



U.S. Department of Health and Human Services

---



Agency for Healthcare Research and Quality

Advancing Excellence in Health Care • [www.ahrq.gov](http://www.ahrq.gov)

# **A National Web Conference on the Impact of Implementing Novel Health IT Interventions for Cancer Screening, Diabetes, and Childhood Illnesses**

**July 31, 2014  
2:30pm – 4:00pm ET**



# Moderator and Presenters Disclosures

---

Moderator:

Ed Lomotan, M.D.\*

Agency for Healthcare Research and Quality

Presenters:

Steven Atlas, M.D., M.P.H.†

David Ballard, M.D., M.S.P.H., Ph.D., F.A.C.P.\*

David Bragg, M.D.\*

Cliff Fullerton, M.D.\*

Kenneth McConnochie, M.D., M.P.H.\*

\*Have no financial, personal, or professional conflicts of interest to disclose.

† Dr. Atlas would like to disclose that he is a beneficiary from a royalty arrangement with SRG Technology for the commercialization of the population management system, although no payments have been made to date.



U.S. Department of Health and Human Services



Agency for Healthcare Research and Quality

Advancing Excellence in Health Care • [www.ahrq.gov](http://www.ahrq.gov)

# The Role for Population Health Management in Primary Care Network: Preventive Cancer Screening as a Case Study

**Steven J. Atlas, M.D., M.P.H.**

**Director, Practice Based Research & Quality Improvement**

**Massachusetts General Hospital**

**July 31, 2014**



# Today's Goals

---

- Population health management in primary care
  - ▶ Preventive cancer screening as a model
- Proof-of-concept study: Massachusetts General Hospital (MGH) Mammography FastTrack study to improve breast cancer screening
- Demonstration trial: TopCare for comprehensive cancer screening(breast, cervical, colorectal)
- TopCare Implementation at Partner's Healthcare



# Population Health Management

---

- Is this something new?
- Application of public health principles to the private health care system
  - ▶ Well-defined populations
  - ▶ Focus on vulnerable groups: leading to interventions outside of traditional care settings
  - ▶ Importance of surveillance
  - ▶ Role of prevention
  - ▶ Impact of chronic disease on health
  - ▶ Need to assess outcomes of care



# Population Health Management

---

- Why now?
- Population health is at the heart of the Affordable Care Act (ACA)
  - ▶ Extend insurance coverage to more individuals
  - ▶ New payment models to control costs
  - ▶ New ways to deliver high-quality, affordable care [for example, accountable care organizations (ACOs)]
- Primary care transformation using patient-centered medical home models
- Dissemination of health information technology (IT) (HITECH Act)



# Cancer Prevention Background

---

- Despite benefits of preventive cancer screening, rates among eligible individuals remain suboptimal
- Shortcoming of existing office-based IT reminders
  - ▶ Patients may miss regular follow-up visits or
  - ▶ Screening may be overlooked because of competing demands due to limited time during encounters
- Population-based reminders not requiring office visits may increase use of recommended services
  - ▶ Information technology can automate processes
  - ▶ Payment reform supports care redesign efforts



# Proof-of-Concept: Mammography FastTrack\*

---

- Study goal: increase mammography rates in women overdue for screening
- Study period: 3/20/07 – 3/19/10
- Physician/practice case manager reviewed overdue list
  - ▶ Selected patients for reminder letter
- Study design: 6 of 12 practices randomly assigned to use tool (control practices = usual care)
  - ▶ 4,487 patients in intervention practices
  - ▶ 59 of 64 (92%) intervention providers used tool
  - ▶ Actions taken: 64% letter, 12% deferred, 24% none

To: Atlas, Steven J, M.D.

Cc:

Subject: Your Mammography Quality Report and List of Potentially Overdue Patients - Please Open!

Mammography data is now available for your primary care panel.

We have identified all women between the ages of 42-69 years that are directly linked to you and linked them to their mammography results for the past 2 years.

Please select the following link to review the results for your panel and to take action to electronically order mammograms for your overdue patients.

<http://oncall.partners.org>

We hope this information is helpful to you. Please don't hesitate to contact me with any questions or comments.

Sincerely,

Michael J. Barry  
Director, MGH Primary Care Operations Improvement



# Provider Tool Interface

[PCOI](#) [MGH 1871](#) [My Page](#) [PCOI How To](#) [DXplain Admin](#) [MD Availability](#) [Outlook](#) [Phone/Page](#) [ICD9/CPT](#) [Add a shortcut](#) [Feedback](#) [more▼](#)  
[rolodex](#) [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#) [find patient...](#)   [Last 25 Panel](#) [Schedule](#) [Census](#) [Diabetes Mammography Review](#)

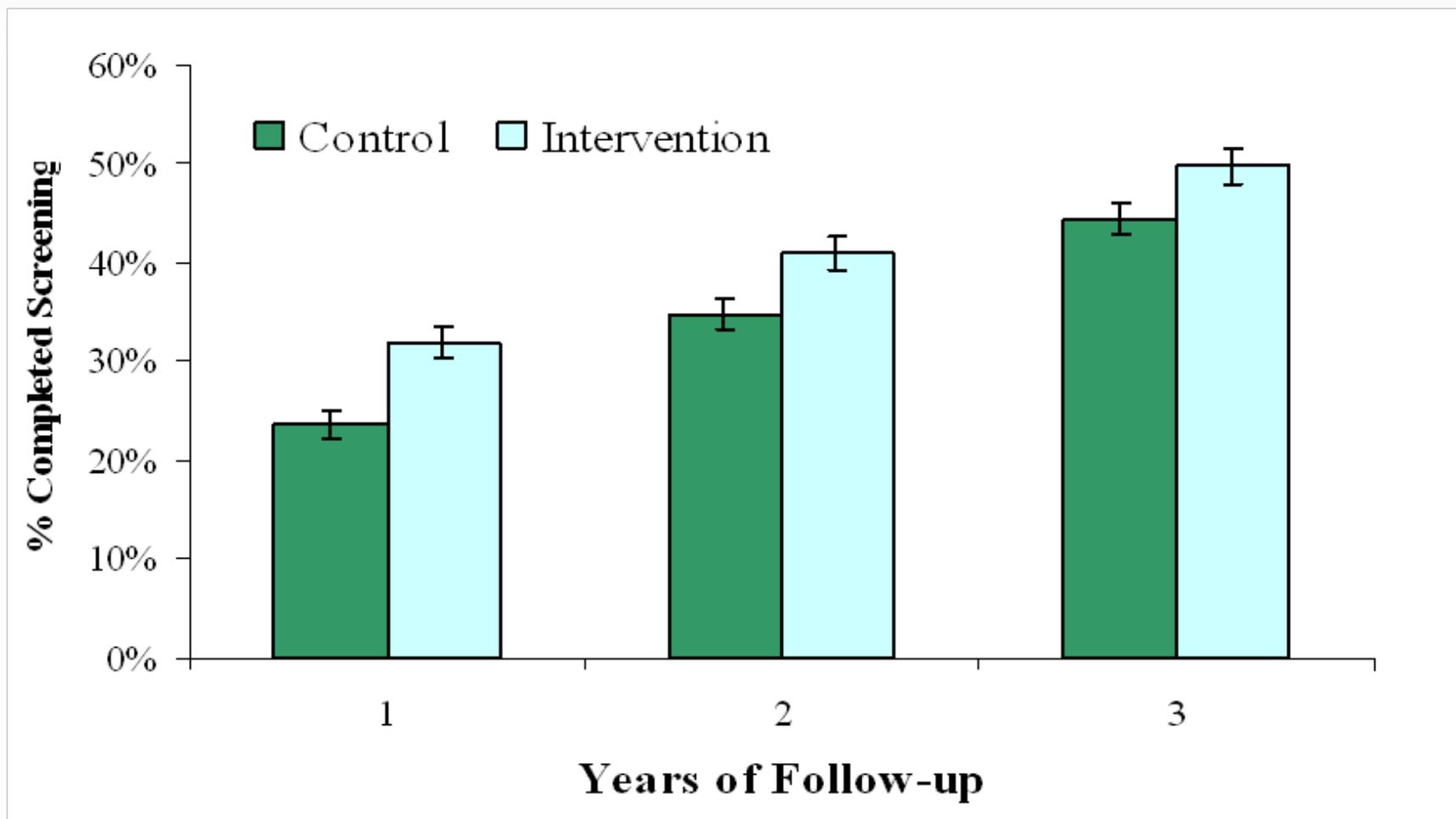
Viewing 23 patient(s) of **LESTER, WILLIAM**

Mammography Review Roster							
Name	MRN	PCP	Schedule	Defer	Deferral Reason	Completed Mammogram Date	Completed Mammogram Result
<a href="#">LAST, FIRST PATIENT 1</a>		WILLIAM			<input type="text"/>	<input type="text"/>	<input type="text"/>
<a href="#">LAST, FIRST PATIENT 2</a>					<input type="text"/>	<input type="text"/>	<input type="text"/>
<a href="#">LAST, FIRST PATIENT 3</a>					<input type="text"/>	<input type="text"/>	<input type="text"/>
<a href="#">LAST, FIRST PATIENT 4</a>					<input type="text"/>	<input type="text"/>	<input type="text"/>
<a href="#">LAST, FIRST PATIENT 5</a>					<input type="text"/>	<input type="text"/>	<input type="text"/>
<a href="#">LAST, FIRST PATIENT 6</a>					<input type="text"/>	<input type="text"/>	<input type="text"/>
<a href="#">LAST, FIRST PATIENT 7</a>					<input type="text"/>	<input type="text"/>	<input type="text"/>
<a href="#">LAST, FIRST PATIENT 8</a>	MRN 8	WILLIAM LESTER	<input type="checkbox"/> Yes	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<a href="#">LAST, FIRST PATIENT 9</a>	MRN 9	WILLIAM LESTER	<input type="checkbox"/> Yes	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<a href="#">LAST, FIRST PATIENT 10</a>	MRN 10	WILLIAM LESTER	<input type="checkbox"/> Yes	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**LAST, FIRSTPATIENT1 ( MRN 1 )**  
 56Y Female  
**Most recent mammogram**  
 on record (MGH) as of **02/28/1996**  
 Completed on **02/28/1996**  
**Phone Numbers:**  
 (617) 555-5555 (home)  
 (617) 555-5555 (work)  
**Next PCP Visit:**  
 01/25/2007 with WILLIAM LESTER



