



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

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OBJECTIVE OF PROGRAM: Preventive screenings enable early detection of diseases at their pre-symptomatic stage, leading to timely interventions and better health outcomes. A proactive, automated approach to screening large patient populations improved the percentage 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.

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 (HM) topics. These recommendations are leveraged as best practices for the standard of care and used to ensure patients receive appropriate preventive screening via a program called 'scheduled outreach'. The scheduled outreach program reduces administrative and clinician burden by automating the identification of care gaps, ordering of tests and services, and patient communication.

IMPLEMENTATION METHODS: Through the scheduled outreach program, patients appropriate for colorectal cancer screening (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, placed 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 augmented intelligence (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: A total of ~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 new automated process and proactive sending of colorectal cancer screening kits to eligible patient's homes improved CRCS rates by 15.2% and avoided thousands of hours of staff time.

- CRCS rate improvement: **67.5% to 82.7%**
- Cologuard kit return rate: **21.5%**
- **525** patients with findings on colonoscopy following positive Cologuard
- Annual savings of human capital:
 - **~2,600** hours of physician time
 - **~600** hours nursing chart review
 - **~4,400** hours scheduling

CONCLUSION: This new approach streamlined the cancer screening process by leveraging AI to identify risk and automate the order and delivery of screening kits to patients in the convenience of their homes. Over 13,000 patients were screened leveraging the automated process, saving 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.

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References:

1. Colorectal Cancer: Screening, Accessed on 1/15/2023 at [Colorectal Cancer: Screening | United States Preventive Services Taskforce \(uspreventiveservicestaskforce.org\)](https://www.uspreventiveservicestaskforce.org/colorectal-cancer-screening)