POPULATION HEALTH:
Turning data into information, and information into transformation.

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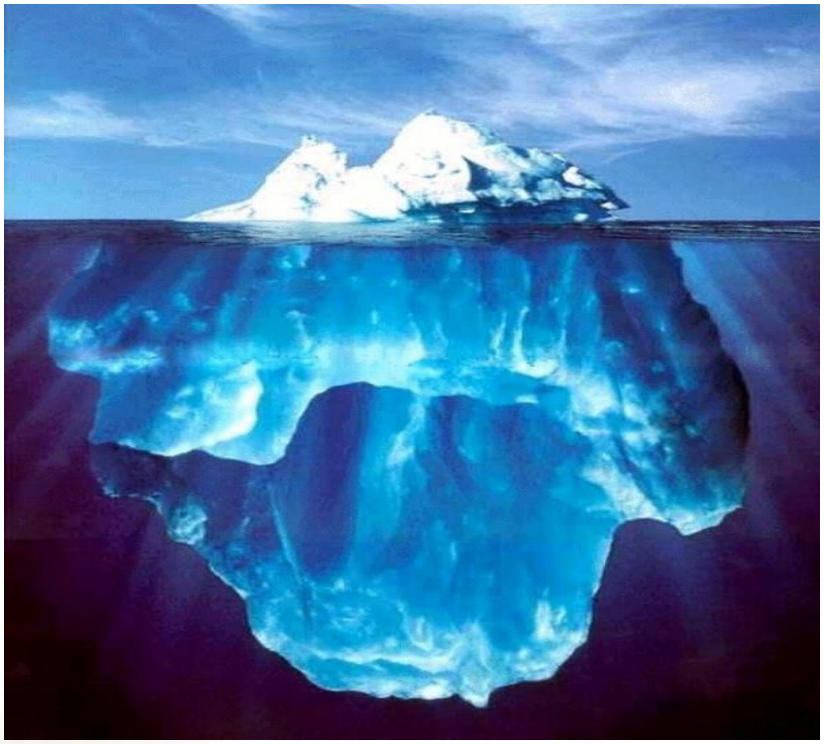
Objectives

- Organization description
- Change in industry landscape
- Population Health analytic tool
- How we started
- Preparing for pilot
- Developing a new model
- LIVE
- Measuring outcomes
- Results
- Patient impact
- Strategic Roadmap and Population Health
- System-wide roll out

Organization Description

- Aurora Health Care is one of the largest not-for-profit, integrated health care systems in the United States.
- Wisconsin and northern Illinois.
- ~1.2 million patients
- 15 hospitals
- ~175 clinics
- 80 pharmacies
- 60 laboratories
- Home care services
- 1600 physicians
- 400 advanced practice providers

Where we spend our $$$



We spend the largest number of resources on the smallest percentage of the population

Acute Care /Advanced Illness

- Episodic
- Patient needs our services
- Utilize most resources
  (3% population/29% of cost)

Tertiary Prevention

Manage chronic conditions
(7% population/23% cost)

Secondary prevention

Early detection screenings
At Risk (10% population/19% cost)
Stable (30% population/22% cost)

Primary Prevention

Healthy (50% population/7% cost)

Statistics from NCQA: Continuing Care and Case Management for Population Health

Accounting for a Change in Landscape

CURRENT STATE
Volume-based/Episodic care

Results in:
- Healthcare costs expected to reach $4.4T in 2018
- Unnecessary services
- Inefficient delivery of care
- Missed prevention opportunities

FUTURE STATE
Value-based/Continuous Care

Results in:
- Proactive care management of patient populations
- Leveraged caregiver teams working at top of license
- Easy access to care
- Efficient delivery of quality care

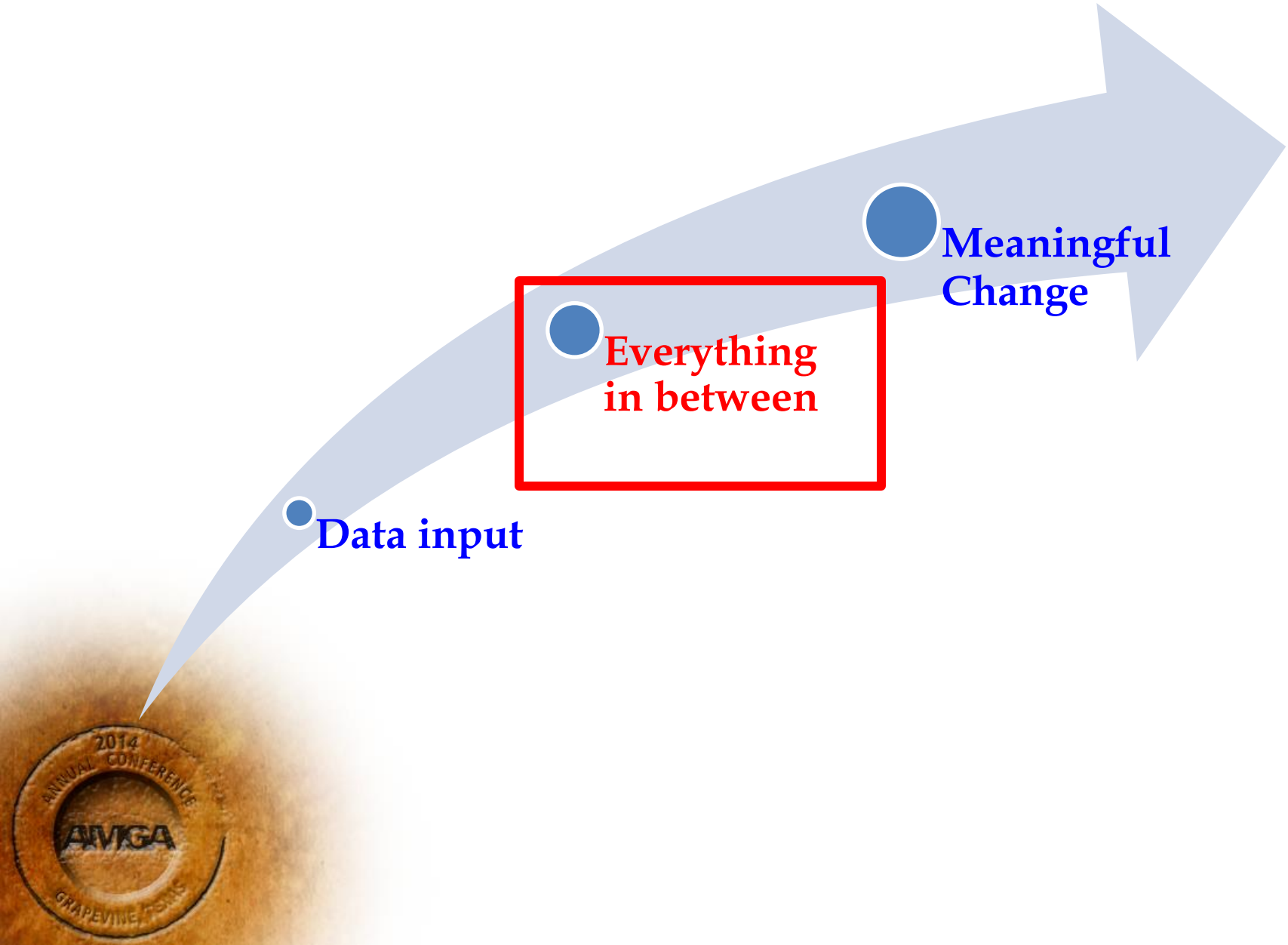
How to account for change?

