Published in final edited form as:

J Health Care Poor Underserved. 2010 ; 21(2): 568–581. doi:10.1353/hpu.0.0290.

Effectiveness of Continuing Medical Education in Increasing Colorectal Cancer Screening Knowledge among Vietnamese American Physicians

Dr. Bang H. Nguyen, DrPH, Ms. Jane T. Pham, MPH, Ms. Rylene A. Chew, MPH, Dr. Stephen J. McPhee, MD, Dr. Susan L. Stewart, PhD, and Dr. Hiep T. Doan, MD

Dr. Nguyen, Ms. Pham, and Dr. Doan are affiliated with the Northern California Cancer Center, in Fremont, California. Dr. Nguyen is also affiliated with the Div. of Epidemiology, Dept. of Health Research and Policy, School of Medicine, Stanford University. Ms. Chew is affiliated with the State of California, Department of Health Services, in Richmond, California. Dr. McPhee and Dr. Stewart are affiliated with the Division of General Internal Medicine, Department of Medicine, University of California, San Francisco (UCSF)

Abstract

Colorectal cancer (CRC) screening rates are lower in Vietnamese Americans than in non-Hispanic Whites. Most Vietnamese Americans have ethnically concordant physicians and are willing to have CRC screening if their physicians recommend it. We conducted two continuing medical education (CME) seminars with participants recruited from the Vietnamese Physician Association of Northern California to increase their CRC screening knowledge. We used pre- and post-CME surveys to evaluate the CMEs and per-item McNemar's tests to assess changes in knowledge. Correct responses increased significantly from pre- to post-CME for all 5 items on CRC burden and 4 of 11 items on screening guidelines and practices at the first CME and for 5 of 7 items on screening guidelines and practices at the second CME. CME seminars were effective in increasing CRC screening knowledge among Vietnamese American physicians. This increase may lead to physicians' recommending and their patients' completing CRC screening tests.

Keywords

CME; colorectal cancer screening; Vietnamese Americans; health disparities

Introduction

Colorectal cancer (CRC) is the fourth most common cancer in the United States¹ and the third most common cancer in both Vietnamese men and women in California.² The U.S. Preventive Services Task Force recommends fecal occult blood testing (FOBT), sigmoidoscopy, or colonoscopy for adults, beginning at age 50 and continuing until age 75 years.³ Other professional organizations have different guidelines.⁴ Despite CRC screening effectiveness and recommendations, screening rates remain low. Among Americans age 50 or older, only 18.7% had FOBT during the preceding year, and only 50.6% had sigmoidoscopy or colonoscopy (Sig/Col) during the preceding 10 years.⁵ Colorectal cancer screening rates are even lower in Vietnamese Americans than in non-Hispanic Whites.^{6–8} The proportions of Vietnamese Americans having ever had an FOBT, lower endoscopy

(sigmoidoscopy or colonoscopy), or any CRC test (29%, 36%, and 52%) and being up-to-date for FOBT, lower endoscopy, or any CRC test (18%, 34%, and 45%) are significantly lower than those of non-Hispanic Whites (58%, 57%, 75% and 26%, 52%, 62%, respectively) (all p-values <.001).⁸ In addition, CRC screening rates among Vietnamese Americans are below the U.S. *Healthy People 2010* targets, which are to increase the proportion who have received FOBT within the past two years to 50% and the proportion who have ever received sigmoidoscopy to 50%.⁹ Vietnamese Americans are one of the fastest growing U.S. populations. From 1990 to 2000, the number of Vietnamese Americans grew by 83% from 614,547 to 1,122,528.^{10,11} Almost all Vietnamese Americans aged 50 and older were born in Vietnam and maintain their traditional culture and language.¹² Vietnamese Americans are poorer, more socially and economically disadvantaged, and medically underserved, and face more language barriers than non-Hispanic Whites. Compared with non-Hispanic Whites nationally, Vietnamese Americans are twice as likely to be living below the poverty level (16% vs. 9%) and have only about two-thirds the per capita income (\$15,655 vs. \$23,918). In addition, 33% of Vietnamese Americans speak English “not well” or “not at all,” and 49% live in linguistically isolated households (households with no one aged 14 or over who speaks English at least “very well”), compared with 1% of non-Hispanic Whites.¹³ In Santa Clara County, California, Vietnamese aged 50 to 74 are significantly more likely to not to have graduated from college (74% vs. 53%), be uninsured (11% vs. 2%), to be unemployed or a homemaker (29% vs. 12%), and to rate their health as “fair or poor” (52% vs. 46%) than non-Hispanic Whites.⁷ Over 70% Vietnamese Americans have ethnically concordant physicians^{6,12,14–16} and are willing to have CRC screening if their physicians recommend it.¹⁷ Counterintuitively, however, prior studies suggest that Vietnamese American patients with ethnically concordant physicians are less likely to get breast and cervical cancer screening.^{16,18,19} Studies have shown physicians have low levels of knowledge on CRC screening guidelines.^{20,21}