# Overdue Patients Completing Screening by Year





# TopCare\*

## Technology for Optimizing Population CAre in Resource-Limited Environment

---

- **Comprehensive cancer screening:** breast, cervical, colon
- **Population-based surveillance:** for all eligible patients seen in MGH primary care practices
- **Nonvisit based IT system:** complements existing visit-based/specialty efforts
- **Population health proof-of-concept:** IT supporting care redesign to improve outcomes in real-world setting
- **Demonstration project:** assessing provider's unique knowledge as catalyst for improved care



# TopCare: Key System Features

---

- **Patient identification:** overdue for cancer screening
- **Patient attribution:** assigned to primary care provider (PCP) or practice
- **Outreach:** automated reminder letters
  - ▶ Intervention: provider can also send directly to delegate, patient navigator, or defer screening
  - ▶ Central call center for patients to report outside tests
- **Active surveillance:** tracking tests and outreach
- **Contact management**
  - ▶ Practice delegates make/receive outgoing/ingoing calls
  - ▶ Navigators for patients at high risk for noncompliance



# Study Design

---

- Cluster randomized trial of 18 practices sites in MGH primary care practice-based research network to the intervention (n=9) or control (n=9) groups
- TopCare implemented in all study practices for 1 year (6/15/2011 – 6/14/2012)
- Eligibility criteria:
  - ▶ Breast: women 42–74 years, no mammogram in past 2 yrs
  - ▶ Cervical: women 21–64 years, no Pap smear in past 3 yrs
  - ▶ Colorectal: men/women, 52–75 years, no colonoscopy in past 10 years, or sigmoidoscopy/CT colonography in 5 yrs



# TopCare Interventions

---

- Control group: augmented usual care (AUC)
  - ▶ Automated application identified all patients overdue for cancer screening and mailed reminder letters
- Intervention group: AUC with PCP input
  - ▶ Physicians or population managers used the application to screen a list of overdue patients
  - ▶ Hypothesis: involving PCPs would lead to more effective and efficient cancer screening



# TopCare Cancer Screening Provider Registry

Zai, Adrian

PCP - MGH

Help Roster Folders Reports

Practice SP Provider

Search

Clear

Top Care PCP

You are searching:

Select	Name	MRN	PCP	Next PCP Appt	Breast	Cervical	Colorectal	Risk	Days Left
<input type="checkbox"/>				no appt	scheduled	excluded	unscheduled	Moderate	5
<input type="checkbox"/>				no appt	uptodate	excluded	unscheduled	Low	5
<input type="checkbox"/>				no appt	excluded	unscheduled	excluded	Low	14
<input type="checkbox"/>				no appt			unscheduled	Low	16
<input type="checkbox"/>				no appt	excluded	unscheduled	excluded	Low	24
<input type="checkbox"/>				no appt	uptodate	unscheduled	uptodate	Low	38
<input type="checkbox"/>				no appt	excluded	unscheduled	excluded	Low	43
<input type="checkbox"/>				no appt	unscheduled	excluded	unscheduled	Moderate	43
<input type="checkbox"/>				no appt	unscheduled	uptodate	excluded	Low	51
<input type="checkbox"/>				12/09/2011			unscheduled	Low	56

- Select an Action
- Send TopCare Letter
- Have TopCare Delegate Call Patient
- Refer to TopCare Navigator
- Not patient(s) of this PCP
- Defer all screening
- Patient(s) deceased

Select an Action

Submit

# of remaining Navigator slots:0

search MRN/Last Name

Search

Clear

Viewing 1 to 100 of 10

prev 100

next 100

100



# Web Page with Additional Information/Options

Zai, Adrian

PCP - MGH

Help

Roster

Folders

Reports

Practice

SP

Provider

Search

Clear

Top Care PCP

You are searching: \_\_\_\_\_

Select	Name	MRN	PCP	Next PCP Appt	Breast	Cervical	Colorectal	Risk	Days Left
<input type="checkbox"/>				no appt	scheduled	excluded	unscheduled	Moderate	5
<input type="checkbox"/>				no appt	uptodate	excluded	unscheduled	Low	5
<input type="checkbox"/>				no appt	excluded	unscheduled	excluded	Low	14
<input type="checkbox"/>				no appt			unscheduled	Low	16
<input type="checkbox"/>				no appt	excluded	unscheduled	excluded	Low	24
<input type="checkbox"/>				no appt	uptodate	unscheduled	uptodate	Low	38
<input type="checkbox"/>				no appt	excluded	unscheduled	excluded	Low	43
<input type="checkbox"/>				no appt	unscheduled	excluded	unscheduled	Moderate	43
<input type="checkbox"/>				no appt	unscheduled	uptodate	excluded	Low	51
<input type="checkbox"/>				12/09/2011			unscheduled	Low	56

Select an Action

Send TopCare Letter

Have TopCare Delegate Call Patient

Refer to TopCare Navigator

Not patient(s) of this PCP

Defer all screening

Patient(s) deceased

Select an Action

Submit

# of remaining Navigator slots:0

search MRN/Last Name

Search

Clear

Viewing 1 to 100 of 10

prev 100

next 100

100



# Custom Letters

## Massachusetts General Hospital

Attn: Evanthia Kartsagoulis  
Founders 736  
55 Fruit Street  
Boston, MA 02114-2696



MASSACHUSETTS  
GENERAL HOSPITAL

To: Maria Gonzales

Sep 11, 2011

## Massachusetts General Hospital

Attn: Evanthia Kartsagoulis  
Founders 736  
55 Fruit Street  
Boston, MA 02114-2696



MASSACHUSETTS  
GENERAL HOSPITAL

To: Jane Doe  
25 Home Street  
Cambridge, Massachusetts 02142  
United States

Sep 18, 2011

Dear Jane Doc,

I am writing to check on whether you are up-to-date on cancer screening test(s). The goal of screening is to prevent cancer from developing in the first place, or to find it early, before there are any signs a patient or doctor can see, when it is easier to treat and cure. I want to make sure we schedule a screening test if you are overdue, or update your records if our information is not correct.

Women should consider having a mammogram at least every two years to screen for breast cancer. If you are overdue, please contact our Radiology department at 617-724-XRAY (9729) or [www.massgeneralimaging.org/mymammo](http://www.massgeneralimaging.org/mymammo).

Women should have a Pap test at least every three years to screen for cervical cancer. If you are overdue and would like to schedule a Pap test, please call the doctor's office where you routinely get your Pap test done.

All eligible patients should have colon cancer screening at least every ten years. If you are overdue and would like to schedule a colonoscopy, please call our gastroenterology specialist group at 617-726-2426.

Your medical records here show that you are eligible for cancer screening for the following tests, the date of your most recent test, and whether you are due for additional testing:

	Cancer Screening Test	Most Recent Date	Status
Breast:	Mammogram	No date recorded	Overdue
Cervical:	Pap Smear	No date recorded	Overdue
Colon:	NA	No date recorded	Overdue

If our records are incorrect and you are up to date on your cancer screening, please email us at [careupdate@partners.org](mailto:careupdate@partners.org) or call 617-643-0287 to let us know. You can leave a private message with our Care Update Service so that we can update your medical record. When you leave a message, please tell us your name, medical record number, the date of the screening test, what the test was, where you had it done, and what the results were (if it was not done here at MGH). If you are not sure of all the details, just leave as much information as you can. You may also send us any reports of your screening test by fax (617-228-4560) or mail:

pruebas de detección de cáncer. EL objetivo de estas pruebas es el de prevenirarlo tempranamente, antes que aparezcan síntomas que el paciente o el y curarlo. Quiero asegurarme de coordinar una cita para realizar la prueba, si registros si nuestra información no es correcta.

ografía al menos cada dos años para detectar cáncer de mama. Si ya está departamento de Radiología al 617-724-XRAY (9729) o visite:

menos cada tres años para detectar cáncer cervical. Si ya debería hacerse la colaou, por favor llame al consultorio del médico donde rutinariamente se lo

berán hacerse una prueba de detección de cáncer de colon al menos cada diez a cita para una colonoscopia, por favor llame a nuestro equipo especialista en

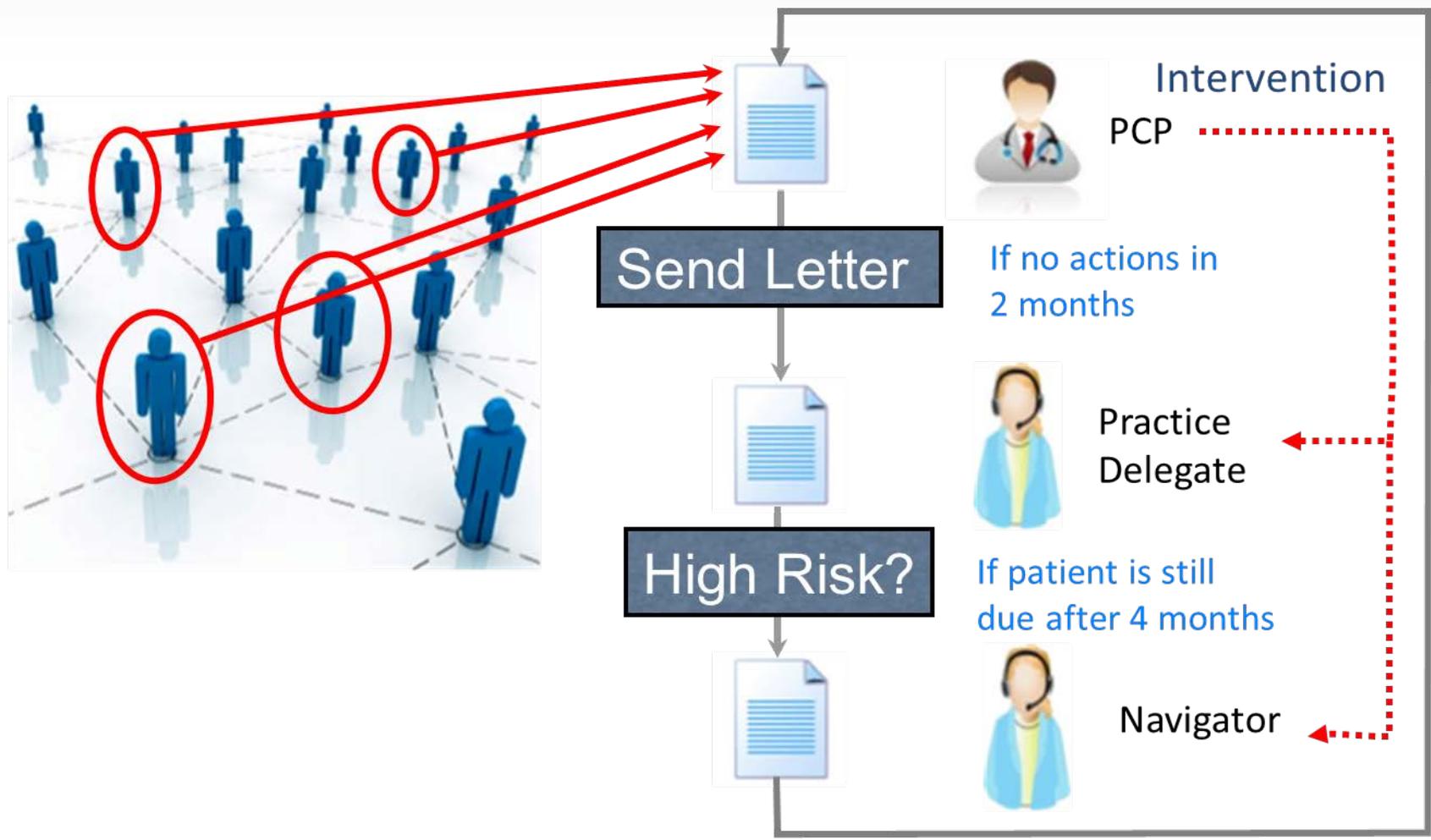
eúne los requisitos para realizarse las siguientes pruebas de detección de las recientes, y si ya debería hacerse pruebas adicionales:

