
GI ON DEMAND
Access GI Expertise, Educational Resources and Support for You and Your Patients
Registered Dietitians
GI Psychologists
GI Sub-Specialists
APP
Patient
GI
Genetic Testing
Telehealth Features
Education Resources
A Free ACG Member Benefit Designed to Help You and Your Patients!
Learn More and Join Today at
GIONDEMAND.COM

1


2023
ACG HEPATOLOGY SCHOOL & EASTERN
REGIONAL POSTGRADUATE COURSE
JUNE 2-4, 2023 | RENAISSANCE HOTEL WASHINGTON, DC
Register online: meetings.gi.org

2

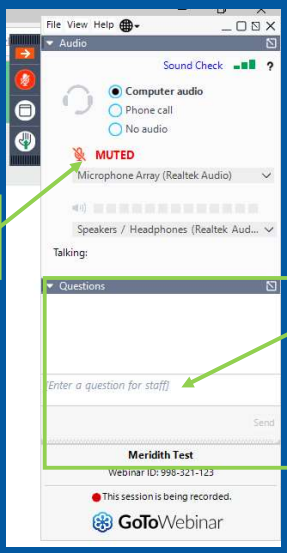
3

Virtual Grand Rounds

universe.gi.org

Participating in the Webinar

All attendees will be muted and will remain in Listen Only Mode.



Type your questions here so that the moderator can see them. Not all questions will be answered but we will get to as many as possible.

4

Virtual Grand Rounds universe.gi.org

ACG Virtual Grand Rounds

Join us for upcoming Virtual Grand Rounds!


Week 11 –Thursday, March 16, 2023
CRC Screening: How Can We Improve?
Faculty: Aasma Shaukat, MD, MPH, FACG
Moderator: Janice H. Cheong, MD
At Noon and 8pm Eastern

Week 12 – Thursday, March 23, 2023
Lynch Syndrome Awareness: Historical and Current Approaches to Identifying Individuals With Lynch Syndrome
Faculty: Peter Stanich, MD; and Heather L. Hampel, MS, CGC
Moderators: Julie L. Yang, MD; and Elana Levinson, MS, CGC
Host: Jessica Long, MD, CGC
At Noon and 8pm Eastern

Visit **gi.org/ACGVGR** to Register

5

ACG 2023

OCTOBER 20–25, 2023
VANCOUVER, CANADA

VANCOUVER

Save the Date!

Be sure your passport is up to date!

6

ACG VIRTUAL GRAND ROUNDS WEBINAR

The Role of Genetic Testing in Early Colorectal Cancer Detection

Heather Hampel, MS, LGC

Jordan Karlitz, MD, FACG,

Candace Peterson, MS, CGC

Virtual Grand Rounds

universe.gi.org

7

Jordan J. Karlitz, MD, FACG
DIRECTOR OF CLINICAL OPERATIONS, GI ONDEMAND
CHIEF MEDICAL OFFICER, GASTRO GIRL
Disclosure: SENIOR MEDICAL DIRECTOR, GRAIL

Heather Hampel, MS, LGC
ASSOCIATE DIRECTOR, DIVISION OF CLINICAL CANCER GENOMICS
PROFESSOR, DEPARTMENT OF MEDICAL ONCOLOGY & THERAPEUTICS RESEARCH
LICENSED GENETIC COUNSELOR
THE CITY OF HOPE NATIONAL MEDICAL CENTER