Published continuing medical education interventions have included formal didactic activities, written, audio and video educational materials, outreach visits, opinion leaders, audit with feedback, reminders, and patient-mediated strategies, and combinations of these strategies to target physician knowledge deficits.^{22–26} Review studies have recommended using: interactive methods that enhance participant activities and provide opportunities to practice skills;^{23–25} multiple interventions;^{22,24,25} interventions designed for specific groups of participants;²⁵ communication programs utilizing CDs or DVDs;²⁶ and utilizing locally respected health professional leaders.²⁶ Didactic presentations alone have generally not been effective.^{22–26} Continuing medical education regarding CRC has been found to be effective in increasing knowledge of CRC staging among surgeons, pathologists, and other health care professionals^{27,28} and improving physician’s performance and patient outcomes of CRC screening among primary care clinicians.²⁹ Among Vietnamese American physicians, continuing medical education has been found to increase knowledge³⁰ and performance³¹ of cervical cancer screening.

Applying these findings, we developed two interactive CMEs for a specific group of Vietnamese American physicians, delivered by locally respected Vietnamese American gastroenterologists. Additionally, we supplemented the CMEs with other provider training interventions including patient-mediated activities, such as distribution of culturally and linguistically appropriate CRC screening booklets and reminder penlights to patients at Vietnamese American physicians’ offices in the study area, and distribution of provider training newsletters and DVDs. The provider training intervention was a part of a larger public and provider intervention trial designed to increase CRC screening rates in Vietnamese Americans. The findings of the intervention trial are reported elsewhere.¹⁵ The objective of the CMEs was to increase knowledge of CRC and CRC screening among the

Vietnamese American physicians. This article reports the development, implementation, and evaluation of these CMEs.

Methods

A gastroenterologist consultant and a professor in internal medicine with extensive experience in provider and CME training and research recommended topics for the CME sessions. Both CMEs addressed CRC burden, significance for and screening of Vietnamese Americans, and screening guidelines and current practices. In addition, the first CME covered emerging CRC screening tests, such as virtual colonoscopy and fecal DNA testing, and the second CME included management of abnormal findings. At each CME, a locally respected Vietnamese American gastroenterologist and a research scientist delivered PowerPoint presentations and facilitated an interactive session in which the presenters posed questions to engage the audience in a discussion and answered any questions raised by attendees.

Participants were recruited from the roster of the Vietnamese Physician Association of Northern California (the Association). Prior to each CME, we mailed over 200 invitations to all Association members. Each invitation stated the event's topic, format, location, intended audience, and co-sponsorship between the Association and the Northern California Cancer Center (NCCC). We also produced a newsletter announcing the CMEs and sent it to all Association members as a reminder. Study eligibility criteria included being a self-identified Vietnamese American health care provider and completion of pre- and post-CME questionnaires.

The CME sessions were held as a part of the Association's regular dinner meetings on May 6 and November 4, 2005 at two Asian restaurants in the study area of Santa Clara County, California. The dinner paid for by the Association was a part of its standard practice. The Association received a grant for the CME speaker honoraria and study conduct. Association members were not required to attend both CMEs. The CME dates, sites, and format were recommended by the Association leadership. At registration, each participant received a package containing an agenda, a pre-CME questionnaire, a (sealed) post-CME questionnaire, and supplies of health education materials. The purpose of the bilingual Vietnamese-English booklet, *Kham Ruot Gia De Song Tho* (For Long Life, Test The Colon), and the penlight bearing the same slogan was to assist the physicians in counseling their patients about CRC screening and to serve as a reminder. Before the CME presentation, we asked participants to complete and turn in the pre-CME questionnaire. To encourage participants to turn in the questionnaires, we gave a raffle ticket for each returned survey. After the seminars, we asked participants to complete the post-CME questionnaire. Another raffle ticket was given for each submitted post-CME survey. Raffles were held on site immediately after the collection of the post-CME surveys. Raffle prizes were two medical textbooks for the first CME, and two DVD players for the second CME. Following each CME, we mailed a newsletter including the correct answers to the survey questions and a DVD recording of the CMEs to all Association members, regardless of their attendance.

