Augmenting Intelligence & Amplifying Health: Proactive Outreach for Enhanced Preventive Screening

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OBJECTIVE

Preventive screenings enable early detection of diseases at their pre-symptomatic stage, leading to timely interventions and better health outcomes. A proactive, automated approach leveraged augmented intelligence (AI) to screen large patient populations by directly delivering collection tools to patients' homes. This streamlined approached reduced barriers, making it easier for patients to take action, improving the rate of patients screened for colorectal cancer, while decreasing workforce burden and optimizing efficiency. By effectively integrating preventive screenings into their programs, healthcare organizations can improve outcomes, cost-effectiveness and broad patient engagement while reducing disparities, leading to a healthier population and a more sustainable healthcare system. The goal of the project was to increase colorectal cancer screening (CRCS) rates from 67.5% to 80%.

PLANNING

Over 680,000 patients rely on Mayo Clinic for preventive screening through Primary Care. Evidenced based screening recommendations are translated into the Epic EHR as health maintenance topics. These recommendations are leveraged as best practices for the standard of care and used to ensure patients receive appropriate preventive screening via scheduled outreach. The scheduled outreach program utilizes AI to identify quality care gaps in large populations. It reduces administrative and clinician burden by:

- **Comprehensively identifying care gaps and disparities**
- **Automating the ordering of tests and services**
- **Delivering streamlined patient communication**
- **Optimizing the resulting process**

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IMPLEMENTATION METHODS

Through the scheduled outreach program, patients appropriate for CRCS were identified as being due and received communication, however screening completion required the patient to initiate the process. The care team would review their medical history, discuss screening options with the patient, place the order, and schedule the appropriate screening. When the United States Preventive Services Task Force recommendations for CRCS were changed to begin at age 45, reduced from 50, this institution had over 70,000 patients who were due and eligible for CRCS. At project inception, CRCS rates were 67.5%, falling short of the 80% target. A new approach was needed.

An AI algorithm was developed that categorized patients as average risk or high risk. Risk was determined by factors such as family or personal history of colorectal cancer or personal history of polyps on previous colonoscopy. Average risk patients were deemed appropriate for screening leveraging Cologuard, an at-home test kit used for detecting certain DNA markers and blood in the stool. A staggered rollout strategy was implemented, with an initial focus on patients overdue for screening. Cologuard kit distribution directly to patient's homes eliminated transportation barriers and personal time away to attend colonoscopy appointments, making screening accessible for more patients.

RESULTS

Approximately 40,000 kits were distributed within a 12-week timeframe, leveraging a staggered roll-out to ensure colonoscopy access for patients with positive Cologuard™ test results. The proactive process of sending colorectal cancer screening kits to eligible patients' homes resulted in 11,614 patients screened for CRCS. 9,455 patients returned their Cologuard™ kit, whereas 2,159 opted to undergo a colonoscopy as their primary screening. Screening rates improved by 15.2%. Baseline screening rates were 67.5% at project inception and rose to 82.7% within six months of the project launch.

Leveraging AI and automation enabled improved access to screening, while avoiding thousands of hours of human capital. Nurses and providers avoided over 12,500 hours in reviewing patients charts to assess risk and place screening orders. Scheduling staff avoided nearly 6,000 hours in scheduling screening tests and procedures.

Most importantly, patients benefited from the enhanced screening process. 767 patients received a positive Cologuard™ result and underwent a follow-up colonoscopy as part of the screening continuum. 525 patients were found to have adenomas during their colonoscopy. These findings may result in removal of pre-cancerous polyps and heightened colorectal cancer surveillance. Six patients received a cancer diagnosis as a result of screening.

RESULTS

44,138 Patients Contacted

25% Screened (11,614)

85% Returned Cologuard Kit

15% Opted for Colonoscopy

Cologuard™ Results (9,455)

88% Negative

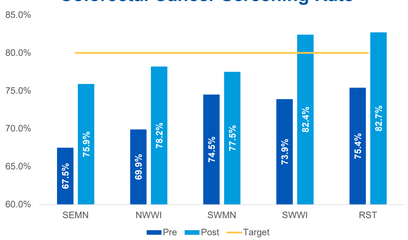
12% Positive

767 Positive Result Obtained Colonoscopy

525 Patients With Adenomas

6 Patients With Cancer

Colorectal Cancer Screening Rate

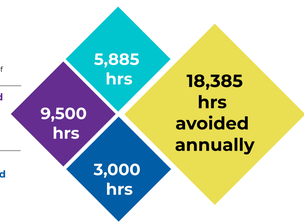


Avoided Hours Through Automation

Scheduling Hours Avoided
Automation of forms, removal of patients calling to schedule

Nursing Hours Avoided
Algorithm documentation, Health maintenance review, pending order processes removed

Provider Hours Avoided
Removal of manual ordering processes



DISCUSSION

Considerations and Benefits

FINANCIAL IMPACTS
- ACO contract adherence
- Downstream therapies
- Preventive interventions

QUALITY METRIC COMPLIANCE
- Improved CRCS rates
- Education/Best Practice
- CMS guidelines

FOUNDATIONS FOR FUTURE WORK
- Infrastructure for future at home testing products
- Enhancement pathways identified
- Dissemination to other locations

CONCLUSIONS

The initial focus targeted average risk patients overdue for CRCS. Subsequent phases of the project transitioned to proactive communication to patients due soon for screening and included the automated delivery of screening kits once the patient was overdue .

This new approach has transformed the delivery of healthcare and streamlined the cancer screening process by leveraging AI to identify patients' colorectal cancer risk and automate the ordering and delivery of screening kits to patients in the convenience of their homes.

Nearly 12,000 patients were screened leveraging the automated process, avoiding thousands of hours in provider, nurse, and scheduling time while improving quality and patient outcomes.

As healthcare dollars in the United States become even more limited, and human capital is increasingly scarce, developing an AI-enabled, systematic approach to screening and prevention paves the way to better health among populations.

REFERENCE

Colorectal Cancer: Screening, Accessed on 1/15/2023 at Colorectal Cancer: Screening | United States Preventive Services Taskforce (uspreventiveservicestaskforce.org)