Candace Peterson, MS, CGC
GENOMIC SCIENCE LIAISON
CERTIFIED LICENSED GENETIC COUNSELOR
AMBRY GENETICS

MKT-SPEC-PPT-20073-EN-v1

8

Jordan J. Karlitz, MD, FACG

DIRECTOR OF CLINICAL OPERATIONS, GI ONDEMAND
CHIEF MEDICAL OFFICER, GASTRO GIRL

Disclosure: SENIOR MEDICAL DIRECTOR, GRAIL

9

Agenda

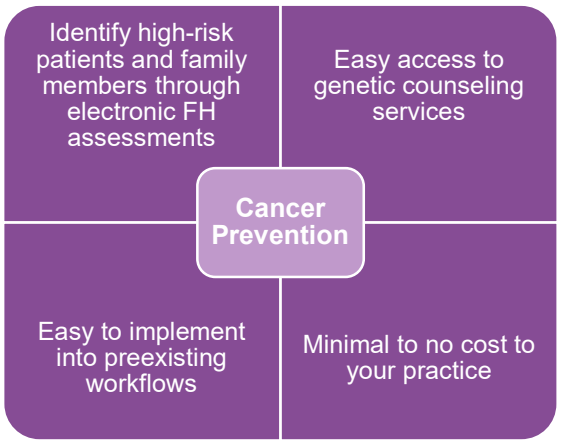
- Why should GI practices identify patients that need genetic testing?
- What would be the components of an optimal genetic testing and counseling process?
- What are the genetic testing guidelines for hereditary cancer syndromes?
- How does early screening of high-risk patients impact clinical management and your practice?
- How can my practice utilize technology to identify and test patients at risk for hereditary cancer syndromes?

10

Why should my GI practice identify patients at risk for hereditary cancer syndromes?

- Many patients in your GI practice have hereditary cancer syndromes, but you just have not identified them yet
- These cancer syndromes are associated with very high lifetime cancer risks which are associated with considerable morbidity and mortality
- If these patients are not identified, the patient and their family members may be at greater risk
- Over time, these patients can develop cancer while you are taking care of them in your practice
- By identifying these patients, you can both save lives through frequent endoscopic surveillance protocols and recruit new at-risk family members to your practice

Key components of a Genetic Testing Program in GI Practice



Case Study #1

- A 32-year-old male was seen by you in 2019 for EoE. The patient did well on medication (resolution of dysphagia) with plan for follow up q 1-2 years to reassess symptoms.
- The hospitalist service now consults you today (4 years later) for an obstructing colon mass. Colonoscopy reveals a 5 cm sigmoid mass that is microsatellite unstable on tumor testing. Germline testing confirms Lynch syndrome.
- You go back to review your notes from 2019; there is documentation that there is no FH of colorectal cancer in first degree relatives. However, you obtain further family history in the hospital now and realize that the patient's paternal grandfather had CRC at age 55 and a paternal aunt had uterine cancer at age 52.
- Based on this family history the patient would have met criteria for genetic testing back in 2019. How could I have prevented this from happening?

Most common hereditary GI cancer syndrome?

- **Lynch Syndrome**
  - Lifetime CRC risk up to 80%
  - Risk of other cancers: stomach, ovarian, uterine etc.
  - 1:279 people (1.2 million) in the U.S. are affected and most are completely unaware

Cancer Epidemiol Biomarkers Prev; 26(3) March 2017: https://cebp.aacrjournals.org/content/cebp/26/3/404.full.pdf

So how many patients in my practice are carrying a GI related hereditary cancer syndrome?

- Based on a Lynch syndrome carrier frequency of 1:279 and a potential concentration of patients in GI practices with stronger cancer family histories and numerous polyps (due to referral bias), it is reasonable to estimate approx. 1:200 people in a GI practice are carrying a Lynch or polyposis mutation
- Working example: GI provider working 4 days a week, 46 weeks out of the year
  - 12 clinic patients per half day, 4 sessions per week (48 patients)
  - 15 endoscopies per full day, 2 days per week (30 patients)
  - Encountering 1-2 hereditary patients per month, or 12-24 per year per provider
  - In a practice with 10 GI providers, that amounts to up to 120-240 patients per year

Cancer Epidemiol Biomarkers Prev; 26(3) March 2017: https://cebp.aacrjournals.org/content/cebp/26/3/404.full.pdf

15

Who are these patients in our practices with hereditary CRC syndromes?

- Some we may have already identified due to clearly obvious phenotypes
  - Very strong family history of CRC, CRC at a young age, multiple polyps
- Many others are hiding in plain sight and have not been identified yet
  - Seemingly low risk patients with GERD, IBS, gastroparesis, chronic pancreatitis etc. who have not had an adequate family history taken
  - However, over the years, as you take care of these patients, they can and will develop cancer if they have a missed underlying mutation

16

Patients you may be missing who based on guidelines should be offered genetic counseling/testing

- **33-year-old male** patient with chronic GERD and no personal history of cancer whose father had CRC at age 56.
- **56-year-old female** patient who just had a negative screening colonoscopy and has no family history of cancer but has a personal history of uterine cancer at age 49.
- **26-year-old male** patient with EoE and no personal history of cancer with a single aunt with CRC diagnosed at age 49
- **42-year-old female** patient with personal history of bladder cancer and a grandmother with uterine cancer diagnosed at age 51. No CRC in the family.

