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Key Considerations in Designing a Patient Navigation Program for Colorectal Cancer Screening

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Abstract

Colorectal cancer is the second leading cause of cancer mortality among those cancers affecting both men and women. Screening is known to reduce mortality by detecting cancer early and through colonoscopy, removing precancerous polyps. Only 58.6% of adults are currently up-to-date with colorectal cancer screening by any method. Patient navigation shows promise in increasing adherence to colorectal cancer screening and reducing health disparities; however, it is a complex intervention that is operationalized differently across institutions. This article describes 10 key considerations in designing a patient navigation intervention for colorectal cancer screening based on a literature review and environmental scan. Factors include (1) identifying a theoretical framework and setting program goals, (2) specifying community characteristics, (3) establishing the point(s) of intervention within the cancer continuum, (4) determining the setting in which navigation services are provided, (5) identifying the range of services offered and patient navigator responsibilities, (6) determining the background and qualifications of navigators, (7) selecting the method of communications between patients and navigators, (8) designing the navigator training, (9) defining oversight and supervision for the navigators, and (10) evaluating patient navigation. Public health practitioners can benefit from the practical perspective offered here for designing patient navigation programs.

Keywords

patient navigation; colorectal cancer; screening

INTRODUCTION

Among cancers affecting both men and women in the United States, colorectal cancer is the second-most common cancer diagnosed and the second leading cause of cancer mortality (U.S. Cancer Statistics Working Group, 2008). In 2009, a total 51,848 persons died and

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136,717 were diagnosed with colorectal cancer. African Americans are disproportionately affected, experiencing both higher incidence and mortality from colorectal cancer. Colorectal cancer incidence and mortality can be reduced through screening (Whitlock, Lin, Liles, Beil, & Fu, 2008). The U.S. Community Preventive Services Task Force (2013) supports screening using multiple test types. Screening can both detect disease early when treatment is more effective and, using colonoscopy, prevent cancer by removing precancerous polyps (Whitlock et al., 2008). Currently, only 58.6% of adults are up-to-date with colorectal cancer screening (Joseph, King, Miller, & Richardson, 2012), and significant disparities in screening prevalence exist among racial and ethnic minorities, the uninsured, persons of lower income, and those with less education (Rim, Joseph, Steele, Thompson, & Seeff, 2011).

A systematic review of studies published between 1999 and 2006 identified individual, cultural, environmental, and health care system barriers that impede adherence to cancer screening guidelines (Beydoun & Beydoun, 2008). Numerous public health strategies have been developed to address these barriers and increase colorectal cancer screening, including interventions targeting patients, providers, and health systems (*The Guide to Community Preventive Services*, http://www.thecommunityguide.org/index.html). Patient navigation (PN) is an intervention that shows promise in increasing adherence to colorectal cancer screening and reducing health disparities. Specific to cancer screening, the intervention involves navigators who are trained to assess an individual patient's barriers (e.g., transportation, fear about the procedure) and then assist him or her in overcoming those barriers. To date, however, few large-scale efficacy trials of PN on adherence to colon cancer screening have been conducted, and research suggests that how PN is implemented varies considerably (Paskett, Harrop, & Wells, 2011; Wells et al., 2008).

Consequently, in 2009, the Division of Cancer Prevention and Control of the Centers for Disease Control and Prevention (CDC) in collaboration with Westat embarked on a project to develop and test a PN intervention to increase adherence to colonoscopy screening. Of particular interest is developing and testing a model feasible and replicable for implementation by public health practitioners. This article describes formative efforts conducted to guide the development of a PN intervention model. Specifically, we describe key considerations in designing a PN program based on a literature review and environmental scan.

BACKGROUND

PN was first developed to address health disparities among women with breast cancer. The first PN program was established in the early 1990s at Harlem Hospital in New York City to improve the timeliness of diagnostic resolution among medically underserved women who had an abnormal screening mammogram (Freeman, 2012). Since that time, PN has been adopted across the cancer continuum (screening to survivorship) and cancers (breast, cervical, colorectal; Paskett et al., 2011).

Widespread use of PN has led to federal government support for research, evaluation, and implementation initiatives sponsored by National Cancer Institute (NCI), Centers for

Medicare and Medicaid Services (CMS), and Health Resources and Services Administration (HRSA). The Patient Navigation Research Program, a 5-year, nine-site research trial, was funded in 2005 by NCI in collaboration with the American Cancer Society (ACS). The 2005 Patient Navigation Outreach and Chronic Disease Prevention Act (H.R. 1812) authorized a demonstration program of PN to be carried out by HRSA beginning in 2008. And in 2006, CMS funded a 4-year demonstration project for PN with six sites, each serving a unique priority population (e.g., American Indian) and focusing on various cancers. Furthermore, the 2010 Patient Protection and Affordable Care Act (P.L. 111–148) Section 3510 specifically references PN and extends the 2005 Act cited above through 2015. Consequently, HRSA funded 10 new PN projects in 2010 focused broadly on chronic diseases (e.g., cancer, diabetes). The use of PN may increase, given the Affordable Care Act's emphasis on patient-centered health care.

Although PN may be applicable to a wide variety of health conditions, definitions relevant to cancer prevention and care are pertinent to this discussion. The Association of Oncology Social Workers, the Oncology Nursing Society, and National Association of Social Workers adapted C-Change's (http://cancerpatientnavigation.org) definition of PN: "Individualized assistance offered to patients, families, and caregivers to help overcome healthcare system barriers and facilitate timely access to quality health and psychosocial care from pre-diagnosis through all phases of the cancer experience" (http://www.aosw.org/docs/PR-PositionPatientNav. pdf). As of 2012, the Association of State and Territorial Health Officials promotes this definition of PN as well (http://astho.org/Programs/Prevention/Chronic-Disease/Cancer/Patient-Navigation).

