

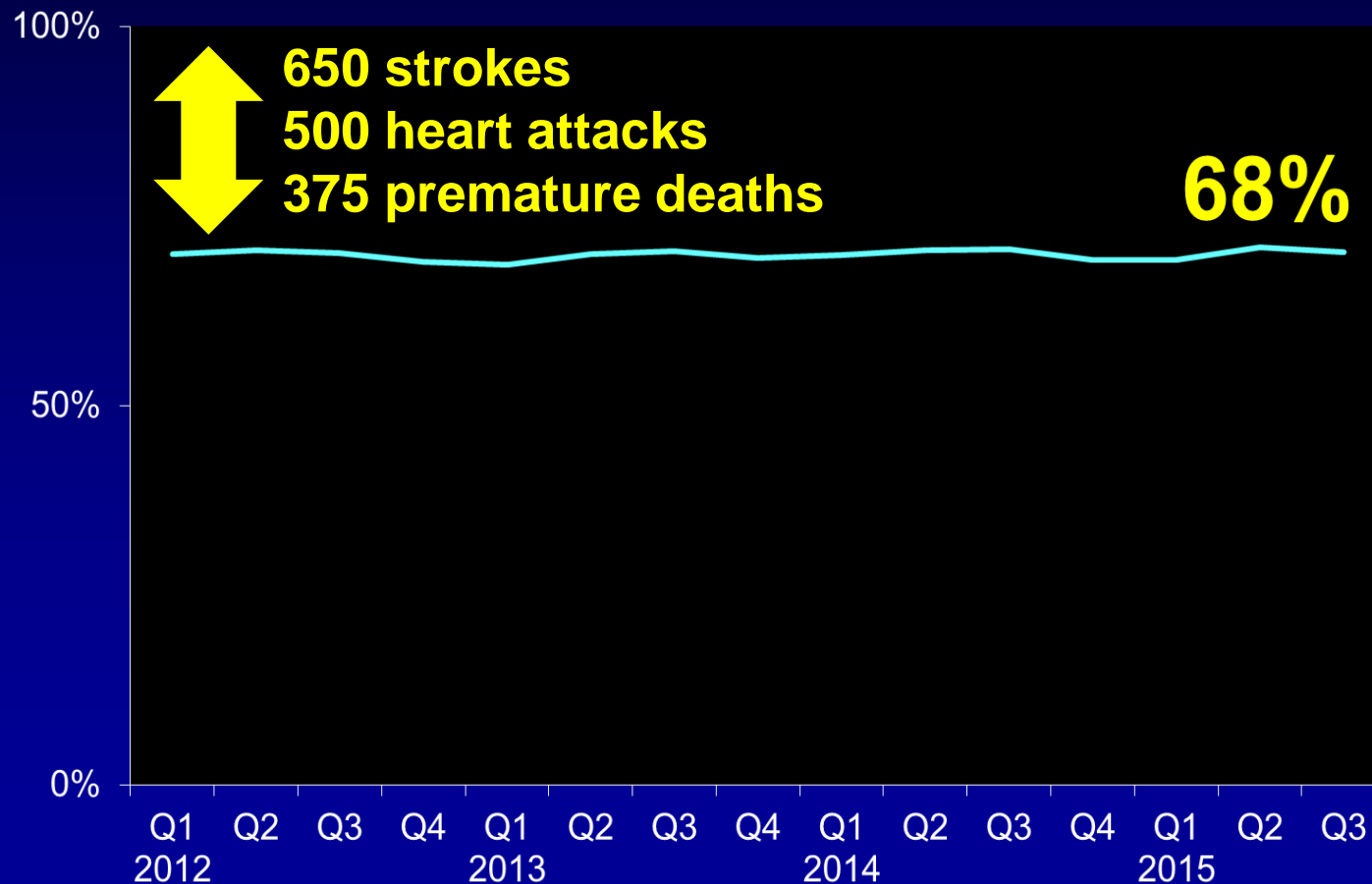
# Hypertension Improvement

# **Our Burning Platform**

- **70 million Americans**
- **#1 risk factor for premature death**
- **\$46 billion in excess healthcare**
- **Important measure for value based care**