PREMM: https://premm.dfci.harvard.edu/

17

GI doctors and how they manage hereditary syndromes: The Data

- National Survey of GI doctors asking questions about barriers to genetic analysis of colorectal cancer patients
- 509 respondents (private practice, academic center, urban, rural)
- Barriers preventing test ordering (percentage of providers stating the following are barriers)….
  - Perceived cost - 33.3%
  - Unfamiliarity interpreting results - 29.2%
  - Unavailable genetic counseling - 24.9%
- In multivariable analysis, non-academic and rural settings were associated with cost and genetic counseling barriers

Noll A, Parekh PJ, Zhou M, Weber TK, Ahnen D, Wu x, Karlitz JJ. Barriers to Lynch Syndrome Testing and Preoperative Result Availability in Early-onset Colorectal Cancer: A National Physician Survey Study Clin Transl Gastroenterol. 2018 Sep; 9(9): 185

18

So how can we identify these patients?

- Taking a comprehensive family history to risk stratify every patient in your practice by personal and family history would be the best way to identify these hereditary patients, but who has the time and personnel to do this?
- Even if we identify these patients, it is so hard to get patients to genetic counselors, so how are we going to manage these patients?

Basic principles of an optimized genetic counseling and testing process

- Use digital technology to obtain personal and family history information on all patients in a given GI practice (regardless of their diagnosis)
  - Prevents workflow disruptions at the time of the office visit
  - Allows patients to have more time to collect accurate family history information
  - GI provider does not need to worry about getting the family history themselves
- If thresholds are met for genetic analysis, genetic testing is arranged
- Offer a GI cancer-related gene panel
  - Using a comprehensive panel takes the guesswork out of figuring out what genes to order
- Utilizing genetic counseling services for patients with abnormal results provides patients with an opportunity to receive education and guidance regarding the impact of their results for themselves and their families

So how would this be good for my practice?

- Genetic testing is guideline recommended and can assist in preventing cancer in patients and family members
- Practices that embrace technology and the most up to date guidelines will be attractive to patients
- Identifying hereditary cancer patients will allow for expansion of guideline recommended endoscopic surveillance procedures
- Identifying hereditary cancer patients will allow recruitment of family members as new patients to your practice

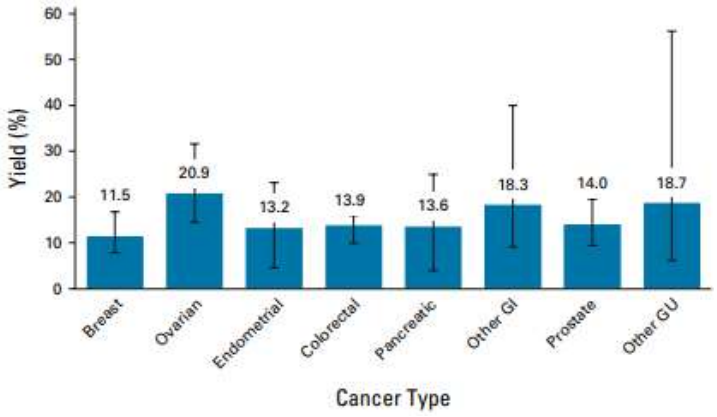
21

Heather Hampel, MS, LGC

ASSOCIATE DIRECTOR, DIVISION OF CLINICAL CANCER GENOMICS
PROFESSOR, DEPARTMENT OF MEDICAL ONCOLOGY & THERAPEUTICS RESEARCH
LICENSED GENETIC COUNSELOR
THE CITY OF HOPE NATIONAL MEDICAL CENTER

22

How common are hereditary cancer syndromes in GI cancer patients?



