Patient, Clinician, and Organizational Barriers to Timely Diagnosis

Ann M. Geiger, MPH, PhD

Scientific Directory, Cancer Care Delivery Research

National Cancer Institute Community Oncology Research Program

NIH NATIONAL CANCER INSTITUTE

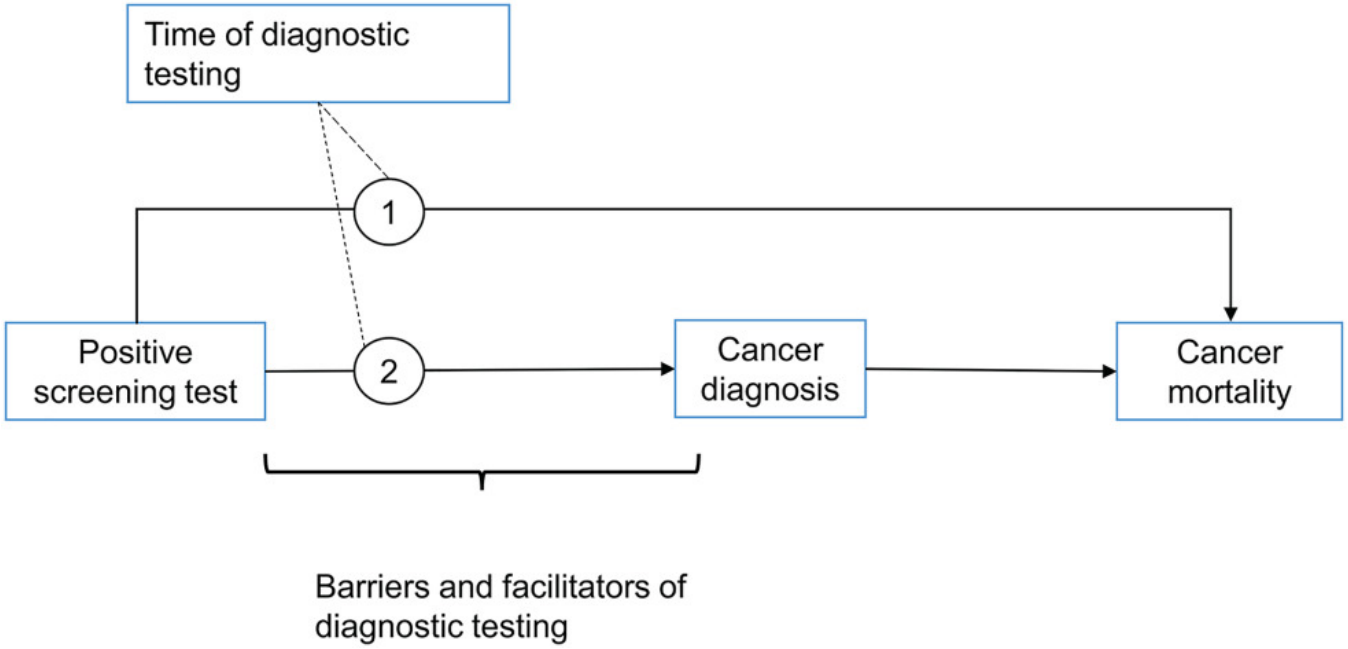
March 3, 2020

Disclosures and Thanks

- No financial conflicts of interest.
- Opinions are mine and not those of any federal government agencies
- Thanks to many colleagues and collaborators over 20+ years
  - Most recently Paul Doria-Rose
    - Lead Scientist of NCI-supported network Population-based Research to Optimize the Screening Process (PROSPR)
      - “Conducts research to better understand how to improve the cancer screening process in community healthcare settings”

