

Clinical Use of PSA Testing: What Has Changed Since the USPSTF Updated Recommendation?

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2019 Massachusetts Prostate Cancer Symposium
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Session Goals

- Highlight issues with PSA testing in the past
- Review the implications of the USPSTF D recommendation on PSA testing
- Suggest a risk-based strategy for PSA testing



What We Know:

- African American men and men with a family history are disproportionately affected by prostate cancer.
- African American men with prostate cancer in Boston have less favorable outcomes than MA and US men.
- Reductions in PSA screening have occurred since May 2012.
- Less favorable disease endpoints have been observed among prostate cancer cases diagnosed since May 2012.
- Risk and prognostic factors have been identified that may indicate some men in need of enhanced surveillance and monitoring.

Prostate Cancer Rates

Incidence

Mortality

Black:White
Rate Ratio

1.75

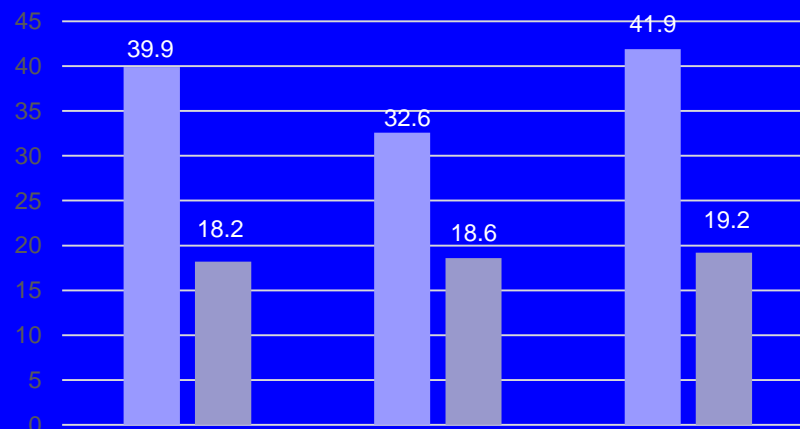
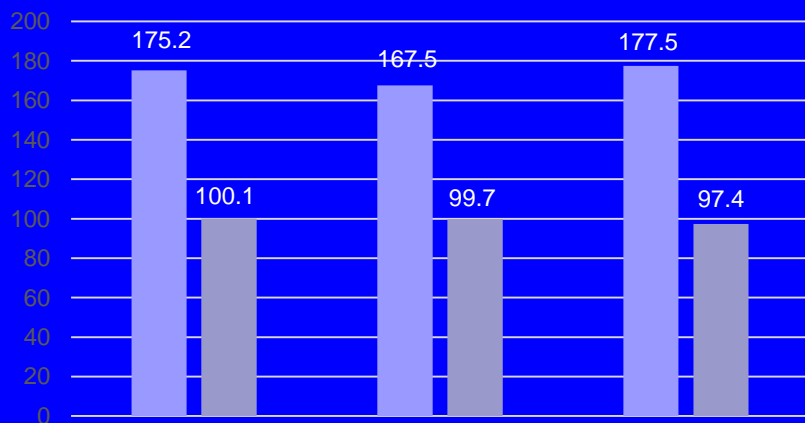
1.68

1.82

2.19

1.75

2.18



US

MA

Boston

US

MA

Boston



Black (includes Hispanic)