For the first CME, the pre-CME questionnaire was a 27-item survey, with 5 items on participants' knowledge of the CRC burden in both the Vietnamese American and general U.S. populations, 11 items on screening guidelines and current practices, and 11 items on risk factors for CRC. For the second CME, the pre-CME questionnaire was a 16-item survey, with 7 items regarding CRC screening guidelines and current practices and 9 CRC vignettes to assess the physicians' screening recommendations to hypothetical patients. On both pre-CME questionnaires, there were demographic questions, e.g., participant's year of birth, sex, country of medical school completion, medical specialty, years in practice, and

site of practice, and questions about their current CRC screening practices. Patient profile questions included the proportion of patients age 50 and older, the number diagnosed with CRC in the past year, patients' types of medical insurance, and patients' CRC screening compliance. For both first and second CMEs, the post-CME survey items were identical to the pre-CME items, except that the demographic and patient profile questions were not repeated. Each survey took about 15 minutes to complete. (The CME questions and correct answers appear in Tables 3 and 4.)

The primary outcome was the change in knowledge between the pre- and post-CME surveys. Responses per item were coded as "0" for incorrect and "1" for correct. Total correct scores and percentages were then calculated for each participant on both pre- and post-CME surveys. For any knowledge-related item, non-responses were included in the analysis as incorrect answers. McNemar's tests were used to determine if there was a significant change between participants' pre- and post-CME scores.

The Institutional Review Boards of the Northern California Cancer Center and University of California, San Francisco approved the study protocol.

Results

Table 1 shows the demographic characteristics of Vietnamese American physician participants at the two CMEs. In the first CME, 42 physicians completed both pre- and post-CME surveys. In the second CME, 35 physicians completed both surveys. For both CMEs, the majority of physicians were male, age 50 years or older, in general internal medicine or family medicine, in solo or group private practice, and Vietnamese medical school graduates.

Table 2 shows the patient profiles and CRC screening compliance reported by primary care physicians at the two CME sessions. Patient profiles are presented only for internal medicine and family medicine physicians (not pediatricians or psychiatrists) because primary care physicians are most often responsible for ordering CRC screening tests. Large proportions of the patients of the primary care physicians had public insurance (such as Medicare or MediCal). About half of the physicians had had one or more patients diagnosed with colon cancer in the past year. Although relatively few physicians reported that their patients requested FOBT, sigmoidoscopy, or colonoscopy "always" or "most of the time" (ranging from 6% to 39%), many more indicated that they offered these tests to their patients "always" or "most of the time" (ranging from 28% to 76%). Few physicians reported that their patients refused CRC screening tests "always" or "most of the time" (ranging from 0% to 16%).

Table 3 reports on the evaluation of the first CME, specifically, the percentages of correct responses on knowledge items related to CRC burden, screening guidelines and practices, and risks factors. The pre-CME knowledge regarding the CRC burden and screening guidelines and practices was limited. The percentages of correct responses were 50% or below for all 5 items regarding CRC burden and for 5 of 11 items concerning on CRC screening guidelines and practices. From pre- to post-CME, statistically significant improvements in correct responses were observed for all 5 items on CRC burden, 4 of 11 items concerning CRC screening guidelines and practices, and 5 of 11 items on CRC risk factors. For 5 of the 6 items regarding CRC risk factors that did not show statistically significant increases, the pre-CME knowledge levels were already high, ranging from 69% to 95%.

Table 4 reports on the evaluation of the second CME, specifically, the percentages of correct responses on knowledge items regarding CRC screening guidelines and practices and on

treatment vignettes. There were significant increases in 5 of the 7 items regarding screening guidelines and practices. One question on currently recommended guidelines for FOBT did not yield a statistically significant increase; however, the baseline score was already high at 89%. Physicians improved their correct responses for 7 of the 9 treatment vignettes between pre-and post-CME, but the improvement was not statistically significant.

