ANNUAL

Advances and Innovations in Endoscopic Oncology and Multidisciplinary Gastrointestinal Cancer Care

Opportunities for Early Detection and Interception of

GI/Pancreas Cancers using Endoscopic Imaging

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Disclosures

- Consultant for Boston Scientific

The presentation and/or comments will be free of any bias toward or promotion of the above referenced companies or their product(s) and/or other business interests.

This presentation and/or comments will provide a balanced, non-promotional, and evidence-based approach to all diagnostic, therapeutic and/or research
related content.

This presentation has been peer-reviewed and no conflicts were noted.

Cultural Linguistic Competency (CLC) & Implicit Bias (IB)

STATE LAW:

The California legislature has passed Assembly Bill (AB) 1195, which states that as of July 1, 2006, all Category 1 CME activities that relate to patient care must include a cultural diversity/linguistics component. It has also passed AB 241, which states that as of January 1, 2022, all continuing education courses for a physician and surgeon **must** contain curriculum that includes specified instruction in the understanding of implicit bias in medical treatment.

The cultural and linguistic competency (CLC) and implicit bias (IB) definitions reiterate how patients' diverse backgrounds may impact their access to care.

EXEMPTION:

Business and Professions Code 2190.1 exempts activities which are dedicated solely to research or other issues that do not contain a direct patient care component.
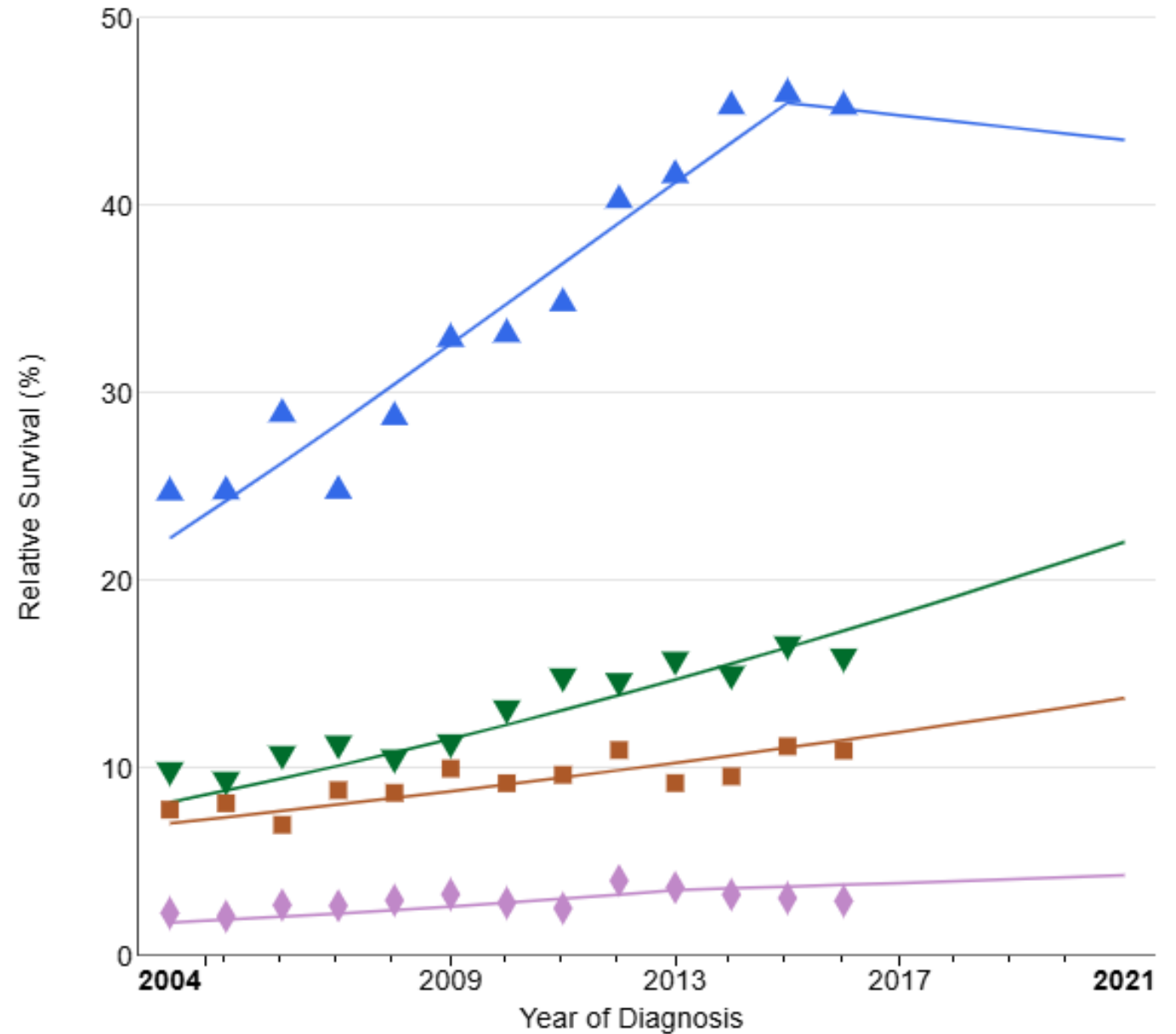
The following CLC & IB components will be addressed in this presentation:

- Discuss how race and ethnicity affect participation in screening and surveillance among high-risk populations. Discuss how socioeconomic status may affect access to procedural-based screening.
- Discuss how implicit bias may lower enrollment of specific populations into trials for early detection of cancer.
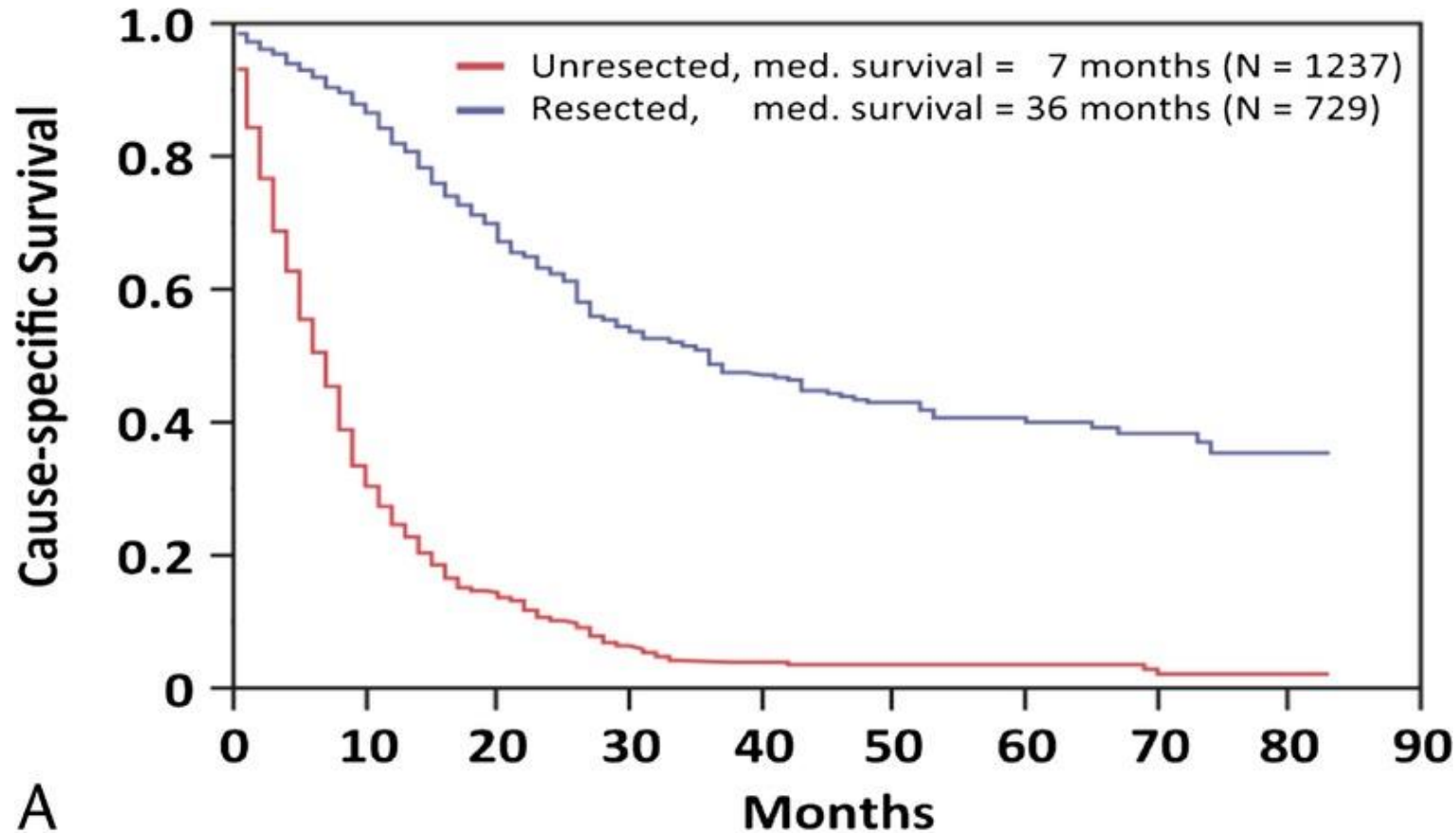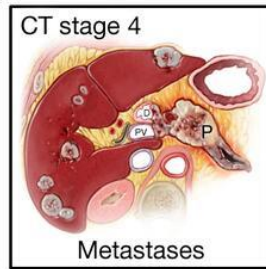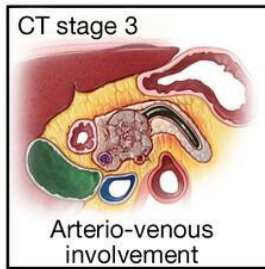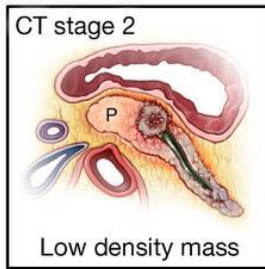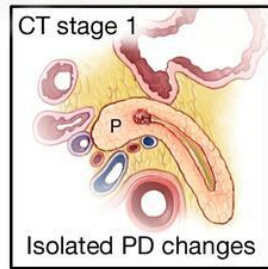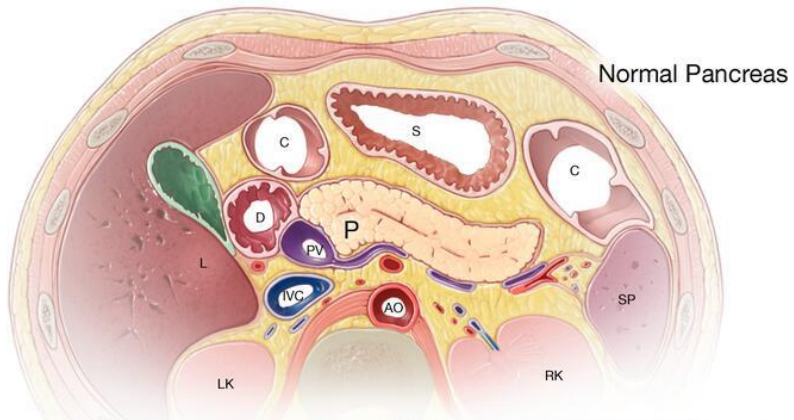
Good News and Bad News