del cáncer	Fecha más reciente	Estado
a	Fecha no documentada	Atrasado
u	Fecha no documentada	Atrasado
	Fecha no documentada	Atrasado

con sus pruebas de detección de cáncer, por favor, envíenos un correo al 617-643-0287 para hacémoslo saber. Puede dejar un mensaje privado en ara que actualicemos los registros. Cuando deje un mensaje, por favor, fecha de la prueba, qué prueba se realizó, dónde se la realizó y cuáles fueron i no está seguro de todos estos detalles, deje toda la información que conozca. e resultados que tenga al 617-228-4560, o por correo a:



# TopCare has an Active Surveillance System





# TopCare Contact Lists

Zai, Adrian

RSO

NAVIGATOR - MGH

Help

Roster

Folders

Reports

Practice

SP

Provider

Search

Clear

## Top Care Navigator

Name	Status	Trk Date	Lang	Nxt Apt	Breast	Cervical	Colorectal	Practice	Dys Lft	Ref. By	PCP
	●		Spanish	no appt			unscheduled	MGH Charlestown Adu			Dvorin, Evan
	●		Arabic	no appt	unscheduled	excluded	unscheduled	MGH Downtown			
	●	02/02/12	Spanish	no appt	unscheduled	excluded	unscheduled	MGH Chelsea Adult Me	167	Grinspoon	Grinspoon, Peter
	●		Spanish	no appt	uptodate	excluded	unscheduled	MGH Chelsea Adult Me	168	Fisch	Fisch, Judith
	●	01/20/12	Spanish	02/29/2012			unscheduled	MGH Chelsea Adult Me	174	Grinspoon	Grinspoon, Peter
	●		Cambodian	no appt			unscheduled	MGH Revere Healthca	185	Chin	Chin, Danny
	●		Cambodian	03/05/2012			noshow	MGH Revere Healthca	185	Chin	Chin, Danny
	●		Cambodian	01/25/2012			unscheduled	MGH Revere Healthca	200	Olson	Olson, Laura
	●	01/10/12	English	no appt	01/11/2012	excluded	excluded	Bulfinch Medical Grou	252	Palamara	Palamara, Kerri
	●		Spanish	02/15/2012	unscheduled	02/15/2012	uptodate	Internal Medicine Assc	278	RPM	Berman, Rebecca
	●		French	no appt			noshow	Internal Medicine Assc	278	RPM	
	●		Somalian	no appt	unscheduled	excluded	unscheduled	Internal Medicine Assc	287	RPM	
	●		Arabic	no appt	uptodate	excluded	unscheduled	Internal Medicine Assc	287	RPM	
	●		Spanish	no appt	uptodate	excluded	unscheduled	MGH Chelsea Adult Me	287	RPM	Eubanks-daniel, Rochelle

search MRN/Last Name

Search Patient Status:

● ● ● ● ● ● ● ●

Search Language

Search

Clear

Viewing 1 to 100 of 292

prev 100

next 100

100





# Contact Management

Zal, Adrian

NAVIGATOR - MGH

Help Roster Folders Reports

Practice SP Provider

Search

Clear

Top Care Navigator

63 Male

Oncall

Demographics

Summary

Breast

Cervical

Colorectal

Notes

Contact

## Calls

Date/Time	By	Type	Call Comment
10/14/11 12:04:53	Gulmaraes, Erica	TOPCARE	[Successful Contact on 10/14/2011] Colonoscopy scheduled for 12/05/11 @ 9:45 -- Blake. (Asked pt for reason for previous no shows (3); pt said he couldn't do the prep--couldn't take the liquid).
08/11/11 15:47:33	Gamba, Gloria	TOPCARE	[Successful Contact on 08/11/2011] Requests appt for Oct. Early am. needs escort

Home Phone: [REDACTED]

Day Phone: [REDACTED]

Number of consecutive unsuccessful contact:0

Successful Contact

11/28/2011

Unsuccessful Contact

Reset

Cease Contacting This Patient

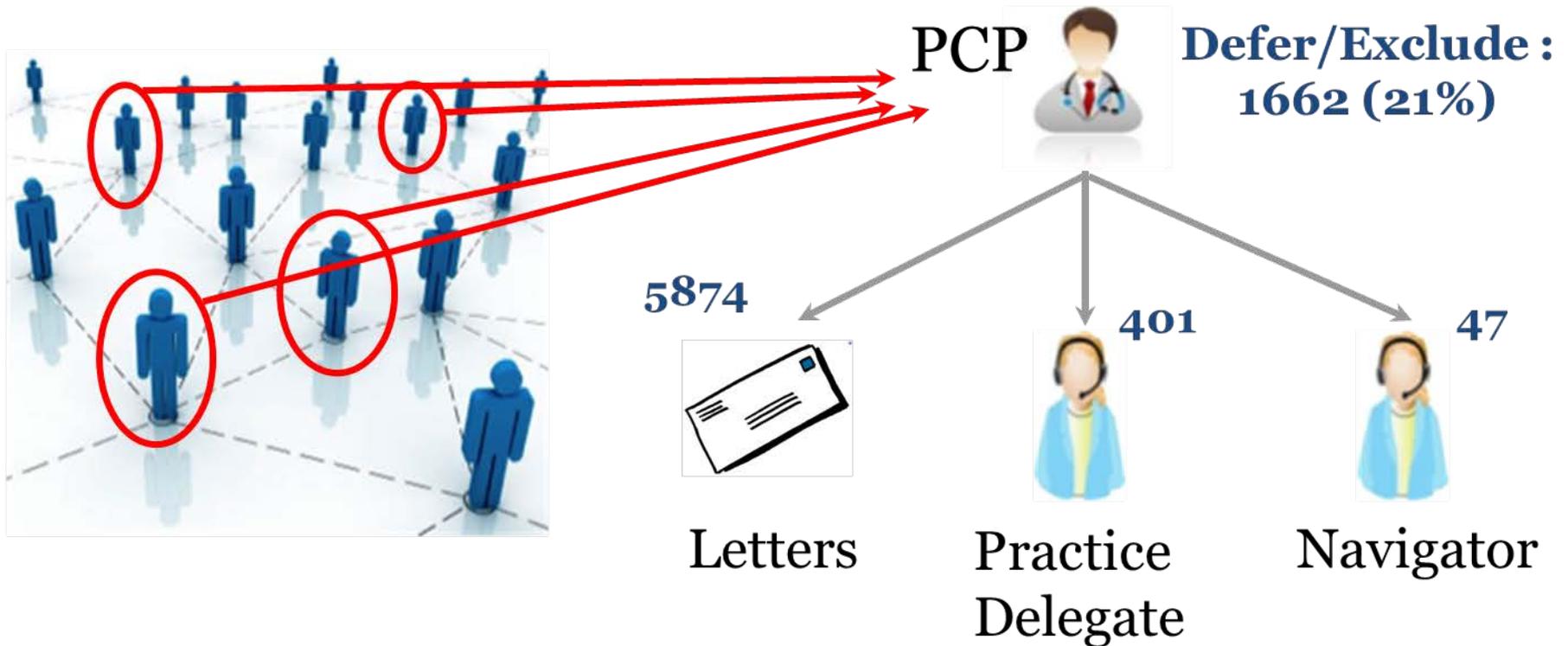
Call Comments:

