

Challenges and Opportunities for Promoting Patient Access in Health Equity in Integrated Diagnostics

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M E D I C I N E

Disclosure Information

Otis W. Brawley, MD, MACP, FRCP

I have the following financial relationships to disclose:

**Genentech/Roche, Grail, PDS Biotech, Lyell Immunopharma, Incyte,
and Agilent**

– and –

**I will not discuss off label use and/or investigational use in my
presentation.**

Objectives

- The cost of healthcare in the US
- Define “Health Disparities” in the US
- Broadly define health equity
- Discuss the complex interaction of the two.
- Make a few observations about medicine.

THE COST OF AMERICAN HEALTHCARE

U.S. Health Care Spending (2019)

\$3.8 TRILLION

17.7% of US GDP (\$21.43 Trillion)

Martin, Hartman, Lassman, et al. Health Aff, 2021

Health Expenditure as a percentage of Gross Domestic Product (GDP) 2019



• United States	17.7%
• Germany	11.7%
• Switzerland	11.3%
• France	11.1%
• Japan	11.0%
• Sweden	10.9%
• Canada	10.8%
• Belgium	10.7%
• Norway	10.5%
• United Kingdom	10.2%
• Netherlands	10.2%
• Finland	9.2%
• Israel	7.5%

[Health expenditure as share of GDP by country | Statista](#)

Disparities in Health

- The concept that some populations (however defined) do worse than others.
- The measure can be:
 - Incidence
 - Mortality
 - Survival
 - Quality of life

Disparities in Health

Populations can be defined or categorized by:

- Sex or Gender
- Race
- Area of geographic origin
- Family/Tribe
- Ethnicity and Culture
- Area of Residence
- Socioeconomic Status

Race

Defined by US Office of Management and Budget (OMB) every ten years.

- Sociopolitical and not biologic by OMB definition
- Rejected by Anthropological community as non-scientific
- Recent AMA statements condemn the biologic use of race

Colon Cancer

Quality of Pathologic Assessment

- Inadequate assessment of the specimen (the number of nodes examined) is associated with the hospital where care was received.
- Blacks are more likely to be treated in a hospital where the pathologist has multiple cases per day to process.
- Inadequate staging due to socioeconomic factors leads to some Blacks with true stage 3 disease being labeled stage 2 and some of the talk that colorectal cancer is more aggressive among Blacks!!!

Rhoads et al, Cancer 2012 Jan 15;118(2):469-77

Poor Quality of Care

- A substantial number of Americans of all races and incomes get “less than optimal cancer care!”
- Racial minorities and the poor are more likely to get less than optimal cancer care.
 - No appropriate screening or poor-quality screening
 - No diagnostics or poor-quality diagnostics
 - No surgery or poor-quality surgery
 - No chemotherapy or inappropriate dosing of chemotherapy
 - No radiation therapy or poor-quality radiation therapy

Poverty and Radiation Therapy

- When candidates for radiation therapy, the poor are less likely to receive it.
- Quality of radiation therapy is an issue for those who get it.
 - Aiming of the beam
 - Quality of machine (poor people often have lower energy, older machines available to them).

