

Cancer Genomics for Public Health: Increasing Genomic Competency and Confidence in the Public Health Workforce



Deb Duquette, Mary Teachout, Ann Annis-Emeott, John Gehring, Janice Bach



Background

With the advent of the genomics era, the Centers for Disease Control and Prevention (CDC) and others developed the following genomic competencies for public health professionals:

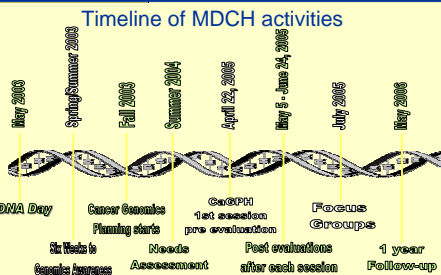
- Demonstrate basic knowledge of the role that genomics plays in the development of disease
- Identify the limits of his/her genomic expertise
- Make appropriate referrals to those with more genomic expertise

To help build genomic competency, the Michigan Department of Community Health (MDCH) Public Health Genomics Program has used several strategies to educate the public health work force.

Strategy	Examples
1. Building a Foundation – know your audience	Genomics Workgroup at MDCH
2. Raising awareness and stimulating interest	<i>An introduction to Genomics for Public Health Professionals</i> developed by CDC and Centers for Genomics and Public Health in MI, NC, and WA
3. Increasing knowledge	<i>Six Weeks to Genomics Awareness</i>
4. Strengthening skills	Graduate Summer Sessions in Epidemiology (University of Michigan School of Public Health with scholarships from the Center)
5. Using evaluation to improve thinking	Evaluation by organizers, trainers and participants

In 2003, MDCH partnered with the University of Michigan Center for Public Health and Community Genomics (CPHCG) to present “Six Weeks to Genomics Awareness” to public health staff. After participating in the workshop series, Cancer Section staff identified a need for further genomics education with a specific focus on cancer.

Methods



Needs Assessment

MDCH staff, with assistance from CPHCG, and Centers for Genomics and Public Health at the University of WA and University of NC, developed a needs assessment of the Cancer Section.

- Completed by 27 Cancer Section staff
- Guided educational content and program evaluation
- 48% felt cancer genetics was integrated into their program a small amount, or not at all.

Program Objectives

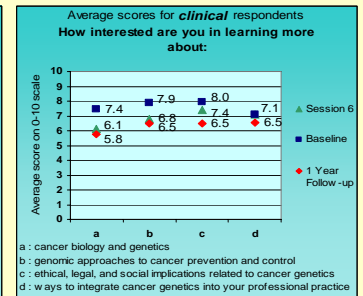
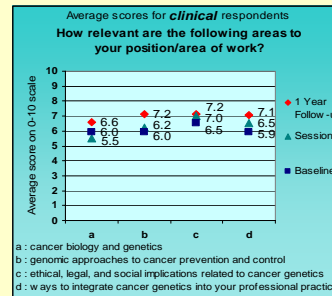
- Increase cancer genomics knowledge, interest, and perception of relevance among public health providers working in cancer control
- Facilitate integration of cancer genomics into public health practice, programming, policy and services
- Foster a collaborative process between public health and genomics experts

Cancer Genomics for Public Health featured:

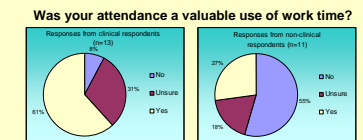
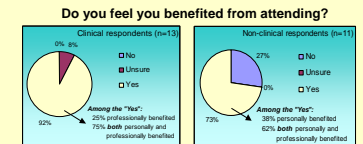
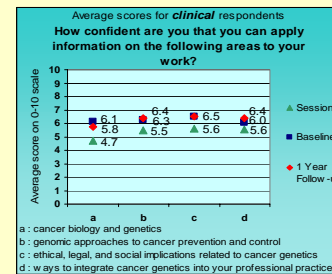
- A series of six sessions with lecture presentations by 12 expert speakers
- 11 hours of content and practical application exercises
- A focus on the Cancer Section's five priority sites: breast, cervical, prostate, lung, and colorectal cancer
- Mandatory attendance for both clinical and non-clinical staff; approximately 60 staff and other invited guests attended each session

Results

Before the *Cancer Genomics for Public Health* (CaGPH) sessions began, a pre-test was administered to assess the Cancer Section staff's self-reported interest and knowledge in genomics, and its relevance to their job. Following the formal presentation provided at each session, participants brainstormed about implications for, and applications to, public health cancer programs. Post-tests were given after each of the six sessions as well as a one-year follow-up. Selected results are summarized in the figures below.

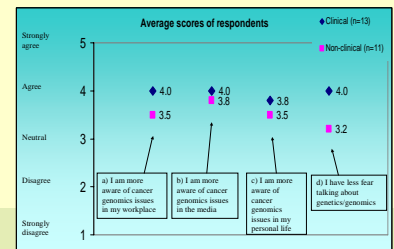


The relevance of four topic areas was assessed. An increase in relevance to the respondents' work between the time of the pre-test and one-year follow-up was observed, especially in relation to genomic approaches to cancer prevention/control and ways to integrate cancer genetics into practice. At the one-year follow-up, interest in knowing more about these areas had decreased, perhaps because the knowledge gained from the *CaGPH* education modules was felt to be sufficient.



Respondents' confidence that information could be applied to their work was generally unchanged between the pre-test and one-year follow-up. However, 92% (n=13) of clinical respondents felt they benefited professionally and/or personally from attending *CaGPH*, and 61% felt it was a valuable use of work time, while 31% were unsure. Of the non-clinical participants, only 27% (n=11) felt it was a valuable use of work time but 73% felt they did benefit.

At the one-year follow-up, respondents moderately agreed they were more aware of cancer genomics issues in the workplace, media, and personal life, with greater agreement among the clinical vs. non-clinical staff.



Discussion & Acknowledgments

Increasing genomic competency of the public health workforce remains an ongoing challenge. *Cancer Genomics for Public Health* is one model of a collaborative process to increase genomic knowledge among public health professionals working in cancer prevention and control programs. The process of developing *CaGPH* led to a productive partnership between the MDCH Cancer Section, Genomics Program and Center for Public Health and Community Genomics, an academic center; it also increased awareness of the role of the state Genomics Program in public health. Evaluation revealed positive perceptions of the personal and professional benefits among all staff. *CaGPH* was less relevant for non-clinical staff, and six sessions may be excessive. While participation heightened awareness for clinical respondents, it is unclear whether it affected their ability to apply new genomics information to their jobs. An emphasis on real life applications in cancer genomics and the ethical, legal and social implications appears to benefit the learning process. Based on feedback obtained from workshop attendees, modification of the cancer genomics modules for dissemination to a wider audience is currently in progress.

The authors would like to thank and acknowledge Jen Bodzin, Laurie DeDecker, Aaron Goldenberg, Sue Haviland, Sharon Kardis, and Catherine Wang for assistance in development, delivery, and evaluation of *Cancer Genomics for Public Health*.