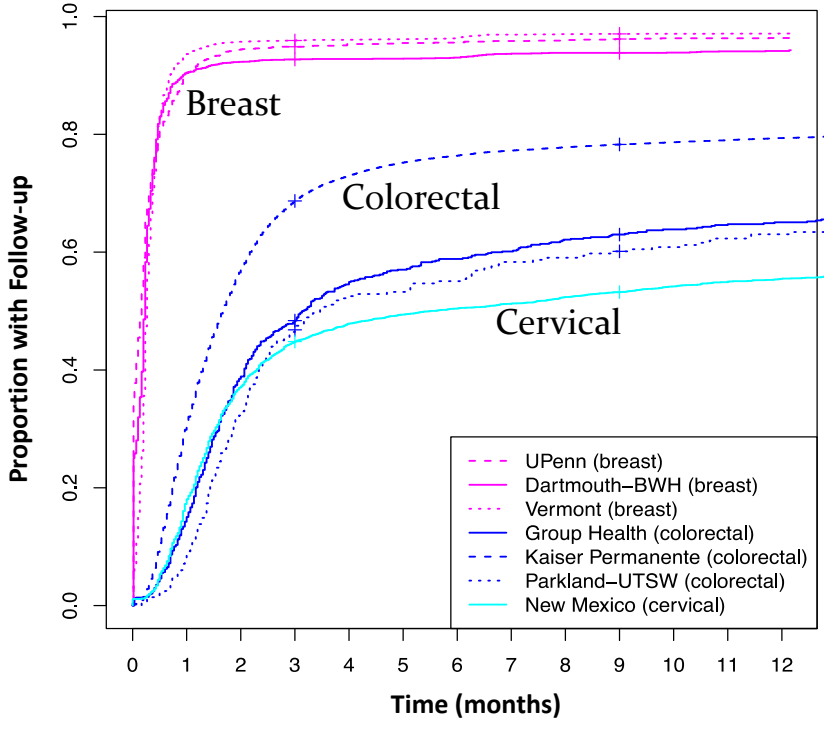
        healthcaredelivery.cancer.gov/prospr/

Timely follow-up of positive cancer screening results: A systematic review and recommendations from the PROSPR Consortium



Doubeni CA et al. *CA: A Cancer Journal for Clinicians*. 2018.

Variation in Follow-up After Abnormal Screen



Tosteson et al. *J Gen Intern Med*. 2015.

Table 4. Predicted LYG per 1,000 screened by time to diagnostic testing and decrement in LYG relative to immediate diagnostic testing

	LYG per 1,000 screened (and percent change) relative to immediate diagnosis			
Model	**Immediate**	**3 months**	**6 months**	**12 months**
Breast	101.6	84.1 (−17.3%)	66.1 (−34.9%)	41.0 (−59.6%)
Cervical	281.7	279.5 (−0.8%)	277.6 (−1.4%)	273.8 (−2.8%)
CRC-SPIN	249.8	244.8 (−2.0%)	239.7 (−4.1%)	230.2 (−7.8%)
MISCAN-Colon	233.7	227.3 (−2.7%)	222.7 (−4.7%)	213.7 (−8.6%)

Rutter CM et al. *Cancer Epidemiol Biomarkers Prev*. 2017.

Abnormal Mammography Follow-Up

Table 6. Concordance Between BI-RADS® Assessment Categories and

Assessment	Management	
Category 0: Incomplete – Need Additional Imaging Evaluation and/or Prior Mammograms for Comparison	Recall for additional imaging and/or comparison with prior examination(s)	N
Category 1: Negative	Routine mammography screening	E
Category 2: Benign	Routine mammography screening	E
Category 3: Probably Benign	Short-interval (6-month) follow-up or continued surveillance mammography (Figure 155, see page 152)	>
Category 4: Suspicious	Tissue diagnosis	>
Category 4A: *Low suspicion* for malignancy		>
Category 4B: *Moderate suspicion* for malignancy		>
Category 4C: *High suspicion* for malignancy		>
Category 5: Highly Suggestive of Malignancy	Tissue diagnosis	≥
Category 6: Known Biopsy-Proven Malignancy	Surgical excision when clinically appropriate	N

ACR BI-RADS® Atlas. American College of Radiologists. 2013.