- Understand the world we live in is changing
- Account for the regulatory mandates
- Electronic Health Record impact.
- Managing data effectively to achieve integrity and quality information
  - Prevent "Garbage in Garbage out"
- Aggregating and analyzing the data
  - Showing a holistic view
  - Show patterns
  - Identify relationships
  - Highlight opportunities

Driving change through Population Health

- Industry buzz word, where definitions vary.
- Identifying what Population Health is for Aurora Health Care
  - Help patients live well.
  - Increase provider access to allow for expanded population based care models.
  - Providing a team approach to care.
  - Optimize our technology and practice to produce the best possible outcomes.
  - Instill a self-improving culture based on high quality data.
  - Use data as an asset to identify populations and **make meaningful changes**.

Getting from here to there



Selecting a Population Health Analytic Tool

- Humedica MinedShare® is a cloud-based solution built to serve as the analytic engine for population health management.
- Integrating clinical and claims data across continuum to give providers a complete view of their population and trends in health utilization and outcomes.
- Predicting patients at-risk and reducing preventable costs by identifying unmet needs and clinical risk factors.
- Making all clinical insights immediately actionable by combining a patient-centered view with multiple attribution models.
- Driving performance improvement through deep comparative benchmarks.

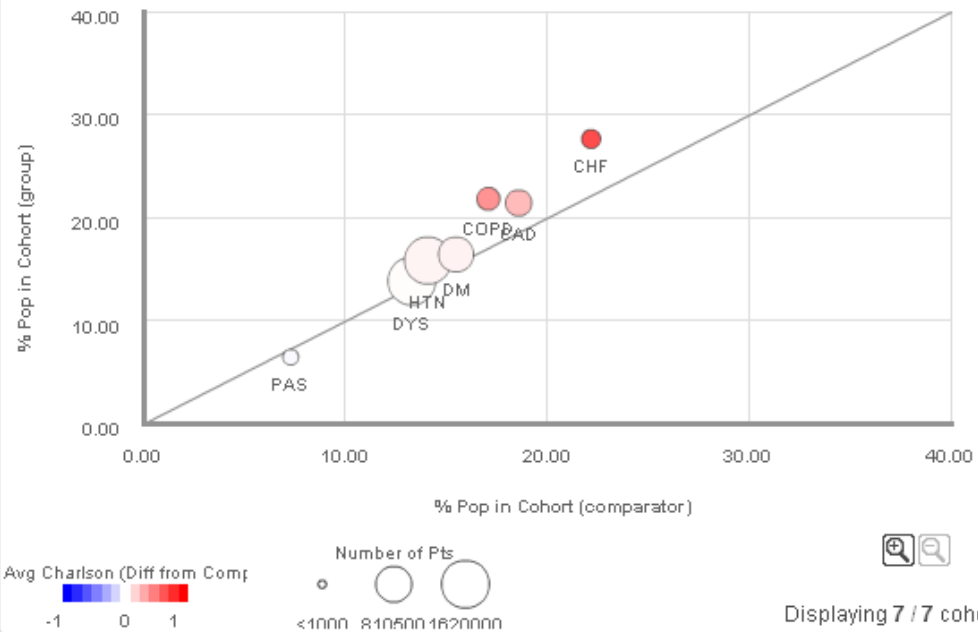
Beginning the Journey to Meaningful Change

- Understanding "Predictive" analytics
  - Moving beyond Risk Scoring
- Using **enterprise data across the care continuum**, to improve patient care by **analyzing data to identify trends and patterns**, and **predict future behaviors and events**, to a high degree of **certainty**.
- Analyze different populations to understand the opportunities.
- Identify where the largest number of resources are spending the most time.

Identifying Populations

Cohorts

Cohort Prevalence



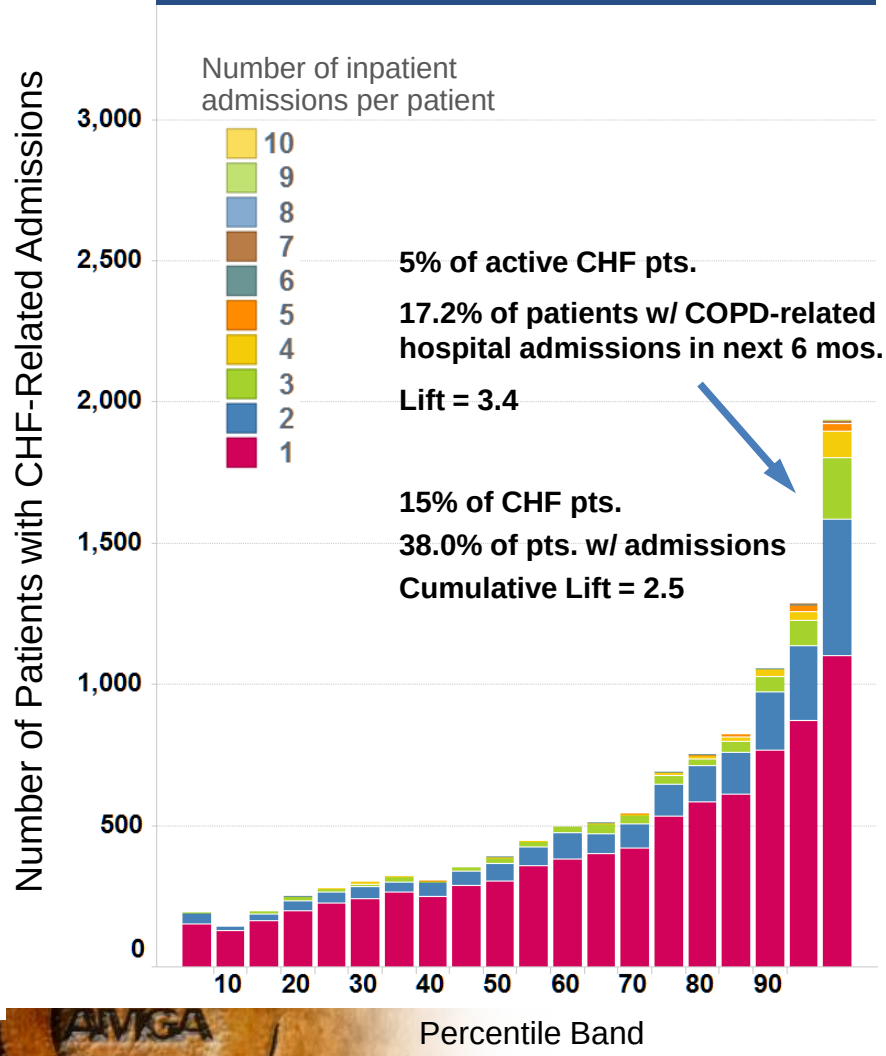
Displaying 7 / 7 cohorts

Process	Result	Comp.	# of Pts
Pts w/ 1 or More BMI assessments (Last 12 Months)	89%	86%	879,352
Pts w/ 1 or More SBP & DBP Tests (Last 24 Months)	90%	92%	879,352
Pts w/ 1 or More Lipid Panel Tests (Males Age 35+, Females Age 45+)	57%	60%	571,895
Pts w/ 1 or more colorectal cancer screenings (ages 50-75)	22%	24%	348,873
Pts w/ Smoking Status Recorded (Last 24 Months, Ages 18+)	21%	88%	879,352
Pts Who Ever Had a Pneumonia Vaccine (Ages 65+)	20%	25%	201,633
Females w/ 1 or More Bone Density Tests (Ages 65+)	16%	25%	116,209
Females w/ 1 or More Mammograms (Last 24 Months, Ages 40-69)	53%	37%	242,963

