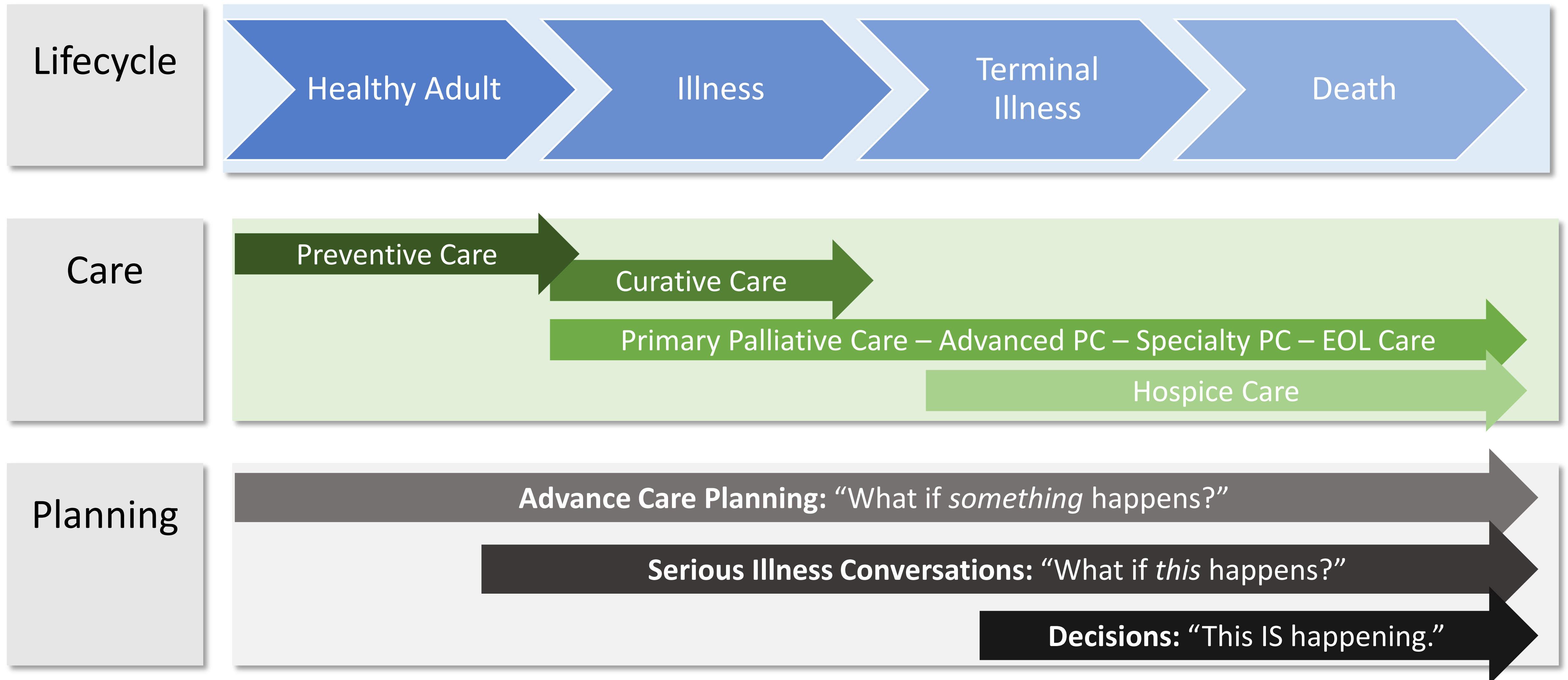
Can We Change Care, Experience and Total Cost at End of Life?

NAACOS
April 11, 2024

- Engagement vs. “death by powerpoint”
- Q&A after each presenter, and at the end
- Assume a diverse level of experience
- Let’s start & stop on time

Stages of Life, Care and Planning



Adapted from: Lumina Hospice, MaineHealth, Novia Scotia Health Conversations

Shannon Banks

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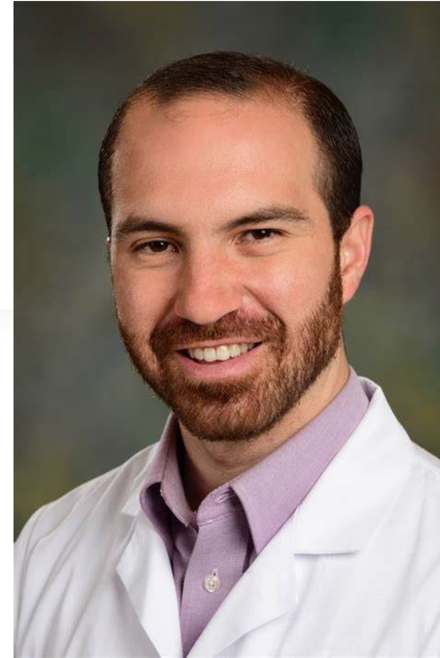


Nathan Moore, MD

Medical Director, BJC ACO

Beth Souder

VP Clinical Operations

Delaware Valley ACO

Uncle Bob

MaineHealth ACO (Maine & NH)