Abnormal Cervical Cancer Screening Follow-Up

Table 1. Cervical Cancer Screening Test Results Follow-up

This table shows the recommended follow-up for women who have had no prior abnormal cervical cancer screening test results. Follow-up is different when an abnormal cervical cancer screening test result occurs in a woman who has had a prior abnormal result.

	Ages 21–24	*Ages 25–29*	*Ages 30 and Older*	
			HPV Negative	*HPV Positive*
Normal Pap test results	Routine screening: Pap test every 3 years	Routine screening: Pap test every 3 years	Routine screening: Preferred— Co-testing* every 5 years Acceptable— Pap test alone every 3 years	Acceptable— Co-testing* in 12 months Acceptable— HPV typing†
ASC-US	Preferred— Repeat Pap test in 12 months Acceptable— Reflex HPV test‡	Preferred— Reflex HPV test‡ Acceptable— Repeat Pap test in 12 months	Repeat co-testing* in 3 years	Colposcopy
LSIL	Repeat Pap test in 12 months	Colposcopy	Preferred— Repeat Pap test in 12 months Acceptable— Colposcopy	Colposcopy
ASC-H	Colposcopy	Colposcopy	Colposcopy	Colposcopy
HSIL	Colposcopy	Immediate excisional treatment or colposcopy	Immediate excisional treatment or colposcopy	Immediate excisional treatment or colposcopy
AGC	AGC has several subcategories. The type of follow-up tests that are recommended depend on the AGC subcategory. Tests performed for follow-up include colposcopy, endocervical sampling, and endometrial sampling.			

Abbreviations: ASC-H = atypical squamous cells, cannot rule out HSIL; ASC-US = atypical squamous cells of undetermined significance; AGC = atypical glandular cells; HPV = human papillomavirus; HSIL = high-grade squamous intraepithelial lesion; LSIL = low-grade squamous intraepithelial lesion.

