Patient Navigator Workforce Development Initiative

COLORADO Department of Public Health & Environment

Patient Navigator Studies 2010-2015
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Key Articles:

Citation	Focus	Setting	Study design	Participants	Outcome Measures	Results	Key Message
Cancer							
Battaglia, T.A., Bak, S.M., Heeren, T., Chen, C.A., Kalish, R., Tringale, S.,Freund, K.M. (2012).	Breast & cervical cancer abnormality screening to diagnostic resolution	6 community health center sites (CHCs)	Quasi-experimental Boston Patient Navigation Research Program collected baseline data (2004-2005) and intervention data (2007-2008)	N=997 subjects in the baseline period and N= 3,041 subjects during the intervention period (n=1,499 navigated, n=1,542 control). 30% were African American, 28% were Hispanic and 34% were white 32% had no insurance, 38% were publically insured.	Diagnostic resolution of the screening abnormality	Breast screening abnormality: significant decrease in time to diagnosis for navigated subjects who resolved after 60 days (aHR 1.4, 95% CI: 1.1-1.9) vs controls, but no differences for those who resolved before 60 days (aHR1.04, .83 - 1.3). Cervical screening abnormality: significant decrease in time to diagnosis for all navigated subjects vs controls (aHR 1.5, 95% CI: 1.4-1.9).	PN decreased time to abnormal test resolution for cervical cancer. PN only significantly decreased time for breast cancer abnormalities for those who resolved after 60 days.
Braun, K., Thomas, W.L., Domingo, J.L., Allison, A., Ponce, A., Kamakana, P.H. Tsark, J. (2015).	Cervical, Breast, Prostate and Colorectal cancer Screening	Six participating sites: Baltimore, MD, Houston, TX, Detroit, MI, Newark, NJ, Salt Lake City, UT, and	Randomized control trial. One group with navigator assisted cancer screening services vs cancer	488 Medicare beneficiaries (45% Hawaiian, 35% Filipino, 11% Japanese, 8% other)	Cancer Status Assessment surveys at baseline and at exit of study.	57.0% of PN arm vs 36.4% of controls had Pap test in the past 24 months (P =.001), 61.7% of women in the PN arm vs 42.4% of controls had a mammogram in the past 12 months (P=.003), 54.4% of men in the PN	PNs increase cancer screening uptake among Asian Medicare beneficiaries

Patient Navigator Studies 2010-2015

Citation	Focus	Setting	Study design	Participants	Outcome Measures	Results	Key Message
		Moloka'i, HI.	education.			arm vs 36.0% of controls had a PSA test in the past 12 months (P=.008), 43.0% of both sexes in the PN arm vs 27.2% of controls had a flexible sigmoidoscopy or colonoscopy in the past 5 years (P<.001).	
Horne, Hn, Phelan-Emrick, Df, Pollack, Ce, Markakis, D, Wenzel, J, Ahmed, S, Garza, Ma, Shapiro, Gr, Bone, Lr, Johnson, Lb, & Ford, Jg. (2014)	Colorectal Cancer (CRC) Screening	Baltimore City, Maryland	Randomized trial, Control group, receiving only printed educational materials (PEM), or the intervention arm where they were assigned a patient navigator in addition to PEM.	N= 2593, Baltimore City resident, aged 65 and older, and enrolled in Medicare Parts A and B.	At exit, individuals reported having either colonoscopy or sigmoidoscopy in the 10 years prior to the exit interview or an Fecal Occult Blood Test (FOBT) in the year prior to the exit screening interview.	PN group more likely to report being up-to-date with CRC screening (OR 1.55, 95 % CI 1.07–2.23), after adjusting for select demographics. The patient navigator increased screening for colonoscopy/ sigmoidoscopy (OR 1.53, 95 % CI 1.07–2.19), but not FOBT screening. Stronger effects of navigation among participants 65–69 years and those with an adequate health literacy level.	PNs increased CRC screening particularly among 60-65 year olds and individuals with adequate health literacy levels.
Ko, N. Y., Darnell, J. S., Calhoun, E., Freund, K. M., Wells, K. J., Shapiro, C. L., Dudley, D. J., Patierno, S. R., Fiscella, K., Raich, P., & Battaglia, T. A. (2014)	Breast Cancer Treatment Quality	Ten research centers	Secondary analysis of a multicenter quasi-experimental study	N= 761. Participants eligible for antiestrogen therapy, 552 eligible for radiation therapy, and 158 eligible for chemotherapy. (black, 37.5%; Hispanic, 22.3%;	Evaluate the timeliness and cost effectiveness of patient navigation for individuals	Navigated participants had a statistically significant higher likelihood of receiving antiestrogen therapy vs non-navigated controls (n = 381; odds ratio [OR], 1.73; *P* = .004). Navigated participants (n = 255) were no more likely to receive radiation after lumpectomy (OR, 1.42; *P*	PNs increased likelihood of receipt of antiestrogen therapy.