# Local Problem

**160,000 adult patients with HTN**



# Adult Primary Care

## Who We Are

**400k**

adult  
patients

**300**

PCPs

**50**

care  
coordinators

**51**

ambulatory  
sites

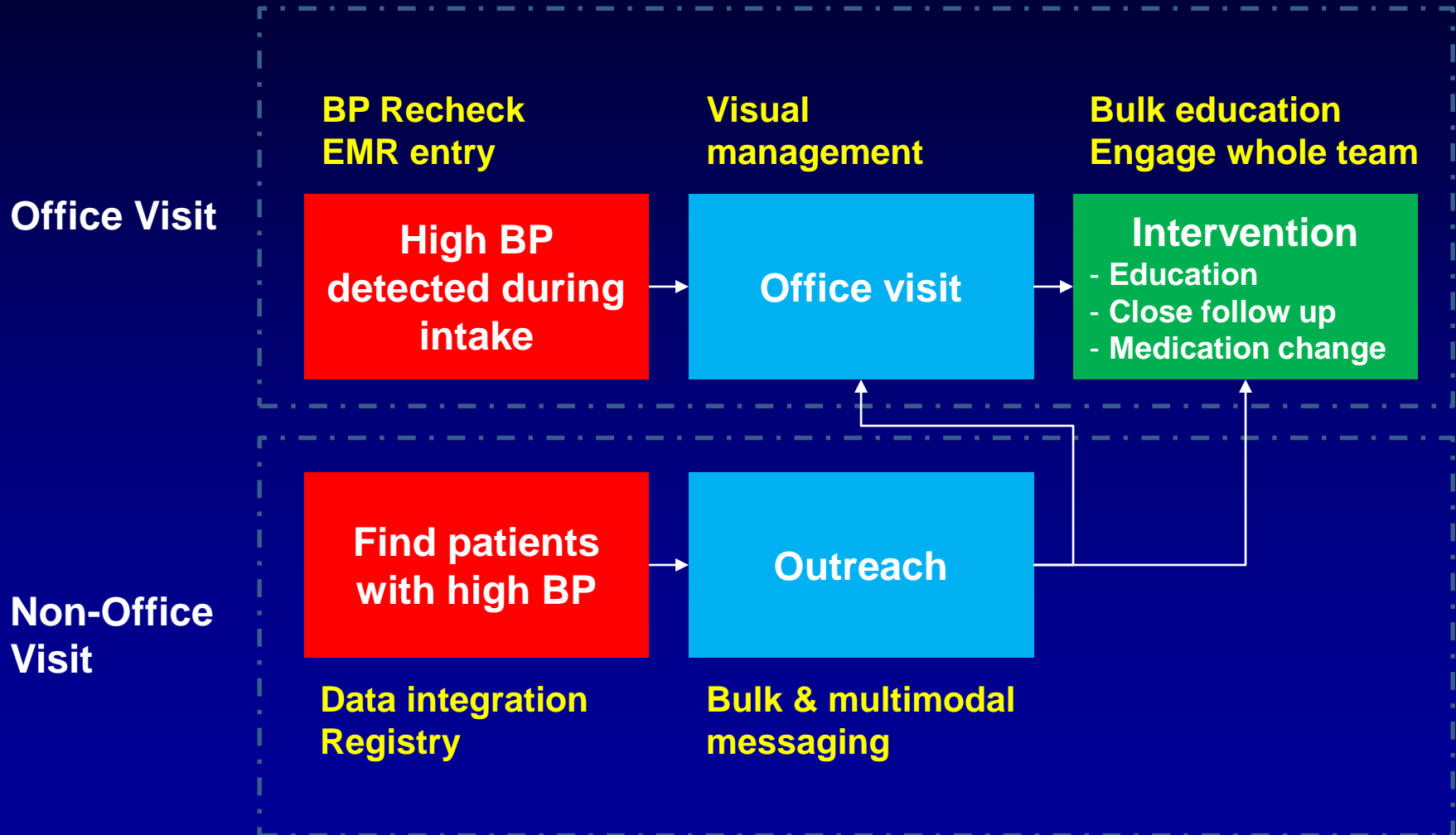
**6**

social  
workers

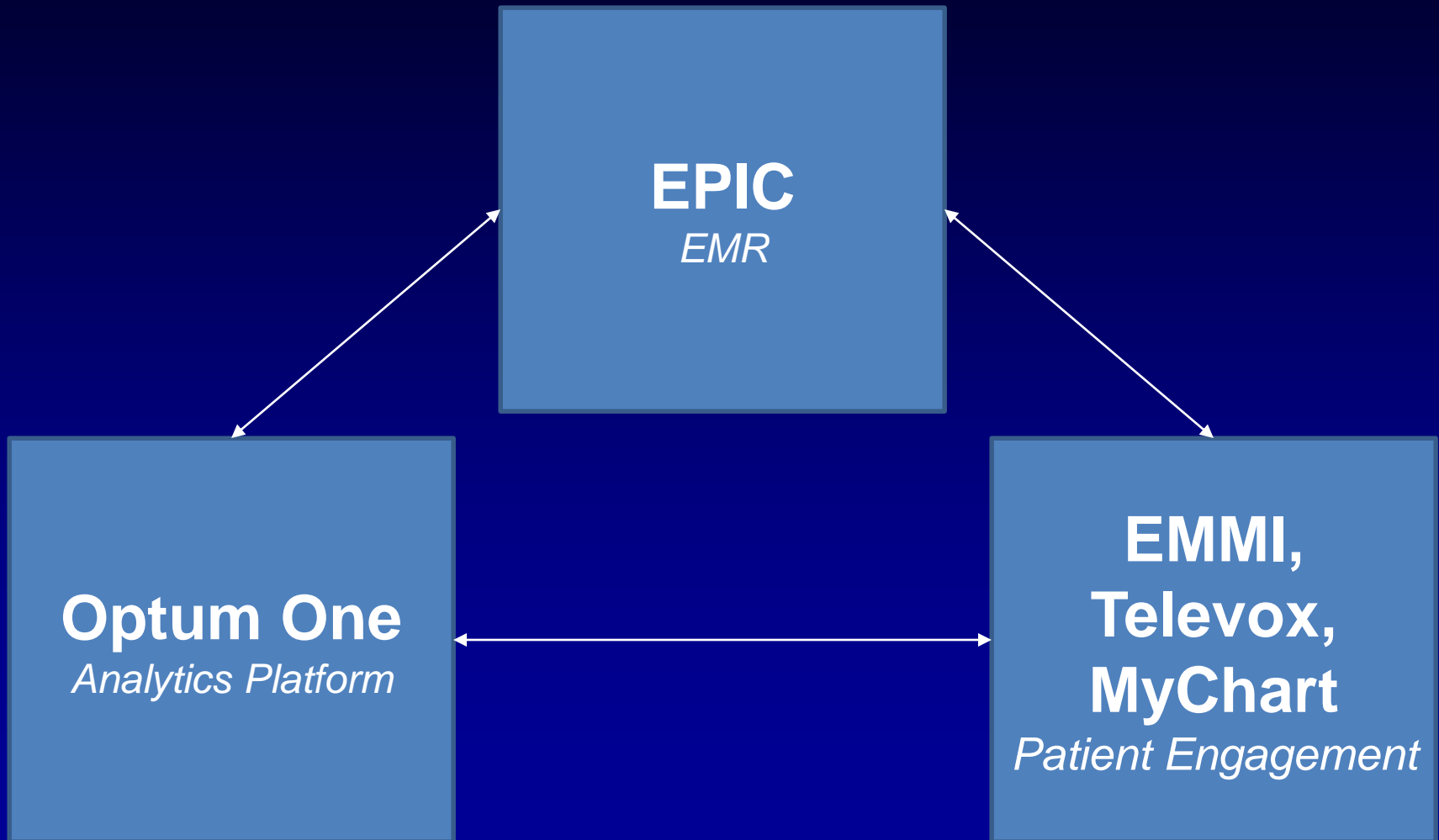
**8**

clinical  
pharmacists

# BP Control Workflow



# Technology Utilization



# HTN Improvement Structure

Quality & Medicine Institute Leadership

Core Team

Local Site Champions

Local Teams

Frontline  
Staff



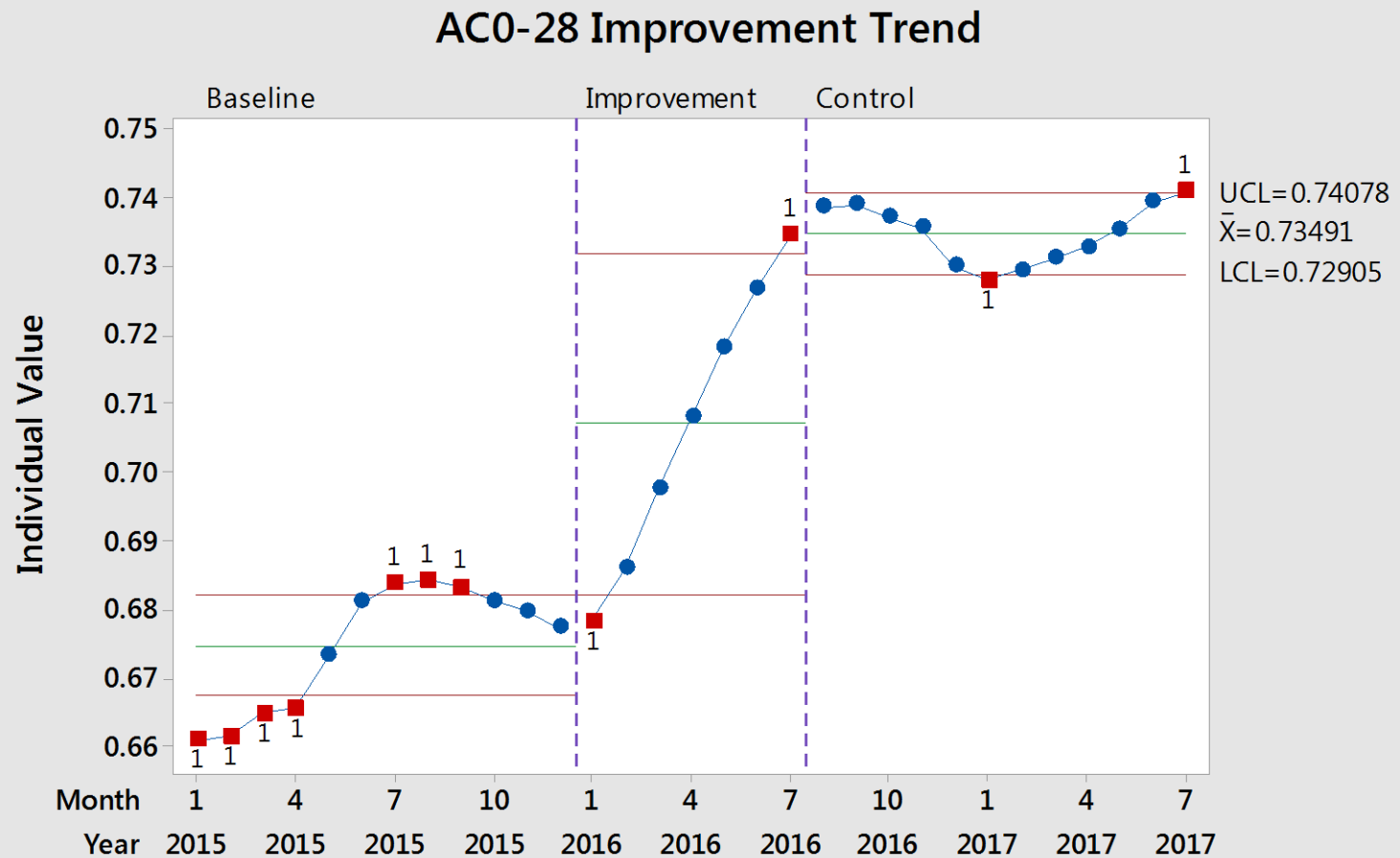
## Measures of Success

---

- Blood pressure control
- Follow-up within 30 days
- Appointments for high blood pressure patients who haven't had a recent visit
- Rechecking high-read patients during the same visit



# Hypertension Improvement



*Each monthly data point represents a rolling 12 month average*

## People

1. How to connect data to frontline staff?
2. How to ensure we measure BPs properly?
3. How to promote patient self-management?

## Process

1. How to incorporate visual management?
2. How to find and bring in those with high BPs?
3. How to monitor BPs between office visits?