Return to Roster

Save

# TopCare Intervention Trial

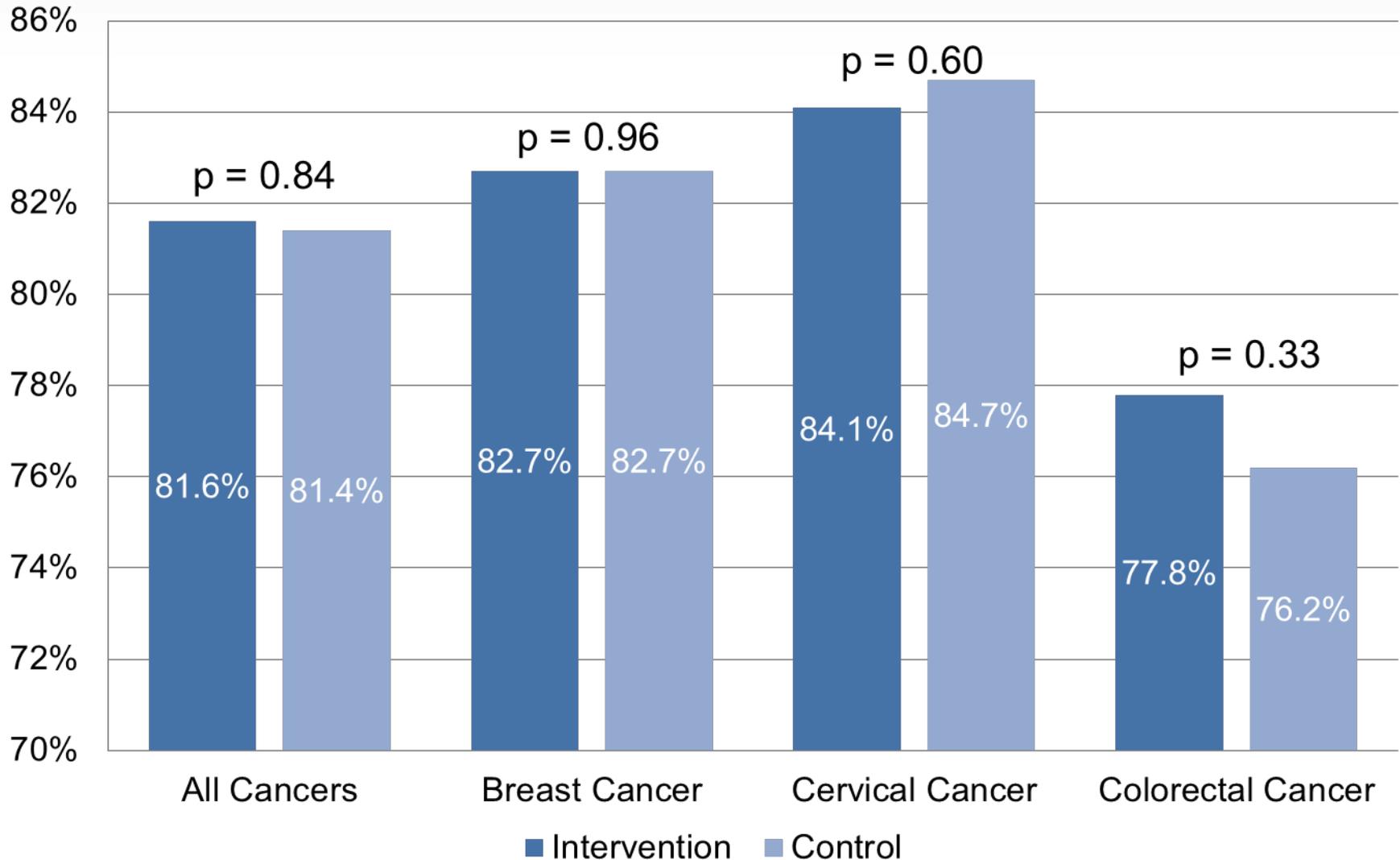
88 out of 101 (87%) providers  
reviewed 9784 of 16573 (48%) patients



