

# Demand for Continuing Medical Education Programs on Cancer Care Among Primary Care Physicians in North Carolina

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## Abstract

**Background:** Primary care physicians have a central role in cancer prevention and control services, yet relatively little attention has been given to their needs for continuing medical education (CME) that clarify or update screening guidelines, enhance recognition of signs or symptoms of cancer, and address ongoing health issues in patients treated for cancer (e.g., pain control, lymphedema, tertiary prevention).

**Methods:** A random sample of 600 primary care physicians practicing in urban and rural locations in North Carolina was selected to assess past cancer-related CME sessions, and demand for current cancer education topics.

**Results:** Of 539 eligible, 231 surveys were returned (43%). Approximately 37% of respondents had attended no cancer-related CME in the last two years. Highest interest for cancer CME topics was found for screening for breast and skin cancers, general update diagnostic skills, pain management and patient/family support, side effects from treatment, lymphedema management and lymphedema diagnosis, genetic susceptibility, diet and smoking cessation. Interest levels by CME topic did not vary by urban/rural practice settings.

**Conclusion:** There is low access but high demand for cancer-related CME topics among primary care physicians. Strategies are needed to fill this need and to assess impact.

**Keywords:** cancer screening, CME, primary care.

## Introduction

Cancer is an increasingly common diagnosis and cause of death nationally among adults. In North Carolina, one in every two men and one in every three women will be diagnosed with cancer during his or her lifetime. The economic costs of cancer care and impact to families in North Carolina are estimated at \$2.9 billion annually.<sup>1</sup> Primary care physicians occupy an important position in delivering effective and high quality care for cancer prevention and control, through screenings, referrals, patient education, and, for those treated for cancer, coordinating longer-term disease management. For cancer prevention, guidelines for early detection through routine screening have been established for breast, cervix, colon, and prostate cancers conditioned on considerations of patient age and known risk status.<sup>2-8</sup> However, evidence exists that life-saving prevention, early detection, and control may not be carried out even when

beneficial support is overwhelming.<sup>9</sup> Reasons for this gap are complex, but potential confusion over cancer screening detection policy from a lack of uniformity in type and interval screening specifications among the various medical professional organizations guiding primary care has been cited as important.<sup>7</sup> At the same time, technology for cancer screening is advancing as genetic markers and new immunologic assays replace traditional tests, potentially adding to the complexity of obtaining and interpreting the screen for the patient. For patients with a history of cancer, the primary care physician may play a pivotal role by leading the patient's general health maintenance (in the context of a cancer history) and promoting the prevention of recurrence. Physician education in comprehensive, state-of-the-art cancer prevention and detection and health maintenance is therefore central to delivering effective cancer screening and prevention services.

Keeping abreast of new developments in cancer prevention

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and control can be a challenge for primary care physicians (PCPs).<sup>10</sup> Many physicians rely on formal continuing medical education (CME) courses to provide information. There are a number of formats by which physicians receive CME credit (e.g., didactic, large or small discussion groups, workshops, internet access, etc.). Each format has strengths and/or weaknesses.<sup>11-14</sup> There is a growing body of literature regarding which type of CME format primary care physicians prefer<sup>15-17</sup> and which patient care topics physicians seek most.<sup>18</sup> However, in the area of cancer control, no studies have been published on PCP interest or need for CME programs for primary care providers despite the fact that cancer is a leading chronic disease with formal best practice recommendations for screening<sup>19</sup> and vigilance. Given competing community resources for educational programs to fulfill category 1 credit requirements and the availability of funds to attend such sessions, the most effective cancer CME programs are likely to be those meeting the demand and interest of the intended physician audience.