300,000 Beneficiaries

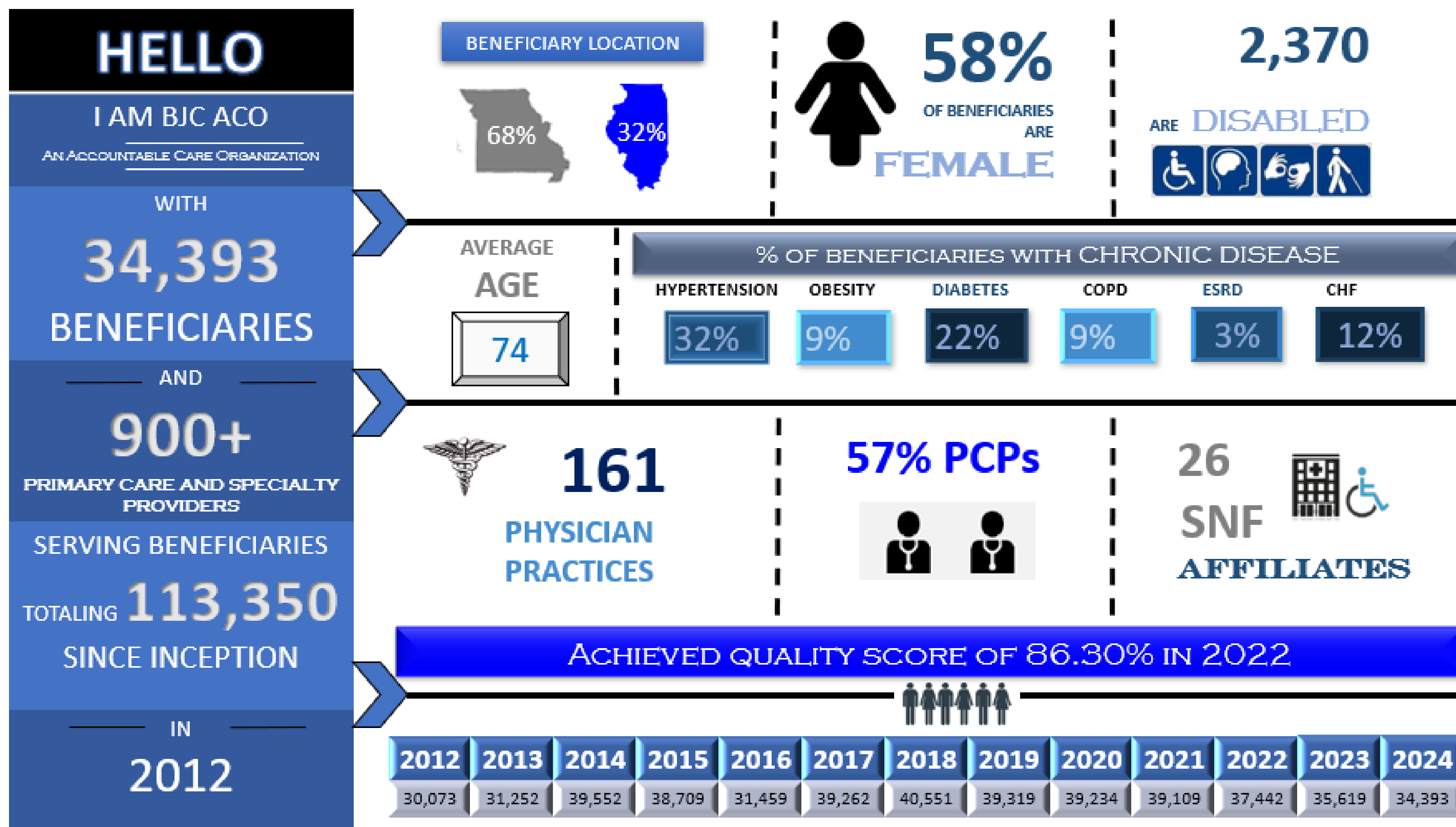
1,800 Participants

344 Practices

20 Rural Health Centers

11 Hospitals

BJC ACO (Missouri and Illinois)



DELAWARE VALLEY ACO

an accountable care organization

*Supports **population health** strategy of*

Philadelphia-based health systems

Humana

Two Clinically Integrate Networks that include:

DVACO Network

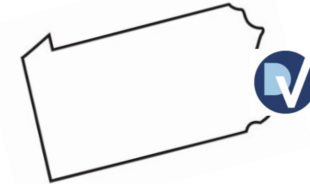
2,500 Physicians	850 PCPs
18 Hospitals	2,600 Care Sites

192,000

BENEFICIARIES

PHILLY REGION

Southeast PA and South NJ



CMS-MSSP PARTICIPANT Enhanced Track

Multiple Commercial Shared Savings Agreements

Side by Side

	MaineHealth ACO	BJC ACO	DVACO
Geography	Maine & NH	Missouri & Illinois	Philly Region
Beneficiaries	300,000	34,393	192,000
Participants	1,800	900	2,500
Practices	344	161	955
Rural Health Centers	20	2	0
Hospitals	11	14	18
SNF Affiliates/Preferred SNFs	41	26	33
MSSP Level	B/A	x	Enhanced
EMR (primary)	Epic	Epic	Epic
Pop Health Platform	Arcadia	Arcadia	Bamboo

MaineHealth
Accountable Care Organization

Can We Change Care, Experience and Total Cost at End of Life?

NAACOS Spring Conference

Lee Pellecchia, Sr. Business Intelligence Analyst

April 11, 2024

Who We Are

300,000 Beneficiaries

1,800 Participants

344 Practices

20 Rural Health Centers

11 Hospitals

Our True North

Value Oversight Committee

Guiding Principles for Identification of Care Variation Initiatives

1. Meaningful for patient care
2. Opportunity for improvement
3. Reliable source of data and benchmark
4. Impacts contract performance
5. Supported by key stakeholders
6. Aligns with MaineHealth ACO system priorities