Along with definitions, others have articulated common characteristics of PN (Paskett et al., 2011) and principles of PN (Freeman & Rodriguez, 2011). Across these definitions, characteristics, and principles is a focus on addressing patients' barriers to efficiently assist them through a specific course of care within a health care system (e.g., from a primary care referral for colonoscopy through completion of the screening test). Despite this commonality, important differences in operationalizing PN exist. A comprehensive review of PN published in 2011 summarizes significant variation in navigator training (e.g., lay workers vs. professional staff) and background (e.g., nursing, social work), priority populations served, services provided, and where in the cancer continuum PN is provided (Paskett et al., 2011). Additionally, outcome measures for PN have been inconsistent and typically depend on the cancer addressed, where in the cancer continuum the intervention occurs, and specific study aims (Esparza & Calhoun, 2011).

METHOD

Literature Review

We searched Medline, PsychFirst, PsychoInfo, SocialSciSearch, SocialScienceAb, PapersFirst, Proceedings, WilsonSelectPlus, ERIC, ABI Inform, PeriodicalAbs, CINAHL, AppliedSocialSciences Index and Abstracts, Sociological Abstracts, and Google Scholar for peer-reviewed studies conducted in the United States, Canada, or England and published from 1995 through 2012. We used combinations of the following search terms: patient navigat*, lay navigat*, nurse navigat*, navigator nurse, Native American navigat*, health

navigat*, navigation service, navigation program cancer, neoplasm*, screening, and care. The literature review was supplemented by reference lists from identified articles and by articles identified through the environmental scan described below. We also relied on two comprehensive reviews of PN literature across all cancers, one published in 2008 and another in 2011 (Paskett et al., 2011; Wells et al., 2008). Although we intended to focus on colorectal cancer, the larger evidence base helped us categorize relevant considerations in developing a PN program. Overall, the studies varied considerably in the type of PN conducted and the point in the care continuum addressed.

We used a standardized abstraction form to assess the following criteria: PN model and services provided, location or setting of PN, navigators' background and/ or hiring criteria, navigators' training, priority population served, study purpose, study design, participant inclusion criteria, sample size, study sample demographics, outcome measures and instruments used, conclusions or results, and other pertinent information (e.g., theoretical framework).

Environmental Scan

We conducted an environmental scan to gather information about existing PN programs and resources. We searched gray literature, accessed websites for known PN programs, conducted an Internet search using the keywords "patient navigator" and "patient navigation," and gathered published materials from established PN programs. In total, we identified 78 documents, including training manuals, program tools, navigator job descriptions, presentations, reports, legislation, funding announcements, factsheets, evaluation reports, and websites.

In addition, we interviewed 12 practitioners and researchers from established PN programs, prioritizing persons representing Federal PN initiatives, programs focused on colonoscopy screening, and other well-established PN programs. There were 4 representatives from CMS, HRSA, and NCI and 8 representatives from ACS, Ralph Lauren Center for Cancer Care and Prevention, Chicago PN Program, New York City Department of Health and Mental Hygiene, Colorado Colorectal Screening Program, and Johns Hopkins University. The semistructured discussion guide mirrored the topics captured in the standardized abstract form used in the literature review. Detailed notes were composed for the interviews that, on average, lasted 60 minutes. Additional program materials and documents were provided by some of the participants.

Analysis

We compiled data into detailed matrices. The publications matrix was organized based on the abstraction criteria noted above. The matrix for documents identified through the environmental scan included the type of document, associated PN program, and a comprehensive description of the document. A team of four researchers reviewed the matrices and notes from the interviews to classify characteristics of PN programs, identify areas of variation, and consider key decision points in intervention design.

RESULTS

Based on our literature review, we identified 14 efficacy studies associated with PN addressing colorectal cancer screening and diagnosis (Table 1).

Furthermore, through our analysis we identified 10 key areas of consideration in developing a PN program for colorectal cancer screening: (1) identifying a theoretical framework and setting program goals, (2) specifying community characteristics, (3) establishing the point(s) of intervention within the cancer continuum, (4) determining the setting in which navigation services are provided, (5) identifying the range of services offered and patient navigator responsibilities, (6) determining the background and qualifications of navigators, (7) selecting the method of communications between patients and navigators, (8) designing the navigator training, (9) defining oversight and supervision for the navigators, and (10) evaluating PN. In describing these aspects of a program, we focus attention to the current practices of colorectal cancer focused PN programs (Figure 1).

Identifying a Theoretical Framework and Setting Program Goals

Results suggest that few PN programs apply theoretical frameworks to their program design. We did, however, identify studies that apply the social ecological model, the health belief model, social cognitive theory, social support theory, stages of change, preventive health model, precaution adoption process model, and the chronic care model (Ma et al., 2009; Myers et al., 2008; Myers et al., 2013; Nuss, Williams, Hayden, & Huard, 2012; Paskett et al., 2012). In addition, building off a qualitative study of the navigation process, Jean-Pierre et al. (2011) propose a framework linking process, patient, navigator, and external factors to navigator outcomes.

Specifying Community Characteristics

Interviewees emphasized the importance of understanding characteristics of the priority population to be served and of the community, more generally. The demographic characteristics (e.g., race/ethnicity, income, first language, insurance status, education, country of origin) of the priority population inform decisions about both navigation services to provide (e.g., translation) and navigators to hire (e.g., Spanish speakers). In addition, the population to be served by the program may have unique barriers that must be recognized, such as mistrust of the health system or cultural norms that impede screening. Results also suggest that aspects of the community (e.g., rural/urban, access to healthcare, role of churches) can influence the design of a PN program. For instance, to reach Korean immigrants, Ma et al. (2009) worked through Korean churches and hired Korean-speaking navigators who represented the community and could assist with language translation.