Mattes MD, Suneja G, Gaffty BG et al. Adv Radiat Oncol. 2021

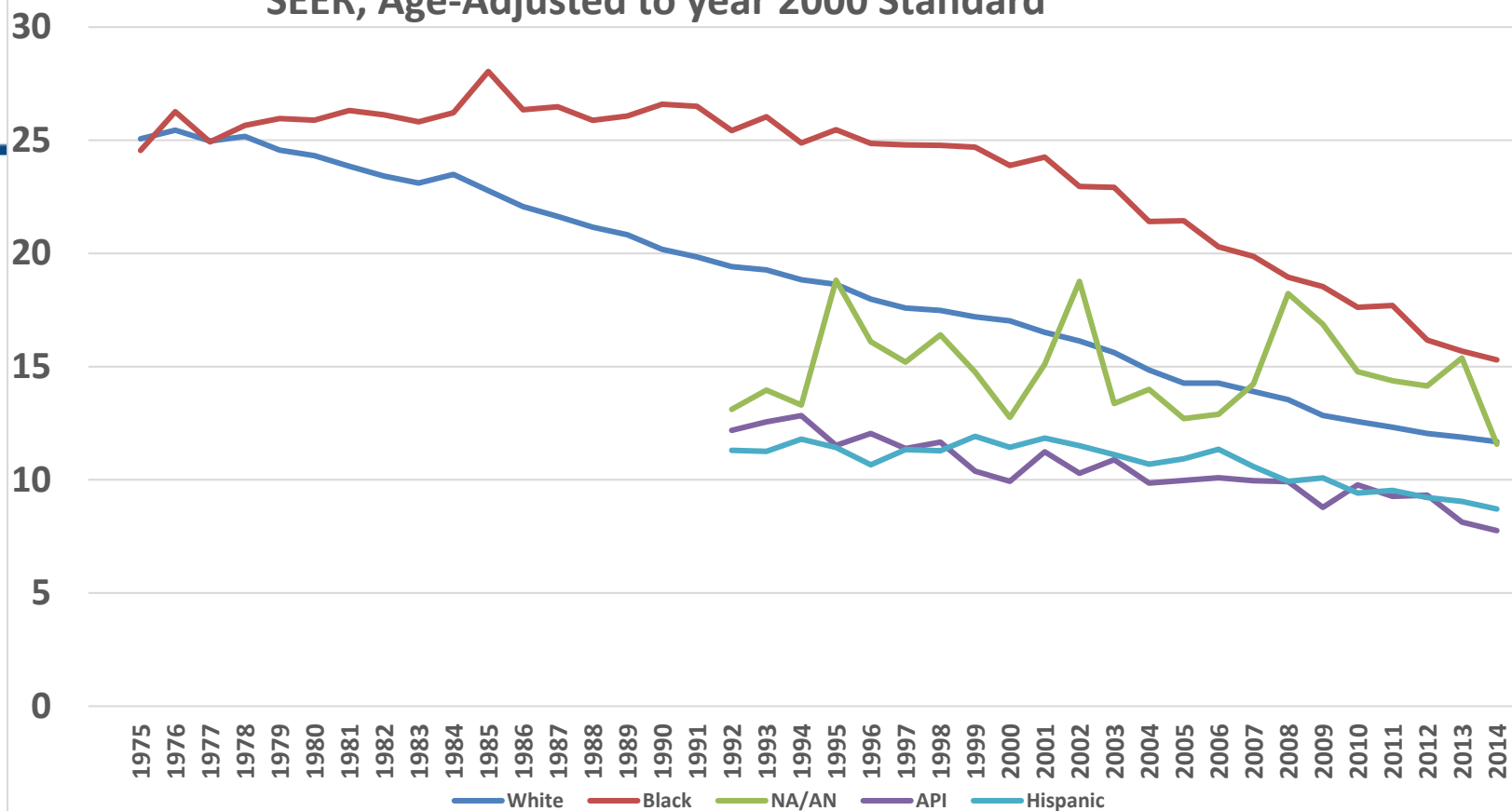
Washington C, Goldstein DA, Moore A, et al. Am Soc Clin Oncol Educ Book. 2022

FACT

When a new useful medical intervention is introduced, it initially creates disparities!

For example: colorectal cancer screening and treatment improved in the 1970's

Female Colorectal Cancer Mortality, 1975-2015 SEER, Age-Adjusted to year 2000 Standard



Siegel, et al. CA 2018;68:329-339

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Key Point!!!