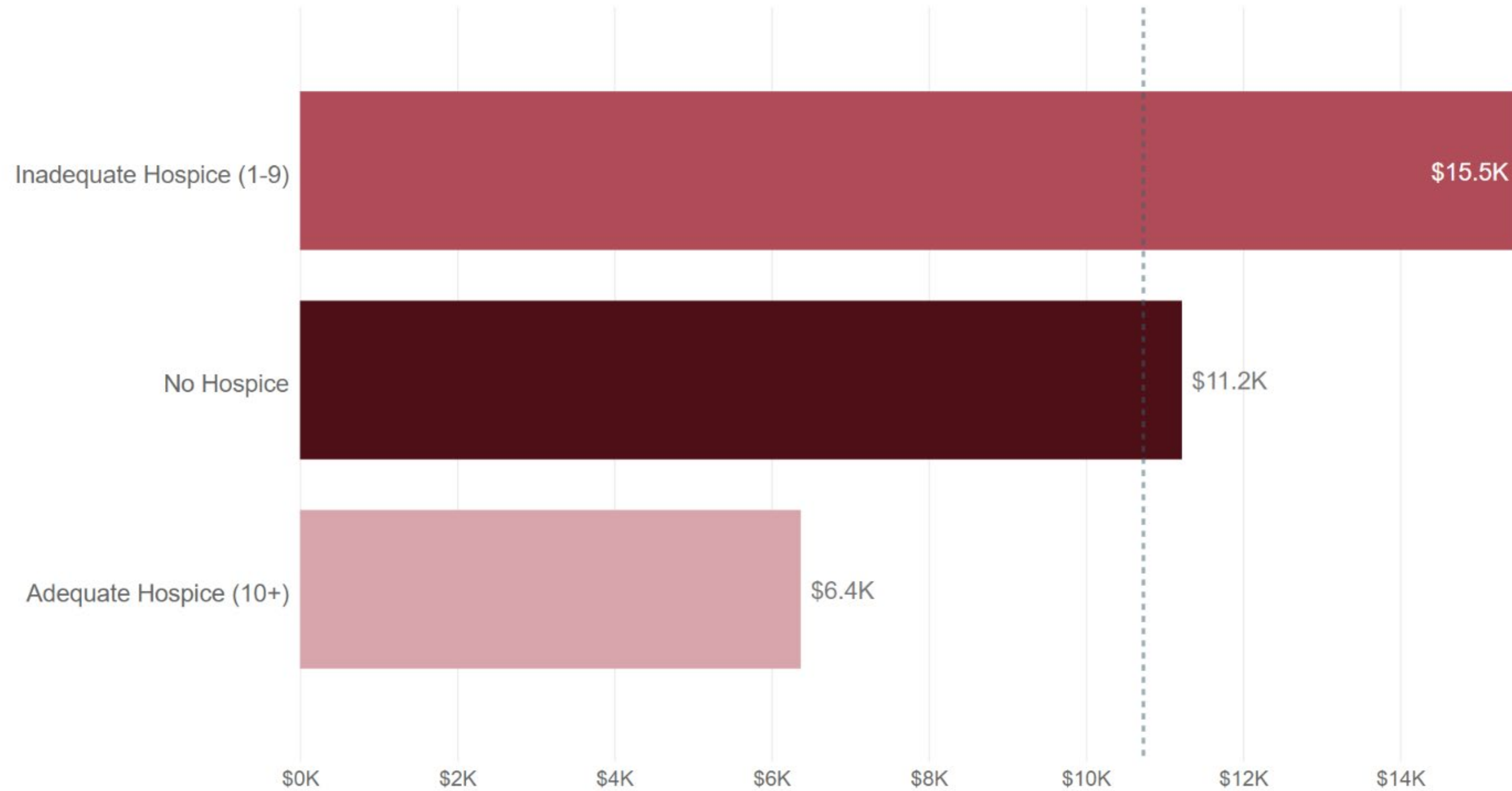
End-of-Life Care

FY'24 Objective:

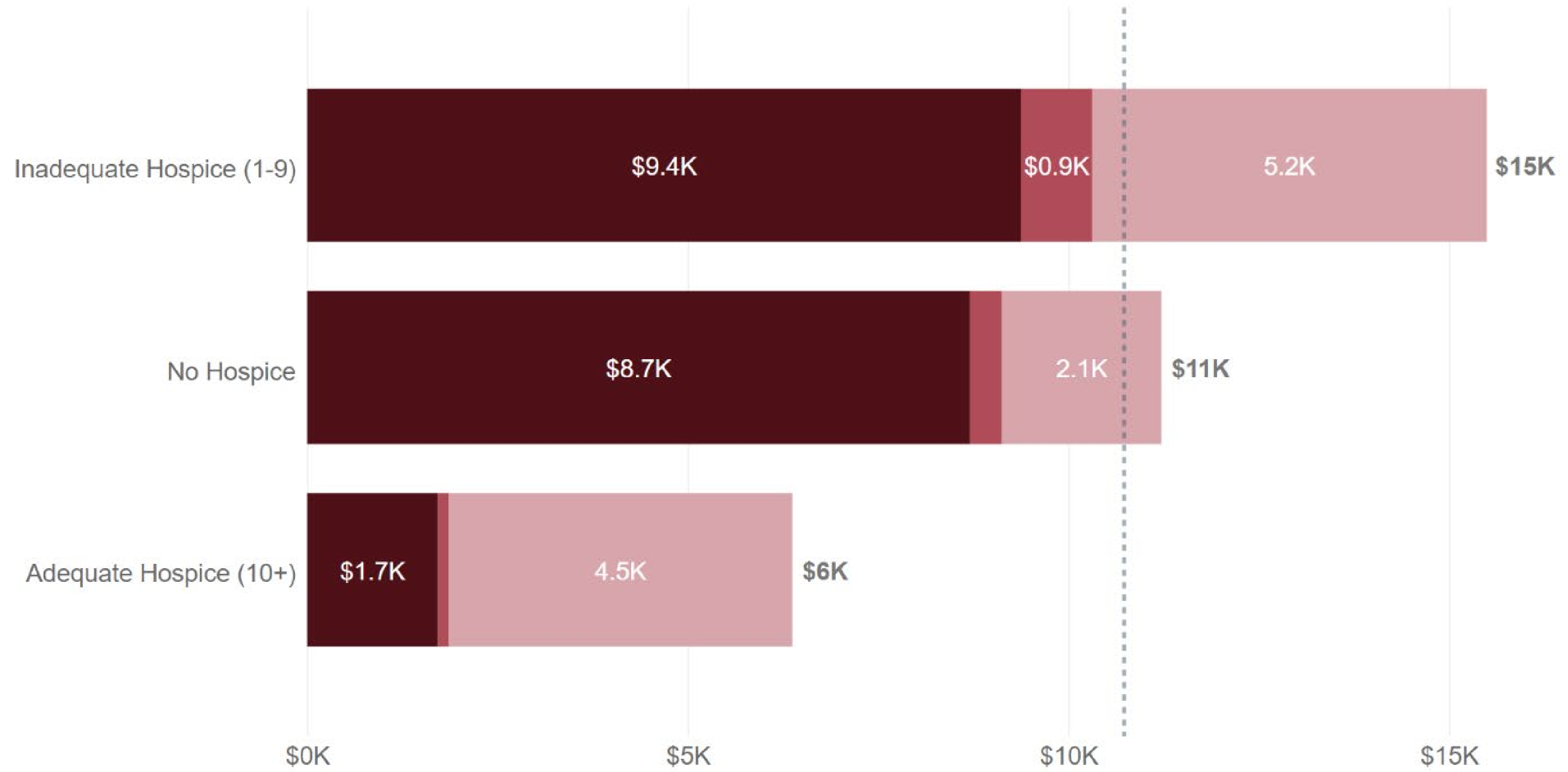
35% of patients with newly diagnosed stage IIIb lung cancer, all stage IV solid tumors, and glioblastoma multiforme are referred for a palliative care appointment within 8 weeks of the first medical oncologist visit

Involvement of palliative care early in serious illness increases duration of hospice, notably without changing how long the patient lives.

Total Cost of Care in the Last 30 Days



Total Cost of Care in the Last 30 Days



Total Cost of Care in the Last 30 Days by Chronic Condition

Accomplishments

- MaineHealth palliative care strategic plan developed
- MHACO network palliative care stakeholder workshop
- Funding to support building facilitation skills
- Capital investment to expand ambulatory palliative care staffing
- Palliative care services co-located at 3 cancer care sites

What's Ahead

Recruiting for Palliative Care clinicians across MaineHealth Medical Group

Ambulatory 24/7 palliative care

Continued focus in FY25 on providing adequate hospice at end-of-life. Expect to expand focus to all high-risk populations appropriate for palliative care

Using Machine Learning to Enhance Advance Care Planning

Nathan Moore MD
BJC Accountable Care Organization
St. Louis, MO
Nathan.Moore@BJC.org