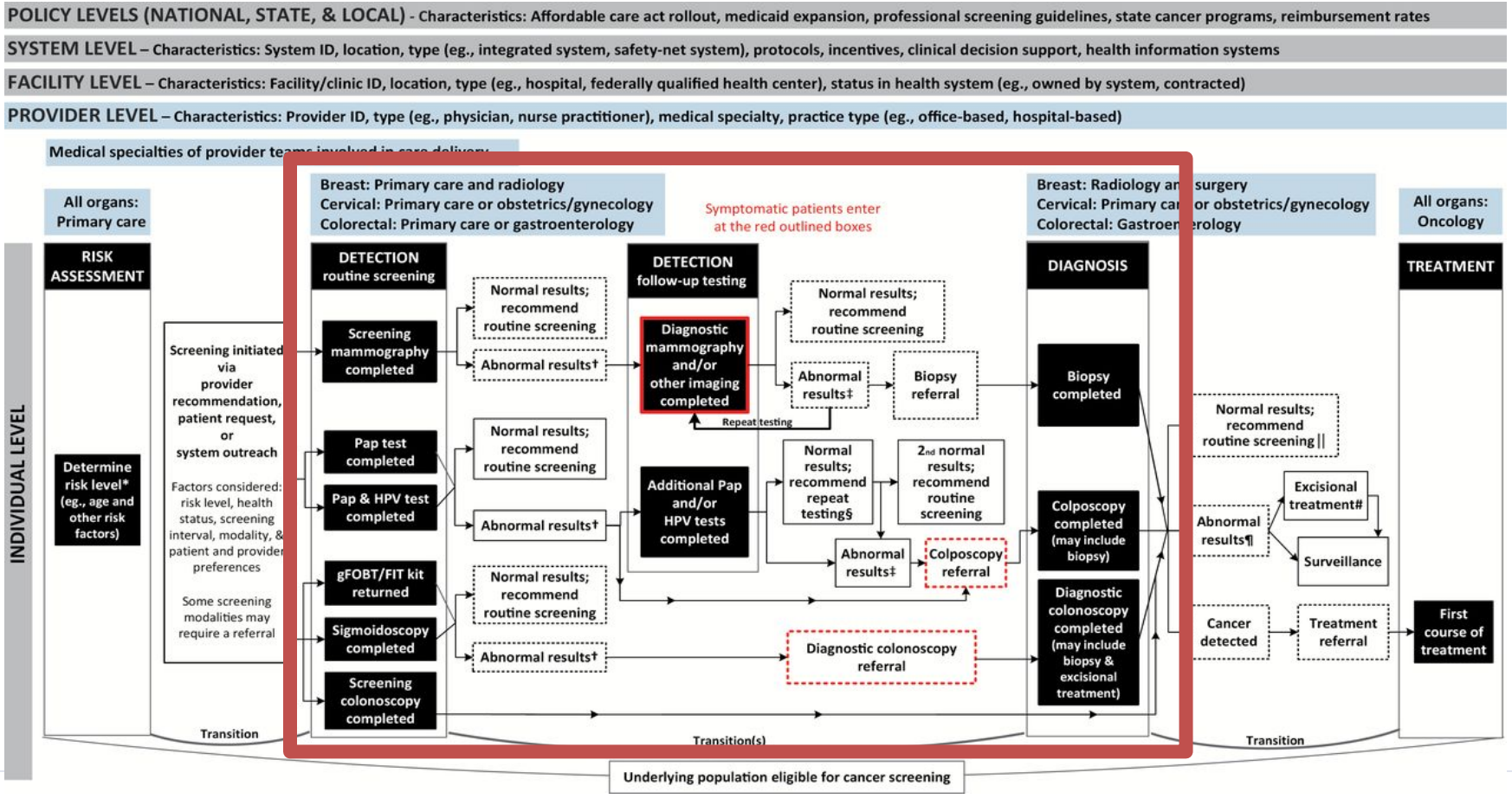
*Co-testing: Combined Pap test and HPV test

†HPV typing: A test for the presence of HPV type 16 and HPV type 18

‡Reflex HPV test: A test for the presence of high-risk HPV types using the sample used for a Pap test

FAQ187. The American College of Obstetricians and Gynecologists. 2016.

Figure 1. Population-based Research Optimizing Screening through Personalized Regimens (PROSPR) trans-organ conceptual model for breast, cervical, and colorectal cancer screening



Beaber EF et al. *JNCI: Journal of the National Cancer Institute*. 2015. https://doi.org/10.1093/jnci/djv120