Patient Navigator Studies 2010-2015

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				other, 3.9%) and 36.3% being white. English speakers (79%).		= .22) than control participants (n = 297).	
Lasser, K. E., Murillo, J., Lisboa, S., Casimir, A. N., Shah, L. V., Emmons, K. M., Fletcher, R. H., & Ayanian, J. Z. (2011).	Colorectal Cancer (CRC) Screening	Cambridge Health Alliance	Randomized controlled trial. Intervention: intro letter from primary care provider with educational material, followed by telephone calls from a language-concordant navigator.	N= 465. Participants not up-to-date with CRC screening and spoke English, Haitian Creole, Portuguese, or Spanish as their primary language.	Completion of any CRC screening within 1 year. Secondary outcomes: proportions of patients screened by colonoscopy who had adenomas or cancer detected.	Intervention patients more likely to undergo CRC screening vs control patients (33.6% vs 20.0%; *P* < .001), to be screened by colonoscopy (26.4% vs 13.0%; *P* < .001), and to have adenomas detected (8.1% vs 3.9%; *P* = .06). Navigator intervention was particularly beneficial for patients with primary language was other than English (39.8% vs 18.6%; *P* < .001) and black patients (39.7% vs 16.7%; *P* = .004).	PNs successful in increasing CRC screening particularly among non-English speaking individuals and African Americans.
Luckett, R., et al. (2015).	Cervical Cancer Screening with abnormality	PSEC is a specialty clinic within the Gynecologic Oncology Department at Brigham and Women's Hospital	Evaluation of no show rates prior to patient navigator program compared to post implementa-tion	N= 4,199	Evaluate no-show rates at a tertiary care referral colposcopy center and explored factors associated with missed appointments.	No-show rates declined from 49.7% to 29.5% after implementation of the patient navigator program (p<0.0001). 45% of patient no-shows were anticipated or a result of patient misunderstanding and could be reduced with targeted education by the patient navigator.	PNs can reduce colposcopy no show rates
Percac-Lima, S., Ashburner, J. M., Bond, B., Oo, S. A., & Atlas, S. J. (2013).	Breast Cancer Screening	MGH Chelsea, an urban community health center (CHC) affiliated with	Retrospective program evaluation of an implemented intervention.	Somali, Arabic, or Serbo-Croatian (Bosnian) and were eligible for breast	Decreases disparities in breast cancer screening.	Screening rates increased in refugee women (81.2 %, 95 % CI: 72 %–88 %), and were similar to the rates in English-speaking (80.0 %, 95 % CI: 73 %–	PN increased screening rates in both younger and older refugee women. PN reduced disparities in breast

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		Massachusetts General Hospital	Breast cancer screening participation over the 4-year study period.	cancer screening at an urban community health center (CHC). Comparison groups were English-speaking and Spanish-speaking women eligible for breast cancer screening in the same CHC.		86 %) and Spanish-speaking (87.6 %, 95 % CI: 82 %–91 %) women.	cancer screening among refugee women.
Wells, Kj., Lee, Jh., Calcano, Er., Meade, Cd., Rivera, M., Fulp, Wj., & Roetzheim, Rg (2011)	Breast, Colorectal cancer diagnostic resolution	The Moffitt Cancer Center Patient Navigation Research Program (Moffitt PNRP)	A cluster randomized design, the study consisted of 11 clinics (six navigated; five control).	N= 1,267	Among participants who achieved diagnostic resolution of the cancer-related abnormality, length of time (in days) between initial abnormality and date of definitive diagnosis or date of last follow-up. Definitive diagnosis within the minimum follow-up period of 6 months.	PN did not have a significant effect on time to diagnostic resolution in multivariable analysis (P = 0.16). Although more navigated patients achieved diagnostic resolution by 180 days, results were not statistically significant (74.5% navigated vs. 68.5% control, P = 0.07).	PN did not reduce delays to diagnostic for breast and colorectal cancer.