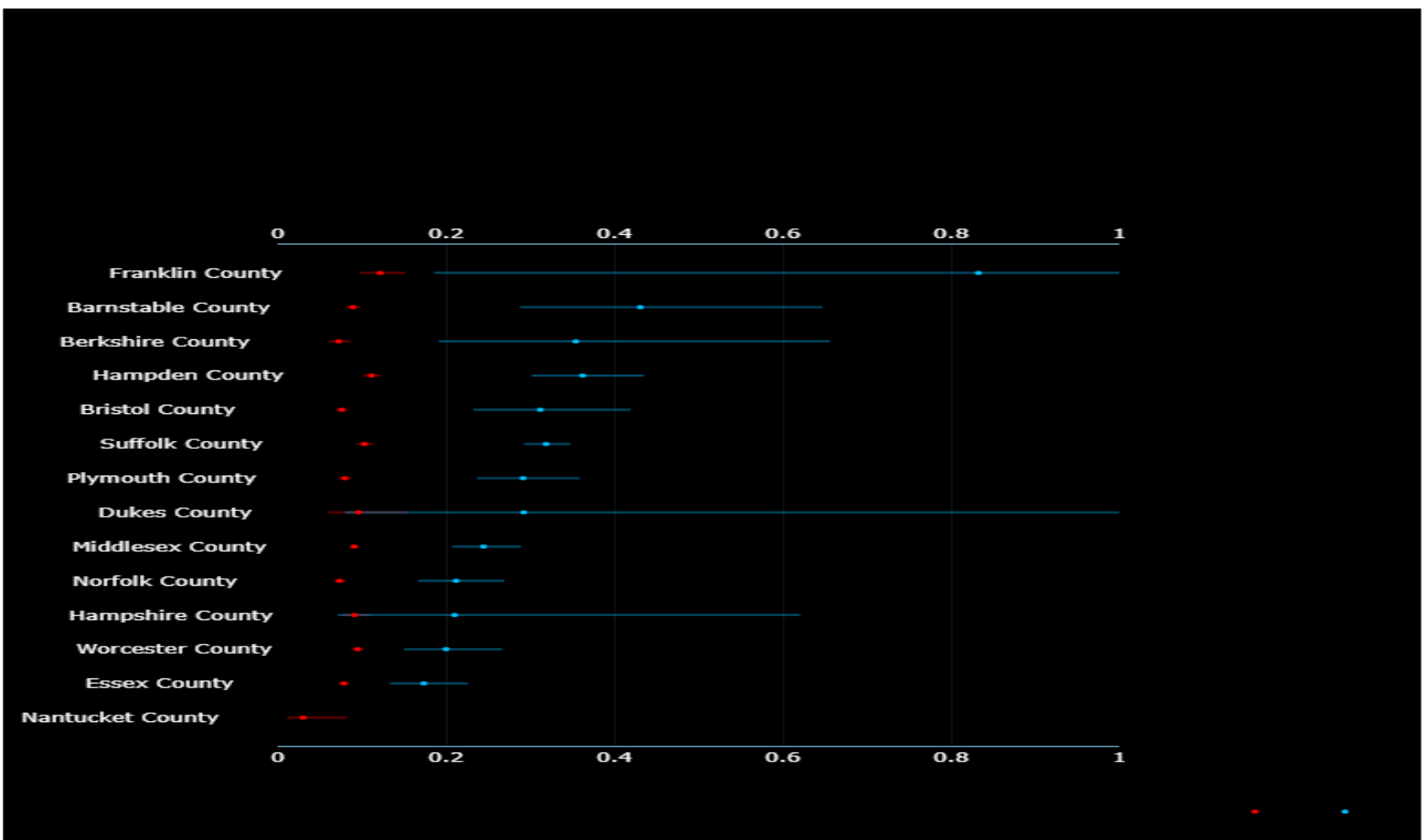


White (Unknown Hispanic)