The Most Important Question in Cancer Control

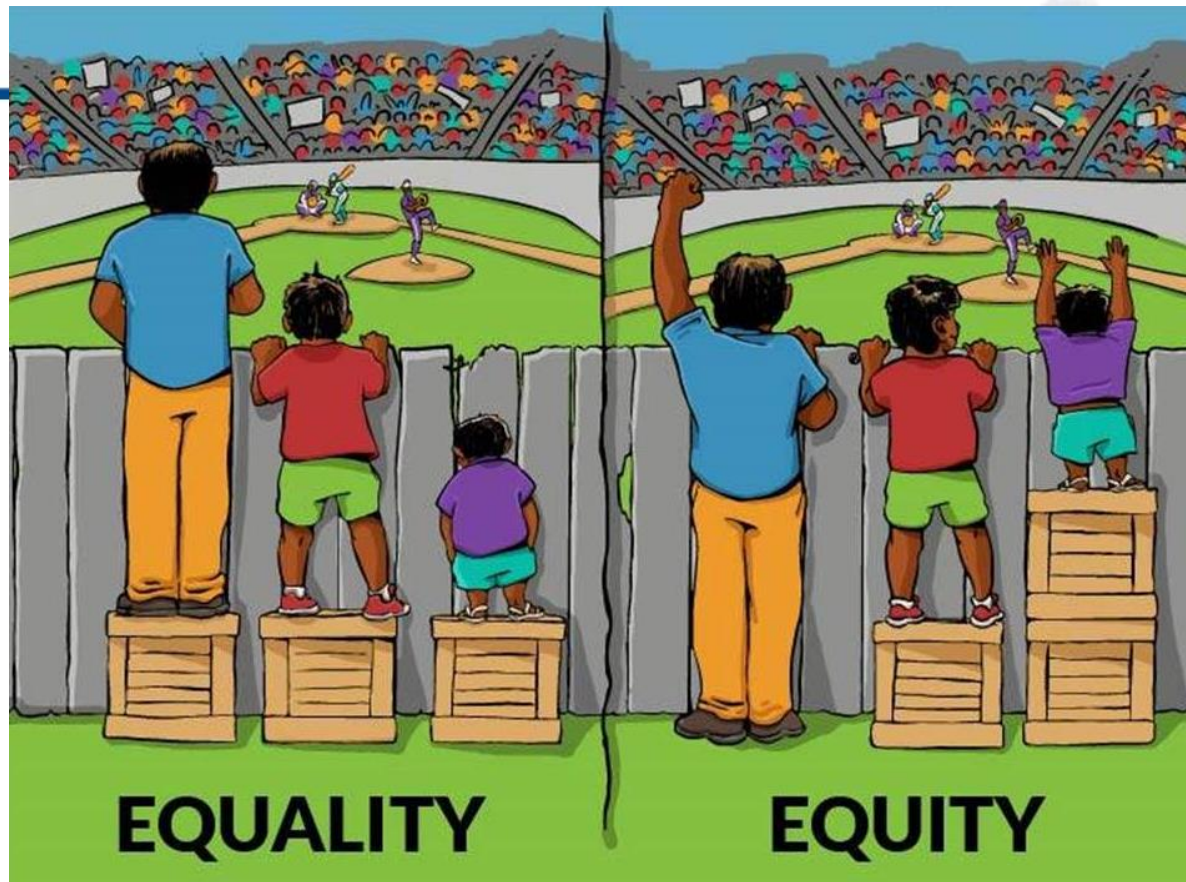
How can we provide adequate high-quality care (to include preventive services) to populations that so often do not receive it?

- Many Americans get their care in resource poor settings.
- Unnecessary care consumes limited resources and interferes with abilities to provide necessary care.
- The provision of unnecessary care is a cause of health disparities.

High Quality Health Care

“Doing the right thing, at the right time, in the right way, for the right person – and having the best possible results.”