**Total intervention letters: 5874+6128=12,002 (24%)**  
**Total control letters: 16,378 (31%)**

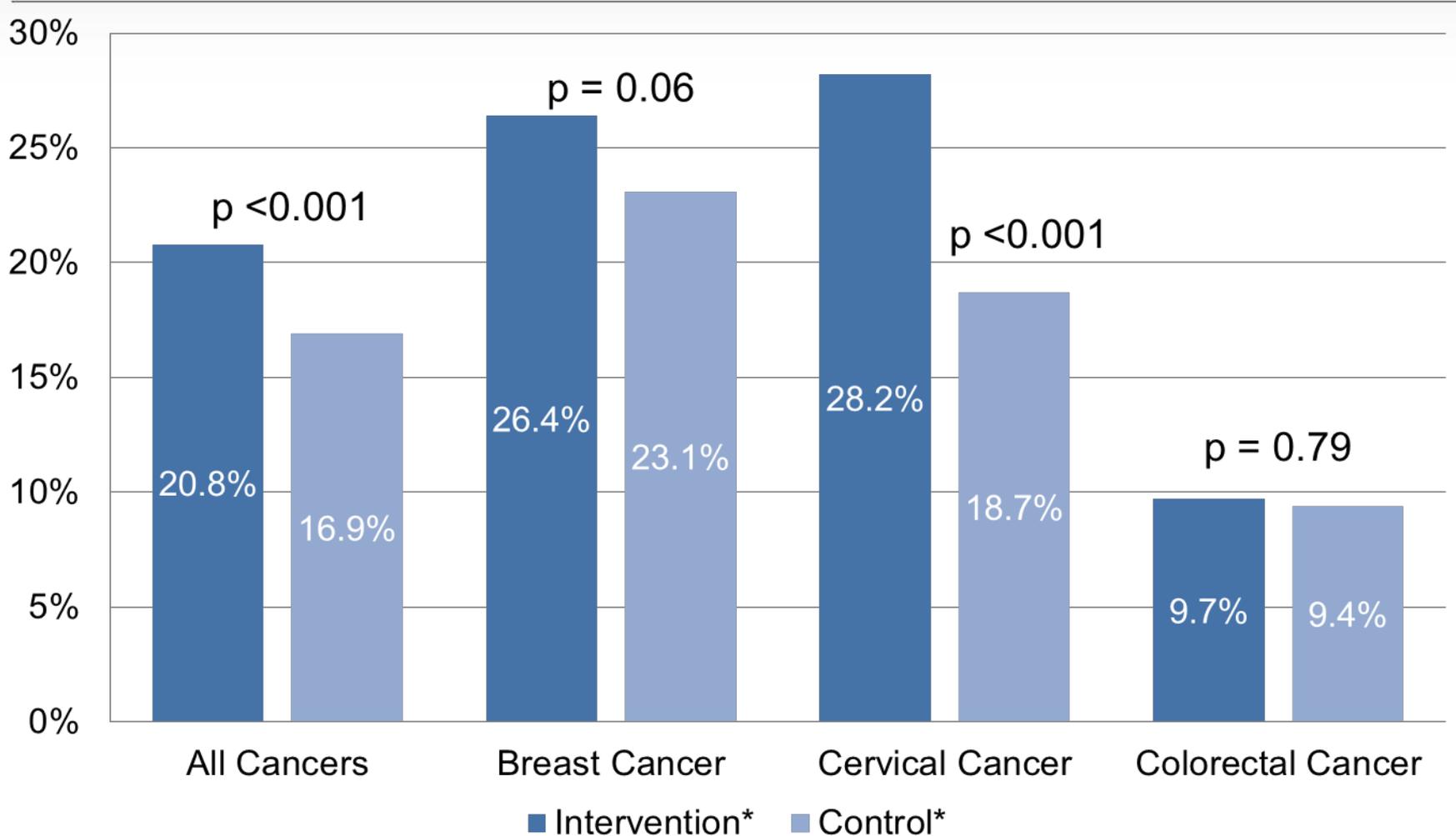


# 1-Year Outcomes: Average Screening Rates Among All Eligible Patients





# 1-Year Outcomes: Average Screening Rates Among Overdue Patients

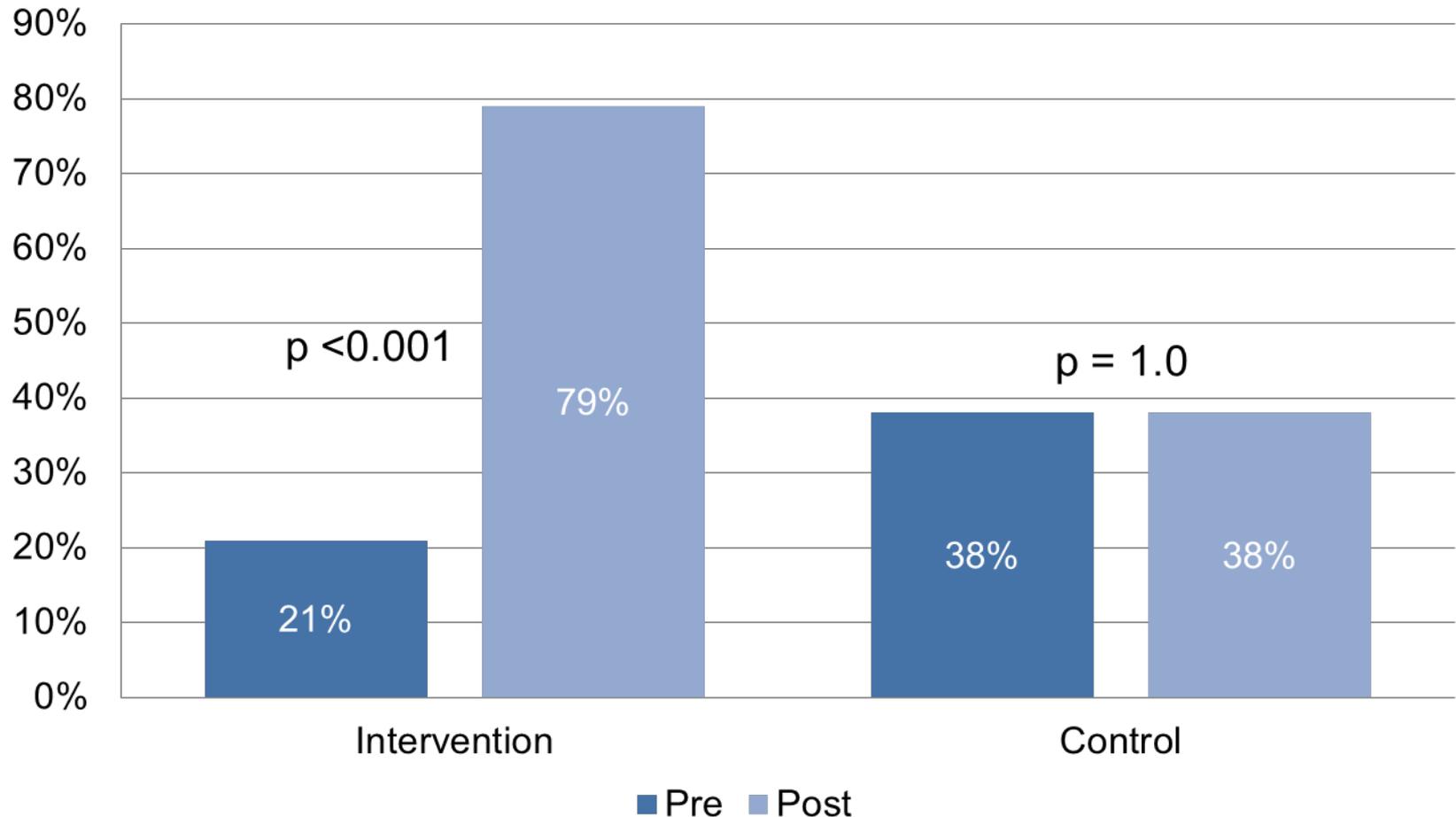


\* Among practices in the top tertile of delegate use



# Provider Survey: Satisfaction

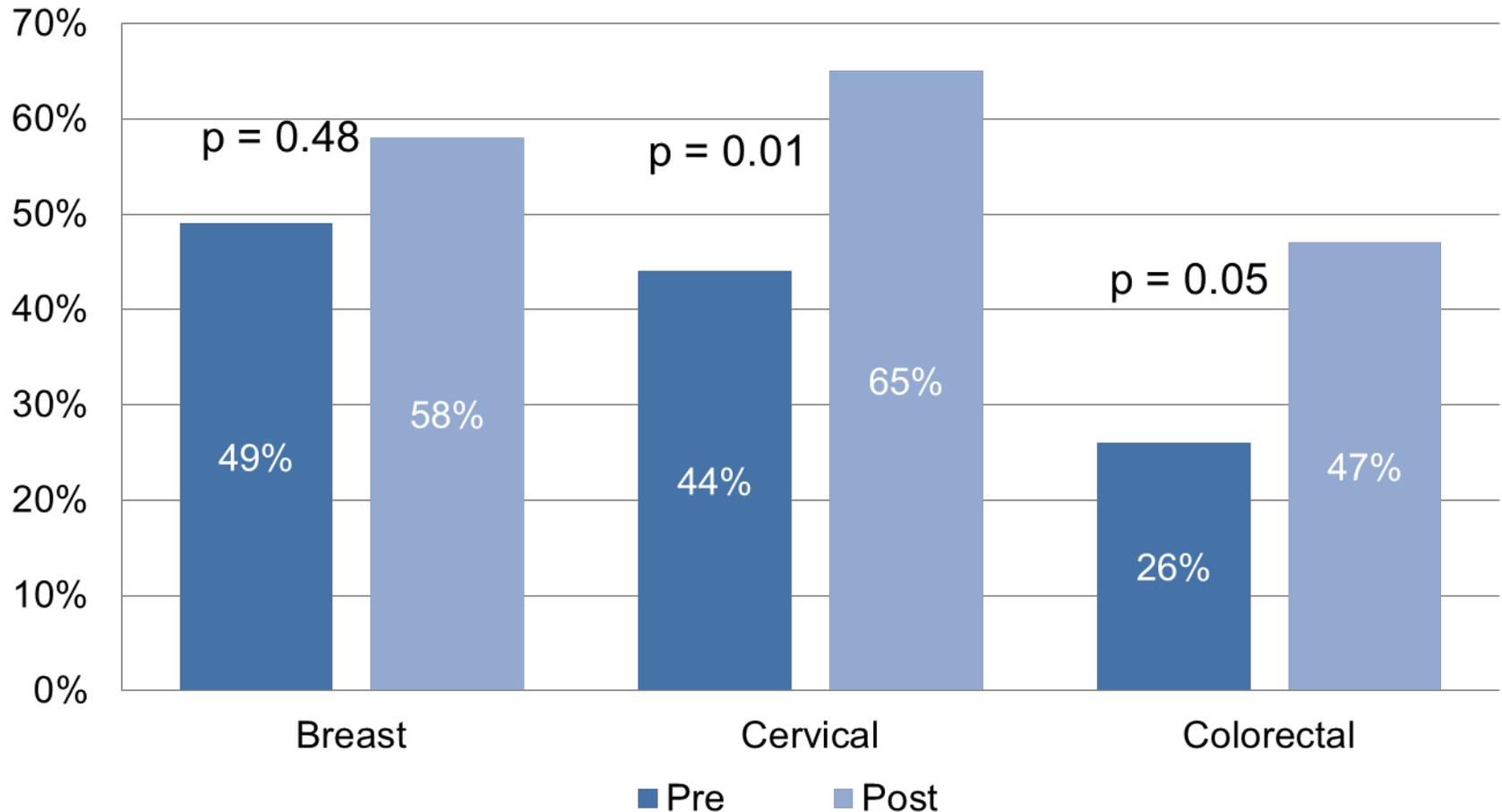
Believe the Process for Managing Patients Overdue for Cancer Screening Improved Over the Past Year





# Survey Response: Intervention Providers\*

Time Spent on Cancer Screening: < 10 Minutes Per  
Clinical Session



\* No significant differences in responses for PCPs in control practices



# Conclusions

---

- Involving PCPs in a visit-independent, population management health IT system did not increase screening rates compared to an automated reminder system.
  - ▶ However, similar rates were achieved with fewer patient contacts in intervention practices.
  - ▶ Among practices where delegates used TopCare more, improved screening rates were found among overdue patients in intervention group.
  - ▶ Intervention PCPs thought process for managing cancer screening improved and spent less time on it during clinic visits.



# Post-Study Implementation

---

- All practices continue cancer screening
  - ▶ Choice of using reviewing list (PCP or designee) or not
- Addition of diabetes registry
  - ▶ Overdue for testing
  - ▶ Referral to diabetes champion for insulin management
- Rollout of TopCare v2.0
  - ▶ New registries: heart disease, hypertension, panel management

HOME

WORKSPACE

REGISTRIES

ADMIN

Populations

Interventions

CardioVascular Events (PHM)

Cervical Screening (PHM)

Colorectal Screening (PHM)

Diabetes (PHM)

Hypertension (PHM)

Mammo Screening (PHM)

My Panel (PHM)

## My Profile



### Steven Atlas

Director, Primary Care Rese  
Improvement  
MGH

[Edit My User Account](#)  
[Edit My User Profile](#)

## Need Help?

Send us a help desk request



Help Desk Requests

Frequently Asked Questions

## Training Materials & Discussions



Practice Manager



PCP



Delegate



Navigator



PHM

## News & Announcements

7/15/2014

### New TopCare reports are out!

Hi team, For those who have access to TopCare reports, I just want to inform you that the reports are all in production now. Check them out! Please be ...

[Read More](#)

7/1/2014

### TopCare 2.0 Official Rollout at MGH –Please Read

Dear Colleagues, I'm writing to remind you that on Wednesday, July 2nd, we will be turning on the TopCare 2.0 functionality to all users at... [Read More](#)

5/29/2014

### New CVE roster is up!

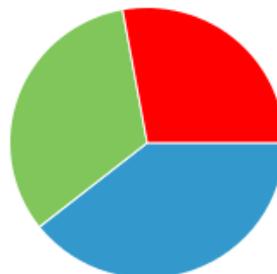
Hi team, As usual, let the beta testing begin. Thanks, Adrian [Read More](#)

[All News](#)

## Pulse Check

Thank you for participating.  
**How often do you use TopCare?**

### Poll Results:



Daily [39%] Weekly [32%]  
Monthly [27%]



Have ideas  
to improve TopCare?

- New Patient Registry
- New Registry Risk Criteria
- Application Enhancement
- Research Interest
- General Question

**TELL US!**



# Contact Information

---

Steven Atlas

[SATLAS@mgh.harvard.edu](mailto:SATLAS@mgh.harvard.edu)

Massachusetts General Hospital



U.S. Department of Health and Human Services



Agency for Healthcare Research and Quality

Advancing Excellence in Health Care • [www.ahrq.gov](http://www.ahrq.gov)

# Impact on Implementing Novel Health IT Interventions for Diabetes

July 31, 2014

**Cliff T. Fullerton, M.D., M.S.**  
Chief Medical Officer,  
BSWH Quality Alliance  
Chief Officer for Population  
Health & Equity, BSWH

**David J. Ballard, M.D., M.S.P.H., Ph.D.,  
F.A.C.P.**  
Chief Quality Officer, BSWH  
President, STEEEP Global Institute  
Chair, CERTs Steering Committee  
Member, National Advisory Council, AHRQ

**David W. Bragg, M.D.**  
Medical Director of Clinical Operability,  
BSWH Quality Alliance  
Sr. VP Medical Informatics,  
Health Texas Provider Network



# Topics to be Covered

---

1. EHR deployment research – areas of interest:
  - a. Financial productivity effects
  - b. Clinical effectiveness
2. Deployment and utilization of an EHR in a provider network
3. EHR clinical effectiveness for diabetes care
  - a. Intervention: specific diabetes care-related functionality
  - b. Lessons learned—diabetes care process and outcomes
4. Future plans



# Research Study I: Financial Productivity and Effects

---

- Title: Impact of Health IT on Primary Care Work-flow and Financial Measures: 1R03HS018220-01
- Funding timeline: 09/30/2009 – 09/29/2011
  - ▶ Aim 1: to estimate the effect of the EHR on workflow outcome measures.
  - ▶ Aim 2: to estimate the effect of the EHR on financial measures.
  - ▶ Aim 3: to quantify financial and nonfinancial costs of health IT implementation and maintenance, contributing knowledge about perceived barriers and facilitators to EHR adoption and implementation.



# Financial Productivity and Effects

## Total Cost Of Implementation Of Electronic Health Record System For An Average Five-Physician Practice In The HealthTexas Provider Network Through First Year Of Use

Expenditures	Costs through 60 days after launch	First-year costs <sup>a</sup>	Total costs <sup>b</sup>
<b>FINANCIAL COSTS (DEPRECIABLE CAPITAL EXPENSES)</b>			
Hardware costs (fixed)	\$25,000	\$0	\$25,000
Hardware costs (variable)	\$35,290	\$0	\$35,290
Software license, hosting, etc. (variable)	\$14,250	\$85,500	\$85,500
<b>NONFINANCIAL COSTS</b>			
HealthTexas network implementation team (fixed)	\$28,025	\$0	\$28,025
Practice implementation team (fixed)	\$7,413	\$0	\$7,413
Practice end user (variable)	\$51,657	\$0	\$51,657
<b>TOTAL</b>			
Per practice	\$162,047	\$85,500	\$232,297
Per physician	\$32,409	\$17,100	\$46,659

**SOURCES** Authors' interviews with key informants; authors' analysis of HealthTexas documents and salary data. **NOTES** Data are from the twenty-six primary care practices in the network that implemented the electronic health record between June 2006 and December 2008. Fixed costs are constant across practices, regardless of size. Variable costs depend on the number of physicians in a practice. <sup>a</sup>Includes costs for first sixty days after launch. <sup>b</sup>Not all totals in previous columns sum to total because of double counting of some operating costs.



# Research Study II: Clinical Effectiveness

---

- Title: Impact of Health IT Implementation on Diabetes Process and Outcome Measures
  - ▶ AHRQ grant: R21 HS20696-02
  - ▶ Funding timeline: 06/01/2011 – 05/31/2013
- Objective: to assess the impact of EHR implementation on the primary care of diabetes
- Data sources: charts were abstracted semiannually for 14,051 diabetes patients seen in 34 primary care practices.



# Clinical Effectiveness: Specific Aims

---

- Primary aim: to estimate the impact of an EHR on diabetes outcomes, measured by the proportion of patients meeting the Health Partners Optimal Diabetes Care measure.\*
- Secondary aim 1: to estimate impact of an EHR on specific patient outcomes and compliance with recommended process of care related to diabetes.
- Secondary aim 2: to estimate the prevalence of physician use of the Diabetes Management Form (DMF), and the effect of the DMF on patient outcomes related to diabetes as measured by the Optimal Diabetes Care measure.