HELLO

I AM BJC ACO

AN ACCOUNTABLE CARE ORGANIZATION

WITH

34,393

BENEFICIARIES

AND

900+

PRIMARY CARE AND SPECIALTY PROVIDERS

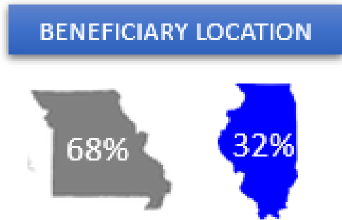
SERVING BENEFICIARIES

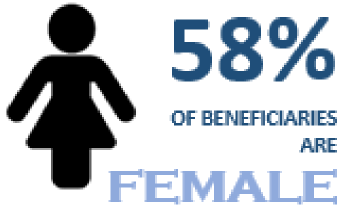
TOTALING **113,350**

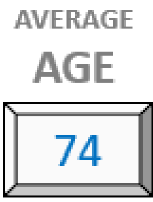
SINCE INCEPTION

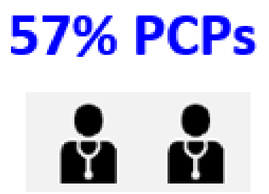
IN

2012

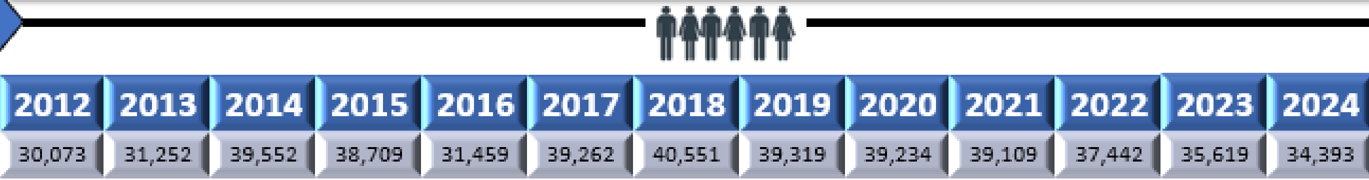








ACHIEVED QUALITY SCORE OF 86.30% IN 2022



2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
30,073	31,252	39,552	38,709	31,459	39,262	40,551	39,319	39,234	39,109	37,442	35,619	34,393

Background

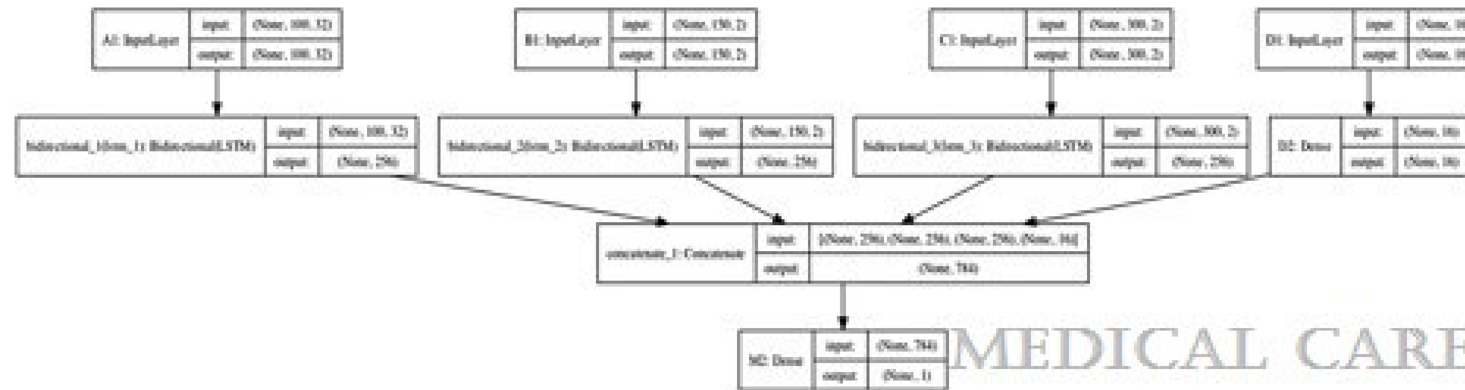
- Advance care planning is critically important for improving quality of care, increasing patient/family satisfaction, and reducing unnecessary costs
- ACP and palliative care are significantly underutilized in nearly every health system in the US
- Major barriers:
  - Accurate identification of high-risk patients
  - Engaging providers to participate in goals of care discussions

High Risk Inpatient Identification: Machine Learning

Epic data is obtained 24 hours after admission analyzing 500+ variables including:

1. Diagnoses
2. Vitals
3. Labs
4. Medications/therapies

Model Structure

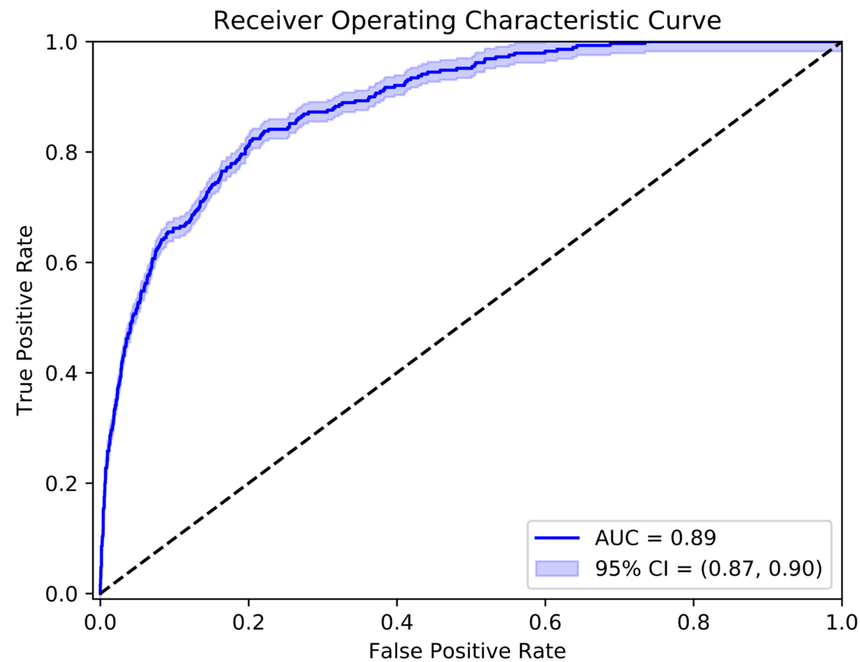


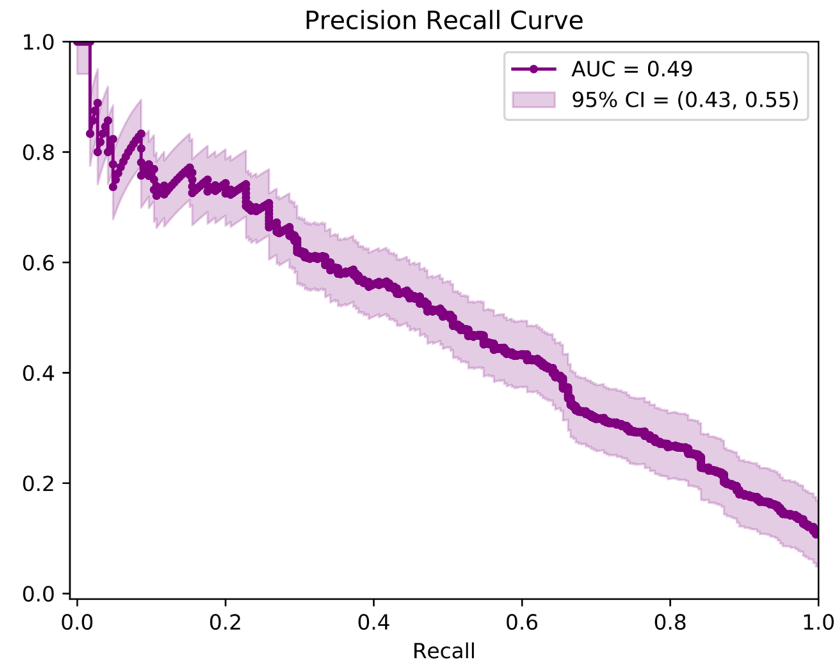
Three bidirectional long short-term memory (LSTM) models

- 100 most recent diagnosis, procedure, and medication codes (A);
- 150 most recent laboratory test names and values (B)
- 300 most recent vital sign names and values (C).

A fourth neural network model (D) was comprised of demographic and social history variables.

Prediction Performance





Death or hospice occurred in 1.4% of low encounters, 5.2% of medium encounters, and 18% of high risk encounters.

Inpatient Pilot

- Hospitalist Service
- Non-ICU
- Full code, no documented goals of care
- Jan – July 2021
- Community hospital

Basic Demographics

	Control (N=353)	Intervention (N=189)
Age (years)		
Mean (SD)	77.4 (10.6)	77.5 (10.6)
Race		
White	305 (86%)	164 (87%)
Black	42 (12%)	22 (12%)
Other	6 (2%)	3 (2%)
Gender		
Female	178 (50%)	97 (51%)
Male	175 (50%)	92 (49%)
COVID Status		
COVID-	322 (91%)	171 (90%)
COVID+	31 (9%)	18 (10%)
Charlson Score		
Mean (SD)	7.66 (3.28)	7.60 (2.79)

Outcomes

- 87% response rate
- Palliative care consults 33% of time

Outcomes

	Control	Intervention	P-value
Documented Goals of Care/ ACP Discussion	14%	58%	**<0.001**
Time to Goals of Care Discussion	5.84 days	3.07 days	**<0.001**

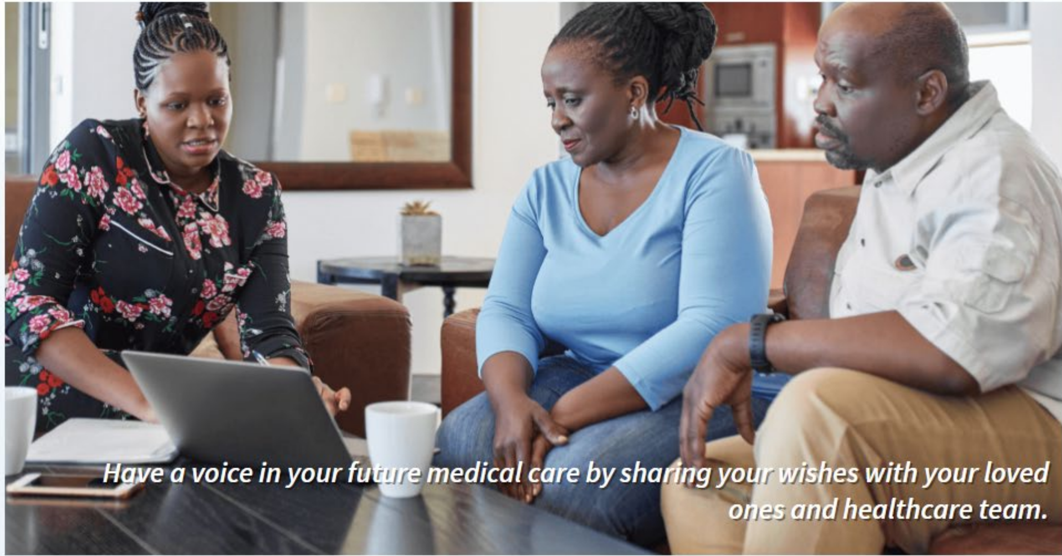
Discharge Code Status	Control	Intervention	P-value
Full Code	92%	80%	<0.001
Comfort Care Only	2%	3%	
Limited Code	6%	17%	

Outpatient

- Medium risk inpatients are sent to PCP, not hospitalist
- Generate list of high risk patients for PCPs quarterly
- Build in Advance Care Planning as part of AWVs
- Outpatient palliative care services for ACP and end of life/symptom management
- Home-based palliative care for significant support

MyChart Integration

Advance Care Planning



Health Care Agents

You currently have no health care agents.

Planning Documents

If a document should be removed, send us a message.

Documents On File

There are no documents of this kind to display.

Add a document

Please name the document you upload as precisely as possible to aid our team in handling it appropriately. Common documents include: Advance Directives and Living Will, Power of Attorney, and/or three documents that must be signed by a physician before uploading - Physician Orders for Life-Sustaining Treatment (POLST), Transportable Physician Orders for Patient Preferences (TPOPP), and Out-of-Hospital DNR (OHDNR).