Example of a Curated Panel for GI Testing

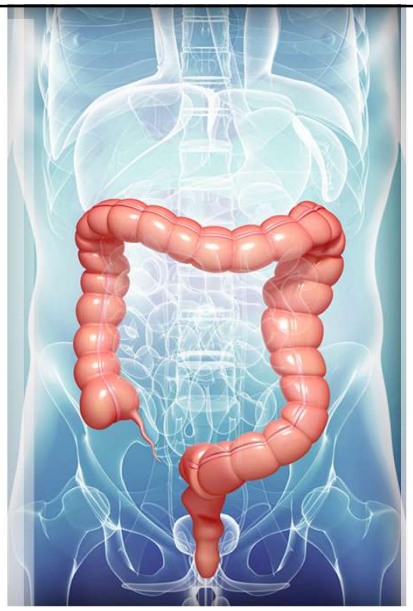
APC	ATM	AXIN2	BARD1	BMPR1A
BRCA1	BRCA2	BRIP1	CDH1	CDK4
CDKN2A	CHEK2	DICER1	EPCAM	GREM1
HOXB13	MLH1	MLH3	MSH2	MSH3
MSH6	MUTYH	NBN	NF1	NTHL1
PALB2	PMS2	POLD1	POLE	PTEN
RAD51C	RAD51D	RECQL	RPS20	SMAD4
SMARCA4	STK11	TP53		

Provides clinicians with accurate results to inform patient care.

Comprehensive 38-gene panel that identifies inherited risks.

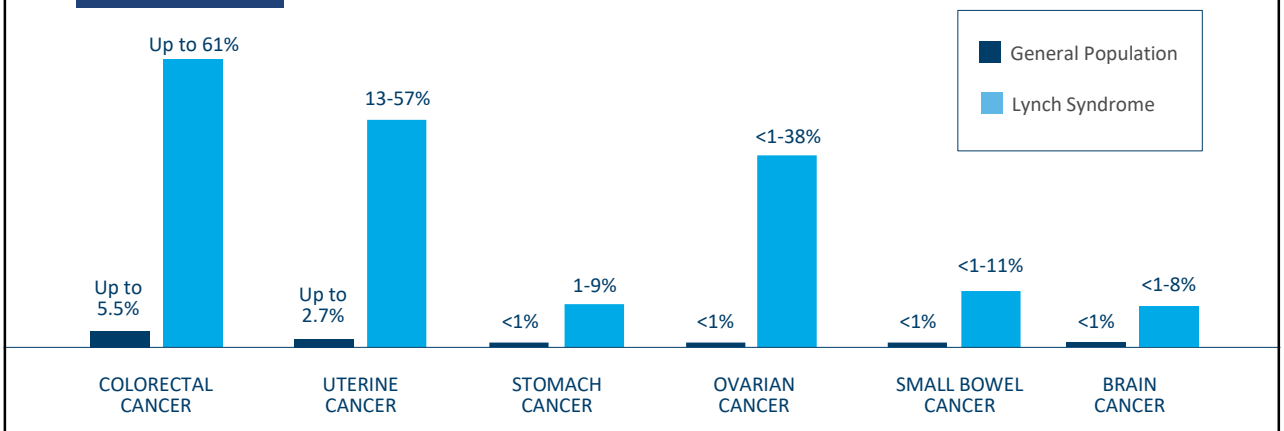
Lynch Syndrome

- **Frequent:** Over 1.2 million individuals in the United States have Lynch syndrome
- **Cancer Risks:** Inherited condition that causes high risks for colorectal, endometrial, ovarian, gastric and other cancers
- **Actionable:** Preventable cancers with early and more frequent screening
- **Underdiagnosed**: 95% of affected individuals do not know they have Lynch syndrome



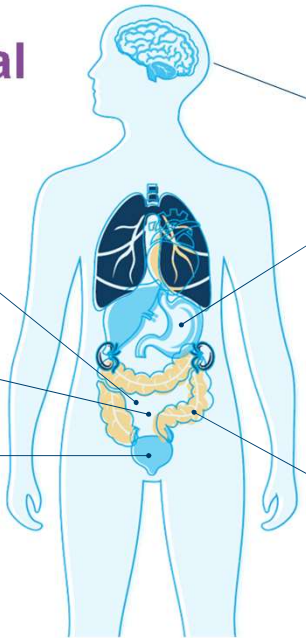
Cancer Epidemiol Biomarkers Prev; 26(3) March 2017:https://cebp.aacrjournals.org/content/cebp/26/3/404.full.pdf

Lynch Syndrome significantly increases lifetime cancer risks



*Risks vary depending on specific Lynch gene

Impact on Clinical Management



ENDOMETRIAL
- Option of risk-reducing surgery

OVARIAN
- Option of risk-reducing surgery

UROTHELIAL/BLADDER
- Optional depending on family history; increased risk in males
- Urinalysis
- Annually beginning at age 30-35

