Using Data to Improve Care

NAACOS Summer 2021 Boot Camp

June 23, 2021

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Using Data to Improve Care

Identifying & Addressing Gaps – Tom Hawkes

June 23, 2021

Tom Hawkes

Tom Hawkes . VP of Technology Innovation
Caravan Health

As Vice President of Technology Innovation for Caravan Health, Tom is responsible for the development of technology and innovation programs and applications to support clients in their delivery of population health. He joined Caravan in January 2017.

For over 25 years Tom has been leveraging technology and data to drive innovation across industries before entering health care and joining one of the nation's largest HMO's, Kaiser Permanente, over 15 years ago. Tom held various technology leadership positions in Kaiser's California national headquarters before joining Kaiser's Hawai`i Permanente Medical Group in Honolulu to develop a custom population health application integrated into Epic. He also championed interoperability as a member of the Board of Directors for the Hawai`i Health Information Exchange and supported another local health system in Hawai`i build out their analytic and decision support systems for their inpatient and outpatient facilities and a growing Clinically Integrated Network. Tom has a Master's of Science in Environmental Management from the University of San Francisco and a Bachelors in Physical Science from the University of California, Berkeley.

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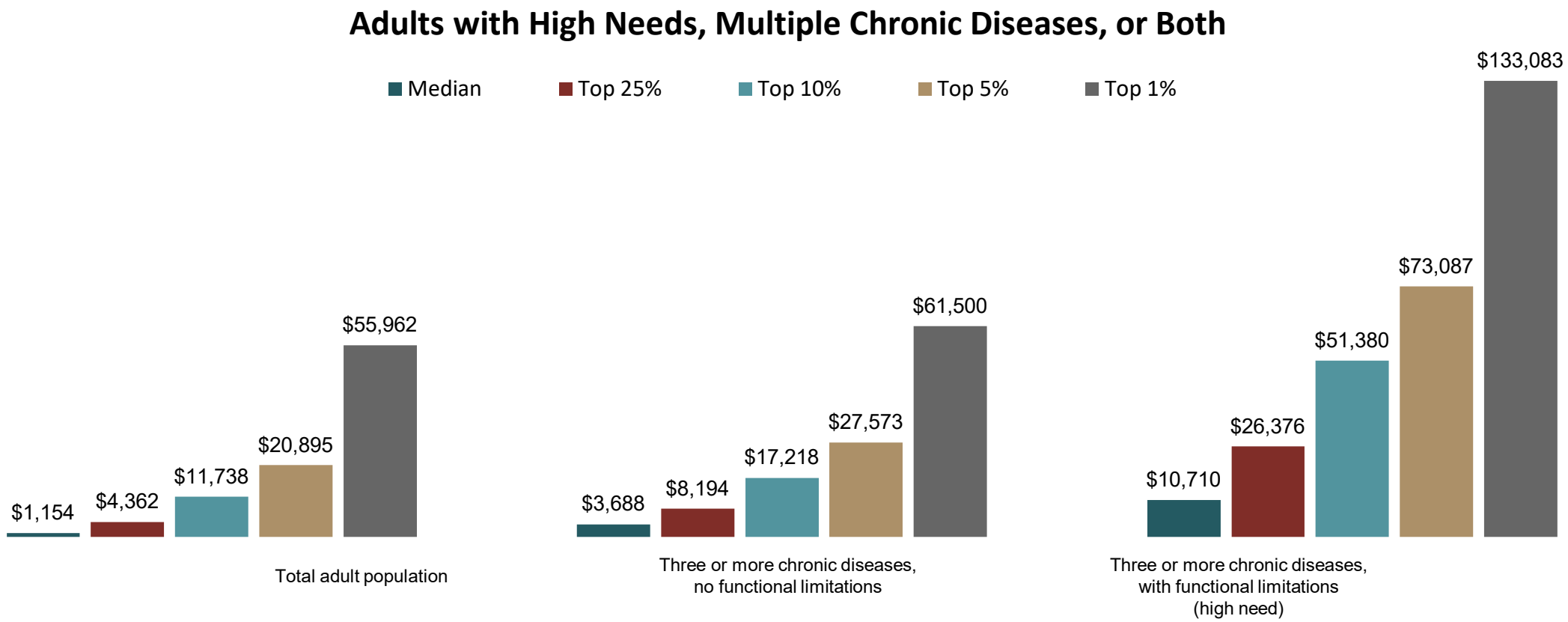
Introduction

Health Care Spending in the US



Note: Noninstitutionalized civilian population age 18 and older.

Data: 2009-2011 Medical Expenditure Panel Survey (MEPS). Analysis by C.A. Salzberg, Johns Hopkins University.

How Do We Address Gaps in Care for These Patients?

Identify opportunities to optimize

- ✓ Review your patient's timeline
- ✓ Close referral loops and obtain records
- ✓ Know what your patient is missing
- ✓ Add value to your patient's visit
- ✓ Improve specificity in coding

Focus on areas of impact in your practice

Meaningful data to drive system change

Using Data to... → ***... Improve Patient Care***

Strategic Systems Using Aggregated Tools

Maximize Power of ACO Claims Data

Analyze your community's performance related to chronic conditions and preventive medicine. Where do you thrive? Where do you struggle?

Meet with clinicians to provide clinical insight for the data.

Prioritize areas for improvement and identify where you need additional resources based on which populations, providers, and practices carry the most risk.