## Technology

- ✓ Leverage analytics
- ✓ Scalability
- ✓ Workflow integration

# People

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# Technology

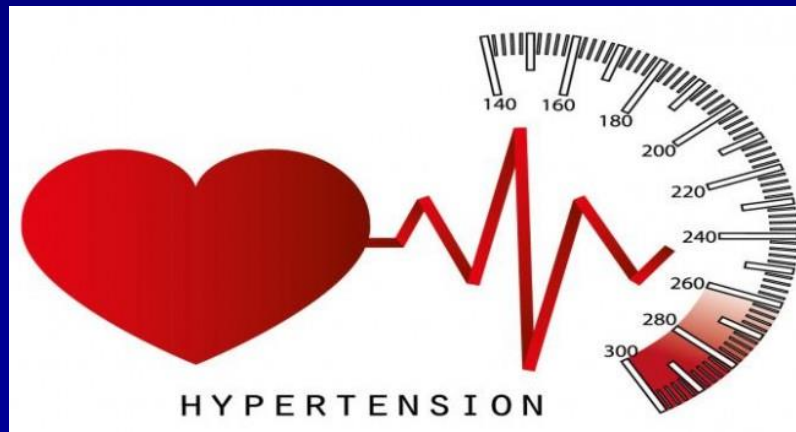
- ✓ Leverage analytics
- ✓ Scalability
- ✓ Workflow integration

# Cohort Definitions

**120,000**  
“off the shelf”  
definition

**VS**

**160,000**  
custom  
definition



# HTN Cohort Definition

**Clinical Data  
(e.g. EMR)**



**Financial Data  
(e.g. claims)**

## Hypertension

### Parameters

	>=18 yrs old
<b>AND</b>	Pts w Dx of Elevated BP w/o HTN Dx Ever (False)
<b>AND at least 1 of:</b>	1.) Pts with HTN on the problem list, <b>OR</b>
	2.) # of HTN Related ED/IP/OBS/Amb Visits >=2, <b>OR</b>
	3.) Pt Had SBP >= 150 or DBP >= 90 >=4 times in separate encounters

Drill Method

Institute

Center

By Center

Medicine Institute

All Centers

Time Frame

Month

Provider Attribution

Month

December 2016

PCP

Page 1 of 1

[Detail Report](#)
[Printable Summary](#)

ACO				
ACO Care Coordination/Patient Safety	1	0	0	0
ACO Preventative Health	3	1	3	0
ACO At Risk Populations	1	0	4	0

	Actual	Target		N	Through Date
ACO 22: DM HbA1c < 8%	68.9%	65.3%	✓	36,338	Dec 2016
ACO 27: DM HbA1c > 9%	20.1%	10.0%	✗	36,338	Dec 2016
ACO 28: HTN Control	74.2%	79.7%	✗	121,052	Dec 2016
ACO 30: IVD Use ASA/Antithrombotic	88.1%	97.9%	✗	34,860	Dec 2016
ACO 41: DM Eye Exam	53.8%	90.0%	✗	36,338	Dec 2016

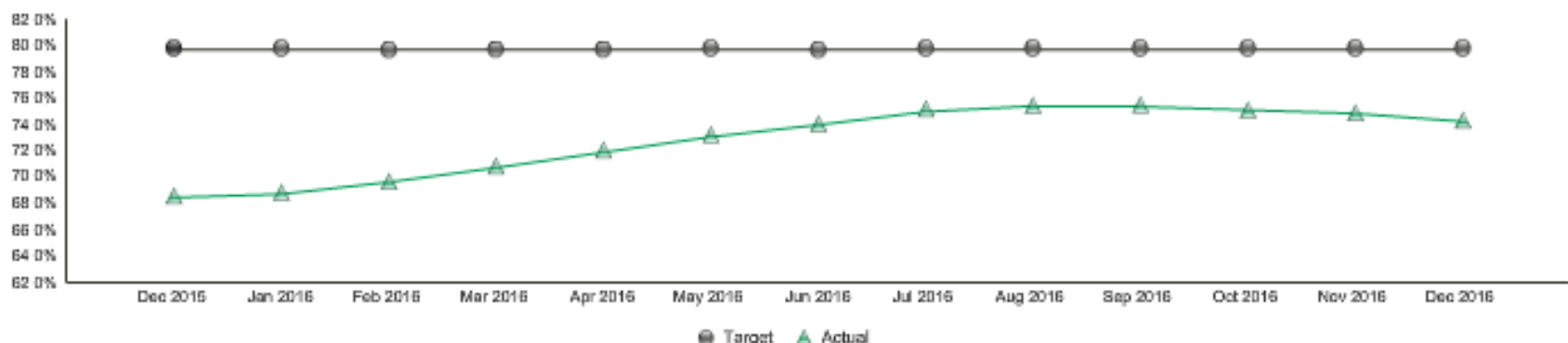
Trend

Comparison

ACO 28: HTN Control

Medicine Institute - All Centers - All Locations - All Physicians

N-Size: 121,052 (Dec 2016)



# Hypertension Improvement

16<sub>k</sub> IN '16



**+5100**  
as of April 30th

5100 more patients with controlled BP means:\*



**76 LESS STROKES**

**51 LESS HEART ATTACKS**

**41 LESS EARLY DEATHS**

## Let's Keep Up the Momentum!

Recheck All High BPs  
Ensure Proper Measurement  
Close Follow up for High BPs  
Outreach to Patients Not Coming In



"Hypertension remains one of the most important preventable contributors to disease and death."

- JNC VIII



Questions or Ideas? Send them to [einlotc@ccf.org](mailto:einlotc@ccf.org)

\* Evidence-based estimates of numbers needed to treat. References available.

# Hypertension Improvement

16<sub>k</sub> IN '16



**+10240**

## Uh Oh. We're slowing down!

Our monthly improvement has leveled off.  
We need your help to get moving again!



131 less strokes

100 less heart attacks

75 less early deaths

## RECIPE FOR SUCCESS

Review your practice-level data

Work your outreach lists

Reboot 30 day follow up efforts

- 85% of nurse BP visits = no copay
- Express Care for BP checks (North Olmsted, STJ, Solon, Sagamore Hills and Wadsworth)

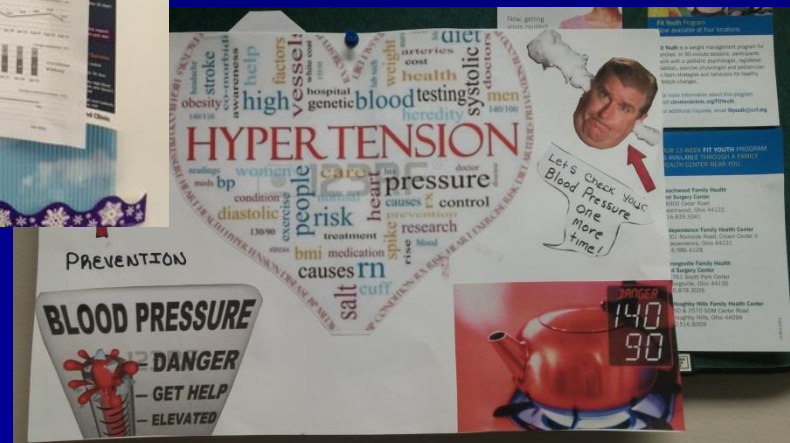
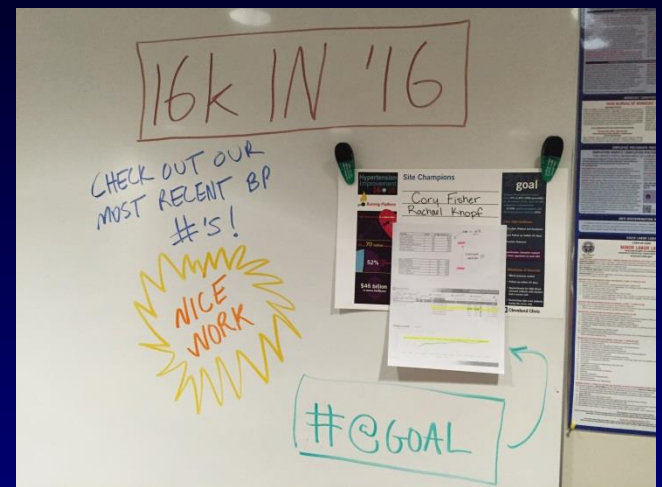
## FYI



ACO patients with high BP and no follow up will be sent a MyChart note in October suggesting PCP follow up or Express Care drop-in.



# Visual Management





# Friendly Competition



# People

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2. How to ensure we measure BPs properly?
3. How to promote patient self-management?

# Process

1. How to incorporate visual management?
2. How to find and bring in those with high BPs?
3. How to monitor BPs between office visits?



