

THE University of Vermont CANCER CENTER

INNOVATIONS

RESEARCH / EDUCATION / COMMUNITY OUTREACH / CLINICAL CARE

FALL 2024



TOBACCO AND CANCER

Lung screening on the rise

DIRECTOR'S MESSAGE

Dear UVM Cancer Center community,

Cigarette smoking accounts for one in five cancer cases and one-third of all cancer-related deaths. Even more alarming, people living in rural areas have an 18% to 20% higher lung cancer mortality rate than those living in urban areas. Smoking rates are also higher in rural regions (18.1%) as compared to urban areas (10.5%).

These trends are mirrored in our catchment area where the rate of people who currently smoke is higher (17.6%) compared to the United States overall (14.4%) and use of tobacco is significantly higher in our rural counties (figure 1). With higher-than-national smoking rates, policies seeking to limit nicotine in standard cigarettes are strategies UVM Cancer Center trainee **Marc Feinstein** (page 1) and Cancer Population Sciences member **Eli Klemperer, Ph.D.** (page 2) are evaluating in their research.

For many patients who are being treated for lung cancer the wasting of muscle tissue and function, called sarcopenia, is a common complication. **Hibba Rehman, M.D.'s** clinical trial (page 3) is enrolling stage 3 and 4 patients to see if a strength training program can reduce the impact of sarcopenia on patients with lung cancer.

A critical goal, especially for those who have a significant smoking history, is to detect lung cancer earlier when it is easier to treat and the chances for cure are high. Over the last three years, **Beth Zigmund, M.D.**, has worked collaboratively with the Vermont state cancer coalition to increase the number of people who receive lung screens through outreach initiatives. The result? An impressive 32.9% increase in low dose CT scan lung screens (page 4).

With the increase in early-stage detection through lung screening, it is estimated that the proportion of lung cancer survivors will increase by 33% over the next 10 years. **Elizabeth Scharnetzki MA, Ph.D.**, a faculty scientist at the MaineHealth Institute for Research, was recently awarded an American Cancer Society grant through the UVM Cancer Center for her study *Bridging the Gap: Understanding Lung Cancer Survivors' Needs and Care Access Challenges* (back cover). Her study will inform future strategies for providing support for survivors.

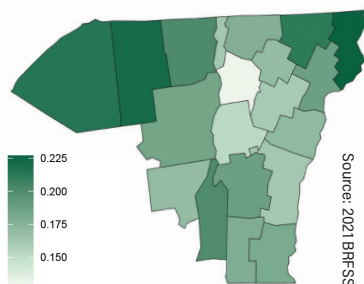
These are some fantastic examples of the transformative work by UVM Cancer Center members in the area of lung cancer and tobacco science. This issue of Innovations, focused on the theme *Tobacco and Cancer*, illustrates how our research, community outreach, clinical care, and education initiatives reduce the burden of tobacco-related cancers in our catchment area.



Randall F. Holcombe

Randall F. Holcombe, M.D., M.B.A.

J. Walter Juckett Chair in Cancer Research
Director, University of Vermont Cancer Center
Associate Dean for Cancer Programs,
Larner College of Medicine
Chief, Division of Hematology & Oncology



THE University of Vermont CANCER CENTER

University of Vermont
Cancer Center
149 Beaumont Avenue
Burlington, VT 05405

CONTRIBUTORS

Kate Strotmeyer
Managing Editor

Jeff Wakefield,
Katie Queen, Ph.D.
Contributing Writers

Andy Duback
Photographer

Ann Howard
Designer

CONTACT INFORMATION

UVM Cancer Center
cancer@uvmcc.med.uvm.edu
802-656-3099
@UVMCancerCenter
www.vermontcancer.org

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ON THE COVER:
"TOBACCO AND CANCER"
LUNG SCREENING ON THE
RISE (PAGE 4)



CANCER CENTER TRAINEE CONDUCTS POLICY RELEVANT TOBACCO RESEARCH

MARC FEINSTEIN

“Addiction touches everyone’s life.” This is what led Cancer Center graduate student Marc Feinstein to pursue a career in tobacco research.