Evaluate HCC Gaps

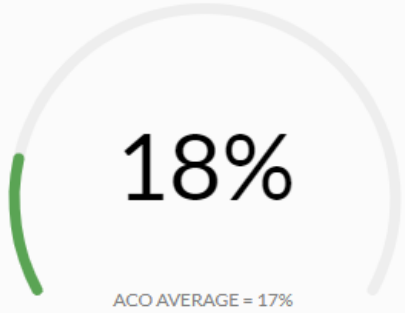
Impact of Chronic Conditions

62 chronic conditions

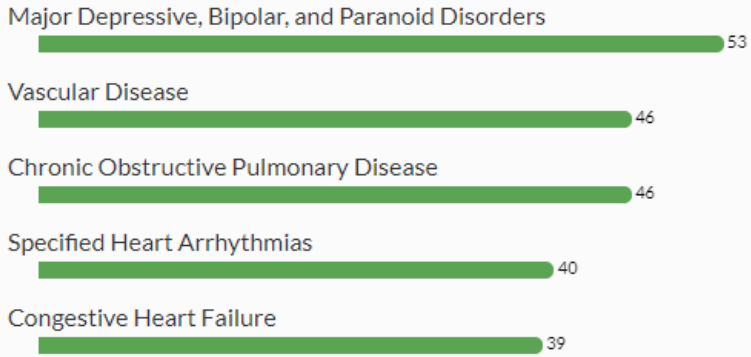
Data updated as of Jun 1, 2021

View Clinicians | View Patients

Annual Closure Rate



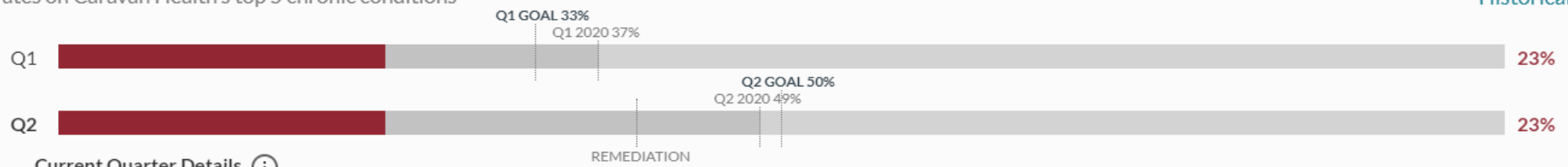
Top Coding Opportunities



Quarterly Milestones

Closure rates on Caravan Health's top 5 chronic conditions

Historical Quarterly Milestones



Current Quarter Details

Coding for Reimbursement vs. Coding for Risk

How we use ICD-10 codes changes as we move from Fee-For-Service to value-based payment models. Understanding how to use codes in a new way will be critical to achieving shared savings.

Coding for Reimbursement

- Providers bill services based on E&M and CPT procedure codes
- Payment is based on complexity of the service
- Payment is not impacted by the complexity of the patient
- ICD-10 codes are used to demonstrate medical necessity for an individual visit

Coding for Risk

- RAF score calculated to predict patient complexity and annual spend "cost"
- Savings is achieved when the spend is less than the estimated cost for that year
- CMS "wipes the slate clean" annually, so qualifying HCC codes need to be on at least one claim each calendar year

Poor:

Dx: Hx DM, COPD, Obesity

Total RAF: 0

- Low specificity, "Hx of" doesn't denote active management of disease
- **ICD-10 Codes:** non-specific/Hx codes are not mapped to HCC Codes
- **HCC Code:** None
- **Total RAF:** 0

Best:

Dx: Type 2 diabetes with diabetic nephropathy, Stage 3 CKD, morbid obesity with BMI= 41

Total RAF: 0.619

- High specificity & clear active management of disease
- **ICD-10 Codes:** E11.21, N18.3, Z68.41
- **HCC Code:** 18, 22, 138
- **Total RAF:** 0.619 (0.305 + 0.07 + 0.244)

HCC Savings Opportunity

CHRONIC CONDITIONS
NOT REVIEWED

PROJECTED COSTS

9,000

ACTUAL COSTS

10,500

1,500

IN LOSSES/PT

CHRONIC CONDITIONS
REVIEWED
(NO PROCESS)

PROJECTED COSTS

10,600

ACTUAL COSTS

10,500

100

IN SAVINGS/PT

CHRONIC CONDITIONS
REVIEWED
(AWV PROCESS)

PROJECTED COSTS

11,000

ACTUAL COSTS

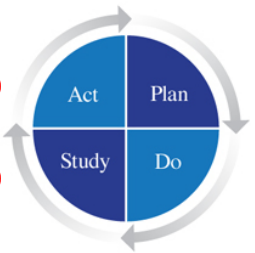
10,500

500

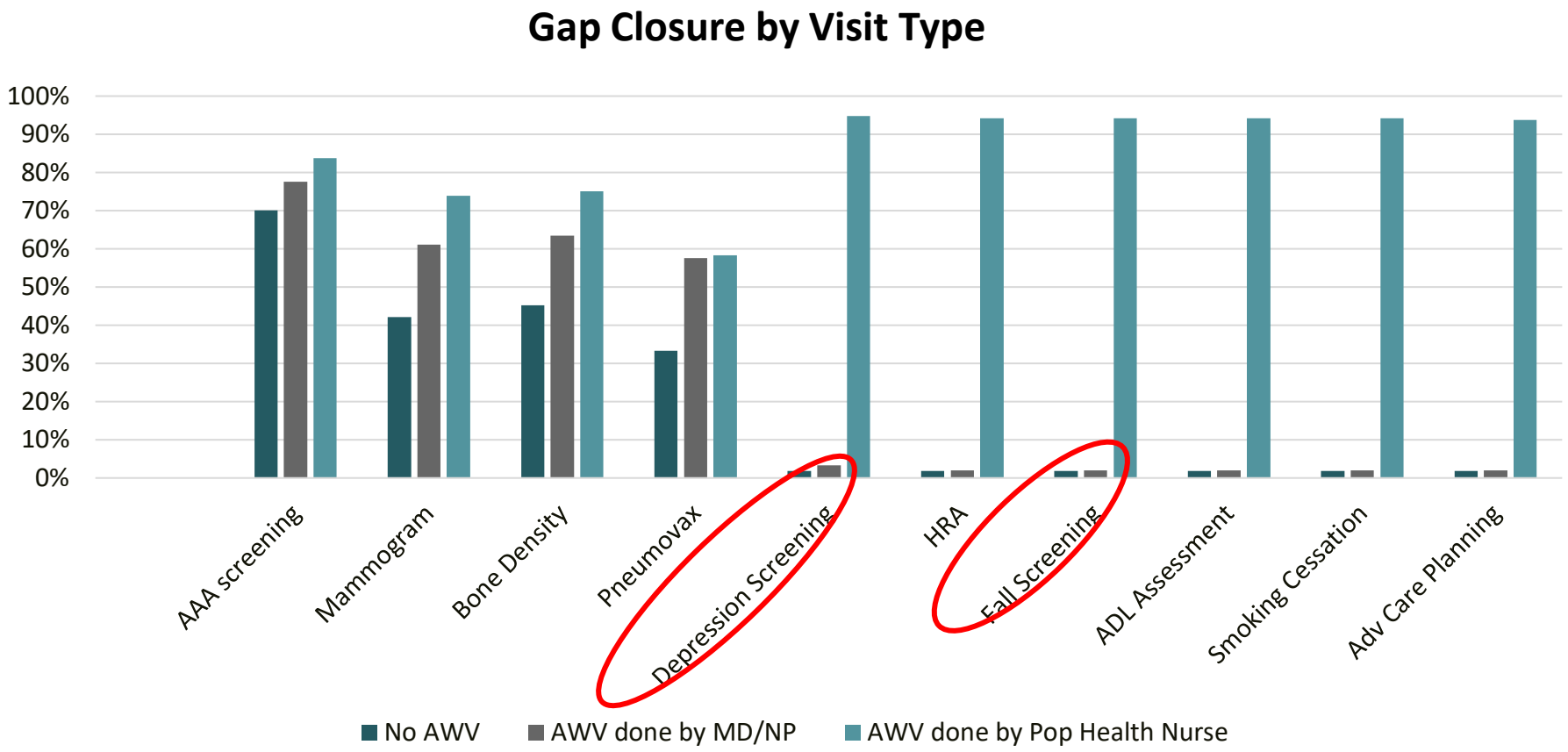
IN SAVINGS/PT

Evaluate Quality Measure Opportunities

NAME	NUM/DEN	POINTS	PRACTICE RATE	COMMUNITY RATE
Influenza Immunization (PREV-7)	6 / 8	1.70	75.00%	75.00%
Breast Cancer Screening (PREV-5)	5 / 8	1.55	62.50%	62.50%
Tobacco Use: Screening and Cessation Intervention (PREV-10)	5 / 8	1.55	62.50%	62.50%
Controlling High Blood Pressure (HTN-2)	3 / 6	1.40	50.00%	50.00%
Colorectal Cancer Screening (PREV-6)	2 / 5	1.25	40.00%	40.00%
Diabetes Mellitus: Hemoglobin A1c Poor Control (DM-2) *Inverse measure, a lower rate indicates better performance	2 / 2	0.00	100.00%	100.00%
Falls: Screening for Future Fall Risk (CARE-2)	2 / 8	0.00	25.00%	
Screening for Clinical Depression and Follow-Up Plan (PREV-12)	2 / 8	0.00	25.00%	