BRAIN
- Annual neurologic exam

STOMACH AND SMALL BOWEL
- Optional depending on family history; increased risk in males, older age, specific ethnicity
- Upper endoscopy/EGD
- Baseline at age 40; every 3-5 years in high risk

COLORECTAL
- Colonoscopy
- Every 1-2 years beginning at age 20-25

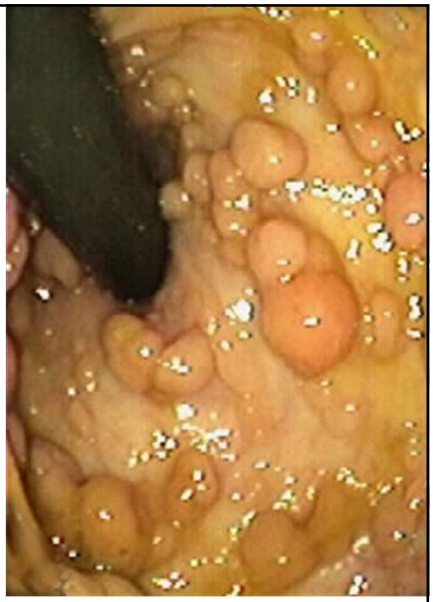
Virtual Grand Rounds

universe.gi.org

27

Familial Adenomatous Polyposis

- **Less Frequent:** Accounts for 1% of all CRC
- **Cancer Risks:** 100% risk of colorectal cancer if untreated; Increased risks for duodenal, thyroid, hepatoblastoma, and medulloblastoma cancers
- **Actionable:** Colectomy recommended to prevent CRC
- **Overdiagnosed and undertested**: There are now ~9 adenomatous polyposis genes each with different risks and management



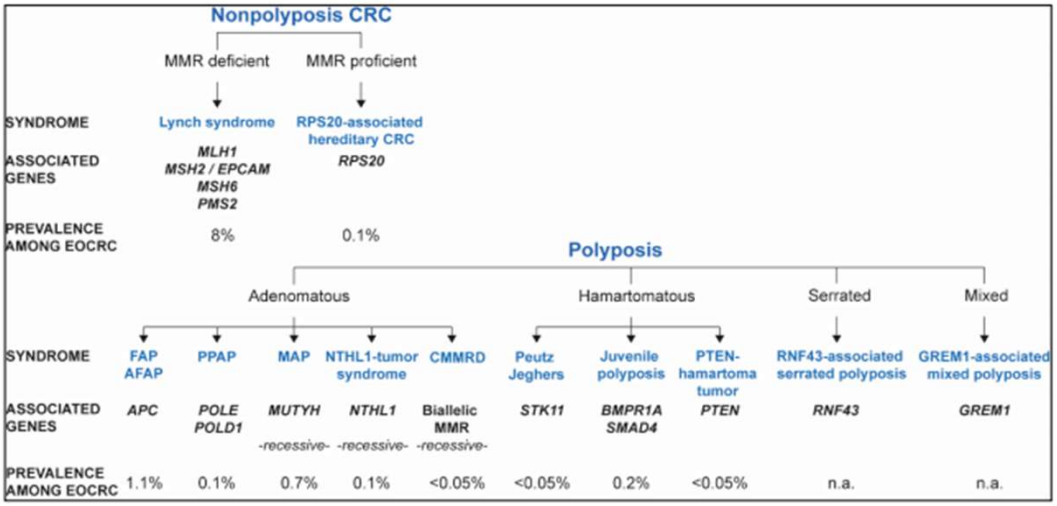
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3281354/#:~:text=Familial%20adenomatous%20polyposis%20(FAP)%20is,effective%20method%20of%20CRC%20prevention.

Virtual Grand Rounds

universe.gi.org

28

Many Colorectal Cancer & Polyposis Genes Have Been Identified



Alvarez MD, et al. The Inherited and Familial Component of Early-Onset Colorectal CancerCells 2021, 10, 710.

