Addressing Modifiable Risk Factors for Gastric Cancer

Meira Epplein PhD
Co-Leader, Cancer Risk, Detection, and Interception, Duke Cancer Institute
Professor, Population Health Sciences and Medicine, Duke University
April 11, 2025

Duke Cancer Institute

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Moving prevention from epidemiology to the community and the clinic

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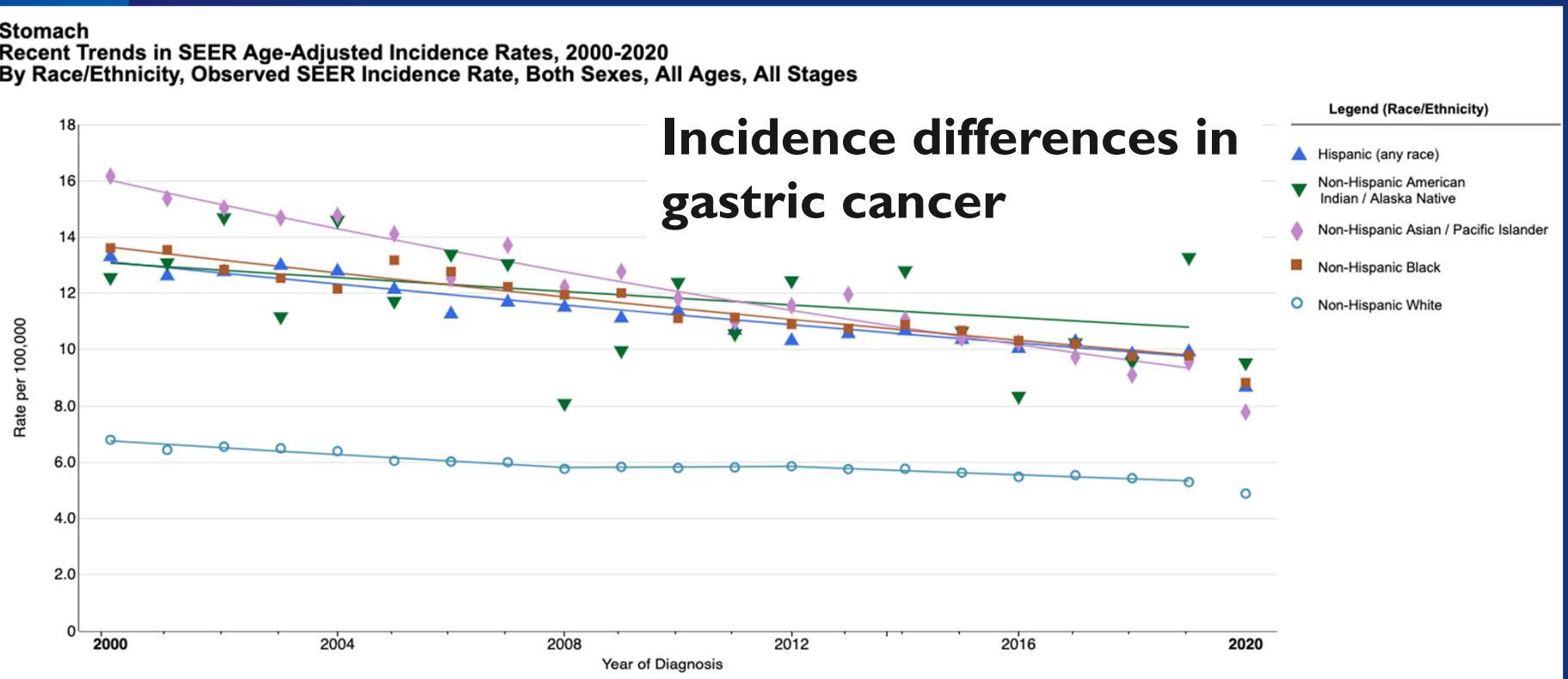
Gastric Cancer and Health Disparities

- Race is a social construct, and our team is opposed to the practice of race-based medicine
- Race-conscious research can help mitigate health inequities

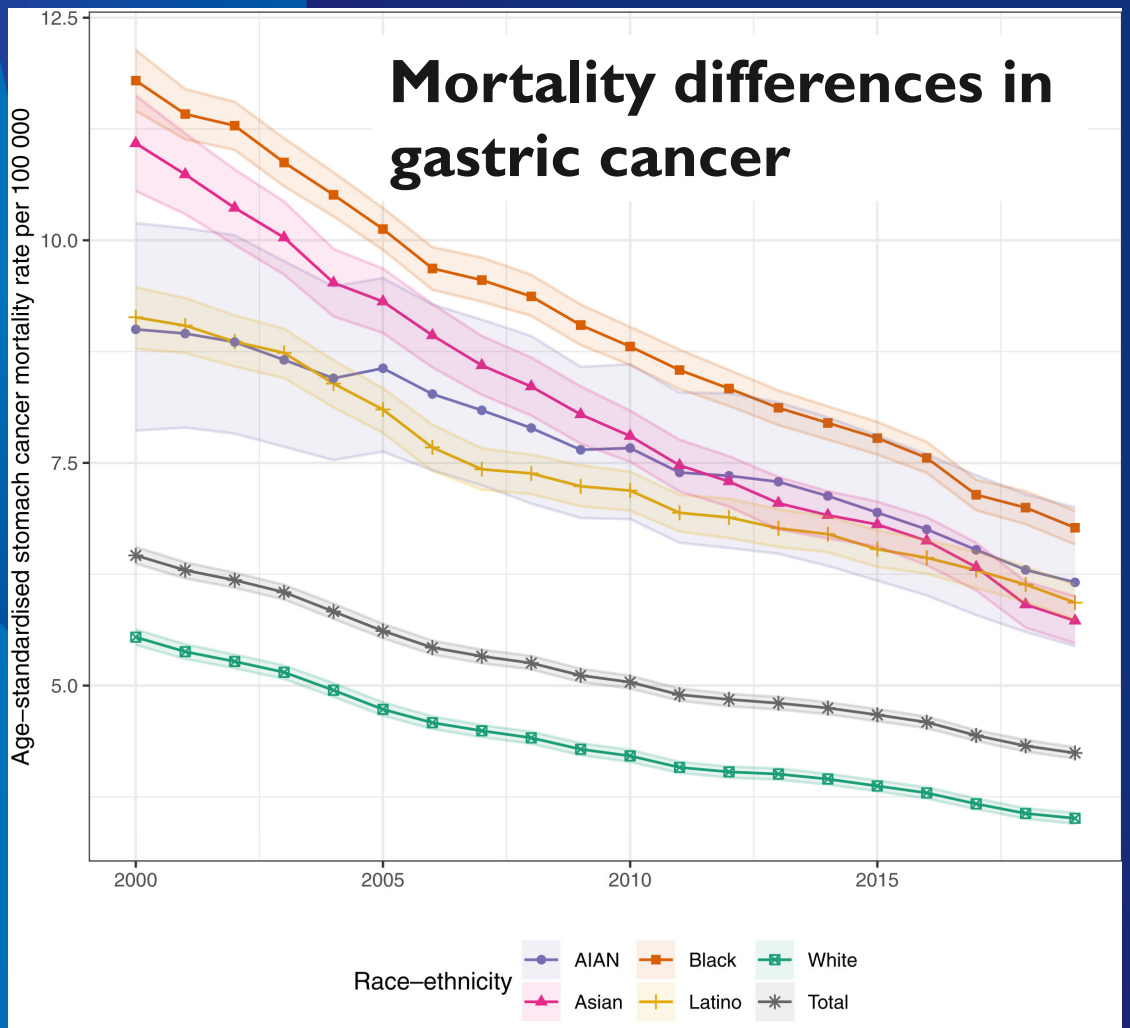
- Our goal is to conduct translational research in diverse and inclusive cohorts that reflect our local community so that knowledge gained will be relevant and impactful for those most affected by gastric cancer
- Our research team is particularly interested in *H. pylori* eradication as a strategy to address gastric cancer disparities and translational approach for early gastric cancer interception