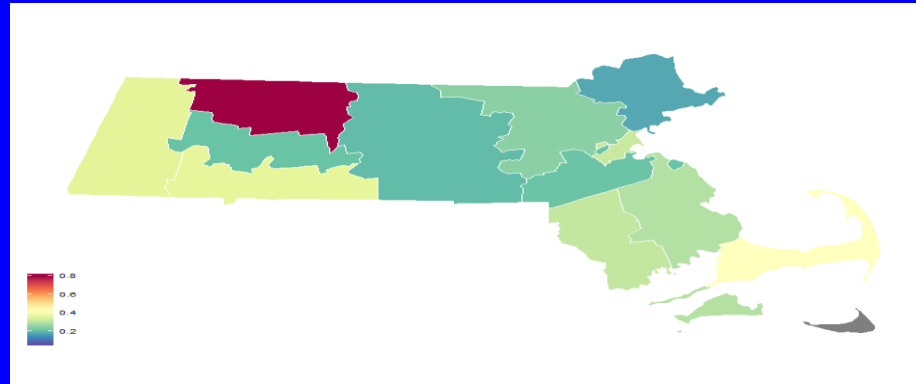


US SEER Age-Adjusted and MA Cancer Registry Age-Adjusted per 100,000, 2011-2015

Differences in Mortality to Incidence Ratios with 95% Confidence Intervals (Black versus White) for Men in 14 Massachusetts Counties Ranked from Least to Greatest Difference

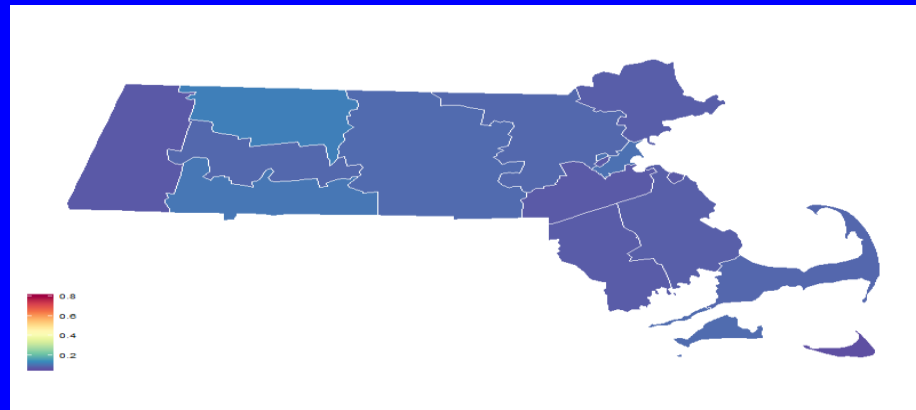


Mortality to Incidence Ratios for Black Men with Prostate Cancer in Fourteen Massachusetts Counties*



*Nantucket county (lower right) censored due to low case count

Mortality to Incidence Ratios for White Men with Prostate Cancer in Fourteen Massachusetts Counties

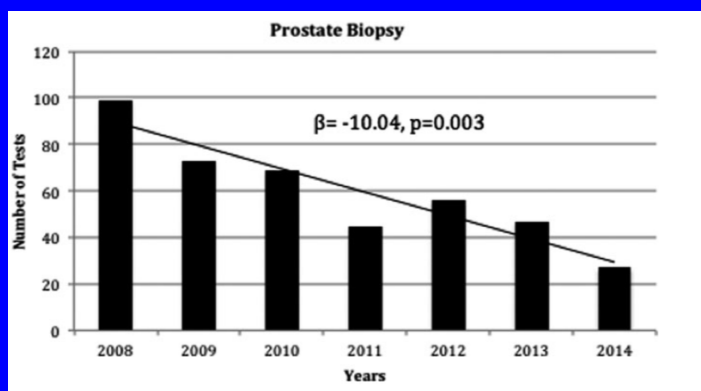
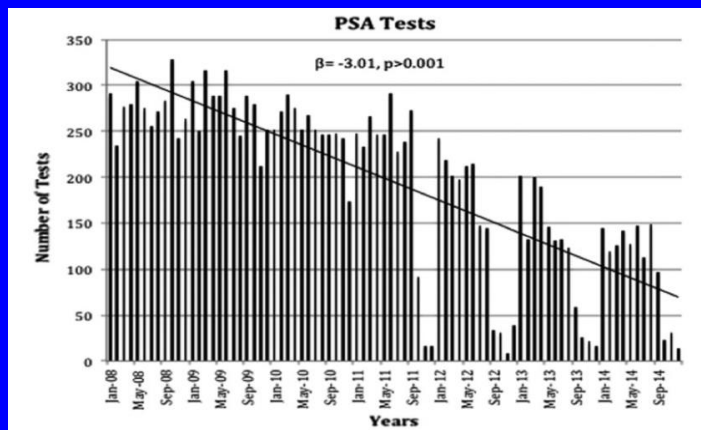