Discussion

Overall, the two CME sessions were effective in increasing Vietnamese American physicians' knowledge regarding CRC burden and risk factors and CRC screening guidelines and practices. In the first CME, Vietnamese American physicians' knowledge regarding the CRC screening was limited before the CME, but it increased significantly after the CME session. For the second CME, knowledge on CRC screening guidelines and practices increased significantly. The results of this study are consistent with previous findings on CME and provider training interventions among Vietnamese American physicians.^{30,31}

However, physician responses to clinical vignettes regarding treatment did not show significant improvements. These vignettes were rather complicated and required distinction of nuances. Perhaps the material needed to answer the vignette questions was not distinctly emphasized and repeated sufficiently in the didactic presentation. Also, there may be not enough time for participants to process this material over the course of a dinner. Given that vignettes are reasonably common in training,^{32–35} in the future educators could use interactive methods to facilitate discussion, provide context, and explain correct answers to cases to increase retention of the material.

There are several strengths of this study. First, the CME seminars were part of a multifaceted intervention. We supplemented the CME sessions with other provider training interventions including distribution of a culturally and linguistically appropriate CRC booklet and reminder penlights to patients at the physicians' offices in the study area. Second, there were multiple communication tools, such as provider training newsletters and DVDs, to disseminate information to the physicians. Third, the CME was designed for a specific group of participants, Vietnamese American physicians. Fourth, the training was delivered by locally respected health professional leaders.

This study has a few limitations. First, the study did not have a method of validating long-term retention of knowledge gained through the CMEs. Second, the study had no control group or random assignment to alternative interventions, which might have allowed stronger assertions of causal effects on physician knowledge. Third, the samples were small and thus we could not detect small changes in knowledge. In addition, it was not possible to determine the extent of overlap between the two sets of respondents or to link the first and second CME survey responses of individuals.

Based on the results of this study and the consistent findings with other cancer screening studies using CME to educate Vietnamese American physicians,^{30,31} we conclude that CME is an effective method to increase knowledge about cancer screening for them. This improved knowledge may lead to an increased physician recommendation of CRC screening for their patients and thereby increased CRC screening rates in Vietnamese Americans.

This study provides evidence that CME designed for a specific group, delivered by locally respected health professional leaders, and complemented with culturally and linguistically appropriate health education materials is effective in increasing cancer screening knowledge in health care providers who have low baseline knowledge.

Acknowledgments

We wish to thank the Vietnamese Physician Association of Northern California, Ms. Jennifer Tran, Ms. Jenny McNeill, Dr. Khanh Le, and Dr. Ky Lai for their contributions in organizing the CMEs. Some of these data were presented at the American Society of Preventive Oncology Annual Meeting, March 2 – 4, 2007, Houston, TX. This research was supported in part by National Cancer Institute grants R01 CA 100856 and U01CA114640. However, the contents of this publication are solely the responsibility of the authors and do not necessarily represent the official views of the National Cancer Institute.