Patient Navigator Studies 2010-2015

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Other Health Conditions							
Ell, K., Katon, W., Xie, B., Lee, P., Kapetanovic, S, Guterman, J., & Chou, C. (2010).	Depression Management among Diabetics	Two public safety-net clinics. Los Angeles CA	Randomized Controlled Trial. Intervention (INT group): problem-solving therapy and/or antidepressant medication; telephone treatment response, adherence, & relapse prevention; plus systems navigation assistance. Enhanced usual care (EUC group) included standard clinic care plus patient receipt of depression educational pamphlets & a community resource list.	N= 387 diabetic patients (96.5% Hispanic) with clinically significant depression.	Depression Assessment score	INT patients had significantly greater depression improvement (≥50% reduction in Symptom Checklist-20 depression score PNs from baseline; 57, 62, and 62% vs. the EUC group's 36, 42, and 44% at 6, 12, and 18 months, respectively; odds ratio 2.46–2.57; $P <$ 0.001).	PNs as part of a comprehensive program can help reduce depressive symptoms among people with diabetes
Glover, W. J.,	Diabetes	Boston Medical	Pilot Study	N= 128	Decline in no	Statistically significant	PNs in diabetes have

Patient Navigator Studies 2010-2015

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Pravodelov, V., Capelson, R., Norgaisse, M., O'Shea, D., Vimalananda, V. G., & Rosenzweig, J. L. (2013)	Management	Center (BMC)		Mean age 54 +/- 14; Black/African American 52%, Hispanic. 24%, White 12%, Other 12%; English 73%; Spanish 17%, Other 10%; Unemployed 39%, Full-time employed 12%, Part-time employed 4%, Other 45%.	show rates and improved clinical outcomes.	difference in the no-show rate and A1c for these 128 participants. Patient Navigator Program participation was associated with reductions in the no-show rate from 42.7% to 38.2% and the mean A1C from 10.4% to 9.8%.	promise for improving attendance and clinical outcomes in a inner-city patient population with healthcare disparities
Griswold, K. S., Homish, G. G., Pastore, P. A., Leonard, K. E. (2010).	Individuals with Mental health illness access to primary care	An urban Comprehensive Psychiatric Emergency Program (CPEP). Buffalo, NY	Randomized Control Trial. Care navigators vs usual care. Navigators: regular phone & in person contact	N=175 Adults over the age of 18.	Connection rates to medical care	After 1 year, the intervention group was statistically more likely to access care, versus controls (62.4 vs. 37.6%, $P < .001$)	PNs were effective in helping patients connect to primary care after a psychiatric crisis.
Shlay, J. C. Barber, B. Mickiewicz, T. Maravi, M. Drisko, J. Estacio, R. Gutierrez, G. Urbina, C. (2011)	Cardiovascular (CVD) disease risk factors	3 community health centers in the Denver Health and Hospital Authority (DHHA)	Quasi-experimental quasi-experimental pre-post (baseline and 12- month follow-up). Intervention: Patient navigator conduced 1 hour call + follow up	N= 486	Assessment of clinical characteristics at baseline and 12-month follow-up	Mean Framingham risk score lower for intervention group (mean FRS, 15%) than comparison group (mean FRS, 16%); total cholesterol lower for intervention group (mean total cholesterol, 183 mg/dL) than comparison group (mean total cholesterol, 197 mg/dL). Intervention reported significant improvements in some health behaviors	PNs may provide some benefit in reducing risk of CVD

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			calls. PN worked on CVD risk reduction strategies			at 12-month follow-up, nutrition-related behaviors. Tobacco use and cessation attempts did not improve.	

Additional Research Study Results:

