EPIDEMIOLOGY IN EVOLUTION

Cross-Cohort Collaboration Meeting
March 7th, 2015
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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-makers
   • Uncertainty vs. certainty
   • Our value


“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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