MS #27051 (accepted author manuscript of the article published in J Gen Intern Med 2019. doi: 10.1007/s11606-019-05096-2)

Screening refusal associated with choice of colorectal cancer screening methods. A cross-sectional study among Swiss primary care physicians.

Yonas Martin, MMed[1,2], Alexander Leonhard Braun, MMed[1], Nikola Biller-Andorno, MD, PhD[3], Jean-Luc Bulliard, PhD[4], Jacques Cornuz, MD, MPH[5], Kevin Selby, MD[5], Reto Auer, MD, MAS[1,5]

[1]Institute of primary health care (BIHAM), University of Bern, Bern, Switzerland, [2]Department of General Internal Medicine, Inselspital, Bern University Hospital, University of Bern, Bern, Switzerland, [3]Institute for Biomedical Ethics and History of Medicine (IBME), UZH, Zürich, Switzerland, [4]Institute of Social and Preventive Medicine (IUMSP), University of Lausanne, Lausanne, Switzerland, [5]Department of Ambulatory Care and Community Medicine, University of Lausanne, Lausanne, Switzerland

Corresponding Author:
Yonas Martin, MMed
Institute of primary health care (BIHAM), University of Bern
Mittelstrasse 43
CH - 3012 Bern
yonas.martin@biham.unibe.ch
+41 31 631 58 79

Figures: 2 (Max 2 tables or figures)
Text word length: 698 (Max 700)
References: 6 (Max. 6)

Key words: primary care, colorectal cancer, screening, practice variation, patient preferences

Running title: Colorectal cancer screening in primary care

Introduction

Guidelines recommend primary care physicians (PCPs) offer patients a choice of colorectal cancer (CRC) screening methods, including colonoscopy and fecal occult blood tests (FOBT).(1) However, in countries like the US and Switzerland, patients are screened almost exclusively with colonoscopy.(2, 3) When offered both tests, patients appear as likely to choose one as the other; the predominance of colonoscopy may largely be explained by physician preference and local medical culture.(4) Offering only colonoscopy might explain why screening rates are low.

We sought to determine the proportions of patients who opted for screening with colonoscopy or FOBT and who refused testing among 50-75-year-olds eligible for screening at a PCP visit. We described variation in care between PCPs and tried to identify PCP-level factors associated with testing method and refusal.

Methods

We conducted a cross-sectional data collection on CRC screening practices at PCP-level. We invited 129 PCPs from the Swiss Sentinel Surveillance Network (Sentinella) to fill a structured data collection form for 40 consecutive non-emergent consultations with 50-75-year-old patients. The federal office of public health (FOPH) provided demographic data at PCP level. PCPs reported demographic data at patient-level, data on previous CRC tests, contra-indications for screening, risk factors for CRC, if CRC screening was discussed, choice of test (colonoscopy, FOBT, other), and refusal for testing. We calculated overall proportions and reported variation between PCPs in the proportion of FOBT vs. colonoscopy they prescribed to patients who chose to be tested. We calculated overall prescription rates of FOBT vs. colonoscopy for each PCP, including both patients who had already undergone screening and patients prescribed screening after the consultation. We dichotomized this covariate by never-prescription of FOBT (no patients previously tested with FOBT or prescribed FOBT after discussion) vs. any FOBT.

We used mixed-effects logistic regression models that allowed us to cluster the data by PCP (with PCPs modeled as a random effect) to explore the association between PCP characteristics and the proportion of patients who refused screening after discussion. We adjusted the models for PCPs' demographics (age, sex) and language region, for patients' demographics (age, sex), and PCPs' prescription patterns.

Results

91 PCPs (71% of invited, mean age:54, 24% women) collected data on 3,637 patients. 186 patients were excluded because they were not aged 50-75 y.o. or had already been seen during data collection. 3,453 patients were included in the analysis (mean age:63, 50% women). PCPs discussed screening with 51% (874/1727) of eligible patients (not up-to-date and no contra-indications for testing) (Figure 1). After excluding patients with risk factors or symptoms suggestive of CRC (n=104), 61% (473/770) opted for screening (FOBT/colonoscopy ratio:0.5), 29% refused, 6% were undecided and 3% were unspecified or missing. Most patients who refused screening said they did so because they didn't feel concerned.

33 PCPs (36%) had none of their patients previously tested with FOBT or who planned to be tested with FOBT. Patients of PCPs who only offered colonoscopy were more likely to refuse screening than patients of PCPs who offered both colonoscopy and FOBT (44%vs.20%, respectively, Figure 2). These results were confirmed in our mixed-effects multivariate model (OR:3.90,95%CI:1.90 to 8.00,$p<0.001$). No other PCPs characteristics were associated with chosen testing methods or refusal rates.