Pancreas Recent Trends in SEER Relative Survival Rates, 2004-2021

By Stage at Diagnosis,
5-Year Relative Survival, Both Sexes,
All Races/Ethnicities, All Ages
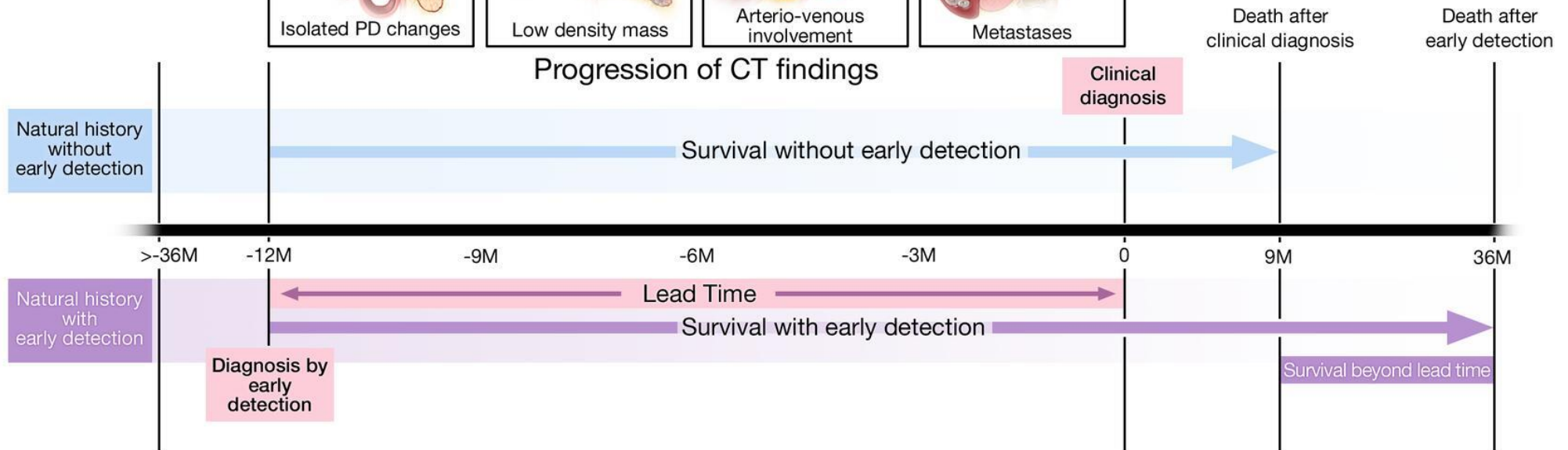
Legend (Stage at Diagnosis)

▲ Localized
▼ Regional
◆ Distant
■ Unstaged

Survival for Stage I PDAC

Unresected, med. survival = 7 months (N = 1237)
Resected, med. survival = 36 months (N = 729)

Chari ST, et al. Pancreas 2015

Normal Pancreas

CT stage 1 — Isolated PD changes

CT stage 2 — Low density mass

CT stage 3 — Arterio-venous involvement

CT stage 4 — Metastases

Progression of CT findings

Death after clinical diagnosis

Death after early detection

Clinical diagnosis

Natural history without early detection

Survival without early detection

>-36M   -12M   -9M   -6M   -3M   0   9M   36M

Lead Time

Natural history with early detection

Survival with early detection

Diagnosis by early detection

Survival beyond lead time

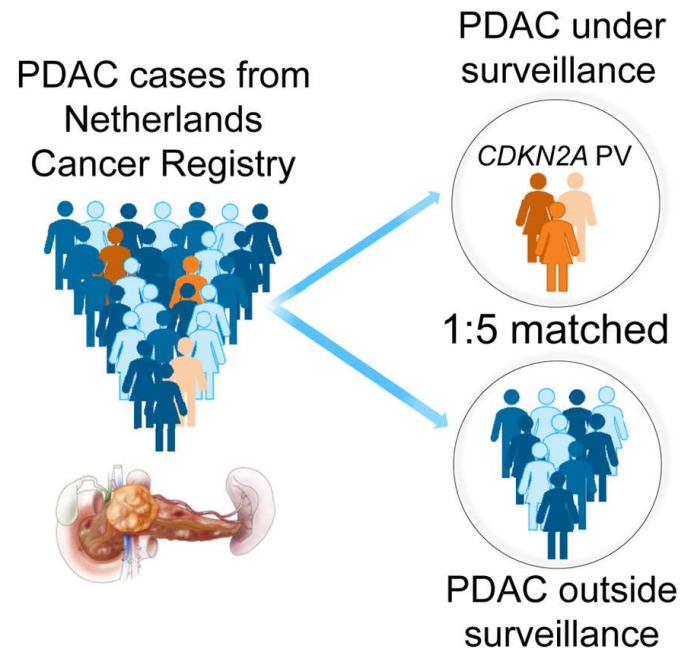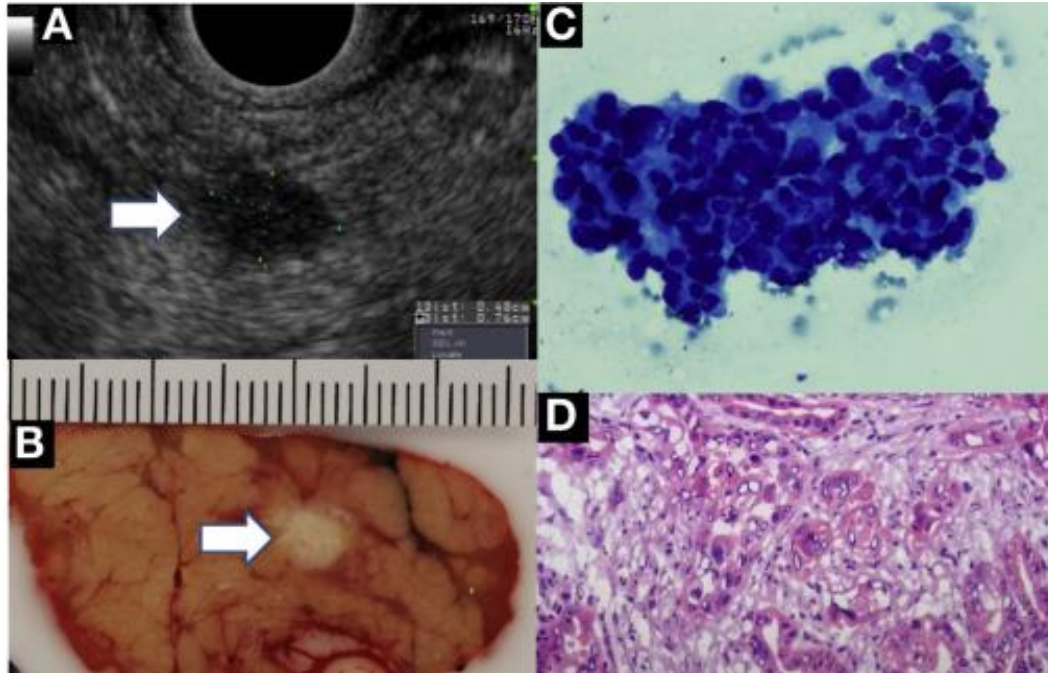© MAYO CLINIC