The National Academy of Medicine

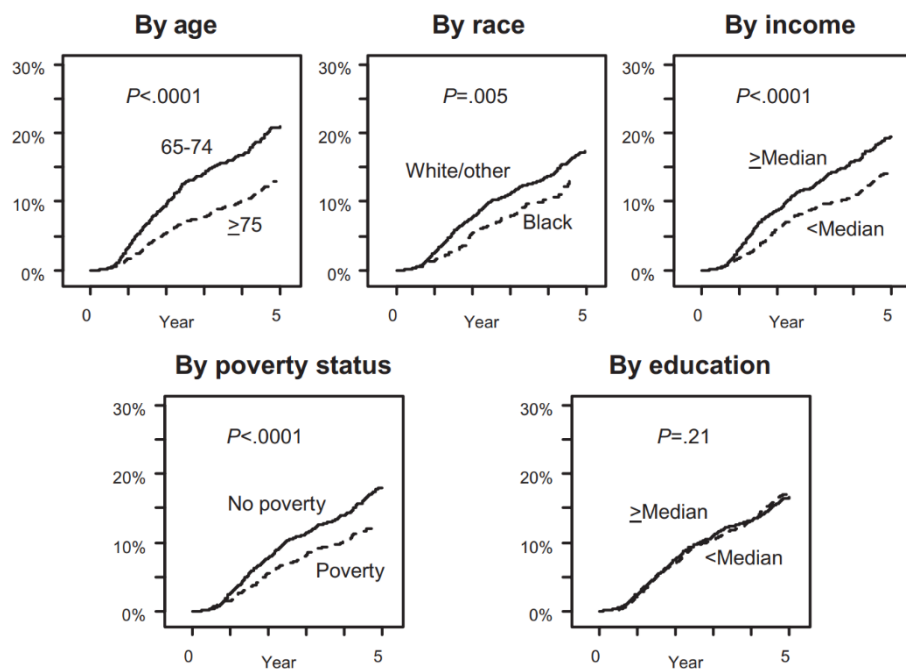


Implementation Science

“The study of methods or strategies to promote the systematic uptake (diffusion) of evidence and evidence-based practices, programs, and policies into routine practice.”

Eccles MP, Mittman BS, Implementation Sci: 2006

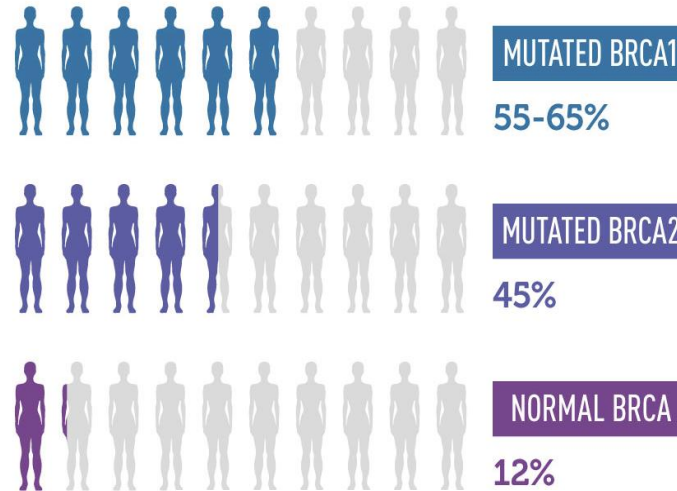
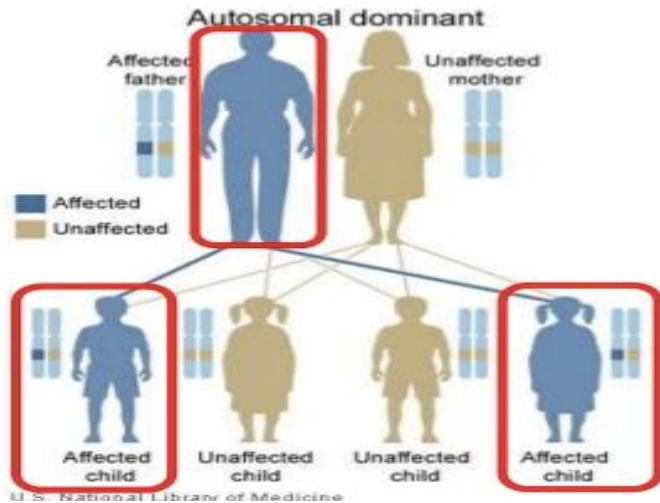
Diffusion and Uptake of a New Therapy



- Docetaxel became standard of care for castration-resistant prostate cancer in 2001
- Uptake of docetaxel use was slower in older patients, Black patients, and poorer patients

Unger J, Hershman DL, JNCI: 2015

Underutilization of Genetic Testing in Minorities



- Most common breast cancer gene mutations are BRCA 1 and BRCA 2
- Genes that regulate DNA repair
- 5-10% of all breast cancers are linked to these genes
- Linked to other hereditary cancers: ovarian, prostate, pancreas
- Other genes: CHEK2, PALB2, ATM, PTEN, BRIP1, BARD1, CDH1 that can increase risk of