Management Guidelines Available for Most Genes on Multi-Gene Panel Tests

National Comprehensive Cancer Network®

NCCN Guidelines Version 1.2021
Genetic/Familial High-Risk Assessment: Colorectal

NCCN Guidelines Index
Table of Contents
Discussion

Table 4: Recommended Management for Patients with Pathogenic Variants in Genes That May Confer a Risk for Colorectal Cancer

GENE	RECOMMENDATION
APC	See NCCN Guidelines for Familial Adenomatous Polyposis (FAP-1)
BMPR1A	See NCCN Guidelines for Juvenile Polyposis Syndrome (JPS-1)
LS genes (*MLH1, MSH2, MSH6, PMS2, EPCAM*)	See NCCN Guidelines for Lynch Syndrome (LS-1)
MUTYH biallelic pathogenic variants	See NCCN Guidelines for *MUTYH*-Associated Polyposis (MAP-1)
PTEN	See NCCN Guidelines for Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic
STK11	See NCCN Guidelines for Peutz-Jeghers Syndrome (PJS-1)
SMAD4	See NCCN Guidelines for Juvenile Polyposis Syndrome (JPS-1)
TP53	See NCCN Guidelines for Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic
GREM1[g]	• Begin high-quality colonoscopy at age 25–30 y and every 2–3 y if negative. If polyps are found, high-quality colonoscopy every 1–2 y with consideration of surgery if the polyp burden becomes unmanageable by colonoscopy. • Surgical evaluation if appropriate.
POLD1[g]	
POLE[g]	
AXIN2[g]	
NTHL1 biallelic pathogenic variants[g]	
MSH3 biallelic pathogenic variants[g]	
APC I1307K pathogenic variant[g,i] *CHEK2*[g,h,i]	• For probands with CRC and one of these pathogenic variants: › See surveillance recommendations for post-CRC resection: ◊ NCCN Guidelines for Colon Cancer and NCCN Guidelines for Rectal Cancer • For probands unaffected by CRC with a first-degree relative with CRC: › High-quality colonoscopy screening every 5 y, beginning at age 40 or 10 y prior to age of first-degree relative's age at CRC diagnosis. • For probands unaffected by CRC and no first-degree relative with CRC: › High-quality colonoscopy screening every 5 y, beginning at age 40. • For CHEK2, also see See NCCN Guidelines for Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic
MUTYH heterozygotes[g]	• For probands unaffected by CRC with a first-degree relative with CRC: › High-quality colonoscopy screening every 5 y, beginning at age 40 y or 10 y prior to age of first-degree relative's age at CRC diagnosis. See screening recommendations in NCCN Guidelines for Colorectal Cancer Screening. • There are no specific data available to determine screening recommendations for a patient with an *MUTYH* heterozygous pathogenic variant and a second-degree relative affected with CRC. See NCCN Guidelines for Colorectal Cancer Screening. • For probands unaffected by CRC with NO family history of CRC: › Data are unclear as to whether specialized screening is warranted for *MUTYH* heterozygous carriers unaffected by CRC with no family history of CRC.[i]
ATM, BLM, GALNT12, RNF43, RPS20	• Available data are insufficient to provide specialized colorectal cancer screening recommendations at this time. See NCCN Guidelines for Colorectal Cancer Screening

https://www.nccn.org/guidelines/guidelines-detail?category=2&id=1503

Why worry about non-colorectal cancer genes?

- In addition to risks for breast, ovarian, prostate, and other cancers, many of these genes have an increased risk for GI cancers.
- NCCN recommends that individuals with *BRCA1/2, ATM, PALB2, TP53*, or Lynch genes (except *PMS2*) with a FDR or SDR with pancreatic cancer:
- Consider pancreatic cancer screening beginning at age 50 or 10 years younger than the earliest dx in family.
- Annual contrast-enhanced MRI/MRCP and/or EUS with consideration of shorter screening intervals for individuals found to have worrisome abnormalities on screening.
- Most small cystic lesions found on screening will not warrant biopsy, surgical resection, or any intervention.

https://www.nccn.org/guidelines/guidelines-detail?category=2&id=1503

Multiple professional organizations recommend genetic testing

American College of Gastroenterology
NCCN GUIDELINES
The American College of Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS
U.S. Preventive Services TASK FORCE
ASCO
AMERICAN SOCIETY OF CLINICAL ONCOLOGY
The American Society of Colon and Rectal Surgeons ASCRS 1899
SGO
Society of Gynecologic Oncology
THE AMERICAN SOCIETY OF Breast Surgeons
Philadelphia Prostate Cancer Consensus 2017

Candace Peterson, MS, CGC

GENOMIC SCIENCE LIAISON
CERTIFIED LICENSED GENETIC COUNSELOR
AMBRY GENETICS

33

Barriers to Care

- The most common barrier to receiving genetic services among cancer patients is health care provider failing to make the referral or recommendation.
- This barrier is more pronounced in minority populations.
- Introducing universal screening tools and alternative service delivery can reduce referral biases and improve access.