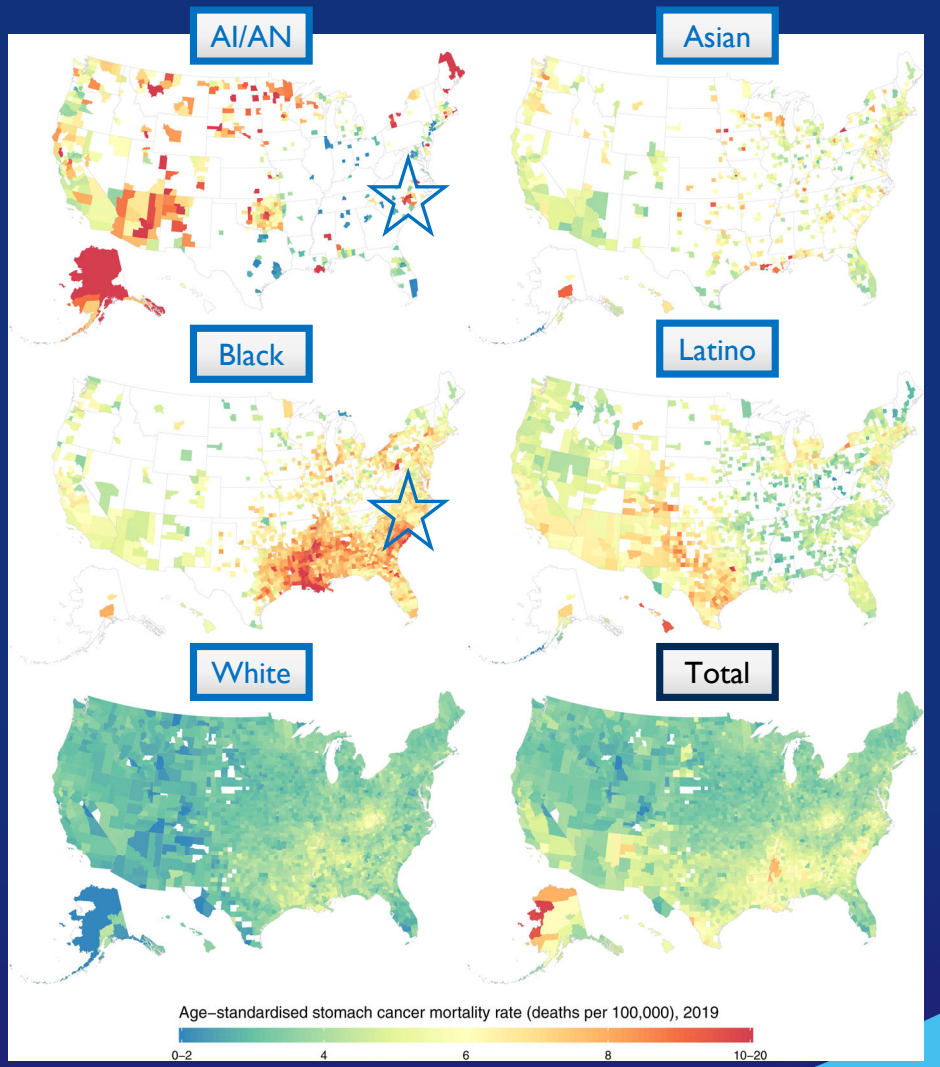


Marked disparities in gastric cancer incidence in the US

Locally, 24% of those presenting for endoscopy and 62% of those diagnosed with gastric cancer are Black patients

SEER Data accessed online October 2023. https://seer.cancer.gov/statfacts/html/stomach.html

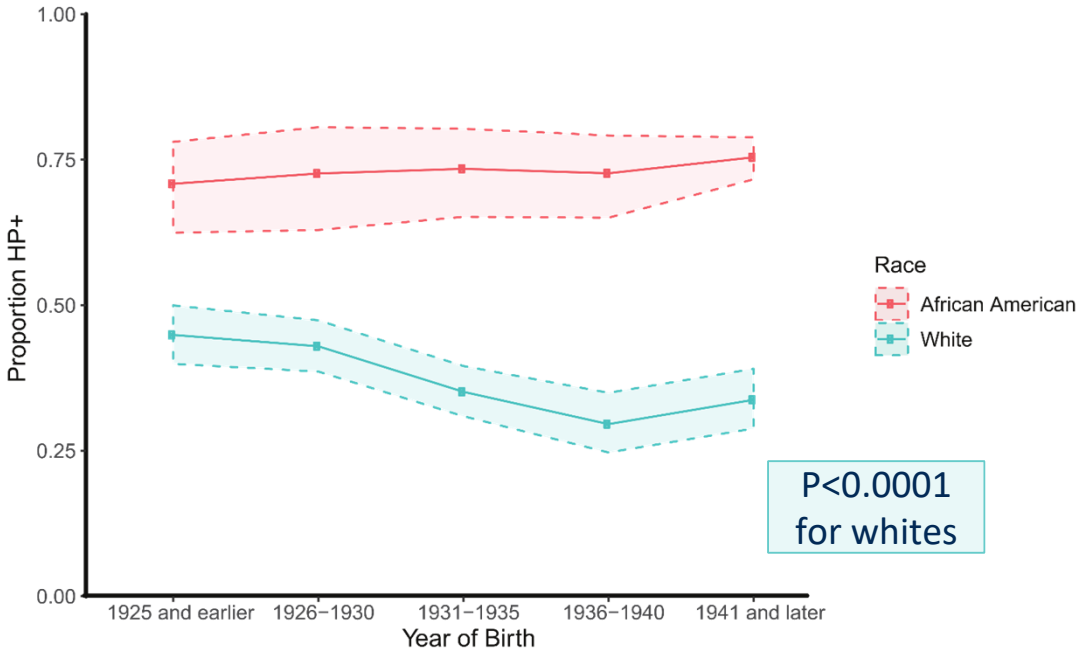




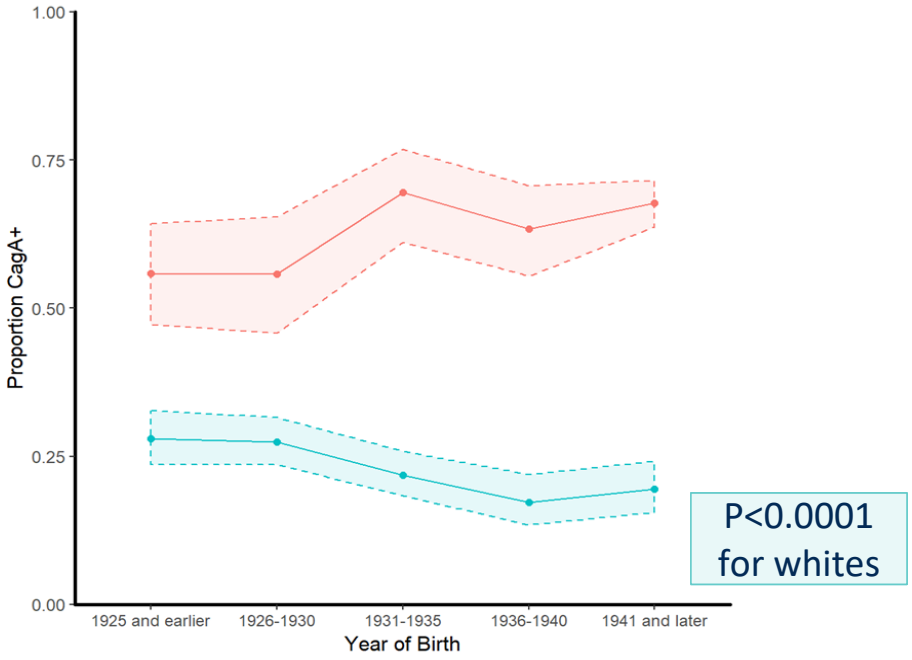
Kenrick P et al. Lancet Regional Health. 2023. DOI: 10.1016/j.lana.2023.100547

