



VA research on **CANCER**

Cancer is a general term that includes more than 200 different diseases. In all forms of cancer, cells in the body grow and multiply abnormally, eventually taking over and destroying normal tissue.

ABOUT CANCER

- The main types of cancer are leukemias and lymphomas, involving the blood and related tissues; carcinomas, which occur in the skin, glands, and certain organs; and sarcomas, which involve muscles and connective tissues.
- Around 40,000 cancer cases are reported to VA's Central Cancer Registry annually, about 3 percent of all cancers in the United States.
- The five most frequently diagnosed cancers among VA cancer patients were prostate, lung and bronchial, colorectal, urinary and bladder cancers, and skin melanomas. This list is similar to that for American men as a whole.
- Colon cancer can be cured if diagnosed early, yet one-third of patients who develop colon cancer will die from the disease.

VA RESEARCH ON CANCER: OVERVIEW

- VA researchers conduct laboratory experiments aimed at discovering the molecular and genetic mechanisms involved in cancer; studies looking at the causes of disease; clinical trials to evaluate new or existing treatments; and studies focused on improving end-of-life care.

- VA researchers are finding ways to maintain good health and enhance the quality of life of the increasing number of cancer survivors.
- While most of the patients VA treats are male, the department is seeing increasing numbers of women Veterans. VA researchers are therefore looking closely at breast cancer, its causes, and treatments for the disease.
- VA studies are examining many topics related to cancer, including the possible risks of e-cigarettes, the link between Agent Orange exposure and prostate cancer, and gene therapy to halt the growth of tumor cells.
- VA and DoD are working on a program to tailor cancer care for patients based on the genes and proteins associated with their tumors. By using genomics, clinicians can provide individualized care based on patients' specific biology.

SELECTED MILESTONES AND MAJOR EVENTS

- 1932** - [Established](#) a tumor research laboratory in Hines, Ill.—the first VA research laboratory to receive funding specifically for research
- 1950** - Concluded, in a [paper](#) by Dr. Robert Schrek of Hines, there is "strong

circumstantial evidence" linking cigarette smoking with respiratory tract cancers

- 1956** - [Linked](#) cigarette smoking with precancerous lesions
- 1984** - [Developed](#) a transdermal nicotine patch to reduce the cravings for cigarettes
- 2000** - [Showed](#) the superiority of colonoscopy to sigmoidoscopy
- 2012** - [Demonstrated](#) that observation is as effective as surgery in treating early-stage prostate cancer
- 2015** - [Joined](#) with gastroenterologists from throughout the United States, Canada, and the United Kingdom to develop a new set of recommendations on the surveillance and management of areas of pre-cancerous cells in patients with inflammatory bowel disease
- 2016** - [Formed](#) the Applied Proteogenomics Organizational Learning and Outcomes (APOLLO) consortium, with the Department of Defense and National Cancer Institute, to tailor cancer care based on individual gene and protein information

RECENT STUDIES: SELECTED HIGHLIGHTS

- **E-cigarettes may be toxic to airway cells**, suppress host defenses, and promote inflammation over time, found a VA San

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Diego Healthcare System study in mice. E-cigarette vapor exposure also led to more damage from bacteria in the throat. (*Journal of Molecular Medicine*, Jan. 25, 2016)

• **Early lung cancer screenings can actually lower smokers' motivation to quit smoking**, according to researchers with the Center of Innovation for Veteran-Centered and Value-Driven Care. Many patients believed that undergoing the screening process meant they did not need to quit. The researchers recommend that clinicians address misconceptions about lung cancer screenings with patients. (*JAMA Internal Medicine*, September 2015)

• **Longer-lasting colonoscopies are associated with lower cancer rates**, according to researchers with the Minneapolis VA Health Care System and the University of Minnesota. Patients who had been examined by doctors with withdrawal times shorter than six minutes, on average, were more likely to have cancer. (*Gastroenterology*, October 2015)

• **Patients who received radiation therapy for testicular cancer** were six times more likely to develop stomach cancer, according to an international study including researchers from the Oklahoma City VA Medical Center. The study further found that those who had received very high doses of radiation were at nearly 20 times the risk. (*British Journal of Cancer*, Jan. 6, 2015)

• **Honokiol, an extract from magnolia tree bark, blocks a protein** called epidermal growth factor receptor (EGFR), found researchers with VA and the University of Alabama at Birmingham. EGFR is associated with squamous cell cancers of the head and neck. In the study, honokiol shut down cancer-cell growth in animal models. (*Oncotarget*, Aug. 28, 2015)

• **Low-dose aspirin can impair the ability of breast cancer cells to renew themselves**, found a Kansas City (Mo.) VA Medical Center study involving mice. A daily dose of aspirin almost halved tumor growth by altering the molecular signature in breast cancer cells. (*Laboratory Investigation*, July 2015)

• **Gene therapy could halt the growth of prostate tumors**, according to Kansas City (Mo.) VA Medical Center researchers. A combination of genes for prostate-specific antigen and prostate stem cell antigen seemed to stop prostate tumors from growing in mice by promoting the production of T cells that attacked tumor cells. (*Immunotherapy*, June 2011)

• **Multitarget stool DNA testing is significantly more sensitive** at detecting colorectal cancer and precancerous lesions than a fecal immunochemical test, according a team led by researchers at the Center for Innovation at Roudebush Veterans Affairs Medical Center in Indianapolis. However, multitarget stool DNA testing gives more false positives than fecal immunochemical testing. (*New England Journal of Medicine*, April 3, 2014)

For more information on VA studies on cancer and other key topics relating to Veterans' health, please visit www.research.va.gov/topics

Among other goals, VA researchers are finding ways to maintain good health and enhance the quality of life of the increasing number of cancer survivors.

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