Establishing the Point(s) of Intervention Within the Cancer Continuum

We identified four unique intervention opportunities for the provision of PN across the cancer care continuum—screening, diagnostic testing, treatment, and survivorship. Screening navigation may be initiated through patient recruitment or a provider referral for screening and typically ends with the completion of preventive screenings (e.g., colonoscopy). Diagnostic navigation focuses on ensuring patients with abnormal findings

(e.g., abnormal fecal occult blood test [FOBT]) achieve diagnostic resolution. Treatment navigation provides support to patients diagnosed with cancer through their completion of treatment. More recently, the applicability of PN posttreatment has been recognized, and there are now programs that provide navigation to assist posttreatment cancer survivors in receiving survivorship services (Pratt-Chapman, Simon, Patterson, Risendal, & Patierno, 2011). Whereas some PN programs focus on a single phase in the continuum of care, others span multiple components of the cancer continuum (Wells et al., 2008).

Of the colorectal cancer screening–specific PN programs identified, most initiate services at the point of physician referral for colonoscopy and provide navigation services through screening completion and/or diagnostic resolution (Chen et al., 2008; Jandorf, Gutierrez, Lopez, Christie, & Itzkowitz, 2005; Lasser et al., 2009; Lasser et al., 2011; Lebwohl et al., 2011; Myers et al., 2008; Nash, Azeez, Vlahov, & Schori, 2006; Paskett et al., 2012; Raich et al., 2012; Wells et al., 2012). We found far fewer examples of PN programs focused on facilitating FOBT or fecal immunochemical test (FIT) screening (Jandorf et al., 2005; Myers et al., 2008; Myers et al., 2013). Interview respondents emphasized the importance of defining when navigation services begin and end to provide navigators with a framework for closing cases so their caseloads do not become unmanageable.

Determining the Setting in Which Navigation Services Are Provided

Results suggest that navigators are based in a variety of settings including primary care practices, community health centers, specialty clinics (e.g., endoscopy centers), hospitals, cancer centers, and community settings (Paskett et al., 2011; Wells et al., 2008). The goals of a particular program influence the setting where navigators are primarily located. As an example, programs focused on facilitating cancer treatment typically place navigators in cancer centers. In contrast, most colorectal cancer screening–specific PN programs that we identified placed navigators in primary care clinics so that they can connect with patients at the point of their referral for screening services (Lasser et al., 2011; Paskett et al., 2012; Percac-Lima, Aldrich, Gamba, Bearse, & Atlas, 2010; Raich et al., 2012; Wells et al., 2012). The method of communication between navigators and patients may also influence where navigators are physically located. For instance, more flexibility regarding setting is likely when PN is delivered telephonically. Considerations related to access of information systems needed to support a navigation program or evaluation of the program (e.g., appointments, patient tracking, and medical records) may also dictate choice of setting.

Identifying the Range of Services Offered and Patient Navigator Responsibilities

PN programs focus on reducing patient-specific barriers to accessing and obtaining health care; therefore, the services typically vary based on a patient's individual needs and circumstances. We identified the following categories of navigator activities and responsibilities: patient outreach or in-reach and recruitment; patient tracking and follow-up; relationship building with the patient; assessment of patient barriers; facilitation of financial assistance; patient education; support for securing transportation, child care or elder care, bowel preparation materials, and an escort for the day of colonoscopy; peer support and encouragement; reminder calls for bowel preparation and colonoscopy appointments; and data collection and reporting about service provision (Chen et al., 2008; Christie et al., 2008;

Jandorf et al., 2005; Jean-Pierre et al., 2011; Myers et al., 2008; Nash et al., 2006; Raich et al., 2012). Collectively, the goals and structure of the program, training and skill set of navigators, characteristics of the priority population, and needs of the patients influence the range of services navigators provide. In our interviews, participants also discussed the importance of defining boundaries on the types of patient barriers addressed by navigators to keep their workload manageable.

Determining the Background and Qualifications of Navigators

Differing views on the appropriate background and training for navigators were evident based on our review. In general, navigators are described as being either lay navigators or professional navigators, although a gray area in this classification exists. Lay navigators tend to be individuals hired from the community the program serves who have no relevant professional or paraprofessional training/certification, although they may have a bachelor's degree in a non-clinical field. The strengths of lay navigators are their familiarity with the resources and workings of the community, ability to speak the language of the community, and affordability compared to professional navigators. Lay navigators can often foster trust in the health care system to increase adherence to screening.

Professional navigators typically hold a bachelor's or master's degree in clinical (e.g., social work, nursing) or nonclinical (e.g., health education) fields. Professional navigators command higher salaries than lay navigators but can conduct a broader and more sophisticated array of services, such as providing psychosocial support and more extensive patient education. We also identified PN models that integrate lay and professional navigators, dividing responsibilities according to required skill level. For instance, some programs use a tiered system of navigation in which some concerns are handled by a lay navigator and others (e.g., clinical questions) are triaged to a professional navigator, most often a nurse or social worker.

Finally, although little research has explored issues related to the selection of navigators, we identified one qualitative study where researchers examined the processes involved in delivering colorectal cancer screening navigation. Results suggested four important characteristics for navigators to possess, including persistence, flexibility, assertiveness, and empathy (Jean-Pierre et al., 2011).

Selecting the Methods of Communication Between Patients and Navigators

Navigators' method(s) of interaction with patients include face-to-face (e.g., the PN's office, patient's home), telephone, e-mail, facsimile, or a combination of methods. In one study, where initial contact was by telephone, patients who met the navigator in person at least one time were somewhat more likely to complete colorectal cancer screening than those contacted by other methods (Percac-Lima et al., 2009). However, phone contact is often heavily used (Lasser et al., 2011; Raich et al., 2012). The primary method of communication between patients and navigators is influenced by several factors, including the priority population served, navigator setting, patient preference, program context, and resources.

