

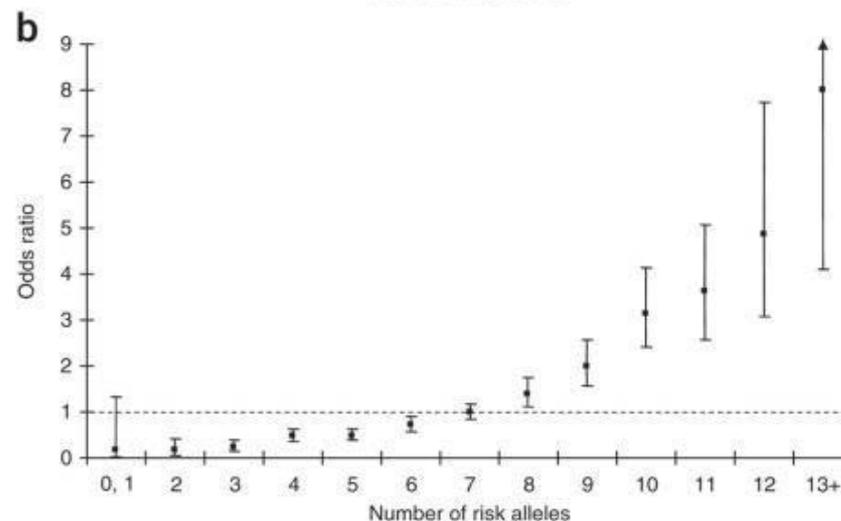
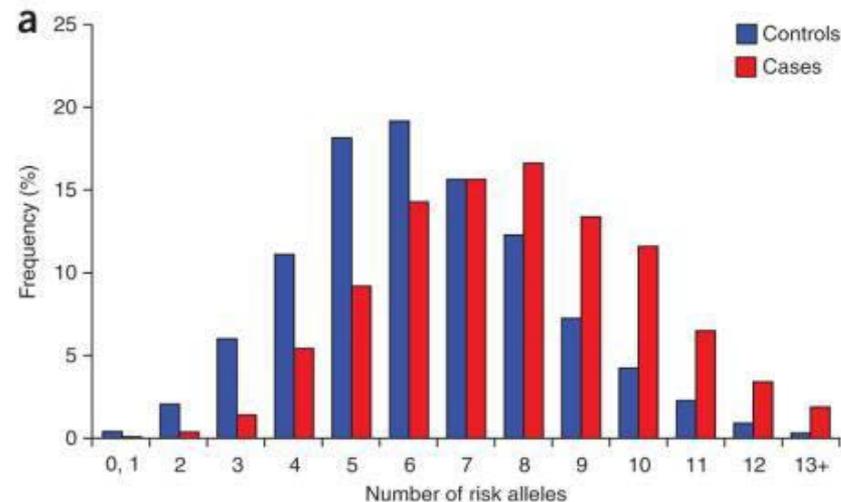
**CISNET:
Looking Towards the Future**

Possible Future Priorities

**Presented for Discussion at the Spring
2013 CISNET Meetings**

Possible Priority I: Polygenic Risk and Family History

- Polygenic risk - traits where the genetic component is determined by many genes with individually small effects
 - ◆ Stratifies across the risk spectrum – potential to identify both high and low risk strategies (unlike family history)
 - ◆ Currently level of risk discrimination is not great for common cancers, but has potential to improve in the next 5 years
- Should polygenic risk be the first or last factor considered?
- How do we best integrate genetic and nongenetic factors?



Cumulative impact of 10 variants on chronic lymphocytic leukemia risk.
Crowther-Swanepoel et al. Common variants at 2q37.3, 8q24.21, 15q21.3 and 16q24.1 influence chronic lymphocytic leukemia risk. *Nature Genetics* 42, 132–136 (2010)

- What is the impact of SNPs on the natural history of disease?
 - ◆ Can common variants identified by GWAS and other approaches go beyond characterizing just cancer vs. control to more specific characterization of cancer (aggressive/non-aggressive disease, adenomas, size/type of adenomas, etc)?

