

childhood malignancies and are important in the development of various types of cancer. Chromosome abnormalities can be confined to the tumor or can be present in all cells; the latter are called *germ-line mutations*. Chromosome abnormalities can be due to translocations (a rearrangement of information between two chromosomes) or abnormal numbers of chromosomes. For example, many well-established chromosome translocations have been identified in childhood leukemia and some solid tumors.

Other genetic syndromes that can affect genes or chromosomes and are associated with a predisposition to cancer include Fanconi anemia, Bloom syndrome, Beckwith-Weidemann syndrome, neurofibromatosis type 1, ataxia-telangiectasia, and Klinefelter syndrome.

Children with immunodeficiencies, such as Wiskott-Aldrich syndrome or acquired immunodeficiency syndrome, or children whose immune system has been suppressed, such as following transplant procedures, are at a greater risk for developing various cancers. Of major concern is the increased risk of secondary cancers in some children successfully treated for their primary malignancy.

Risk Factors

Lifestyle-related behaviors are the main factors that increase the risk of cancer in adults, but they have little to no effect on childhood cancer. There is relatively little information to support a strong environmental role in the development of childhood cancer. However, some risk factors are well established. Known risk factors include exposure to ionizing radiation, carcinogenic drugs, immunosuppressive therapy, infections (such as Epstein Barr virus), race, and genetic conditions ([Scheurer, Lupo, and Bondy, 2016](#)).

Prevention

Knowledge of the risk factors that increase the likelihood of cancer holds the promise of prevention. Unfortunately, the known carcinogens are limited in children. Therefore, at present there is really no known prevention.

Health professionals, however, have two roles. One is aimed at preventing adult type of cancers by educating parents and children about the hazards of known carcinogens, particularly the effects of