Back to the home page

Helpful Resources

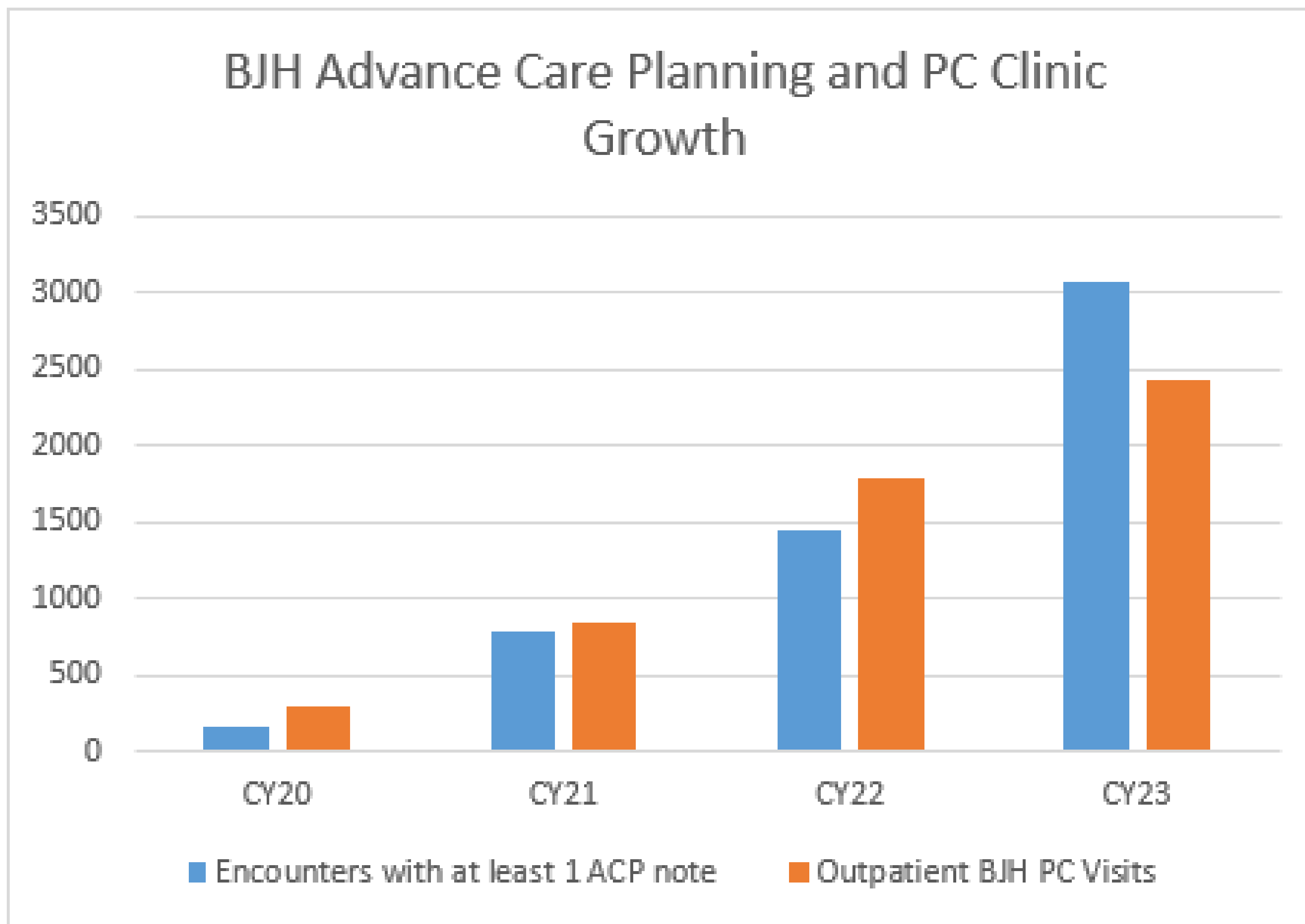
These resources may help you make care decisions and prepare for conversations with your family, friends and doctors. These links are for different situations and you likely will not need all of them. Note: all content and information on the websites are provided by outside organizations for informational purposes only. It is not intended to be relied upon as medical and/or legal advice and is not a substitute for legal advice and/or healthcare advice. BJC Healthcare and Washington University have no control over, or responsibility for, such content or any personal or financial information you provide to these websites.

- **Prepare for Your Care** — Step-by-step program with video stories to help you have a voice in your medical care.
- **The Conversation Project** — Helping people share their wishes for healthcare.
- **Get Palliative Care** — Living with a serious illness? Advice to improve qualify of life along with curative efforts.
- **Missouri Bar Association** — Durable Power of Attorney for Healthcare forms and information from the Missouri State Bar.
- **Illinois Bar Association** — Illinois State Bar information on healthcare decisions.

Christopher L. Schenewerk, MD

By some miracle, I got them into assisted living and we are considering hospice care.

Aug 18, 6:15 AM


BJH Advance Care Planning and PC Clinic Growth
3500
3000
2500
2000
1500
1000
500
0
CY20
CY21
CY22
CY23
Encounters with at least 1 ACP note
Outpatient BJH PC Visits

Communication Skills Academy

- Communication skills sessions utilizing highly trained standardized patients
- Sessions typically last 4 hours and consist of 6 providers with a standardized patient and highly trained instructor
- Clinical vignettes are tailored for each specific audience (e.g. hospitalist, outpatient PCP, intensivists, etc.)
- We have trained over 300 providers

Lessons Learned

- Machine learning algorithms can be critical for automating identification of high priority patients or conditions
- Work backwards - algorithms are useless without appropriate clinical workflows and training
- Strive for high signal:noise to drive provider engagement

DELAWARE VALLEY ACO

an accountable care organization

Our Mission: ***Be Part of the Solution. Inspired by the innovative sprit of our stakeholder organizations, the DVACO accelerates the successful transformation to high quality value-based care in the region.***

Seriously Ill Population (SIP) Strategy

Beth Souder, PT, VP Clinical Operations

NAACOs April 11, 2024

Objectives

- DVACO Overview
- Seriously Ill Population Strategy
  - Building the Case
  - Defining the Population
  - Interventions
  - Outcomes
  - Conclusions
  - Resources

Who we are…

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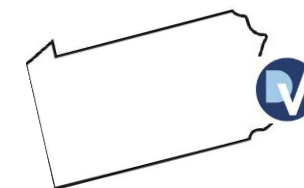

CMS-MSSP PARTICIPANT Enhanced Track

Multiple Commercial Shared Savings Agreements

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Building the claims-based case……

Engaged clinical and operational leaders used clinically-informed, data analysis to demonstrate the large opportunity to improve the care for our patients and their families with serious illness and/or nearing end-of-life.

- Our patients with Serious Illness average two hospital admissions per year which is **~6x the frequency** of our population in general.
- Utilizing real-time Admission/Discharge/Transfer (ADT) alerts of 30-day readmissions from Skilled Nursing Facilities (SNFs) found **that ~ 30% of the population had died within 30 days of their readmission** (excluding COVID deaths).
- **Twenty percent** of our population with potentially avoidable admissions **die within 1 year** of the admission(s).
- **Twenty percent** of our patients with high emergency department utilization (3 or more in 60 days) had died within **2-5 months** of first being identified as having high utilization.
- Historically**, 47%** of our Medicare Shared Savings Program (MSSP) population who received hospice care, received it for 1 week or less prior to death. This finding was **profoundly higher than national average of 28%**[1]. (A lower % is considered a better outcome)