Increase Quality Measure Performance by Utilizing Nurses for Annual Wellness Visits (AWVs)



Source: Caravan Health Client

Optimize Visits Using Patient Detail Tools

Put Your Patient-Detail Data to Work

Use your patient data for pre-visit planning:

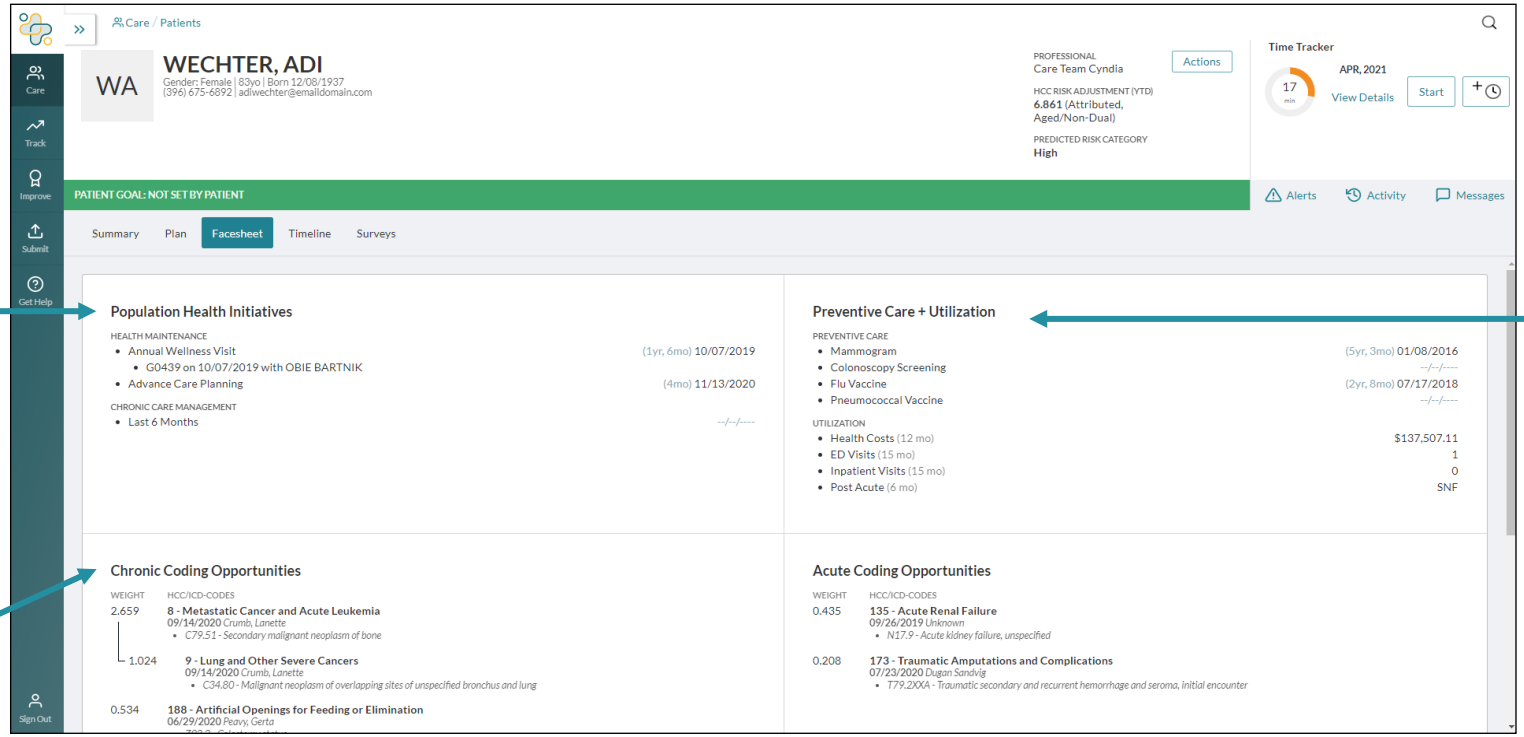
- Coding opportunities (HCC)
- Open referrals
- Quality measure gaps
- Sending and receiving summaries of care