\*Optimal Diabetes Care Measure = HbA1c  $\leq$  8 percent; LDL cholesterol < 100 mg/dl; blood pressure < 130/80 mmHg; not smoking; and documented aspirin use (for patients  $\geq$  40 years).



# Clinical Effectiveness: Intervention 1

---

Deployment of the HealthTexas Provider Network  
(HTPN) Electronic Health Record

*Impact of EHR Exposure on the Delivery of  
Optimal Diabetes Care*



# Setting: HealthTexas Provider Network



## 211 care delivery sites including

- 69 primary care centers
- 103 specialty care centers
- 32 satellite specialty care clinics
- 7 hospitalist programs
- 3 pulmonary critical care units
- 8 liver disease outreach clinics
- 5 advanced heart failure clinics
- 1 kidney outreach clinic
- 3 senior health centers
- 26 cardiovascular care sites
- 2 MRI centers



## > 780 practitioners including:

- 647 physicians
- 134 physician extenders

## Plus:

- 71 registered nurses
- 102 licensed vocational nurses
- 610 medical assistants



# Clinical Effectiveness: Data Collection

---

What made this study possible is the contemporaneous collection of data on diabetes patients.

- In 2007 HTPN established and began populating a retrospective diabetes prevalence cohort database using the AMA Physician Consortium Adult Diabetes Performance Measure set.
- Each cohort was defined by the claims-based algorithm used by the Centers for Medicare & Medicaid Services (CMS)
- All patients with  $\geq 2$  ambulatory care visits  $\geq 7$  days apart with a diabetes-related billing code (CMS National Measurement Specifications Diabetes Quality of Care Measures [2002]: ICD-9-CM Diagnosis Codes 250.xx) during the preceding 12 months were identified from administrative data.



# Clinical Effectiveness: Study Population

---

All patients who :

- Were 40 years or older
- Had at least two diabetes-related visits in 2007
- Had no DMF “exposure” in 2007 or prior
- Had at least two diabetes-related visits in 2009

Know:

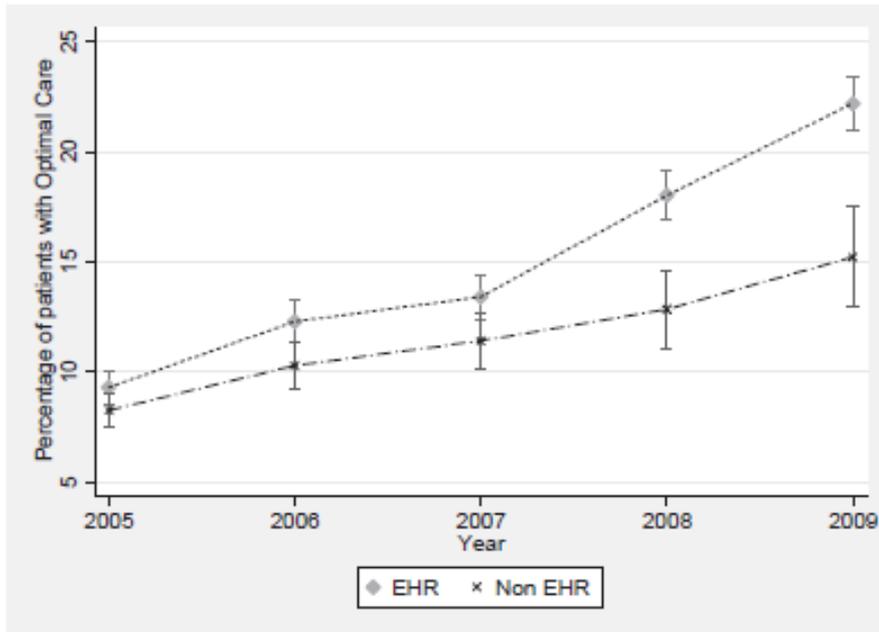
age, sex, insulin usage, number of visits



# Clinical Effectiveness: Intervention 1

## Implementation of EHR

Figure 1: Percentage of Diabetes Patients with “Optimal Care”\* Each Year, According to Whether Their Practice Ever Implemented the Electronic Health Record (EHR).



Notes. \*HbA1c  $\leq$  8 percent; LDL cholesterol  $<$  100 mg/dl; blood pressure  $<$  130/80 mmHg; not smoking; and documented aspirin use (for patients  $\geq$  40 years).

**Findings: Among patients exposed to the EHR, all process and outcome measures except HbA1c and lipid control showed significant improvement.**



# Clinical Effectiveness: Intervention 2

---

- Same population as for intervention 1
- Include only those patient visits after EHR implementation
  - ▶ Compare those patients for whom DMF was used with those for whom the form was not used





# Clinical Effectiveness: Intervention 2 (cont.)

- A key element was the last dialogue box.

The screenshot shows a software window titled "Centricity" with a close button (X) in the top right corner. The main content area is titled "Therapeutic Recommendations:" and contains a numbered list of six items. Item 4 includes sub-points for "Diabetes" and "Smoking". Item 5 includes sub-points for "Urine Microalbumin", "Diabetic Eye Exam", "Foot exam needs to be completed for this visit", and "Lipid panel". At the bottom center of the window is an "OK" button.

Centricity

Therapeutic Recommendations:

- 1) No Blood Pressure recorded yet as of this visit. You may enter this on the EXAM Page of this form.
- 2) Consider entering patient into a Diabetic Education Program.
- 3) Patient is currently taking no medications for diabetes and has a HgbA1C greater than 7.0. Consider starting a medication for better diabetic control.
- 4) Patient's LDL cholesterol is greater than 70 and is at "very high risk" due to ASHD, PVD, or Cerebrovascular Dz AND at least one other major risk factor:
  - Diabetes
  - SmokingConsider increasing the dose of the current lipid lowering agent or adding another agent to get LDL below 70.
- 5) Since the patient is Diabetic, the following are now due:
  - Urine Microalbumin
  - Diabetic Eye Exam
  - Foot exam needs to be completed for this visit
  - Lipid panel
- 6) Patient is diabetic and has evidence for vascular disease. Consider placing the patient on ASPIRIN (if patient can tolerate this) or another anti-platelet agent.

OK



# Clinical Effectiveness: Intervention 2 Results

---

## Summary

- Unadjusted results show larger improvement in unexposed group for primary and most secondary outcomes
- Adjusted results confirm that:
  - ▶ DMF has **negative effect** on optimal care bundle
  - ▶ DMF has **negative effect** on LDL, total cholesterol, blood pressure, and flu vaccines
  - ▶ DMF has **positive effect** on prescribing aspirin, checking microalbumin, foot exams, eye exams



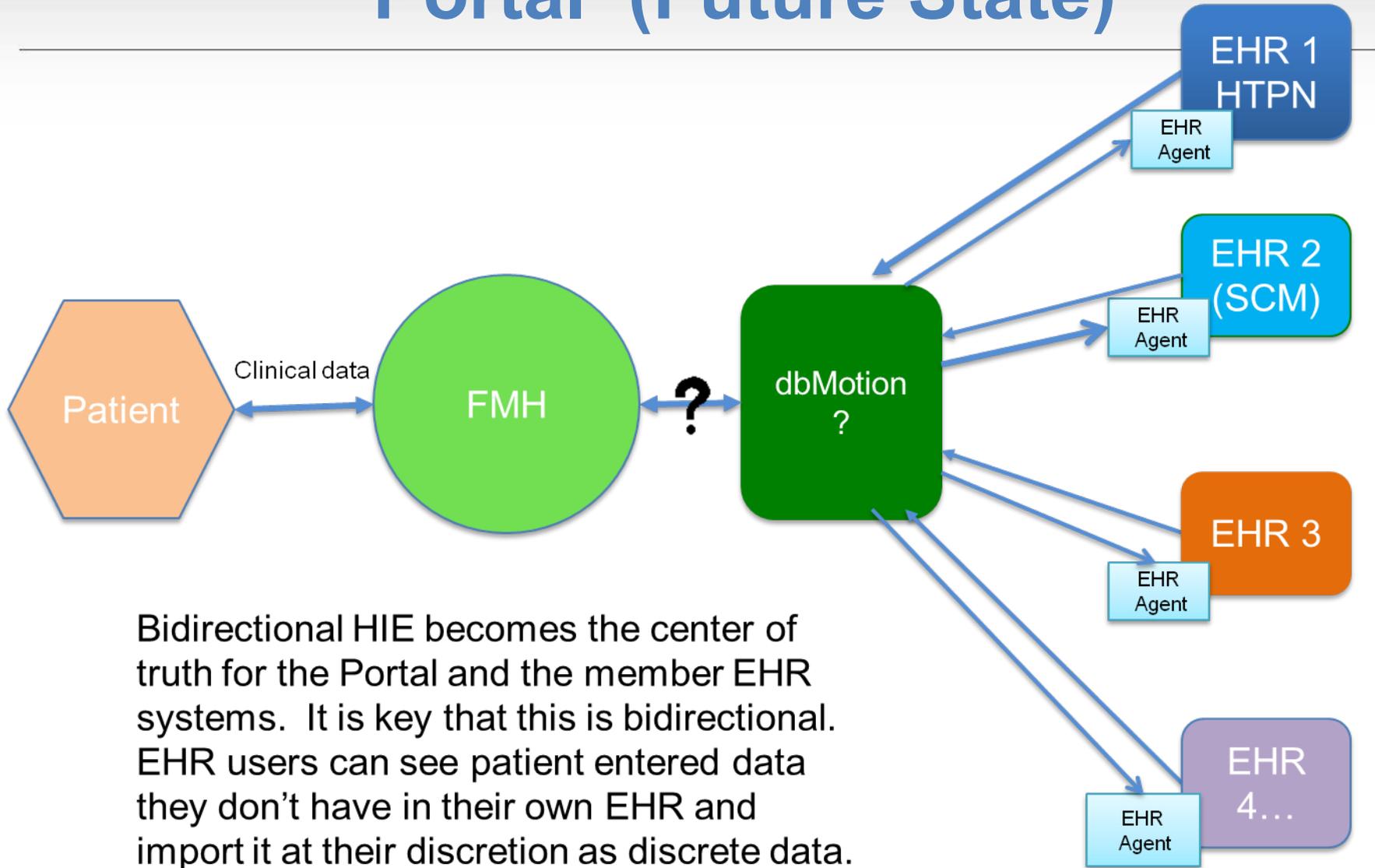
# HealthTexas Provider Network Portal Strategy

---

- Current state: Allscripts (Eclypsis) in acute environments—35 hospitals
- GE Centricity in HTPN (680 employed physicians)
- The Quality Alliance: 2,800 physicians, 74 different EHRs
- *Ideal goal:* one patient, one personal health record



# Bidirectional HIE with Integrated Portal (Future State)



Bidirectional HIE becomes the center of truth for the Portal and the member EHR systems. It is key that this is bidirectional. EHR users can see patient entered data they don't have in their own EHR and import it at their discretion as discrete data.