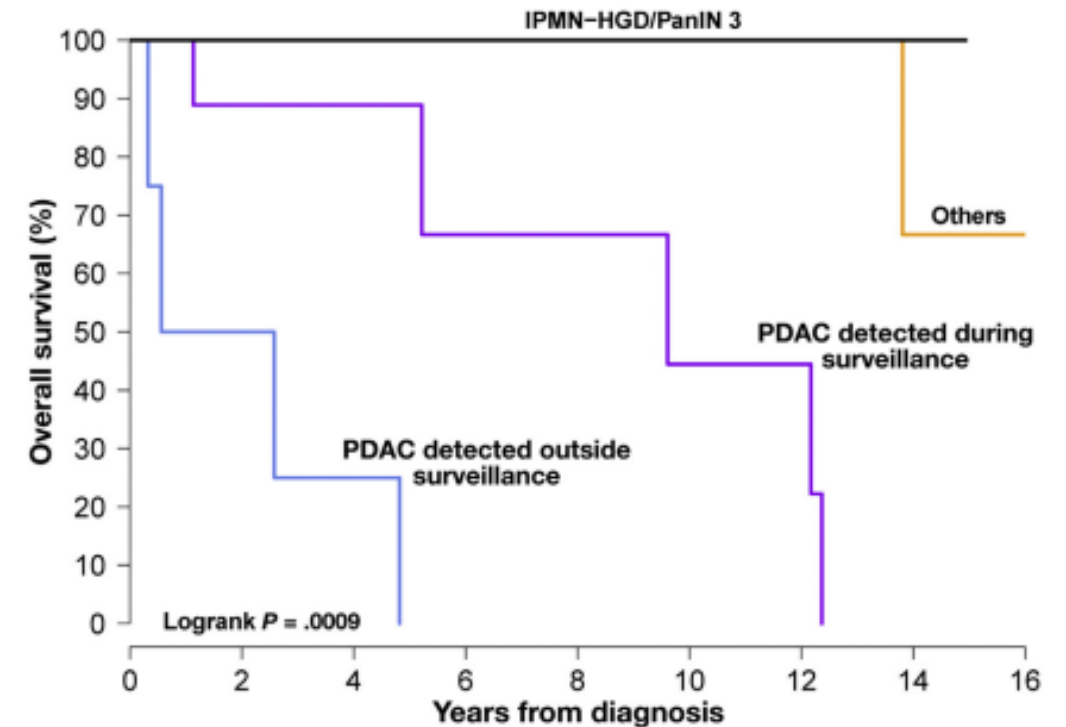# Surveillance for pancreatic cancer in high-risk individuals leads to improved outcomes
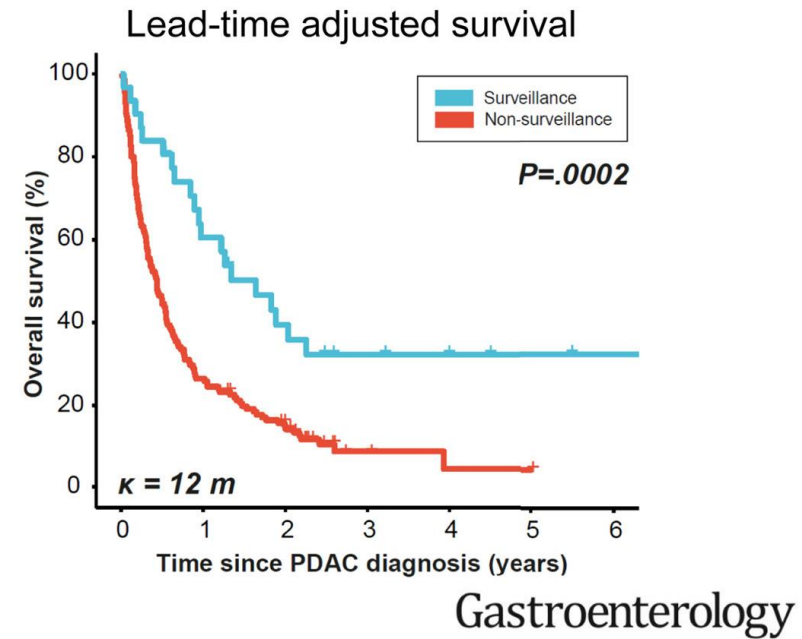
Klatte DC, et al. Gastroenterology 2023