# Technology

- ✓ Leverage analytics
- ✓ Scalability
- ✓ Workflow integration

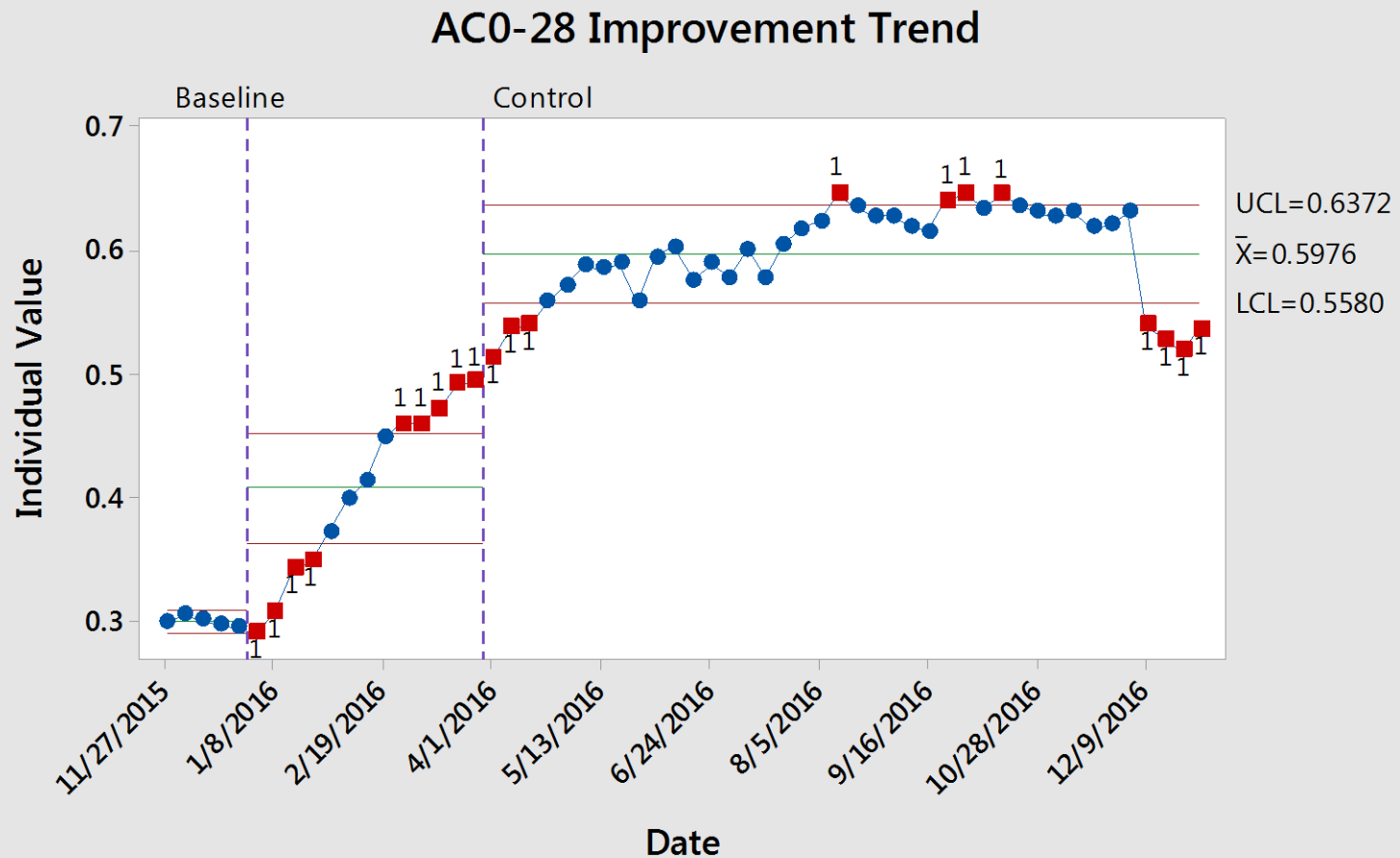
# Ensuring Accurate BPs

- Competency refresher
- Rechecking BPs when high initially
- Recording BP values correctly in the EMR



# Rechecking BPs

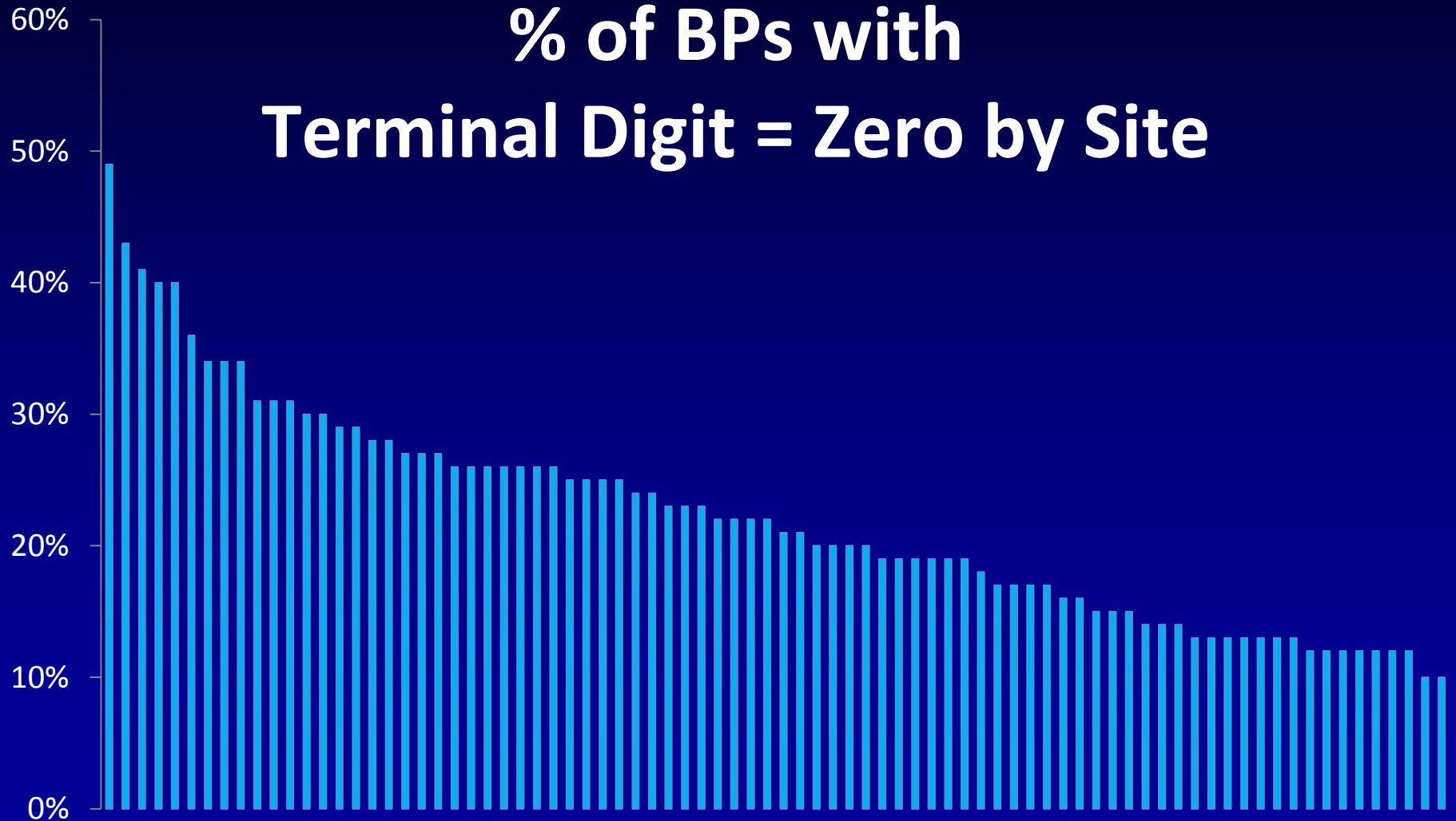
*% of office visits with elevated initial reading where BP was repeated*



Each monthly data point represents a rolling 12 month average

# Recording BPs Correctly

**% of BPs with  
Terminal Digit = Zero by Site**



# People

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# Technology

- ✓ Leverage analytics
- ✓ Scalability
- ✓ Workflow integration

# After Visit Summary Education

- Automatically prints if known hypertension & BP is elevated at the visit
- Enabled across the Enterprise

<b>After Visit Summary</b>		
8/16/2017 3:25 PM Office Visit	Department: Internal Medicine Main Campus Phone: 216-444-5665	Description: 53 year old female Provider: Nirav Vakharia

## Additional Information

For most people our Blood Pressure goal is less than 140/90. Your provider may have a different Blood Pressure goal for you. Prolonged High Blood Pressure increases risk of heart attacks, heart failure, and strokes and other medical problems. Many people with Blood Pressure more than 120/80 develop High Blood Pressure in the future. Blood Pressure can be helped by following a healthy diet with lots of vegetables every day, regular exercise, and maintaining a normal weight. Your Blood Pressure today was 120/80 or higher, please discuss with your provider how to best monitor your Blood Pressure.

# Education @ Scale with EMMI

## PROGRAM UTILIZATION

87,758

Programs Issued

23,731

Programs Started

4,317

Surveys Completed

## PATIENT FEEDBACK

82%

Patients who indicated they will now take new action in managing their health

81%

Patients who indicated they are now more aware of how their lifestyle impacts their health

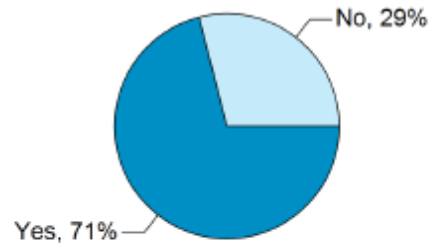
81%

Patients who indicated they are now more motivated to change their lifestyle



# Patient Feedback re EMMI (n=4317)

Did the Emmi program answer questions you would have normally called to discuss with your healthcare provider (doctor, nurse, etc)?

