Preventive Medicine 102 (2017) 20–23

Contents lists available at ScienceDirect

Preventive Medicine

journal homepage: www.elsevier.com/locate/ypmed

Short Communication

Recommendation of colorectal cancer testing among primary care patients younger than 50 with elevated risk

Celette Sugg Skinner [a,b,*], Chul Ahn [a,b], Ethan A. Halm [a,b,c], Wendy Pechero Bishop [a], Katharine McCallister [a], Joanne M. Sanders [a], David Farrell [d], Noel Santini [c,e], Amit G. Singal [b,f]

[a] Department of Clinical Sciences, UT Southwestern Medical Center, 5323 Harry Hines Blvd., Dallas, TX 75390, USA
[b] Simmons Comprehensive Cancer Center, UT Southwestern Medical Center, 5323 Harry Hines Blvd., Dallas, TX 75390, USA
[c] Department of Internal Medicine, UT Southwestern Medical Center, 5323 Harry Hines Blvd., Dallas, TX 75390, USA
[d] People Designs, 1304 Broad St, Durham, NC 27705, USA
[e] Parkland Health & Hospital System, 5201 Harry Hines Blvd., Dallas, TX 75235. USA
[f] Department of Internal Medicine, Division of Digestive & Liver Diseases, UT Southwestern Medical Center, 5323 Harry Hines Blvd., Dallas, TX 75390, USA

ARTICLE INFO

Article history:
Received 17 January 2017
Received in revised form 6 June 2017
Accepted 12 June 2017
Available online 15 June 2017

Keywords:
Tailored interventions
Decision support
Cancer screening

ABSTRACT

In the era of precision medicine, efforts are needed to identify and tailor screening recommendations among elevated-risk patients. Individuals younger than 50 years are an important target population, as they comprise 15% of colorectal (CRC) cases and often present with more advanced disease than their 50+ counterparts. In this large study, 2470 patients ages 25–49 used a tablet-based program that assessed risks, matched risks with screening guidelines, and generated tailored printed guideline-concordant recommendations for patients and their providers.
The tablet-based program identified 121 (4.9%) patients with risk factors warranting screening before age 50. Likelihood of risk warranting screening was greater for ages 40–49 than <40 years (OR: 2.38), females than males (OR: 1.82), and African Americans (OR: 1.69) and non-Hispanic Whites (OR: 2.89) compared to Hispanics. Most common risk factors were family history of polyps (23.1%), personal history of inflammatory bowel disease (19.8%), and combined family history of CRC + polyps (18.2%). Receipt of guideline-concordant screening within 6 months of identification was low, including only 5.3% of those who needed colonoscopy and 13.3% for whom colonoscopy or FIT was recommended. Although elevated-risk patients younger than 50 years can be readily identified, more than notification is necessary to facilitate screening participation.

1. Introduction

Screening for colorectal cancer (CRC) is not routinely recommended until age 50 (U.S. Preventive Services Task Force, 2016), but national guidelines recommend earlier screening initiation among individuals with elevated risk (Winawer et al., 2003; Levin et al., 2008). About 15% of CRC cases occur among people <50. They are more likely than their 50+ counterparts to present with advanced-stage disease (Abdelsattar et al., 2016), incidence among them is growing rapidly, (Bailey et al., 2015) and those at elevated risk are unlikely to be screened (Tsai et al., 2015).

In the era of precision medicine, multiple groups have called for improved risk assessment and tailored screening for at-risk younger individuals (Abdelsattar et al., 2016; Bailey et al., 2015; Tsai et al., 2015; Ahnen et al., 2014). However, these patients are difficult to identify because relevant risk factors are not routinely collected and documented in medical records (Welch et al., 2015). Also, determining appropriate test modality, age at initiation, and repeat intervals is difficult because guidelines are based on complex algorithms considering multiple personal and family history factors. Based on risk factor combinations, some patients can satisfy guidelines via fecal immunohistochemical test (FIT) whereas colonoscopy is the only recommended test for those at highest risk (Winawer et al., 2003; Levin et al., 2008).

We developed a touch-screen computer program that assesses individuals' risks, uses algorithms to match them with national screening guidelines, and generates guideline-concordant printed recommendations for patients and their providers. The Cancer Risk Intake System (CRIS) (Skinner et al., 2015; Skinner et al., 2016) was used by a large, diverse population of patients in two primary-care community-based clinics in Dallas County's safety-net, Parkland Health and Hospital System. For these analyses, we used CRIS-collected data to characterize the subset of patients younger than 50 years who reported risk factors indicating need for CRC screening and to describe proportions who underwent guideline-concordant screening, non-guideline-concordant screening, or no screening.

Abbreviations: CRIS, Cancer Risk Intake System; CRC, Colorectal cancer.

* Corresponding author at: UT Southwestern Medical Center, 5323 Harry Hines Blvd., Dallas, TX 75390, USA.
E-mail address: celette.skinner@utsouthwestern.edu (C.S. Skinner).

http://dx.doi.org/10.1016/j.ypmed.2017.06.014
0091-7435/

Table 1
Demographic factors of patients younger than age 50.

	Screening needed $N = 121$ n (%)	Screening not needed $N = 2349$ n (%)	Overall $N = 2470$ n (%)	p-Value[a]
Sex, female	97 (80.2)	1651 (70.3)	1748 (70.8)	0.0198
Age, years				
25–39	28 (23.1)	1015 (43.2)	1043 (42.2)	<0.0001
40–49	93 (76.9)	1334 (56.8)	1427 (57.8)	
Race/ethnicity				
Hispanic	54 (44.6)	1437 (61.2)	1491 (60.4)	0.0007
NH white	12 (9.9)	103 (4.4)	115 (4.7)	
African American	54 (44.6)	787 (33.5)	841 (34.1)	
Other/unknown	1 (0.8)	22 (0.9)	23 (0.9)	

NH = non-Hispanic.
[a] p-Value based on Chi-Square analysis.

