 5, 2013 HPI: "test from Ocean tablet" JT

**Fagerstrom Test for Nicotine Dependence**  
 How often after you wake up do you smoke your first cigarette? "within 5 minutes"  
 Do you find it difficult to refrain from smoking in places where it is forbidden such as church, library, or movie theatres? "Yes"  
 Which cigarette would you hate most to give up? "The first one in the morning". How many cigarettes do you smoke per day? "21 to 30"  
 Do you smoke more frequently during the first hours after waking than the rest of the day? "Yes"  
 Do you smoke if you are so ill that you are in bed most of the day? "Yes"  
 Fagerstrom-Score: 9 / 10  
 Moderate nicotine dependence. Use of NRT or meds along with behavior modification will increase success rates.

Sep 10, 2013 (Dx: D2-60000) KM??  
 Coding Assisting

Prev KM Msg Next KM Msg

8:54 AM

GuelphLinks - External Resources

File

**Guelph HealthLink External Resource Links**

Patient Portal - Tyze  
 CCAC Remote Access Portal  
 Clinical Connect

Discard Add to Notes





# PSS and Chris

Jeff Tarr - PSS

Gates, Steve next visit: not booked age 38 yr 166

Father: deceased MS  
 Mother: DM, Dementia

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current smoker - 17 cigarettes/day ...  
 rare alcohol consumption

Passport EA External Resources Update CPP PROB Ocean

Fagerstrom-Score: 9 / 10  
 Moderate nicotine dependence

**Guelph HealthLink External Resource Links**

- Patient Portal - Tyze
- CCAC Remote Access Portal
- Clinical Connect

Discard Add to Notes

Sep 10, 2013 Coding Assistanting

Sep 24, 2013 Fagerstrom Test for Nicotine Dependence

How often after you wake up do you smoke your first cigarette?  
 Do you find it difficult to quit?  
 Which cigarette would you smoke per day? "11 to 20"  
 Do you smoke more frequently during the first hours after waking than the rest of the day?  
 Do you smoke if you are so ill that you are in bed most of the day?

Fagerstrom-Score: 8 / 10  
 Moderate nicotine dependence. Use of NRT or meds along with behavior modification will increase success rates.

Sep 24, 2013 Pending Tests/Consults JT

-> TELUS Health [Dermatology], not yet booked  
 TELUS Health Phone: (519) 740-8569 Private line: (800) 265-8175 Fax: (519) 821-4120 Address: Pinebush Road, Unit 2 Additional Details: PS Suite EMR -  
 Now a TELUS Health Product testing

-> TELUS Health [Geriatrics], not yet booked  
 TELUS Health Phone: (519) 740-8569 Private line: (800) 265-8175 Fax: (519) 821-4120 Address: Pinebush Road, Unit 2 Additional Details: PS Suite EMR -

Prev JT Msg Next JT Msg

https://go.healthcarelink... CCAC Remote Access Portal

ccac ccac

Welcome to the  
**CCAC Remote Access Portal (RAP)**

Username  Please sign in to begin your secure session.

Password

Sign In



# PSS and Clinical Connect

**PSS - Patient View Data**

**Gates, Steve**      next visit: not booked      age 38 yr 166

Father: deceased MS  
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Passport EA    External Resources    Update CPP PROB    Ocean

ANTI-dsDNA      6  
 Ordering Physician: Tarr, Jeff

REFERENCE RANGE: IU/ML

NEGATIVE	< 20
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POSITIVE	> 25

Dec 11, 2012      bp: 120/78      JT

May 5, 2013      GuelphLinks-Medical Facts I Want You To Know (Click to expand)      JT/KM  
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 May 5, 2013      GuelphLinks-To Help You Know Me (Click to expand)      JT  
 May 5, 2013      GuelphLinks-Things You Need To Know In An Emergency (Click to expand)      JT  
 May 5, 2013      Guelph HealthLinks Passport (Click to expand)      JT

Alert: Guelph HealthLink: Registered Patient, active as of Aug 1, 2013; ends on Aug 31, 2014  
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 Moderate nicotine dependence. Use of NRT or meds along with behavior modification will increase success rates.

Sep 10, 2013      (Dx: D2-60000) KM??