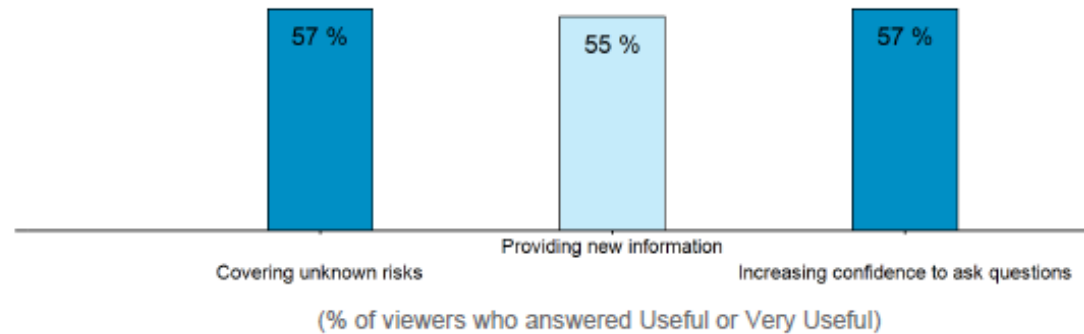


*"This was a great presentation. It is informative without being judgmental. Great tips for lowering blood pressure. I would recommend this to anyone who is diagnosed with high blood pressure."*

*"Very good. Gave me information I may not have asked my doctor for simply because I would not have thought of it."*

*"It was helpful. Reminders are always beneficial. It's so easy to lose focus and resume bad habits and diets."*

How useful was the Emmi program in:



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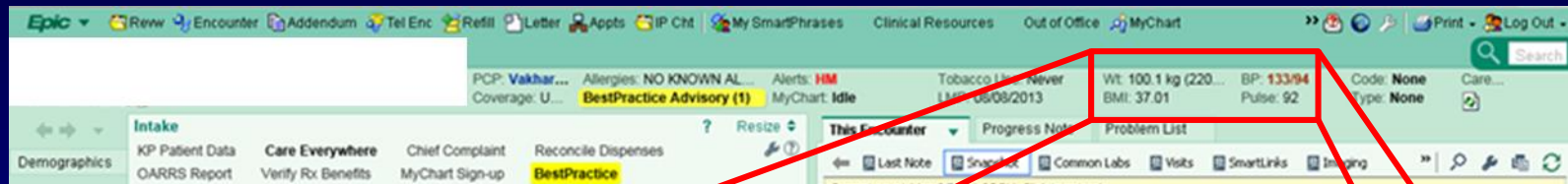


# Technology

- ✓ Leverage analytics
- ✓ Scalability
- ✓ Workflow integration

# Visual Management

## Individual Chart View



Tobacco Use: Never  
LMP: 08/08/2013

Wt: 100.1 kg (220...  
BMI: 37.01

BP: **133/94**  
Pulse: 92

# Visual Management

## Patient List View

Revw Encounter Addendum Tel Enc Refill Letter Appts IP Cht My SmartPhrases Clinical Resources Out of Office MyChart

Schedule

8/16/2017 Today

VAKHARIA, NIRAV MD Total: 6 Auto-refreshed: 11:08 PM

Time	Patient	Proc/Visit Type	Length	Notes	Ch	Pr	Age	Sex	Last BP
1:00 PM		EST PATIENT	20   ...	87548 6 MONTH FOLLOW UP time change...	1...	C...	64-year old	M	110/74
2:00 PM		EST PHYSICAL	40   ...	91665 PHYSICAL (LEFT MESSAGE OF TI...	1...	C...	53-year old	M	132/84
2:00 PM		EST PATIENT	20   ...	88974 MED REVIEW AND LABS	1...	C...	50-year old	M	115/74
3:00 PM		EST PATIENT	20   ...	91665 TCM 7 D/C 8/13/2017 PCC call 8/14/...	2...	C...	50-year old	F	111/52
3:00 PM		SAME DAY	20   ...	87196 Pain in abdomen	2...	C...	40-year old	M	129/87
3:40 PM		EST PATIENT	20   ...	87738 follow up diabetes	3...	C...	53-year old	F	133/94

Dept: INTM MAIN

Last BP

110/74

115/74

132/84

129/87

111/52

133/94

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# Technology

- ✓ Leverage analytics
- ✓ Scalability
- ✓ Workflow integration

# Facilitating Close Follow Up Nurse BP Visit Clinic Order

## Order Entry

NURSE BP VISIT ORDER

✓ Accept

✗ Cancel

Remove

Routine

Priority:

Routine

! Comments (F6):

⊕

abc

↶

↷

?

?

+

Insert SmartText

📄

↶

↷

↶

↷

NURSE BP VISIT:

If SBP is 180 or greater and/or DBP is greater than 110 contact LIP immediately

If SBP is less than 140 and DBP is less than 90: Schedule for routine PCP follow up in 6 months

If SBP is greater than or equal to 140 and less than 180 and/or DBP is great than or equal to 90 and less than 110,  
Medication change: \*\*\*

▶ Additional Order Details

✓ Accept

✗ Cancel

Remove

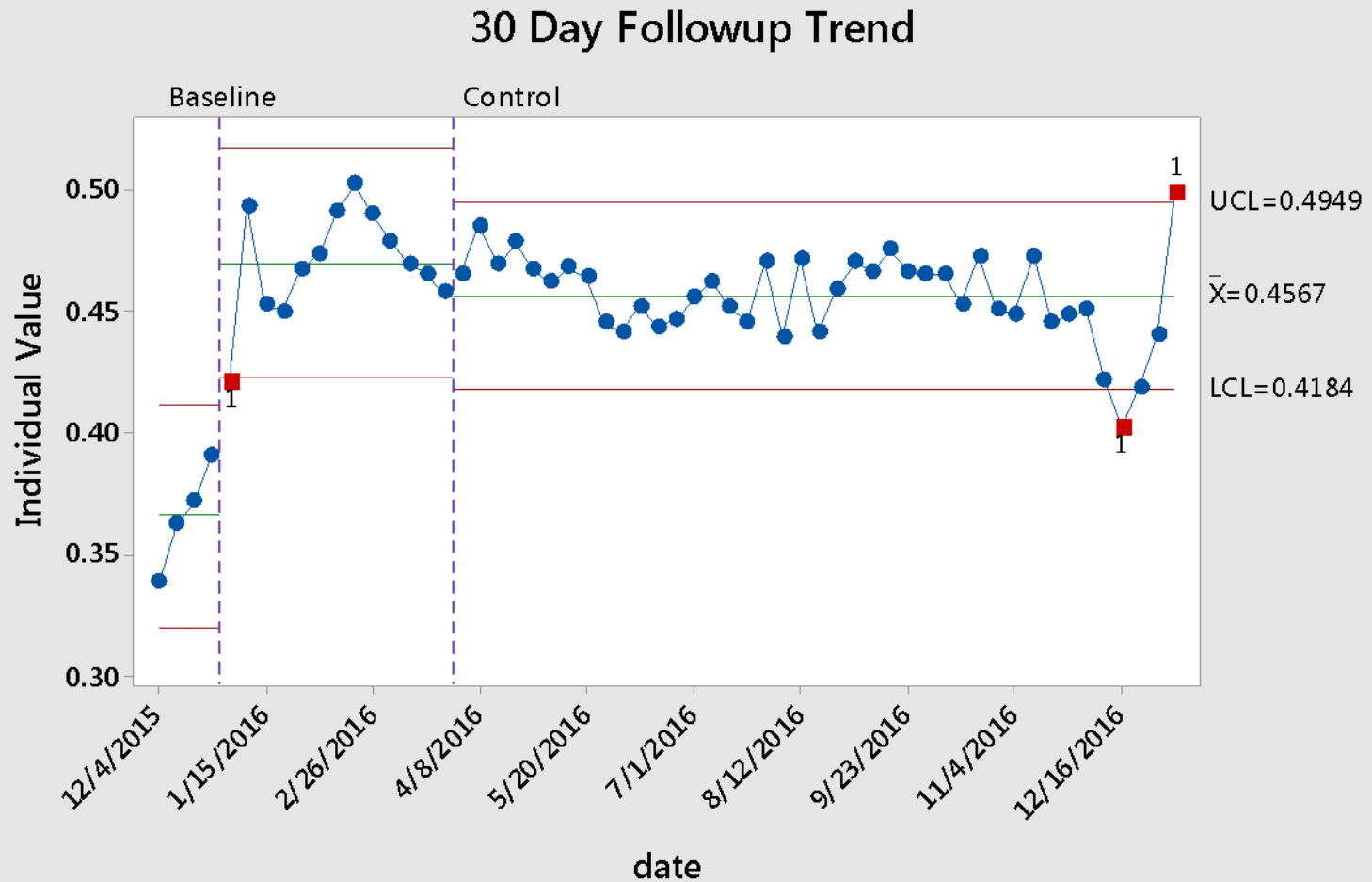
@ Nurse Visit (within 30 days, up to 3 visits)

### Comments

#### NURSE BP VISIT:

If SBP is 180 or greater and/or DBP is greater than 110 contact LIP immediately  
If SBP is less than 140 and DBP is less than 90: Schedule for routine PCP follow up in 6 months  
If SBP is greater than or equal to 140 and less than 180 and/or DBP is great than or equal to 90 and less than 110,  
Medication change: increase amlodipine to 10mg  
Labs to Order: None  
Follow-up visit to be scheduled within 21 days with: RN