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Cancer							
Baker, D.W., Brown, T., Buchanan, D., Weil, J., Balsley, K, Ranalli, L., … Wolf, M.S. (2014).	Colorectal cancer (CRC) screening	Erie Family Health Center (EFHC), a federally qualified health center network in Chicago, Illinois	Randomized controlled trial with patients who had previously completed a home Fecal Occult Blood Testing from March 2011 through February 2012 and had a negative result.	N=450 72%of women; 87% Latino; 83% stated that Spanish was their preferred language; and 77% were uninsured.	Completion of FOBT within 6 months of the date the patient was due for annual screening.	Intervention patients were much more likely than those in usual care to complete FOBT (82.2%vs 37.3%; P < .001).	PNs increase CRC screening uptake
Bickell, N., Geduld, A.N., Joseph, K.A., Sparano, J.A., Kemeny, M., Oluwole, S., … Leventhal, H. (2013).	Breast Cancer treatment Quality	Eight inner-city hospitals: 4 municipal and 4 tertiary referral centers, NY	Randomized Trial. Women were block-randomly assigned to intervention (INT) or usual care (UC).	N=374. Women with early-stage breast cancer who underwent surgery between October 2006 and August 2009.	Receiving adjuvant treatment and obtaining help.	High rates of INT and UC patients received treatment: 87% INT versus 91% UC women who underwent lumpectomy received radiotherapy (*P* = .39); 93% INT versus 86% UC women with estrogen receptor (ER) –negative tumors ≥ 1 cm received chemotherapy (*P* = .42);	No differences between PN and usual care for breast cancer treatment received.

Patient Navigator Studies 2010-2015

Citation	Focus	Setting	Study design	Participants	Outcome measures	Results	Key Message
						92% INT versus 93% UC women with ER-positive tumors ≥ 1 cm received hormonal therapy (*P* = .80	
Braschi, C., Sly, J., Singh, S., Villagra, C., & Jandorf, L. (2014).	Colorectal Cancer (CRC) screening	Mount Sinai's Primary Care Clinic NY, NY	Randomized Clinical Trail, either a culturally-targeted PN group or a Standard PN group.	N= 570, Latino patients over the age of 50 with no history of inflammatory bowel disease or CRC and no significant comorbid conditions were eligible.	Screening colonoscopy (SC) for CRC	There was no difference in SC completion between PN groups (80.9 and 79.0 %).	Both standard & culturally-targeted PN successfully increased SC completion by nearly 30 % above the recent estimation.
Chen, F., Mercado, C., Yermilov, I., Puig, M., Ko., C.Y., Kahn, K., Ganz, P., & Gibbons, M.M. (2010).	Breast Cancer Program Quality Indicators	Public Hospital Olive View–UCLA Medical Center, Los Angeles, CA	Quasi Experimental Quality indicators met prior to implementation of patient navigator program vs post PN program	N= 49	Forty-nine patients were treated before the use of navigators and 51 after program implementation.	Overall adherence to the quality indicators improved from 69 to 86 per cent with the use of patient navigators (P < 0.01). Use of surveillance mammography, improved significantly (52 to 76%, P < 0.05). All nine indicators reached 75 per cent or greater adherence rates after implementation of the navigator program compared with only four before implementation.	PNs appear to improve breast cancer quality of care in a public hospital
Daskalakis, C., Veron, S.W., Sifri, R.,	Colorectal Cancer (CRC) Screening	10 primary care practices affiliated with	Randomized Trial. Screening test	N= 945 primary care patients, ages 50 to 79	Completion of colorectal cancer screening	FIT preference: more likely to complete FIT screening (P = 0.005);	Screening strategies providing access and navigation to both

Patient Navigator Studies 2010-2015

Citation	Focus	Setting	Study design	Participants	Outcome measures	Results	Key Message
Carlo, M., Cocroft, J., Sendecki, J.A., & Myers, R.E. (2014)		the Christiana Care Health System (CCHS), Delaware.	preference for fecal immunochemical test (FIT) or colonoscopy, mailed access to FIT and colonoscopy, and telephone navigation for FIT and colonoscopy, on screening.	years old.		colonoscopy preference: more likely to perform colonoscopy screening (P = 0.032). Mailed access to FIT and colonoscopy was associated with increased overall screening (OR = 2.6, P = 0.001), due to a 29-fold increase in FIT use. Telephone navigation associated with increased overall screening (OR = 2.1, P = 0.005), due to a 3-fold increase in colonoscopy performance.	tests may be more effective than preference-tailored approaches.
Dorfman, M.P., Zauber, A.G., Mills, G., Ruckel, J.M., Church, T.R., Mandelson, M., Winawer, S. (2010)	Colorectal Cancer (CRC) Screening	3 study centers: Shreveport (LSU), Seattle, Minneapolis	Randomized control trial to PN + FOBT or Colonoscopy	N=3526 Asymptomatic men and women ages 50-69 (40-69 at Shreveport).	Screening colonoscopy or annual fecal occult blood test (gFOBT) with a sensitive slide.	Screening colonoscopy adherence rates were comparable for whites (76%) and African-Americans (74%) at LSU (Relative Ratio =1.04; 95% Confidence Interval (CI) 0.94 -1.14, p=0.5).	The PN eliminated racial disparities in CRC screening
Enard, K.R., Nevarez, L., Hernandez, M., Hovick, S.R., Moguel, M.R., Hajek, R.A., Blinka, C.E., Jones, L.A., & Torres-Vigil, I. (2015).	Colorectal Cancer (CRC) Screening	Medicare fee-for-service (FFS) enrollees recruited through six sites. University of Texas MD Anderson Cancer Center, Houston TX	A randomized controlled trial. Intervention: tailored PN services - education, counseling, and logistical support in language of choice. Comparison: mailed cancer	N= 2,084. English and Latino enrollees, ≥40 years and covered by Medicare parts A and B. Not have been diagnosed with any type of cancer within	CRC Screening (CRCS) adherence according to USPSTF guidelines using self-reported data collected at the termination of the demonstration	More navigated than non-navigated participants became CRCS adherent (43.7 vs. 32.1 %, p = 0.04). The odds of CRCS adherence were significantly higher for PN vs comparison participants adjusted OR 1.82, p = 0.02). Higher CRCS adherence rates were	PN delivered outside of the primary care environment is modestly effective in increasing CRCS adherence among Latino Medicare enrollees.

