



Lets Talk Informatics

March 29, 2018

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CONFLICT OF INTEREST DECLARATION

I do not have an affiliation (financial or otherwise) with a pharmaceutical, medical device, health care informatics organization, or other for-profit funder of this program.



OBJECTIVES

Participants will be able to:

- define Personal Health Record
- describe the features of MyHealthNS
- cite recent literature about the safety and effectiveness of PHRs
- consider and discuss the challenges of a major IT implementation

AGENDA

1. Overview of MyHealthNS: Capabilities and features
2. Review selected literature on portal effects
3. Cover challenges in implementation and adoption
 - a. Recruitment
 - b. Adoption of functionality
4. Discussion and questions

WHICH ASPECTS OF HEALTH INFORMATICS?

Use of IT to

- Improve quality of care
 - Better patient outcomes
 - Improved patient satisfaction
- Improve patient safety
 - Reduced errors
- Better share health information with patients



1. OVERVIEW OF CAPABILITIES



A PHR is ...

... an electronic health record that enables patients to access their own health and medical information from many health providers in one location, available anytime, from anywhere.

PHRs also enable patients to communicate securely with their providers; to record their own self-monitoring health data, and; to receive a copy of their test results and reports.

It is accessible online by the patient and their caregivers (parents for children / adult children for parents).



PHR POTENTIAL BENEFITS

- Instant access to information by the patient/family
- Secure communication between patient and doctor
- Secure communication with colleagues
- Better patient engagement in managing their own care
- Better safety
- Reassurance

WHAT'S WRONG WITH THE CURRENT SYSTEM?

1. The doctors' offices call patients if results are abnormal
2. If not called, patients are to assume everything was OK

- Potential problems:

- The lab does not complete the test
- The results are mislabelled or not sent to the MD
- Patient anxiety
- The physician misses an abnormal test

DATA FROM THE CMPA

- Reviewed a 5 year period
- Found 500 cases where there were breakdowns in the follow up of a critical diagnostic test.
- In over 33% of these the patient suffered serious outcomes, including permanent injury and death.
- Almost 90% of those cases ended up in a judgement unfavourable to the physician involved.

<https://youtu.be/6zaoGGN4BrU>

WHAT'S WRONG WITH THE CURRENT SYSTEM?

- A 2015 study determined that patients have concerns with the current system
- Patients described frequent delays and inconsistency in both the level of information and the method of communication, as well as dissatisfaction with non-clinical staff relaying results

•Litchfield et al Br J Gen Pract. 2015 Mar;65(632):e133-40.



2. EVIDENCE & RESEARCH



WHAT'S THE EVIDENCE?

- Kaiser Permanente, the US Navy and the Veterans Administration in the US have provided it for years.
- In the UK it was mandated that all patients have online access by 2015
- New Zealand and Australia have adopted online access in a variety of ways
- Several Toronto area hospitals and BC made it available several years ago
- Quebec and Alberta have announced plans to introduce universal patient access

CAN PORTALS IMPROVE HEALTH?

- Studies of Group Health Cooperative diabetes patients found significant associations between the use of secure messaging and improvements in glycemic testing and control.

Harris et al. *Diabetes Care*. 2009;32(7):1182–1187.

Harris et al *Diabetes Care*. 2013; 36(9):2726–2733.

CAN PORTALS IMPROVE HEALTH?

- Portal use was associated with improvements in cholesterol in patients with diabetes and hypertension.
- Secure patient–physician messaging was associated with improved performance ($p<0.0001$) in HbA1c screening and control, LDL screening and control, retinopathy screening, and nephropathy screening
- It was also associated with improved performance in blood pressure control among patients with diabetes ($p<0.001$) and with blood pressure control among members with hypertension alone ($p=0.002$).

Zhou et al Health Aff 2010;29(7):1370–1375.

CAN PORTALS IMPROVE HEALTH?

- Examination of the efficacy of web portal use among 54 adult patients with type 2 diabetes seen at an academic medical center in Nashville, TN.
- Greater self-reported use of secure messaging between patient and clinician was significantly associated with the patient's glycemic control ($p=0.04$)

Wade-Vuturo et al *J Am Med Inform Assoc.* 2013;20(3):519–525.

WHAT DOES THE LITERATURE SAY ABOUT PORTALS?