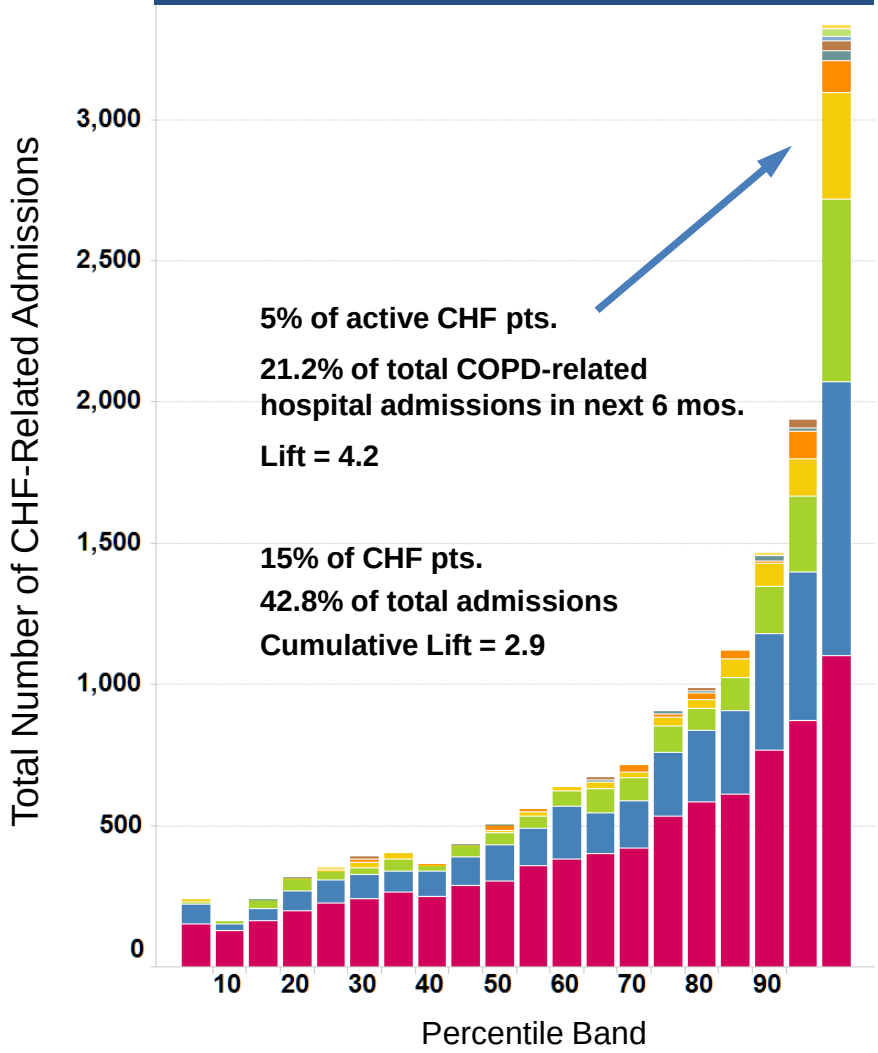
*example screen shots are from Humedica MinedShare®