Prev KM Msg      KM: 1 message      Next KM Msg

**ClinicalConnect**      Logged in as: Kirk Miller  
 Monday, September 16, 2013

Main Menu  
 General Modules  
 HRLMP Lab Test Guide  
 MacPLUS  
 RNAO BPGs  
 Notifications  
 None  
 Admin Modules  
 Reports  
 Security Log  
 Users  
 Version

Welcome  
 Welcome to the MEDSEEK Clinical Portal

Logout

# PSS AND TYZE



The screenshot displays two overlapping windows. The left window is a medical record for 'Gates, Steve', showing a list of medications, a 'Guelph HealthLink: Registered Patient' status, and a 'Fagerstrom Test for Nicotine Dependence' result. The right window is the 'Tyze V4' calendar interface, showing a calendar for September 2013 with an appointment for 'Kirk' on September 19th from 10:00 am to 12:00 pm at GGH Outpatient.

**Medical Record (PSS) Details:**

- Age: 38 yr, 166
- Medications: NovoRapid 100unit 8 units bid, docusate sodium 1 capsule once in the morning, Novolin Pen 100u/ml use 28 units every morning and 15 units at bedtime, lansoprazole 30mg po, levothyroxine sodium 125 mcg po od, Bactroban Cream apply bid x7 days
- Diagnoses: Major Depression, Recurrent Episode (ICD-9), Diabetes Mellitus (ICD-9), Hypothyroidism, 244.9, Hypothyroidism Not Otherwise Specified (ICD-9), COPD, D2-60000, COPD (SNOMED CTB)
- Current smoker - 17 cigarettes/day... rare alcohol consumption
- Alerts: Guelph HealthLink: Registered Patient (active as of Aug 1, 2013; ends on Aug 31, 2014); Declines DM education, foot care, referral (active as of Aug 1, 2013; ends on Nov 1, 2013)
- Test Results: ANTI-dsDNA (6 IU/mL) - NEGATIVE (< 20), BORDERLINE (20-25), POSITIVE (> 25)
- Fagerstrom Test for Nicotine Dependence: Score: 9/10 (Moderate nicotine dependence)

**Tyze V4 Calendar Details:**

- Month: SEPTEMBER 2013
- Appointment on 19th: Kirk, 10:00 am - 12:00 pm, GGH Outpatient
- Other events: Starts at 12:00... VISIT by WWCCAC, PSW JOAN

# NEXJ Project



Kirk Miller - PSS  
 File Edit Style Settings Patient View Data Letter  
 next visit: not booked  
 Checked Out  
 age 38 yr 166

**Gates, Steve**

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 Mother: DM, Dementia

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 Declines DM education, foot care, referral

current smoker - 17 cigarettes/day ...  
 rare alcohol consumption

AMTI-daDNA  
 Ordering Physician: Tarr, Jeff

REFERENCE RANGE:	IU/ML
NEGATIVE	< 20
BORDERLINE	20-25
POSITIVE	> 25

Dec 11, 2012 bp: 120/78 JT

May 5, 2013 GuelphLinks-Medical Facts I Want You To Know (Click to expand) JTRM  
 GuelphLinks-Things to Update (Click to expand) JT  
 May 5, 2013 GuelphLinks-People I Rely On (Click to expand) JTKM  
 May 5, 2013 GuelphLinks-People I Trust To Help Me (Click to expand) JT  
 May 5, 2013 GuelphLinks-Personal Needs (Click to expand) JT  
 May 5, 2013 GuelphLinks-Getting Through The Day And Night (Click to expand) JT  
 May 5, 2013 GuelphLinks-What To Do When (Click to expand) JT  
 May 5, 2013 GuelphLinks-Things That Help me Manage and Cope (Click to expand) JT  
 May 5, 2013 GuelphLinks-To Help You Know Me (Click to expand) JT  
 May 5, 2013 GuelphLinks-Things You Need To Know In An Emergency (Click to expand) JT  
 May 5, 2013 Guelph HealthLinks Passport (Click to expand) JT

Aug 1, 2013 Alert: Guelph HealthLink: Registered Patient, active as of Aug 1, 2013; ends on Aug 31, 2014 JT  
 Aug 1, 2013 Alert: Declines DM education, foot care, referral, active as of Aug 1, 2013; ends on Nov 1, 2013 JT  
 Sep 5, 2013 HPI: "test from Ocean tablet"

**Fagerstrom Test for Nicotine Dependence**  
 How often after you wake up do you smoke your first cigarette? "within 5 minutes"  
 Do you find it difficult to refrain from smoking in places where it is forbidden such as church, library, or movie theatres? "Yes"  
 Which cigarette would you hate most to give up? "The first one in the morning"  
 How many cigarettes do you smoke per day? "21 to 30"  
 Do you smoke more frequently during the first hours after waking than the rest of the day? "Yes"  
 Do you smoke if you are so ill that you are in bed most of the day? "Yes"  
 Fagerstrom-Score: 9/10  
 Moderate nicotine dependence. Use of NRT or meds along with behavior modification will increase success rates.