A clinical psychology graduate student in the lab of Eli Klemperer, Ph.D., Marc uses an experimental tobacco marketplace to analyze how people’s tobacco product use patterns change based on altering the unit price of nicotine in certain products. The experimental tobacco marketplace is a well-established methodology in which study participants “buy” their tobacco products through the study’s Amazon-like platform, allowing researchers to track an individual’s product use across varying conditions.

This research is critically important because a national policy—originally proposed in 1993—is being strongly considered, which would limit nicotine levels in cigarettes to the point that it is no longer detectable. However, the current policy may exclude little cigars and cigarillos which, historically, have been used as a similar and equally harmful alternative to cigarettes.

In his National Institute on Drug Abuse (NIDA) T32 funded study, Marc used the experimental marketplace to see what alternative products cigarette users switched to when the unit price for nicotine in paper cigarettes increased (a proxy for reduced nicotine content). What he found was that most people switched from cigarettes to electronic cigarettes. However, a detectable and concerning portion switched to little cigars or cigarillos, rather than harm-reducing products such as a nicotine patch.

While Marc’s research indicates that people who smoke cigarettes would likely stop or reduce their use of cigarettes under the new nicotine-limiting policy, he also finds that without including little cigars and cigarillos in the policy, users are likely to switch to these equally harmful products. “My hope is that by demonstrating to policymakers the types

of products users are likely to switch to under the current policy guidelines, they will reconsider which other product types need to be included in the policy,” says Feinstein.

But how does this relate to cancer? Approximately one in five cancer cases result from cigarette consumption. Marc’s work indicates that to reduce the cases of cancer resulting from cigarette smoking through policy implementation, the policy needs to consider the alternative products individuals would choose to use and the toxicity associated with their consumption.

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After completing his graduate work in clinical psychology, Marc plans to apply for a clinical internship with the U.S. Department of Veterans Affairs, ultimately hoping to continue to work in a capacity that bridges the clinical and research worlds. Marc credits his success as a trainee at UVM to the collaborative environment and access to a wide array of content experts, including UVM Cancer Center members Stephen Higgins, Ph.D., and Eli Klemperer, Ph.D.

Marc approaches a lot of things with humor, and one of his favorite quotes that is relevant to his research comes from Mark Twain: “To quit smoking cigarettes is one of the easiest things a man can do, I myself have done so thousands of times.” He believes this encapsulates addiction well. “My goal is to help understand ways we could reduce 1,000s of quit attempts into just a few attempts before success.” ■



ELI KLEMPERER, PH.D.

NEW GRANT WILL ASSESS THE IMPACT OF NICOTINE-LIMITING POLICIES ON DUAL USERS OF CIGARETTES AND E-CIGARETTES

Cigarette smoking accounts for nearly one in five cancer cases and one-third of all cancer related deaths. In recent years, the prevalence of using multiple tobacco products, notably cigarettes and e-cigarettes, has been on the rise in the U.S. While e-cigarettes offer a potentially safer alternative, most users continue to smoke cigarettes in the long term, especially those who use e-cigarettes infrequently.

To combat this issue, the Food and Drug Administration (FDA) is planning to impose a nicotine-limiting standard on cigarettes that could potentially save millions of lives over time. However, it's uncertain how this regulation will affect dual users of cigarettes and e-cigarettes.

Eli Klemperer, Ph.D., was recently awarded an R01 grant to study the effects of nicotine-limiting standards on adult dual users in Vermont, northern New York, and Rhode Island. While the cigarette smoking rates in the UVM Cancer Center's catchment area vary, rates in some counties are as high as 23% compared to the national average of 14%.

The grant—a combined award from the National Institute on Drug Abuse (NIDA) and the Food and Drug Administration Center for Tobacco Products—will allow Dr. Klemperer, in collaboration with Professor of Psychiatry and Vermont Center for Behavior and Health Director Stephen Higgins, Ph.D., and colleagues from the Larner College of Medicine and Brown University, to conduct a 12-week, double-blind randomized controlled trial. The primary objective of the trial is to investigate the impact of the proposed nicotine-limiting standard for cigarettes on

the total number of cigarettes smoked per day among adult dual users. Additionally, the study aims to assess whether any observed changes are influenced by corresponding limitations on e-cigarette nicotine content.

