

EPIDEMIOLOGY IN EVOLUTION

Cross-Cohort Collaboration Meeting

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- Premise: population health is getting more complex
- Problem: Health outcomes remain suboptimal

Key Questions for the next 10 years

1. How to optimize health in an aging population?
 - Pathways to disease and disability
 - Target patient-centered outcomes (independence, autonomy, social engagement)
2. How to reduce disparities in health?
 - Better understand multifactorial causes
 - Cost-containment
3. What is the role of precision medicine?
 - Is personalized medicine an achievable goal?

Addressing the Key Questions

1. Examine risk factors & health as a continuum and a process
 - Cohort study is key
 - e.g. CHS captures health processes over latter part of life-course
2. Multi-level determinants and dimensions of health
 - Clinical, social, behavioral, environmental
3. Tailored prevention, a.k.a. the “Subpopulation Medicine Initiative”
 - Middle ground between disease-specific guidelines & personalized medicine
 - Cohort collaboration will allow for enhanced exploration

What can epidemiology offer?

- Framework to evaluate sea of data
 - Ensure that science is better, not just bigger
- Role of the cohort study
 - Strengths
 - Clear target population; “real world” sample
 - Data are collected for a purpose; low information bias
 - Address health and disease over time
 - Weaknesses
 - Potentially healthy participant bias
 - Non-randomized treatment/exposures
 - N (scalpel vs. sledgehammer)

Epidemiology in ≥ 2015

1. Combine study designs to leverage strength of each
 - Cohort & RCT
 - Cohort & health record data
2. Leverage advances in statistics and computing power
 - Complex bidirectional pathways to disease
 - Multiple testing

Epidemiology in ≥ 2015

3. New technology

- Assessment: wearable sensors, improved exposure monitors, better disease surveillance
- Mobile health
- e-cohorts

4. Communication

- Public and policy
- Uncertainty vs
- Our value

New York Times – “The Government’s Bad Diet Advice” February 20th, 2015

“The primary problem is that nutrition policy has long relied on a very weak kind of science: epidemiological, or “observational,” studies in which researchers follow large groups of people over many years. But even the most rigorous epidemiological studies suffer from a fundamental limitation. At best they can show only association, not causation. Epidemiological data can be used to suggest hypotheses but not to prove them.”

THANK YOU

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