

## SESSION 1

**Public Health and Medical Approaches to Cancer Prevention****S1. Lifestyle and Medical Approaches to Cancer Prevention**

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Cancer risk can be reduced by adopting a healthy lifestyle and by medical means. Tobacco control is central to public policies for cancer prevention. Overweight and obesity in the United States may account for 20% of cancer deaths in women and 14% in men [1]. Cancer prevention strategies have progressed from a predominantly lifestyle approach to a model that combines clinical investigations in a medical setting with public health interventions [2]. This change stems from advances in identifying, developing, and testing agents with the potential either to prevent cancer initiation, or to inhibit or reverse the progression of premalignant lesions to invasive cancer. Encouraging laboratory and epidemiologic studies, along with secondary end-points in treatment trials, have provided a strong scientific rationale for the hypothesis that a pharmacologic approach - chemoprevention - can reduce cancer risk. Numerous chemopreventive agents, including naturally occurring vitamins, minerals, phytochemicals, and synthetic compounds, have proven to be safe and effective in preclinical and clinical studies. Promising results have been reported for cancers of the prostate, breast, colon, lung, bladder, cervix, oral cavity, esophagus, skin, and liver [2]. The use of emerging technologies, identification of biomarkers of risk, and advances in genetic research are being applied to chemoprevention research. For example, an interdisciplinary approach to investigate molecular and genetic markers that affect cancer risk is being applied to studies of the most common types of cancer in the United States in women (breast) and men (prostate). For breast

cancer prevention, tamoxifen has been demonstrated to reduce risk, and second and third generation selective estrogen receptor modulators [SERMS], as well as aromatase inhibitors, are being studied to learn how best to prevent primarily hormonally-driven (estrogen receptor positive [ER+]) breast cancers [3]. A number of food constituents, their synthetic analogues and other drugs are being tested aimed at preventing estrogen receptor negative [ER-] tumors and ER+ tumors that are not responsive to SERMS or aromatase inhibitors. For prostate cancer, the Prostate Cancer Prevention Trial showed a 25% reduction in the prevalence of prostate cancer over the seven year study [4]. Tumors of Gleason grade 7-10 were more common in the finasteride group. While the latter is yet to be explained, this trial demonstrated that prostate cancer, at least in part, is preventable. The Selenium and Vitamin E Cancer Prevention Trial (SELECT) is investigating the effects of selenium and vitamin E on the clinical incidence of prostate cancer.

**References**

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