What We Know:

- White men with a family history of prostate cancer are at increased risk of being diagnosed with and subsequently dying from prostate cancer
- In Black men, a family history of prostate cancer in fathers or brothers is associated with a 3-fold increase risk of disease, and a strong positive relationship is noted for the number of affected first degree relatives
- Screening in men with a positive family history of prostate cancer showed a trend toward decreased prostate cancer-specific mortality and decreased time to death from prostate cancer


Impact of May 2012 USPSTF Recommendation



	Before May 2012	After May 2012	P-Value
	N=1,440	N=560	
Extraprostatic Extension on Imaging	12.6%	18.9%	0.039
Lymph Node Positivity on Imaging	1.1%	2.1%	0.078
Presence of Bony Metastatic Disease	1.7%	3.2%	0.041
CaP on Biopsy	37.0%	50.8%	<0.0001
Gleason <7	47.4%	41.1%	0.042
Gleason 7	30.9%	39.7%	
Gleason >7	21.7%	19.2%	
Core Involvement (%)	2.0%	13.0%	<0.0001

Patel et al. 2018

Blair et al. 2018



“The effect of the United States Preventive Services Task Force grade D recommendation against screening for prostate cancer on incident prostate cancer diagnoses in the US”

Barocus DA, Mallin K, Graves, AJ, et al, Journal of Urology, June 15, 2015.

Assessing the Impact of the Guidelines

- Identified NEW cancers diagnosed between January 2010 and December 2012 using National Cancer Database
- Looked at trend of prostate cancers diagnosed each month BEFORE and AFTER the draft USPSTF Guidelines and compared them with new colon cancer cases

RESULTS

Incident monthly prostate cancer diagnoses dropped by -1363 cases (12.2%) in the month after the USPSTF draft guideline and continued to decrease by 164 cases per month relative to baseline (-1.8%). By contrast, monthly colon cancer diagnoses remained stable



CONCLUSION

There was a 28% decline in incident diagnoses of prostate cancer in the year following the USPSTF draft recommendation against PSA screening.

MORE.....

- New prostate cancer diagnoses declined by :

23% to 29% for men over age 70

26% for men considered infirm


Further analysis of the data....

- Saw a 37.9% fall in LOW-RISK prostate cancer while colon cancer cases remained stable
- The investigators suggest that withholding screening for prostate cancer could result in failure to detect higher-risk cancer during the window of curability. Timely treatment of intermediate and high-risk localized disease usually results in superior overall survival

CONCERNS.....

One year after the draft guidelines, the study identified:

- A 28.1% decrease in the diagnoses of **INTERMEDIATE-RISK** prostate cancers
- A 23.1% drop in the diagnoses of **HIGH-RISK** prostate cancers



“These findings suggest that reduced screening may result in missed opportunities to spare these men from progressive disease and cancer death.”

Daniel A. Barocus, MD, MPH

Screening Recommendations (Kohestani 2017)

