Mass General Brigham

Radial

The Third Virtual Value-based Payment Summit Special Edition
HELD IN CONJUNCTION WITH THE THIRD HEALTH CARE VALUE WEEK

# Case Study: How Mass General Brigham ACO Used AI/ML Decision Support to Optimize Palliative and Hospice Utilization

Value-Based Payment Summit
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# Agenda

**Disclosure**

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**Conclusions**

# Disclosure

Anant Vasudevan is a Hospitalist at Brigham and Women's Hospital and an Instructor in Medicine at Harvard Medical School. His participation today is in his capacity as the Chief Medical Officer of Radial and views presented are his own.

Amy Baughman and Kaitlyn Schweikert have no relevant financial disclosures.

# Background

# The science: timely end of life care benefits patients

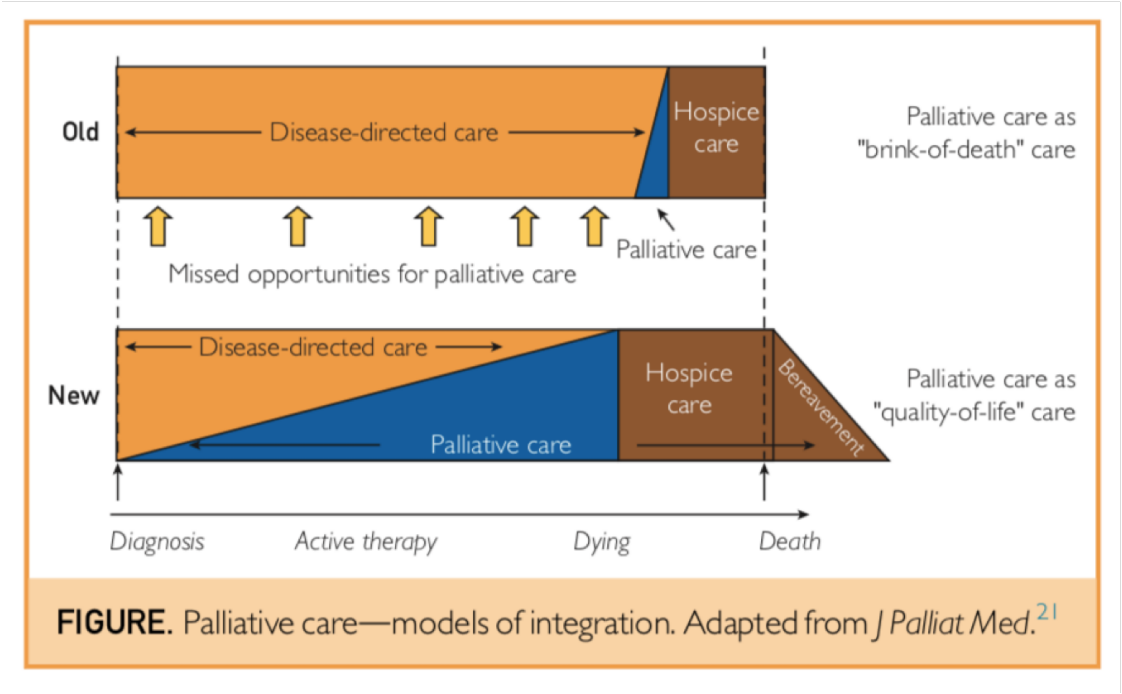



**FIGURE.** Palliative care—models of integration. Adapted from *J Palliat Med.*[21]

**Journal of Clinical Oncology**
"Better quality-of-life, survival, and mood" [1,2]

**Mayo Clinic Proceedings**
"More likely to be home at end-of-life" [3]

**The New England Journal of Medicine**
"Fewer avoidable end-of-life hospitalizations" [4]

**Journal Of Pain And Symptom Management**
"Improved experience for bereaved family" [5,6]


[1]Bakitas MA, Tosteson TD, Li Z et. al. Early Versus Delayed Initiation of Concurrent Palliative Oncology Care: Patient Outcomes in the ENABLE III RCT. *J Clin Oncol.* 2015; 33(13): 1438-1445.
[2]Smith TJ, Temin S, Alesi ER et. al. American Society of Clinical Oncology Provisional Clinical Opinion: The Integration of Palliative Care into Standard Oncology Care. *J Clin Oncol.* 2012; 20(8): 880-887.
[3]Buss MK, Rock LK, McCarthy EP. Understanding Palliative Care and Hospice: A Review for Primary Care Providers. *Mayo Clin Proc.* 2017; 92(2): 280-286.
[4]Temel JS, Greer JA, Muzikansky A, et al. Early palliative care for patients with metastatic non-small-cell lung cancer. *N Engl J Med.* 2010;363(8):733-742.
[5]Schockett ER, Teno JM, Miller SC et. al. Late Referral to Hospice and Bereaved Family Member Perception of Quality of End-of-Life Care. *J Pain Symptom Manage.* 2005; 30: 400-407.