CHF-Related Inpatient Admissions – 12 IDNs

Patients

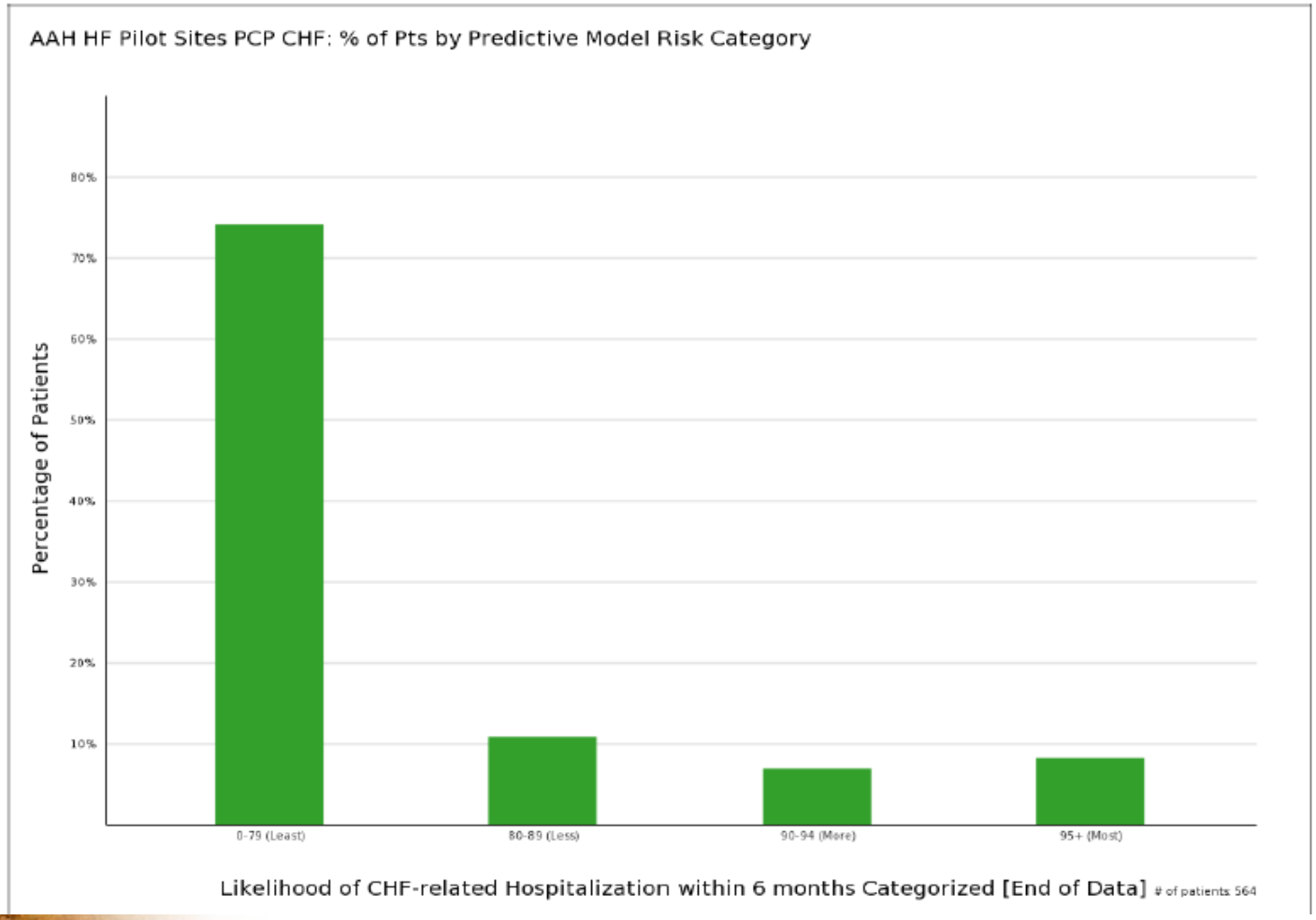


Admissions



Predictive Analytic Risk Stratification

AAH HF Pilot Sites PCP CHF: % of Pts by Predictive Model Risk Category

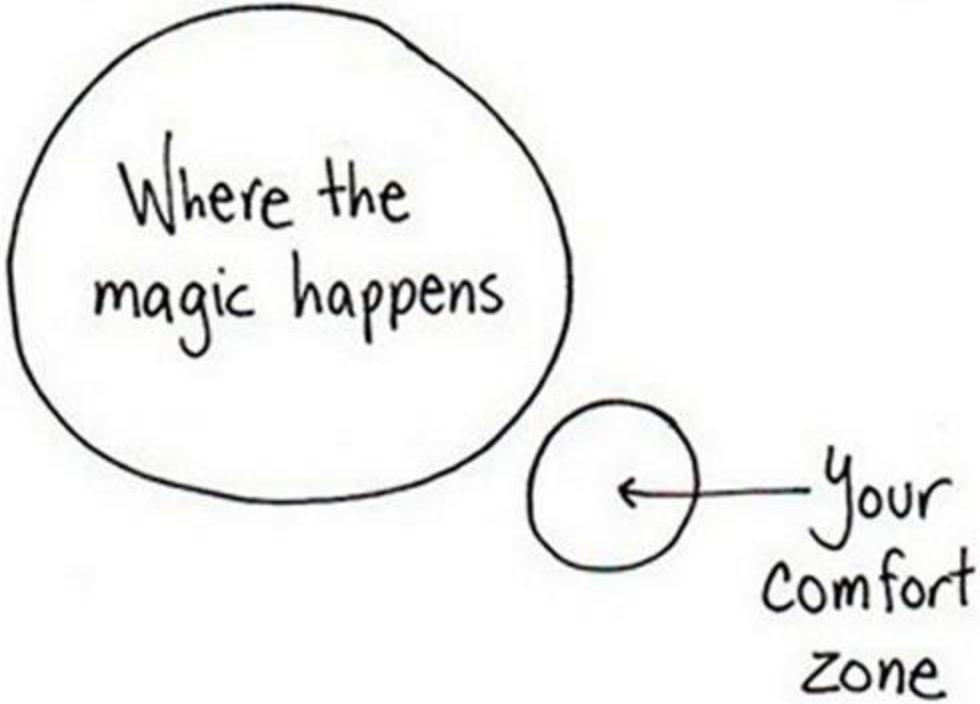


*screen shots are from Humedica MinedShare®

How to make the data actionable

- ✓ Leadership vision
- ✓ Assessing current state and regulations
- ✓ Formed strategic roadmap
- ✓ Selected the population health analytic tool
- ✓ Analyze the data to identify our opportunities

- Now lets make the magic happen!



The Reason Why

This **man has an EF 15%, DM, HF, CVA and multiple co-morbidities**. He started the HFCC pilot by **walking in with a cane with edema and severe SOB**. He stated that he was **SOB all the time**. Weight was up and down multiple admissions last 7/22/13. Since then and with HFCC he has now received all his medications covered for him through the VA (big cost savings for the patient). He qualified for Cardio/Pulmonary Rehab. He is understanding his HF and his medications. He is now on the treadmill with Cardio/Pulm rehab 25-30 min at 2.5% incline at 2.5 MPH 3 days/wk. He is back to working 9 hr days 2-3 days per week as a machine operator. He told me today that "**I feel like he did when I was 50". Patient understands how to manage his weight and watch his symptoms and likes being kept in check with his disease process**.

-Aurora Health Coach, RN

*note the term "Health Coach" and "PCMH RN" in this presentation are interchangeable.

How we started

MARCH 2013

Governance:

- Formed a Steering Committee
- Selected a Physician Chair to drive change
- Identified a core project/develop team of experts

How we selected the Project & Pilot Group:

- Compared Humedica's data analysis against Aurora's strategic roadmap, to determine our focus:
  - Predictive Analytics
- Used national benchmarks to validate focus.
- Analyzed where the greatest opportunities presented
  - Heart Failure and COPD populations.

Heart Failure and COPD Projects

PHASE 1

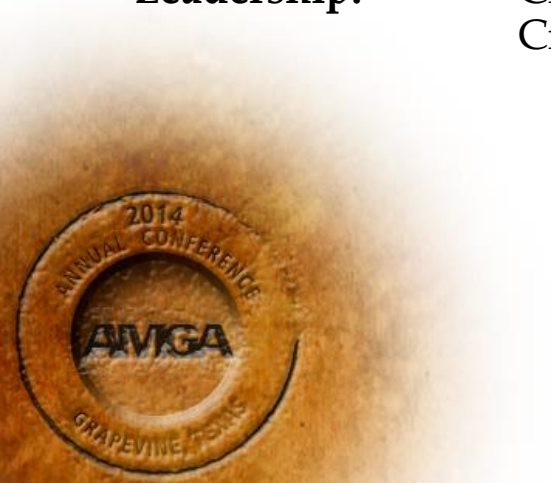
Purpose: Use Predictive Analytics to identify the highest risk populations forecasted to admit within 6 months for Heart Failure. Institute a disease-specific action plan to improve outcomes for this population.

Live date:	06/2013
Focus Area:	5 clinics 1 hospital
Target Group:	129 Patients
Caregivers:	32 Providers 6 Health Coach RNs
Leadership:	Cross functional Cross organizational

PHASE 2

Purpose: Using Predictive Analytics to identify the highest risk populations forecasted to admit within 6 months for COPD. Institute a disease-specific action plan to improve outcomes for this population.

Live date:	01/2014
Focus Area:	5 clinics 1 hospital
Target Group:	263 Patients
Caregivers:	32 Providers 6 Health Coach RNs 2 Pharmacists 1 Home Care 1 Specialist
Leadership:	Cross functional Cross organizational