Review of 176 studies

- Patients reported:
 - improved satisfaction with online access and services compared with standard provision
 - improved self-care
 - better communication and engagement with clinicians.
- Safety improvements were patient-led through identifying medication errors and facilitating more use of preventive services

Mold et al Br J Gen Pract. 2015 Mar;65(632):e141-51.

CAN PORTALS IMPROVE HEALTH?

- Greater self-reported use of secure messaging between patient and clinician was significantly associated with glycemic control ($p=0.04$)
- Patients with uncontrolled hemoglobin A1c (HbA1c) at baseline who used secure messaging were more likely than nonusers to achieve glycemic control
- Patients with uncontrolled blood pressure at baseline who used web-based refills were more likely than nonusers to achieve control at follow-up with 2 more years of web-based refill use

Shimada et al. *J MedInternet Res.* 2016;18(7):e179.

CAN PORTALS IMPROVE HEALTH?

- RCT on the effectiveness of home BP monitoring, e-communication, and pharmacist care on hypertension control.
- Among 778 participants, there was a nonsignificant increase in the % of patients with controlled BP among the patients assigned to the home monitoring and web training group
- Adding web-based pharmacist care significantly increased the percentage of patients with controlled BP (56%), compared with those under usual care ($p<0.001$).

Green et al. *JAMA*. 2008; 299(24):2857–2867.

CAN PORTALS IMPROVE HEALTH?

- An RCT conducted in nine primary care clinics in Washington state evaluated the effectiveness of online depression care
- 208 patients starting antidepressant treatment for depression were randomized to either usual primary care treatment or primary care supported by online care management by a psychiatric nurse.
- After 5 months, patients offered the program had higher rates of antidepressant adherence (81% vs. 61%, $p=0.001$) and lower symptoms checklist depression scores ($p=0.043$)

Simon et al *J Gen Intern Med.* 2011;26(7): 698–704.

CAN PORTALS IMPROVE HEALTH?

- Tenforde et al examined the use of electronic personal health records by 10,746 adult diabetes patients seen at the Cleveland Clinic
- Compared to nonusers, personal health record users had better diabetes quality measure profiles.

Tenforde M et al *J Gen Intern Med.* 2012

CAN PORTALS IMPROVE HEALTH?

- A retrospective cohort study of primary care patients at an academic medical center who had a new diagnosis of hypertension
- Portal users were found to be more likely than nonusers to achieve blood pressure control

Manard et al. *J Am Board Fam Med*. 2016;29(4):452–459.

CAN PORTALS IMPROVE HEALTH?

- Several studies have shown improved adherence to screening with portal use

Krist et al *Ann Fam Med*. 2012;10(4):312–319.

Wright et al *J Gen Intern Med*. 2011;27(1):85–92.

Henry et al *Am J Prev Med*. 2016;51(1):71–77.

Nagykaldi et al *J Am Board Fam Med*. 2012;25(2):158–167.

WHAT DO PATIENTS WANT?

- A national survey of US patients
- 3677 respondents
- 92% considered online access to records important
- While there were no differences across race or ethnicity in importance of access, black and Hispanic respondents were significantly less likely to be offered access ($P = .006$ and $<.001$, respectively)

Peacock et al J Am Med Inform Assoc. 2017 Apr 1;24(e1):e173-e177

CAN PATIENT ACCESS TO ONLINE RECORDS CAUSE HARM?

Meta-analysis of 143 studies done in primary care in US and Europe

- Professional concerns about privacy cited in 14 papers
- 18 studies reported doctors' concerns over increased workload
- Physicians expressed concern that patients might be subject to anxiety from unexplained test results
- They also expressed concerns that patients might be offended by viewing their notes
- They also expressed fears that access to records could disrupt the doctor patient relationship

De Lusigan et al *BMJ Open* 2014;4:e006021

CAN PATIENT ACCESS TO ONLINE RECORDS CAUSE HARM?

- Qualitative study of MyHealth eVet from 2000 to 2010
- Over 7,000 patients enrolled
- Focus groups reported:
 - Positive effect on communication between and during visits
 - Improved understanding of their own health care
 - Improved participation in care
 - Challenges in viewing clinical notes were raised
- *Study did not identify appreciable harm*

Woods et al J Med Internet Res. 2013 Mar, 15(3):e65

CAN PATIENT ACCESS TO ONLINE RECORDS CAUSE HARM?