[6]STeno JM, Shu JE, Casarett D et.al. Timing of Referral to Hospice and Quality of Care: Length of Stay and Bereaved Family Members' Perceptions of the Timing of Hospice Referral. *J Pain Symptom Manage.* 2007; 34: 120-125.

# Timely palliative/hospice care is a strategic priority for MGB and NWH

## Mass General Brigham's Population Health Management strategic priorities

- *Right Patient, Right Place, Right Time:* Helps facilitate home-first care, improves inpatient capacity, and ensures limited Skilled Nursing Facility (SNF) beds are available for patients who need it most
- Improve both experience and quality of care by boosting timely access to palliative/hospice for those approaching end of life
- Decrease Total Medical Expenditure by avoiding unnecessary SNF stays and reducing acute inpatient utilization

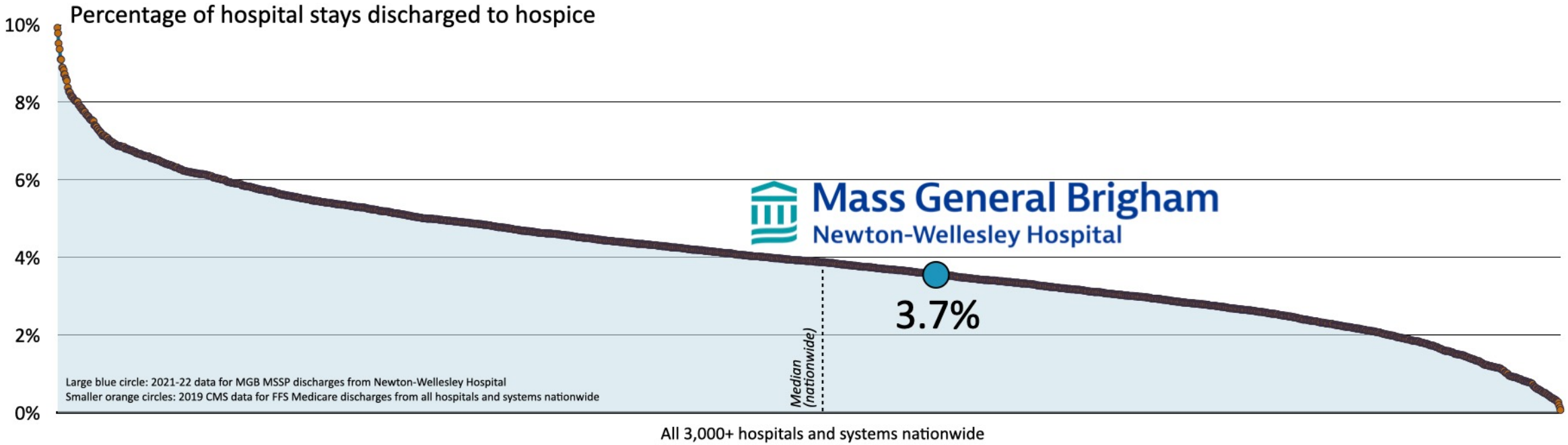
## Opportunity to increase palliative/hospice referrals, especially among patients with repeat SNF stays

- MGB data showed that over 10% of MSSP ACO members were dying within 30 days after discharge from a SNF
- For patients with 3+ SNF stays, 90-day mortality approaches 30%

## Mass General Brigham ACO and Newton-Wellesley Hospital were equipped and ready to take action

- Pre-existing staffing and Population Health programming was already in place
- MGB ACO and hospital teams were already actively managing care across the continuum, including post-acute and end-of-life

# Pre-launch analysis confirmed that Newton-Wellesley Hospital (NWH) was slightly below the nationwide median hospice referral rate




- The opportunity identified was to build on existing strong performance to reach and exceed the national median
- Boosting NWH's hospice referral rate from 3.7% to 4.2% would equal **+15 additional referrals to hospice per year**
- With TME savings of $27,455 per each additional hospice enrollment, the resulting savings opportunity for MGB MSSP ACO was calculated as $411,825 annually

TME savings of $27,455 per each additional hospice enrollment. Source: Trella Health 2020 Analytics Report "Quantifying Hospice's End-of-Life Impact," which analyzed data from 904,000 Medicare members who expired between July 2018 and June 2019.