Patient Navigator Studies 2010-2015

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			education materials.	the last 5 years to be included in the screening arm	project.	observed n the uptake of endoscopic screening methods.	
Fiscella, K., Whitley, E., Hendren. S., Raich, P., Humiston, S., Winters, P., Jean-Pierre, P., Valverde, P., Thorland, W., & Epstein. (2012).	Breast & Colorectal Cancer	Two sites; Rochester NY and Denver CO.	A randomized controlled trail. PN vs usual care	N= 438. Newly diagnosed breast (n=353) or colorectal cancer (n=85). predominantly middle-aged; female (90%); 44% race-ethnic minorities; 46% lower education levels; 18% uninsured; 9% non-English primary language.	3- month outcome measures of time to completion of primary cancer treatment, satisfaction with cancer-related care, or psychologic distress	No statistically significant group differences. Subgroup analysis showed that socially disadvantaged patients (i.e., uninsured, low English proficiency, and non-English primary language) who received PN reported higher satisfaction than those receiving usual care (all $P < 0.05$).	PN for cancer patients may not necessarily reduce treatment time nor distress.
Hendren, S, Griggs, JJ, Epstein, R, Humiston, S, Jean-Pierre, P, Winters, P, Sanders, M, Loader, S, & Fiscella, K. (2012).	Breast and Colorectal Cancer	13 oncology and primary care practices serving disadvantaged patients. Most patients were referred by 3 large hospital-based oncology practices. Rochester NY	A randomized controlled trial. Rochester, NY. Patients with breast cancer and colorectal cancer were randomly assigned to receive a patient navigation intervention or usual care.	319 randomized patients. Median age was 57 years and 32.5% were from minority race/ethnicity groups.	Quality of Life (QOL) was measured at baseline and four subsequent time points, using the validated Functional Assessment of Cancer Therapy (FACT-B, FACT-C) instruments.	Total and subscale FACT scores did not differ between groups when analyzed as a change from baseline to 3 months, or at various time points. The emotional well-being subscale change from baseline approached significance (better change among patient navigation group, $P = 0.05$).	PN may not affect QOL during cancer treatment, that social/medical support are adequate in this study's setting, or the trial failed to target patients likely to experience QOL benefit from PN
Honeycutt, S., Green, R., Ballard, D., Hermstad, A.,	Colorectal Cancer	Two Community Health Centers	Quasi-experimental evaluation. PN group: 1)	N= 809, ages 50 to 64 years old. Low-income patients at	Colonoscopy referral and examination during the study	Patients at intervention clinics were significantly more likely than patients at	PN can be an effective approach to ensure that lifesaving, preventive

