Session 4: Cancer prevention, genetics and vaccines

S15. Cancer prevention and genetic testing: An update

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The past decade has witnessed an expanded role for cancer genetics in the identification of individuals and families at high risk for a range of cancers. Evidence for surgical approaches to risk reduction has also been strengthened for several cancers, including breast, ovarian, colorectal, gastric and endometrial carcinomas, as well as melanoma. Surgical risk reduction is generally reserved for individuals at highest risk based on identification of genetic susceptibility, strong family history, remarkable exposure or premalignant lesions.

There has been frequent hope that strategies successful in the prevention of cancer in high risk populations would extend easily to usual risk individuals. However, the rarity of individuals with identified mutations in cancer susceptibility genes, genetic privacy concerns, and issues in randomization present special problems for the evaluation of chemoprevention strategies in high risk populations. There has also been recognition that the biology of cancers that occur in mutation carriers may sometimes differ from the more common sporadic subtypes. Concerns about these differences raise questions as to whether mutation carriers should be included in large chemoprevention trials, and whether biomarker studies in mutation carriers will be generalizable to less selected populations. Screening studies have been easier to conduct with genetically at-risk populations.

More recent work has led to the identification of increasing numbers of low penetrance cancer susceptibility genes which account for a larger portion of attributable risk in the population. These genes may be more important for targeting screening and prevention interventions as techniques become increasingly expensive and risk reduction strategies continue to have toxicities.

Data for specific syndromes will be reviewed.