Facesheet

Optimize Patient Visits with a claims-based Facesheet

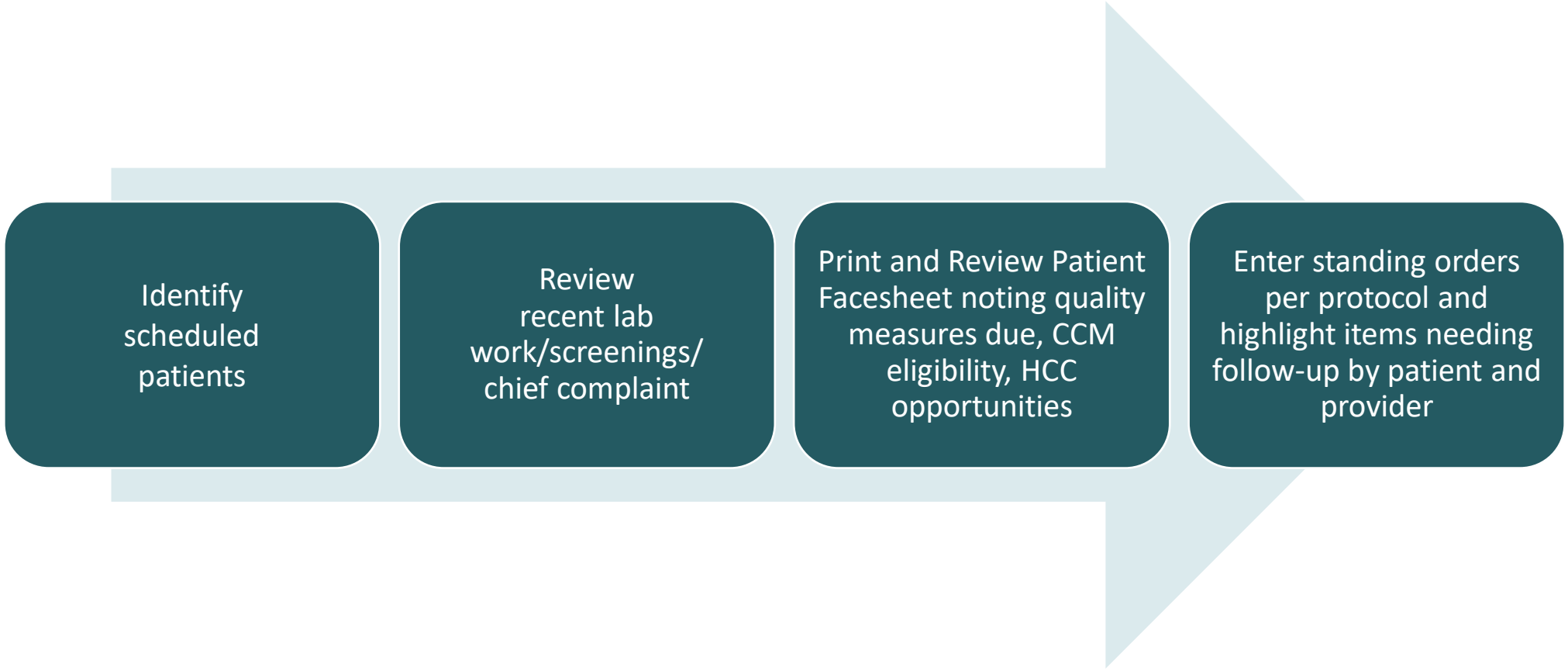
Population Health Initiatives

Chronic Coding Opportunities



Preventive Health Screenings

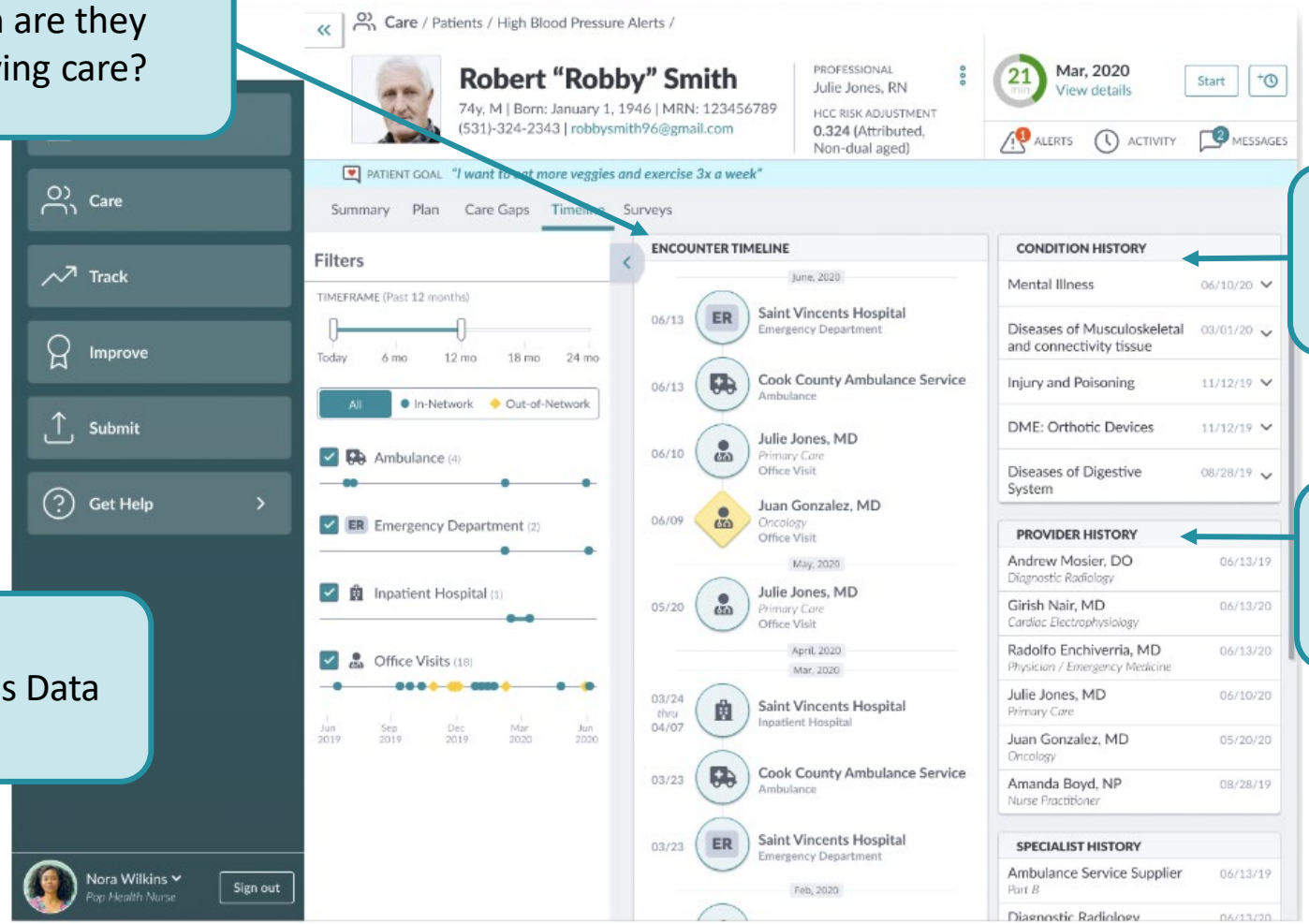
Optimizing Patient Visits



Patient Care Timeline

Timeline

When are they receiving care?



Claims Data

Which Diagnosis are you unaware of?

Who and Where are they getting care?

Annual Wellness Visit (AWV) Opportunities

Filters

AWV OPPORTUNITIES ×

FROM DATE

mm/dd/yyyy

TO DATE

06/17/2021

Apply

AWV Opportunities

NAME	LAST AWV/IPPE	AWV/IPPE	ATTRIBUTED PROVIDER	PREDICTED RISK
AUZENNE, FLORE	08/19/2019	AWV	THADDIUS TOOHEY	High
BOLEN, MANNY	08/19/2019	AWV	DUGAN SANDVIG	High
BONFANTI, RHODIA	12/11/2019	AWV	DUGAN SANDVIG	High
DOAN, LIN	12/07/2019	AWV	DUGAN SANDVIG	High
ELLISSA, FELIX	02/04/2020	AWV	DUGAN SANDVIG	High
HASSETT, SANSONE	11/02/2019	AWV	OBIE BARTNIK	High
LEDAY, JEFF	12/27/2018	AWV	OBIE BARTNIK	High
MENZER, BENJAMIN	01/26/2020	AWV	DUGAN SANDVIG	High
MIMI, LAIRD	04/18/2019	AWV	THADDIUS TOOHEY	High
MONTS, BURKE		IPPE	DUGAN SANDVIG	High
SALTZMAN, CLARISSA	07/26/2019	AWV	DUGAN SANDVIG	High
SEETON, RENE	01/27/2019	AWV	DUGAN SANDVIG	High

AWV: Reduced Cost and Increased Prevention

Among 8917 Medicare beneficiaries, an AWV was associated with significantly reduced spending on hospital acute care and outpatient services