Organization	Age	Method	Qualifiers	Frequency if normal PSA	Risk factors acknowledged
ACP	50-69	PSA testing	Only for 10-year life expectancy and after discussing with doctor.		
ACS	≥ 50	PSA-based, may add DRE	Only for 10-year life expectancy and after discussing with doctor. High risk screen earlier (as early as age 40)	Every 2 years. Every year if ≥ 2.5 ng/mL	African ancestry, family history
ASCO	≥ 50	PSA-based	Only for 10-year life expectancy and after discussing with doctor.		
AUA	55-69	Total PSA. Biomarker test before biopsy	Only for 10-year life expectancy and after discussing with doctor. High risk screen earlier (as early as age 40).	Individualized based off initial PSA	African ancestry, family history
EAU-ESTRO-SIOG	≥ 50	PSA-based and/or DRE	Only for 15-year life expectancy and after discussing with doctor. High risk screen earlier (as early as age 45).	Individual decision. Every 2 years for high risk, 8 for lowest risk	African ancestry, family history, midlife PSA ≥ 1ng/mL
MSKCC	45-70	PSA-based	Only for 10-year life expectancy	Every 6-10 years if PSA ≤1 ng/mL. Every 2-4 years if PSA = 1-3 ng/mL	African ancestry, family history,
NCCN	≥ 45	Total PSA. Biomarker test before biopsy	After discussing with doctor. Acknowledges heterogeneity exists in risk groups and recommends more predictive models be evaluated		African Ancestry, family history, BRCA mutations
USPSTF 2017	55-69	PSA-based	Only for 10-year life expectancy and after discussing with doctor. Stop at age 70. "Grade C"		African ancestry, family history



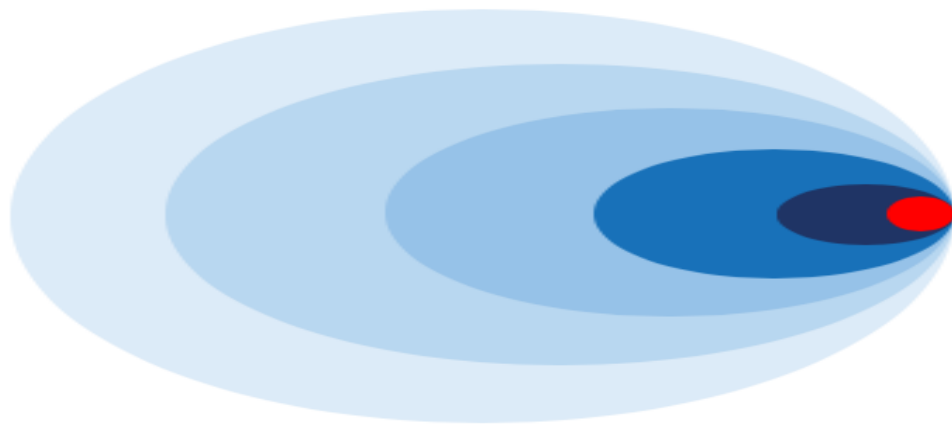
PSA Testing in the Past:

- Confusion in messaging
- Organized vs. Opportunistic screening
- Over-diagnosis and Over-treatment
- Misinterpretations of available evidence regarding benefits and harms of PSA testing in the 2012 USPSTF D recommendation



Precision Population Health:

“Having the data and the capability to tailor preventive interventions precisely for specific populations to more directly meet their needs”



PRECISE

PREcision **C**are, **I**nterventions,
Screening, and **E**mpowerment

Risk-Stratified Prostate Cancer Screening and Monitoring: The PRECISE Initiative



Dana-Farber/Harvard
Cancer Center

NCI Comprehensive
Cancer Center

A Cancer Center Designated by the
National Cancer Institute



CENTER FOR GLOBAL
CANCER PREVENTION

HARVARD T.H. CHAN
SCHOOL OF PUBLIC HEALTH



HARVARD
CATALYST

BOSTON
PUBLIC
HEALTH
COMMISSION



PRECISE Goals

- Develop and implement precision prostate cancer screening and disease monitoring practices.
- Improve clinical outcomes.
- Reduce comorbidities related to overtreatment.
- Ensure all populations benefit.
- Reduce disparities in prostate cancer mortality.