Racial and Ethnic Disparities in Genetic Testing at a Hereditary Breast and Ovarian Cancer Center

Eloise Chapman-Davis, M.D.¹, Zhen Ni Zhou, M.D., Ph.D.¹, Jessica C. Fields, M.D.¹, Melissa K. Frey, M.D.¹, Bailey Jordan, B.S.¹, Katherine J. Sapra, M.P.H., Ph.D.¹, Sudeshna Chatterjee-Paer, M.D.¹, Ann D. Carlson, M.S., C.G.C.², and Kevin M. Holcomb, M.D.¹

¹Division of Gynecologic Oncology, Department of Obstetrics and Gynecology, New York Presbyterian-Weill Cornell Medicine, New York, NY, USA;
²Genetic Risk Assessment Program, Weill Cornell Medicine, New York, NY, USA.

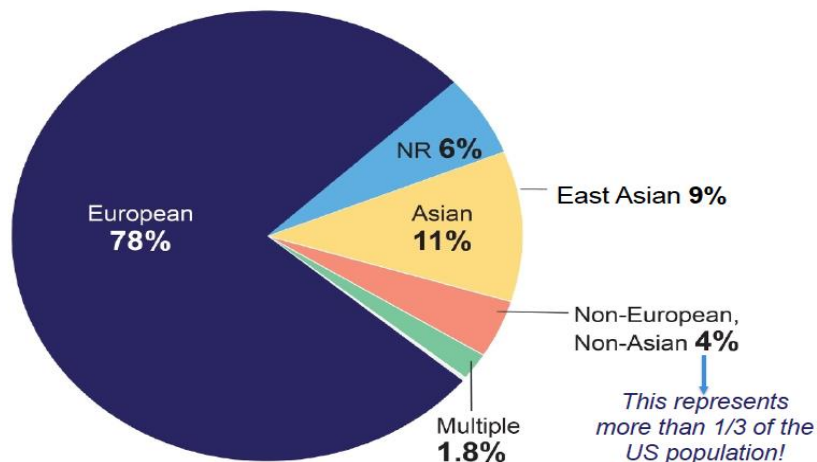
[Check for updates](#)

Levy D, et al. Genet Med 2011

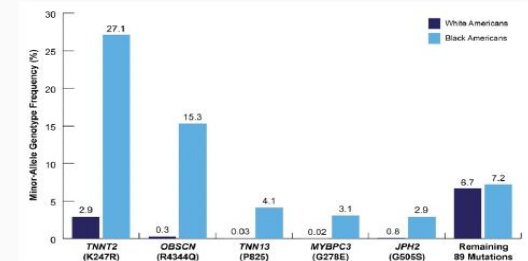
- **Only 30% of women diagnosed with high risk breast cancer < 40 yrs obtained genetic testing**
- **BRCA 1 mutation prevalence 16.7 % in AA diagnosed with BC under the age of 40 vs 7.2% in whites**

Precision Medicine is Expanding, but Genomic Studies are Not Diverse

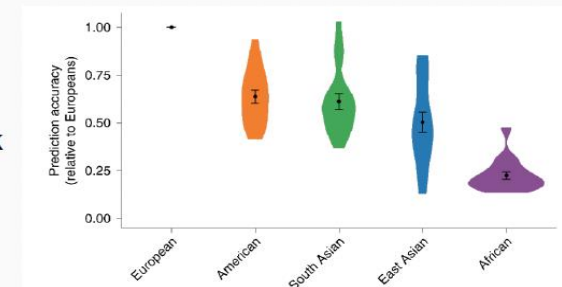
There is a lack of diversity in
genome-wide association studies.



This affects
interpretation
of genetic
variants...