Average Cost in the Last 180 Days of Life by Length of Hospice Use

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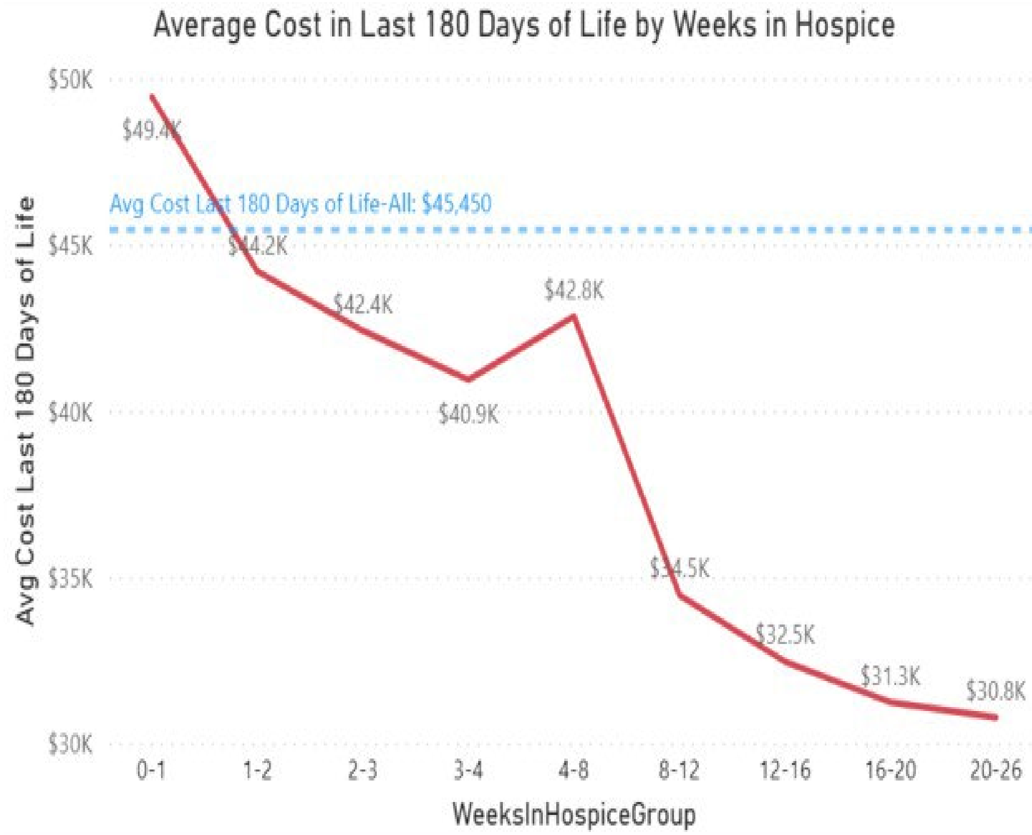

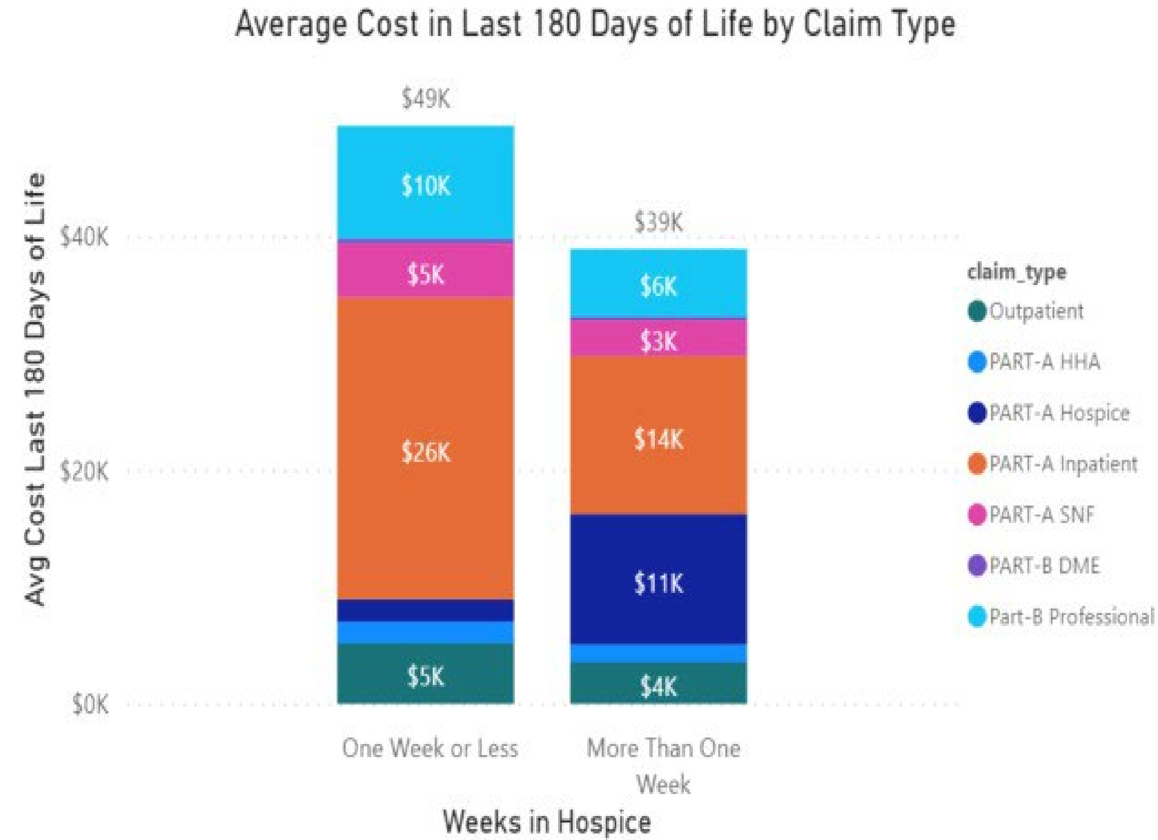

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Desired Future State

- Improve the quality of life/care for patients with serious illness and their families through earlier goals of care conversations and symptom management interventions while reducing total cost of care through elimination of futile, unnecessary, or unwanted interventions, reduction in hospital admissions, and enhanced utilization of care in the home.
- Primary measures of success:
  - Percent of SIP population with ACP billed* (CPT I or II). Patients who die and had an ACP have 25% lower TCOC then those who did not have an ACP[2]
    - Baseline: 25%
  - Percent of patients who receive hospice for 1 week or less. Patients who receive palliative care and hospice (for greater then 1 week prior to death) have lower TCOC[3]
    - Baseline: 47%
  - KPIs for decedents enrolled in home-based palliative care (HBPC)

Defining the Serious Illness Population

- ~Seven % of our MSSP and Medicare Advantage patients identified as having "[a] health condition that carries a high risk of mortality and either negatively impacts a person's daily function or quality of life or excessively strains the caregiver"[4]
- Created a "SIP flag" using claims data and combined it with ADT data to facilitate proactive identification and intervention
- 58% of our Seriously Ill patients also have fragmented care = frequent utilization and/or no single practice provided more than half of a beneficiary's evaluation and management visits

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Serious Illness Population

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- Patients are divided into three tiers using serious chronic conditions, hospitalization, SNF, HH DME claims and classification of frail elder.