ARTICLE Genetics inMedicine

Disparities in genetic services utilization in a random sample of young breast cancer survivors

Christos Nikolaidis, PhD[1], Debra Duquette, MS, CGC[2,3], Kari E. Mendelsohn-Victor, MPH[4], Beth Anderson, MPH[3], Glenn Copeland, MBA[3], Kara J. Milliron, MSc, CGC[5], Sofia D. Merajver, MD, PhD[6,7], Nancy K. Janz, PhD[6], Laurel L. Northouse, PhD, RN[4], Sonia A. Duffy, PhD, RN[8] and Maria C. Katapodi, PhD, RN[1,4]

Genetic Testing Across Young Hispanic and Non-Hispanic White Breast Cancer Survivors: Facilitators, Barriers, and Awareness of the Genetic Information Nondiscrimination Act

Deborah Cragun,[1,2] Anne Weidner,[3] Joy Kechik,[1] and Tuya Pal[3]

34

Alternative Service Delivery Models (SDM)

- Access, time, and patient cost barriers likely contribute to disparities in genetic services.
- Different SDM can help provide greater access to GC and GT services.
- Genetic Counseling via Telephone, group, or video.
- PCPs, OBs, Gastroenterologists, and other specialists ordering testing.
- Self-directed web-based education, chatbot risk assessment and pre-test education.

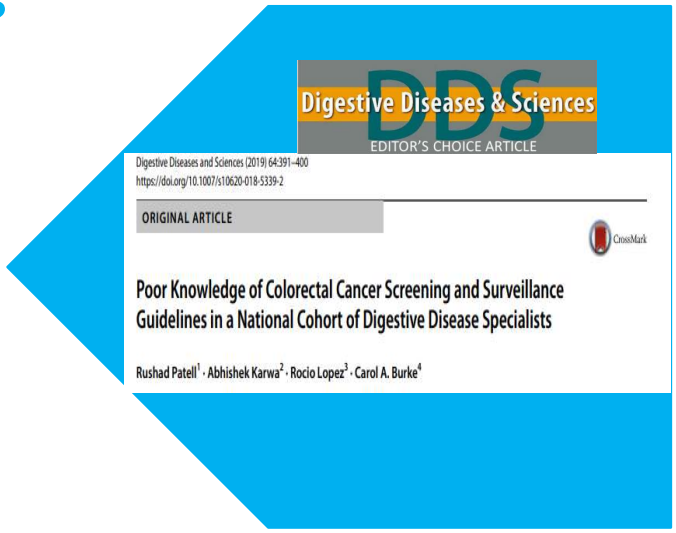
Which option is the best?

Acceptance of Technology for Identification of High-Risk Patients

Aims: Tested the accuracy of CRC screening knowledge in nationwide cohort of practicing and trainee physicians and assessed interest in a mobile app to improve CRC screening use

Result: 100% accuracy was noted in only 22% for screening and 37% for surveillance knowledge.
Over half use smartphones at least "often" in patient care.
87% would use a CRC screening and surveillance smartphone app.

Conclusion: Accuracy in applying CRC screening guidelines by GI's is poor while smartphone use for patient care is high. High interest in a CRC screening/surveillance mobile app appears an opportunity for rapid access and increased adherence to CRC screening guidelines