References

1. American Cancer Society. Cancer Facts & Figures 2008. Atlanta, GA: American Cancer Society; 2008.
2. Cockburn, M.; Deapen, M., editors. Cancer Incidence and Mortality in California: Trends by Race/ethnicity, 1988–2001. Los Angeles: Los Angeles Cancer Surveillance Program, University of California; 2004.
3. U.S. Preventive Services Task Force. Screening for Colorectal Cancer: U.S. Preventive Services Task Force Recommendation Statement. *Ann Intern Med.* 2008; 149:627–637. [PubMed: 18838716]
4. McFarland EG, Levin B, Lieberman DA, et al. Revised colorectal screening guidelines: joint effort of the American Cancer Society, U.S. Multisociety Task Force on Colorectal Cancer, and American College of Radiology. *Radiology.* 2008; 248:717–720. [PubMed: 18710970]
5. Centers for Disease Control and Prevention. Increased use of colorectal cancer tests --- United States, 2002 and 2004. *MMWR.* 2006; 55:308–311. [PubMed: 16557215]
6. Jenkins CNH, McPhee SJ, Bird JA, et al. Cancer risks and prevention practices among Vietnamese refugees. *West J Med.* 1990 Jul; 153(1):34–9. [PubMed: 2389574]
7. Walsh JME, Kaplan CP, Nguyen B, et al. Barriers to colorectal cancer screening in Latino and Vietnamese Americans compared to non-Latino White Americans. *J Gen Intern Med.* 2004 Feb; 19(2):156–66. [PubMed: 15009795]
8. Wong ST, Gildengorin G, Nguyen T, et al. Disparities in colorectal cancer screening rates among Asian Americans and non-Latino Whites. *Cancer.* 2005 Dec 15; 104(12 Suppl):2940–7. [PubMed: 16276538]
9. U.S. Department of Health and Human Services. Understanding and Improving health; Objectives for Improving Health (Part A: Focus Areas 1–14). 2. Vol. 1. Washington, DC: Dept. of Health and Human Services; November. 2000 Healthy People 2010; p. 24
10. U.S. Census Bureau. 1990 Profiles of Asians and Pacific Islander: Selected Characteristics. Washington, DC: U. S. Bureau of the Census; 1990.
11. U.S. Census Bureau. Profiles of General Demographic Characteristics 2000: 2000 Census of Population and Housing, United States. Washington, DC: U. S. Census Bureau; 2001.
12. Nguyen BH, McPhee SJ, Stewart SL, et al. Colorectal cancer screening in Vietnamese Americans. *J Cancer Educ.* 2008 Jan–Mar; 23(1):37–45. [PubMed: 18444045]
13. U.S. Census Bureau. US Census 2000 Summary File 4 on Population and Housing Data. U.S. Census Bureau; Web sites. Available at http://factfinder.census.gov/servlet/DTTable/?_bm=y&-geo_id=01000US&-reg=DEC_200
14. McPhee SJ, Bird JA, Ha NT, et al. Pathways to early cancer detection for Vietnamese: Suc khoe la vang! (Health is gold!). *Health Educ Q.* 1996 December; 23(Suppl):S60–S75.
15. Nguyen BH, McPhee SJ, Stewart SL, et al. Effectiveness of a controlled trial to promote colorectal cancer screening in Vietnamese Americans. *Am J Public Health.* 2009 Revision resubmitted.
16. Jenkins CN, McPhee SJ, Bird JA, et al. Effect of a media-led education campaign on breast and cervical cancer screening among Vietnamese American women. *Prev Med.* 1999 Apr; 28(4):395–406. [PubMed: 10090869]
17. Nguyen BH, Vo PH, Doan HT, et al. Using focus groups to develop colorectal cancer screening intervention among Vietnamese Americans. *J Cancer Educ.* 2006 Summer;21(2):80–3. [PubMed: 17020518]

18. McPhee SJ, Bird JA, Davis T, et al. Barriers to breast and cervical cancer screening among Vietnamese American women. *Am J Prev Med.* 1997 May-Jun; 13(3):205–13. [PubMed: 9181209]
19. McPhee SJ, Stewart S, Brock KC, et al. Factors associated with breast and cervical cancer screening practices among Vietnamese American women. *Cancer Detect Prev.* 1997; 21(6):510–21. [PubMed: 9398991]
20. Gennarelli M, Jandorf L, Cromwell C, et al. Barriers to colorectal cancer screening: inadequate knowledge by physicians. *Mt Sinai J Med.* 2005 Jan; 72(1):36–44. [PubMed: 15682261]
21. Nadel MR, Shapiro JA, Klabunde CN, et al. A national survey of primary care physicians' methods for screening for fecal occult blood. *Ann Intern Med.* 2005 Jan 18; 142(2):86–94. [PubMed: 15657156]
22. Davis DA, Thomson MA, Oxman AD, et al. Changing physician performance. A systematic review of the effect of continuing medical education strategies. *JAMA.* 1995 Sep 6; 274(9):700–5. [PubMed: 7650822]
23. Davis D, O'Brien MA, Freemantle N, et al. Impact of formal continuing medical education: do conferences, workshops, rounds, and other traditional continuing medical education activities change physician behavior or health care outcomes? *JAMA.* 1999 Sep 1; 282(9):867–74. [PubMed: 10478694]
24. O'Brien MA, Freemantle N, Oxman AD, et al. Continuing medical meetings and workshops: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev.* 2001; (2):CD003030. Review. [PubMed: 11406063]
25. Mansouri M, Lockyer J. A meta-analysis of continuing medical education effectiveness. *J Contin Educ Health Prof.* 2007 Winter;27(1):6–15. [PubMed: 17385735]
26. Cauffman JG, Forsyth RA, Clark VA, et al. Randomized controlled trials of continuing medical education: What makes them most effective? *J Contin Educ Health Prof.* 2002 Fall;22(4):214–21. [PubMed: 12613056]
27. Wright FC, Law CH, Last LD, et al. A blended knowledge translation initiative to improve colorectal cancer staging. *BMC Health Serv Res.* 2006; 16(6):4. [PubMed: 16412251]
28. Smith AJ, Law CH, Khalifa MA, et al. Multimodal CME for surgeons and pathologists improves colon cancer staging. *J Cancer Educ.* 2003 Summer;18(2):81–6. [PubMed: 12888381]
29. Wei EK, Ryan CT, Dietrich AJ, et al. Improving colorectal cancer screening by targeting office systems in primary care practices: Disseminating research results into clinical practice. *Arch Intern Med.* 2005 Mar 28; 165(6):661–6. [PubMed: 15795343]
30. Lai KQ, Nguyen TT, Mock J, et al. Increasing Vietnamese-American physicians' knowledge of cervical cancer and Pap testing: Impact of continuing medical education programs. *Ethn Dis.* 2004 Summer;14(3 Suppl 1):S122–7. [PubMed: 15682781]
31. Nguyen BH, Nguyen K-P, McPhee SJ, et al. Promoting cancer prevention activities among Vietnamese physicians in California. *J Cancer Educ.* 2000 Summer;15(2):82–5. [PubMed: 10879896]
32. Butler R, Collins E, Katona C, et al. Does a teaching program improve general practitioners' management of depression in the elderly? *J Affect Disord.* 1997 Dec; 46(3):303–8. [PubMed: 9547129]
33. Lu T-H, Shih T-P, Lee M-C, et al. Diversity in death certification: A case vignette approach. *J Clin Epidemiol.* 2001 Nov; 54(11):1086–93. [PubMed: 11675159]
34. Vamos M. The concept of appropriate professional boundaries in psychiatric practice: A pilot training course. *Aust N Z J Psychiatry.* 2001 Oct; 35(5):613–8. [PubMed: 11551276]
35. Saarela T, Engstrom R. Reporting differences in management strategies by primary care physicians and psychiatrists in older patients who are depressed. *Int J Geriatr Psychiatry.* 2003 Feb; 18(2):161–8. [PubMed: 12571826]