# References

---

Herrin, J, Nicewander D, Fullerton C, Aponte P, Stanek G, Cowling T, Collinsworth A, Fleming NS, Ballard DJ. The effectiveness of implementing an electronic health record on diabetes care and outcomes. 2012. *Health Serv Res* **47**(4): 1522-1540

Herrin J, da Graca B, Aponte P, Stanek HG, Cowling T, Fullerton C, Hollander P, Ballard DJ. Impact of an EHR-based Diabetes Management Form on quality and outcomes of diabetes care in primary care practices. 2014 Jan 7. *Am J Med Qual*.



# Contact Information

---

David Ballard

[Dj.ballard@baylorhealth.edu](mailto:Dj.ballard@baylorhealth.edu)

Baylor Scott and White Health

Cliff Fullerton

[cliff@BaylorHealth.edu](mailto:cliff@BaylorHealth.edu)

Baylor Scott and White Health

David Bragg

[David.bragg@baylorhealth.edu](mailto:David.bragg@baylorhealth.edu)

Health Texas Provider Network



U.S. Department of Health and Human Services



Agency for Healthcare Research and Quality

Advancing Excellence in Health Care • [www.ahrq.gov](http://www.ahrq.gov)

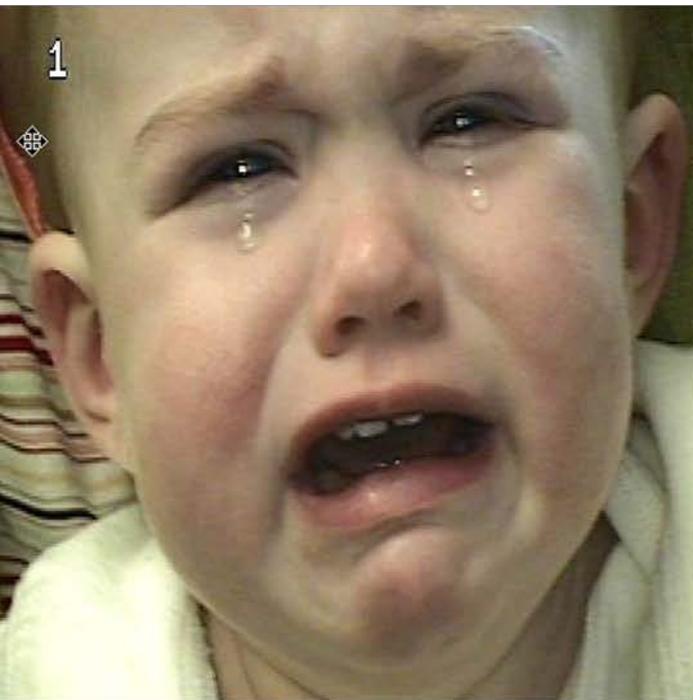
# Implementation and Evaluation of Health IT for Care of Children with Acute Illness

**Kenneth M. McConnochie, M.D., M.P.H.**

**July 31, 2014**

# Primary Care, Patient-to-Provider Telemedicine: Health-e-Access

- 9 months old, temperature 104 on waking from nap at child care
- Well when dropped off at 7:30 that morning, except for sniffles



**Diagnosis:**  
acute otitis media



**Next day**



# Health-e-Access

Child site

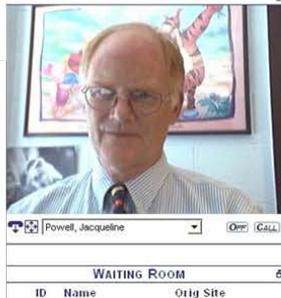


Provider site

Health-e-Access



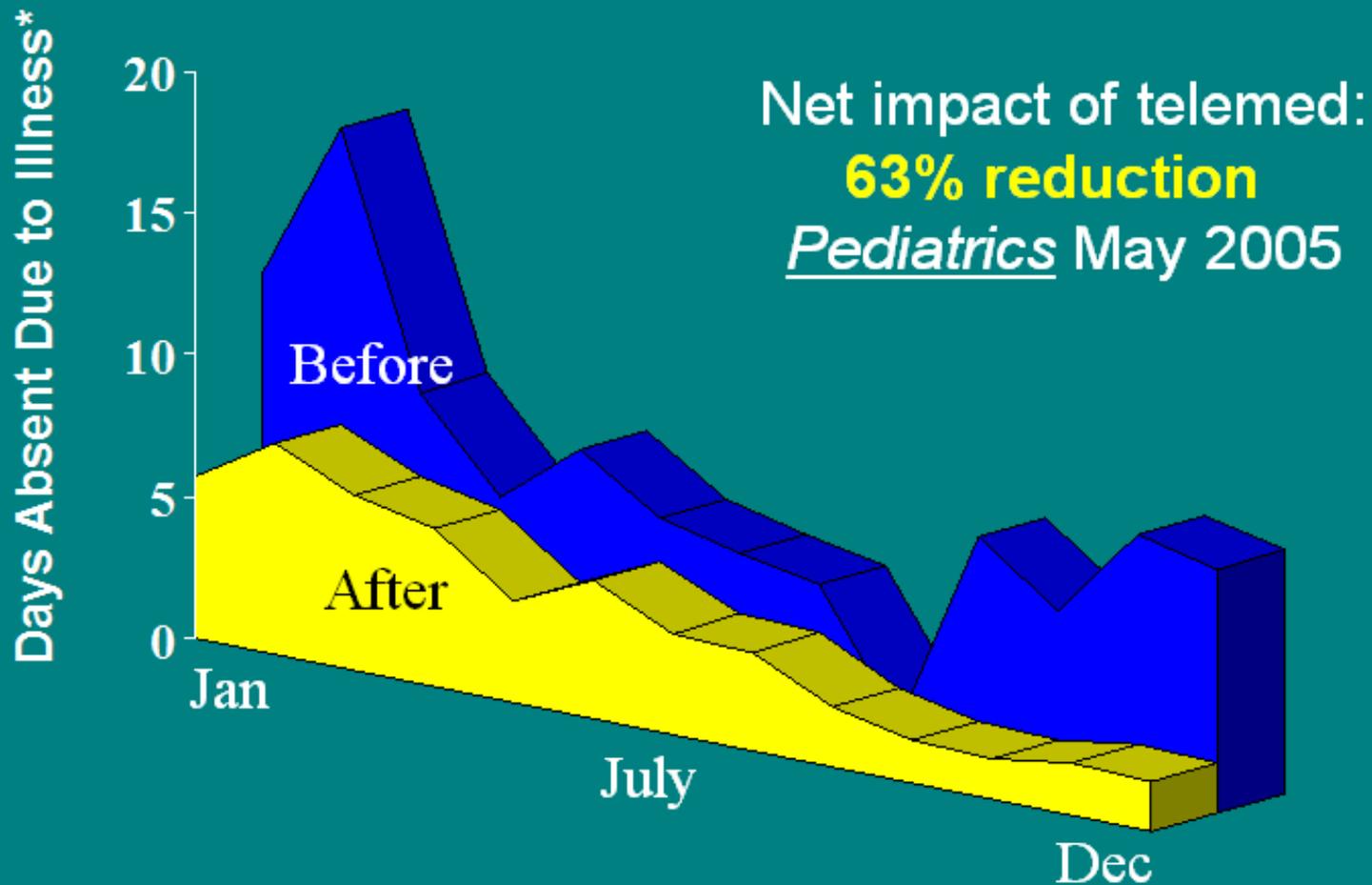
Video conference window - view at child site



Video conference window - view at clinician site



# Effectiveness: Absence from Child Care Due to Illness



\* Absence due to illness in mean days per week per 100 registered child-days.



# Effectiveness and Efficiency

---

- Reduction in absence from child care due to illness: **63%**
- Visits completed in child care, schools, child development center: **> 14,000**
- Completion rate: **97%** (3% referred to higher level of care)
  - ▶ Would otherwise have gone to emergency department (ED), urgent care, or office: **94%**
  - ▶ Allowed parent to stay at work/school: **93%** (estimated time saved, mean = 4.5hr/visit)
  - ▶ Would choose child care with telemed over one without: **92%**



# Effectiveness and Efficiency (cont.)

---

- Continuity with primary care medical home: **83%**
- Community access sites **> 70** (includes all Rochester City Schools)
- Provider participation and commitment:
  - ▶ Providers **> 70**
  - ▶ Primary care practices = **10**
  - ▶ Primary care practice goal **>25%** of illness seen via telemed
- Payer reimbursement:
  - ▶ City children covered ~ **85%**
  - ▶ Not yet paying: FFS Medicaid (**6%**), Fidelis (**6%**)
  - ▶ Uninsured ~ **4%**



# Effectiveness and Efficiency (cont.)

---

- Observed reduction in ED visits:
  - ▶ Fewer visits among children in regular city elementary schools and child care: **at least 22%**
  - ▶ Fewer visits among special needs children attending a child development center: **almost 50%**
- Pediatric primary care office visits appropriate for telemedicine = **85%**
- Pediatric emergency department visits appropriate for telemedicine = **40%**



# Value to the Community

---



## Usual Care

Child seen 4 hrs. later, at best  
First dose of medication 6 hrs. later



## Health-e-Access Care Model

Child seen now  
First pain medication now  
First antibiotic 1-2 hrs. later

# Cost to the Community

## Usual Care



- Office, urgent care, or ED physical space
- Personnel costs: nurses and med-techs
- Parent misses ½ day of work
- Transportation costs, often ambulance
- Payment for ED visit \$750

## *Versus*

## Health-e-Access Model



- Little or no cost for space
- Patient-end equipment and connectivity
- Personnel costs: med-tech, coordinator
- No transportation or parking cost
- Parent misses no work
- Payment for telemed visit = \$75