2. Methods

2.1. Study procedures

From 8/28/2013 to 1/22/2016, bilingual research assistants and clinic staff invited a convenience sample of 4583 patients to provide verbal consent and use CRIS while waiting for primary care appointments. Eligible patients were 25–75 years – youngest and oldest ages for which there are CRC screening guidelines (Winawer et al., 2003; Levin et al., 2008) – and spoke English or Spanish. CRIS collected personal and family history risk factors, including heritable syndromes including Lynch and familial adenomatous polyposis.

CRIS is described in detail elsewhere (Skinner et al., 2015; Skinner et al., 2016). CRIS algorithms link responses with US Multi-Society Task Force (USMTF) guideline-concordant recommendations (Winawer et al., 2003; Levin et al., 2008) and generate tailored printouts for the patient and referring physician.

The study was approved by the UT Southwestern Institutional Review Board.

2.2. Analyses

We determined the proportion of patients younger than 50 years reporting risk factors warranting screening. We used multiple logistic regression analysis to examine whether demographic factors were significantly associated with risk warranting screening. We grouped patient-reported risk factors into: personal history of polyps, personal history of inflammatory bowel disease (IBD), family history of polyps, family history of CRC, and personal or family history of CRC or cancers

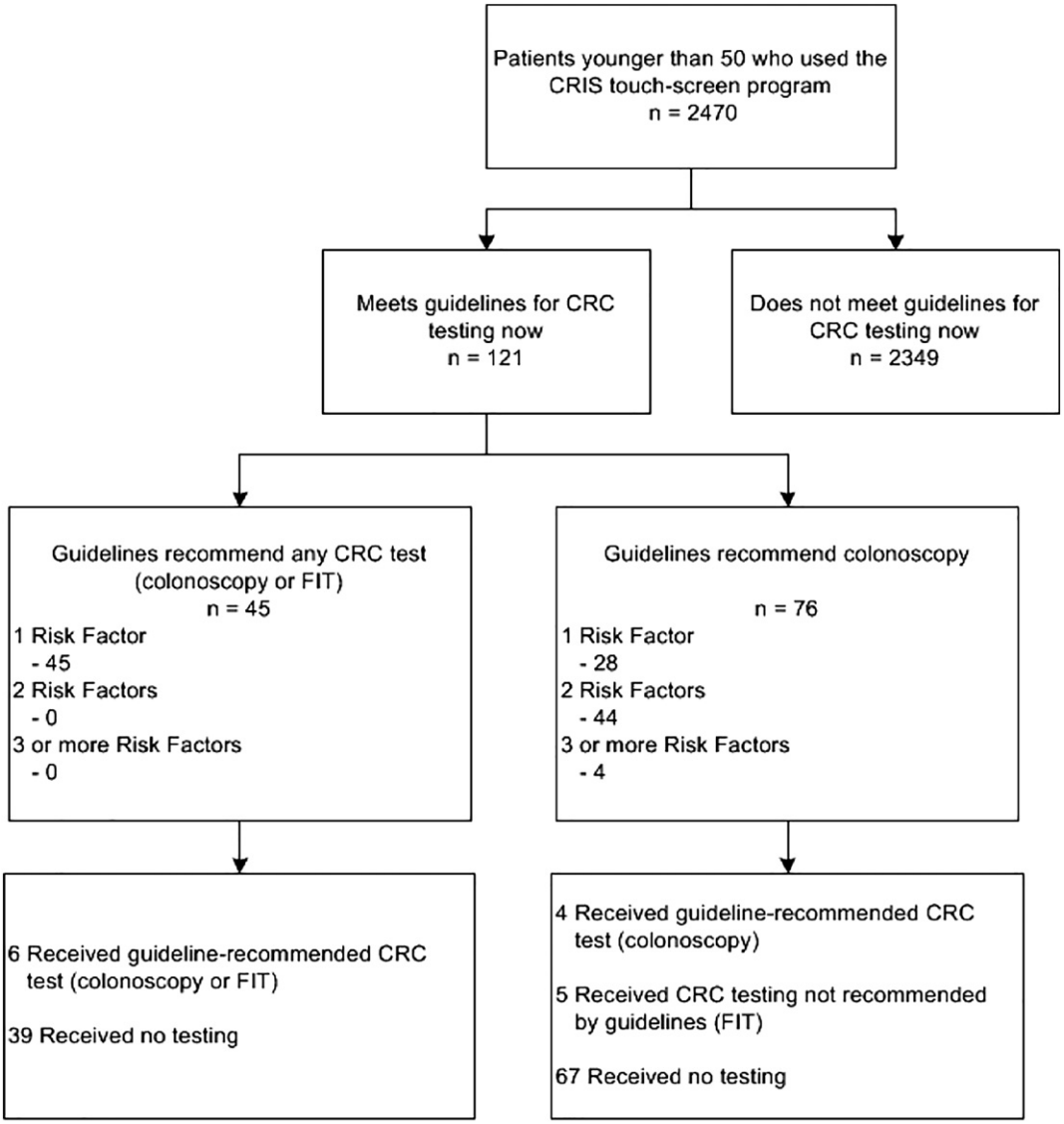

Fig. 1. Study schematic.