

# The Major Killers of Americans: Research and Prevention

PHYSICIANS COMMITTEE FOR RESPONSIBLE MEDICINE

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**M**edical research is at a crossroads. Older experimental techniques cannot eradicate major killer diseases. Researchers in the fight against major diseases must look to new technologies, and doctors must learn new approaches to prevention.

## Heart Disease: The Number One Killer

**T**he greatest advance in the recent understanding of heart disease is the discovery that it can be virtually eliminated by controlling three factors—cholesterol, smoking, and blood pressure. This extraordinary advance came from sophisticated studies of human patients.

Over the past five decades in Massachusetts, thousands of individuals in two generations have been carefully studied to see which factors are responsible for heart disease. The Framingham Heart Study showed that if cholesterol levels stay below 150, a heart attack is extremely unlikely.<sup>1</sup> Other studies, such as the Lipid Research Clinical Trial and the Multiple Risk Factor Intervention Trial, have also demonstrated the importance of controlling cholesterol levels. For every 1 percent increase in cholesterol, there is approximately a 2 percent increase in risk of heart disease.<sup>2</sup>

Coronary artery bypasses and heart transplants, while necessary for some patients, have not matched the potency of dietary and other lifestyle measures. Bypasses and transplants develop aggressive recurrent atherosclerosis unless strict dietary steps are taken. Clearly, medicine's best strategy is to institute such steps while the patient is still healthy.

Populations that consume diets high in fruits, vegetables, and whole grains are known to have a lower risk of heart disease. The National Cholesterol Education Program recommends decreasing saturated fat and cholesterol and increasing fiber in the diet.<sup>3</sup>

Dean Ornish, M.D., of the University of California at San Francisco, has shown that if people who have advanced heart disease adopt a low-fat vegetarian diet, stop smoking, reduce stress, and engage in mild daily exercise, the progression of their heart disease can be stopped, and even reversed.<sup>4-6</sup>

Other researchers have determined that a vegetarian diet may be nearly as effective as some cholesterol-reducing medications.<sup>7</sup> Vegetarian diets have also been shown to lower blood pressure.<sup>8</sup>

More research is needed on lifestyle changes, such as human behavioral studies on how to help people change long-standing smoking and dietary habits. Economic and political studies on how to shift farm production away from tobacco and livestock

and toward grains, legumes, vegetables, and fruits are also essential.

## Cancer: The Number Two Killer

**A**lthough incidence rates for cancer overall seem to be stable or declining in some cases, cancer is still the number two killer in the United States. For men and women under the age of 85, cancer is now the leading cause of death. The chance of developing cancer over a person's lifetime is 46 percent for men and 38 percent for women.<sup>9</sup>

A standard technique in the search for new anticancer drugs has been to give test substances to laboratory mice with leukemia, a slow and expensive procedure. It has yielded few effective agents while consuming millions of dollars and no fewer than 1 million animal lives each year.

However, a method that tests potential drugs on actual human tumor cells has been developed by Michael Boyd, Robert Shoemaker, and others at the National Cancer Institute.<sup>10</sup> In an automated system, the effectiveness of a substance in killing cancer cells is checked and entered into a computer. Potential drugs that have been overlooked by the mouse screening system may be found to work in the new human cell screen.

A large body of data now show that cancer can be prevented, instead of wasting resources in often failed efforts to cure established cancer. The National Cancer Institute estimates that as many as 50 percent to 75 percent of cancer deaths in the United States are caused by human behaviors such as smoking, physical inactivity, and poor dietary choices.<sup>11</sup> Improving the diet, quitting smoking, and increasing exercise will greatly decrease the risk of developing cancer.

In 1982, the National Research Council released a technical report, "Diet, Nutrition, and Cancer,"<sup>12</sup> showing that diet was probably the greatest single factor in the epidemic of cancer. Since then, more evidence has implicated specific dietary factors in several types of cancer. Foods rich in fats and oils increase the risk of cancer in organs related to digestion (e.g., colon, rectum) and organs that are sensitive to sex hormones (e.g., breast, prostate).<sup>11,13,14</sup>

In addition, some food constituents help protect against cancer. Dietary fiber, principally found in whole grain cereals and legumes, may help prevent cancer of the colon and rectum. It also may reduce risk of breast cancer, perhaps by lowering cholesterol and sex hormones.<sup>14</sup> Several vitamins have shown anticancer activity: beta-carotene (the form of vitamin A found in dark green and yellow vegetables and fruits), vitamins C and

E, and the mineral selenium may help prevent cancer.<sup>14</sup> Also, diets rich in fruits and vegetables decrease the risk of getting cancers of the colon, mouth, pharynx, esophagus, stomach, and lung, and may reduce the risk of prostate cancer.<sup>11</sup>

Avoiding excessive exposure to sunlight is a critical step in the prevention of skin cancer. In addition, radon, a natural radioactive gas that seeps up from some underground rocks into groundwater supplies, has been implicated in specific cancers.<sup>15</sup> Improved ventilation stops radon from building up in enclosed areas.

Prevention is a key component of the strategy for those looking for a way to reduce the cancer epidemic. By avoiding factors that lead to cancer and including foods that strengthen us against the disease, we can, to a great extent, control our own risk.

<b>ESTIMATED PERCENTAGES OF CANCER DUE TO SELECTED FACTORS*<sup>16,17</sup></b>	
<b>Diet</b>	<b>20%-50%</b>
<b>Tobacco</b>	<b>29%-31%</b>
<b>Physical inactivity</b>	<b>1%-2%</b>
<b>Alcohol</b>	<b>3%</b>
<b>Radiation</b>	<b>5%-7%</b>
<b>Air and Water Pollution</b>	<b>1%-5%</b>
<b>Medications</b>	<b>&lt;1%</b>

\* Other factors may also play a role in some forms of cancer and are not included in this table. Categories may overlap. For example, both tobacco and alcohol contribute to esophageal cancer.

### Stroke: The Number Three Killer

In a stroke, a part of the brain is killed, leading to paralysis, loss of sensory function, and often death. Clinical and epidemiologic studies have shown how stroke is caused and how it can be prevented. It has become clear that the same factors that lead to heart disease—high blood pressure, elevated cholesterol levels, and smoking—can also cause stroke.<sup>18</sup> Controlling these factors can prevent stroke.

Increasing physical activity has been shown to decrease the risk of stroke,<sup>18,19</sup> as have dietary changes, such as consuming more whole grains, fruits, and vegetables.<sup>20</sup>

To reduce the incidence of stroke, more aggressive measures to help people change dietary and smoking behavior must be developed.

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