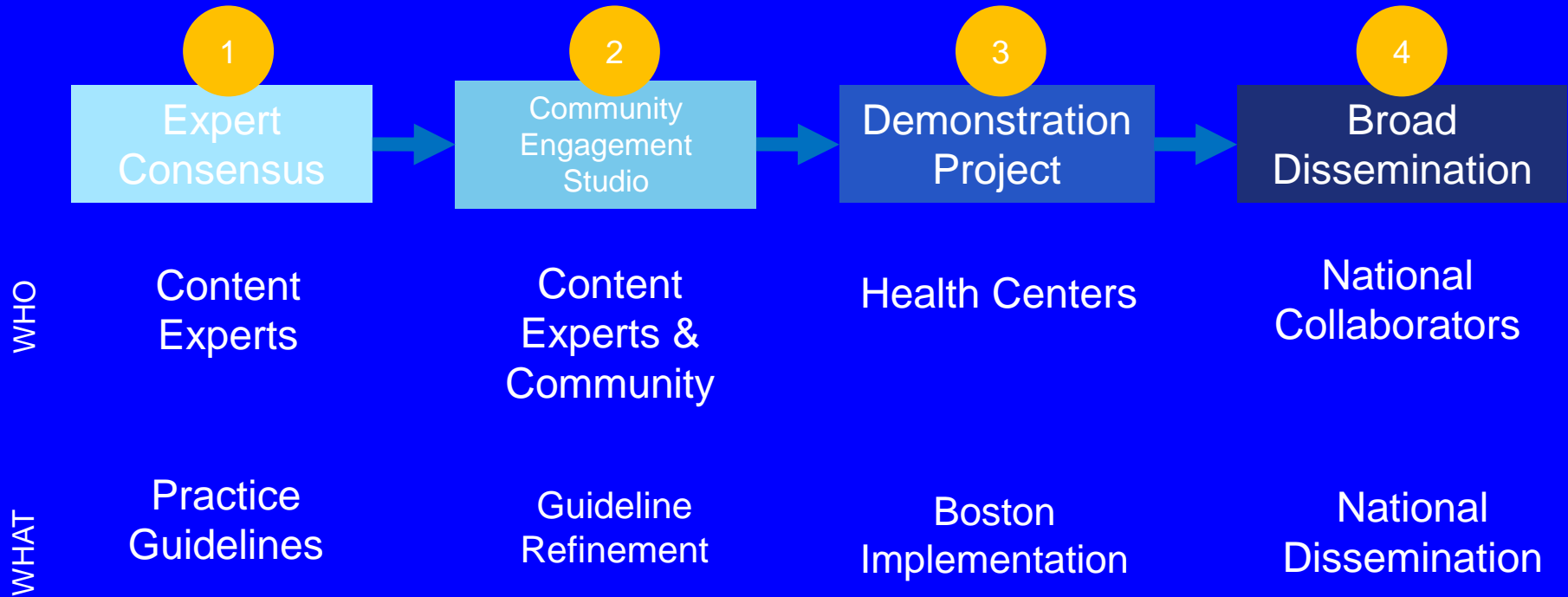
Why Prostate Cancer?

Why Boston and Massachusetts?

- Significant Disparities in Incidence and Mortality, particularly among African American men
- Evidence of screening benefit for some men
- Controversy about the benefit of population-wide screening



Proposed PRECISE Workflow



Expert Consensus

1

Activity	Goal/Outcome
Conduct landscape analysis of existing recommendations	Understand the current state of screening
Summarize data supporting stratified risk or screening information for non-cases; monitoring in recently diagnosed men	Understand what factors may be relevant to consider for risk-stratified screening (race, age, family history, genetic mutation, etc.)
Define optimal screening protocols in population subgroups (symposium? Consensus conference?)	Consensus statement/paper



Community Engagement Studios

2

Activity	Goal/Outcome
Undertake Community Engagement Studios (led by Harvard Catalyst)	Provide clinicians/researchers with a real-time, in-person opportunity to share their research concepts and goals with various stakeholders to receive direct feedback and guidance via a facilitated conversation
Develop Community Outreach Plan	Protocol for implementation of risk-stratified screening in the community