- Using Results from The Cancer Genome Atlas (TCGA) and Other Data Sources
 - ◆ Genomic characterization of disease (e.g. triple negative breast cancer and beyond)
 - ◆ Genomic risk stratification for treatment

Possible Priority II: Understanding How Screening Works in Real-World Settings and Determining the Best Routes to Optimize the Process

- Partnerships between CISNET and those who collect cancer screening process data in community settings
- Example:
 - ◆ PROSPR (Population-based Research Optimizing Screening through Personalized Regimens - <http://appliedresearch.cancer.gov/networks/prospr/>)
 - PROSPR recognizes that screening is not a singular event, but rather a process (recruitment, screening, positive screen evaluation, diagnosis, referral for treatment), and that all parts of the process must be working to effectively
 - PROSPR collects data on all phases of the process in various health care settings (for breast, colorectal & cervical cancers)
 - Modeling can determine how far from the efficiency frontier current screening is, and the most important leverage points in the screening process to get closer
 - PROSPR includes modelers, but does not necessarily facilitate comparative modeling, which could be facilitated by CISNET

➤ Other examples

- ◆ Breast Cancer Surveillance Consortium

- <http://breastscreening.cancer.gov/>

- ◆ Cancer Research Network

- <http://crn.cancer.gov/>

Possible Priority III: Supporting the Development of Decision Aids

- Modeling results can provide a key element for input into Decision Aids
- Decision Aids
 - ◆ Tools to Allow Individuals to Elucidate Harms and Benefits and to Weigh Potential Choices Given their Personal Preferences
 - ◆ Tools to Allow Health Care Professionals to Guide Shared Decision Making
 - ◆ Evaluation of the Benefits versus Costs (esp. time) of Shared Decision Making
- Decision Support Tools
 - ◆ Tools that aid physicians in making decisions –e.g. tools to help radiologists make decision about call backs
- What types of additional expertise would need to be brought in (e.g. behavioral economics)

Possible Priority IV: State and Local Cancer Control Planning

- CISNET Models can Inform State and Local Cancer Control Planning
 - ◆ CISNET supplements funded by CDC
 - CRC screening in South Carolina
 - Tobacco control and lung cancer screening in NE Pennsylvania
 - CRC screening in NE Pennsylvania
 - Tobacco control and lung cancer screening in Detroit and across Michigan
 - ◆ Supplements were selected for funding not just based on their applicability to the specific area, but as an exemplar for other similar areas around the country
 - ◆ Extensions to other areas is of interest, and should become easier as the modeling community learns how to extend a model previously applied on the national level

- International Cancer Control Planning
 - ◆ Cancer control planning in middle income countries (e.g. South America, Caribbean, Far East, Middle East, Eastern Europe) is an opportunity for CISNET to make an impact
 - ◆ International Cancer Control planning brings up many unique issues (e.g. different health care systems, cultural barriers, access to health care, data infrastructure to support modeling)

Possible Priority VI: Evaluating Natural History Experiments Caused as a Result of the Affordable Care Act (ACA)

- As the affordable care act is implemented across the country (in some cases differently in different places), there will be opportunities to explore the differential impact on health care outcomes

- Modeling is an ideal way to explore these relationships, and allows for control of confounding factors, time lags between policy changes and their impact, and statistical variation
 - ◆ An example of using modeling to explore a natural experiment
 - Shaw et al. An ecologic study of prostate-specific antigen screening and prostate cancer mortality in nine geographic areas of the United States. *Am J Epidemiol.* 2004 Dec 1;160(11):1059-69.

- Phase in for ACA (2010-2015)
- Opportunities for modeling, e.g.,
 - ◆ Declines in health disparities
 - ◆ BRCA counseling about genetic testing for women at higher risk
 - ◆ Elimination of cost sharing for mammography, colonoscopy
- Surveys will be enhanced to support research on the impact of ACA
 - ◆ BRFSS, NHIS, National Ambulatory Care Survey, MEPS

Possible Priority VII: Value of Information (VOI) Analyses

- Value of Information (VOI)
 - ◆ The amount a decision maker would be willing to pay for information prior to making a decision
 - ◆ VOI is gaining more interest around NIH
 - Example – may be valuable before initiating an expensive prevention trial