Designing the Navigator Training

There are no nationally established standards or certification for PN training. We identified two established training programs—the Harold P. Freeman Patient Navigation Institute (www.hpfreemanpni.org) and the Colorado Patient Navigator Training Program (www.patientnavigatortraining.org). Several programs have developed training manuals for patient navigators that are available via websites and can be tailored to an individual program (e.g., the Colorado Colorectal Screening Program; New York City Department of Health and Mental Hygiene). Several PN programs have developed their own training programs. For instance, the NCI and ACS developed training for staff working with the Patient Navigation Research Program (Calhoun et al., 2010).

Training needs will differ depending on the background and skill level of staff (Shelton et al., 2011). For the PN programs we reviewed, trainings typically addressed the following topics: communication skills, including motivational interviewing; cultural issues; general cancer information, including cancer prevention, early detection, and treatment; patient assessment skills; navigator roles and responsibilities; navigator–patient boundaries; community resources; clinic procedures; data collection; patient confidentiality; the Health Insurance Portability and Accountability Act; and, if relevant, research ethics (Calhoun et al., 2010; Jean-Pierre et al., 2011; Shelton et al., 2011). Role-playing is an important component in navigation training. Apart from initial training and orientation for navigators, ongoing training is important to ensure continuing education and skill development and help integrate new navigators.

Defining Oversight and Supervision for Navigators

Interview results suggest consensus for the provision of navigator supervision by professionals. Several programs, especially those using lay navigators, include both clinical and administrative supervisors. Navigators typically meet individually with supervisors weekly and also in a group setting to discuss individual cases, if there are multiple navigators. The inclusion of a clinical supervisor may improve the integration of navigators into the clinical team. Programs not using clinicians as the direct supervisors of navigators often identify a dedicated clinician to respond to their medical and psychosocial questions regarding patient care.

Evaluating Patient Navigation

Standardized metrics for PN have not been established. However, the following are measures for consideration in designing program evaluations:

- Program outcomes including rates of screening adherence, quality of bowel preparation, and timeliness of care received from abnormal result (typically FOBT or FIT) to diagnostic resolution (Battaglia, Burhansstipanov, Murrell, Dwyer, & Caron, 2011)
- Process measures such as navigator caseload (e.g., number of patients, time spent per patient, days in navigation), communication type (e.g., encounter type, communication frequency, time spent communicating), barriers assessed and

barriers addressed, return rates for FOBT or FIT tests, and no-show and cancellation rates for colonoscopy (Battaglia et al., 2011)

- Training outcomes measured by navigator knowledge, skill levels, and satisfaction with training
- Patient satisfaction to obtain patient-centered assessments regarding the PN intervention
- Cost-effectiveness to enable economic analysis of PN through comparison of PN with other intervention strategies to increase colorectal cancer screening (Whitley et al., 2011)

Data systems that support patient tracking and allow for collection of data needed to measure the metrics noted here are critical to successful performance monitoring and evaluation

Discussion

Based on this formative study, we identified 10 areas to consider when designing a PN program for colorectal cancer screening and diagnosis. Figure 1 offers practitioners practical guidance to facilitate systematic design of PN programs. Although our focus is colorectal cancer screening, these results likely help developers of navigation programs for other health conditions as well.

Our findings also suggest opportunities for strengthening PN programs in three areas: intervention design, training, and evaluation. First, applying theoretical frameworks (e.g., health belief model) to navigation intervention models helps define the specific constructs to be addressed by the program that may improve program effectiveness. Next, few national training programs exist for navigators and there are no national certifications for navigators. Professionalization of navigation may help lead to insurance reimbursement for the service, something not typically covered at this time. Third, improved evaluation of PN programs is needed, including of evaluation navigator processes and costs. We found little in the literature evaluating the effectiveness of PN to improve adherence to fecal blood testing, an area of concern given return rates for these screening tests are often low. Standardization of metrics for PN, including measures for outcomes, PN processes, patient satisfaction, navigator training, and costs, is also needed and would allow for comparisons across programs and meta-analysis. Toward that end, the ACS convened a summit in 2009 to address PN measurement. Following the meeting, teams of participants developed articles proposing measures for PN across the cancer continuum. In 2011, the articles were published in a supplemental issue of the journal *Cancer* (Vol. 117, Issue 15, August 1, 2011).

Finally, we identified only two large-scale randomized studies testing the impact of PN for colorectal cancer screening adherence (Lasser et al., 2011; Percac-Lima et al., 2009) and just one study (nonrandomized) measuring potential mechanisms by which PN facilitates colorectal cancer screening (Ma et al., 2009). Given the limited evidence base, CDC has developed a theoretically based intervention currently being tested as part of a randomized

trial expected to enroll approximately 1,000 patients. Results from this study informed the intervention design for that research. Along with measuring outcomes, the CDC is examining more proximal indicators (e.g., patient knowledge, self-efficacy) theorized as related to screening adherence using pre- and postintervention surveys. Results may help identify important leverage points in delivering PN.

CONCLUSION

In summary, PN represents a viable intervention to improve the colorectal cancer screening rates that remain relatively low in the United States. Although widely viewed as an individual-level public health strategy, PN could potentially extend its impact by improving system-level practices through clinic-wide adoption of navigation components including patient education, patient tracking, and performance monitoring (e.g., colonoscopy adherence rates). Practitioners and researchers alike can use our results to develop strong navigation interventions.