Helicobacter pylori Disparities

H. pylori antibody prevalence by year of birth, in MEC, NYU WHS, PLCO, and SCCS (N = 4,476)



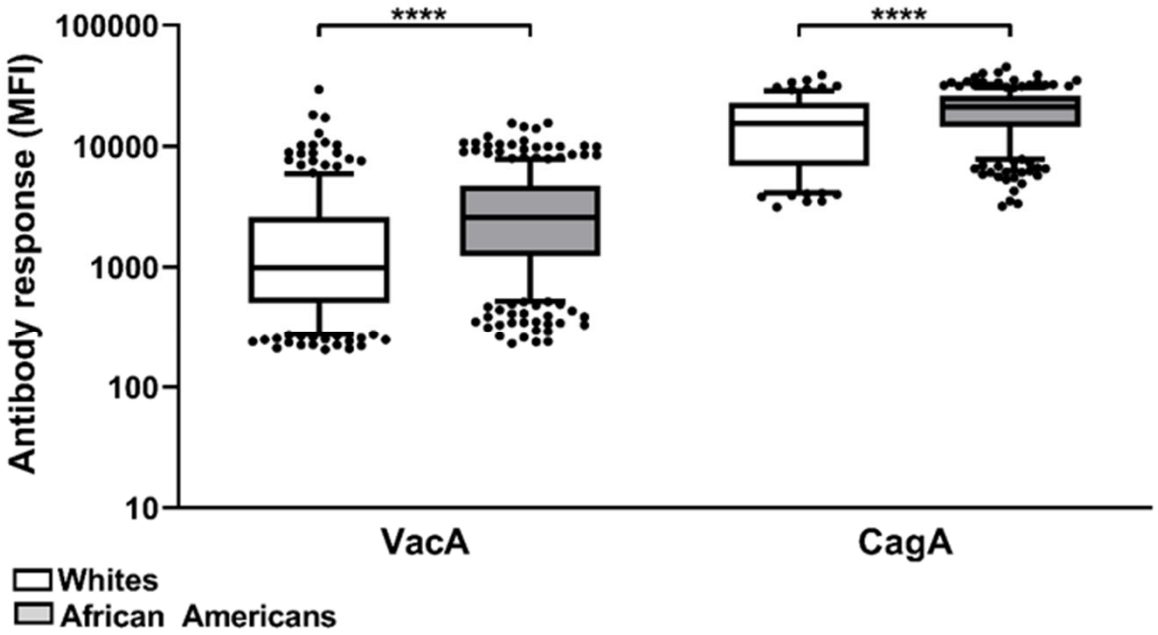
H. pylori CagA antibody prevalence



Varga, Butt et al., *Cancer Epidemiol Biomarkers Prev* 2020.

Helicobacter pylori Disparities

H. pylori VacA and CagA antibody levels by race in the US among _H. pylori_ sero-positives

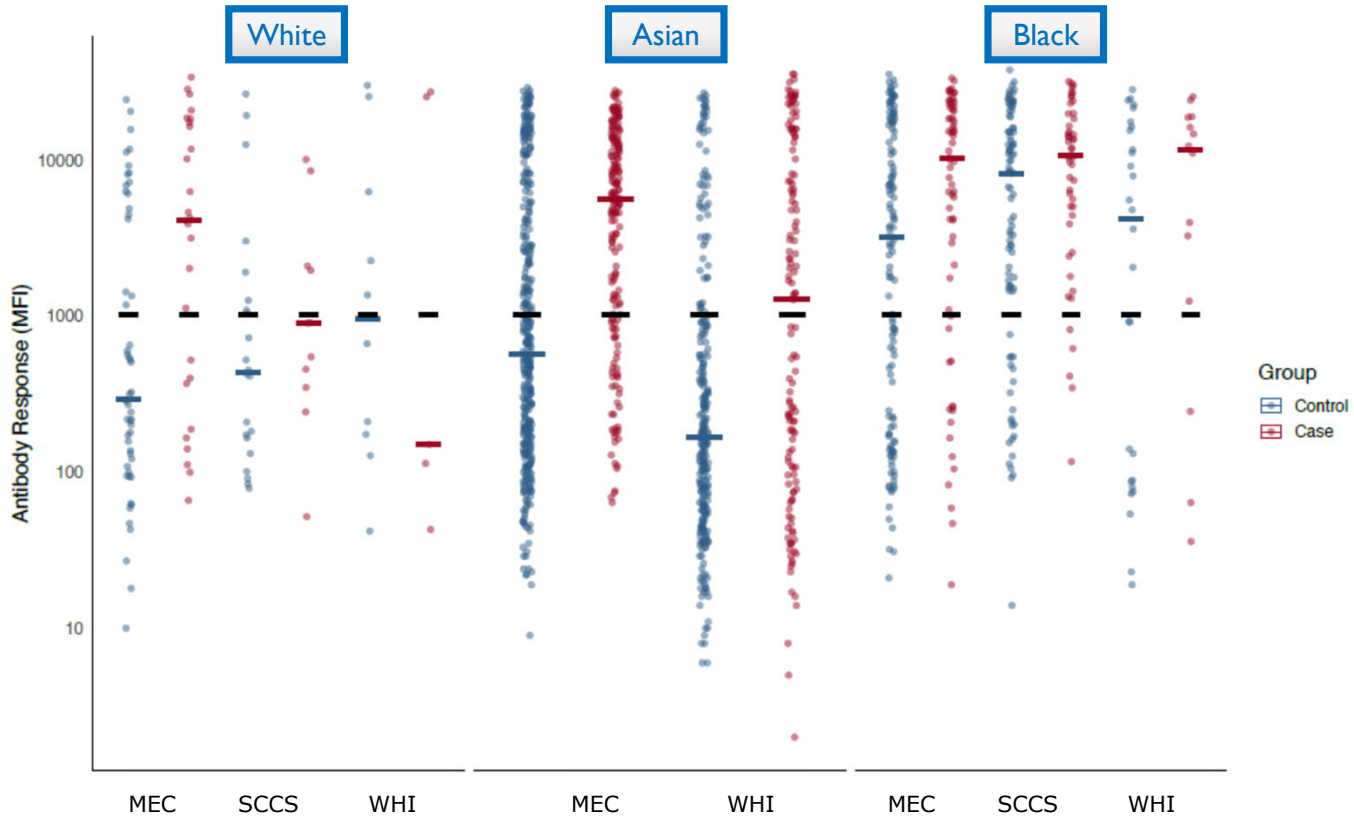


Butt et al., *Cancer Causes and Control* 2020; 31:601-606.

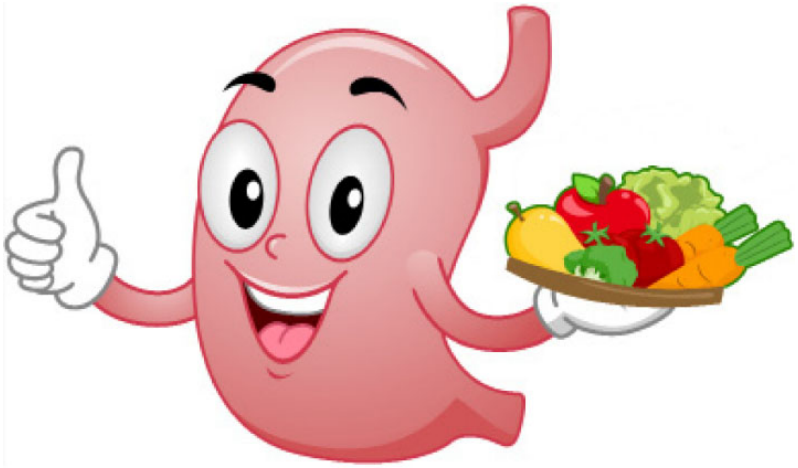
DIGEST

Disparities in gastric cancer: Expanding our understanding of the underlying reasons

CagA antibody levels by race and cohort, non-cardia gastric cancer cases and matched controls



Helicobacter pylori in the Community



DISH

Durham Initiative for Stomach Health

DISH Objectives

- To conduct a pilot study to determine prevalence of *H. pylori* and other stomach cancer risk factors in the Durham, NC community
- To engage and partner with community leaders to serve as advisors to ensure the benefit of increasing overall health and health knowledge in the local population
- To lay the groundwork for a **future multi-site prevention and eradication initiative**, to ultimately reduce the burden of stomach cancer among high-risk populations

Helicobacter pylori in the Community

	Initial project ideas	Final project processes	Impact of Study
Stakeholder meetings			
Input from health services & community-based researchers	One-on-one meetings with select faculty	Roundtable meeting with experts from community outreach to policy implementation	Group feedback enhanced a bigger-picture thinking of the overall goals, towards which the current project would be a first step
Input from community	Development of a steering comm.	Work with established community advisory councils	Capitalizing on already existing relationships with the community is pragmatic and feasible
Input from clinicians	Focus groups with clinicians	One-on-one meetings with clinicians	Scheduling one-on-one meetings with clinicians is more practical
Study planning			
How to approach potential study participants	Meet with church pastor	Meet with church pastor; present during Sunday services; meet with congregants	Importance of meeting the congregation and introducing the topic personally, and presenting the project as a cancer prevention strategy rather than focus on disparity
How to describe the study	Study flyer	Study flyer, study brochure, in-person meetings at the church to explain the project	Interacting with potential study participants in multiple ways allows for an iterative process to best share study information

Helicobacter pylori in the Community

	Initial project ideas	Final project processes	Impact of Study
Participant recruitment			
Location	Clinics	Community (at a local church)	Individuals are most comfortable at sites they frequent and trust
No. of events and sites	Multiple dates and sites	One-day event on site at one church	Scaling down to for ease of execution and assessment of logistics
Date and timing of event	Sunday after services	All-day Tuesday prior to evening services	Provides flexibility for potential participants
Consent	In-person consent	Electronic + in-person consent	To improve event logistics, make as many tasks available to be completed prior to the day of event as possible
Study event			
Questionnaire	Potentially relevant gastric cancer risk factors, plus detailed lifestyle variables	Shorten as much as possible - remove religiosity questions, but add questions to help think about long-term implementation	Participants need to feel that the questions are reasonable, not invasive (like religiosity questions), but that also get to the larger issues of **beliefs/behavior, physician interaction, and finances**
Biospecimen Collection	Breath test, blood draw, stool sample	Breath test and blood draw	The stool sample would not have added significantly more information, but would create an additional barrier to participation.