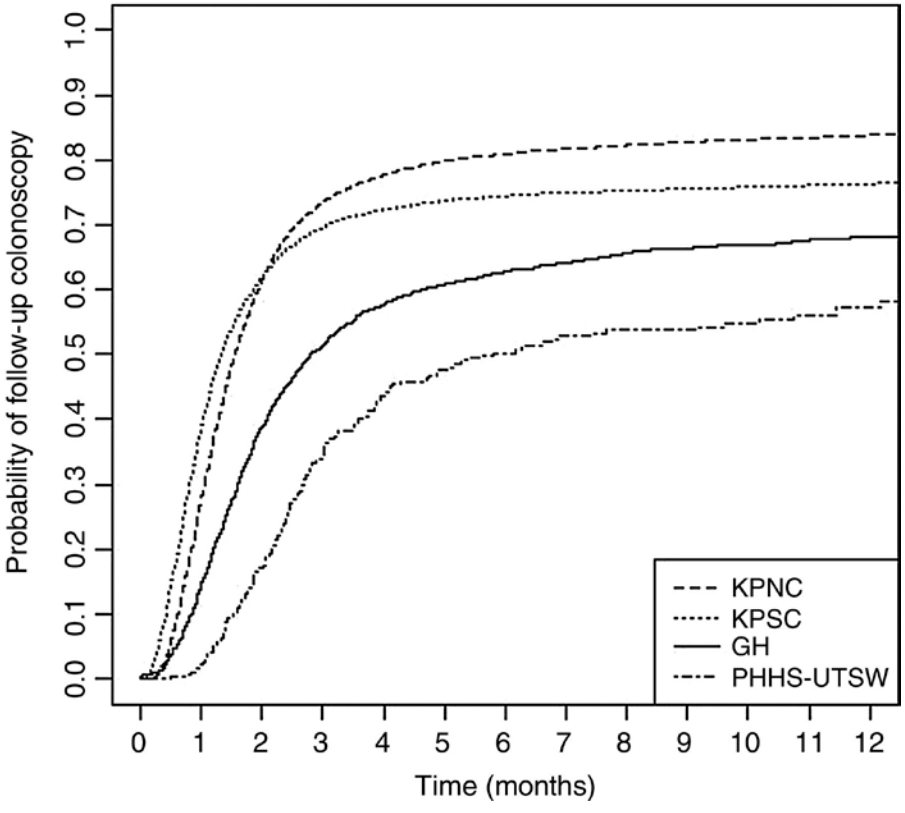
OXFORD UNIVERSITY PRESS

Abnormal Colorectal Cancer Fecal Screening Follow-Up

Colonoscopy

US Multi-Society Task Force on Colorectal Cancer. *Gastroenterology*. 2017.

Time to follow-up colonoscopy after positive fecal blood test, by PROSPR health care system, 2011–2012.



Chubak J et al. *Cancer Epidemiol Biomarkers Prev*. 2016.

At KPNC, compared to a follow-up colonoscopy within 30 days…

Follow-up at 7 to 12 months associated with increase in:

- Any colorectal cancer (1.37, 1.09-1.70)*
- Advanced stage (1.55, 1.05-2.28)*

Follow-up at more than 12 months associated with an even bigger increase in:

- Any colorectal cancer (2.25, 1.89-2.68)*
- Advanced stage (3.22, 2.44-4.25)*

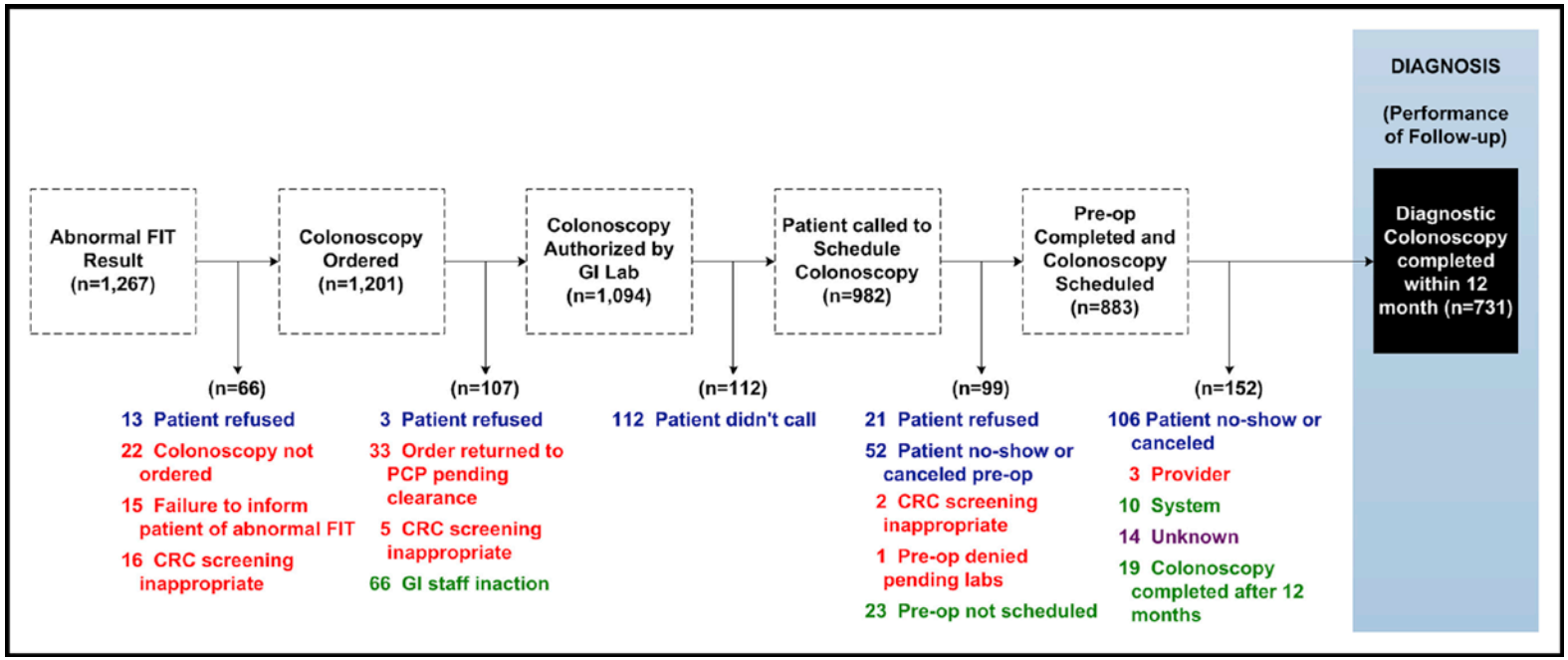
*adjusted odds ratios and 95% confidence intervals