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References

Battaglia TA, Burhansstipanov L, Murrell SS, Dwyer AJ, Caron ASE. Assessing the impact of patient navigation: Prevention and early detection metrics. Cancer. 2011; 117(Suppl 15):3553–3564. [PubMed: 21780090]

Beydoun HA, Beydoun MA. Predictors of colorectal cancer screening behaviors among average-risk older adults in the United States. Cancer Causes Control. 2008; 19:339–359. [PubMed: 18085415]

Calhoun EA, Whitley EM, Esparza A, Ness E, Greene A, Garcia R, Valverde PA. A national patient navigator training program. Health Promotion Practice. 2010; 11:205–215. [PubMed: 19116415]

Chen LA, Santos S, Jandorf L, Christie J, Castillo A, Winkel G, Itzkowitz S. A program to enhance completion of screening colonoscopy among urban minorities. Clinical Gastroenterology and Hepatology. 2008; 6:443–450. [PubMed: 18304882]

Christie J, Itzkowitz S, Lihau-Nkanza I, Castillo A, Redd W, Jandorf L. A randomized controlled trial using patient navigation to increase colonoscopy screening among low-income minorities. Journal of the National Medical Association. 2008; 100:278–284. [PubMed: 18390020]

Community Preventive Services Task Force. What is the community guide?. 2013. Retrieved from http://www.thecommunity-guide.org/index.html

Esparza A, Calhoun E. Measuring the impact and potential of patient navigation: Proposed common metrics and beyond. Cancer. 2011; 117(Suppl 15):3537–3538. [PubMed: 21780087]

Freeman HP. The origin, evolution, and principles of patient navigation. Cancer Epidemiology, Biomarkers & Prevention. 2012; 21:1614–1617.

Freeman HP, Rodriguez RL. History and principles of patient navigation. Cancer. 2011; 117(Suppl 15):3539–3542. [PubMed: 21780088]

Jandorf L, Gutierrez Y, Lopez J, Christie J, Itzkowitz SH. Use of a patient navigator to increase colorectal cancer screening in an urban neighborhood health clinic. Journal of Urban Health. 2005; 82:216–224. [PubMed: 15888638]

Jean-Pierre P, Hendren S, Fiscella K, Loader S, Rousseau S, Schwartzbauer B, Epstein R. Understanding the processes of patient navigation to reduce disparities in cancer care: perspectives of trained navigators from the field. Journal of Cancer Education. 2011; 26:111–120. [PubMed: 20407860]

Joseph D, King J, Miller J, Richardson LC. Prevalence of colorectal cancer screening among adults-behavioral risk factor surveillance system, United States, 2010. Morbidity and Mortality Weekly Report. 2012; 61:51–56. [PubMed: 22695464]

Lasser KE, Murillo J, Lisboa S, Casimir AN, Shah LV, Emmons KM, Ayanian JZ. Colorectal cancer screening among ethnically diverse, low-income patients: A randomized controlled trial. Archives of Internal Medicine. 2011; 171:906–912. [PubMed: 21606094]

Lasser KE, Murillo J, Medlin E, Lisboa S, Valley-Shah L, Fletcher RH, Ayanian JZ. A multilevel intervention to promote colorectal cancer screening among community health center patients: Results of a pilot study. BMC Family Practice. 2009; 10:37. [PubMed: 19480698]

Lebwohl B, Neugut AI, Stavsky E, Villegas S, Meli C, Rodriguez O, Rosenberg R. Effect of a patient navigator program on the volume and quality of colonoscopy. Journal of Clinical Gastroenterology. 2011; 45(5):e47–e53. [PubMed: 21030874]

Ma GX, Shive S, Tan Y, Gao W, Rhee J, Park M, Toubbeh JI. Community-based colorectal cancer intervention in underserved Korean Americans. Cancer Epidemiology. 2009; 33(5):381–386. [PubMed: 19914880]

Myers RE, Bittner-Fagan H, Daskalakis C, Sifri R, Vernon SW, Cocroft J, Andrel J. A randomized controlled trial of a tailored navigation and a standard intervention in colorectal cancer screening. Cancer Epidemiology, Biomarkers, & Prevention. 2013; 22:109–117.

Myers RE, Hyslop T, Sifri R, Bittner-Fagan H, Katurakes NC, Cocroft J, Wolf T. Tailored navigation in colorectal cancer screening. Medical care. 2008; 46(9 Suppl 1):S123–S131. [PubMed: 18725824]

Nash D, Azeez S, Vlahov D, Schori M. Evaluation of an intervention to increase screening colonoscopy in an urban public hospital setting. Journal of Urban Health. 2006; 83:231–243. [PubMed: 16736372]

Nuss HJ, Williams DL, Hayden J, Huard C. Applying the social ecological model to evaluate a demonstration colorectal cancer screening program in Louisiana. Journal of Health Care for the Poor and Underserved. 2012; 23:1026–1035. [PubMed: 24212156]

Paskett ED, Harrop JP, Wells KJ. Patient navigation: An update on the state of the science. CA: Cancer Journal for Clinicians. 2011; 61:237–249.

Paskett ED, Katz ML, Post DM, Pennell ML, Young GS, Seiber EE, Murray DM. The Ohio patient navigation research program: Does the American Cancer Society patient navigation model improve time to resolution in patients with abnormal screening tests? Cancer Epidemiology, Biomarkers, & Prevention. 2012; 21:1620–1628.

Percac-Lima S, Aldrich LS, Gamba GB, Bearse AM, Atlas SJ. Barriers to follow-up of an abnormal pap smear in Latina women referred for colposcopy. Journal of General Internal Medicine. 2010; 25:1198–1204. [PubMed: 20652647]

Percac-Lima S, Grant RW, Green AR, Ashburner JM, Gamba G, Oo S, Atlas SJ. A culturally tailored navigator program for colorectal cancer screening in a community health center: A randomized, controlled trial. Journal of General Internal Medicine. 2009; 24:211–217. [PubMed: 19067085]

Pratt-Chapman M, Simon MA, Patterson AK, Risendal BC, Patierno S. Survivorship navigation outcome measures: A report from the ACS patient navigation working group on survivorship navigation. Cancer. 2011; 117(Suppl 15):3575–3584. [PubMed: 21780092]

Raich P, Whitley EM, Thorland W, Valverde P, Fairclough D. Program, f. t. P. N. R. Patient navigation improves cancer diagnostic resolution: An individually randomized clinical trial in an underserved population. Cancer Epidemiology, Biomarkers, & Prevention. 2012; 21:1629–1638.