Patients with PDAC detected during surveillance survive longer

7 mm tumor detected after 10 years of surveillance

Canto MI, et al. Gastroenterology 2018

Surveillance detected survival
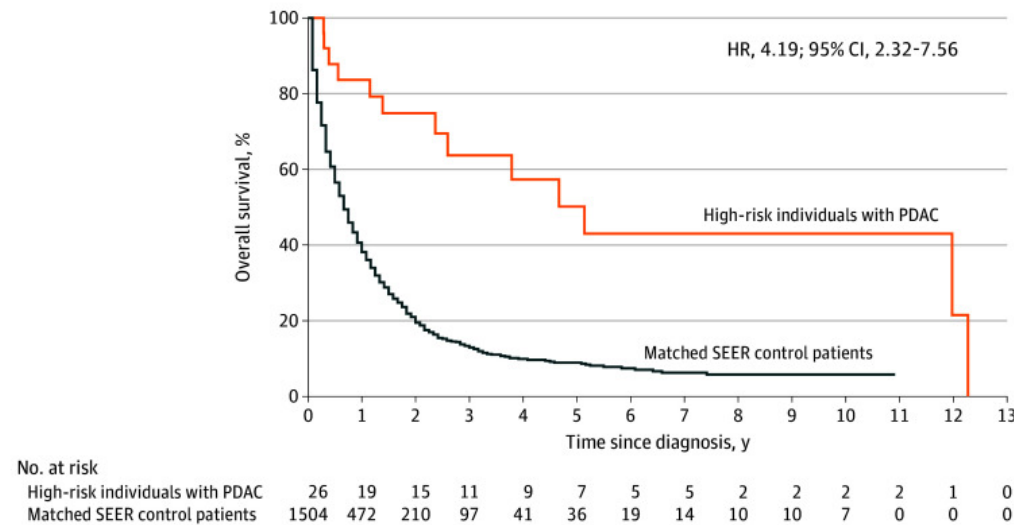
Blackford AL, et al. JAMA Oncology 2024

Table 3. Comparison of OS in High-Risk Individuals With PDAC and Matched SEER Control Patients With Additional Sensitivity Analysis Accounting for Potential Lead-Time Bias.

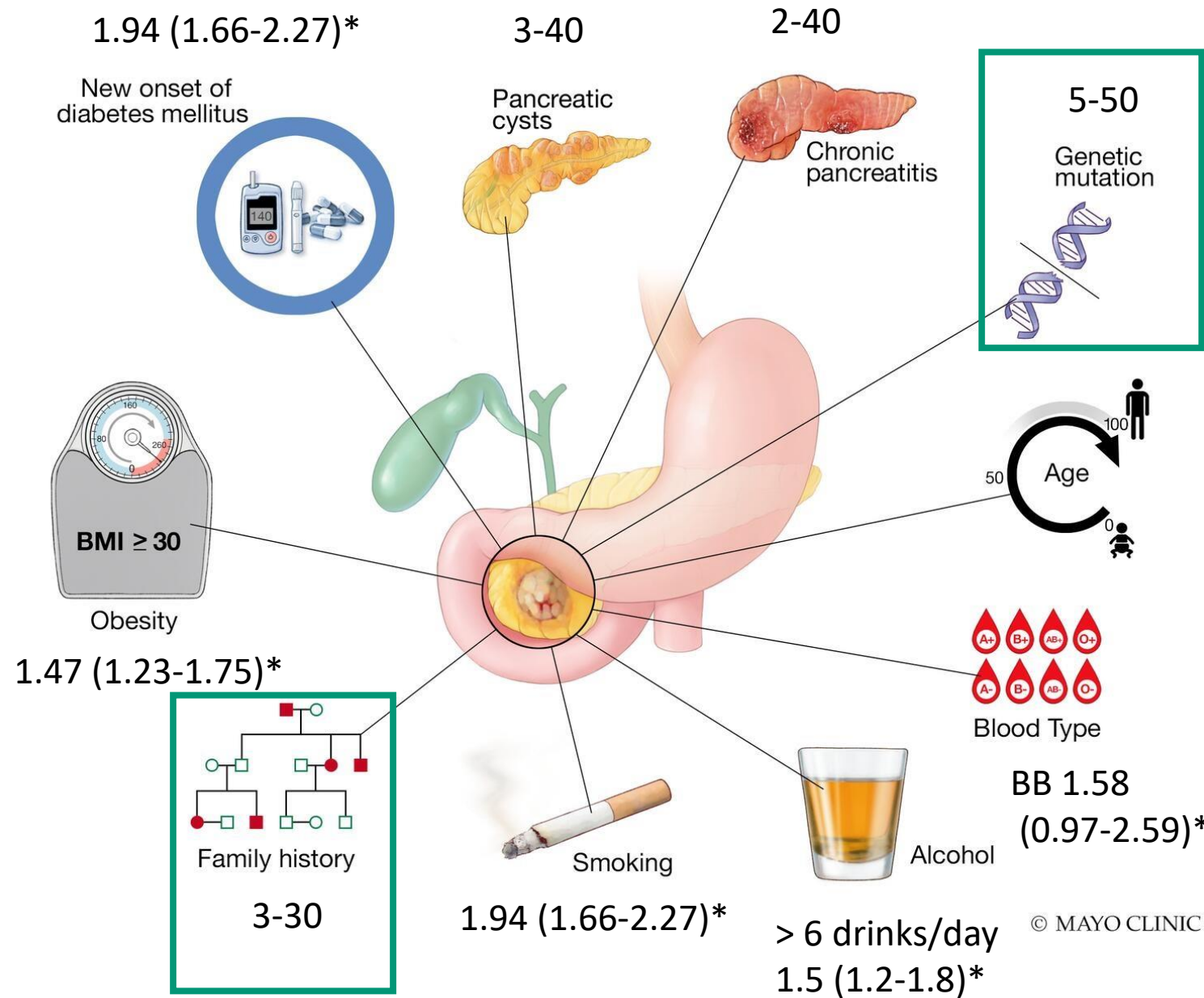| Group	OS, median (range), mo	Survival probability (range), %		Observed		Lead-time bias					
						3 mo		6 mo		12 mo	
		1 y	5 y	HR (95% CI)[a]	P value	HR (95% CI)[a]	P value	HR (95% CI)[a]	P value	HR (95% CI)[a]	P value
High-risk individuals with PDAC (n = 26)	61.7 (1.9-147.3)	84 (70-100)	50 (32-80)	1 [Reference]	<.001	1 [Reference]	<.001	1 [Reference]	<.001	1 [Reference]	<.001
Matched SEER control patients with PDAC (n = 1504)	8.0 (1.0-131.0)	38 (36-41)	9 (7-11)	4.19 (2.32-7.56)		3.91 (2.12-7.21)		3.69 (1.97-6.91)		3.34 (1.74-6.40)	

Why does this seem so hard?