Helicobacter pylori in the Community

	Initial project ideas	Final project processes	Impact of Study
Study event			
Participant reimbursement	Amazon gift card	Walmart gift card plus boxed meal, social security number waiver received	Walmart was favored by this community; participation during lunch or dinner hour highlighted importance of boxed meal; requiring a social security number provides an additional barrier.
Follow-up			
Individual results	No return of individual results	Results mailed to participant with an accompanying phone call by study team within 2 weeks of study event	There is value and need to give back to participants. Follow-through includes: staff phone-calls to results, patient navigators provided to those with financial barriers, and physician executive summary to inform guideline-concordant H. pylori treatment.
Re-testing	No re-testing	Follow-up events at church to re-test after treatment	There is documented ~30% failure of H. pylori treatment to eradicate; re-testing allows us to re-visit the community, confirm eradication or to support seeking of salvage treatment.

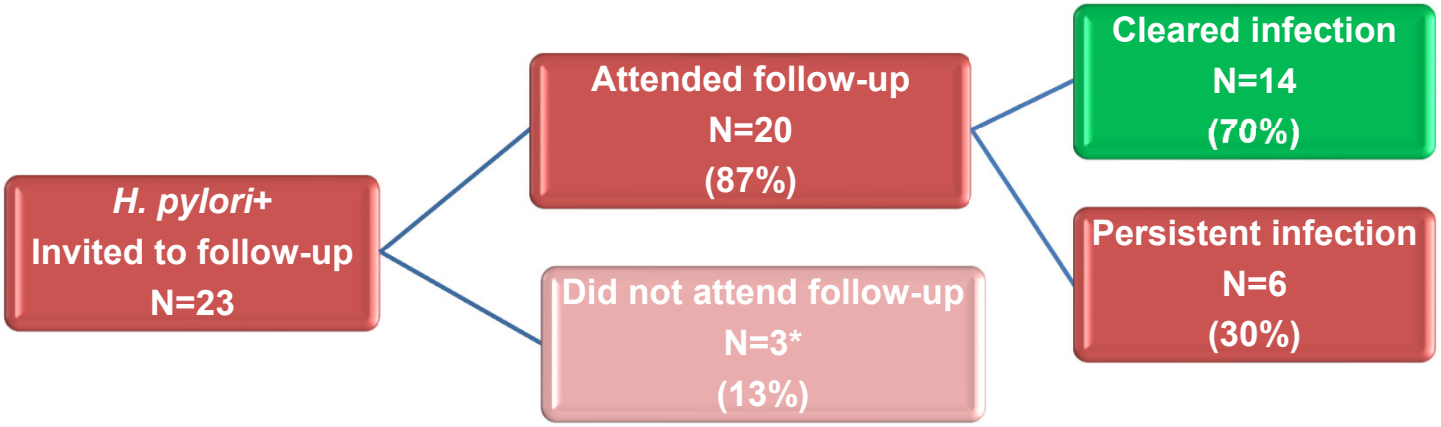
Helicobacter pylori in the Community

DISH Study Event – May 15, 2018, 2-8pm
at The River Church

- **92 individuals participated**, completing:
  an extensive questionnaire, taking the breath test, and donating a blood sample
- **25% were found to be *H. pylori*+ by the breath test**
- Results were returned to individuals within 2 weeks, along with a physicians' executive summary including information on approved treatment
- 6-months post-event, on November 13, we did a follow-up visit at the church, where we re-tested on site, and returned results there

Crankshaw et al., *BMC Gastro* 2020.

Helicobacter pylori in the Community



- 70% of those originally *H. pylori*+ who returned for follow-up had successfully eradicated the bacteria.
- Reasons for persistent infection include:
  - Prescribed the wrong therapy
  - Non-adherence to the full course of treatment
  - *H. pylori* antibiotic resistance to first-line therapy

Crankshaw et al., *BMC Gastro* 2020.

Helicobacter pylori in the Community

DISH Follow-up

Personal Stories

- One participant has had stomach distress for years, including a hospital stay, where she was asked to take the breath test for *H. pylori*, but she refused.
- After our church engagement, testing, and recommendations, she eradicated her *H. pylori* and feels significantly better.

Helicobacter pylori in the Community

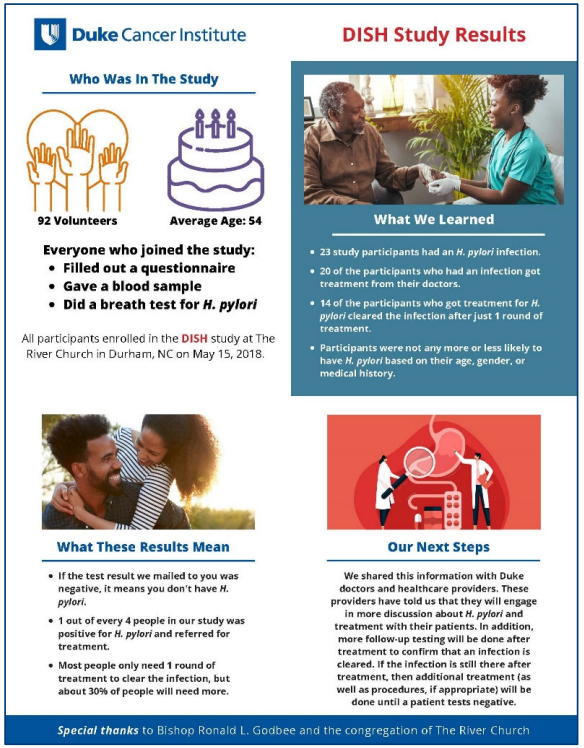
DISH Follow-up

Personal Stories

- One participant we determined to have a persistent infection met with their physician who decided to perform an endoscopy and found multiple ulcers. The physician also sent the tissue to be tested for antibiotic resistance. The results show the participant was resistant to clarithromycin. Because of this, quadruple therapy was prescribed.
- The most recent endoscopy showed the ulcers are healing and the patient has cleared her *H. pylori* infection.