For the study, participants will be randomly assigned to one of four different combinations of high- and low-nicotine e-cigarettes and cigarettes, allowing researchers to determine the most effective combination in reducing cigarette use. The investigators expect to recruit over 300 adult dual users to participate in the trial.

This grant follows a series of successful trials led by Dr. Higgins between 2016 and 2019, and subsequent work recently published in JAMA, which revealed promising results regarding the effectiveness of very low-nicotine-content (VLNC) cigarettes in reducing smoking rates and dependence severity among vulnerable populations. These findings underscore the potential of reducing nicotine content in cigarettes to facilitate smoking cessation efforts, particularly among high-risk individuals.

The team will communicate the results of the new study directly to the FDA to inform their proposed nicotine-limiting standard for cigarettes and how that policy could be impacted by e-cigarette regulation. "This work is especially relevant to the rural areas of our region. Tobacco use disproportionately affects people in rural communities. This work could inform policy around tobacco, specifically helping to reduce the tobacco health burden carried in rural communities," said Dr. Klemperer. ■

CLINICAL TRIAL TESTS EFFECTIVENESS OF STRENGTH TRAINING IN SLOWING MUSCLE WASTING IN LUNG CANCER PATIENTS

Among the common complications of cancer and its treatments is a condition called sarcopenia, the wasting of muscle tissue and function. Its onset often signals poorer outcomes for cancer patients, even those receiving the most advanced treatments.

Resistance training and other forms of exercise have been shown to slow or reverse sarcopenia and its impact on health for cancer patients. But concern about infections may prevent patients from participating in in-person group exercise sessions and rural patients often lack access to a fitness facility.

A new clinical trial asks the question: Will an online version of the strength training program—allowing patients to participate safely at home from any location—attract and retain cancer patients effectively, and will the program be successful in blunting sarcopenia development?

“We have data that shows this kind of exercise in a face-to-face setting helps patients maintain muscle mass and function,” said Hibba Rehman, M.D., a physician researcher at UVM’s Larner College of Medicine and the principal investigator on the clinical trial. “The clinical trial is a feasibility study to see if an online version can be done with this patient population and be effective in preventing sarcopenia.” The study participants will have the option to

choose from in-person or on-line formats.

Research studies have shown that lung cancer patients who maintain muscle mass and function live longer and have better disease control, Dr. Rehman said.

Open to Stage 3 and Stage 4 Lung Cancer Patients

To date the trial has enrolled six of fifteen participants and is actively recruiting through patient education and community outreach events such as the Women’s Health and Cancer Conference where Dr. Rehman gave a talk.

The trial is open to stage 3 and 4 lung cancer patients who can walk, don’t rely on supplemental oxygen, have the ability to use electronic devices and have adequate internet support. The Cancer Center has some resources available to supply an internet device, like a tablet or laptop computer, to those who need one and qualify for that support.

The 12-week online program will consist of two to three 45-minute-to-an-hour weekly supervised resistance training sessions provided by a medical based gym affiliated with UVMMC and led by an expert trainer.

In addition to addressing sarcopenia, the exercise program offers other benefits, Dr. Rehman said. “Patients’ cardiovascular health can improve, along with mobility and general quality of life,” she said. “The social aspect of regularly interacting with other people, even in a virtual setting, can also improve mood and emotional well-being.” There is also emerging data that exercise might impact gut microbiome health in a positive manner. ■



For more information about the clinical trial, please contact the UVM Cancer Center’s Clinical Trials Office (802-656-4414, ext. 2).

UVM CANCER CENTER OUTREACH CAMPAIGN CONTRIBUTES TO MAJOR INCREASE IN LUNG CANCER SCREENINGS

Lung cancer accounts for 35% of cancer deaths in Vermont, the leading cause of cancer death in the state, but only 13% of new cancer cases, according to the Vermont Department of Health's most recent *Vermont Cancer Data Pages* report.

What accounts for the discrepancy?