HEART FAILURE PILOT

POPULATION HEALTH

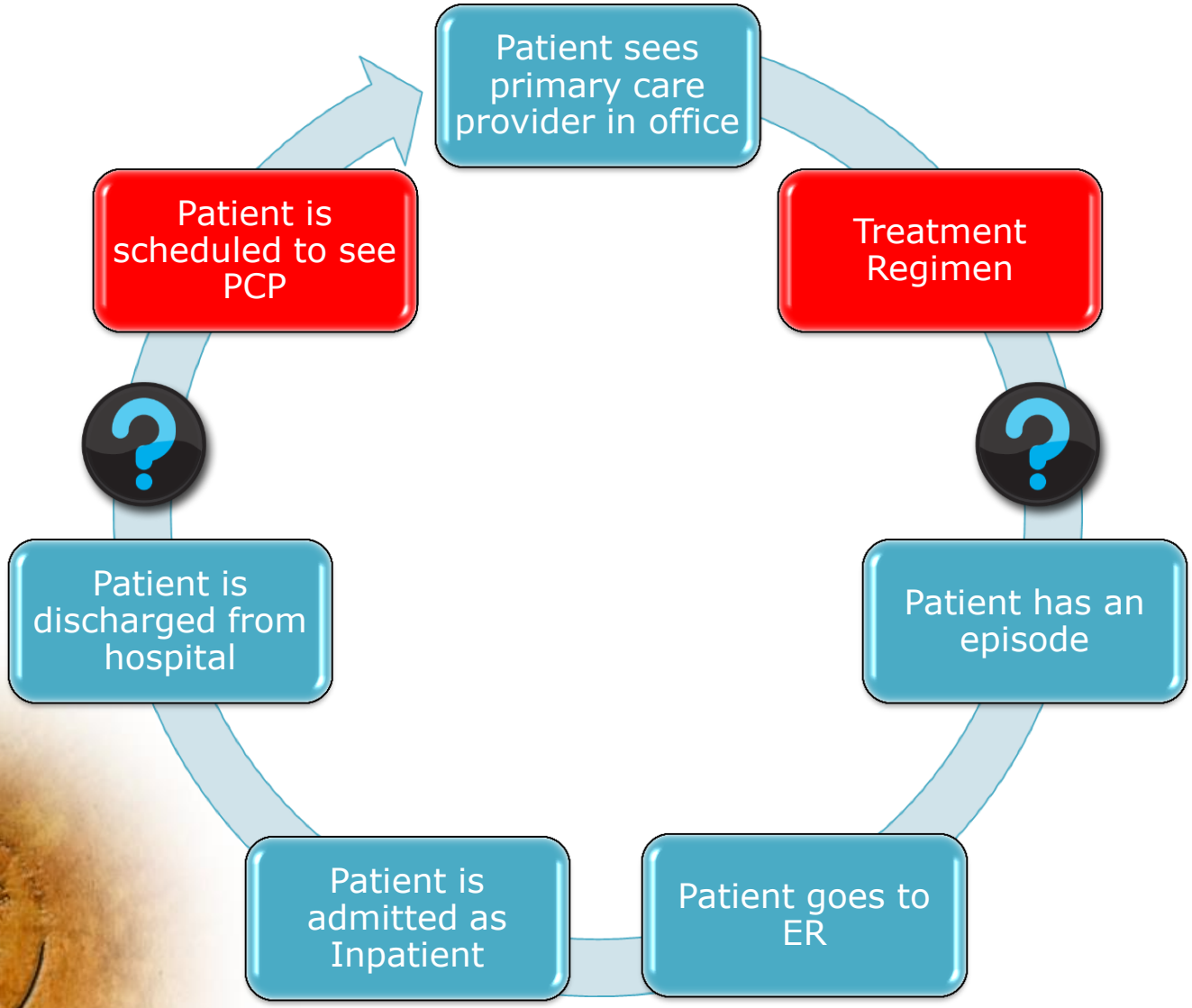
Planning

- Clinical validation of the data
- Performed Extensive Research to determine an optimal model
  - Industry
  - Internal
- Developed a plan based on the data and our gaps in care
  - Patient Engagement
  - Increased Care Coordination
  - Team based care model
- Identified the tools needed to support the model
  - Action Plans
  - Patient Management Plans
  - Order Sets and Documentation
  - Reports within our EHR
- Determined the Timeline

High Level Pilot Timeline

Project Milestones	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec 13’
Data Compilation	X									
Data Validation	X									
Team		X								
Research		X								
Patient Scope		X								
Workflow		X	X							
EHR Build		X	X							
Training			X	X						
Education			X	X						
LIVE				X						
Lessons Learned				X	X	X	X	X		
Progress Reporting				X	X	X	X	X		
Final Analysis									X	X

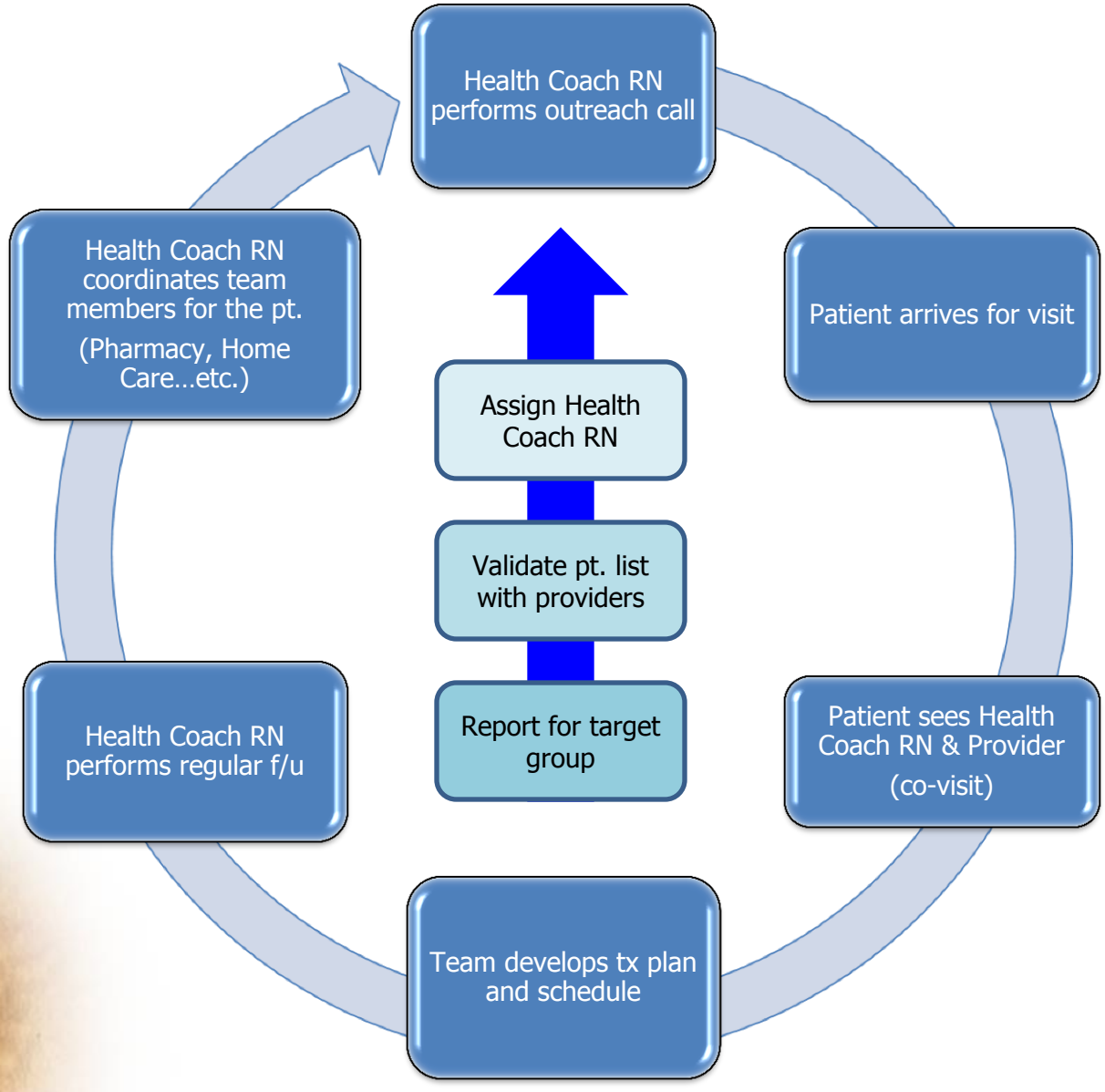
The Old Model



High Level Process Summary

- ✓ Use Health Coach RN as the conduit between provider and care team
- ✓ Institute a collaborative workflow
- ✓ Engage the patient in their care in an enhanced way
- ✓ Use heart failure protocols and quality-driven treatment plans to improve care.
- ✓ Develop electronic tools to allow for ease in utilization as well as comprehensive documentation.