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Brueder, A., Haardorfer, R., Yam, J., Arriola, K. J. (2013).		(CHCs), consisting of 8 clinics in Southwest Georgia.	identify needed screening, 2) prompt providers, 3) coordinate screening & follow-up, 4) one-on-one education & appointment reminders, 5) barrier reduction (eg, costs, transportation, literacy), 6) entered colonoscopy recall into charts 6) follow referral patterns	average risk for CRC from 4 intervention clinics and 9 comparison clinics.	period and being compliant with recommended screening guidelines at the end of the study period.	comparison clinics to undergo colonoscopy screening (35% versus 7%, odds ratio = 7.9, $P < .01$) and be guideline-compliant on at least one CRC screening test (43% versus 11%, odds ratio = 5.9, $P < .001$).	health screenings are provided to low-income adults in a rural setting.
Jandorf, L, Stossel, Lm, Cooperman, Jl Graff, Zivin J, Ladabaum, U, Hall, D, Thélémaque, Ld, Redd, W, Itzkowitz, Sh. (2013).	Colorectal Cancer Screening	Mount Sinai's primary care clinic	2 randomized controlled trials Patients were randomized to 1 of 4 PN groups	N= 395, Patients aged ≥50 years without active gastrointestinal symptoms, significant comorbidities, or a history of inflammatory bowel disease or CRC.	Detailed cost analysis of PN programs at the authors' institution from an institutional perspective	53.4% underwent SC alone, 30.1% underwent colonoscopy with biopsy, and 16.5% underwent snare polypectomy. Accounting for the average contribution margins of each procedure type, the total revenue was $95,266.00. The total cost of PN was $14,027.30. Net income was $81,238.70.	PN can be an effective approach to ensure that lifesaving, preventive health screenings are provided to low-income adults in a rural setting.
Jandorf, L., Braschi, C., Ernstoff, E., Wong, Cr.,	Colorectal Cancer Screening	Mount Sinai's primary care clinic NY, NY	Randomized clinical trial Randomized into 3 groups: peer-	N= 532. African American patients more than 50 years	Screening colonoscopy completion rates.	Screening colonoscopy completion rate was 75.7% across all groups with no significant	Because patient navigation successfully increases colonoscopy

Patient Navigator Studies 2010-2015

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Thelemaque, L., Winkel, G., Thompson, Hs., Redd, Wh., &Itzkowitz, Sh. (2013)			patient navigation, pro-PN, and standard.	without significant comorbidities		differences in completion between the three study arms.	adherence, cultural targeting may not be necessary in some populations.
Kreuter, M. W., Eddens, K. S., Alcaraz, K. I., Rath, S., Lai, C., Caito, N., Greer, R., Bridges, N., Purnell, J. Q., Wells, A., Fu, Q. Walsh, C., Eckstein, E., Griffith, J., Nelson, A., Paine, C., Aziz, T., & Roux, A. M. (2012).	Cancer Screening Referrals from Resource Telephone Line	United Way 2-1-1 Missouri. This system serves 99 of 114 counties in Missouri, nine counties in southern Illinois.	Randomized Trial. 2-1-1 callers received standard service and those with ≥ 1 cancer risk factor/ need for screening assigned to verbal referrals only, verbal referrals + a tailored reminder mailed, or verbal referrals + a telephone health coach/navigator.	N= 1,200. Aged ≥18 years, living in Missouri, English-speaking.	At 1 month, recalling and contacting the cancer control referral(s) they received. Both were measured in phone interviews conducted by the research team at 1-month follow-up.	Callers in the navigator condition were more likely to contact a cancer control referral than those receiving tailored reminders or verbal referrals only (34% vs 24% vs 18%, respectively; *n*=772, *p*<0.0001). Navigators were effective in getting 2-1-1 callers to contact providers for mammograms (OR=2.10, 95% CI=1.04, 4.22); Paps (OR=2.98, 95% CI=1.18, 7.54); and smoking cessation (OR=2.07, 95% CI=1.14, 3.74).	Because patient navigation successfully increases colonoscopy adherence, cultural targeting may not be necessary in some populations
Lairson, Dr., Dicarlo, M., Deshmuk, Aa., Fagan, Hb., Sifri, R., Katurakes, N., Cocroft, J., Sendecki, J., Swan, H., Vernon, Sw., & Myers, Re. (2014).	Colorectal Cancer Screening Cost Analysis	Ten primary care practices affiliated with e Christiana Care Health System (CCHS), Delaware	Randomized Trial. 3 Groups: Control Group, Standard Intervention (SI), or Tailored Navigator Intervention (TNI). SI: sent colonoscopy instructions and stool blood tests. TNI: sent	N= 945	Determine the cost-effectiveness of mailed standard intervention (SI) and tailored navigation interventions (TNI) to increase CRC screening use.	Program costs of the SI were $167 per participant. The average cost of the TNI was $289 per participant.	The TNI was more effective than the SI, but substantially increased the cost per additional individual screened.