# Facilitating Close Follow Up

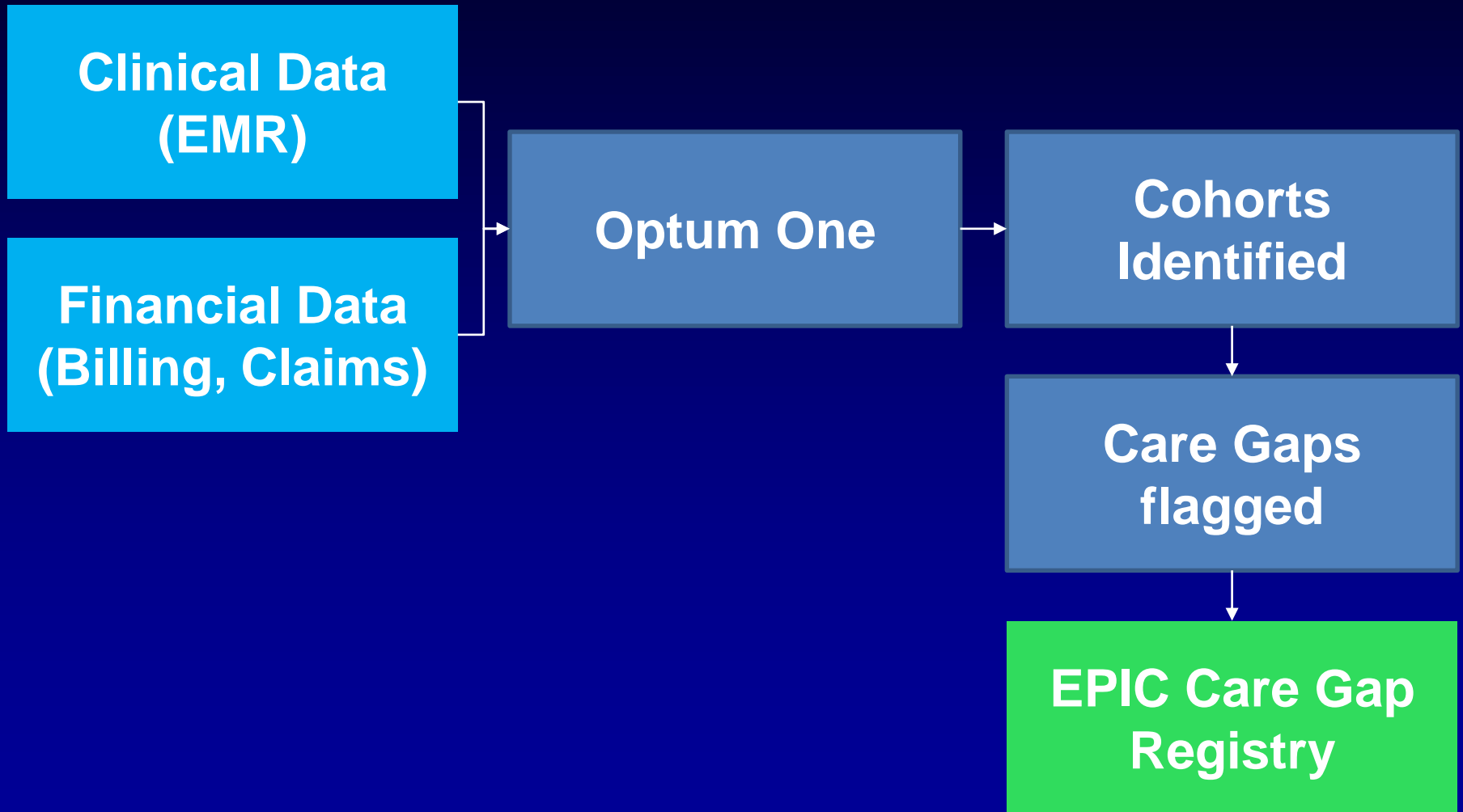


# **Outreach to those with High BPs**

- **1/3 of abnormal BPs measured outside of primary care in our system**
- **Caregivers express desire to address all care gaps during an outreach encounter**
- **Opportunity: a single source of truth for all evidence based care gaps**



# Identifying & Managing Care Gaps



# Care Gap Registry

## **Evidence-based Care Gaps**

**Atrial Fibrillation**

**Asthma**

**Cardiovascular disease**

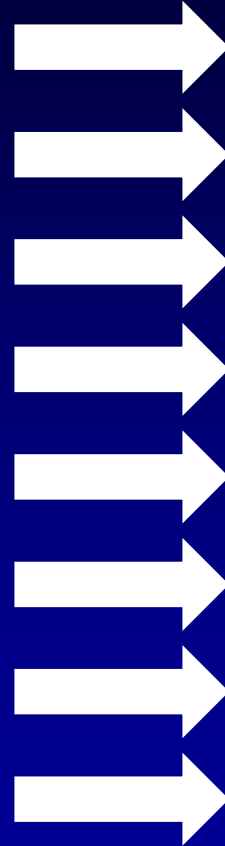
**Chronic kidney disease**

**Congestive heart failure**

**COPD**

**Diabetes**

**Hypertension**



**Single EPIC  
registry to  
manage the  
population**

[Filters](#)
[Options](#)
[Re-run Report](#)
[Chart](#)
[Encounter](#)
[Communication](#)
[HM Modifiers](#)
[Add to List](#)
[Questionnaire Series](#)
[Patient Registry Validation](#)

Patient	MRN	PCP	PCC Name	Phmcst Name	Next PCP Appt	ST SYSTOLIC E	ST DIASTOLIC E	HBA1C	HAS CARE GAP	AFIB	ASTHMA	CHF	CKD	CVD	DM	HTN
		David M Wendt			04/12/2017	109	52	6.1	✗	✓	—	✓	—	—	✗	✓
		Cory M Fisher			08/10/2017	137	81			—	✓	—	—	—	—	—
		Kevin J Leisinger				147	94			—	—	—	—	—	—	—
		Amelia M Walborn				140	91	5.8		—	—	—	—	—	—	—
		David M Wendt				141	72	6.1	✗	—	—	—	—	✓	—	✗
		David M Wendt			06/20/2017	117	65	6.1	✗	✓	—	✗	—	✗	—	✓
		David M Wendt				102	68	6.8	✗	—	—	✗	✗	—	—	—
		Kurtis C Dorman			07/03/2017	120	80	9.8	✗	—	—	—	—	—	✗	✓
		Kevin J Leisinger				124	78	6.7	✗	—	—	—	—	—	✗	—
		Mary Corbett			10/09/2017	108	62			—	—	—	—	✓	—	✓
		David M Brill			07/10/2017	120	85			—	—	—	—	—	—	—
		Kurtis C Dorman				130	88	6.1		—	—	—	—	—	—	✓
		David M Wendt			05/17/2017	122	85	5.4		—	—	—	—	—	—	✓
		Carl A Culley Jr.			04/25/2017	132	79	5.0		—	—	—	—	—	—	—
		Courtney Pearson, MD				150	80	6.5	✗	—	—	—	—	✗	✗	✗

[CC LPOC](#)