In North Carolina, an Advisory Committee on Cancer Coordination and Control (NCACCC) has been established to develop and coordinate a comprehensive cancer control plan for the state.<sup>20</sup> A centerpiece of the committee's strategy is collaboration with primary care systems and medical associations to identify resources needed to promote cancer prevention and control. To meet this objective, this study was conducted to assess demand for cancer care and treatment CME in both urban and rural areas of the state. This report: 1) describes interest levels in the four distinct aspects of cancer-related healthcare services: screening, diagnosis, treatment, and follow-up care by physician characteristic and patient groups served; and 2) examines the preferred method of accessing a cancer-related CME program.

## Methods

A sampling frame was assembled of all primary care physicians listed on the North Carolina Physician Roster, and grouped according to urban and non-urban area using the North Carolina Data Center designations of metropolitan place names.

The survey was designed to collect data on screening, diagnosis, treatment, follow-up care, and preferred method for receiving CME on cancer related topics. A 66-item needs assessment survey was developed by study collaborators at the Wake Forest University School of Medicine (WFUSM). The prototype instrument was pre-tested at WFUSM among physicians in the gynecology and primary care clinics and reviewed for content. New items were generated from content review and physician feedback. Modifications to the survey were finalized and approved by the NCACCC office. The final format included content areas in the following cancer care and prevention topics: cancer prevention and risk factor reduction, screening and interpreting test results, diagnostic techniques, treatment options and prognosis, and follow-up care to surgery. A survey sample of 300 physicians was selected per urban and non-urban grouping (N=600). The sample was mailed a questionnaire with a postage-paid return mailer. Returned and completed surveys

from the initial mailing were tracked and a replacement survey was sent after a two-week non-response period. After the second mailing, telephone calls were placed to the physician's office when the phone numbers were available in the listing. Arrangements were made with office staff to deliver a faxed copy of the survey.

Data analysis was performed to describe means and proportions of the survey category responses. Tests of significance were performed using two sample t-tests with pooled variance estimates, and judged to be significant at  $p < .05$  without correction for multiple comparisons. To describe CME topics of most interest, ratios of 'very interested' (VI) to 'not at all interested' (NI), were calculated as VI/NI. This ratio served as a means of ranking CME topics in terms of strong preference (or demand) among items in the case where there may be considerable variability in interest for the topics considered. For example, a topic where 30% of respondents are 'very interested,' 40% are 'interested' and 30% are 'not interested' ( $30/30 = 1$ ) has much less widespread appeal than a topic with interest ratings of 30%, 60%, and 10%, respectively ( $30/10=3$ ). In the former case the number of respondents who desire the CME topic is balanced by the number who have no interest at all, whereas in the latter, the CME topic is appealing to most. Thus, a ratio larger than 1 indicates more interest than disinterest for the topic; a ratio below 1 suggests that high level interest may be specific to subgroups, such as practice type. Tests of significance were performed on the logarithms of the demand ratios, using asymptotic statistics described in Agresti.<sup>21</sup> The null hypothesis in this case was that the logarithm of the demand ratio is equal to 0 (so that the demand ratio is equal to 1).

## Results

### **Survey Return Completion Rate**

Removal of invalid addresses (N=21) and non-practicing physicians (N=40) resulted in a final sample size of 539 physician names. Of these, 97 (18%) initial mailings were returned, with a replacement survey being sent after a two-week non-response period yielding 54 additional responses (10%). After the second mailing, telephone calls were placed to the physician's office when the phone numbers were available in the listing. Arrangements were made with office staff to deliver a faxed copy of the survey resulting in another 80 (15%) completed surveys for a cumulative total of 231 (43%) surveys completed and returned.

### **Physician Profile**

The physician mean number of years in practice was 16.6 years ( $\pm 12$ ) and the provider mean age was 48.2 years ( $\pm 11$ ). As shown in Table 1, approximately 48% of physician respondents classified themselves as family medicine, 27% internal medicine, 20% gynecological, and 4.5% as other. Most respondents were male (89%), with a majority serving rural group practice settings (55%). Survey respondents estimated that more than one-third of their patients were smokers (34%) and nearly one-third (32%) had an estimated income below \$20,000 per year.