Demonstration Project

3

Activity	Goal/Outcome
Identify community clinical partners	Network of implementation sites in which risk-stratified screening can be undertaken
Test protocol(s) developed in Community Engagement Studios	Pilot feasibility of community-based risk-stratified prostate cancer screening
Use pilot feasibility testing to finalize protocol for risk-stratified screening	Final protocol for community implementation

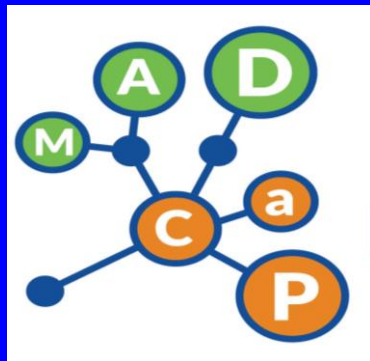


Broad Dissemination

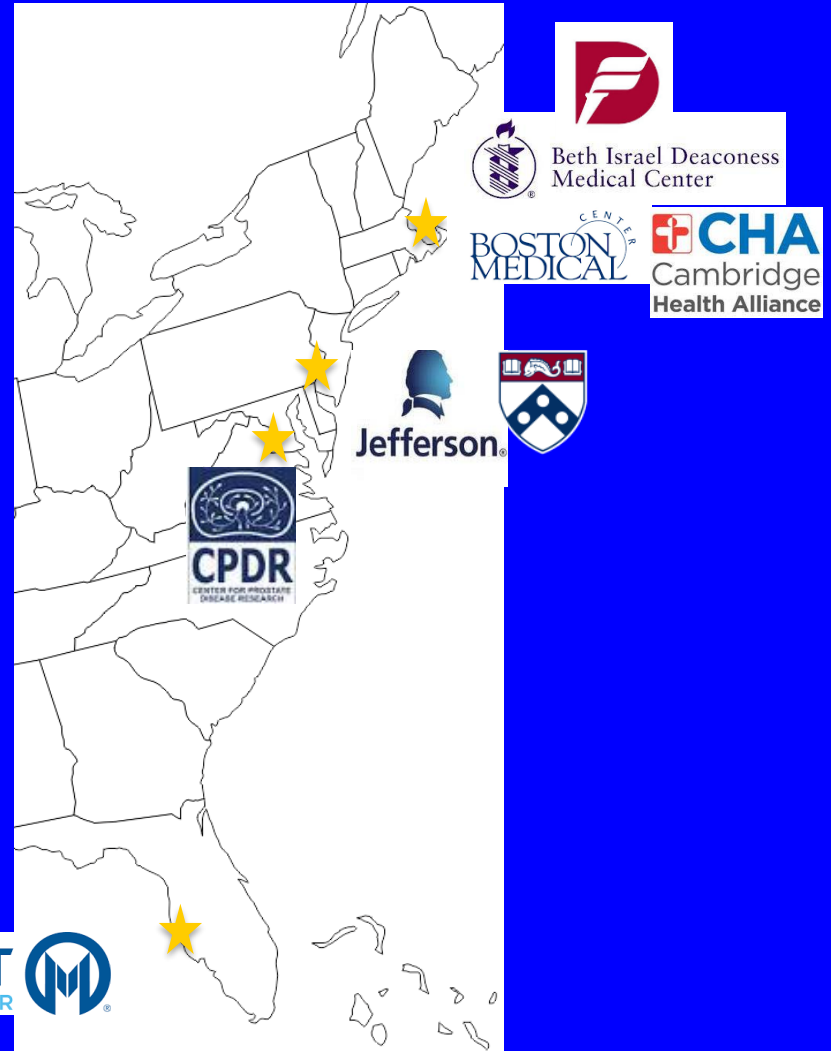
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Activity	Goal/Outcome
Identify national partners who can test and implement the protocol	Disseminate protocol to a national audience
Test and implement protocol	Improve use of prostate cancer screening and devise metrics for assessing value of the protocol to optimize care and reduce disparities





MADCaP Implementation Network



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P U B L I C
H E A L T H
C O M M I S S I O N**



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