Patient Navigator Studies 2010-2015

Citation	Focus	Setting	Study design	Participants	Outcome measures	Results	Key Message
			instructions for scheduling a colonoscopy, a stool blood test, or both based on test preference + a navigation telephone call.				
Ramirez, A. G., Pérez-Stable, E. J., Penedo, F. J., Talavera, G. A., Carrillo, J. E., Fernandez, M. E., Holden, A. E. C., Munoz, E., San Miguel, S., & Gallion, K. (2013).	Breast Cancer Screening & Diagnosis	Latino community-based health clinics in San Francisco, San Diego, New York City, Miami, Houston, and San Antonio, Texas	Quasi-experimental design to compare unmatched control participants and intervention participants on the time from abnormal breast screening to diagnosis and the proportions diagnosed within 30 days and 60 days of the initial screen	425 Latinas who had Breast Imaging Reporting and Data System (BI-RADS) radiologic abnormalities categorized as BI-RADS-3, BI-RADS-4, or BI-RADS-5	Number of days from index screening abnormality to diagnosis and the proportion of women achieving timely diagnosis (within 30 days or 60 days).	Time to diagnosis shorter in the PN group (mean, 32.5 days vs 44.6 days in the control group; hazard ratio, 1.32; *P* = .007). PN significantly shortened time to diagnosis among women who had BI-RADS-3 radiologic abnormalities (mean, 21.3 days vs 63.0 days; hazard ratio, 2.42; *P* < .001) but not in the BI-RADS-4 or BI-RADS-5 radiologic abnormalities groups (mean, 37.6 days vs 36.9 days; hazard ratio, 0.98; *P* = .989). Timely diagnosis more frequently among navigated (within 30 days: 67.3% vs 57.7%; *P* = .045; within 60 days: 86.2% vs 78.4%; *P* = .023) driven by BI-RADS-3 strata (within 30 days: 83.6% vs 50%; *P* < .001; within 60 days: 94.5% vs 67.2%; *P* < .001).	The time to diagnosis was shorter in the navigated group
Rodday, A. M.,	Breast,	National	Randomized	N= 3777, (1968	Time to	Controls: unemployed	PN eliminated

Patient Navigator Studies 2010-2015

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Parsons, S. K., Snyder, F., Simon, M. A., Llanos, A. A., Warren-Mears, V., Dudley, D. Lee, J. H., Patierno, S. R., Markossian, T. W. Sanders, M., Whitley, E. M. & Freund, K. M. (2015).	Colorectal, Cervical Cancer Diagnostic Resolution	Cancer Institute's Patient Navigation Research Program	Clinical trial PN vs usual care	in the control arm and 1809 in the navigation intervention arm) the mean age was 44 years; 43% were Hispanic, 28% were white, and 27% were African American.	diagnostic resolution after a cancer screening abnormality.	experienced a longer time to resolution employed full-time (hazard ratio [HR], 0.85; P = .02). Renters (HR, 0.81; P = .02) and those with other (ie, unstable) housing (HR, 0.60; P < .001) had delays in comparison with homeowners. Never married (HR, 0.70; P < .001) and previously married participants (HR, 0.85; P = .03) had delays vs married participants. No differences in the time to diagnostic resolution with any of these variables within the navigation intervention arm.	disparities and demonstrate the value of providing patient navigation to patients at high risk for delays in cancer care.
Kelly, E., Fulginiti, A., Pahwa, R., Tallen, L., Duan, L., & Brekke, J. S. (2014).	Appropriate use of health care services	Two sites of a large contract provider of mental health services in Southern California.	Pilot trial. Comparison of immediate intervention group (peer health navigation) or usual treatment	N= 24 Individuals with serious mental illness	Measures of health status, healthcare utilization, and barriers to healthcare	Participants changed their orientation about seeking care to a primary care provider (44.4 % vs. 83.3 %, $x^2 = 3.50$, $p < .05$) rather than the emergency room (55.6 % vs. 0 %, $x^2 = 8.75$, $p < .01$).	PNs demonstrated considerable promise through positively impacting health and healthcare utilization
Lasser, K.E., Kenst, K.S., Quintiliani, L.M., Wiener, R.S., Murillo, J., Pbert, L.,	Smoking cessation treatment	Boston Medical Center is an urban safety-net hospital	Pilot randomized controlled trial. Control: smoking cessation brochure and a list of smoking	N=47 Smokers	smoking cessation treatment at 3 months & 6 months	Nine (47.4%) of 19 of navigation group participants had engaged in smoking cessation treatment by 3 months vs 6 (42.9%) of	PN to promote engagement in smoking cessation treatment was feasible and acceptable to