The New Model



Changing to a Team-based model

"A team is a group of people that do what I tell them to do"

"A group of motivated people with complimentary skills, who are committed to a common purpose."*

*definition by LEAN Six Sigma

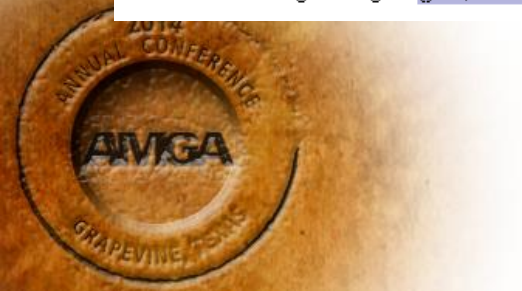
Health Coach Outreach

Heart Failure Initial Intake

Hunter Ztest
9/18/2013

Patient Reported information:
What do you prefer to be called? ***
What is the best way for us to reach you? {CONTACT MANNER:130311}
Who do you live with? ***
Does any one else help care for you? {yes no:108347}
Is there anyone you would like to bring with you for your visits? {yes no:108347}
Do you have a cardiologist you see for your heart care? {If yes, please update the care team yes no:108347}
Do you follow a special diet? {yes no:108347}
Do you follow a fluid restriction? {yes no:108347}
Have you been hospitalized for your heart failure? {If yes, please note most recent hospital date yes no:108347}
Do your heart symptoms interfere with your daily activities? {yes no:108347}
How far can you walk before you become short of breath? ***
Please review and update the patients medication list with them.
Do you take over the counter medication that may not be on our medication list? {pay particular attention to medications such as ibuprofen , Aleve, etc. yes no:108347}

Historical Clinical Information:
Is there an echocardiogram in the record?{yes no:108347}
When was this performed? ***
What is the patient's most recent ejection fraction? ***
Is the patient on an ACE inhibitor or ARB? {yes, no contraindication:130312}
Is the dose at target range? {yes, no contraindication:130312}
Is the patient on a beta blocker? {yes, no contraindication:130312}
Is the dose at target range? {yes, no contraindication:130312}



Rooming and Monitoring Questionnaire

Questionnaires

Current Questionnaires

HEART FAILURE ONGOING SYMPTOM QUESTIONNAIRE

Add | Remove | Restore

Adv	Question	Answer	Comment
	Do you have any shortness of breath with activity?	Yes	
	Do you have any shortness of breath at rest?	No	
	Do you have problems sleeping due to your breathing?	No	
	Are you able to lay in bed when you sleep? If yes, how many pillows do you use?	Yes	
	Has your weight changed in the last several days or week?	Yes	5 lb increase in one week
	Do you have any swelling in your ankles, stomach or hands?	Yes	stomach
	Do you have any chest pains?	No	
	Are you having any problems taking your medications regularly?	No	
	Are you having any side effects from your medications?	No	
	Do you have any questions about your medications?	No	

Yes/No (Shift+F5)

Evidence Based Order Set

visit with Testing Physician, MD for Office Visit

? Resize Close

Opened SmartSets

Associate | Primary Dx | New Dx | Providers | Next

Pharmacy | Sign

AHC HEART | Add Order

"This SmartSet

DOCUMEN

Charting | elected

Heart

ORDERS

Labs | elected

Diagnos | elected

Referral | elected

MEDICATI

Diuretic | elected

Ace Inhi | elected

Beta Bl | elected

PATIENT I

Patient | elected

DIAGNOSI

Diagnos | elected

LOS & FO

Establis | elected

New Pa | elected

Consult | elected

Ad hoc Orders | Add Order

MEDICATIONS

Diuretics, Andosterone Antagonists, Other — 0 of 11 selected

Ace Inhibitors - ARB — 0 of 39 selected

Beta Blockers

Bisoprolol - Initial dose 2.5 mg daily; titrate to effective dose 10 mg daily

Carvedilol - Initial dose 3.125 mg bid; titrate to effective dose 25 mg bid

Metoprolol - Initial dose 12.5 - 25 mg daily; titrate to effective dose 200 mg daily

- bisoprolol (ZEBETA) 5 MG tablet - 1/2 tablet daily
  2.5 mg, Oral, DAILY, Disp-15 tablet, R-2
- bisoprolol (ZEBETA) 5 MG tablet - 1 tablet daily
  5 mg, Oral, DAILY, Disp-30 tablet, R-2
- bisoprolol (ZEBETA) 10 MG tablet
  10 mg, Oral, DAILY, Disp-30 tablet, R-5
- carvedilol (COREG) 3.125 MG tablet
  3.125 mg, Oral, 2 TIMES DAILY, Disp-60 tablet, R-2
- carvedilol (COREG) 6.25 MG tablet
  6.25 mg, Oral, 2 TIMES DAILY, Disp-60 tablet, R-2
- carvedilol (COREG) 12.5 MG tablet
  12.5 mg, Oral, 2 TIMES DAILY, Disp-60 tablet, R-2
- carvedilol (COREG) 25 MG tablet
  25 mg, Oral, 2 TIMES DAILY, Disp-60 tablet, R-5
- metoPROLOL (TOPROL-XL) 25 MG 24 hr tablet
  12.5 mg, Oral, DAILY, Disp-15 tablet, R-2
- metoPROLOL (TOPROL-XL) 25 MG 24 hr tablet
  25 mg, Oral, DAILY, Disp-30 tablet, R-2
- metoPROLOL (TOPROL-XL) 50 MG 24 hr tablet
  50 mg, Oral, DAILY, Disp-30 tablet, R-2
- metoPROLOL (TOPROL-XL) 100 MG 24 hr tablet
  100 mg, Oral, DAILY, Disp-30 tablet, R-2
- metoPROLOL (TOPROL-XL) 100 MG; 2 tabs daily
  200 mg, Oral, DAILY, Disp-30 tablet, R-5

Patient Management Plans

Allergies: Lisinopril, Feldene, Str... Health Maintenance FC: Medicare
FYI: Reg Note, Patient Manage... myAurora: Inactive

Chart Review Last refresh: 4:42:11 PM

SnapShot | Demographics | Chart Review | Problem List | History | FYI | Care Teams | Medications | WR

Filters | Text Search | Refresh | Select All | Deselect All | Review Selected | Master Report | Flowsheet | Route | More

Encounters | Lab | Imaging | Procedures | Cardiac Dx | Other Orders | Medications | Episodes | Letters | Misc Reports | Notes/Trans | Media

22 records match filters, more records to load — Hide Add'l Visits | wendys filter | off premise | HFCC | NH | Clear All

Filtered: Hide Add'l Visits

Date	Type	Provider	Department	Specialty	Description
12/20/2013	Appointment	Bullis, Paul V, MD	ARFP	FamilyPrac	
10/24/2013	Appointment	Malik, Ijaz, MD	ARCARD	Cardiology	
10/11/2013	Appointment	Moretti, Scott T, MD	AROPH	Ophth	
10/04/2013	Appointment	Moretti, Scott T, MD	AROPH	Ophth	Canceled (Inconvenient Ti...
09/24/2013	Appointment	1, Har Anticoag Nurse	ARAC	Int Med	
09/23/2013	Appointment	Moretti, Scott T, MD	AROPH	Ophth	Canceled (Inconvenient Ti...