**Table 1.**  
**Respondent Physician Profile: Gender, Type of Practice, Type of Specialty, Patient Population Served, and Estimated Population Low Income/Underserved**

Category	Sub-Category	N (%)
<i>Gender</i>	Female	(11.1)
	Male	(88.9)
<i>Practice</i>	Private	(21.3)
	Group	(71.0)
	Other	(07.7)
<i>Specialty</i>	Family Medicine	(48.4)
	Internal Medicine	(26.9)
	Gynecology	(20.2)
	Other	(04.5)
<i>Patient Population/Service area</i>	Urban practice	(44.6)
	Rural	(55.4)
<i>Estimate of low-income/Underserved</i>	Patients with income < \$20,000	(31.7)
	Patients with high school diploma	(24.3)
	Current smokers	(34.1)

A substantial proportion of physicians, nearly 37%, had not attended any cancer-related CME sessions in the past two years, and only 22% indicated attending one session (see Table 2).

**CME Interest**

Table 3 summarizes physicians' interest in participating in cancer-related CME topics. The highest interest in the *Screening* category was in general screening, with 58% being 'very interested.' For the *Diagnosis* and *Treatment* categories, 47% of primary care physicians surveyed were 'very interested' in a general update of diagnostic skills and 35% were 'very interested' in side effects from treatment for follow-up care. For cancer *Prevention* topics, 53% of physicians were 'very interested' in methods to identify and address high risk.

**Demand ratios**

In Table 4, the item response, or 'demand,' ratios show that within the *Screening* CME topic category, general screening (23.12), breast (7.63), and skin (3.67) drew highest levels of interest (demand), while colonoscopy (0.47) exhibited lowest interest. In the *Diagnosis* and *Treatment* topic categories, general update diagnostic skills (8.12), pain management (4.49) and patient/family support (3.28) were reported to be of high interest, while research protocols (0.53) had the lowest interest. The highest interests in *Follow-up care* were side effects from cancer (3.35), side effects from treatment (2.72), long-term follow-up (1.88), lymphedema management (1.20) and lymphedema diagnosis (1.05), while lowest demand was therapist availability (0.92). For *Risk factor prevention* and *Risk reduction* topics, genetic susceptibility (4.04), diet (2.97), and smoking cessation (2.45) showed highest interest, while sun exposure (1.08) exhibited comparably lower interest.

**Table 2.**  
**Continuing Medical Education: Number of Sessions Physician Attended in Past Two Years**

Number of Sessions	Percentage
0	36.9%
1	21.7%
2	15.2%
3	12.0%
4+	14.7%

**Discussion**

This study found a high interest for CMEs focused on selected cancer topics for primary care providers. Further, self-reported attendance at formal CME sessions targeting cancer care was not high, with more than one-third (37%) attending no sessions in the past two years.

Most interest was reported for CME information relating to screening for breast, ovarian, skin and prostate cancers, all of which are highly relevant to primary care and have guidelines for screening that are evolving through evidence-based medicine. Also of interest were sessions on identifying high risk for cancer and strategies for risk factor reduction (e.g., smoking cessation), pain management and side effects of treatment, lymphedema and long-term follow-up care. Relatively low interest was found for specific procedures such as biopsy, sigmoidoscopy, and tumor staging, which primary care providers usually do not perform.

While on-site lectures are the most preferred means of attending a CME session, nearly one-quarter of the respondents viewed Internet CME access as a favorable means of attending CME programs. Unlike CMEs targeted to hospital staff or

There were no statistically significant differences in CME interest and demand proportions by urban/non-urban practice location (data not shown). For medical specialty type (Table 4), family medicine practitioners had a statistically higher ( $p < .05$ ) level of interest in pain management, general prevention, and long-term follow-up of patients treated for cancer. Obstetrics/gynecology practitioners had significantly higher interest in CME topics addressing breast, cervical and ovarian cancer screening, and genetic susceptibility than either internists or family practice physicians.