## No difference

- Medication cost
- Provider cost



# Newer Primary Care Applications

---

## Pediatric acute-illness care

- ▶ Neighborhood/after-hours access—**avoid ED**

## Pediatric chronic problem care

- ▶ Asthma management—**avoid school absence, ED, hospital**
- ▶ ADHD management—**avoid grade retention, school dropout**

## Pediatric dentistry

- ▶ Dental screening—**avoid extensive dental work, tooth loss**

## Geriatric acute-illness care

- ▶ Senior living communities—**avoid ED, hospital**



# Primary Care Apps: Vision

---

- Unlimited
- At some point in the care process for any concern, it is advantageous to patients to engage at a distance.
- Health care: a process of information acquisition, interpretation, and exchange



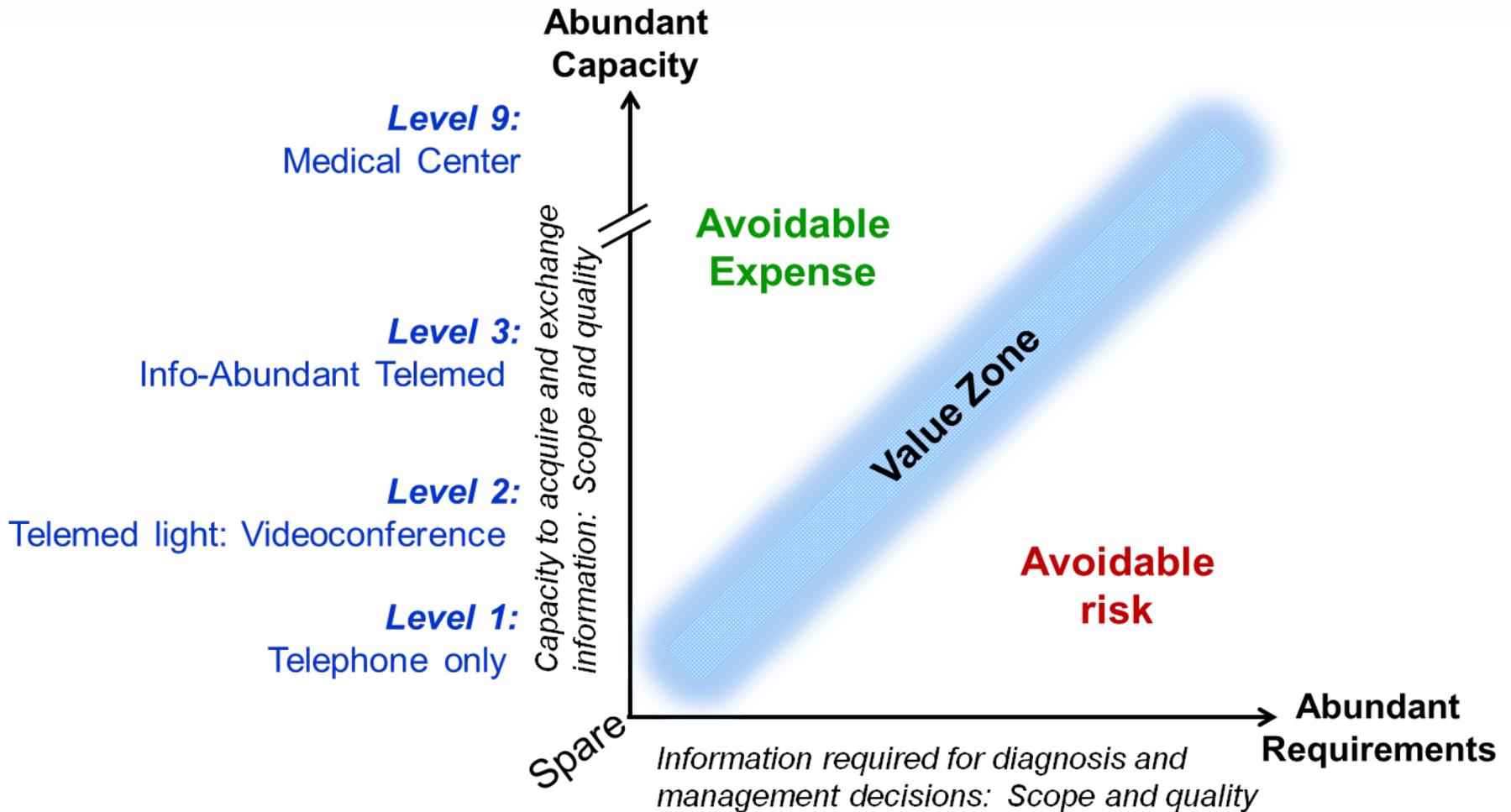
# Barriers

---

- Deeply entrenched care processes
- Human response to uncertainty
- Provider scarcity
- Fee-for-service financing
- Productivity measured as units of service
- Lack of relevant regulations
- Lack of established best practices



# Value and the Continuums of Information Requirements and Capacity





# Facilitators

---

- Organize into Integrated Practice Units (IPUs)
- Measure and focus on outcomes that are most meaningful to patients



# Financial Incentives' Effect on Care Delivery

## *Hospital Chain Said to Scheme to Inflate Bills*

By JULIE CRESWELL and REED ABELSON JAN. 23, 2014

*The New York Times*

Every day the scorecards went up, where they could be seen by all of the hospital's emergency room doctors.

Physicians hitting the target to admit at least half of the patients over 65 years old who entered the emergency department were color-coded green. The names of doctors who were close were yellow. Failing physicians were red.

The scorecards, according to one whistle-blower lawsuit, were just one of the many ways that Health Management Associates, a for-profit hospital chain based in Naples, Fla., kept tabs on an internal strategy that regulators and others say was intended to increase admissions, regardless of whether a patient needed hospital care, and pressure the doctors who worked at the hospital.

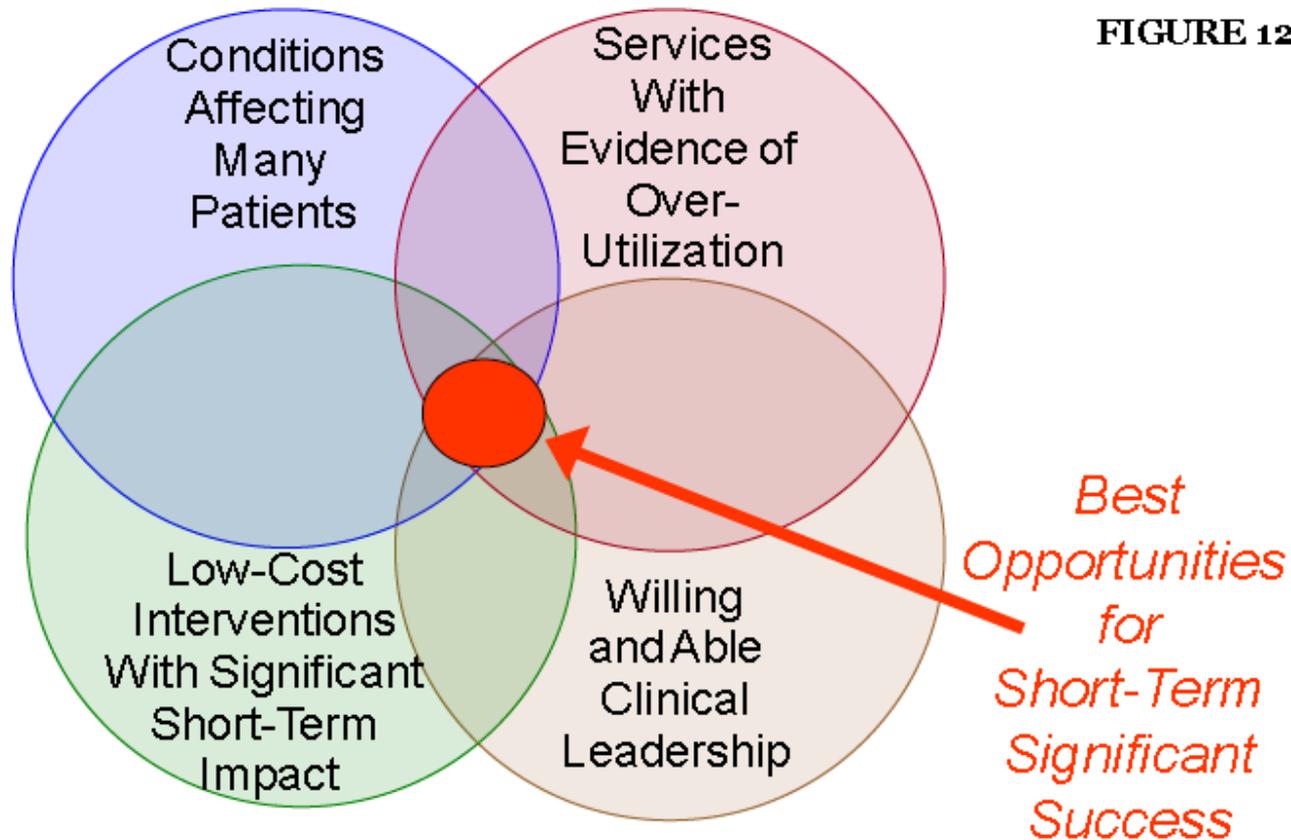


# Facilitators

---

- Organization using IPUs
- Measurement and focus on outcomes most meaningful to patients
- Bundled payment for care cycles
- Cost-based accounting
- Enabling information technologies (the continuum)
- Care guidelines (best practices) and regulations enabling all the above

# Implementing Health IT





# Thank You

---

- Miller HD. *Transitioning to Accountable Care: Incremental Payment Reforms to Support Higher Quality, More Affordable Health Care*. Center for Healthcare Quality and Payment Reform, 2011.
- Porter ME, Lee TH. The Strategy That Will Fix Health Care. *Harvard Business Review*, October 2013: 51- 71.
- Porter ME, Pabo EA, Lee TH. Redesigning Primary Care: A Strategic Vision To Improve Value By Organizing Around Patients' Needs. *Health Affairs*, 2013, 32: 516–525.



# Contact Information

---

Kenneth McConnochie

[ken\\_mcconnochie@urmc.rochester.edu](mailto:ken_mcconnochie@urmc.rochester.edu)

University of Rochester Medical Center



## Q & A

---

Please submit your questions by using the Q&A box to the right of the screen.



# CME/CNE Credits

---

## ***To obtain CME or CNE credits:***

Participants will earn 1.5 contact credit hours for their participation if they attended the entire Web conference.

Participants must complete an online evaluation in order to obtain a CE certificate.

A link to the online evaluation system will be sent to participants who attend the Web Conference within 48 hours after the event.