Unlike other cancers, which have established screening protocols developed over decades, lung screening for at-risk patients became a standard recommendation covered by insurance only in 2013, after research showed it saved lives, and is still less utilized than screening for other cancers. As a result, lung cancer is often detected in patients only after it has spread and is difficult to treat.

Public Education Campaign

Thanks in part to a multi-faceted public education campaign conducted in 2022 by the UVM Cancer Center in partnership with the Dartmouth Cancer Center and Vermonters Taking Action Against Cancer, which accelerated trend lines already underway, screening rates are up significantly in the last three years in the UVM Cancer Center's catchment area.

According to data compiled by Beth Zigmund, M.D., director of the UVM Cancer Center's Lung Screening Program and a key architect of the public information campaign, total annual low dose CT lung screens at the UVM Medical Center have increased by 32.9% over the past three years.

"The number is very encouraging," said Dr. Zigmund, "and is a testament to the importance of creating strong partnerships to engage and educate the public and primary care providers about the importance of lung screening. We need to continue our work and push the number of screenings even higher," she said.

The most recent data from the American Lung Association shows that Vermont leads the nation in lung

cancer screening, diagnosis and survival rates but that only 10% of high risk Vermonters are being screened, a number that is more than double the national average of 4.5% but still much too low, Dr. Zigmund says. In New York, 4.9% of those at high risk were screened, according to the report.

If lung cancer is caught early via a screen, when it is confined to one spot, Vermonters have a five-year survival rate of 65%, compared with just 9% for patients whose cancer is caught late, after it has spread widely, according to the American Cancer Society.

Annual Lung Screening Events

The statewide public education campaign included educational materials, social media posts, web advertising, op-eds, and outreach to media. In addition to informing the general public, education and training were offered to healthcare providers to increase their awareness of the need for lung cancer screenings.

Overall, the goal was to raise general awareness of the importance of screening and to publicize expanded new guidelines for the at-risk population: those over 50 who have smoked a pack of cigarettes a day for 20 or more years, and quit no fewer than 15 years ago.

The public education campaign also gave focus to a new annual event—Lung Cancer Screening Day—during November, Lung Cancer Awareness Month, at both the UVM Medical Center (UVMHC) and Champlain Valley Physician's Hospital (CVPH) in Plattsburg, N.Y.

Thus far, 2,000 new patients have received first-time screens at UVMHC since January, 2020—a huge impact on overall rates. "Providing clinical care is a foundational element of what we do at the UVM Cancer Center," Dr. Zigmund said. "But community outreach to vulnerable groups is equally important in preventing disease and its progression. I'm proud to have been part of a team that is making our community members aware that, with proper and timely screening, lung cancer can be caught early and is a very treatable disease." ■

TOTAL ANNUAL LOW DOSE CT LUNG SCREENS AT THE UVM MEDICAL CENTER HAVE INCREASED BY 32.9% OVER THE PAST THREE YEARS.



BETH ZIGMUND, M.D.

NEW GRANT: STUDY EXAMINES LUNG CANCER SURVIVORS' NEEDS

The American Cancer Society (ACS) Institutional Research Grant provides seed money to support the initiation of cancer research projects by early-career faculty. In addition to financial support, the program incorporates mentoring and career development for the junior faculty member by senior faculty.

Elizabeth Scharnetzki, MA, Ph.D., a faculty scientist at the Center for Interdisciplinary Population and Health Research at the MaineHealth Institute for Research, **was one of three UVM Cancer Center members awarded funding for her study *Bridging the Gap: Understanding Lung Cancer Survivors' Needs and Care Access Challenges*.**

The proportion of lung cancer survivors in the United States is projected to increase by 33% over the next 10 years, making lung cancer survivors the fastest growing segment of all cancer survivors. Dr. Scharnetzki's project aims to support this growing population by developing a comprehensive understanding of lung cancer survivors' needs. To accomplish this, research teams from Maine and Vermont will develop and field an exploratory assessment of lung cancer survivors' behavioral and medical

healthcare needs and identify care access challenges. Results of the survey will inform the development of future interventions designed to address the identified unmet needs of lung cancer survivors and to promote equitable access to services.



ELIZABETH SCHARNETZKI, MA, PH.D.