Discussion

When PCPs discussed CRC screening with their 50-75-year-old patients who were not up-to-date with screening, had no contraindication and no risk factors for CRC, a third of their patients declined to be screened. PCPs who only offered colonoscopy had lower screening rates (47% vs. 71%) and higher refusal rates (44% vs. 20%) than PCPs who offered both colonoscopy and FOBT. These results are in line with a randomized controlled trial showing lower uptake rates of CRC screening tests among patients who are offered only colonoscopy vs. among the ones who are offered both FOBT and colonoscopy (5). We were inherently limited in considering additional patient-level sociodemographic factors by the simplicity and anonymity of our data collection.

Encouraging PCPs to offer both methods could reduce the number of physicians who only prescribe one screening modality, reduce variation between practices, and allow more patients to choose the test that matches their preferences and values.(4, 6) This could reduce the number of refusals, raise CRC screening rates, and ultimately lower the burden of CRC.

Acknowledgements

Contributors: We thank the primary care physicians from the Sentinella network and the Sentinella administration as well as the Section Notification Systems at the Federal Office of Public Health for their help collecting this data. We thank Kali Tal for the thorough editing of this work. We thank Emanuele Prati for his help in the data collection. We thank Charles Dvořák for the great help in the conduction of the study among Sentinella PCPs. We thank Cyril Ducros for his comments to this work.

Funders: This work was supported by the funds from the Swiss National Scientific Foundations National Research Plan 74 NFP74. 407440_167519. The funders had no role in the design or conduct of the study, in the collection, management, analysis, or interpretation of data, nor in the preparation, review or approval of the manuscript.

Prior presentations: An earlier version of the abstract was presented at the Wennberg International Conference (WIC) in Zürich, Switzerland in April 2018 and at the Swiss Society of General Internal Medicine (SSGIM) meeting in Basel, Switzerland in May 2018. The abstract was presented at the European Society of Medical Decision Making (SMDM) conference in Leiden, Netherlands, in June 2018. This work was presented as oral presentation at the American Society of Medical Decision Making (SMDM) Conference in Montreal in October 2018.

Conflict of interest

None of the authors has a conflict of interest related to this manuscript.

References:

1. Bibbins-Domingo K, Grossman DC, Curry SJ, Davidson KW, Epling JW, Jr., Garcia FAR, et al. Screening for Colorectal Cancer: US Preventive Services Task Force Recommendation Statement. JAMA. 2016;315(23):2564-75. doi:10.1001/jama.2016.5989
2. Fedewa SA, Cullati S, Bouchardy C, Welle I, Burton-Jeangros C, Manor O, et al. Colorectal Cancer Screening in Switzerland: Cross-Sectional Trends (2007-2012) in Socioeconomic Disparities. PLoS ONE. 2015;10(7):e0131205. doi:10.1371/journal.pone.0131205
3. McQueen A, Bartholomew LK, Greisinger AJ, Medina GG, Hawley ST, Haidet P, et al. Behind Closed Doors: Physician-Patient Discussions About Colorectal Cancer Screening. Journal of General Internal Medicine. 2009;24(11):1228-35. doi:10.1007/s11606-009-1108-4
4. Selby K, Cornuz J, Gachoud D, Bulliard JL, Nichita C, Dorta G, et al. Training primary care physicians to offer their patients faecal occult blood testing and colonoscopy for colorectal cancer screening on an equal basis: a pilot intervention with before-after and parallel group surveys. BMJ Open. 2016;6(5):e011086. doi:10.1136/bmjopen-2016-011086
5. Inadomi JM, Vijan S, Janz NK, Fagerlin A, Thomas JP, Lin YV, et al. Adherence to colorectal cancer screening: a randomized clinical trial of competing strategies. Arch Intern Med. 2012;172(7):575-82. doi:10.1001/archinternmed.2012.332
6. Mulley AG, Trimble C, Elwyn G. Stop the silent misdiagnosis: patients' preferences matter. Bmj. 2012;345:e6572.

Figure legends

Figure 1- Flowchart of 40 consecutive patients aged 50-75 included by PCPs from the Sentinella network from in 2017.*

* PCPs collected data on 40 consecutive patients aged 50-75 from on past screening status, contraindications for screening, if a discussion on CRC screening could take place, RF and symptoms for CRC and the decision taken (refusal, FOBT, colonoscopy, other). Data collected between April and December 2017. a RF = Risk factor for CRC

Figure 2 – Decision patterns among patients who had a discussion on CRC screening (N patients=770) and included by PCPs who only prescribed colonoscopy (N=33) vs PCPs who prescribed both colonoscopy and FOBT (N=58), in the Sentinella Network in 2017*

* Patients with risk factors or symptoms suggestive for CRC (n=104) (see Figure 1) excluded of this analysis