As shown in Table 5, the preferred method of accessing a cancer-related CME course/program was by in-person lecture (63%), rather than a video-conference or lecture format (6%), which was not favored. In terms of sponsorship, the Area Health Education Centers (AHECs) were viewed as the most favorable mode of sponsorship (37%). Finally, 23% of physicians reported a 'very favorable' attitude toward accessing a CME session over the Internet.

**Table 3.****CME Topic Interest and Demand Ratio: Screening, Diagnosis and Treatment, Follow-up Care, and Prevention Categories**

Category	Item	% Very Interested (VI)	% Not Interested (NI)	Ratio (VI/NI)
<i>Screening</i>	Breast	48.1%	6.3%	7.63
	Ovarian	42.2%	7.8%	5.41
	Skin	37.1%	10.1%	3.67
	Cervical	42.1%	11.9%	3.54
	Clinical breast exam	39.6%	16.4%	2.41
	Disc results with patients	36.1%	15.6%	2.31
	Prostate	37.6%	16.6%	2.26
	Flex sigmoidoscopy	31.6%	32.3%	0.97
	Excise skin lesions	29.3%	31.8%	0.92
	Punch biopsy	24.8%	32.5%	0.76
	Endometrial biopsy	28.5%	40.5%	0.70
	Colposcopy	18.4%	39.6%	0.47
	General screening	57.8%	2.5%	23.12
	<i>Diagnosis and Treatment</i>	Pain Management	46.2%	10.3%
Patient/family support		35.8%	10.9%	3.28
Treatment options		35.0%	12.1%	2.89
Patient care and management		33.8%	12.3%	2.74
Relative care		30.2%	19.1%	1.58
Hospice care		32.1%	20.5%	1.56
Antibiotic fever		28.5%	23.4%	1.22
Emetics		26.8%	22.3%	1.20
Leukopenic fever		26.7%	25.3%	1.05
Multidisciplinary teams		18.9%	22.6%	0.83
Research protocols		19.2%	36.4%	0.53
General update diagnostic skills		47.1%	5.8%	8.12
Staging		20.8%	23.9%	0.87
<i>Follow-up Care</i>		Side Effects from cancer	32.2%	9.6%
	Side effects from treatment	34.5%	12.7%	2.72
	Long-term follow-up	32.1%	17.1%	1.88
	Lymphedema management	28.1%	24.0%	1.20
	Lymphedema diagnosis	27.7%	28.4%	1.05
	Therapist availability	23.1%	25.2%	0.92
<i>Risk Factor Prevention/Reduction</i>	Identify high risk	52.6%	9.9%	5.30
	Genetic susceptibility	42.0%	10.4%	4.04
	Diet	33.0%	11.1%	2.97
	Smoking	35.7%	14.6%	2.45
	Exercise	30.7%	15.6%	1.97
	Genetic counseling	29.2%	23.1%	1.26
Sun exposure	23.2%	21.4%	1.08	

healthcare providers within academic clinical departments capable of attracting large numbers, primary care physicians in the community may find it more difficult to attend off-site CMEs, making video conferencing an attractive media format to adopt for category 1 credit.

While needs assessments, such as this one, are the cornerstone of sound education, studies are needed on the effectiveness and impact of various continuing education formats in terms of number reached and, ultimately, in changing cancer prevention and control practices or outcomes. The effectiveness of CME programs as

**Table 4.**  
**Topic Demand Ratio<sup>†</sup> by Specialty: Screening, Diagnosis and Treatment, Follow-up Care, and Prevention.**