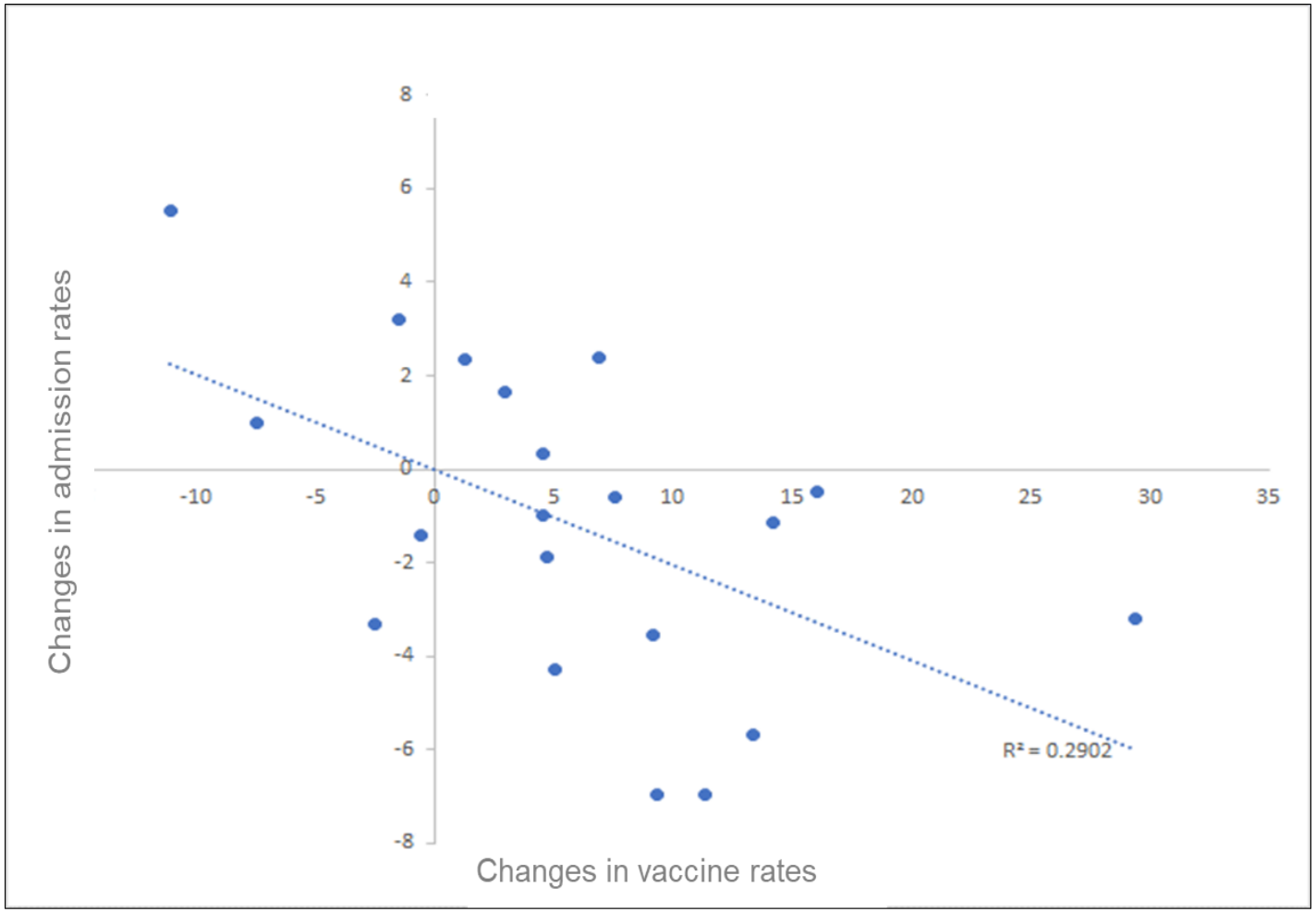
Patients who received an AWV in the index month had a **5.7%** reduction in adjusted total healthcare costs over the ensuing 11 months

The greatest effect was seen for patients in the highest hierarchical condition category risk quartile (**6.3%** reduction)

Beneficiaries who had an AWV were also more likely to receive recommended preventive clinical services

Beckman *et al*. Medicare Annual Wellness Visit Association with Healthcare Quality and Costs. *American Journal of Managed Care* 2019 25(3), e76-e82

Reducing Hospital Admission Rates with Pneumonia Vaccination



Next Steps

Next Steps for Improving Care

System Change:

Meaningful Data

- HCC Gaps
  - By Provider
  - By Diagnosis
  - By Practice
- Quality Measures Opportunities
  - By Biggest Gaps
- Patient Facesheets
- Patient Timelines
- AWV Opportunities

Focus Areas (PDSA!):

- **In Primary Care**
- **In Specialty Care**
- **In Coding Processes**
- **In Pre-Visit Planning**

Optimize Visits:

Data + Strategy w/Pre-Visit Planning

- Capture chronic conditions
- Add quality measures
- Evaluate outstanding referrals

Improvement is in the Data

Improvement for patients

- Better chronic disease management and documentation
- Decreased gaps in care (more AWVs, referring to CCM as appropriate)

Improvement for practice

- Population Health Nurse working to top of license
- Processes to standardize and simplify visits

Improvement for systems

- Impact ACO Benchmark
- Increase likelihood of achieving shared savings

Improvement for physicians

- Processes increase comprehensive care by non-physician team
- Aligns patient, system, and physician goals in physician contracting

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Thank You

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NOMS HEALTHCARE

NOMS 360: Chronic Care Management

June 23, 2021

Discussion Points

- Overview of NOMS Healthcare
- Overview of NOMS Care Management
- Lessons Learned & Future Plans

NOMS HEALTHCARE

NOMS Mission Statement

The mission of NOMS Healthcare is to provide excellent, personalized, team-based care.

NOMS HEALTHCARE

Geographical Reach

Organization overview

247 Providers, 27 specialties, 146 locations, and over 1000 employees

Physician owned and led

The Journey to Value-Based Care

- 2011: Patient Centered Medical Home
- 2013: Advance Pay ACO
- 2015: Ancillary expansion: Imaging, Physical Therapy, Lab, ASCs
- 2017: CPC+ Track II
- 2018: BPCI-A
- 2019: ACO Track B
- 2021: ACO Track C
- 2021: Primary Care First (Newly on-boarded offices that were not previously CPC)

NOMS HEALTHCARE

Providers do not have to do it alone!


TEAM

Care Team Structure

- Hybrid approach
  - Decentralized – Medical Assistants or LPNs
  - Centralized – RNs, Social Workers, Dietitian, Smoking Cessation Specialists, Diabetes Self-Management Educator
  - Nurse Practitioner
  - Call center – LPNs, Medical Assistants

Goal of Care Management

Advocates:

- Manage lower risk patients
- Help close care gaps

RN Care Managers

- Educate patients to be able to self-manage chronic conditions.
- Graduate patients once patients are confident --- Advocates take over

LSW Care Managers

- Manage resources for patients
- Help patients learn how to cope with chronic conditions

Technology Use to Guide Care Management

- Claims Data
- Registries
- HIE – ADT alerts
- Data extraction
- Navina

Where to next?

