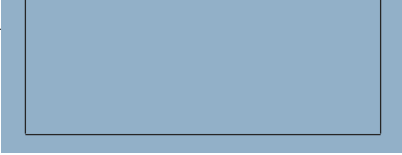


# UVM ScholarWorks

## Evaluation of a cancer risk assessment questionnaire to guide cancer screening decision-making in primary care

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# EVALUATION OF A CANCER RISK ASSESSMENT QUESTIONNAIRE TO GUIDE CANCER SCREENING DECISION-MAKING IN PRIMARY CARE


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Rotation: Milton, VT 10/2017-11/2017

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# Problem Identification

- Cancer is the leading cause of death in Vermont and the second leading cause of death in the U.S. <sup>1</sup> More than 1000 Vermonters die from cancer each year (Figure 1).<sup>2</sup>
- Cancer screening can lead to early detection, prolonging patients' longevity and reducing deaths. Most primary care providers (PCP) use cancer screening guidelines developed by United States Preventive Services Task Force (USPST), but large disparities exist between the guidelines and the actual delivery and compliance of cancer screening.<sup>3</sup> In a recent survey study which included Vermont providers, 76% of PCP participants reported screening practices that were not in accordant with USPST recommendations for breast cancer.<sup>4</sup>
- **A more effective risk-based screening system is needed to address this problem.**



Cancer Site	Male and Female		VT Deaths (per year)
	U.S. Rate (All Races)	VT Rate (All Races)	
All Sites	166.1	172.3 ▲	1,363
Lung and Bronchus	44.7	47.7 ▲	379
Colon and Rectum	14.8	14.4	113
Pancreas	10.9	11.2	88
Leukemia	6.8	6.8	51
Non-Hodgkin Lymphoma	5.9	6.0	47

Figure 1. Age adjusted cancer mortality rates per 100,000 population, 2010-2014.<sup>2</sup>

# Public Health Cost

- Cancer screening tests are expensive. The annual Medicare cost for breast cancer screening was \$1.08 billion in the U.S.<sup>5</sup> In order to reduce cost and resources, screening guidelines are progressing from age-based approach to more personalized risk-based approach.
- Detecting cancer at earlier stage can reduce treatment costs. In a study of 8360 women diagnosed with breast cancer, the treatment costs were higher for those who were diagnosed at a more advanced stage (Figure 2).<sup>6</sup>

Breast Cancer Stage at Diagnosis	Treatment Cost per Patient in 24 months after diagnosis
Stage 0	\$71,909
Stage I/II	\$97,066
Stage III	\$159,442
Stage IV	\$182,655

Figure 2. Breast cancer treatment costs based on stage at diagnosis.<sup>6</sup>

# Community Perspective

- “Primary care providers have limited time with each patient. During preventative visits, patients often bring up multiple acute issues that need to be addressed immediately. It is difficult for providers to conduct screening according to the constantly changing guidelines.”

Family Medicine Physician at Milton, VT

- “I was so anxious about my risk for cancer due to my complex family history of cancer. My wonderful primary doctor referred me to the genetic counseling specialists in order to find out which screening I should go through. That process took so long!”

30 y.o. Patient

# Intervention and Methodology

- The Vermont Cancer Risk Questionnaire was developed by Dr. John King and Brian Sprague PhD. based on the risk factors of common cancers. The questionnaire contains 20 questions which assessed risk factors for lung, colon, breast, prostate, and cervical cancer and reviewed cancer family history. The draft needed input from patients and clinicians.
- Seven patients and three family medicine attendings/residents at the Milton clinic were interviewed. Participants were asked to fill out the questionnaire and to give specific feedback on the presentation, length, wording, and content of the questionnaire. The chosen patient participants varied in age and sex. Each interview took about 15-20 minutes.

# Results

Patient Demographics							
Sex at birth	Female	Female	Female	Male	Male	Male	Male
Age	21	25	56	28	47	51	59

Patients (n=7)		Clinicians (n=3)	
<b>What do you like about the questionnaire?</b>	<ul style="list-style-type: none"> <li>• Good length</li> <li>• Well-written questions</li> <li>• Simple wording</li> </ul>	<b>What do you like about the questionnaire?</b>	<ul style="list-style-type: none"> <li>• Good length</li> <li>• Simple for patients to understand</li> </ul>
<b>What part of the questionnaire do you not understand?</b>	<ul style="list-style-type: none"> <li>• #1: The columns for “If Current Smoker” and “If Former Smoker” are unclear</li> <li>• #2 and #3: None of the patients knew all the chemicals mentioned.</li> <li>• #20: The checkboxes make the table too complex to understand.</li> </ul>	<b>What needs to be changed?</b>	<ul style="list-style-type: none"> <li>• Ask about patient’s cancer history</li> <li>• Instead of screening exposure to the specific chemicals, screen for careers with high-risk to exposure</li> <li>• Use standardized race categories</li> <li>• Utilize the cancer screening questions from BRFSS and compare the questionnaire results to national data</li> </ul>

# Evaluation of Effectiveness and Limitation

## **Effectiveness**

- The questionnaire was modified based on these feedbacks.
- After taking the survey, several patients expressed interests to learn about their cancer risk. A patient even expressed interest to learn about his family members' cancer risk.
- Physicians were interested to learn about the implications of this questionnaire for their practice.

## **Limitations**

- The questionnaire is relevant to age 21-80, but the oldest interview participant is 59.
- Since responses are self-reported, it is difficult to assess the accuracy of patients' responses.
- Many patients asked for risk estimates after taking the questionnaire, but we are still in the process of developing an informational output system.

# Future Steps

- Use cognitive interviewing techniques to assess the accuracy of responses. Participants will think out loud as they complete the questionnaire. The interview will be repeated multiple times, and the responses of each round will be compared.
- Build the questionnaire into PRISM
- Implement the questionnaire at two UVMHC primary care clinics. The data will provide longitudinal data for developing a cancer risk prediction algorithm. **The goal of this algorithm is to guide cancer screening decision-making for clinicians and patients.**

The author would like to thank the wonderful staff at the Milton Family Practice for making this project possible.

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