# Smart Hospice

# About Radial

**“Simple decision support for better care”**

Healthtech company based in Massachusetts

Funded in part by NIH and the National Science Foundation

Our focus is leveraging machine learning to:

- Boost quality of care
- Improve performance under value-based contracts
- Centralize more of the right care at home
- Accelerate care planning conversations for outpatient providers

# What is Radial Smart Hospice?

## AI to support early and appropriate referrals to palliative and hospice care

**The science confirms that palliative and hospice care is beneficial to patient quality of life**

**National statistics show that too few patients are referred to palliative/hospice, and those who do are referred too late**

**Outpatient providers feel ill-equipped to have difficult palliative/hospice conversations**

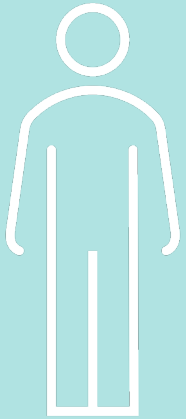
**During a hospital stay, patient/family may be more open to a conversation about goals of care**

# Smart Hospice: a zero data entry solution

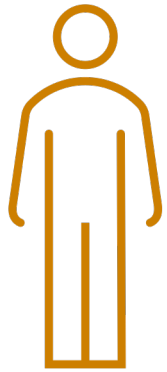
**Machine learning for early palliative/hospice assessment and identification**

Smart Hospice identifies these patients on hospital day one

**“No uncertainty”**
Therapeutic interventions are appropriate



**“On the border”**
At risk of unnecessary or potentially harmful interventions



**“No uncertainty”**
Focus is optimizing patient quality of life – the need for palliative/hospice is clear

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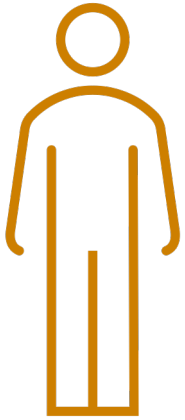

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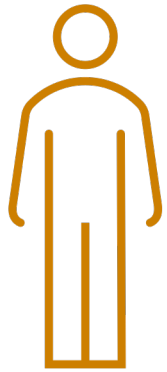

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# Pilot Overview

# About our deployment site
# Newton-Wellesley Hospital

**273-bed community teaching hospital in Newton, MA**

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**Part of the Mass General Brigham healthcare system**

Offering access to community-based medicine as well as advanced specialty care

# Introducing the NWH Smart Hospice implementation team

## NWH Population Health Team

**Casey Morle, OT, MS, OTR**
Transitions Care Manager

**Katie Strand, PT, MSPT, CCM**
Transitions Care Manager

**Tori Sagar, PTA**
Transitions Care Manager

**Corrie Mancuso, MS, OTR/L**
Transitions Care Manager

**Jennie Wright, RN**
Director of Population Health and Care Continuum

**Kaitlyn Schweikert**
Program Manager

## NWH Palliative Care Team Smart Hospice Leads

**Kosha Thakore, MD**
Chief of Palliative Care

**Angela Sousa, MSN, ANP-BC, ACHPN**
Palliative Care Provider

**Plus additional key stakeholder groups at NWH:**

Palliative Care Team
Hospitalist Team
ICU Team
Inpatient Case Management Team

# We launched Smart Hospice as a six-month pilot at NWH with predefined success criteria

Goals of the pilot:

1. Deploy Smart Hospice AI/ML platform for MSSP ACO members hospitalized at NWH.
2. Operationalize Smart Hospice to facilitate timely involvement of palliative care, *leading over time to:*
3. An increase in appropriate and timely referrals to hospice for “on the border” patients who may be approaching the end of life.