Illustration of a Screening Program in the General U.S. Population Lifetime Risk for Panc CA = 1.3%
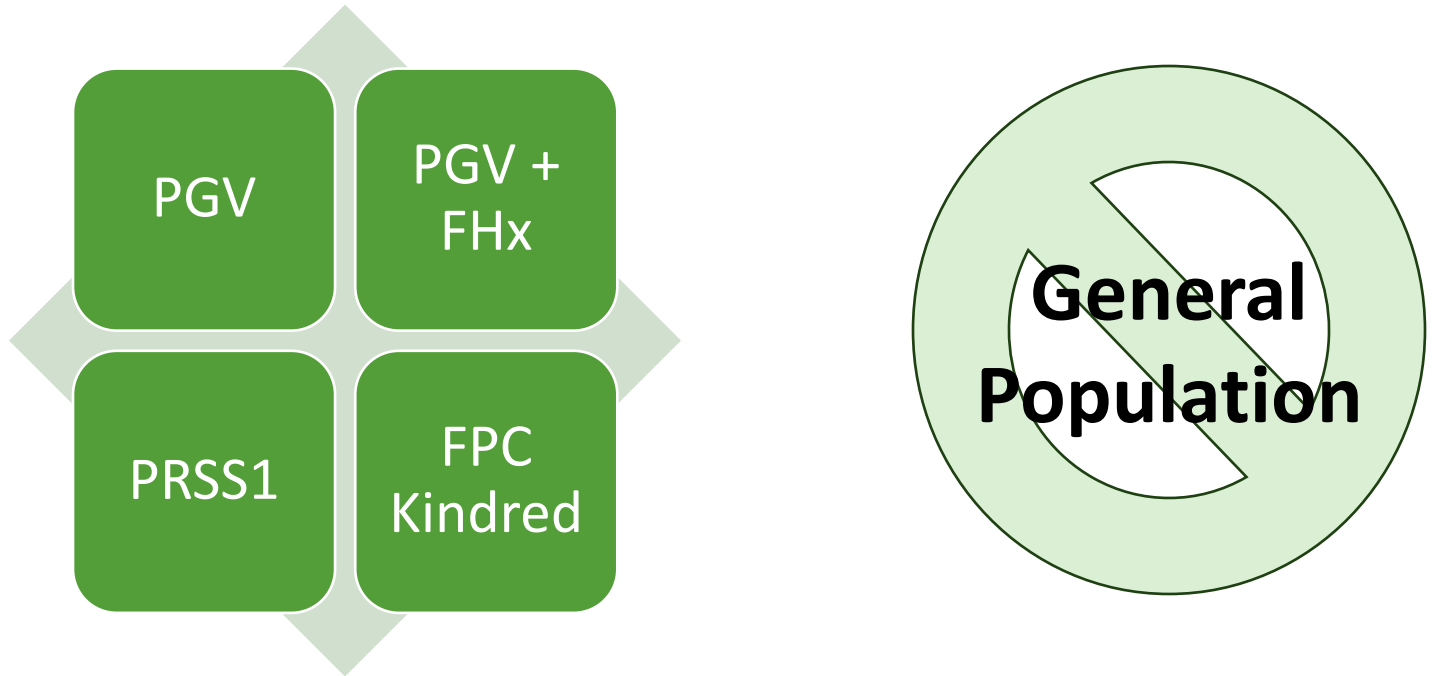
Increased risk patients

1.94 (1.66-2.27)*

New onset of diabetes mellitus

3-40

Pancreatic cysts

2-40

Chronic pancreatitis

5-50

Genetic mutation

BMI ≥ 30

Obesity

1.47 (1.23-1.75)*

Age

Blood Type

Family history

3-30

Smoking

1.94 (1.66-2.27)*

Alcohol

> 6 drinks/day
1.5 (1.2-1.8)*

BB 1.58
(0.97-2.59)*

* Midha S, et al. Cancer Letters 2016

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USPTF recommendations for screening

PGV

PGV + FHx

PRSS1

FPC Kindred

General Population

PGV = Pathogenic gene variant; FHx = Family history; FPC = Familial Pancreatic Cancer Kindred

Who to Screen and Age to initiate

Pathogenic Gene	Lifetime risk (%)	Age to Initiate[1]
STK11 (Peutz-Jeghers)	11-32	35
CDKN2A	16-20	40
PRSS1	10	40
BRCA1[2]	3-5	50
BRCA2	5-8	50
PALB2[2]	2-4	50
ATM	5-10	50
Lynch[2] (MLH1,2,6, PMS2 & EPCAM)	0.5-7	50
Familial Pancreatic Cancer Kindred[3]	8-12	50

[1] Initiate screening 10 years earlier than earliest case

[2] Only Screen if also have ≥ 1 FDR or SDR with PDAC

[3] 2 or more relatives with at least 1 FDR

Adapted from Fasullo M, et al. Am J Gastroenterol 2024

Screening

- EUS or MRI with contrast Annually* (STK11 and CDKN2A more frequently?)