Table 1

Demographic Characteristics of Vietnamese American Physician Participants at Continuing Medical Education (CME) seminars

Variable	First CME (n = 42)		Second CME (n=35)	
	n	% [*]	n	% [*]
Gender				
Male	30	76.9	22	68.8
Female	9	23.1	10	31.3
Age (years) [†]				
Under 40	10	27.0	5	15.6
40–49	7	18.9	6	18.8
50–59	13	35.1	11	34.4
60 and over	7	18.9	10	31.3
Medical specialty				
General internal medicine	15	39.5	8	24.0
Family medicine	10	26.3	10	31.3
Other [‡]	13	34.2	14	43.8
Years of practice				
1–10	19	52.8	12	41.4
11–20	8	22.2	7	24.1
21–40	9	25.0	10	34.5
Country of medical school completion				
U.S.	15	40.5	10	32.3
Vietnam	20	54.1	21	67.7
Other [§]	2	5.4	0	0.0
Primary site of practice				
Solo/group private practice	26	66.7	22	68.8
Group/staff-model HMO	6	15.4	3	9.4
Public/community health center/county clinics	5	12.8	3	9.4
University/medical school-based practice	2	5.1	1	3.1
Other sites	0	0.0	3	9.4

* Missing responses not included in percent calculations

[†] Age calculated by difference between year of study and year of birth

[‡] Other specialties include plastic/reconstructive surgery, psychiatry, radiology, nephrology, public health, pediatrics/neonates, obstetrics/gynecology, physical medicine and rehabilitation, pharmacy, cardiology, colorectal surgery, infectious disease, and anesthesiology

[§] Other countries include France and Canada

Table 2

Patient Profiles and Colorectal Cancer Screening Compliance Reported by Primary Care Physicians*