*Smart Hospice identifies and recommends non-obvious “on the border” patients who are appropriate for palliative/hospice consult.*

Our predefined success criteria were:

- (40% weight) User agreement, i.e., TCM and Palliative Care consider Smart Hospice recommendations to be appropriate
- (40% weight) User satisfaction as reported on survey
- (15% weight) Percent of Smart Hospice “recommended” patients who receive inpatient palliative consult
- (5% weight) Discharge rate from NWH to hospice

# Smart Hospice workflow

**Transitions Care Management (TCM) Team**

- Use Smart Hospice daily
- Leverage Epic to review “recommended” patients
- Discuss with care team
- Refer “recommended” patients to Palliative Care Team on hospital day 1 or 2

**Palliative Care Team**

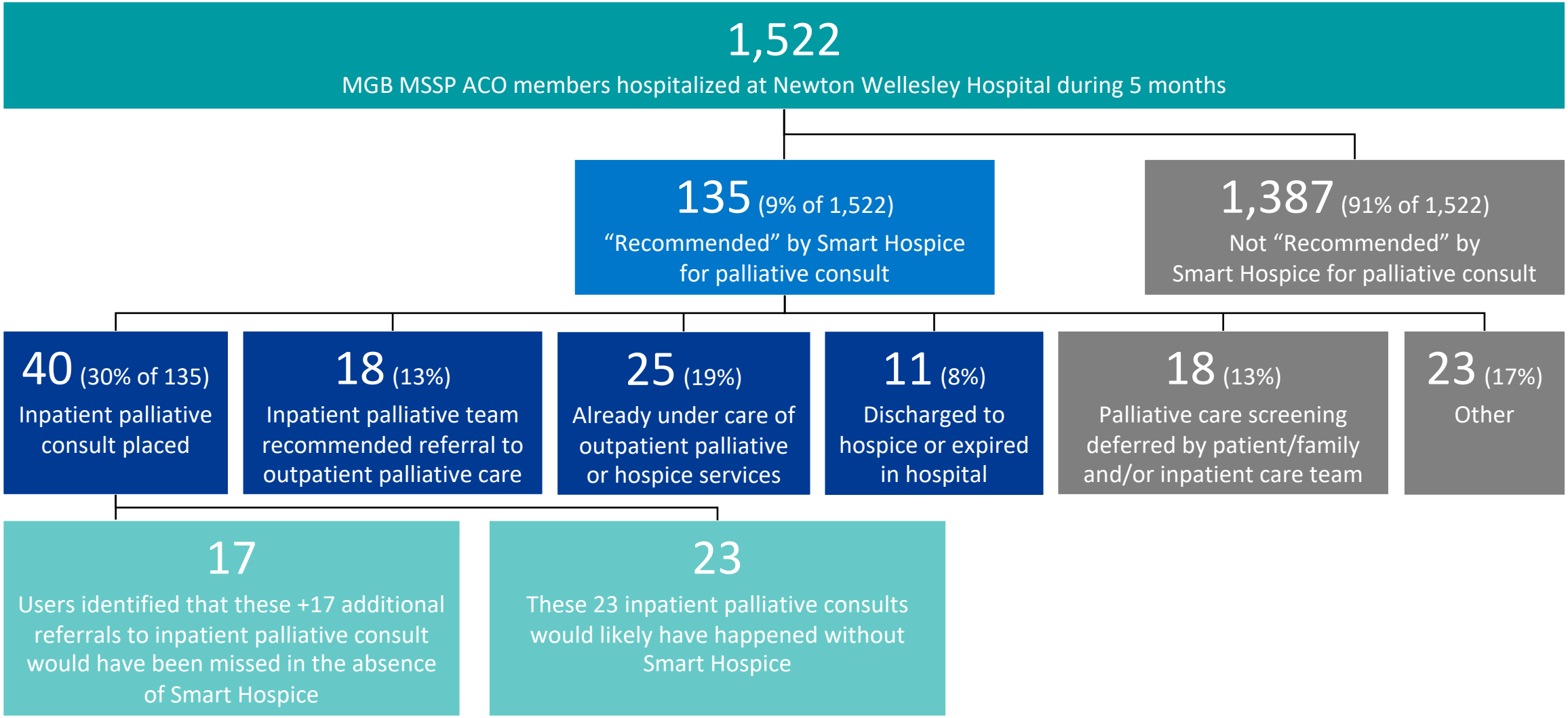
- Assess if palliative screening is appropriate
- If yes: consider inpatient palliative consult, outpatient palliative services, or hospice
- If no: continue with standard care planning process

**Palliative and/or Hospice Services, in partnership with TCM Team**

- Engage with patient/family and care team to determine next steps

# Pilot Results: Palliative and Hospice Utilization

# Overview of results



# Smart Hospice contributed a +24% boost in inpatient palliative consults during the pilot (+17 referrals)

**17** (+24% *vs.* without Smart Hospice)

Users identified that these +17 additional referrals to inpatient palliative consult would have been missed in the absence of Smart Hospice