Helicobacter pylori in the Community

Partnership with Bishop Ronald Godbee, Pastor of the River Church



Helicobacter pylori in the Community

Helicobacter pylori in the Clinic

grace

gastric immune response and cancer interception

A GI Tissue Repository Study

GRACE Team

Katie Garman
PI

Meira Epplein
PI

Nina Salama
Site PI, FHCRC

Sydnee Crankshaw
Program Manager

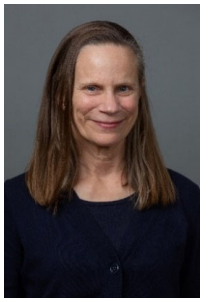
Anna Diocareza
Lead CRC

Amanda Mandy
CRC

Paula Scotland
Lab analyst II

DCI Core Partners

Shannon McCall
Biospecimen



Donna Niedzwiecki
Biostatistics

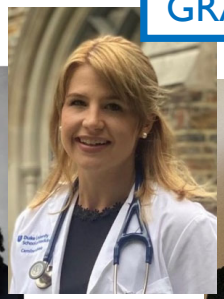
GRACE Trainees

Priya Alagenan
3rd/4th year
med student

Hannah Brown
Internal medicine
resident

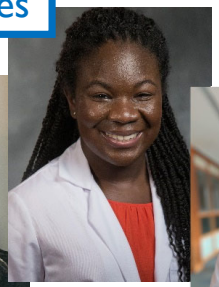
Danielle Mebuge
Pediatric GI
fellow

Grace Sekaya
DIRECT Fellow
gap year trainee



Caroline Labriola
3rd year
med student

Rachel Zuzul
3rd year
med student



Allison Taylor
Hem/Onc
fellow

Jacqueline Emerson
3rd/4th year
med student

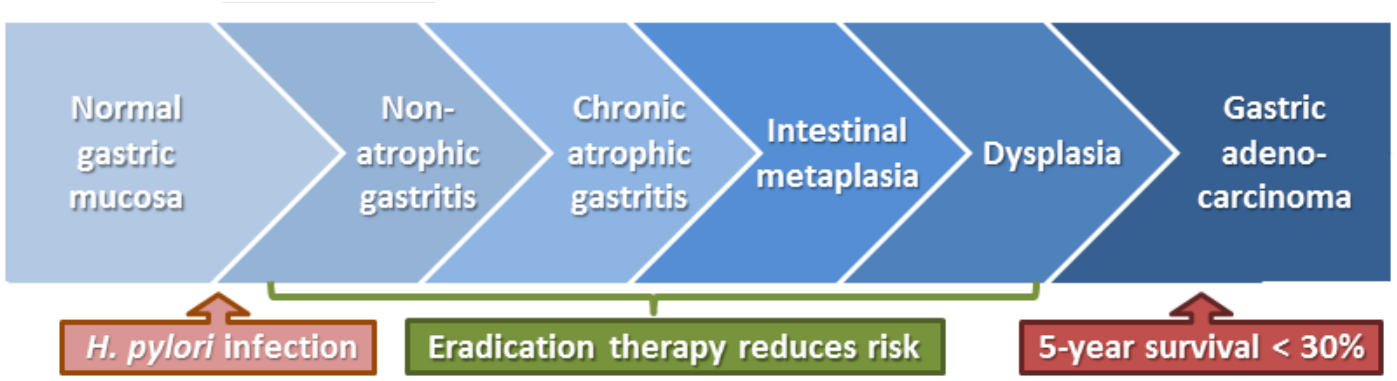
Serach Patterson
DIRECT Fellow
gap year trainee

Angel Hailemariam
DIRECT Fellow
gap year trainee

Lucas Collins
3rd year
med student

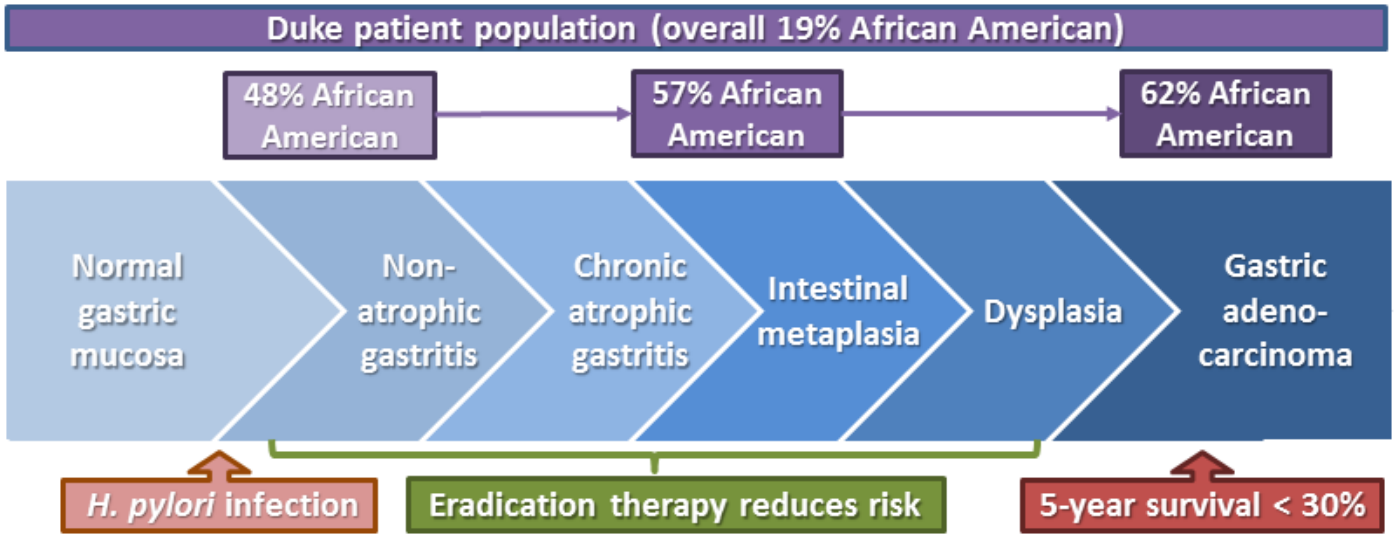
Helicobacter pylori in the Clinic

The Correa Cascade of gastric carcinogenesis



Helicobacter pylori in the Clinic

The Correa Cascade of gastric carcinogenesis

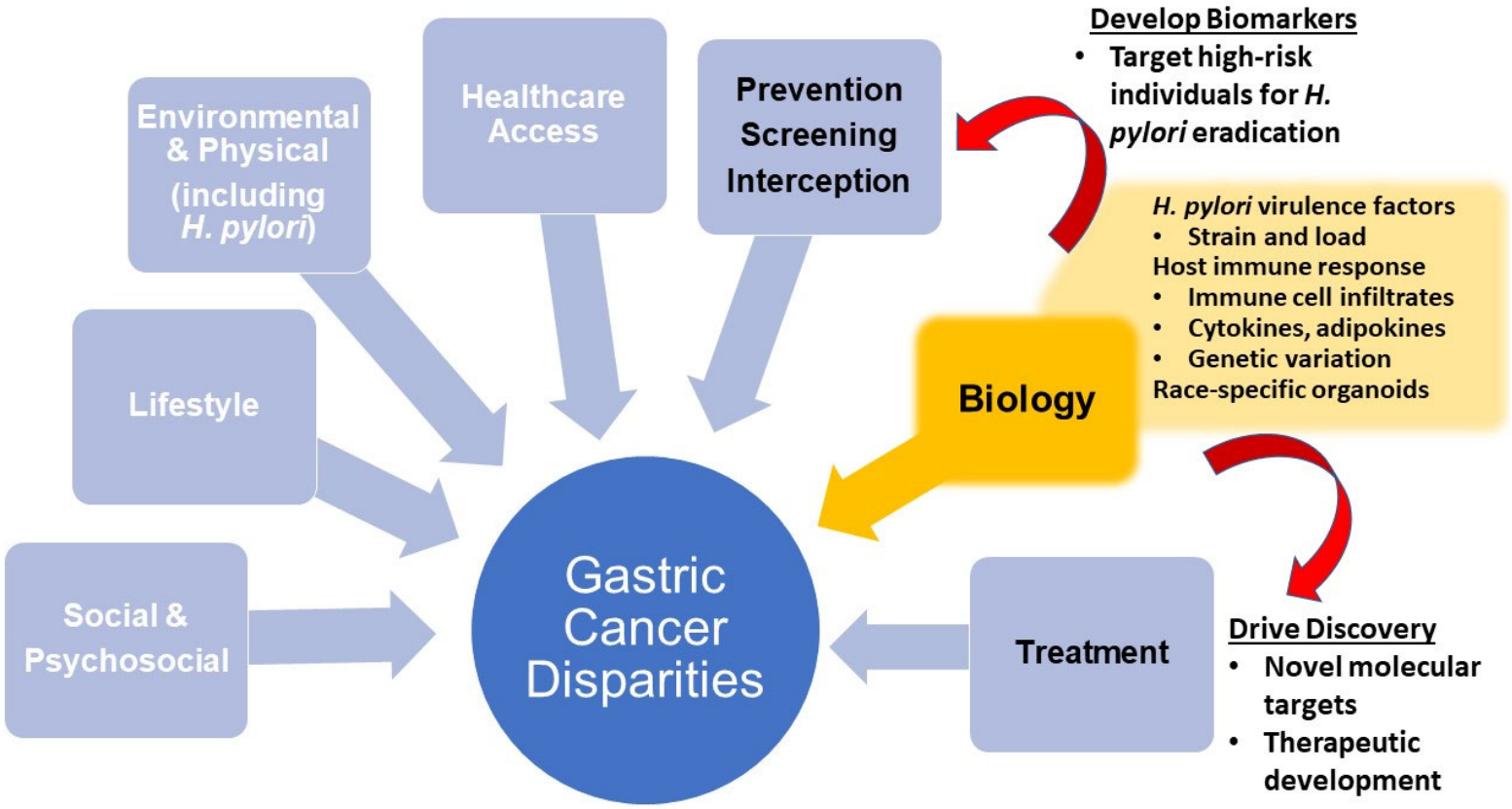


Creating a New Translational Research Cohort

- To develop new strategies for cancer interception and treatment, **basic/translational cohorts should reflect the demographics of those affected by the disease.**
- Research activities, such as designing studies, developing surveys, recruiting and enrolling patients, offer opportunities for partnership with research participants.

How can we build deeper trust of translational research and achieve new advances in gastric cancer? Our goal was to generate a new diverse and inclusive cohort to understand factors underlying health disparities in gastric cancer and to generate an inclusive set of pre-cancer gastric organoids to develop novel approaches for personalized cancer interception.