Sep 10, 2013 (Dx: D2-60000) KM??



Home



Mike Debery

- Medical Summary
- Profile
- Circle of Care
- Schedule
- Health Record
- Assessments
- Transitional Care
- Health Coach

My Circle

- Mr. Walter Bentz  
Friend
- Dr. Edwin Hudson  
Care Provider
- Dr. Richard Lang...  
Care Provider
- Lauren Miller  
Care Provider

View All

## Transitional Care

### Heart failure

Status  
 Onset Apr 14, 2013, not resolved  
 Possible Causes  
 Tachycardia

### In Case Of

- In the event of shortness of breath for periods of more than 10 minutes - attend the emergency room immediately
- In the event of swelling of the chest area surrounding the device - attend the Emergency Room within 24 hours
- In the event of mild to moderate chest pain use low-dose Aspirin as required - if pain persists for more than 8 hrs contact your cardiologist.

### Plan & Timeline

- EP Study - ICU department  
 Dr. Richard Langdon  
 Mar 27, 2013 - Apr 2, 2013  
 Completed
- Insertion of Defibrillator & Cardiac Resynch...  
 Dr. Edwin Hudson  
 Apr 10, 2013  
 Completed - Improved
- New Medication: Ramipril 2.5mg  
 Apr 11, 2013 - Apr 12, 2014

Mike Debery

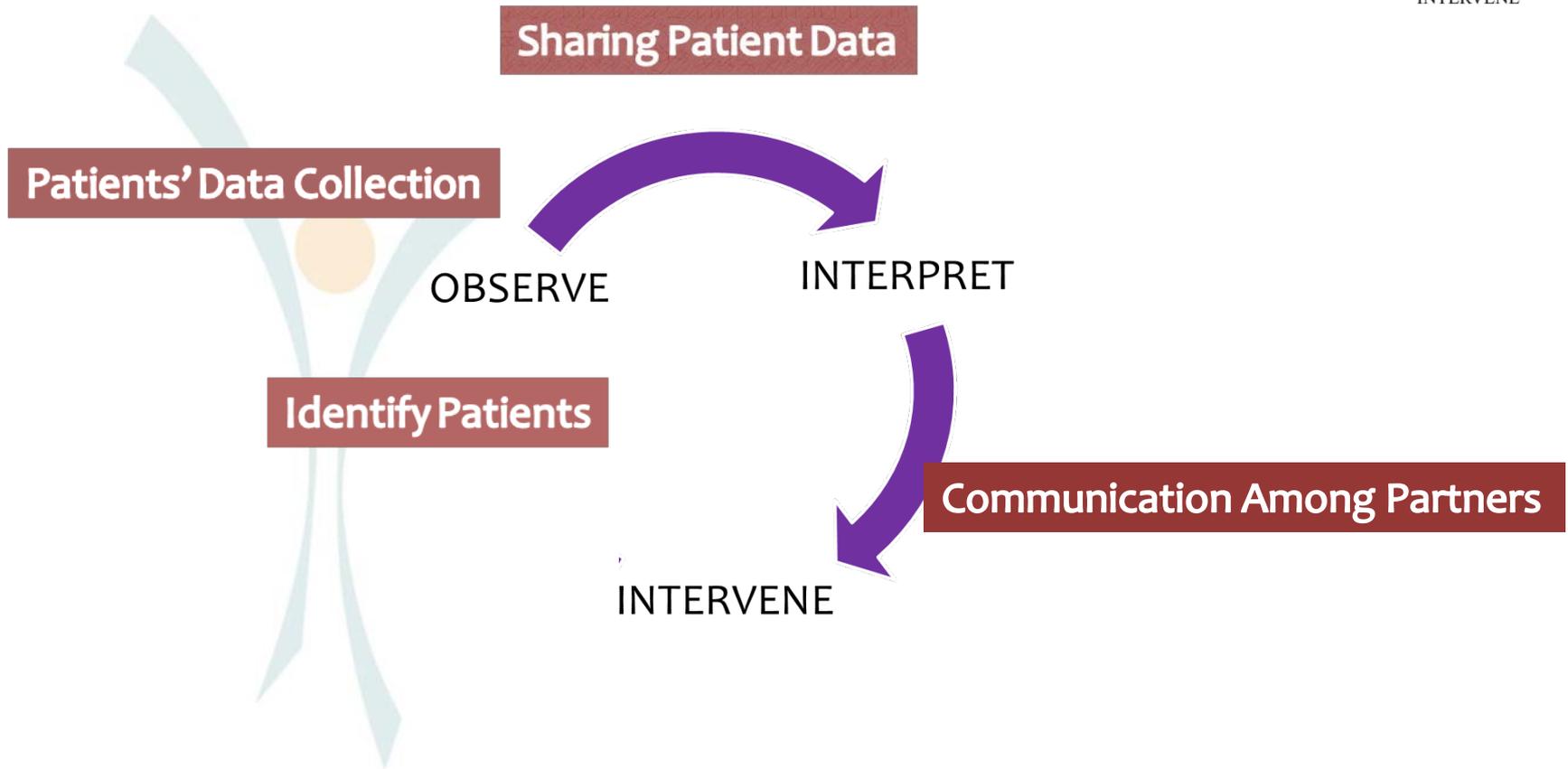
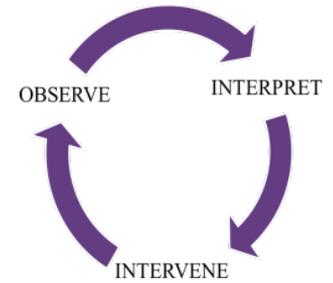
### Appointments