Status as of January 2024:

**Smart Hospice impact (over 5 months):**

# $850,000

TME savings if all 13 of these referrals to the inpatient palliative team convert to timely hospice enrollment:

- 4 who are enrolled in hospice as of Jan '24, *plus*
- 9 actively considering and/or not yet discussed

**equivalent to $2 million annualized**

TME savings of $27,455 per each additional hospice enrollment. Source: Trella Health 2020 Analytics Report "Quantifying Hospice's End-of-Life Impact," which analyzed data from 904,000 Medicare members who expired between July 2018 and June 2019.

# Pilot Results: User/Stakeholder Feedback

# Users agreed with more than 9 in 10 Smart Hospice “recommended” patients

Users were prompted to rate in Smart Hospice every patient that was “recommended” by the platform

## 92% agreement

Users agreed that 92% of Smart Hospice “recommended” patients could be suitable candidates to screen for palliative care (or hospice if appropriate)

Note: user agreement scoring began two months after pilot start date; not all ”recommended” patients were scored by users for agreement.

# Users appreciated Smart Hospice for ease of use, clear insights, and enhancing collaboration with palliative care team

## What do you like most about Smart Hospice?

"Collaboration with palliative care"

"Connection it has built between palliative care and TCM [staff]"

"User friendly"

"The ability to identify high utilizers across different healthcare systems"

"The clear overview the insights section provides of the patient's needs"

## Do you have any suggestions for how we can improve Smart Hospice?

"Identify patients earlier in the disease trajectory"

"Wider spectrum to identify patients who may be overlooked while inpatient"

"[Expand Smart Hospice capability] to be used in the primary care world, many of the patients identified would benefit from home-based palliative care"

Verbatim user responses from surveys administered in mid-August and mid-October 2023

# Key stakeholders reported concrete improvements in palliative/hospice care integration at NWH

**+25%**

**more respondents felt that level of inpatient palliative care utilization was "just right"**

**+25%**

**more respondents felt they had the right tools and information to justify a palliative consult**

**+23%**

**more respondents stated good workflows and processes were in place to identify patients for palliative/hospice involvement**

**+14%**

**more respondents reported it was easy to refer to the Inpatient Palliative Care team**

## Qualitative feedback was consistent with the above findings

- Physicians reported being much more likely to use or consider the "Surprise" question
- Increased confidence/comfort in assessing whether a patient needs a Palliative Consult
- Increased collaboration, especially within Inpatient Case Management team
- Less likely to cite barriers to palliative involvement – including lack of care team alignment, patient/family unwilling to discuss goals of care, palliative care not top of mind, or lacking confidence about palliative appropriateness

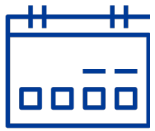
Internal NWH Pre and Post Pilot Surveys administered to Palliative Care, Hospitalists, Case Management and ICU teams.
Pre-Pilot Survey administered May 2023 (n=30 responses); Post-Pilot Survey administered November 2023 (n=15 responses).

# Pilot Results: Patient Impacts

# Case study: overcoming hesitation about palliative care

**90+ year old female admitted to NWH**

- Recent diagnosis of pulmonary embolism
- On apixiban
- Presented with shortness of breath, fatigue, and black tarry stool



**"Recommended" by Smart Hospice**

Smart Hospice highlighted:

- Two recent ED visits and three hospital stays
- Diagnoses of Acute MI, CAD, CKD, Dementia, Heart Failure and Pressure Ulcers
- Previously documented DNR
- A palliative care discussion within the past year

**Inpatient Palliative Care Team agreed with recommendation**

The Palliative team confirmed appropriateness of this patient for a goals of care conversation

**Interdisciplinary collaboration**

- However, hospitalist hesitated over a palliative consult, concerned about alienating the family
- Family favored GI procedure, but GI team was cautious due to risk
- Palliative team offered to guide family in discussing the procedure, focusing on values and choices
- The hospitalist placed the referral

## Conclusion: a beneficial outcome that prioritizes patient/family choice

- ✓ Palliative Care provider met with patient and daughter for 90 minutes, reviewing patient/family hopes and concerns
- ✓ Patient and family agreed to not proceed with GI procedure as it would not be in the best interests of the patient
- ✓ Patient and family expressed willingness to continue the conversation around potential referral to hospice

# Outcomes for Smart Hospice patients seen by Palliative Team

Palliative Care MD met with patient; ***recommended hospice as next best step*** to help get patient home and ***maximize quality of life*** with whatever time is left. Pt/family plan to discuss together further.