Rim SH, Joseph D, Steele CB, Thompson T, Seeff L. Colorectal cancer screening: United States, 2002, 2004, 2006, and 2008. Morbidity and Mortality Weekly Report. 2011; 60:42–46. [PubMed: 21248681]

Shelton RC, Thompson HS, Jandorf L, Varela A, Oliveri B, Villagra C, Redd WH. Training experiences of lay and professional patient navigators for colorectal cancer screening. Journal of Cancer Education. 2011; 26:277–284. [PubMed: 21287311]

U.S. Cancer Statistics Working Group. Incidence and mortality web-based report. Atlanta, GA: Centers for Disease Control and Prevention; 2008. United States Cancer Statistics: 1999–2007.

Wells KJ, Battaglia TA, Dudley DJ, Garcia R, Greene A, Calhoun E, Raich PC. Patient navigation: State of the art or is it science? Cancer. 2008; 113:1999–2010. [PubMed: 18780320]

Wells KJ, Lee J, Calcano E, Meade CD, Rivera M, Fulp WJ, Roetzheim RG. A cluster randomized trial evaluating the efficacy of patient navigation in improving quality of diagnostic care for patients with breast or colorectal cancer abnormalities. Cancer Epidemiology, Biomarkers, & Prevention. 2012; 21:1664–1672.

Whitley E, Valverde P, Wells K, Williams L, Teschner T, Shih YCT. Establishing common cost measures to evaluate the economic value of patient navigation programs. Cancer. 2011; 117(Suppl 15):3618–3625. [PubMed: 21780096]

Whitlock EP, Lin JS, Liles E, Beil TL, Fu R. Screening for colorectal cancer: A targeted updated systematic review for the US preventive services task force. Annals of Internal Medicine. 2008; 149:638–658. [PubMed: 18838718]

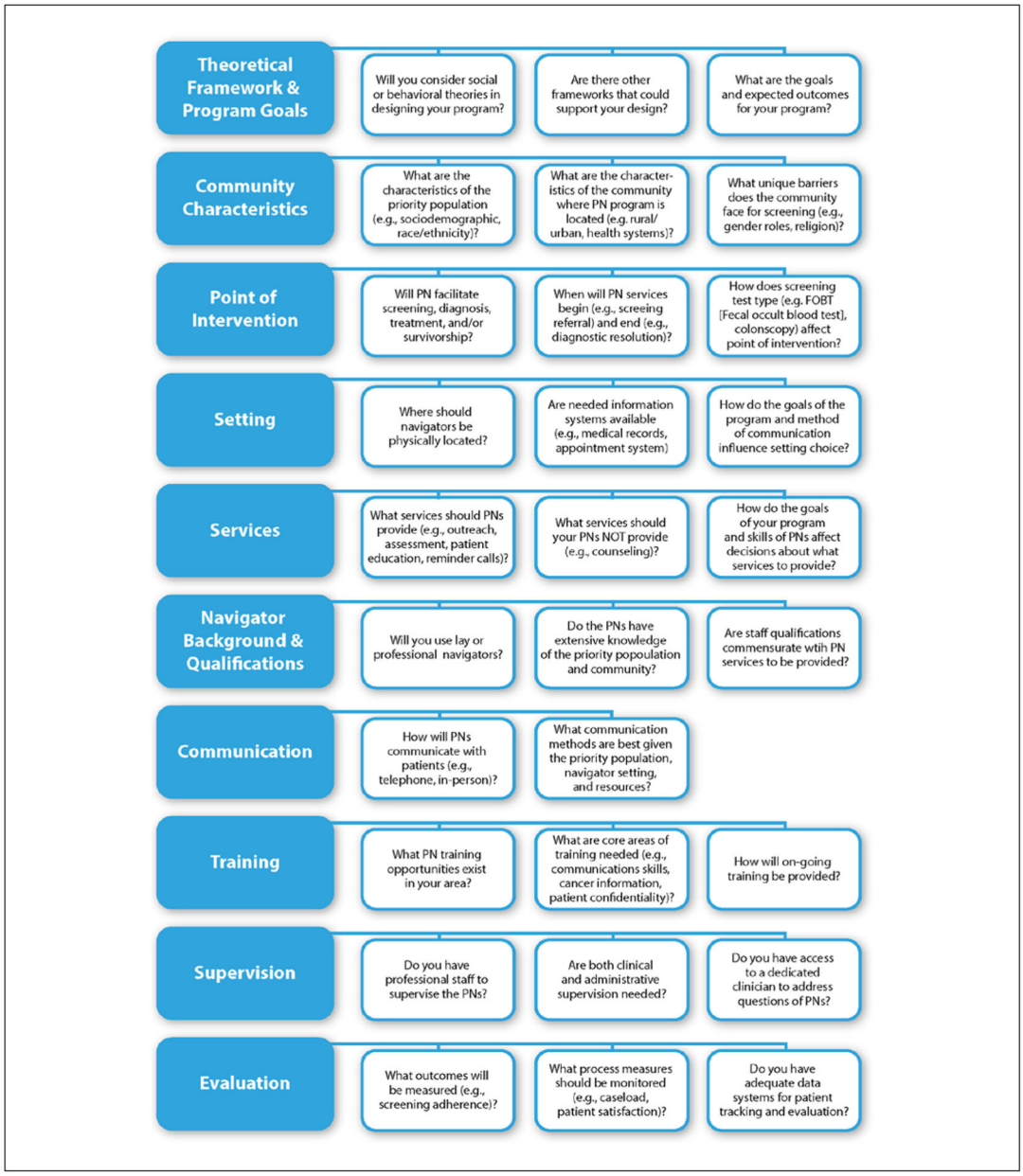

FIGURE 1.