- Several showed increase in email and online messaging by MD's
- Face to face contact stayed the same or decreased
- 10 studies reported improved convenience for patients who were “largely highly satisfied” when physician responses were prompt
- *No evidence of harm to patients, despite physician concerns of same*

De Lusigan et al BMJ Open 2014;4:e006021

CAN PATIENT ACCESS TO ONLINE RECORDS CAUSE HARM?

- 2015 review of 19 studies
- Covered qualitative, quantitative, mixed methods, trial designs
- Patient safety may have been improved: medication errors were discovered
- Patient satisfaction and convenience were increased
- Physicians reported time saving and better management of patient care
- *“There was no reported evidence of harm to patients from the provision of online access”*

Mold et al J. Pers. Med 2015;5:452-469

CAN PATIENT ACCESS TO ONLINE RECORDS CAUSE HARM?

- Study of 52 psychiatric patients in a Boston ambulatory clinic
- Patients read their progress notes through a patient site linked to an electronic medical record
- Both doctors and patients were surveyed after 20 months
- Access to notes was perceived as helpful to patients and did not negatively impact the patients or the treatment relationship

Peck et al *Health Policy and Technology* 6;3, 2017, 309-315

IS THERE EVIDENCE OF ANY ADVERSE OUTCOME?

- An assessment of OpenNotes
- In a one year study of 105 primary care docs in Massachusetts, only 1-8% of patients reported being confused, worried, or offended by what they read

SUMMARY OF STUDIES ON PORTALS

- There is good quality evidence of improved patient outcomes with messaging
- There is no evidence of patient harm with viewing results or notes
- There is mixed evidence on physician workload



3. CHALLENGES IN IMPLEMENTATION



BACKGROUND & INTRODUCTION

- Embarked on pilot in 2012 funded by CHI
- Under aegis of Sandra Cascadden and Mary Russell
- Steering committee comprised MDs, DoH, DNS, consultants, chaired by 2 public members
- Tender sent out for proposals, Relay Health proposal chosen.

MYHEALTHNS PILOT

- What we set out to learn:
 - Business case?
 - Benefits?
- 3 year demonstration project to test the PHR concept
- 30 family physicians; 2 specialties (GI, Hematology), >6000 patients (doubling the project target)
- Project won two national innovation awards
- Evaluation findings resulted in provincial roll-out decision

PILOT RESULTS 1

eResults:

- **98% of patients said they want to continue receiving e-results**
- **85% of patients said it made a positive difference in being able to manage their health**
- **100% of doctors said sharing test results electronically is valuable or extremely valuable to their patients**

PILOT RESULTS 2

eBooking

- ↓ rate of no-shows
- ↑ patient convenience/satisfaction

PILOT RESULTS 3

- eVisits (aka 'eQuestions'):
 - Improved access- (demo showed potential 14% increase in clinic capacity with same # of providers)
 - Superior to telephone with digital record/audit trail
- eMessaging:
 - Alternative to fax use for exchange of patient info between providers
 - Tool for collaborative practice

Nova Scotia launches new system to deliver health test results via smartphone

THE CANADIAN PRESS

Published July 28, 2016 - 4:06pm

Last Updated July 29, 2016 - 8:19am



Fashion Plus Size

MYHEALTHNS ROLLOUT

- The promised compensation for physicians disappeared
- A decision was made for a partial implementation, focussing on release of results
- Physicians who signed up were given a small one time stipend of \$2k
- They agreed to enroll patients and to release results
- Physicians could use messaging but were not paid for doing so

UTILIZATION FEBRUARY 2018: PROVIDERS

- Registered Providers: 250 in 109 practices
- 35% of registered providers are active (average of >1 transaction per week)
- Of the 109 practices participating, 30 (28%) have enabled the option for patients to send messages (allowing patient messaging was not a requirement)
- All practices have Results Manager enabled
- 57 practices (52%) have at least one provider within the practice using the auto-release option