Palliative Care team offered to meet with family and navigate conversation about GI procedure. Palliative Care provider met with patient and daughter for 90 minutes, reviewing patient's hopes and worries. ***Patient/daughter agreed to not proceed with GI procedure and open to potential referral to hospice.***

***Palliative Care MD*** and ***Palliative Care chaplain*** met with patient to discuss values/goals and ***to discuss potential referral to dialysis***. Patient appreciative and with good insight. Palliative care MD/NP and palliative care chaplain will continue to support.

Palliative Care MD met with patient; patient is clear that ***quality of life/comfort is more important to him than time***. He said he **would like to avoid cycling in and out of the hospital** and favors **focusing on care/comfort/letting nature takes its course** rather than coming back to the hospital to try to prolong his life.

Patient connected with Care Dimensions hospice liaison regarding ***potential GIP hospice care referral*** in the future.

Palliative care MD meeting with patient and daughter to ***review care goals and values, provide psychosocial support, and complete SMART assessment***

***Multiple family discussions with palliative care team to support transition to DNR/DNI and GOC*** including continued PO intake as that brings patient great joy. ***Reviewed the MOLST form*** *to communicate care preferences post-discharge;* ***patient with better understanding of Advanced Directives and MOLST completed.***

Palliative Care team met with patient and family. ***Patient verbalized sentiments of wishing to be home, knows that he is dying, wishes to die at home but not yet ready to to move into a comfort pathway.*** *Patient* wanted to know if there is something that can be done to give him more time. ***Discussed hospice and home-based palliative care***.

Patient and family seen multiple times by palliative and spiritual care; ***goals and values reviewed.*** Palliative care team noted ***full code status may not support patient's goals***. Patient/family agree that if in situation without reversible problems, ***focusing on her comfort would likely be consistent with her other described preferences of care***.

***Patient's wishes/worries identified during in depth values and goals conversations.*** Also met with spiritual care. ***Pt's code status changed to DNR/DNI and transitioned to comfort. Patient passed away a few days later.***

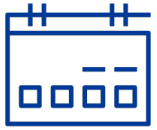
***Meeting with daughter. Encouraged to fill out a new MOLST*** and update in EHR. ***Discussed with CM, who has messaged hospice agency to follow*** as patient discharged to a long-term care facility. Her daughter is in touch with the hospice agency and ***patient may transition to hospice care soon.***

Patient requesting Full Code despite hospitalist concerns. Palliative Care team saw patient who declined to engage in goals of care conversation. ***Palliative Care team however able to provide recommendations re: medications, pain, mood/coping, interventions and assistive devices***.

# Conclusions

# Key takeaways: what went well

**Strong buy-in, collaboration, communication, and engagement across the continuum**



**Excellent agreement with patients "recommended" by Smart Hospice**

**Successful process and workflow for patients recommended for inpatient palliative consult**

**Successful identification and referral of patients to *outpatient* palliative services**

**Success in continued efforts around serious illness communication training and HCP completion**

**Robust internal workflows developed to track data and assess outcomes**

**Positive survey feedback from users and key stakeholder groups**

**Tight collaboration between NWH, Mass General Brigham Population Health, and Radial teams**

# Lessons that can be applied to future state

- The NWH TCM team is **better educated and more confident** identifying patients for inpatient vs. home-based palliative care referral
- The Smart Hospice deployment also highlighted a **need to support patients with frailty/downward trend** that may not yet require a palliative care consult
- Continuing to **celebrate and promote success in hitting HCP completion** targets
- Identified topics of interest for **future palliative care education** for hospitalists and inpatient case management teams
- A hospital stay can be effectively leveraged to accelerate discussions around goals of care, **setting up longitudinal care providers to continue the conversation** after discharge in all clinical settings

# Acknowledgements

Radial

**Kerry Son, MSN, FNP-BC**
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Clinical Software Engineer

**Derek Olsson**
Software Engineering Manager

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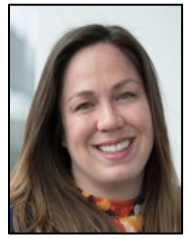

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**Katie Carr**
Innovation and Business Design Lead, Home Hospital Team

Mass General Brigham