- Recently hired a data scientist
- Remote patient monitoring

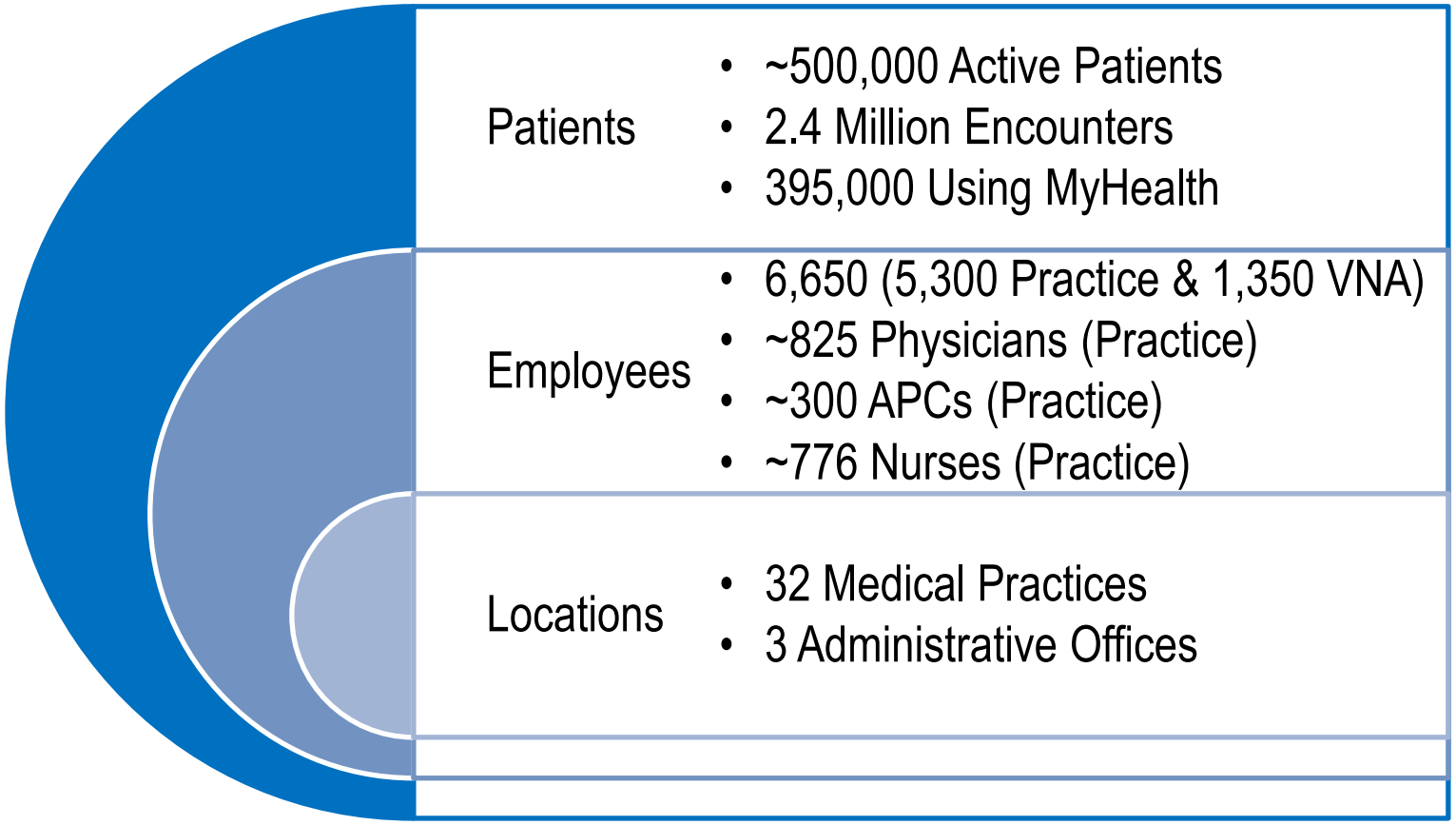
Using Predictive Modeling to Drive Patient Improvement and Care Gap Closures

Yoni Dvorkis, MPH, CHDA
Lead Data Scientist

June 2021

Atrius Health

Atrius Health Overview



Source: Marketing, January 2018

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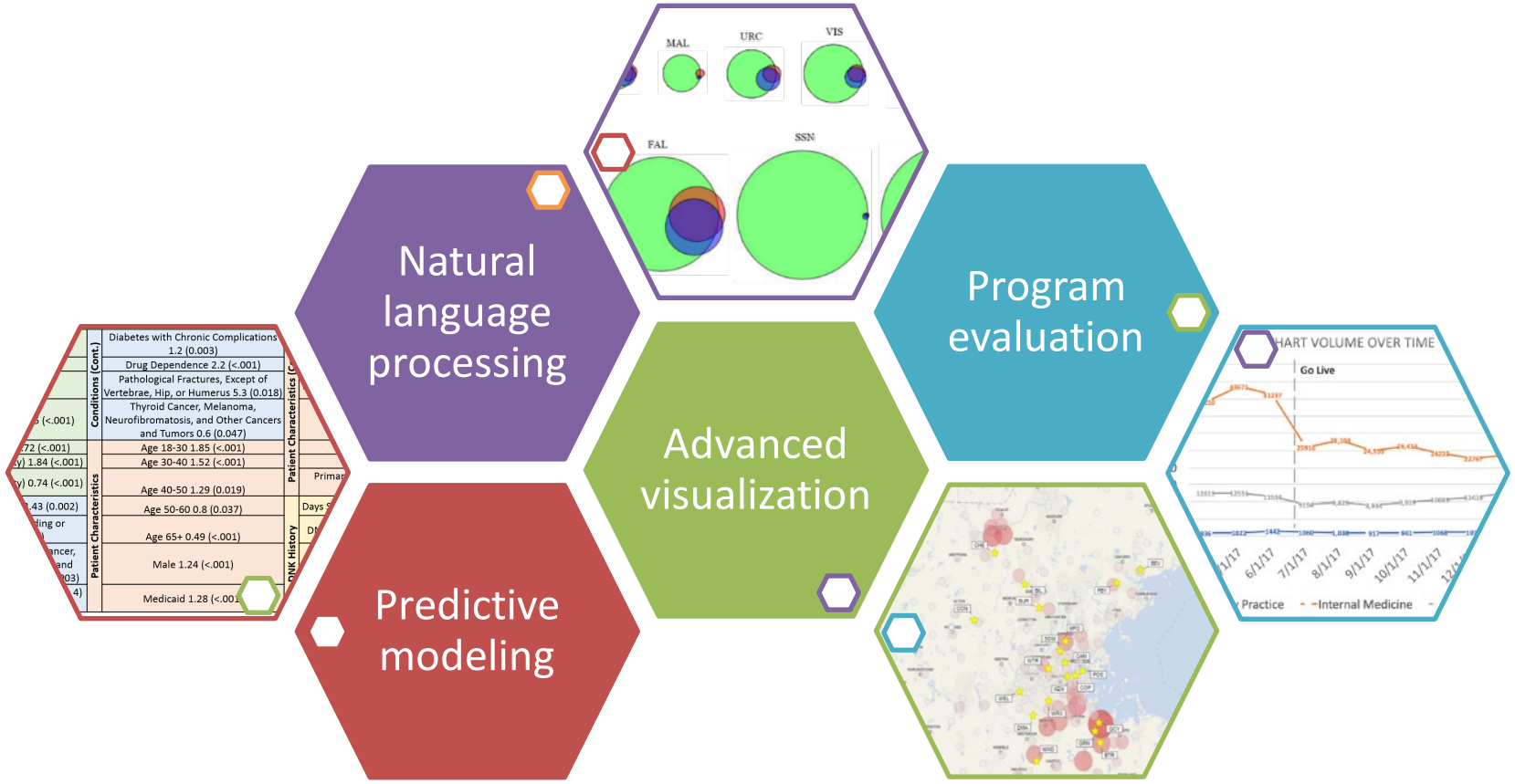
Focus Areas for Atrius Health Data Science