Corley DA et al. *JAMA*. 2017.

Patient Barriers to Timely Follow-up

- Small and inconsistent variation by demographic factors
  - Older age and comorbidities more consistently associated with delays
- Insurance status (including out-of-pocket cost)
- Other
  - Fear (have heard “horror stories” about prep and procedure)
  - Inadequate understanding (attribute abnormality to an existing condition)
  - Lack of social support (no one to accompany them, provide childcare, etc.)
  - Transportation
  - Competing demands
  - Scheduling difficulties
  - No regular clinician or does not trust clinician
  - Refusal

Why Did Patients in a Safety Net System Fail to Obtain a Diagnostic Colonoscopy after Abnormal FIT?



37% (n = 196) due to clinician or organizational factors OR
57% (n = 308) if add patients who did not call to schedule

Martin J et al. *Am J Med.* 2017.

Key Non-Patient Barriers to Timely Follow-up

Clinician

- Unaware of abnormal fecal test
- Colonoscopy not recommended
  - Repeat screening test suggested instead
  - Not perceived as necessary
  - Omission
- Poor communication of recommendation

Organizational

- Insufficient follow-up
  - Not integrated into clinical workflow
  - Lack of clinical decision support in electronic medical record
- Scheduling problems
  - Difficult for patient to schedule a colonoscopy
  - Colonoscopies not available at times convenient for patients

Review of Interventions to Improve Timely Follow-Up

- Identified 23 studies
- Level of barrier targeted
  - Patient = 11
  - Clinician = 5
  - System = 7
- Approaches with moderate strength of evidence
  - Patient navigation
  - Provision of reminders and/or performance data to providers

Selby K et al. *Ann Intern Med*. 2017.