- CA 19-9

- Hemoglobin A1C

- Update genetic results

- Update family history

EUS Screening

Gonda TA, et al. Gastrointest Endosc 2022

Required Views and Common Changes on EUS
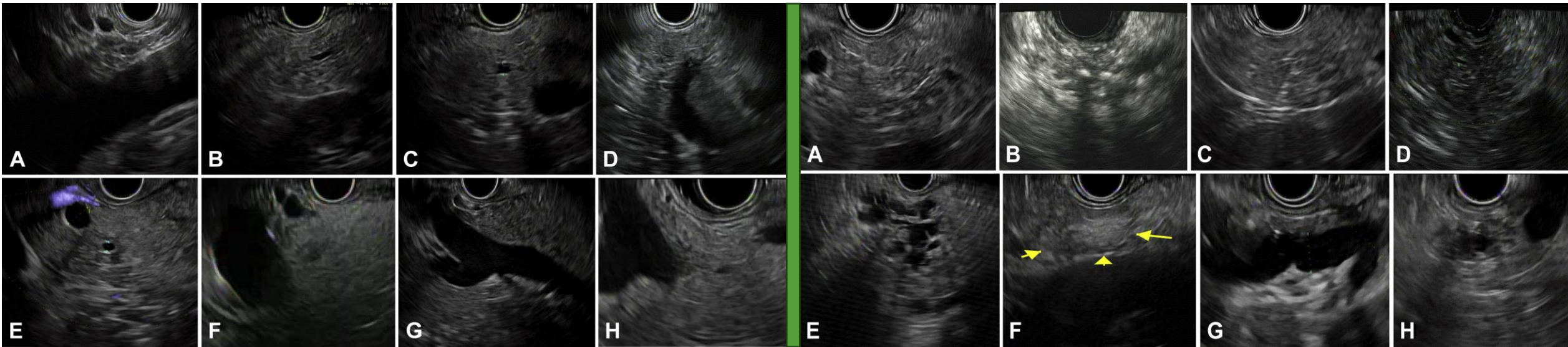
Gonda TA, et al. Gastrointest Endosc 2022
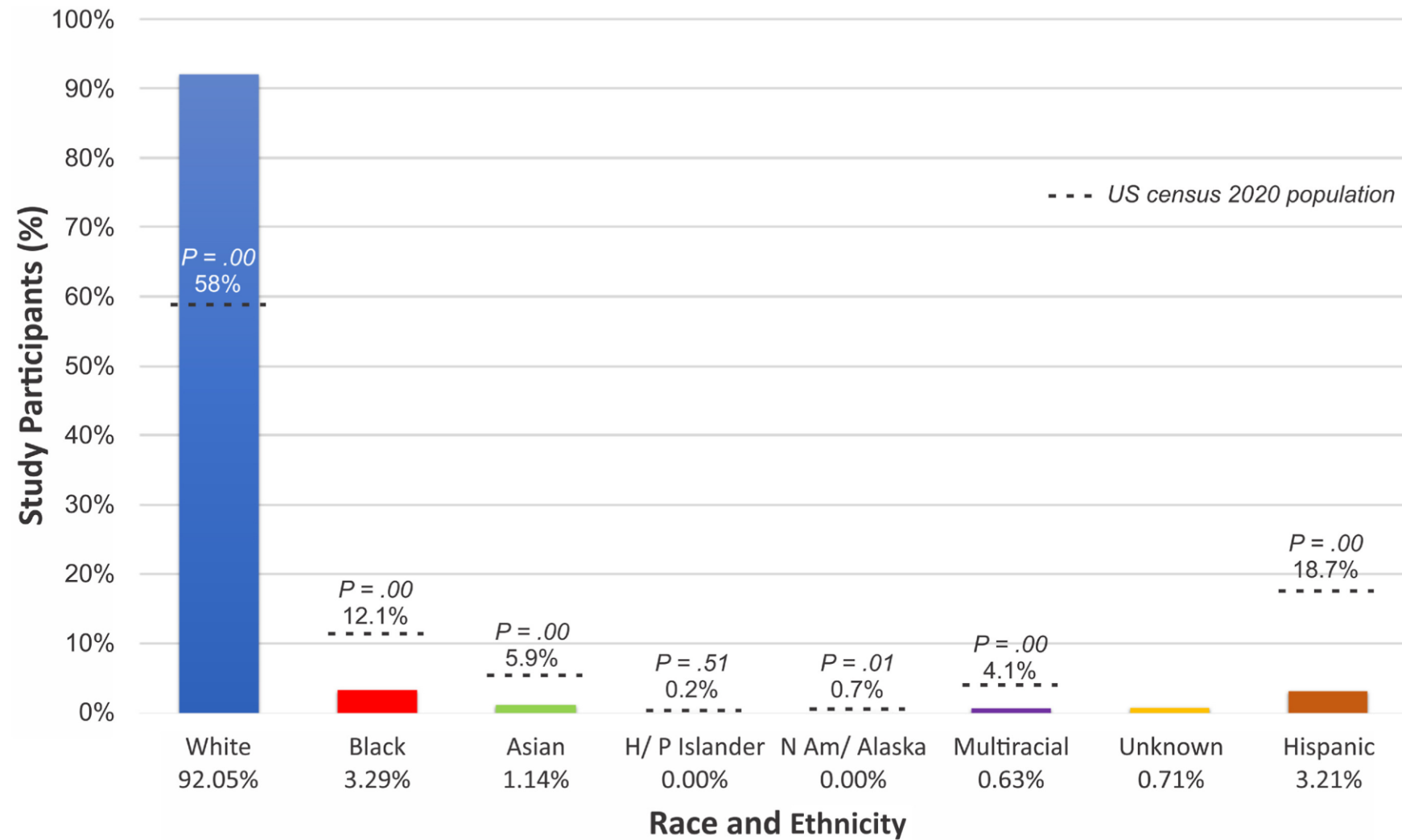
Barriers to Cancer Screening