Pragmatic application of advanced analytic techniques for transforming care to improve lives

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Predictive Modeling – Program Enrollment

Prior Utilization

Medical Conditions

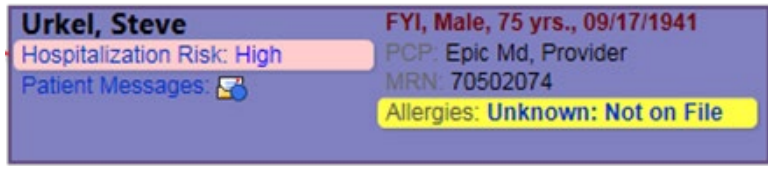
Demographics

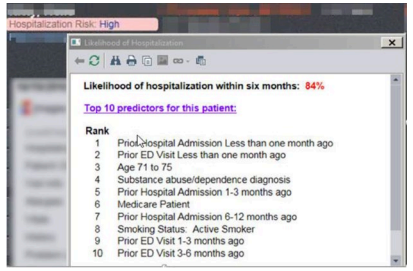
Pharmacy

>200 variables

Predictive Model

Program enrollment





Expedited triage and scheduling

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Predictive Models Paired with Interventions

***CRISPI* Clinical Risk Prediction Initiative**

- *Predict future hospitalizations in next six months*

→ *Case Management/IHB program enrollment*

Patient Header turns Purple for high CRISPI patients

***PALI* Palliative Care Advanced Illness**

- *predict mortality in 12 months*
- *date of death from CCLF files*

→ *Palliative Care consultations*

PALI Score appears in Epic as Moderate (30% - 50%) or High (50%+)

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Predictive Model Deep Dive: CRISPI

Covariate Groups:

	Includes:	Examples of High Risk Predictors:
Demographics	Age	Age 76+ <--- 5.7x increased risk for hospitalization (next 6 months)
	BMI	BMI greater than 40 <--- 1.7x increase in risk
	Smoking Status	Active Smoker <--- 1.4x increase in risk
	Insurance	Medicare patient <---1.5x increase in risk
Diagnoses (Epic or claims)	69 HHS-HCC diagnostic categories	Muscular Dystrophy <---3.8x increase in risk
		Chronic Kidney Disease, Stage 5 <---3.3x increase in risk
		Bone/Joint/Muscle Infections/Necrosis <---1.7x increase in risk
Medication Profile (Epic orders or claims)	28 Medication therapeutic classes	Patient is on Antipsychotic <--- 1.3x increase in risk
		Immunosuppressant <---1.6x increase in risk
		Opioid <--- 1.3x increase in risk
		Chemotherapy <--- 1.2x increase in risk
Prior utilization	Prior IP admissions, ED Visits	Prior admission in the last 30 days <---2.5x increase in risk
	Prior ICU stays visits	Prior ICU stay in the last 12 months <---1.1x increase in risk
	No shows	3 or more no shows in the last 12 months <---1.3x increase in risk
	OP visits	Prior OP visits in last 30 days (4 or more) <---1.5x increase in risk

***148 total predictors are included in CRISPI**

Top 20 model Covariates:

	COVARIATE	OR	P VALUE	
1	MED_CFTHERAPY	6.41	0.000	**
2	AGE_CAT 76+	5.70	0.000	**
3	Muscular Dystrophy	3.78	0.000	**
4	AGE_CAT 71 - 75	3.42	0.000	**
5	MED_PTH	3.30	0.000	**
6	Chronic Kidney Disease, Stage 5	3.27	0.000	**
7	End Stage Renal Disease	3.09	0.000	**
8	AGE_CAT 66 -70	2.96	0.000	**
9	AGE_CAT 61- 65	2.90	0.000	**
10	Quadriplegia	2.66	0.012	*
11	Prior admission in the last 30 days	2.54	0.000	**
12	Metastatic Cancer	2.50	0.000	**
13	AGE_CAT 56-60	2.27	0.000	**
14	Paraplegia	2.19	0.011	*
15	End-Stage Liver Disease	2.16	0.000	**
16	Prior hospital admission 1 - 3 months ago	1.94	0.000	**
17	AGE_CAT 51-55	1.92	0.000	**
18	AGE_CAT 46-50	1.85	0.000	**
19	Hydrocephalus	1.83	0.001	**
20	Chronic Pancreatitis	1.80	0.007	**

** p <0.01
* p <0.05

HHS-HCC diagnosis
Medication class
Age group
Prior utilization

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Predictive Model Deep Dive: CRISPI (LOH Model)

High Risk cutoff: 30%

PPV	[1] 0.373212
SENS	[1] 0.122702
SPEC	[1] 0.9935267
ACCURACY	[1] 0.9670048
C-STAT	[1] 0.843

→ *Out of every 100 patients predicted to be hospitalized in next six months, 37 actually were*

→ *Out of every 100 patients hospitalized, the model found 12 of them (not ideal but derived by 30% cutoff)*

→ *Out of every 100 patients, the model correctly predicted the hospitalization outcome for 96 of them*

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Predictive Model Deep Dive: PALI (Mortality Model)