## Recent Hospitalizations, ED, Observations (Past 365 days)

None

## Patient Information

Patient Name MRN

Sex: Female

## Patient Demographics

Address

## Problem List

Noted

## Cardiovascular

Labile blood pressure

5/25/2016

## Respiratory

Chronic ethmoidal sinusitis

7/31/2008

## Neurology / Psych / ENT

Midline low back pain without sciatica

2/17/2016

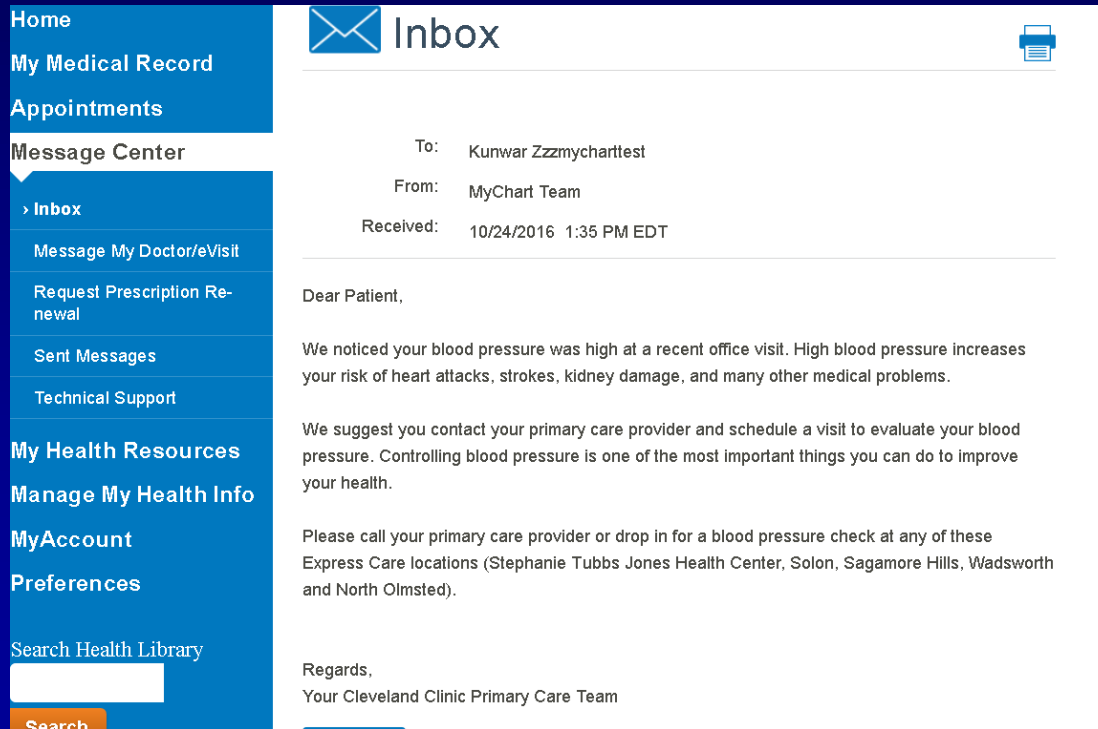
## Genitourinary

Leiomyoma of uterus, unspecified

8/21/2009



# Bulk Outreach

- MyChart
- Email
- Autodial
- Text



The screenshot displays the MyChart patient portal interface. On the left is a blue sidebar with navigation links: Home, My Medical Record, Appointments, Message Center (highlighted), > Inbox, Message My Doctor/eVisit, Request Prescription Renewal, Sent Messages, Technical Support, My Health Resources, Manage My Health Info, MyAccount, Preferences, and Search Health Library. The main content area is titled 'Inbox' and shows an email from 'MyChart Team' to 'Kunwar Zzzmycharttest' received on 10/24/2016 at 1:35 PM EDT. The email body contains a message about high blood pressure, suggesting a visit to a primary care provider or an Express Care location. The signature is from the 'Your Cleveland Clinic Primary Care Team'.

Home  
My Medical Record  
Appointments  
Message Center  
    > Inbox  
        Message My Doctor/eVisit  
        Request Prescription Renewal  
        Sent Messages  
        Technical Support  
My Health Resources  
Manage My Health Info  
MyAccount  
Preferences  
Search Health Library  
      
    Search

 **Inbox** 

To: Kunwar Zzzmycharttest  
From: MyChart Team  
Received: 10/24/2016 1:35 PM EDT

Dear Patient,

We noticed your blood pressure was high at a recent office visit. High blood pressure increases your risk of heart attacks, strokes, kidney damage, and many other medical problems.

We suggest you contact your primary care provider and schedule a visit to evaluate your blood pressure. Controlling blood pressure is one of the most important things you can do to improve your health.

Please call your primary care provider or drop in for a blood pressure check at any of these Express Care locations (Stephanie Tubbs Jones Health Center, Solon, Sagamore Hills, Wadsworth and North Olmsted).

Regards,  
Your Cleveland Clinic Primary Care Team

# People

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2. How to ensure we measure BPs properly?
3. How to promote patient self-management?

# Process

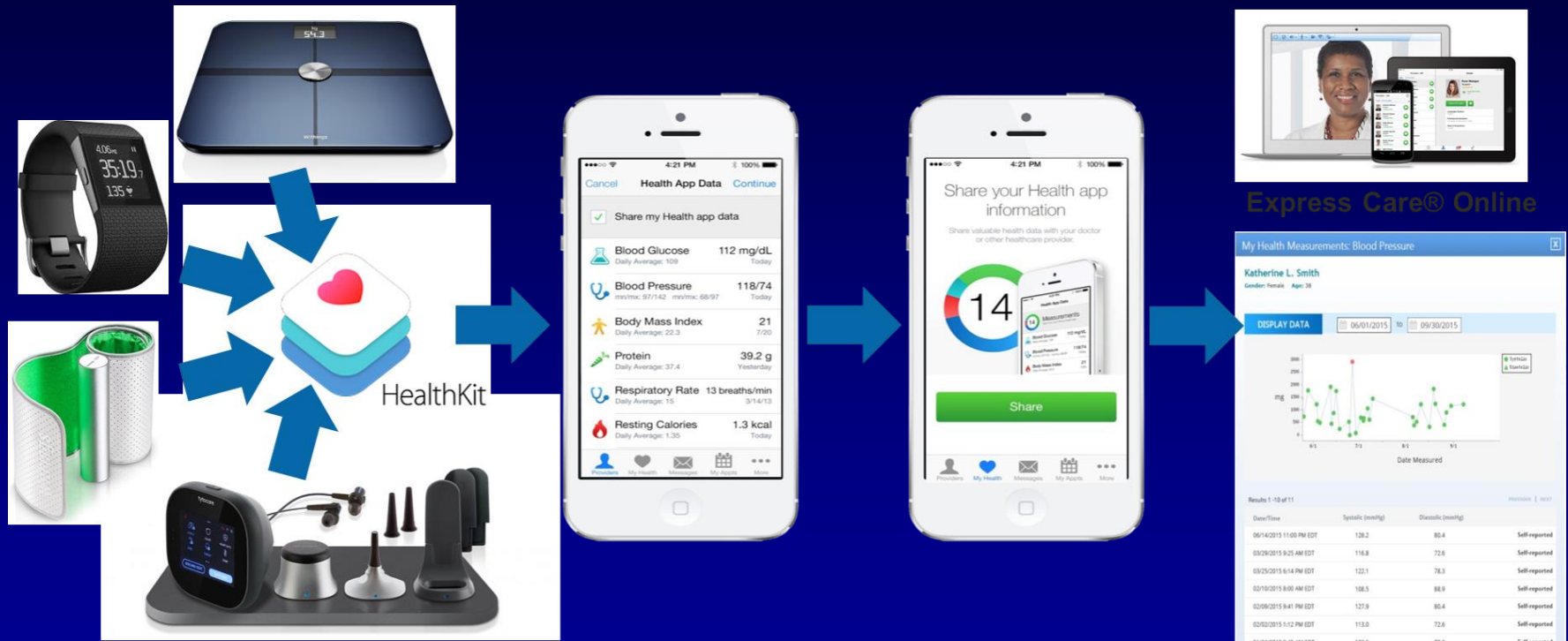
1. How to incorporate visual management?
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# Technology

- ✓ Leverage analytics
- ✓ Scalability
- ✓ Workflow integration

# Data Integration into Epic



# Virtual HTN Pilots

- Phase 1 (late 2016)
  - Bluetooth enabled BP cuffs
  - Virtual visits with providers & health coaches
  - BP control increased from 46% to 54%
- Phase 2 includes Phase 1 interventions plus:
  - Addition of clinical pharmacist
  - Direct EPIC referral
  - Automated EMR integration of home BP cuff readings