Factors affecting Gastric Cancer Disparities in the US

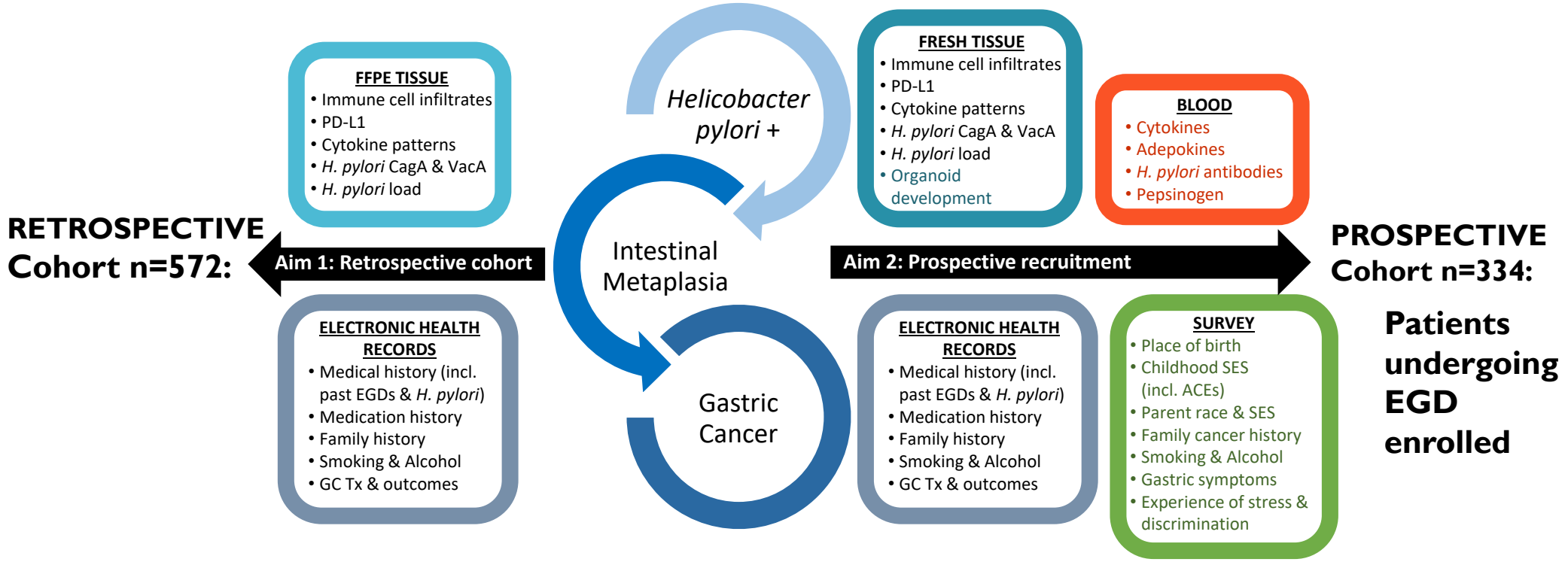


Systemic Racism and related socioeconomic factors may impact several areas across this continuum as well as willingness to participate in research.

grace

gastric immune response and cancer interception

A GI Tissue Repository Study



Helicobacter pylori in the Clinic

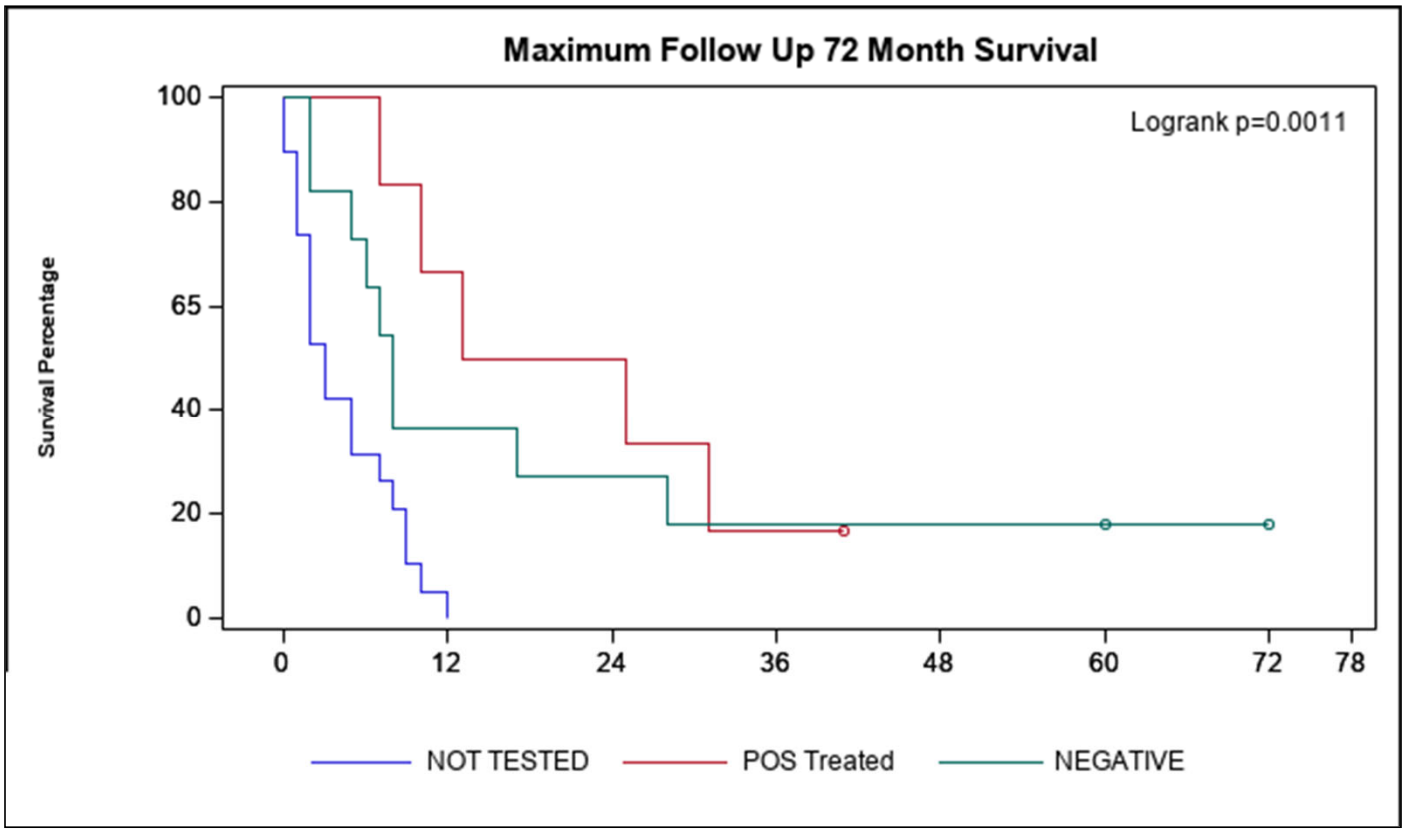
H. pylori Testing and Treatment and Gastric Cancer Survival

	Hazards Ratio[a]	95% CI	P-value
Ever tested for *H. pylori* prior to or at cancer diagnosis?			
Never	1.00	(ref)	
Tested positive and treated <1 year prior to or at cancer diagnosis	**0.21**	**0.08-0.58**	**0.003**
Tested positive and treated ≥1 year prior to diagnosis	0.45	0.18-1.11	0.08
Tested positive and not treated	2.01	0.55-7.38	0.30
Tested negative	0.49	0.24-1.00	0.05
Age (per one year increase)	1.00	0.98-1.03	0.96
Self-reported race (ref: white)			
Black	1.17	0.66-2.08	0.58
Insurance (ref: private)			
Medicare	0.57	0.28-1.13	0.11
Other	0.93	0.42-2.06	0.86
Treatment			
No chemotherapy	2.21	1.00-4.86	0.05
No radiation	1.02	0.53-1.95	0.96
No neoadjuvant treatment	2.22	1.07-4.60	0.03
AJCC 8 stage (ref: I & II)			
Stage III	6.83	2.24-20.88	0.0007
Stage IV	13.83	5.88-32.55	<0.0001
Stage missing	17.90	5.68-56.42	<0.0001

Garman et al. *Gastric Cancer* 2024

Helicobacter pylori in the Clinic

Stage IV Gastric Cancer - Survival by *Hp* Treatment Status



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gastric immune response and cancer interception