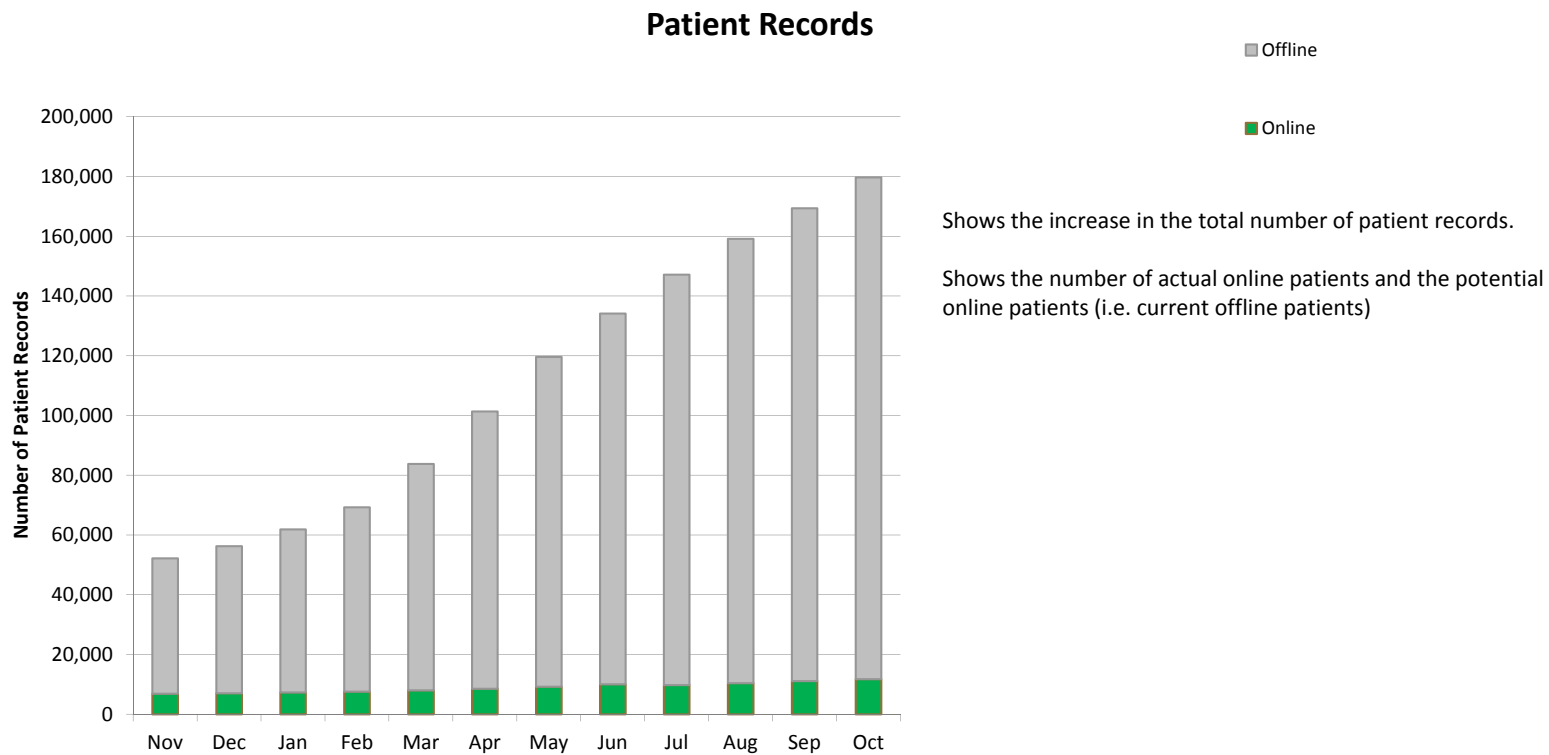
UTILIZATION FEBRUARY 2018: Patients

- Online Patients: 13,782 (Are registered and have a relationship with an enrolled provider)
- 317 patient-initiated messages in January
 - 183 or 58% were a Note to Provider,
 - 22% Note to Staff
 - 16% Appointment Requests
- 1,310 patients (10%) accessed their account once in January
- 1,266 patients (9.4%) accessed their account 2-5x