FYI

New Flag

Existing FYIs

Show inactive | Filter... | Refresh

Entry Date/Time	C	User	Type	Summary	Status
07/23/13 05:08	0..	Pamela Irving	Reg Note	For setting up appts, please call daughter Charlot	Active
06/09/13 14:46		Ann M Dragan	Reg Note	Could not get a good scan of the front of insuranc	Active
07/29/13 16:40		Julie A Desnoo	Patient Management Plan	ED/Urgent Care Patient Management Plan Reas...	Active

ED/Urgent Care Patient Management Plan

Reason for Plan: Reduction in the use of the Emergency Department.

Treatment Plan: If patient has complaints of Chest Pain, I recommend the following:

1) Pt take nitroglycerin 0.4 mg tabs, one tab SL every 5 min x 3

Deactivate | Edit | Show History

Training

Health Coach, RN

- Disease specific education
- EHR functionality training
- Health coaching techniques
- Motivational interviewing
- Industry models
- Operational Flow
- Change Management

Provider

- Disease specific education
- EHR functionality training
- Population Health analytic tool education
- Operational Flow
- Change Management

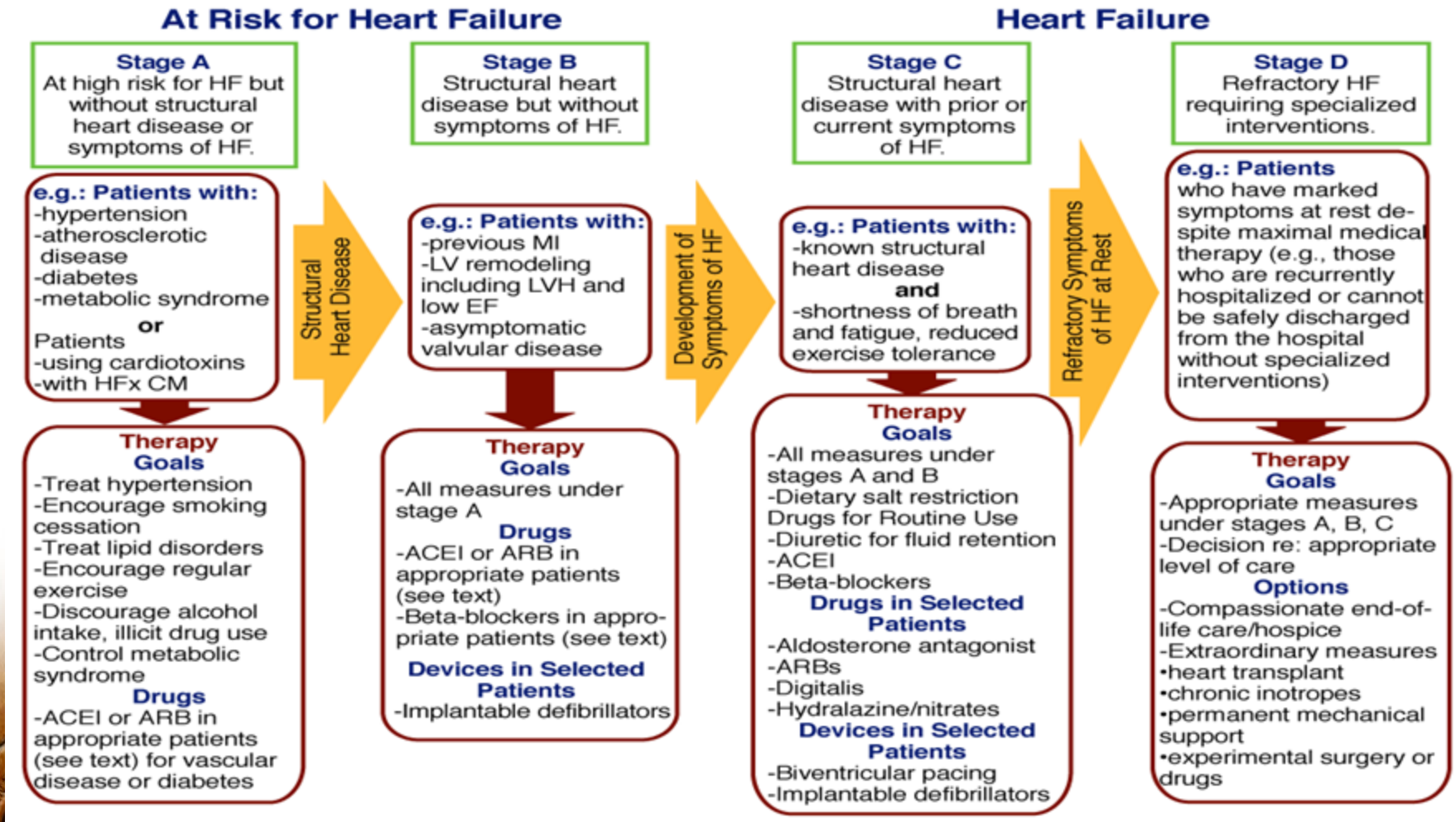
Clinical Caregivers

- EHR functionality training
- Change Management
- Operational Flow

Other Caregivers

- Awareness
- Change Management
- Operational Flow

Example Disease Education



Live and Support

- Local Provider Champion
- Health Coach RN Lead
- Daily check-in calls with core development team & local leaders
- Re-education sessions
- Weekly newsletters with lessons learned
- In-person rounding by local leads and core team
- Provider to Provider outreach for the struggling or reticent.

Tracking Outcomes

<Clinic Name> Report run on <date>	STATUS	BASE	TARGET	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	TREND
EXPERIENCE									
Patient Experience (CGCHAPS)									
Sevice Impact Score		56	65	54	56	59	61	58	
% Access Satisfaction		30%	80%	30%	40%	26%	27%	60%	
Caregiver Experience (1-5 score)									
Team		3	5	2.5	3	2.375	2.5	2.55	
Direct Care		2	5	1	2	1.75	2.2	2.5	
Support Care		4	5	4	4	3	2.75	2.6	
FINANCIAL									
Additional Net Revenue		$0	$2,100	$2,100	$2,100	$2,100	$1,680	$2,100	
Additional Direct Cost		$0	$1,535	$1,535	$1,535	$1,535	$1,228	$1,535	
Contribution Margin		$0	$565	$565	$565	$565	$452	$565	
Volume									
Visits within 7 days		30%	90%	90%	90%	90%	88%	90%	
[redacted]		0%	90%	90%	90%	90%	73%	90%	
Encounters									
Team wRVU		331.03	364.13	353.82	353.82	353.82	353.82	353.82	
Team Visits		1,906	2,097	1,906	1,906	1,906	1,958	1,906	
Team Panel Size		10,000	15,000	10,030	10,050	10,100	10,139	10,195	
OPERATIONS REDESIGN									
[redacted]		30%	90%	30%	50%	60%	65%	75%	
[redacted]		2.2	2.5	2.21	2.25	2.23	2.31	2.32	
[redacted]		3.3	5	3.3	3.4	3.45	3.7	3.6	
QUALITY									
Quality Score		3.40	3.30	3.40	3.50	3.50	3.56	3.60	
Readmission Rate		8.20%	0	8.20%	7.30%	10.00%	7.90%	7.20%	
Acute Care Prevention Opportunity Rate		0.0350	0.0000	0.0350	0.0390	0.0345	0.0325	0.0321	

**Content is for illustrative purposing only and not real data*

Lessons Learned

- The positive impact of the combination visit
- Using APPs for coverage
- Changing clinic dynamic and the need for Change Management
- Health Coach RN role definition
- Provider Adversity
  - Local physician champions
- Patient Engagement
  - Using the right terminology with patients "Heart Failure"

Now for the Results

Clinical Successes

- Drop in Heart Failure rates:
  - **65% reduction in admissions from 2012 to 2013!**
- Decrease in ER utilization.
- Increase in Patient Wellness (moving to lower risk).
- Increase in Patient Satisfaction
- Enhanced Care Coordination model with expanded primary care delivery team.