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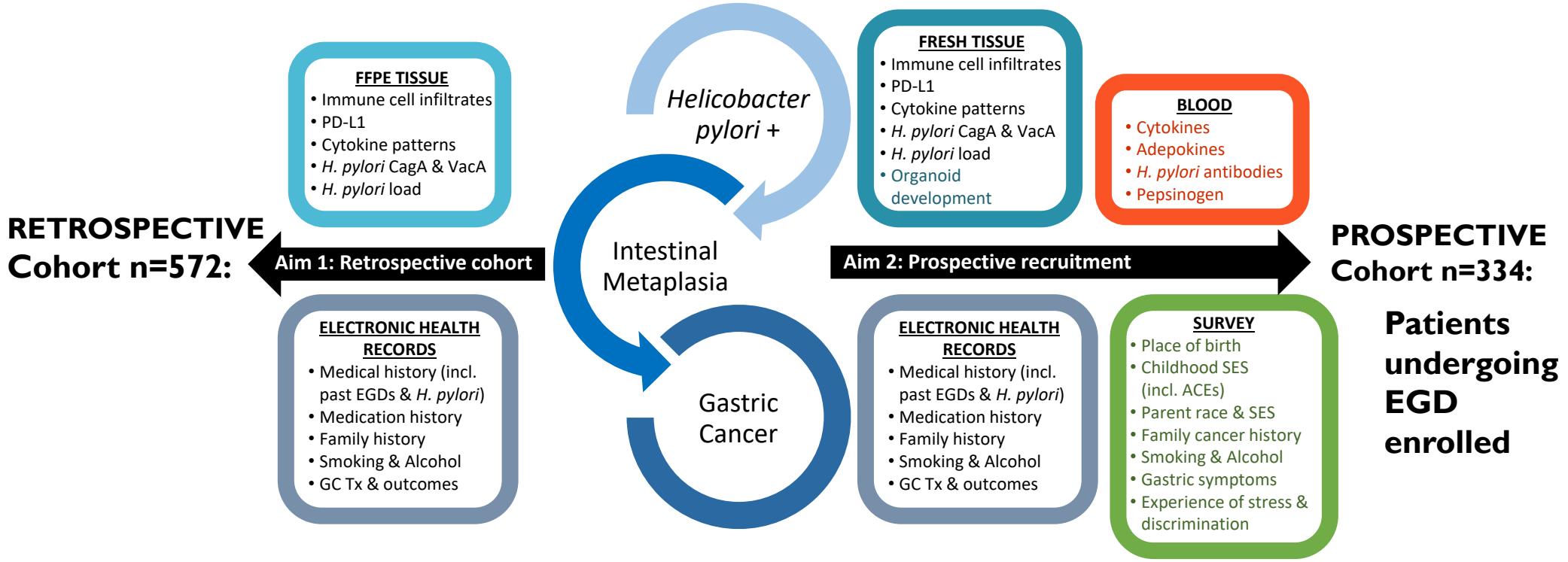
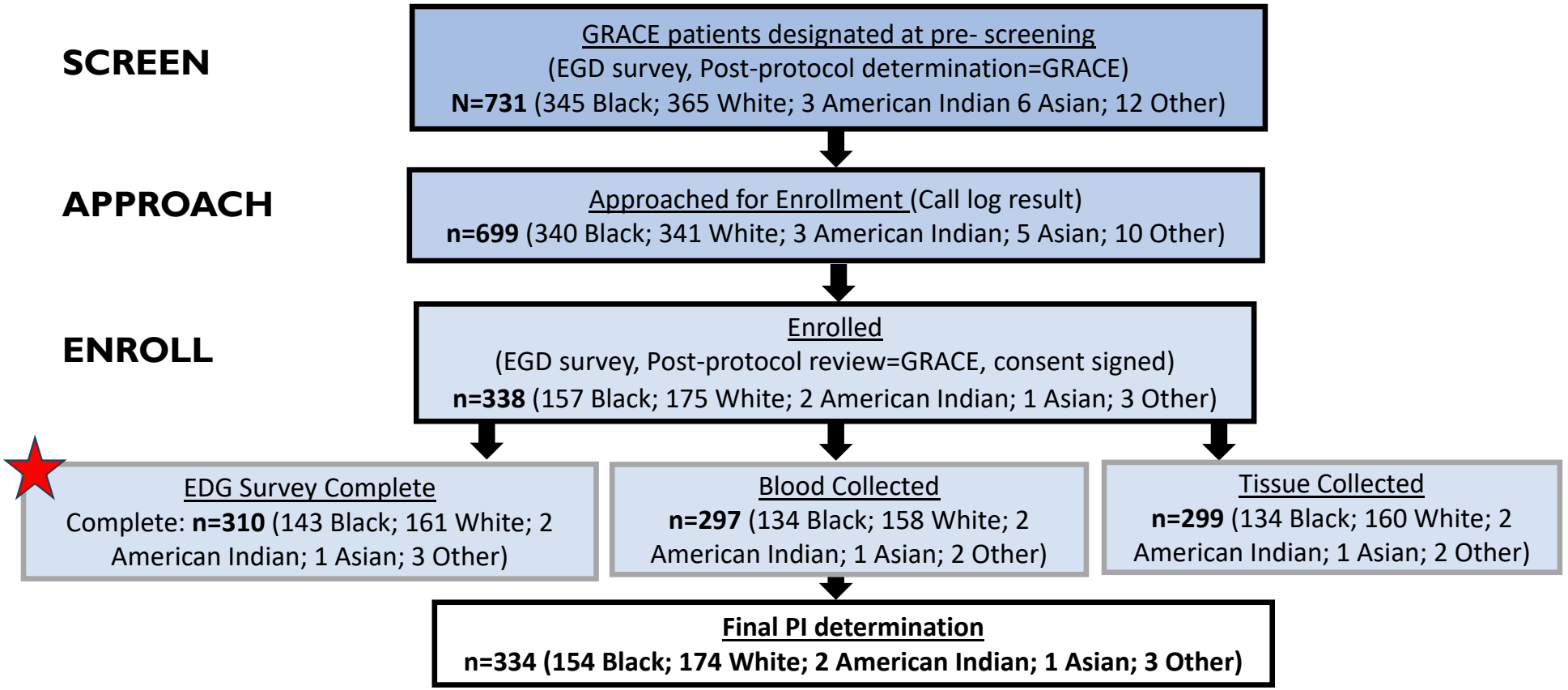
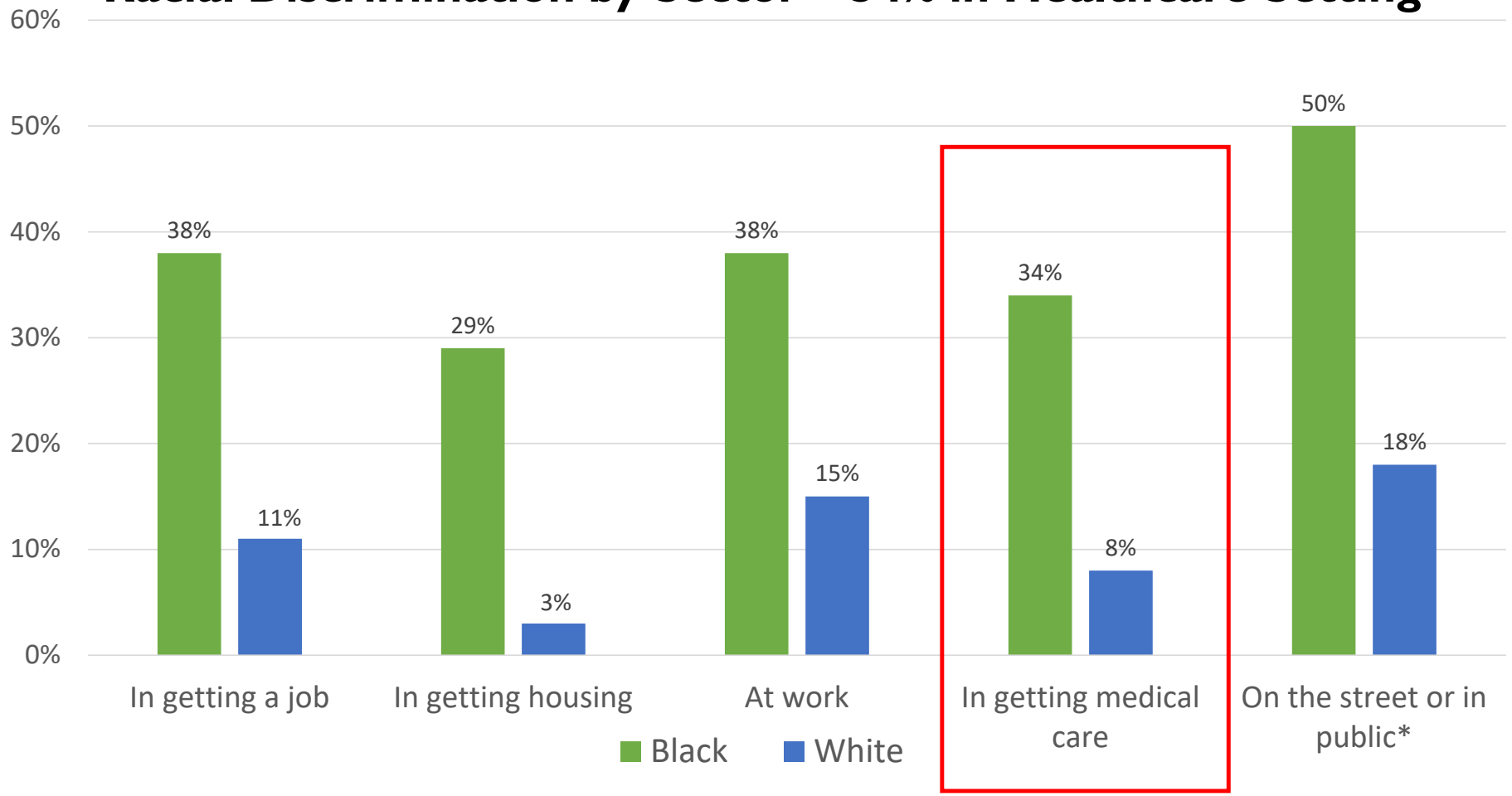