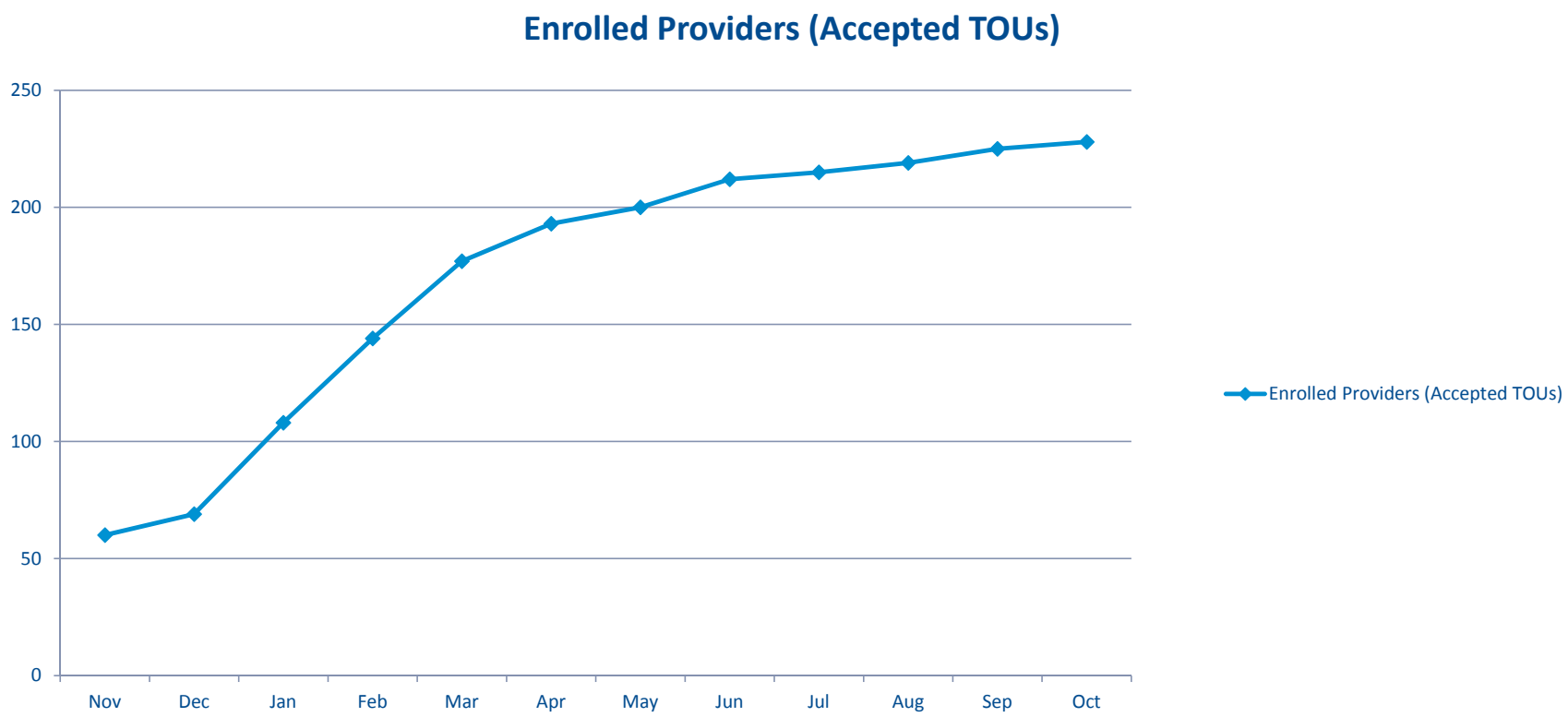
OFFLINE PATIENTS A SUBSTANTIAL ISSUE

~37K-100K unattached patients and growing

~193 K unconnected patient (of only 250 providers) and growing



PROVIDER RECRUITMENT IS LEVELLING OFF



EXTENT OF USE

- Many physicians routinely export allergies, medications, problem list and immunizations during the office visit
- Experience has been that those practices who invite all patients and release some test results automatically are more comfortable with the program and the patient impact in a shorter period of time, presumably because it becomes part of their regular process

AUTORELEASE

- To date there have been no reports of an increase in patient questions in NS due to receiving released results. The only reported question has been about why they have not received a released result.
- The closest to an average behaviour is that the provider starts off with no rule or a very conservative one (ex 30 days) then between 3 & 6 months after starting, they request a review and either create a rule or reduce the timeframe to 5-10 days

PATIENT ONBOARDING

- Seems to require a reminder invitation loop (admin burden).
- Very high ratio of unique patient invites sent to invitations accepted (91%).
- Extremely low rate of new patient invites being sent by providers
- Possible reasons for this??