- Follow-up  
 Dr. Edwin Hudson  
 Sep 20, 2:00 PM
- Follow-up  
 Dr. Edwin Hudson  
 Sep 20, 2:30 PM

View All



# Technology challenges



# Communication Among Partners

What do we need?

- A Shared space for partners to communicate on administrative/operational issues without patient data
- Final solution not yet determined

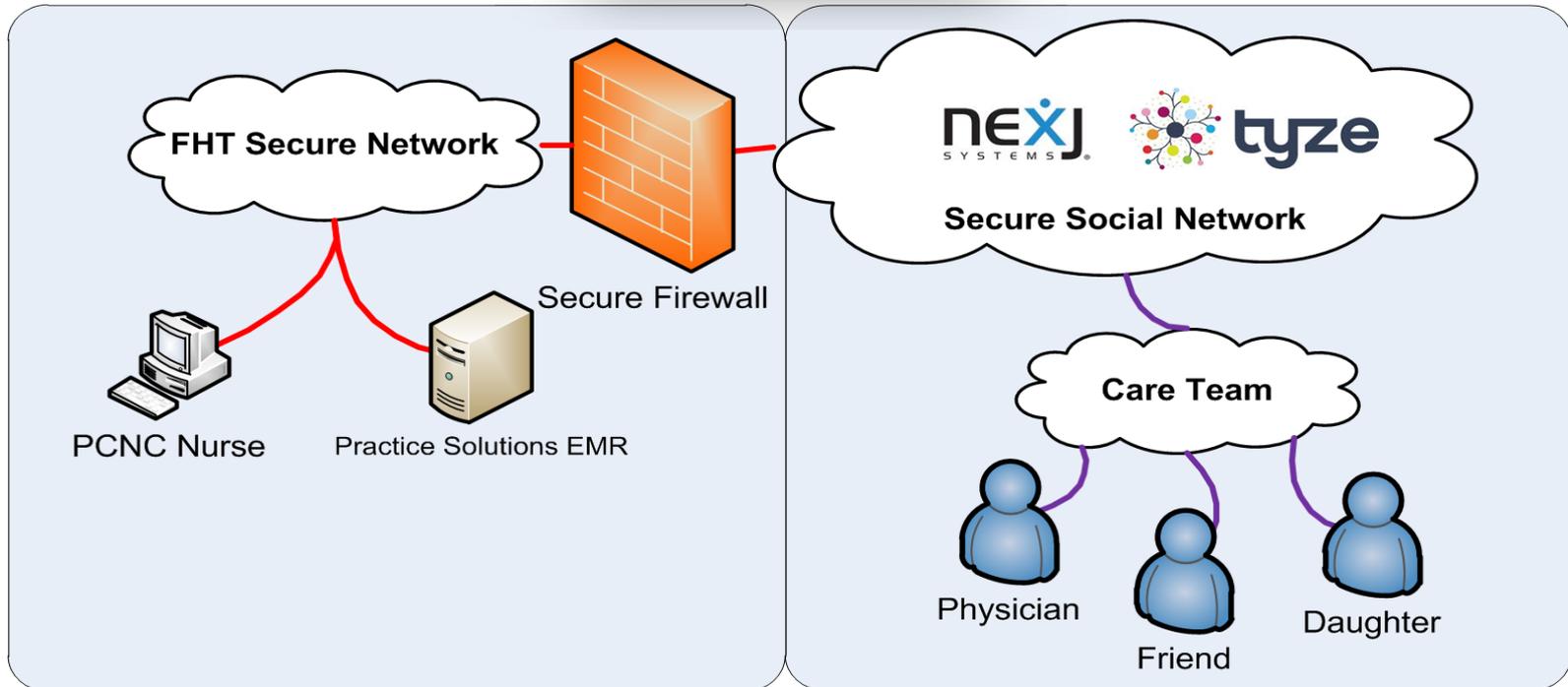
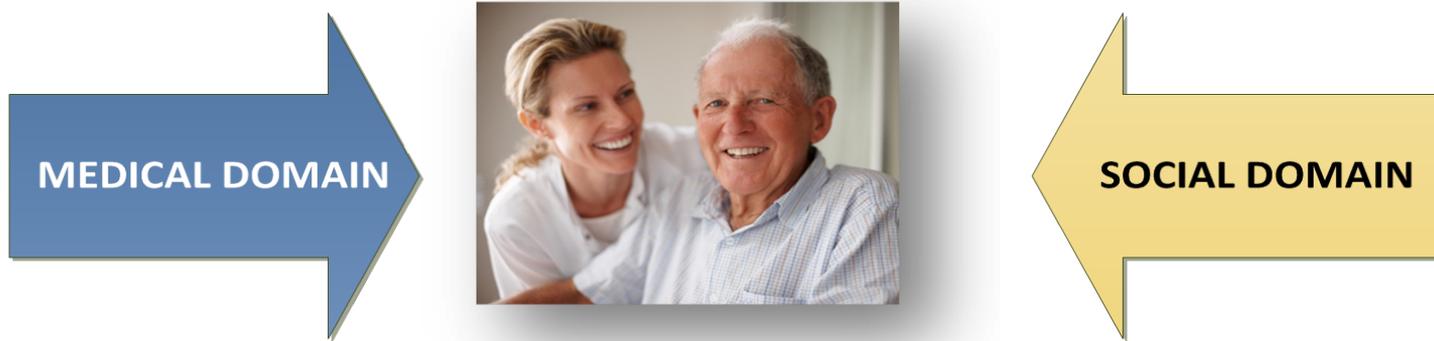
Ideas to date...

- SharePoint site
- Wordpress blog for partners only hosted within Guelph FHT infrastructure
-