Key Considerations in Designing a Patient Navigation (PN) Program for Colorectal Cancer Screening

Table 1

Efficacy Studies of Patient Navigation for Colorectal Cancer Screening and Diagnosis

Authors (Year Published)	Research Design	Colorectal Cancer Test Type(s)	Location/PN Model/Population	Sample Size	Findings
Jandorf, Gutierrez, Lopez, Christie, and Itzkowitz (2005)	RCT	FOBT, FS, colonoscopy	• Primary care practice in East Harlem, New York City, New York • Navigators assisted patient with arranging for screening after physician referral for FOBT, FS, or colonoscopy; PN services included scheduling assistance, patient support and education, and written and telephone appointment reminders • Population largely female, Hispanic, low income, and publicly insured	78	• At 3-month postenrollment, 42.1% of navigated patients (n = 38) completed FOBTs compared to 25% in the control group (p = .086) • At 6 months postenrollment, 23.7% of navigated patients who were referred by their physician for FS or colonoscopy completed an endoscopic examination compared to 5% of the control group (p < .02)
Nash, Azeez, Vlahov, and Schori (2006)	Historical comparison	Colonoscopy	• Acute care hospital in the Bronx, New York City, New York • Navigators assisted patients in arranging for screening after physician referral for colonoscopy; PN services included assistance with paperwork for preadmission testing, scheduling assistance, and appointment reminders; intervention also included direct endoscopic referral and enhancements to gastrointestinal suites • Population largely female, Hispanic, low income, and publicly insured	1,767	• Of the 1,060 patients who received screening colonoscopies during the study period, 45% of patients received navigation; the average number of screening colonoscopies per month increased from 75.7 before the intervention to 119.0 after the intervention • The percentage of broken appointments for all colonoscopies (i.e., screening and diagnostic) declined from 67.2% in the month the patient navigators were hired to 5.3% in the following month and was sustained
Christie et al. (2008)	RCT	Colonoscopy	• Community health center in Boston, Massachusetts • Navigators assisted patients with arranging for screening after physician referral for colonoscopy; PN services included assisting with scheduling for direct endoscopic referral, transportation, and rescheduling if needed and providing patient support and education, including for bowel preparation, and reminders	21	• 53.8% of navigated patients completed screening colonoscopies compared to 13% of the control group (p = .085) • No significant difference in bowel preparation • 100% of navigated patients very satisfied with PN services

Authors (Year Published)	Research Design	Colorectal Cancer Test Type(s)	Location/PN Model/Population	Sample Size	Findings
			• Population largely female (75%), Hispanic, low income, uninsured or publicly insured		
Myers et al. (2008)	Single- group study	FOBT and colonoscopy	• Six primary care practices in Delaware • PN services included assistance in determining preferred test type (e.g., FOBT, colonoscopy) and patient education	154	• 152 patients received navigation and of these, 63 patients (41%) were screened by 6 months (45 with colonoscopy and 18 with FOBT)
Chen et al. (2008)	Cohort	Colonoscopy	• Mt. Sinai Hospital, New York City, New York • Navigators assisted patients with arranging for screening after physician referral for colonoscopy; PN services included assisting with scheduling colonoscopy and providing patient support and education, including for bowel preparation, and reminders • Population largely minority (55% Hispanic and 31% African American)	532	• All patients received navigation • 353 patients (66%) completed screening colonoscopies and 179 (34%) did not • Broken appointment rate decreased from 40% before the navigator program to 9.8% afterward • Bowel preparation was inadequate in only 5% of study patients • A quarter of patients eligible could not be navigated; barriers included incomplete contact information, language barriers, and lapses in insurance coverage
Percac-Lima et al. (2009)	RCT	FOBT, FS, barium enema, and colonoscopy	• Massachusetts General Hospital's Chelsea Healthcare Center, Boston, Massachusetts • PN services included barrier assessment and assisting with determining test type, scheduling colonoscopy, translation, and transportation and providing patient support and education, including for bowel preparation • Population was low income, 60% female, 40% Latino, 47% White, 5% Black, and 2% Asian	1,223	• Randomized 2:1 control to intervention groups. • 27.4% of navigated patients completed CRC screening compared to 11.9% of those in control group ($p < .001$) • Navigators had an average of 3.1 contacts with patients and 39% of patients had in-person meeting with navigator • Patient barriers included lack of knowledge, lack of motivation, concerns about procedure, difficulty scheduling appointment, difficulty with bowel preparation, lack of

Authors (Year Published)	Research Design	Colorectal Cancer Test Type(s)	Location/PN Model/Population	Sample Size	Findings
					translators, cost, and lack of transportation and escorts
Ma et al. (2009)	Two-group, quasi-experimental design	Test type(s) not specified	• Korean Americans recruited from 6 community Korean churches, city not specified • Culturally appropriate cancer education program, including navigation; theory based (health belief model and social cognitive theory); PN services included assisting with appointments, translation, paperwork, and transportation and providing patient education and results facilitation; intervention group also received small group education sessions • Population composed of Korean immigrants	167	• 84 in intervention group (3 churches) and 83 in control (3 churches). • At 12 months postintervention, screening rates increased from 13.1% to 77.4% among intervention group; whereas increase in control group was from 9.6% to 10.8%. (64.3% increase versus 1.2% increase, significant at $p < .001$) • Based on baseline and postintervention assessments; also observed increases in knowledge, perceived susceptibility, and perceived benefits of screening and decreases in perceived barriers to screening among intervention group
Lasser et al. (2009)	Cohort	FOBT and colonoscopy	• Patients of community health center within safety net health system in Somerville, Massachusetts • Navigators assisted patients with arranging for screening after physician referral for screening; theory based (stages of change); PN services included assisting with test choice, appointments, and providing patient support and motivation, appointment reminders, and education, including for FOBT cards and bowel preparation • Population was approximately 69% female, over 30% non-White	145	• 55 in intervention group, 90 in control group • Patients in intervention group more likely to be screened within 6 months than control (31% vs. 9%, $p < .001$) • On average, 4 hours of telephone navigation provided per intervention patient
Lasser et al. (2011)	RCT	FOBT and colonoscopy	• Patients of 4 health centers and 2 public hospital-based clinics in safety net health system in Cambridge, Somerville, and Everett, Massachusetts • PN services included assisting with test choice, appointments, getting insurance, and escorts and providing	465	• Randomized 1:1 control to intervention groups. • Patients in intervention group more likely to be screened at 12 months than control (33.6% vs. 20%, $p < .001$)