Tier	Criteria
Tier 1	Frail elderly + Tier 2
Tier 2	Home Health, SNF, or DME claim in the past 6 months + Tier 3
Tier 3	At least 1 serious chronic condition and At least 1 hospitalization in the past 6 months

Interventions

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- Collaborated with a preferred home care & hospice partner and a large employed physician practice to provide data to first support the **establishment of a home-based palliative care program** and subsequently measure ROI with statistically significant positive outcomes.
- Developed and distributed an **Advanced Care Planning toolkit** that includes a list of other HBPC resources which were vetted to offer comprehensive palliative care management: https://dvaco.org/advance-care-planning-toolkit/
- **Worked with our preferred network SNFs** to improve access to palliative care through telephonic and in-person palliative care consults.
- Provided **longitudinal ambulatory care management** for SIP patients

Outcomes - HPBC is a homerun! [5]

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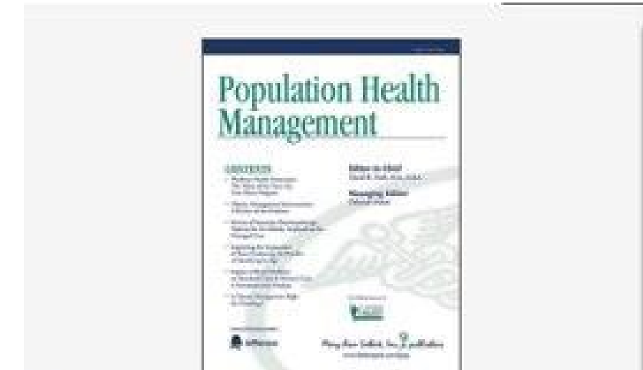
Metric	HBPC	No HBPC	Delta	p-value	Statistically Significant
Population Size (decedents)	168	3618			
Total Cost- Last 90 Days of Life	$27,203	$36,089	($8,887)	0.01631	Yes
Cost by Category last 90 Days of List					
Outpatient Cost	$1,335	$2,274	($940)	0.00042	Yes
Hospice Cost	$4,677	$1,495	$3,182	<.00001	Yes
Inpatient Cost	$10,961	$21,773	($10,812)	<.00001	Yes
SNF Cost	$2,320	$3,531	($1,211)	0.00993	Yes
HHA Cost	$2,425	$905	$1,520	<.00001	Yes
Part B DME Cost	$523	$225	$298	0.00018	Yes
Part B Physician & Drugs Cost	$4,962	$5,883	($920)	0.01302	Yes
Admits/1000 Last 30 Days of Life	333	675	**-51%**		N/A
Admits in the 30 Days of Life: Mean LOS	5.59	7.07	(1.48)	0.00232	Yes
ED Visits/1000 Last 30 Days of life	93	142	**-35%**		N/A
% Patients Utilized Hospice	70%	43%	28%	<.0001	Yes
Hospice Mean LOS	26.46	7.31	19.15	0.00000	Yes
Hospice Median LOS	9.00	5.00	4.00	<.00001	Yes
% of Hospice Patients with LOS 1 Week or Less	47%	81%	-34%	<.00001	Yes
Age	83.81	81.49	2.33	0.00061	Yes
Gender					
F	58.02%	51.11%	6.92%	0.19020	No
M	41.98%	48.89%	-6.92%	0.25848	No
Charlson Comorbidity Index (CCI)	5.73	5.48	0.26	0.43448	No
Cancer %	32.10%	31.33%	0.77%	0.83366	No

Population Health Management > Ahead of Print >

Cost Reduction and Utilization Patterns in a Medicare Accountable Care Organization Using Home-Based Palliative Care Services

Mark Angelo, Abigail Souder, Angela Poole, Terre Mirsch, and Elizabeth Souder

Published Online: 27 Nov 2023 | https://doi.org/10.1089/pop.2023.0224



Information

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http://doi.org/10.1089/pop.2023.0224

Online Ahead of Print: November 27, 2023

Outcomes

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Increased the percentage of our seriously ill population with evidence of having an Advanced Care Plan from a **baseline of 25%** in September of 2021 **to 50%** in November of 2023.

For MSSP claims incurred between 10/1/22-9/30/23 improved the percentage of patients who only receive hospice 1 week or less from **baseline of 47% down to 32%.**

Conclusions

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- Providing positive end-of-life experiences for our patients and families that also results in significant "value" is a win-win for everyone involved.
- Given the current staffing, financial, throughput, and length of stay pressures acute care facilities are under, providing HBPC for the "right" population provides synergistic benefits.
- Leveraging existing Home Care/Hospice and PCP resources, structure, and workflows provides a strong backbone upon which to build.
- Our strategy in general, and our methodologies specifically are all based on existing evidence-based literature and utilize claims data that is common to all MSSP ACOs making it easily transferrable to other ACOs. Please see references for sources to guide:
  - Building a HBPC program[6,7]
  - Defining the seriously ill population[8,9]
  - Defining the frail elder population [10]
  - Measuring HBPC ROI[3,5]

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[4] Kelley, A. S., & Bollens-Lund, E. (2018). Identifying the population with serious illness: The "denominator" challenge., Journal of Palliative Medicine, 21(S2), S-7

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[7] *Center to Advance Palliative Care (CAPC) Palliative Care in the Home- A Guide to Program Design Toolkit (2019). This toolkit can be accessed by CAPC members at https://www.capc.org/toolkits/starting-the-program/designing-a-home-based-palliative-care-program/*

[8] "Identifying the Population with Serious Illness: The "Denominator" Challenge" Journal of Palliative Medicine Kelley AS, Bollens-Lund E. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5756466/

[9] "Identifying Older Adults with Serious Illness: A Critical Step toward Improving the Value of Health Care"
Health Services Research, Kelley AS, Covinsky KE, Gorges RJ, et al.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5264106/

[10] Joynt KE, Jose F Figueroa, Beaulieu N, Wild RC, Orav EJ, and Jha AK. March 2017. " Segmenting high-cost Medicare patients into potentially actionable cohorts." Healthcare Amsterdam, 5, 1-2, Pp. 62-67.

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APPENDIX

Serious Illness Conditions

- Cancer (with chemo)
- Chronic obstructive pulmonary disease
- Renal failure
- Dementia
- Congestive heart failure
- Severe chronic liver disease
- Diabetes with end-organ damage
- Peripheral vascular disease
- Coronary artery disease
- Amyotrophic lateral sclerosis (ALS)
- AIDS/HIV
- Hip fracture, age 71+

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Frail Elder Definition

- Age 65+ and at least two of the following diagnoses: gait abnormality, malnutrition, failure to thrive, cachexia, debility, difficulty walking, history of fall, muscle wasting, muscle weakness, decubitus ulcer, senility, or durable medical equipment use

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