Studying Clinician & Organizational Factors

Organization	Practice setting	Provider (individuals & teams)
1. Setting type (e.g., safety net) 2. Organizational structure/organizational mission/reimbursement model 3. Geographic location 4. Size 5. Other demographics (e.g., urban/rural composition) 6. Screening policies & incentives 7. Incentive structure/Pay-for-performance initiatives 8. Screening outreach/inreach programs (e.g., EHR tools to promote screening) 9. Clinical information systems (EHR vendor/implementation, tumor registry) 10. Clinical support tools in EHR 11. Performance monitoring (e.g., quality metrics, audit and feedback) 12. Quality improvement	1. Type of clinic/facility/practice 2. Geographic location 3. Size & volume (number of providers and patient volume) 4. Medical home recognition 5. Staffing mix 6. Patient demographics 7. Clinical information systems 8. Care coordination/management 9. Patient education & navigation/decision support 10. Screening outreach/inreach & resources for screening	1. Demographics/training 2. Practice (e.g., part-time/full-time/locum tenens, panel size) 3. Screening knowledge, attitudes, & beliefs 4. Team organization (structure/composition/roles) 5. Team membership/roles (e.g., assignment of outreach activities, result reporting) 6. Team communication

Conclusion

- Highest priority remains getting people screened
- Lack of timely follow-up of abnormal screening test diminishes screening impact
  - Appears lung cancer screening programs will face challenges
  - Will follow-up of home HPV self-sampling be even more challenging?
- Achieving timelier follow-up will require addressing patient, clinician, and organizational factors

Citations

Slide 3 - Doubeni CA et al. Timely follow-up of positive cancer screening results: a systematic review and recommendations from the PROSPR consortium. *CA Cancer J Clin*. 2018;68:199-216. doi: 10.3322/caac.21452

Slide 4 - Tosteson AN et al. Variation in screening abnormality rates and follow-up of breast cervical and colorectal cancer screening within the PROSPR consortium. *Gen Intern Med*. 2016;31:372-9. doi: 10.1007/s11606-015-3552-7

Slide 5 - Rutter CM et al. Effect of time to diagnostic testing for breast, cervical, and colorectal cancer screening abnormalities on screening efficacy: a modeling study. *Cancer Epidemiol Biomarkers Prev*. 2017;27:158-64. doi: 10.1158/1055-9965.EPI-17-0378

Slide 6 - American College of Radiologists. ACR BI-RADS® Atlas. 2013. https://www.acr.org/Clinical-Resources/Reporting-and-Data-Systems/Bi-Rads

Slide 7 - American College of Obstetricians and Gynecologists. Frequently Asked Questions 187: Abnormal Cervical Cancer Screening Test Results. 2016. https://www.acog.org/-/media/For-Patients/faq187.pdf?dmc=1&ts=20200301T1549430474

Slide 8 - Beaber EF et al. Unifying screening processes within the PROSPR consortium: a conceptual model for breast, cervical, and colorectal cancer screening. *J Natl Cancer Inst* 2015;107:djv120. doi: 10.1093/jnci/djv120

Slide 9 - Rex DK et al. Colorectal cancer screening: recommendations for physicians and patients from the US Multi-Society Task Force on Colorectal Cancer. *Gastroenterology*. 2017;153:307-23. doi: 10.1053/j.gastro.2017.05.013

Slide 10 - Chubak J et al. Time to colonoscopy after positive fecal test in four US health care systems. *Cancer Epidemiol Biomarkers Prev* 2016;25:1-7. doi: 10.1158/1055-9965.EPI-15-0470

Slide 10 Corley DA et al. Association between time to colonoscopy after a positive fecal test result and risk of colorectal cancer and cancer state at diagnosis. *JAMA*. 2017;317:1631-41. doi: 10.1001/jama.2017.3634

Citations (continued)

Slide 12 - Martin J et al. Reasons for lack of diagnostic colonoscopy after positive results on fecal immunohistochemical test in a safety-net health system. *Am J Med*. 2017;130:93.e1-7. doi: 10.1016/j.amjmed.2016.07.028

Slide 14 – Selby K et al. Interventions to improve follow-up of positive results on fecal blood tests: a systematic review. *Ann Intern Med*. 2017;167:565-75. doi: 10.7326/M17-1361

NATIONAL CANCER INSTITUTE

www.cancer.gov

www.cancer.gov/espanol