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Authors (Year Published)	Research Design	Colorectal Cancer Test Type(s)	Location/PN Model/Population	Sample Size	Findings
			patient support and motivation, education, including for FOBT cards and bowel preparation; navigators also met patients at colonoscopy appointment and follow up with patients to confirm follow-up plan • Population was approximately 60% female, over 50% racial minorities including those speaking English, Haitian Creole, Portuguese, or Spanish		• Within the navigation group, those navigated (39.8% vs. 18.6%, $p < .001$) were more likely to complete their bowel preparation than those not navigated (30.8% vs. 18.6%, $p < .001$)
Lebwohl et al. (2011)	Historical comparison	Colonoscopy	• Columbia University Medical Center, New York City, New York • PN services included assisting with appointments and providing patient education, including bowel preparation, and reminders; navigators also met patients at colonoscopy appointment and follow up with patients to confirm follow-up plan • Population was 59% female and 11% White, 24% Black, and 65% Hispanic (demographic data only available for 357 navigated patients)	749	• Assessed colonoscopy volume at the Medical Center by comparing total number of completed colonoscopies 12 months preceding the intervention to first 12 months of the intervention • Observed 11% overall increase in screening volume between two time periods (5,081 vs. 5,637); among Medicaid outpatients, the observed increase was 56% (957 vs. 1,489) • 749 patients were navigated; of these 678 (91%) completed colonoscopy
Paskett et al. (2012)	Group randomized, nested cohort	Colonoscopy	• 8 primary care clinics and 4 community health centers in Columbus, Ohio; total of 18 clinics • Navigators assisted patients needing diagnostic testing after abnormal screening for breast, cervical, or colorectal cancer; theory-based (chronic care model, social support theory, health belief model); PN services included assessing barriers, assisting with appointments, childcare, and transportation and providing patient support, education, and encouragement • Population was largely female (97%) and White (71%). 22% were Black	862	• Assessed timeliness of diagnostic resolution for breast, cervical, and colorectal cancer screening; included pre- and post-assessments of psychosocial aspects, trust in physicians, anxiety, depression, and perceived social support • PN effect was apparent beginning 6 months after detection of abnormality; found that diagnostic resolution rate at 15 months was 65% higher in PN arm ($p = .012$ for difference in resolution rate across arms; $p = .009$ for an increase in the HR over time); note that authors did not separate results by cancer type • Number of patients receiving diagnostic testing for colorectal

Authors (Year Published)	Research Design	Colorectal Cancer Test Type(s)	Location/PN Model/Population	Sample Size	Findings
					cancer was not specified; 97% of study population was cancer was not specified; 97% of study population was • Three commonly reported barriers among those reporting them were test type/treatment misperception/beliefs, communication problems with providers, and scheduling problems
Wells et al. (2012)	Cluster randomized	Colonoscopy	• 12 primary care clinics in Tampa Bay, Florida • Navigators assisted patients needing diagnostic testing after abnormal screening for breast and colorectal cancer; PN services included assessing barriers and assisting patients to overcome those barriers • Population was largely female (94%), Hispanic (58%), and uninsured (52%); 16% were referred due to a colorectal cancer abnormality	1,267	• Assessed timeliness of diagnostic resolution for breast and colorectal cancer screening • 282 patients had colorectal abnormality (either rectal bleeding or abnormal FOBT); 85% of diagnostic tests performed were colonoscopy • PN did not affect overall time to completion of diagnosis or the number of patients reaching diagnostic resolution
Raich et al. (2012)	RCT		• Denver Health, safety net health system, Denver, Colorado • Navigators assisted patients needing diagnostic testing after abnormal screening for breast, prostate, or colorectal cancer; theory-based (chronic care model); PN services included assessing barriers and assisting with appointment setting and providing patient support and education; navigators also met patients at appointments when needed • Population was largely minority (53% Hispanic, 19% Black, 24% White), low income, and unemployed	993	• Assessed timeliness of diagnostic resolution for breast, prostate, or colorectal cancer screening • 235 patients had colorectal abnormality (rectal bleeding, abnormal FOBT, or sigmoidoscopy) • PN shortened time for colorectal ($p = .0017$); patients navigation for colorectal cancer were more likely to reach diagnosis than those in control group (79% vs. 58%, $p < .002$)
Myers et al. (2013)	RCT	Fecal blood tests and colonoscopy	• 10 primary care practices of the Christiana Care Health System in Delaware • Patients randomized to TNI, SI, or usual care; screening decision stage was assessed for colonoscopy and FOBT; tailored navigation group received mailed instructions for	945	• Colorectal cancer screening adherence was greater for both the TNI (38%) and SI (33%) groups than control group (12%; $p = .001$ and $p = .001$, respectively); however, there was no statistically significant difference between the TNI and SI groups

Authors (Year Published)	Research Design	Colorectal Cancer Test Type(s)	Location/PN Model/Population	Sample Size	Findings
			preferred test (and test kit if FOBT), 1 phone call by navigator to address concerns and encourage testing, and a mailed remind • Population was largely White, non-Hispanic, and 50–59 years		• Statistically significant increases in the screening decision stage were experienced by patients in the TNI (+45%) and SI (+27%) groups than in the control group (+23%, p = .001 and p = .001, respectively)

NOTE: RCT = randomized control trial; FOBT = fecal occult blood test; FS = flexible sigmoidoscopy; PN = patient navigation; TNI = tailored navigation intervention; SI = standard intervention.