Patient Navigator Studies 2010-2015

Citation	Focus	Setting	Study design	Participants	Outcome measures	Results	Key Message
Xuan, Z., & Bowen, D. J. (2013)			cessation resources; navigation condition: brochure/list of resources, and PN.			14 control group participants (chi-square p = ns).	participants
Libin, A., Ljungberg, I., & Groah, S. (2013).	Spinal Cord Injury (SCI) Education	National Rehabilitation Hospital Washington DC	Randomized controlled pilot Control: usual rehabilitation education; navigator group: SCI navigator in person & phone, using the PVA PU guideline education tool.	N=30 Individuals with spinal cord injury	Enhance individual pressure ulcer (PU) knowledge critical to health and well-being during first year after injury.	The navigator group maintained PU knowledge in inpatient rehabilitation (P = 7.89 to 7.85), knowledge decreased in the control group (P = 7.9 to 7.5 PU knowledge of both groups decreased significantly at 3 months post discharge (P = .045).	PNs is able to use experiential learning approach based on enhanced education efforts
Scott, L.B., Gravely, S., Sexton, T., Brzostek, S., & Brown, D. (2013).	Cardiac Rehabilitation Awareness	Public Hospital: Stony Brook University Hospital. NY	Randomized Control Study PN vs usual care	N= 181 Patients with cardiac event	Improvement in cardiac patient awareness about outpatient cardiac rehabilitation (OCR)	PN arm nearly 6 times more likely to have at least some awareness of rehabilitation vs usual care (OR = 5.99; P = .001). Those with some rehab awareness were more than 9 times more likely to enroll in outpatient cardiac rehabilitation (OR = 9.27, P = .034)	PNs can improve awareness of outpatient cardiac rehabilitation services which, in turn, can yield greater enrollment rates in a program.
Binswanger, I.A., Whitley, E., Paul-Ryan, H., Mueller, S., & Sung-joon, M. (2012).	Prevention of poor health outcomes	Re-entry center, Denver CO	Randomized controlled trial. 3 months of patient navigation (PN) with facilitated enrollment into	N=40, prison inmates 18 and older. 18% women, 30% Latino, 58% white, 20% African	Change in number of self-reported barriers to care and change in the rate of health service	Mean number of reported barriers to care was reduced at 3 months in both groups (intervention: -1.8+2.7; control: -1.1+2.4). Change in rate of	A trend towards lower hospitalization rates among navigation participants at 3 months, but rate of emergency room or

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			an indigent care discount program (intervention) or facilitated enrollment into an indigent care discount program alone (control).	American, 5% American Indian, and 18% did not report a race.	use per 100 person days from baseline to 3 months.	emergency department/urgent care visits per 100 person-days from baseline was 1.1+0.9 among intervention participants and 0.5+ 0.5 among control participants. Change in rate of hospitalization per 100 person-days from baseline was 0.1+0.3 in intervention participants and 0.8+1.5 in control participants.	urgent care visits was not improved, perhaps due to the high use of these services to access routine care.
Capp, R., Kelley, L., Ellis, P., Carmona, J., Lofton, A., Cobbs-Lomax, D., D'Onofrio, G. (2014).	High Risk for frequent Emergency Department (ED).	Emergency Department Boston MA	Randomized Control Trail. Comparing PNP versus standard of care for frequent ED users.	N=83 Patients with 4-18 visits/year to two local EDs; ages 21-62 years; Medicaid insurance; residence in a greater urban area; <50% of visits related to mental health or substance abuse.	Patient enrollment into program	A total of 83 (46.1%) patients agreed to enroll in the program; these patients were more likely to identify primary care providers (OR 3.37; 95% CI 1.37-8.34) compared with those who declined. The number of ED visits in the previous year was not associated with agreeing to enroll (OR 1.02; 95% CI 0.93-1.11; ref group=declined to enroll).	Medicaid-enrolled frequent ED users are more likely to agree to participate in a Patient Navigation Program if they identify a primary care provider.