... polygenic risk
scores for
diseases



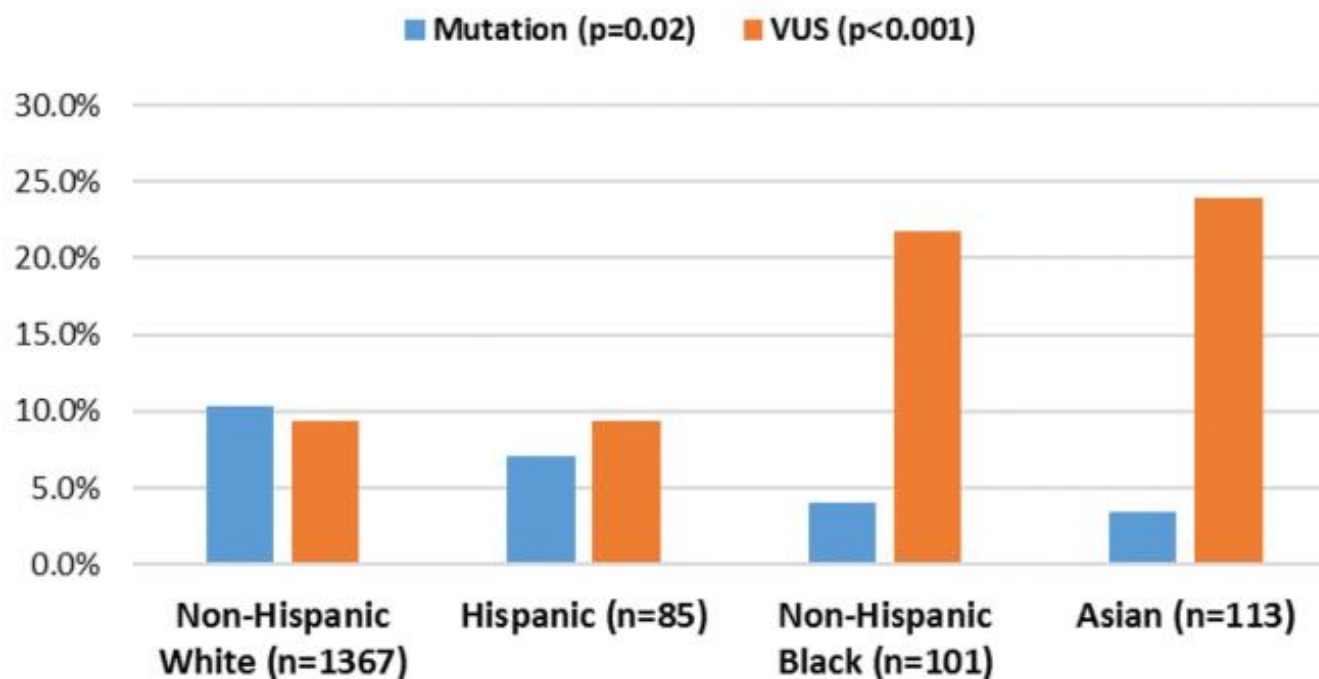
... and many other impacts

Morales et al, Genome Biol, 2018

Martin et al, Nat Genetics, 2019

Manrai et al., NEJM, 2016

Genetic Testing Results by Race Ethnicity



Chapman-Davis E et al. *J Gen Intern Med.* 2021;36(1):35-42.

Opportunities

- Implementation and Diffusion
- De-Implementation
- De-Escalation of Therapy
- Saving of Resources

De-implementation

“Reduction or elimination of inappropriate, ineffective, or potentially harmful healthcare services.”

Walsh-Bailey et al, Implementation Sci, 2021

De-Implementation

Some common interventions

- Should be less commonly used – De-escalation
- Should be retired – De-implementation

Key Point!!!

The Most Important Question in Cancer Control

How can we provide adequate high-quality care (to include preventive services) to populations that so often do not receive it?

- Many Americans get their care in resource poor settings.
- Unnecessary care consumes limited resources and interferes with abilities to provide necessary care.
- The provision of unnecessary care is a cause of health disparities.

Opportunity

- There has been an emphasis on large clinical trials and subset analysis among the races
- Precision medicine may lead us to study interventions and markers/receptors and the study of the distribution of those markers/receptors among populations other than race.

Integrated Diagnostics: The Transformation of American Healthcare!!

The use of “Evidence Based Care and Prevention”

That is:

- The rational practice of medicine
- Not the irrational practice of medicine
- Not the rationing of medicine

The Johns Hopkins Medical Institutions



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