ISSUES and BARRIERS

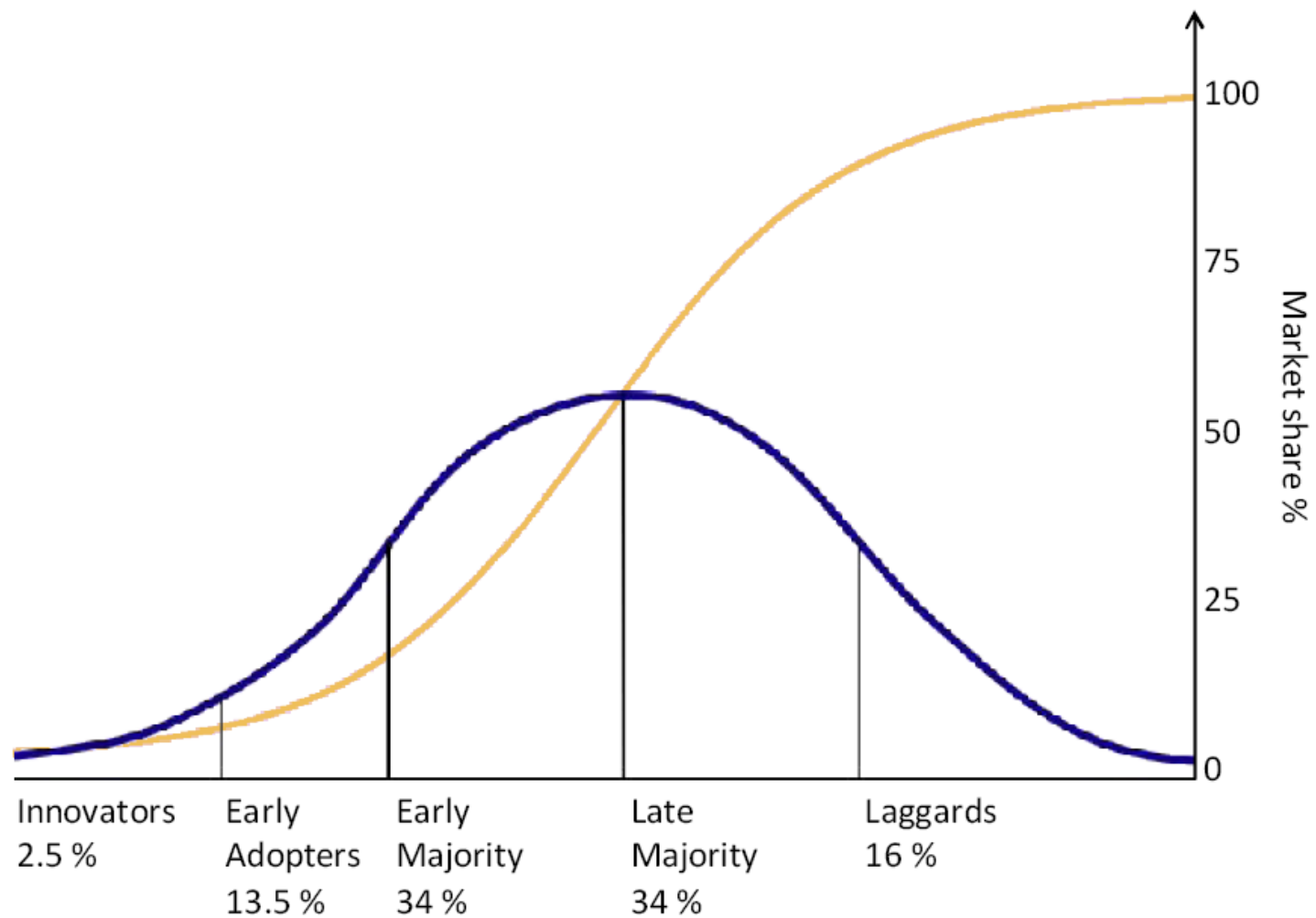
- Lack of compensation
- Unhappy with NSHA
- Concerns with privacy
- Obstacles:
 - staff turnover
 - small patient population (few tests)
- Indifference
- Need tech support/retraining
- Conversions to other EMRs