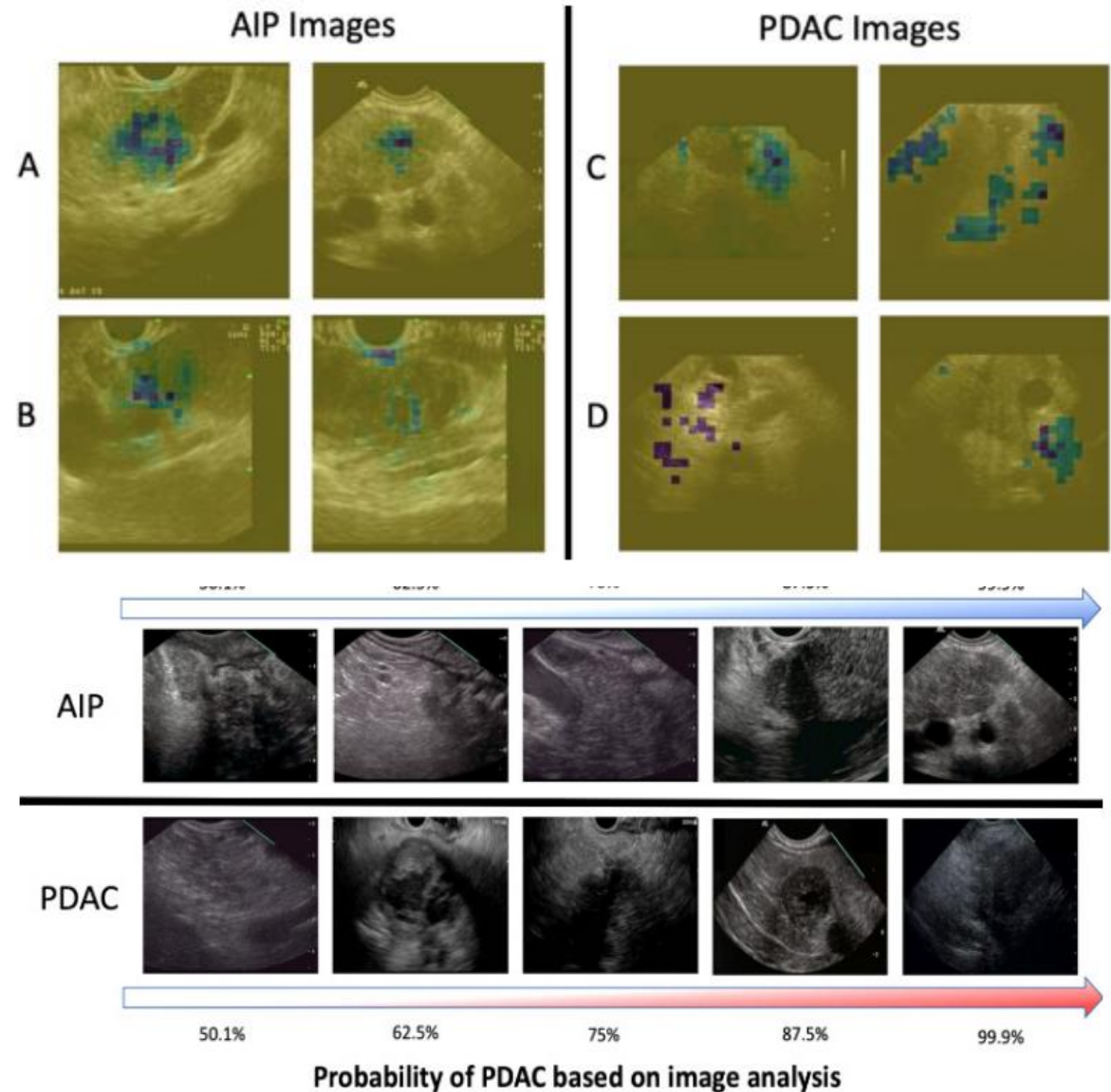- Income
- Geography
- Social Isolation
- Language
- Trust
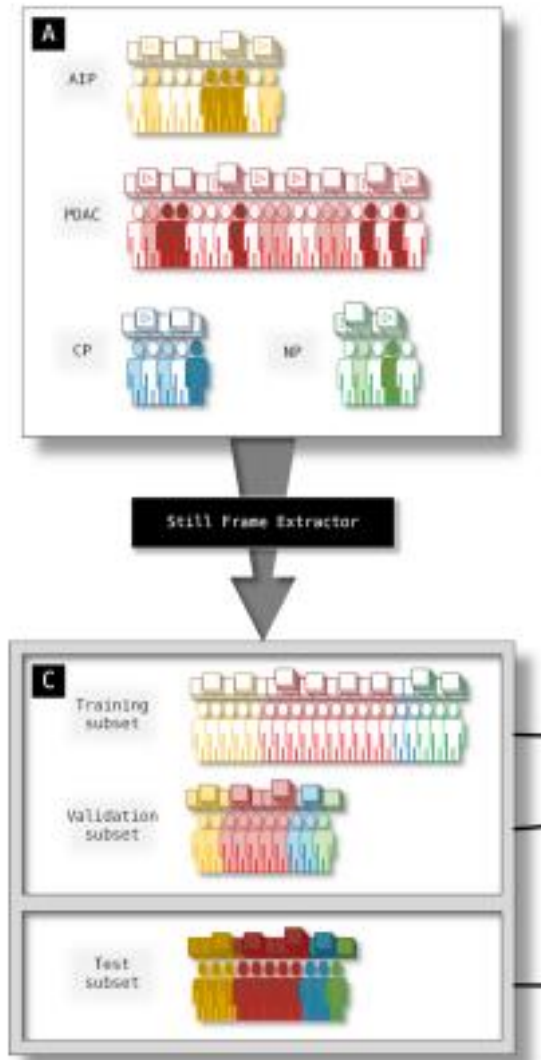- Discrimination

Race and Ethnicity in Pancreas Cancer Surveillance Studies

Silva-Santisteban A, et al. Gastrointest Endosc 2024

Future Directions

EUS-Based Convolutional Neural Network

Marya NB, et al. Gut 2021

CNN-enhanced EUS

	Sensitivity (95% CI)	Specificity (95% CI)	LR+ (95% CI)	PPV (95% CI)	NPV (95% CI)
Detection of aip from all other conditions					
Human Endosonographers	0.54 (0.44 to 0.63)	0.87 (0.83 to 0.90)	4.05 (3.00 to 5.47)	0.55 (0.47 to 0.62)	0.86 (0.84 to 0.88)
EUS CNN model	0.88 (0.64 to 0.99)	0.82 (0.70 to 0.91)	5.03 (2.79 to 9.06)	0.60 (0.45 to 0.73)	0.96 (0.86 to 0.99)
Detection of aip from pdac alone					
Human Endosonographers	0.54 (0.44 to 0.63)	0.82 (0.77 to 0.87)	3.05 (2.21 to 4.20)	0.60 (0.53 to 0.68)	0.78 (0.74 to 0.81)
EUS CNN model	0.88 (0.64 to 0.99)	0.88 (0.73 to 0.97)	7.50 (2.94 to 19.14)	0.79 (0.60 to 0.91)	0.94 (0.80 to 0.98)

Marya NB, et al. Gut 2021

Thank you!