# BP Control Workflow

Office Visit

**BP Recheck  
Terminal 0**

**High BP  
detected during  
intake**

**BP on header  
and schedule**

**Office visit**

**EMMI  
RN, Pharmacy appts**

**Intervention**

- Education
- Close follow up
- Medication change

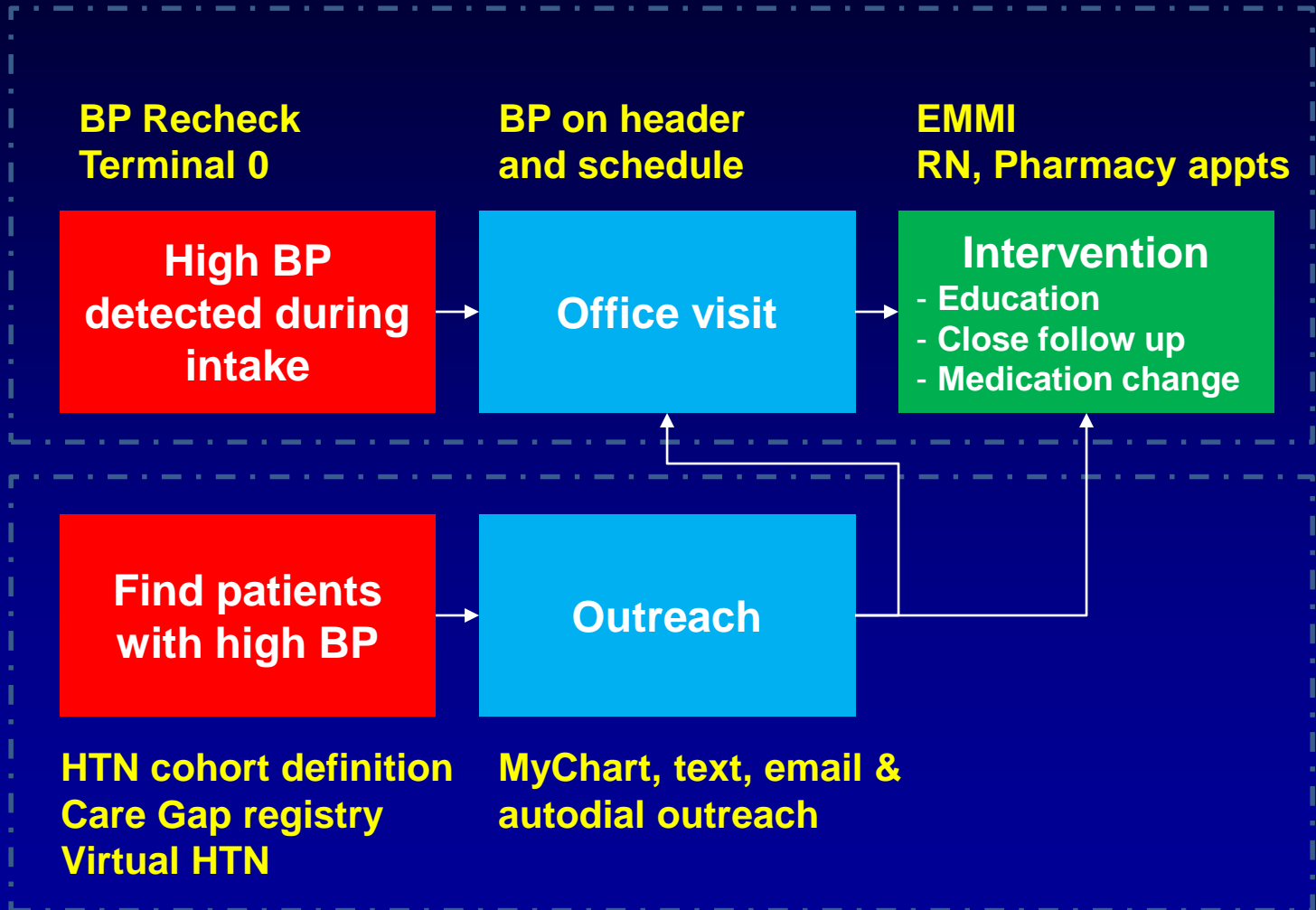
Non-Office  
Visit

**Find patients  
with high BP**

**Outreach**

**HTN cohort definition  
Care Gap registry  
Virtual HTN**

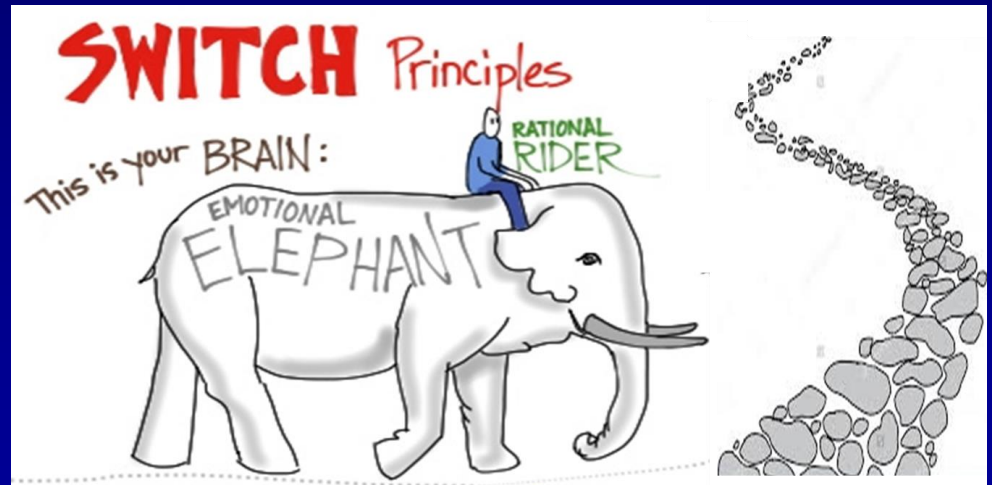
**MyChart, text, email &  
autodial outreach**





# Lessons Learned

- Rational vs. emotional case for change
- Standard tools vs. local autonomy
- Trust & team integration
- Change fatigue



Adapted from SWITCH – How to Change Things When Change is Hard, Chip Heath & Dan Heath

# Technology Investment

- Build the following:
  - Nurse BP order
  - Registry
  - Bulk communication
  - Visual management
  - Virtual Hypertension integration
- Provide Clinical Support to caregivers
- Total estimated Salary cost: \$50,000

# Financial Impact

**87%**

**2015 ACO  
quality points  
achieved**

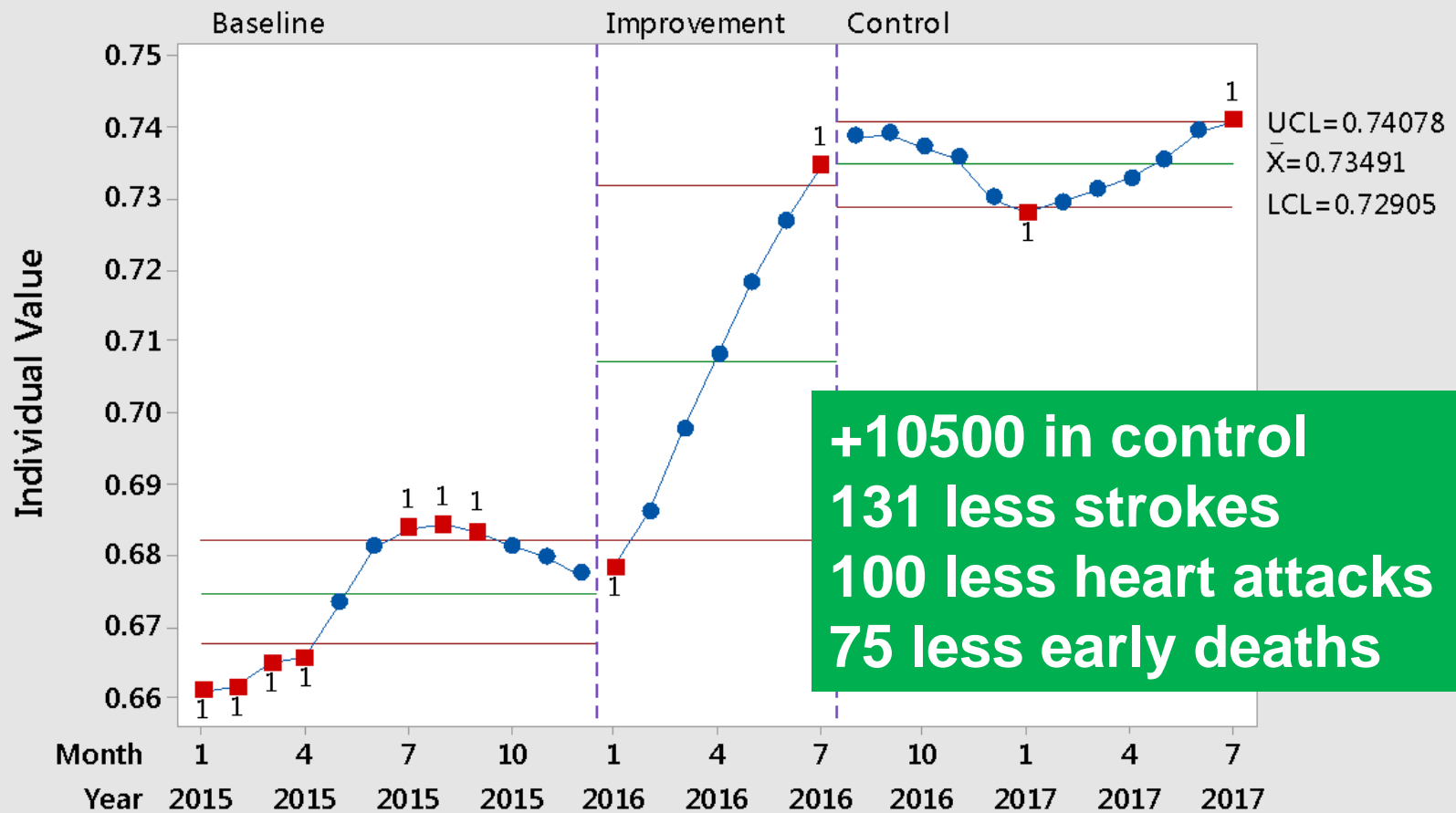
**96%**

**2016 ACO  
quality points  
achieved**

**Quality improvement in 2016  
will translate to an extra ~\$3M  
distribution to our ACO**

# Impact to Patients & Caregivers

## AC0-28 Improvement Trend



Each monthly data point represents a rolling 12 month average

# Key Takeaways

- Use of technology vital in:
  - Leveraging analytics to guide efforts
  - Increasing the efficiency of caregivers
  - Providing new options for patient engagement



**Cleveland Clinic**

**Every life deserves world class care.**