Readmission Impact

- 30% decrease in all-cause readmissions from 2012 to 2013*!

Month	Readmission Rate 2012	Readmission Rate 2013
June	12.1%	11.6%
July	10.7%	6.4%
August	12.9%	8.8%
September	11.9%	7.4%
October	13.73%	6.41%
November	11.25%	8.16%
December	8.90%	7.26%
average	**~11.64%**	**~8.0%**

Now for something AMAZING…

Heart Failure Readmission rate	2012	2013
September	28.57%	9%
October	12.5%	0
November	16.7%	0
December	0	0
average of 4 months	**14.44%**	**2%**

Show me the Money!

- ✓ Avoiding readmission penalties
- ✓ Avoiding diversion – opportunity costs!
- ✓ Improved access for new patients
- ✓ Increase in clinic efficiencies
- ✓ Ability to care for larger panel size
- ✓ Efficient resource allocation for caregivers

(includes deduction of Health Coach resource)

Aurora Health Care has ~600 FP/IM providers

cost savings = ~ **$32,348,400***

In a world where your organization takes 100% of the risk…

- 6 months of data
- 29 providers
- cost savings = $444,720*

*based on 100% risk model

*pilot data annualized

The Patient Rewards

Non-Compliant patient:

"I have done a lot of work for this patient with the VA to get all his medications covered. I have done a lot of listening to him vent, about his health and his physician. I voiced to him that I was going on vacation. He stated that he will change his appointment so that he can meet with me because he appreciates all the hard work I have done to help him with his care. **He stated that he felt no one has ever put this much time into helping him get healthy and helping him with his care coordination**."

Health Coach Patient:

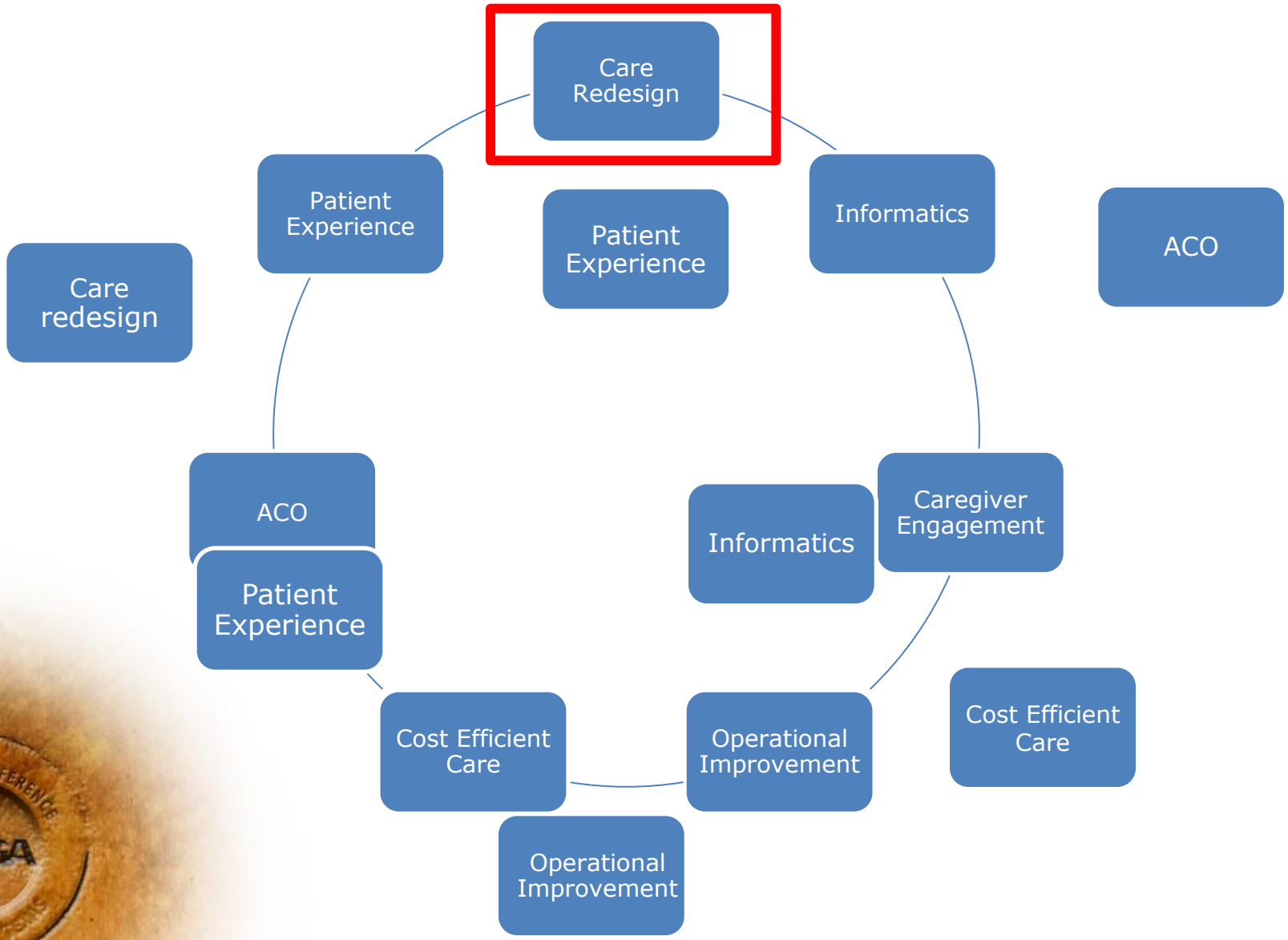
"She was one of my first patients after taking on this role as the Health Coach RN*. The whole family is familiar with the Health Coach and the collaborative effort we have provided as a team in Kewaskum. **This family and patient know they can call anytime with questions or concerns. They view me as an extension of the physician**. We now have a Patient management plan in place for her as well."

Hospice Patient:

"She has recently gone on Hospice. I was able to help her by setting this up and making sure she had her WI DNR bracelet on. **She asked if I can still call her even while she is on hospice because she enjoys my weekly calls. The impact I am having means so much**."

Next steps post Pilot

Strategic Roadmap:
where population health fits



Integrating with Primary Care Redesign

As a program, Aurora's Primary Care Redesign strategy uses a patient-centric approach to **strengthen our foundation**; **optimally transform our operations**; and **communicate our vision**.

Primary Care Redesign aims to:

- help patients live well
- improve caregiver experience
- improve provider access
- foster caregivers working to top of licensure
- increase our population base
- optimize outcomes in relevance to cost and spending

✓ **POPULATION HEALTH FITS!!!**

Making the Triple Aim Happen

Organizational Readiness

- Build population health into the primary care redesign charter
- Messaging from the top (CEO and Medical Group Presidents)
- Fine-tune our marketing strategy
- Engage local leaders
- Onboard physicians through collaborative groups
- Expand Change Management
- Spread awareness to instigate adoption
- Create deployment plan

Our Next Stop

Questions