ASSUMPTIONS OF CURRENT ENROLLMENT STRATEGY

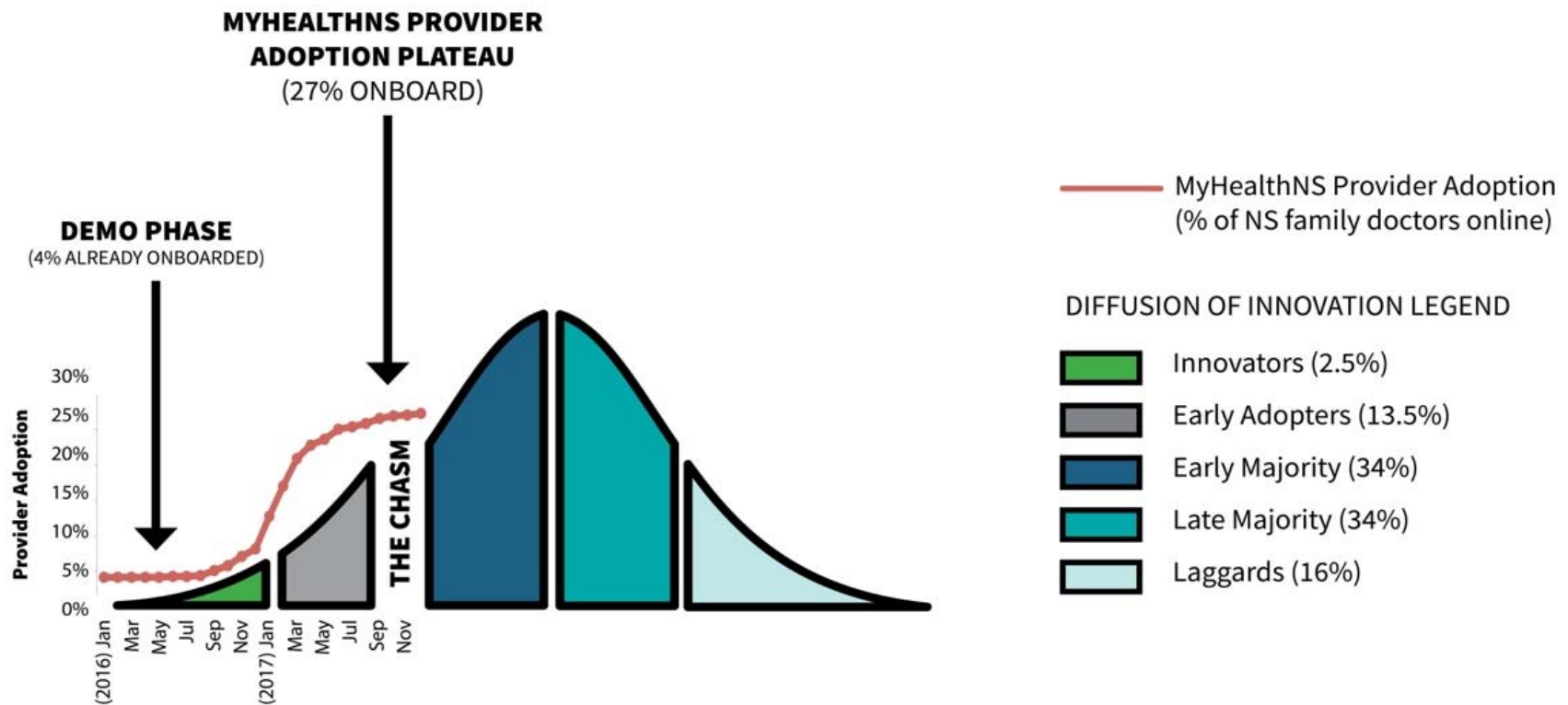
- Implementation plan assumed full-function launch.
- No funding model = adoption resistance. Rollout strategy adapted to promote function with least disruption and greatest benefit.

IS THE ROLLOUT STRATEGY FLAWED?

- Can this ever achieve citizen access to their personal health information (for all who want it)
- Utilization reporting suggests universal patient benefit of eResults is entangled in individual provider gatekeeper registration pathway.
- Need to resolve inequities of access to personal health information (unattached and unconnected patients).



PROVIDER RECRUITMENT & INNOVATION ADOPTION



Nova Scotia spends \$39.6M on compensation for doctors, including new-patient bonus

Pay raise — combined with new incentives — could see doctors receive \$20-30K more a year

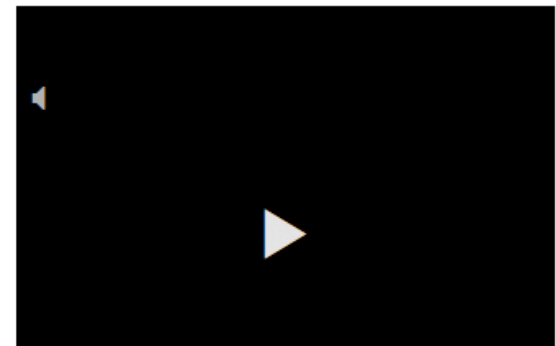
By Jean Laroche, CBC News Posted: Mar 19, 2018 1:19 PM AT | Last Updated: Mar 19, 2018 3:07 PM AT



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THE FUTURE



THE FUTURE

- Need a better model for onboarding patients
- Need a payment scheme that works
- E-referrals
- Incorporation of best practice models

IS DIRECT RELEASE TO PATIENT A BETTER MODEL?