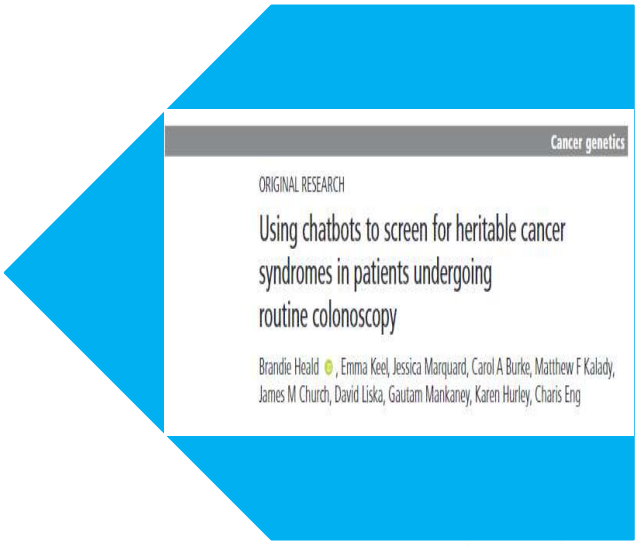


Utility of Technology for Screening Patients

Aim: Test the utility of an artificial intelligence-based chatbot deployed to patients scheduled for colonoscopy screening to identify hereditary colorectal cancer (HCRC) risk factors, educate participants about HCRC, and obtain informed consent. GC time spent per subject was also measured

Result: 11.9% of patients initiated and 96.2% completed the chat. 44% were identified to have at least 1 risk factor for HCRC and all completed pre-test education. 71.3% of those consented underwent testing with 9.3% positive for a germline pathogenic variant. Per subject the GC spent 14.3 minutes.

Conclusion: The use of a chatbot in this setting was a novel and feasible method with the potential of increasing genetic screening and testing in those at risk for HCRC



Patient Assessment of Chatbots

Aims: Utilize focus groups to explore the acceptability, usability and understanding among patients of chatbots developed for consent, post result follow-up and cascade testing.

Results: While familiarity (16%)and prior use (8%)of chatbots was low among participants, analysis of group transcripts revealed support for use for consent and care coordination following results. Most expressed a willingness to use a chatbot to share genetic information with relatives.

Conclusion: The consent chatbot presents an engaging alternative to deliver information challenging to comprehend in traditional paper or in-person consent. The follow-up and cascade chatbots may be acceptable, user friendly, scalable approaches to manage ancillary GC tasks.

Embracing Chatbot Technology

IDENTIFY PATIENTS

Those at risk who qualify for genetic testing

SIMPLIFY PROCESS

Streamlined process for patients and providers

SAVE TIME

Integrate seamlessly into existing workflow

IMPACTFUL RESULTS

May lead to personalized screening, therapeutics and/or preventative procedures

WORKFLOW SOLUTIONS SUPPORTING PATIENTS AND PROVIDERS AT EVERY STEP

DIGITAL HISTORY COLLECTION AND ASSESSMENT

Suite of digital tools collect and analyze patient medical and family history and weigh against medical guidelines

GENETIC SCREENING OR TESTING

Ordered through Ambry for qualified individuals

POST-TEST GENETIC COUNSELING

Made available to all patients

PRE-TEST EDUCATION

How genetic screening or testing can guide personalized, proactive healthcare

RESULTS DELIVERY

Results delivered to the provider, and in most cases, to the patient, using the CARE platform

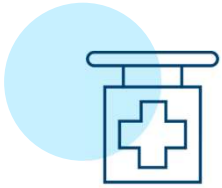
DOCUMENTATION

Transparency at each step, improving patient and provider experience

Medical Benefits of the Chatbot Technology

EARLY DETECTION

Empowers your patient to undergo individualized cancer screening —recommended based on his/her specific cancer risk



PREVENTION

Gives patients the choice to make informed decisions about preventive surgical options to reduce cancer risk

TREATMENT

Ability to tailor treatment recommendations based on genetic test results, if your patient develops cancer

FAMILY

Empower your patient's family members to access appropriate cancer screening by finding those at increased risk for cancer

Where do I go to learn more?

Visit GI OnDEMAND website at: giondemand.com

Email: genetics@giondemand.com

THANK YOU!

Questions?

Jordan J. Karlitz, MD, FACG

Heather Hampel, MS, LGC

Candace Peterson, MS, CGC


GI ON DEMAND
Access GI Expertise, Educational Resources and Support for You and Your Patients
Registered Dietitians
GI Psychologists
GI Sub-Specialists
APP
Patient
GI
Genetic Testing
Telehealth Features
Education Resources
A Free ACG Member Benefit Designed to Help You and Your Patients!
Learn More and Join Today at
GIONDEMAND.COM

45