# NETWORK SUPPORT

# Network Diagram

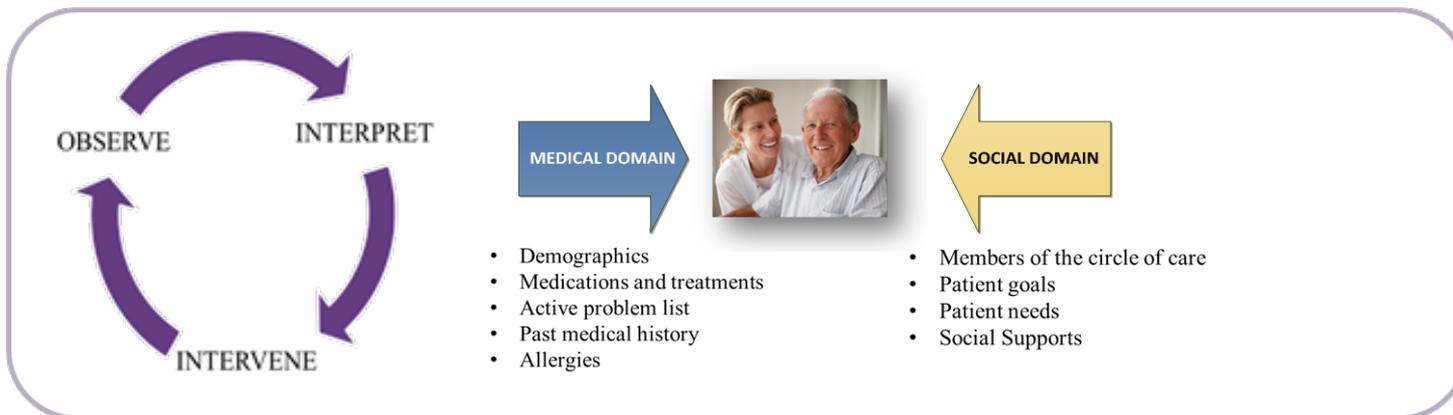
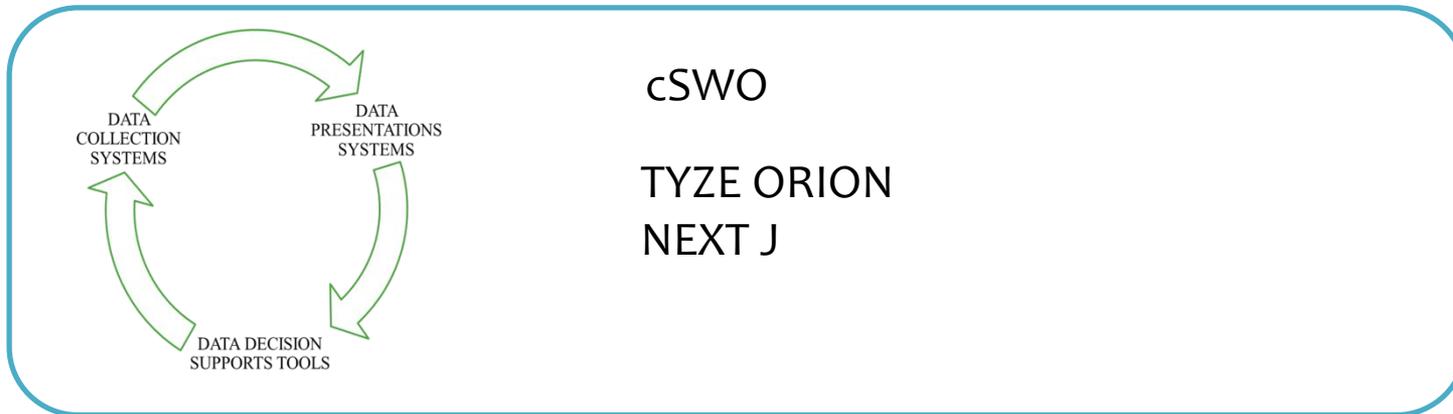


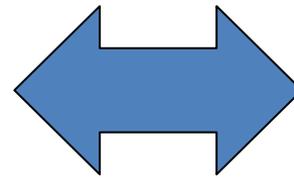
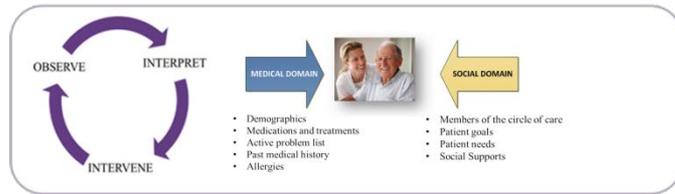
# Privacy and Security



- Login information
  - Separate user accounts linked to patients by invitation only
  - Explicit permissions for data access
- Secure data
  - Data is hosted internally on PS Suite server or on Tyze/NexJ secure servers
  - All access is documented and auditable
- Private FHT Distributed Network
  - All traffic passes through multiple secure firewalls
  - Third-party monthly security audits
- SSL encryption for Tyze and NexJ web access

# Joining the data to an IEHR and iCare plan





EVIDENCE

The Patient and  
HL Member's HL Guide  
(the chronic care focused RN)

RESOURCES

# Integrated Care Platforms are coming



# Build Planes





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**THANK YOU**

And Henry thanks you too!