

CD-ROM: The Genetic Basis of Cancer

Background:

The CD-ROM, *The Genetic Basis of Cancer* is designed to educate health care professionals. The CD-ROM covers the scientific concepts that explain the genetic basis for breast and colon cancer, in particular, and cancer in general. It also comprehensively treats patient care topics including risk assessment, genetic testing, and follow-up care.

The CD-ROM was funded with a grant from the National Action Plan on Breast Cancer and was developed in collaboration with others participating in this group. Additional support comes from the American Cancer Society, the Susan G. Komen Breast Cancer Research Foundation, and the Centers for Disease Control and Prevention's Office of Women's Health, the National Center for Chronic Disease Prevention and Health Promotion, and the National Center for Environmental Health.

Content:

The CD is divided into two sections: a science section and a patient care section.

The science section begins with a basic Genetics Refresher. There is a section on Malignant Transformation which explains the series of mutations that accumulate to transform a normal somatic cell into a cancer cell. This section also explains that in a small percentage of cancers, one mutation is inherited and that the inherited (or germline) mutation is in every cell in the body, not only the somatic cell that will become a cancer cell. These cancers are considered to be hereditary, while the majority of cancers in which there is no inherited mutation are called "sporadic". There is a section that compares and contrasts hereditary and sporadic cancers, and a section that shows how genes and the environment interact to increase risk for cancer. Finally, there is a section that uses breast cancer and colon cancer as models for the comprehensive applications of the concepts that were taught to this point.

The patient care section begins with a tutorial on risk assessment. A section titled To Test or Not to Test comprehensively discusses genetic counseling for decisions about testing and includes pre- and post-test counseling as well as detailed descriptions of the available tests, their appropriate uses, and their relative strengths and weaknesses. In the Managing Patients segment we discuss follow-up of people who are found to have BRCA1 or BRCA2 mutations. We also discuss issues such as surveillance methods, prophylactic surgery, the use of HRT by women at high risk for breast cancer, and chemoprevention.

In both sections, we discuss the epidemiology of breast cancer and why it is difficult to prove that certain factors affect risk, for example, hormone replacement therapy which increases risk only slightly for individuals, but perhaps accounts for a large amount of risk in populations.

There are quizzes at the end of each section and case studies for issues of genetic testing.

Continuing education credits will be available through CDC.