

Mobile Technologies

insight commentary

The case for a US prospective cohort study of genes and environment

Francis S. Collins

National Human Genome Research Institute, National Institutes of Health, Building 31, Room 4B09, MSC 2152, 31 Center Drive, Bethesda, Maryland 20892-2152, USA (e-mail: fc23a@nih.gov)

Information from the Human Genome Project will be vital for defining the genetic and environmental factors that contribute to health and disease. Well-designed case-control studies of people with and without a particular disease are essential for this, but rigorous and unbiased conclusions about the causes of diseases and their population-wide impact will require a representative population to be monitored over time (a prospective cohort study). The time is right for the United States to consider such a project.

Identification of the genetic and environmental factors that contribute to health, disease and response to treatment is essential for the reduction of illness. This, of course, is the primary goal of biomedical research. Several auspicious recent developments suggest that progress in this area could be quite rapid. The sequence of the human genome^{1,2} and increasing information about the genome's function have provided a robust

environmental exposure have improved. These techniques promise to extend the range of epidemiological investigation⁵. There is growing recognition that a change in the environment, in combination with genetic disposition, has produced most recent epidemics of chronic disease, and may hold the key for reversing the course of some diseases⁶. For example, consider the interaction of presumed famine-protective genetic predispositions with a modern environ-

Nature, 2004; 429: 475-7



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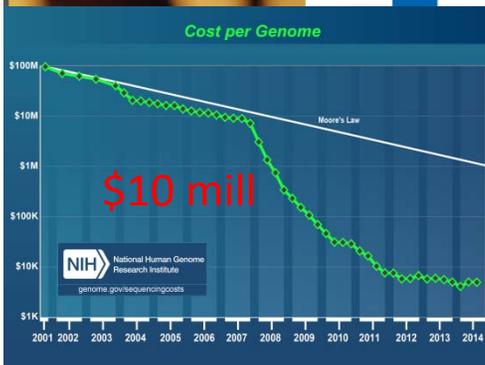
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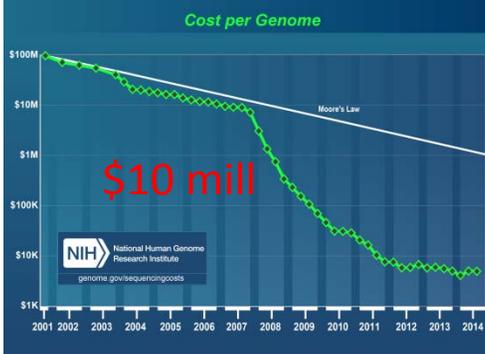
Electronic Health Record Systems and Intent to Attest to Meaningful Use among Non-federal Acute Care Hospitals in the United States: 2008-2011

Dustin Charles, MPH; Michael Furukawa, PhD; and Meghan Hufstader, PhD

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Hospital adoption of EHR systems has more than doubled since 2009.

Figure 1: Percent of non-federal acute care hospitals with adoption of at least a Basic EHR system: 2008-2011



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Vital and Health Statistics

Series 10, Number 229



Summary Health Statistics for the U.S. Population: National Health Interview Survey, 2004

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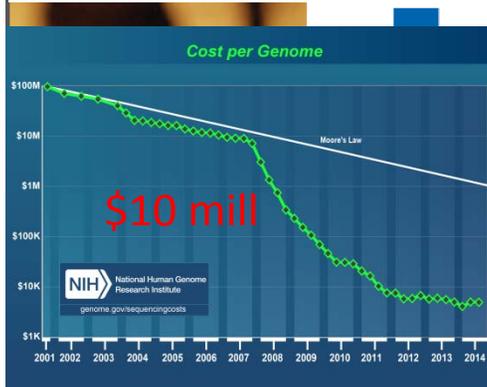
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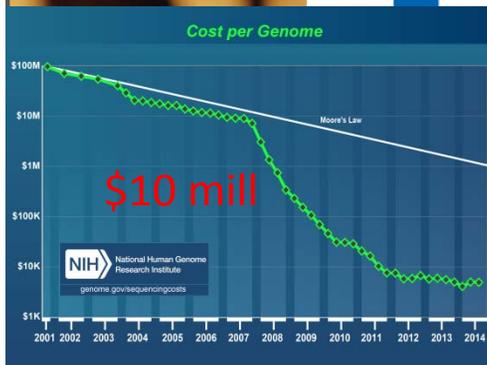
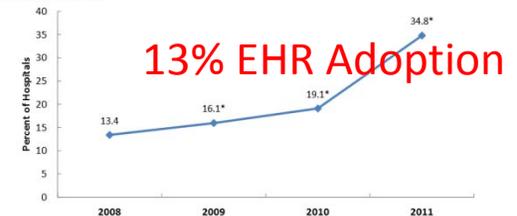
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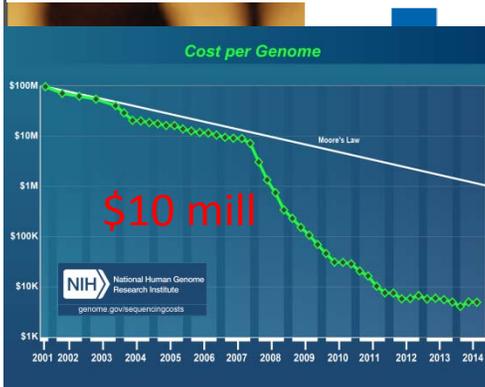
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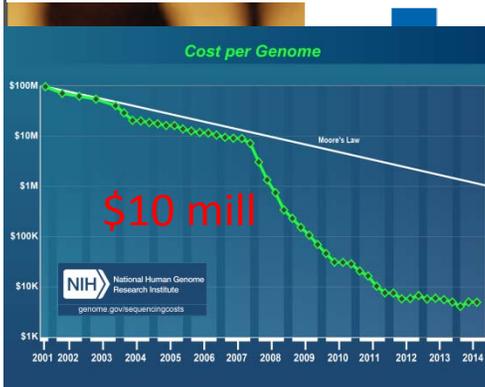
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Can We Use these Mobile Health Technologies to:

- Better Characterize Phenotypes (e.g., augment or extend EHR)
- Better Characterize Outcomes (e.g., patterns of response)
- Better Characterize Treatments (e.g., adherence)
- Extend Treatment Predictors beyond Genomics (e.g. physiological variability)
- More Precisely and Intensively (and with less respondent burden) Characterize Behavioral Risk Factors and Environmental Exposures that Interact with (or overwhelm) Genetics
- Fully Engage Participants as Partners (data control and feedback)