- No longer require doctors to register patients
- No longer require doctors to release results
- Make results available to all who want them
- Solves issue of equality and access

QUESTIONS AND DISCUSSION



Let's Talk Informatics has been certified for continuing education credits by;

- College of Family Physicians of Canada and the Nova Scotia Chapter for 1 Mainpro+ credit.
- Digital Health Canada for 1CE hour for each presentation attended. Attendees can track their continuing education hours through the HIMSS online tracking certification application, which is linked to their HIMSS account.

Please be advised that we are currently in a controlled vendor environment for the One Person One Record project.

Please refrain from questions or discussion related to the One Person One Record project.



EXTRA AND OPTIONAL SLIDES

THE CURRENT SYSTEM - ISSUES

- We seem to have great faith in our current standard of care: office based records and face-to-face contact
- Multiple studies show that patients forget most of what we tell them in the office (or they never understood it in the first place)
- We feel our records are highly accurate, but one of the first things we see when patients get access is that they point out errors in their records
- We neglect the anxiety patients have waiting for test results and focus instead on concern about them misinterpreting them

SUPPORT OF PHR

Support is available via toll free number and access to a deployment specialist.

Toll free number:

- In January 99 calls (12 were US residents)
- 84 taken live
- 15 were call backs
- average wait time 3 minutes
- average call length 5 minutes
- 84% patients, 11% providers, 5% staff

Deployment specialist gets 3-4 calls a day on average

RELIABILITY

- 2 incidents of downtime, total 2 hours in 2017
- 2 incidents of delayed processing of results
- Contractually obligated to 99% reliability

INTEGRATION: Accuro and Practimax

- Good native integrations
- Mail and message functionality
- Optional automatic invites to patients
- Auto record creation
- Export chart contents to MyHealthNS
- Launch MyHealthNS from EMR
- Results Manager which shows all labs from that patient



INTEGRATION: MedAccess

- Native integration underway
- First phases implemented as of last month
- Automatic invitations
- Automatic chart creation and chart export
- Results Manager
- Messaging from EMR
- Will allow for automatic, behind the scenes updates of PHR whenever a user signs off a chart



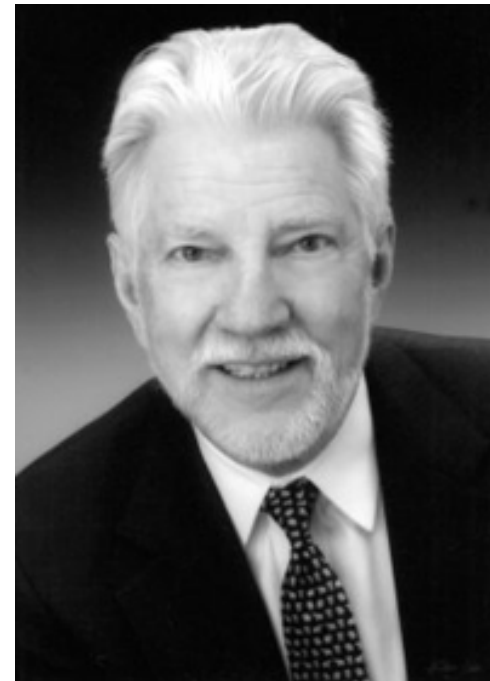
INTEGRATION: Nightingale

- Imperfect third party integration (ThoughtWire)
- *Users have reported multiple issues:*
 - Double login for users
 - Reports of lost connections
 - Reports of system slowdown in areas of lower speed internet
 - Custom user/computer configuration requirements, often changed by PHIM support



DIFFUSION OF INNOVATIONS

- A theory about the adoption of new ideas and technology
- [Everett Rogers](#) first published in 1962



ELEMENTS OF INNOVATIONS

- relative advantage
- compatibility with the pre-existing system
- complexity
- trialability or testability
- potential for reinvention
- observed effects

DIFFUSION OF INNOVATION

- the innovation itself
- communication channels
- Time
- a social system