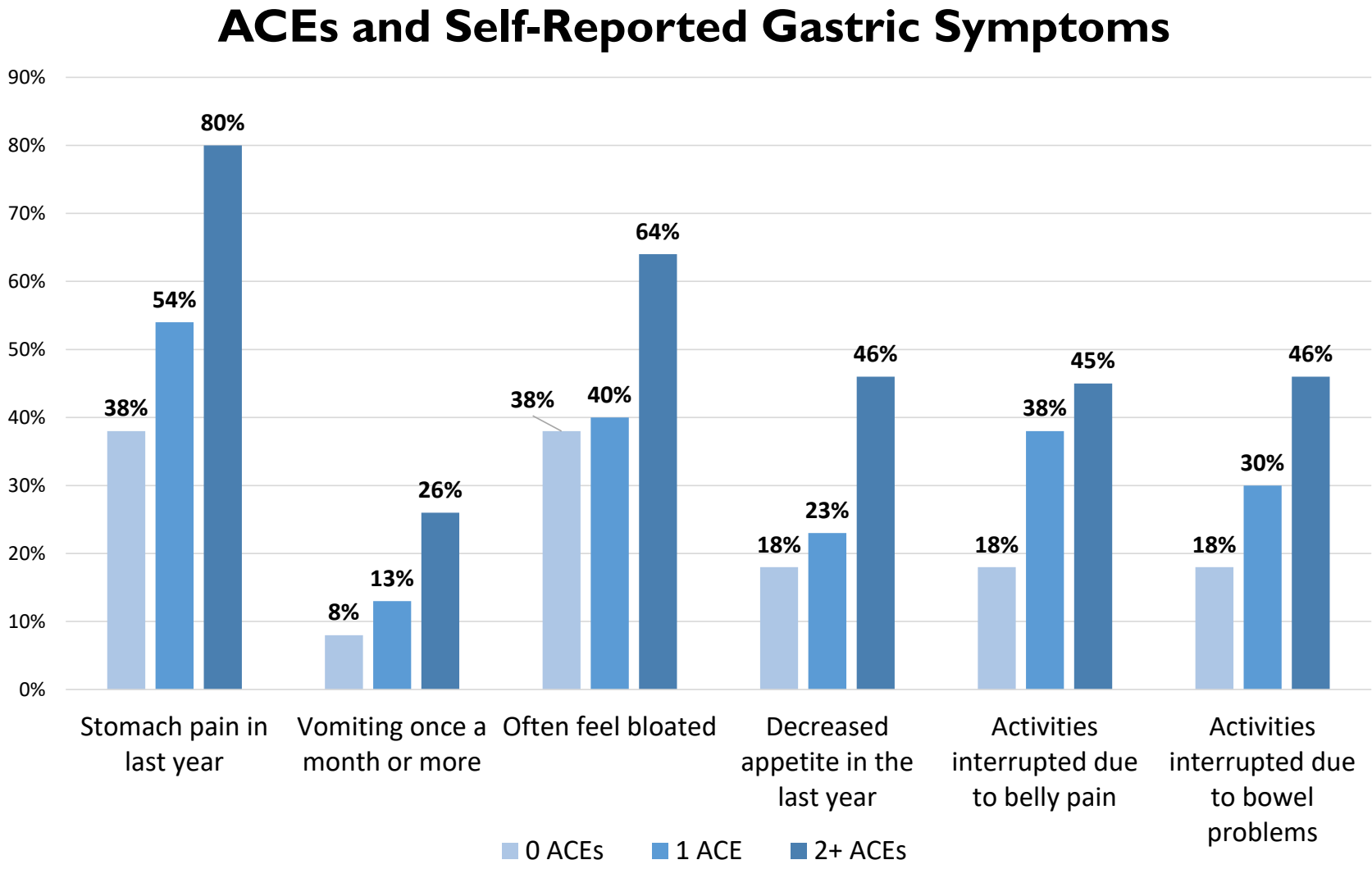
INTENTIONAL INCLUSION ACROSS ALL ASPECTS OF RECRUITMENT



Black patients comprise 24% of those presenting for endoscopy, 47% of screening group, 49% of those approached for enrollment and 46% of participants enrolled in the prospective cohort.

Self-Reported Survey Data in Enrolled Participants: Racial Discrimination by Sector – 34% in Healthcare Setting




ACEs and Self-Reported Gastric Symptoms
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
38%
54%
80%
8%
13%
26%
38%
40%
64%
18%
23%
46%
18%
38%
45%
18%
30%
46%
Stomach pain in last year
Vomiting once a month or more
Often feel bloated
Decreased appetite in the last year
Activities interrupted due to belly pain
Activities interrupted due to bowel problems
0 ACEs
1 ACE
2+ ACEs

Key concepts for inclusion in clinical research

Intentionality – *Planning and Screening, and Enrollment*

Bi-directional community engagement – *Prioritization of Research Questions, Recruitment Strategies, Survey development*

Outreach – *Community Events, Partnership, Accessibility*

Trustworthiness – *Recognizing past, Listening and ensuring Participants feel heard, Answer all Questions*

Integrity – *Best research practices and scientific rigor*

Transparency – *Clear communication*

Return of results – *Critically Important aspect of Trustworthiness and Partnership - Share Gratitude and Clinical Relevance*

Ref: Washington V et al. Clin Pharmacol Ther (2023) 113:575-584.

Thank you!

GRACE team

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Allison Taylor
Jacqueline Emerson
Serach Patterson
Angel Hailemariam
Lucas Collins
Shannon McCall
Donna Niedzwiecki

DUKE UNIVERSITY

Duke Cancer Institute

Steve Patierno
Mike Kastan
Sydnee Crankshaw
Yadu Raveendran
Tomi Akinyemiju
Aretha Rice
Angelo Moore

Pathology

Shannon McCall
Will Jeck

Population Health Sciences

Jennifer Gierisch
Kevin Weinfurt
Leah Zullig
Kathryn Pollak

VANDERBILT

Epidemiology

Bill Blot
Martha Shrubsole
Hui Cai
Wei Zheng
Matt Varga

Gastroenterology

Rick Peek
Pelayo Correa
Tim Cover

JEFFERSON UNIV.

Terry Hyslop
Yutong Li

FRED HUTCH

John Potter
Nina Salama
Lesley Tinker

UNIVERSITY OF HAWAII

Loic Le Marchand
Lynne Wilkens
Kami White

UNC – Chapel Hill

Ronnie Bell
Ryan Dial

RUTGERS

Haejin In

GERMAN CANCER RESEARCH CENTER

Michael Pawlita
Julia Butt
Tim Waterboer

HARVARD

Mingyang Song
Howie Sesso

NCI, NIH

Gwen Murphy
Christian Abnet
Phil Taylor
Allan Hildesheim
Sonja Berndt
Tram Lam

AMERICAN CANCER SOCIETY

Lauren Teras

ALBERT EINSTEIN UNIVERSITY

Sylvia Smoller
Gloria Ho

NYU

Yu Chen

JOHNS HOPKINS

Kala Visvanathan

THE RIVER CHURCH

Bishop Ronald Godbee

Valarie Worthy

All of the wonderful congregation members who supported and participated in DISH

SAICEP

Ronny Bell, Ryan Dial

All of the wonderful NC tribal members who supported and participated in STASH

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