Variable	First CME (n=25)		Second CME (n=18)	
	n	%	n	%
Most common type of patient's insurance				
Public	16	64.0	8	44.4
Private	3	12.0	5	27.8
None	2	8.0	1	5.6
No predominant type	3	12.0	4	22.2
Not applicable/Don't know/Missing	1	4.0	0	0.0
Number of patients diagnosed with colon cancer in the past year				
None	6	24.0	3	16.7
One or more	13	52.0	9	50.0
Not applicable/Don't know/Missing	6	24.0	6	33.3
Proportion of patients, age ≥ 50 years				
≤ 25%	5	20.0	4	22.2
26–50%	12	48.0	7	38.9
51–75%	3	12.0	6	33.3
>75%	2	8.0	0	0.0
Not applicable/Don't know/Missing	3	12.0	1	5.6
Frequency of physicians offering screening				
FOBT				
Never/Rarely	1	4.0	2	11.1
Sometimes	3	12.0	2	11.1
Most of the time/Always	19	76.0	12	66.7
Not applicable/Don't know/Missing	2	8.0	2	11.1
Sigmoidoscopy				
Never/Rarely	4	16.0	4	22.2
Sometimes	7	28.0	5	27.8
Most of the time/Always	12	48.0	5	27.8
Not applicable/Don't know/Missing	2	8.0	4	22.2
Colonoscopy				
Never/Rarely	2	8.0	1	5.6
Sometimes	4	16.0	3	16.7
Most of the time/Always	17	68.0	11	61.1
Not applicable/Don't know/Missing	2	8.0	3	16.7
Frequency of patients refusing screening				
FOBT				
Never/Rarely	12	48.0	8	44.4
Sometimes	9	36.0	7	38.9
Most of the time/Always	2	8.0	0	0.0
Not applicable/Don't know/Missing	2	8.0	3	16.7

Variable	First CME (n=25)		Second CME (n=18)	
	n	%	n	%
Sigmoidoscopy				
Never/Rarely	6	24.0	3	16.7
Sometimes	12	48.0	7	38.9
Most of the time/Always	4	16.0	2	11.1
Not applicable/Don't know/Missing	3	12.0	6	33.3
Colonoscopy				
Never/Rarely	4	16.0	4	22.2
Sometimes	15	60.0	11	61.1
Most of the time/Always	3	12.0	2	11.1
Not applicable/Don't know/Missing	3	12.0	1	5.6

* Includes general internal medicine and family medicine physicians only

Table 3

Percentage of Correct Responses on Knowledge of Colorectal Cancer Burden, Screening Guidelines and Practices, and Risk Factors at the First CME (n = 42)

Questions (correct answers)	Pre CME (%)	Post CME (%)	p-value [†]
Colorectal Cancer Burden			
In the U.S., colorectal cancer is the ... (<i>second leading cause of cancer deaths</i>)	50.0	83.3	0.002
Among Vietnamese women in California, colorectal cancer is ... (<i>the second most common cancer</i>)	47.6	83.3	0.001
Among Vietnamese men in California, colorectal cancer is ... (<i>the fourth most common cancer</i>)	14.3	90.5	0.001
Among people offered an annual FOBT in a U.S. clinical trial, colorectal cancer deaths are reduced by ... (<i>30–39%</i>)	35.7	61.9	0.012
Among people offered an annual FOBT in a U.S. clinical trial, colorectal cancer incidence is reduced by ... (<i>20–29%</i>)	19.0	47.6	0.003
Colorectal Cancer Screening Guidelines and Practices			
The most effective cancer screening is ... (<i>colonoscopy every 10 years</i>)	50.0	81.0	0.001
The recommended evaluation of a properly-performed positive fecal occult blood test is ... (<i>colonoscopy</i>)	45.2	42.9	0.782
People age 50 and older should have colon cancer screening ... (<i>Somewhat agree/Strongly agree</i>)	85.7	95.2	0.103
Colon cancer screening is cost-effective ... (<i>Somewhat agree/Strongly agree</i>)	81.0	95.2	0.034
Current adherence rates for colon cancer screening are high ... (<i>Strongly disagree/Somewhat agree</i>)	50.0	54.8	0.564
Fecal occult blood test is proven effective in reducing colorectal cancer mortality rate ... (<i>Somewhat agree/Strongly agree</i>)	42.9	54.8	0.275
Recommended American College of Gastroenterology and American Cancer Society guidelines for CRC screening are			
Colonoscopy every 10 years ... (<i>True</i>)	83.3	100.0	0.008
Fecal Occult Blood Test every two years ... (<i>False</i>)	61.9	83.3	0.020
Double Contrast Barium Enema every five years ... (<i>True</i>)	35.7	52.4	0.090
Sigmoidoscopy every year ... (<i>False</i>)	81.0	90.5	0.103
Only when patients have symptoms ... (<i>False</i>)	88.1	97.6	0.103
Colorectal Cancer Risk Factors include:			
Country of birth ... (<i>True</i>)	52.4	88.1	0.001
Advanced age ... (<i>True</i>)	92.9	100.0	0.083
Obesity ... (<i>True</i>)	71.4	85.7	0.058
Diet high in red meat ... (<i>True</i>)	88.1	97.6	0.046
Alcohol intake ... (<i>True</i>)	66.7	85.7	0.033
Personal history of cigarette smoking ... (<i>True</i>)	69.0	92.9	0.008
Low calcium intake ... (<i>True</i>)	21.4	28.6	0.317
Previous adenoma or colon cancer ... (<i>True</i>)	95.2	97.6	0.564
Pelvic radiation ... (<i>True</i>)	50.0	83.3	0.001
Low vitamin C intake ... (<i>False</i>)	69.0	78.6	0.206
Use of diuretic medication ... (<i>False</i>)	88.1	90.5	0.706