Category	Item	Family Medicine	Internal Medicine	OB/GYN	
<i>Screening</i>	General screening	24.0***	59.5***	47.0***	
	Skin	4.1***	11.0*	2.4	
	Breast	6.6***	8.0**	70.6***	
	Cervical	4.1***	1.4	63.6***	
	Ovarian	14.0***	1.7	69.7***	
	Prostate	5.1***	2.0	0.6	
	Flex sigmoidoscopy	1.4	0.6	0.8	
	Punch biopsy	1.0	0.4*	1.4	
	Excise bio/skin	1.5	0.3**	2.0	
	Endometrial biopsy	0.9	0.1***	3.6*	
	Coloscopy	0.4**	0.1***	4.5**	
	Clinical breast exam	2.3*	1.2	9.5**	
	Discussing results with patients	2.4*	1.4	3.3*	
	<i>Diagnosis and Treatment</i>	Update diagnostic skill	14.7***	19.0**	3.0
		Staging	0.9	0.9	0.7
Multidisciplinary teams		1.1	0.5	0.9	
Treatment options		3.3***	1.7	4.3*	
Find protocols		0.7	0.2**	0.8	
Pain management		8.2***	2.7	2.0	
Leukopenic fever		2.0*	0.8	0.4	
Antibiotic fever		1.6	1.0	0.8	
Emetics		2.3*	0.7	0.9	
Palliative care		2.4*	1.5	0.7	
Patient care/management		3.5***	3.0	1.4	
Hospice care		2.5	1.1	0.8	
Patient/family support		4.5	2.2	4.0	
<i>Follow up care</i>		Side effects from cancer	1.0	0.5	0.9
		Side effects from treatment	3.3***	1.7	4.3
	Lymphedema diagnosis	0.7	0.2**	0.8	
	Lymphedema management	8.2***	2.8	2.0	
	Therapist availability	2.0*	0.8	0.4	
	Long-term follow up	1.6*	1.0	0.8	
	<i>Risk Factor Prevention/Reduction</i>	General Cancer prevention	19.0***	8.5**	8.5**
Diet		8.0***	0.8	4.7*	
Exercise		6.2***	0.5	3.0*	
Smoking		3.2***	1.5	2.8*	
Sun exposure		2.8**	0.4*	1.1	
Identify high risk		8.4***	5.2***	2.9*	
Genetic susceptibility		5.3***	1.8	37.5***	
Genetic counseling		1.9*	0.8	1.0	

Note: \* P-val <.05, \*\* pval < .01, \*\*\* pval <.001. Test of significance on log (ratio) performed, <sup>†</sup> ratio of 'very interested' to 'not interested'

effective instruments of change has been challenged.<sup>22-24</sup> Davis and colleagues<sup>25</sup> reviewed the general research literature covering 24 separate CME-based interventions and found that benefit, in terms of provider practice or healthcare outcomes, was

dependent upon method of delivery, nature of the interaction, and enabling resources provided. Didactic CME-based interventions failed to change physician behavior, despite effects on knowledge and attitude. Studies using interactive techniques,

such as case discussion or demonstrations, were more effective, as were sequenced interventions allowing practice and feedback loops, and enabling materials (brochures, patient reminder cards, etc.) designed to facilitate implementing the recommended changes.

As cancer screening methods and technologies evolve to encompass genetic screens and refinement of risk estimation, the need among primary care providers for continued cancer control and prevention education is likely to grow. Studies are needed to develop effective CME-based interventions for cancer care.

## Conclusion

Results of this survey indicate that strong interest exists for cancer CME topics among primary care providers, with more than one-third (37%) of respondents reporting no previous attendance of CME-provided cancer care educational sessions.

*Acknowledgement:* The authors are grateful for assistance in survey development provided by Dr. Robert L. Michlelutte, Department of Family and Community Medicine, WFUSM. **NCMJ**

**Table 5.**  
**Preferences for Continuing Medical Education Format**

Format	% Very Appealing
Lecture, in person	62.5%
Lecture, teleconference	6.1%
Small group workshop	20.8%
Independent study	24.1%
Hospital sponsored	24.5%
Area Health Education Center sponsored	36.8%
Panel discussion	12.1%
Internet access	23.1%

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