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

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37 **Introduction**

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

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

49 **Methods**

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

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

68

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.

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111

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114 General Internal Medicine (SSGIM) meeting in Basel, Switzerland in May 2018. The abstract
115 was presented at the European Society of Medical Decision Making (SMDM) conference in
116 Leiden, Netherlands, in June 2018. This work was presented as oral presentation at the
117 American Society of Medical Decision Making (SMDM) Conference in Montreal in October
118 2018.

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120 Conflict of interest

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

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161 **Figure legends**

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

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

168

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

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

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