[†] p-value for McNemar's test

Table 4

Percentage of Correct Responses on Knowledge of Colorectal Cancer Screening and Treatment at the Second CME (n = 35)

Questions (correct answers)	Pre CME (%)	Post CME (%)	p-value [†]
Colorectal Cancer Screening Guidelines and Practices			
The recommended evaluation of a property-performed positive fecal occult blood test is ... (colonoscopy)	45.7	65.7	0.008
Current adherence rates for colon cancer screening are high ... (False)	60.0	65.7	0.317
Fecal occult blood test has been proven effective in reducing colorectal cancer mortality rate in a clinical trial ... (True)	60.0	80.0	0.020
Current recommended American College of Gastroenterology and American Cancer Society guidelines for acceptable colorectal cancer screening rates			
Colonoscopy every ... (10 years)	62.9	91.4	0.002
Fecal Occult Blood Test every ... (1 year)	88.6	91.4	0.655
Sigmoidoscopy every ... (5 years)	60.0	97.1	0.001
Double Contrast Barium Enema every ... (5 years)	45.7	74.3	0.008
Colorectal Cancer Vignettes			
1. A 35 year old man whose mother was diagnosed with colon cancer at age 48 presented to your office asking about colon cancer screening. What would you recommend? ... (Colonoscopy at age 38)	20.0	28.6	0.257
2. A 25 year old female had a sigmoidoscopy for rectal bleeding. She was found to have a 1-cm tubular adenoma in the sigmoid colon which was removed. What would be your recommendation as the next step of her evaluation? ... (Schedule a colonoscopy)	54.3	71.4	0.109
3. A 60 year old man had two adenomatous polyps removed, one of which was 1.5 cm in diameter. When would you recommend a repeat colonoscopy? ... (Repeat colonoscopy in 3 years)	25.7	37.1	0.285
4. A 55 year old man had two small (<1 cm) adenomatous polyps removed during a screening colonoscopy. When would you recommend a repeat surveillance colonoscopy? ... (Repeat colonoscopy in 5 years)	60.0	68.6	0.439
5. A 65 year old female has a small (<1 cm) villous adenoma removed during a screening colonoscopy from the transverse colon. When would you recommend a repeat colonoscopy? ... (Repeat colonoscopy in 5 years)	42.9	40.0	0.782
6. A 40 year old female reported that her mother just died from colon cancer which was diagnosed at age 65. She requested colon cancer screening. A screening colonoscopy was performed, and it was normal. What would be your recommendation for colon cancer surveillance in this patients? ... (Repeat colonoscopy in 10 years)	25.7	28.6	0.706
7. A 55 year old female was found to have a positive FOBT when the test was performed for colon cancer screening. She had a normal flexible sigmoidoscopy 3 years ago. What would be your recommendation for her at this time? ... (Schedule a colonoscopy)	71.4	74.3	0.706
8. A 55 year old male was found to have a cancer in the descending colon on screening colonoscopy. A curative resection of his colon cancer by partial colectomy was performed. What would be your recommendation for cancer surveillance in this patients? ... (Repeat colonoscopy in 3 years, and if it is negative, repeat colonoscopy in 5 years)	8.6	20.0	0.103
9. A 60 year old female was found to have a large adenocarcinoma in the rectum 3 cm from the anal verge. Otherwise, she was feeling well and has no evidence of bleeding or bowel obstruction. What would be your recommendation as the most appropriate next step in her treatment? ... (Refer the patient for chemoradiation therapy and then tumor resection)	17.1	14.3	0.564

[†] p-value for McNemar's test

[‡] non-responses are counted as incorrect