Implementing an AI-Powered Safety Net for Endoscopic Recall in Patients with Iron Deficiency Anemia

Yordan Penev, MTM[1]; Rachel Porth, MD[2]; Heather Hardway[1]; Sarah Flier, MD[3]; Arvind Ravi, MD, PhD[1]*; Maelys Amat, MD, MBA[4]*; Joseph D. Feuerstein, MD[3]*

*Equal contribution; [1]Halo Solutions; [2]Department of Medicine, Beth Israel Deaconess Medical Center; [3]Division of Gastroenterology, Beth Israel Deaconess Medical Center; [4]Division of General Medicine and Primary Care, Beth Israel Deaconess Medical Center

INTRODUCTION

- Diagnostic endoscopy is recommended for all patients with iron deficiency anemia (IDA) due to risks of upper & lower GI cancer
- Up to 45.5% of primary care physicians (PCPs) fail to recommend endoscopy for patients newly diagnosed with IDA
- Only a subset of these patients complete ordered referrals
- We implemented an AI-Powered Safety Net to reduce human error in this process
- The Safety Net automatically identifies patients overdue for follow-up endoscopy, after which we alert their PCPs and expedite subsequent endoscopy scheduling

METHODS

- Prospective study at a large tertiary care academic medical center
- 60-85 years-old patients diagnosed with IDA from 01/2020 to 06/2023
- Machine learning algorithm by Halo Solutions analyzed the EMR to identify patients with IDA who may be overdue for follow-up endoscopy
- Records from our HealthCare Associates group were manually reviewed for feasibility of recall
- Safety net emails were sent to patients' PCPs with pertinent labs and screening recommendations
- GI coordinators expedited subsequent endoscopy scheduling

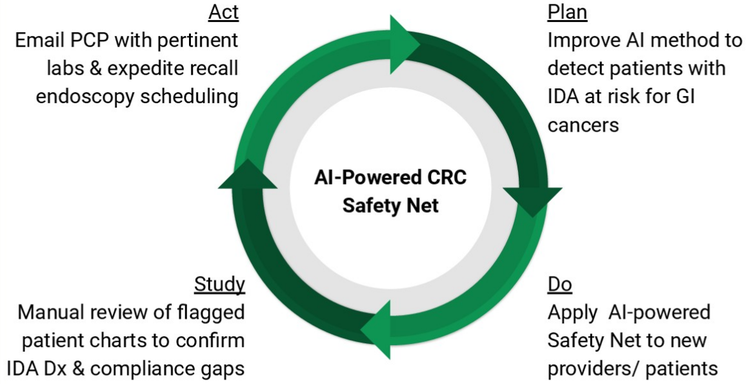

Figure 1. Plan-Do-Study-Act (PDSA) Cycle for detecting patients with IDA at risk for GI malignancy. Dx = Diagnosis

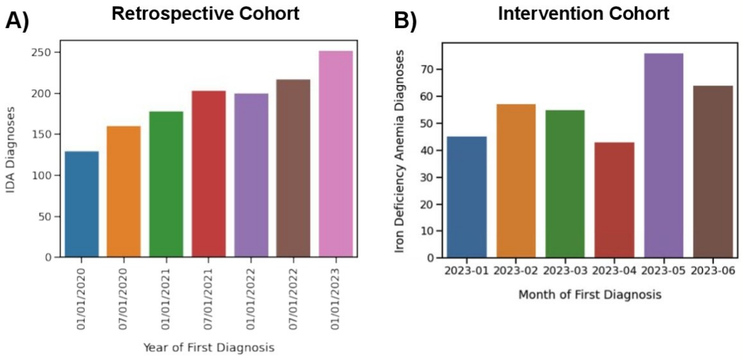

Figure 3. Patient Enrollment. A) Number of patients with IDA identified in each 6-month AI application cycle. B) Number of patients for whom subsequent PCP outreach was generated.

DISCUSSION

- We present a feasible method for GI cancer risk reduction by improving compliance with recall endoscopy in patients with newly diagnosed IDA
- The method is a generalizable tool for AI-powered clinical process automation and improvement
- Future efforts should focus on:
  - Incorporation of relevant comorbidities in recall feasibility (including cancer)
  - Integration of external clinical data sources
  - Tracking clinical outcomes post-intervention as part of a complete PDSA cycle

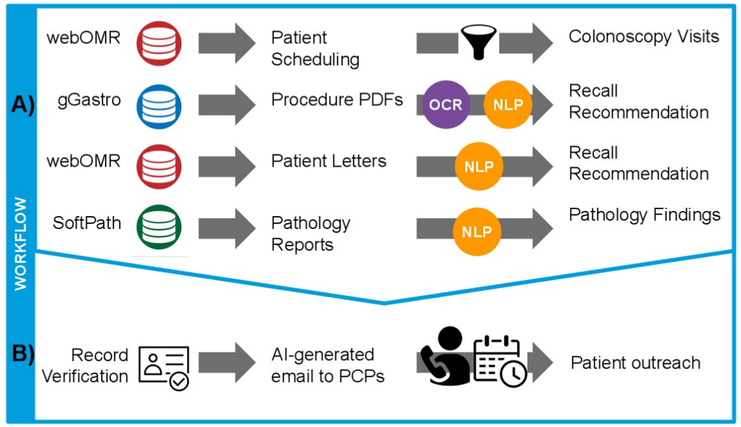

Figure 2. AI-Powered Safety Net Workflow. A) Four data types are used to identify patients who may be overdue for endoscopy. B) The records are manually verified to generate an AI-populated email to patients' PCPs with subsequent expedited procedure scheduling. OCR = Optical Character Recognition. NLP = Natural Language Processing.

RESULTS

- 1,343 patients with IDA were assessed for compliance with American Gastroenterological Association (AGA) screening recommendations
- 1,075 (80.3%) had not completed upper and/or lower endoscopic evaluation within the AGA guideline-recommended time frame
- 327 (30.4%) patients across 54 PCPs were included in the intervention group for targeted evaluation & outreach
- Confirmation of diagnosis and need for endoscopy recall, PCP outreach, and endoscopy scheduling is currently underway
- In a minority of cases, endoscopy procedures had been completed at outside facilities
- Common barriers to endoscopy completion include age and comorbidities

REFERENCES

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CONTACTS

Yordan Penev, MTM
ypenev@ufl.edu

Joseph D. Feuerstein, MD
jfeuerst@bidmc.harvard.edu