Demographic	Male (1.4)	Conditions	Metastatic Cancer (17.7)
	Age 55-60 (1.2) *(NS)*		Lung, Brain, and Other Severe Cancers, Including Pediatric Acute Lymphoid Leukemia (5.3)
	Age 61-65 (1.9)		Colorectal, Breast (Age < 50), Kidney, and Other Cancers (1.7)
	Age 66-70 (1.2) *(NS)*		Protein-Calorie Malnutrition (2.3)
	Age 71-75 (1.7)		End-Stage Liver Disease (4.8)
	Age 76-80 (2.3)		Cirrhosis of Liver (2.1)
	Age 81-85 (3.7)		Rheumatoid Arthritis and Specified Autoimmune Disorders (1.5)
	Age 86-90 (8.5)		Parkinson's, Huntington's, and Spinocerebellar Disease, and Other Neurodegenerative Disorders (1.7)
	Age 91-95 (17)		Non-Traumatic Coma, Brain Compression/Anoxic Damage (3.4)
	Age 96+ (30.1)		Ischemic or Unspecified Stroke (1.4)
	Medicaid (1.4) *(NS)*		Hemiplegia/Hemiparesis (1.9)
	Medicare (1.6)		Atherosclerosis of the Extremities with Ulceration or Gangrene (2.9)
Lifestyle	Geriatric Risk: Fecal Control (3.1)		Chronic Obstructive Pulmonary Disease, Including Bronchiectasis (1.6)
	Geriatric Risk: Decubitus Urcer (2.1)		Fibrosis of Lung and Other Lung Disorders (1.7)
	Geriatric Risk: Weight Loss (2.2)		Aspiration and Specified Bacterial Pneumonias and Other Severe Lung Infections (2.7)
	Smoker UNK (2.6) *(NS)*		End Stage Renal Disease (4.6)
	Smoker Yes (2)		Chronic Kidney Disease, Stage 5 (4.9)
Lab	Lab: Albumin Reading in the Past 12 mo. <= 2.7 (9.1)		Chronic Kidney Disease, Severe (Stage 4) (1.4)
	Lab: BNP Reading in the Past 12 months >= 1201 (17.5)		Amputation Status, Lower Limb/Amputation Complications (3.1)
Utilization	Admitted for Diabetes (9.8)	Medication	Medication: Alzheimer Agent (3.1)
	Admitted for Failure to Thrive (78.6)		Medication: Antidepressant (1.3)
	Admitted for Pancreatic Disease (4.6)		Medication: Antipsychotic (1.9)
	Admissions in Prior 6 mo. (1.6)		Medication: Beta Blocker (1.4)
			Medication: Chemotherapy (1.5)
			Medication: Dmard (3.4)
			Medication: Immunosuppressant (2.7)
			Medication: Loop Diuretic (2.1)
			Medication: Wakefulness-promoting medications (3.1)
		DME	DME: Oxygen Supplies (1.6)
			DME: Hospital Bed (2.4)

- Transparency helps build clinician confidence
- Population view will lead to noise at the individual patient level
- Granularity and nuance can be challenging (e.g. advanced stage COPD has no specific ICD10 code)
- Easy to explain false positive (model predicts high risk but clinician disagrees)
- Also helps explain false negatives – clinician has a high risk patient that the model did not predict to be high risk

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Use Case: Improvement of HCC Coding

- CMS-HCC weights publicly available
  - DxCG Concurrent Risk model for Medicaid/Commercial
- Calibrate weights for specific HCC's aggregated from the ICD10 billed in Epic
- Flag patients missing these HCC's in a given year
- INTERVENTION -> Outreach to patients for Annual Wellness Visit to code HCCs and address underlying clinical concerns
- Data is fed into **Epic Radar Dashboard** -> updated once a day
  - Cogito SQL allows for dataset built in Clarity to be fed back into Hyperspace so clinicians and staff don't have to log in to multiple sources.

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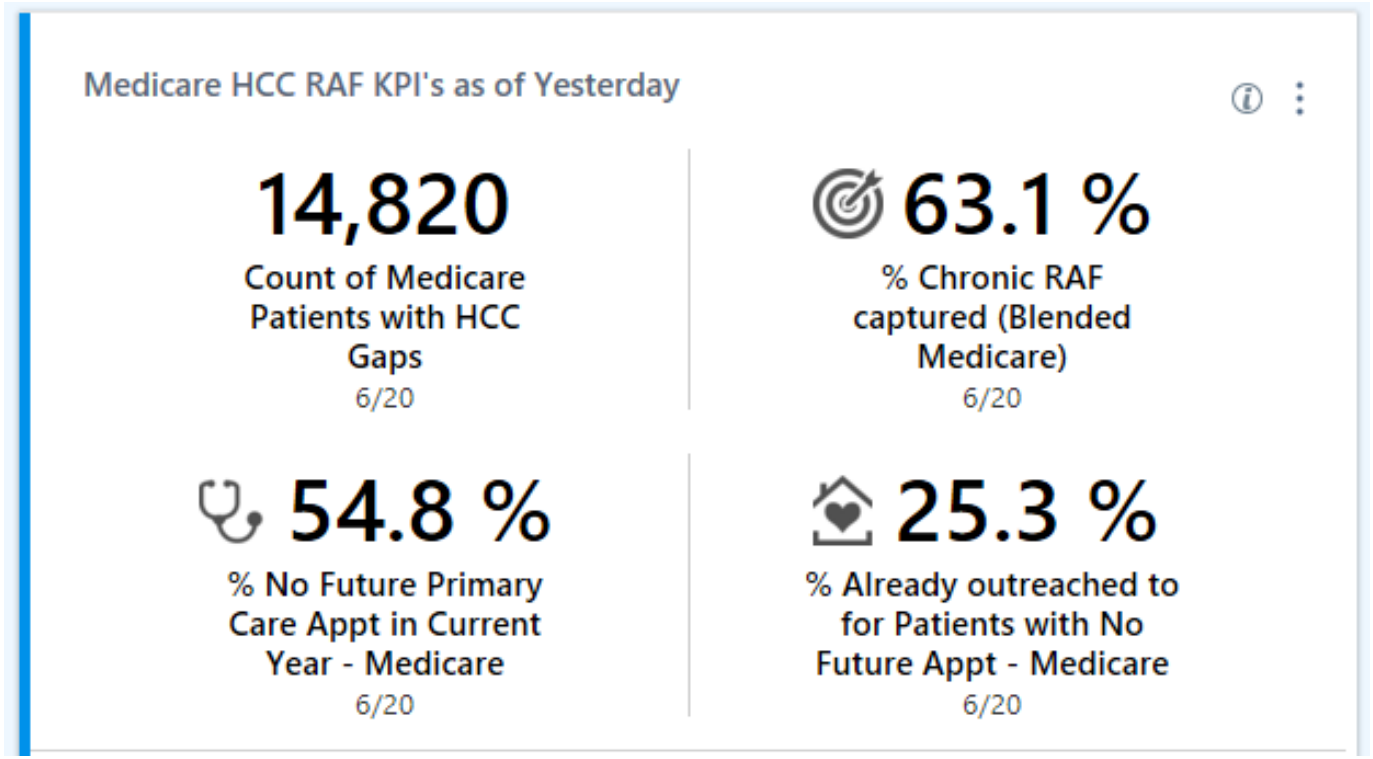
Use Case: Improvement of HCC Coding



- Identifies patients with remaining Gaps
- Captures current RAF capture (want 100% by end of CY)
- % of population without future PCP appointments
- % of that subgroup who have not been outreached to
- **Patient Detail Report linked to within this dashboard ->** enables outreach activities for Population Managers

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Thank you!

Contact:
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Questions?

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