

Session 5 Panel Discussion

- **Question:**
 - How can epidemiology help integrate knowledge from basic, clinical and population sciences to accelerate translation from research to practice?
- **Moderator:** Muin J. Khoury, M.D., Ph.D., EGRP, DCCPS, NCI
- **Panelists:**
 - Martin L. Brown, Ph.D.
Applied Research Program, DCCPS, NCI
 - Katrina Goddard, Ph.D.
Kaiser Permanente Northwest
 - Robert A. Hiatt, M.D., Ph.D.
University of California San Francisco
 - Ann Zauber, Ph.D.
Memorial Sloan-Kettering Cancer Center

Muin J. Khoury, M.D., Ph.D.
EGRP, DCCPS, NCI

Epidemiology in Knowledge Integration

▶ Challenges

- ▶ New (sequencing) technologies
- ▶ Application of new technologies to populations
 - ▶ Greater characterization of mutational spectrum
 - ▶ Change estimates of effect sizes
- ▶ Distinguishing true signals from background noise
- ▶ Sample size for rare conditions or genetic subgroups

▶ Potential solutions

- ▶ Electronic tools to improve automation and search algorithms
- ▶ Greater standardization in nomenclature, coding, and reporting
- ▶ Clear delineation of evidentiary standards and frameworking
- ▶ Identify critical issues using tools such as VOI, decision analysis
- ▶ 'alternatives' to RCTs: observational studies, EMRs, 'natural experiments' across nations



Martin L. Brown, Ph.D.

Applied Research Program, DCCPS, NCI

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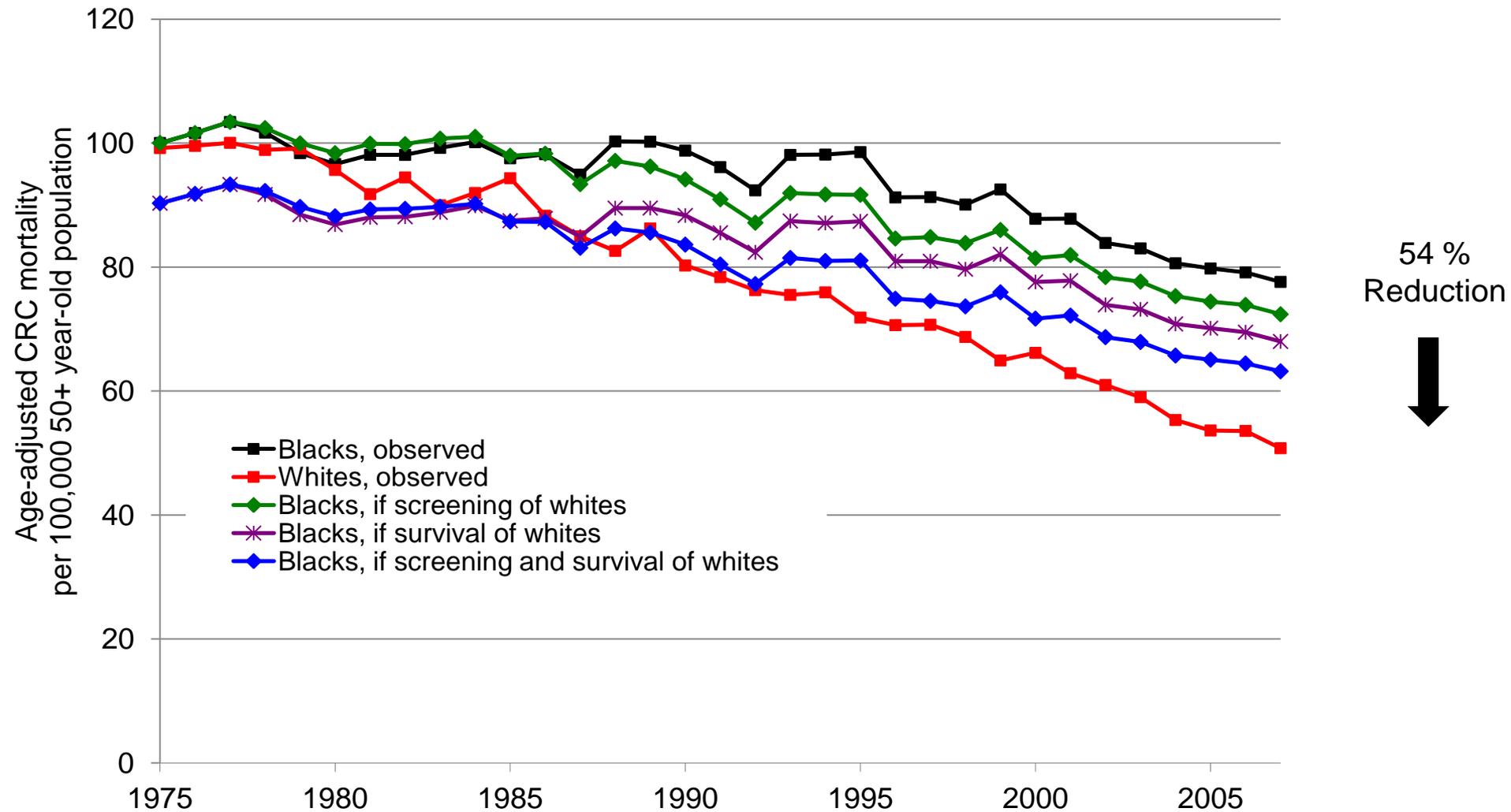
Trends in 21st Century Epidemiology

Knowledge Integration and Meta Research

- * **KI** – “the effective incorporation of knowledge into the decisions practices and policies of organizations and systems”
- * **BIG DATA** – Volume, Velocity & Variability
- * **Team, Translational and Transdisciplinary Science** – Translational Science is best accomplished in teams using a transdisciplinary approach
- * **Education and Training** – Health Professionals, Population Health & Global perspectives.

Katrina Goddard, Ph.D.
Kaiser Permanente Northwest

Microsimulation Modeling of Colorectal Cancer Mortality Observed and Hypothetical if Blacks had Screening Rates and Relative Survival of Whites



Ann Zauber, Ph.D.

Memorial Sloan-Kettering Cancer Center

How can epidemiology help integrate knowledge from basic, clinical and population sciences to accelerate translation from research to practice?

- Context: Rapidly developing technology, dissemination with incomplete evidence, escalating healthcare costs, healthcare reform
- **What epidemiology brings to health services research / comparative effectiveness research**
 - Need for large, representative cohorts with long-term longitudinal follow-up (also concepts of incidence, prevalence), instead of cross-sectional “data aggregation”.
 - Understanding how to analyze observational data, confounding, etc.
 - Harmonization, standardization, validation of “found” data, critical need to invest in this.
- **What health services research brings to epidemiology**
 - Administrative data, EMR, EHR data as representation of individual’s health status and healthcare experience, augmented by patient / provider report.
 - Healthcare delivery systems as “populations laboratories” for research, including retrospective/prospective analysis, pragmatic/cluster trials, health system interventions (cluster randomization), including ehealth, mhealth interventions.
 - Data generation for simulation models (e.g. prevalence and trends of practice), validation of populations for risk models, markers, validation of RCT subset analyses, placing boundaries on the magnitude of RCT results because of “real world” factors.
- **Opportunities on the horizon**
 - Research requirements for “meaningful use” of EMR/HER, e.g. requirement for electronic cancer registration
 - Uneven implementation of healthcare reform = natural experiments (may even be opportunities for randomization, e.g. Oregon Medicaid experiment.