Development of a Program to Train Physician Extenders to Perform Transnasal Esophagoscopy and Screen for Barrett's Esophagus

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BACKGROUND & AIMS: **Screening for Barrett's esophagus (BE) and esophageal adenocarcinoma is not recommended because it was not found to be cost effective. However, physician extenders (PEs) are able to perform unsedated procedures; their involvement might reduce the costs of BE screening. We examined the feasibility of training PEs to independently perform transnasal esophagoscopy (TNE) and screen patients for BE and measured their learning curve.**

METHODS: **Two PEs at a Veterans Affairs (VA) medical center underwent a structured didactic training program and observed nasopharyngoscopies before performing TNE under the supervision of attending endoscopists. Individual technical and cognitive components of TNE were rated on a 9-point structured scale. Learning curves were constructed using cumulative summation. Once the PEs were judged to be technically competent, each PE performed 10 independent videotaped TNEs, which were graded.**

RESULTS: **Both PEs identified anatomic landmarks after 18 consecutive procedures. PE1 and PE2 performed satisfactory nasal intubations after 20 and 25 procedures and esophageal intubations after 29 and 35 procedures, respectively. They acquired overall competence after supervised training on 43 and 47 procedures, respectively.**

CONCLUSIONS: **We developed a program at a VA medical center to train PEs to perform TNE to screen for BE. The PEs were able to perform TNE and recognize esophageal landmarks independently after a modest number of supervised procedures.**

Keywords: CUSUM; Esophageal Cancer Screening; Prevention; Cost Reduction.

The incidence of esophageal adenocarcinoma has increased dramatically in the past several decades.[1] Over 9000 cases are now diagnosed annually, and the majority of these patients die within 5 years of diagnosis.[2] Barrett's esophagus (BE), a premalignant metaplastic condition with a 0.1% to 0.5% annual estimated risk of progression, is the only known precursor of esophageal adenocarcinoma.[3–9] Esophagogastroduodenoscopy (EGD), when performed in a subset of patients with chronic gastroesophageal reflux disease (GERD), diagnoses BE in about 10% of cases.[3,10–12] Subsequent endoscopic surveillance of individuals diagnosed with BE is the current strategy for early detection of dysplasia/cancer, and nonrandomized investigations indicate that surveillance likely results in improved survival.[13–17] However, because there is no randomized controlled trial to support its efficacy and EGD is expensive, endoscopic screening for BE is either not routinely recommended in all adult patients with chronic GERD or is weakly recommended but only in adult patients with multiple risk factors for esophageal adenocarcinoma.[18,19] Thus, less than 5% of esophageal adenocarcinomas are diagnosed in individuals with previously detected BE.[20] Even if endoscopy was recommended in every adult with GERD symptoms, nearly 40% of adenocarcinomas occur in individuals without reflux symptoms.[21,22] Clearly, the challenge is to develop new approaches for identifying BE that are less expensive than EGD and can be widely adopted in the population at risk.

The need to use sedation prohibits the performance of EGD in the primary care setting, adds direct costs (medication administration, monitoring, personnel, and recovery time), adds indirect costs (day off work for patients as well as companions to drive patients home),

Abbreviations used in this paper: BE, Barrett's esophagus; EGD, esophagogastroduodenoscopy; GERD, gastroesophageal reflux disease; PE, physician extender; TNE, transnasal esophagoscopy; VA, Veterans Affairs.

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and increases adverse events. Transnasal esophagoscopy (TNE) is as sensitive as EGD for identifying BE; is well tolerated; and, when performed, it avoids the costs associated with sedation.[23–25] However, our survey of gastrointestinal endoscopists found that for a variety of reasons, including physician reluctance, unsedated TNE has not been widely accepted in the United States.[26] Endoscopic procedures such as TNE offer the prospect of changing our current paradigm of BE screening. In a survey of primary care physicians, we found that, although the majority replied that they did not recommend sedated EGD for chronic GERD symptoms, the availability of unsedated endoscopy within the primary care setting would lead to increased screening.[27]

Up to 25% of asymptomatic male patients older than 50 years at Veterans Affairs (VA) medical centers are reported to have BE.[28] Thus, the performance of sedated EGD for BE screening, even if EGD is performed only in patients with chronic GERD symptoms, at VA medical centers with large demand for endoscopic services is challenging. The aim of this study was to determine whether it is feasible to train physician extenders (PEs) (ie, nurse practitioners and/or physician assistants) to perform TNE in a VA. Training of PEs could then enable a new model for BE screening in outpatient primary care clinics in VA medical centers.

Patients/Materials and Methods

Setting

This study was performed in the Louis Stokes Wade Park VA Medical Center in Cleveland, Ohio within the endoscopy unit and primary outpatient clinics. The study was approved by the Louis Stokes Wade Park VA Medical Center Institutional Review Board.

Training Program

Didactic training: Two PEs (1 physician assistant and 1 nurse practitioner) volunteered to learn TNE. They underwent 1 week of didactic structured training, which included four 1-hour lectures on the techniques of TNE, normal anatomy, and diagnosis of BE and other esophageal pathology. PEs also read textbook chapters and reviewed videos on the basic anatomy and pathology of the oral and nasal cavity, hypopharynx, and the esophagus. This was followed by a 2-week period observing nasopharyngoscopy in the ear, nose, and throat clinic to familiarize trainees with nasopharyngeal anatomy.

Procedural training: Hands-on TNE training was conducted under the supervision of any of 4 attending gastrointestinal endoscopists in 2 stages. In the initial stage, patients scheduled for standard sedated EGD were asked permission to perform a TNE while they were sedated. Trainees were instructed on nasal anatomy, pharyngoesophageal intubation, traversing the esophagus, and recognition of the gastroesophageal junctional anatomy. They were also taught to recognize nasal passages too tight for TNE and when to switch from a transnasal to a peroral approach. After the trainee reached a level of competence of performing TNE and identifying endoscopic landmarks without supervised instruction in at least 4 of 5 consecutive cases, they were then moved to the second stage in which they performed supervised unsedated TNE on consented volunteers prior to sedation for the standard EGD.

Independent phase: In the final independent phase, once the PEs were considered to have achieved competency (score >7 for technical and cognitive components, see the "Competency Assessment" section below), the trainees performed unsedated TNE in the clinic setting without supervision, and the entire examination was videotaped. TNE examinations in this independent unsupervised phase were performed for screening; unlike the training phase, these screened subjects did not have follow-up EGD unless suspected BE was identified during TNE. These procedures were not scored for the components of competency. The first 10 consecutive cases that the PEs performed without supervision were reviewed by an independent supervising physician (AC) who was blinded to the findings for accuracy of interpretation and completeness of the examination.

Transnasal Esophagoscopy Protocol

Patients with a history of recurrent epistaxis, altered nasopharyngeal anatomy, allergy to lidocaine derivatives, bleeding diathesis, or prolonged prothrombin time were excluded. TNE was performed with the TNE-5000 esophagoscope available from Vision Sciences, Inc (Orangeburg, NY). This system has a disposable outer sheath that completely covers the endoscope. It also has a disposable channel for biopsies. The sheath allows sterile office-based endoscopy without the need to disinfect the inner endoscope; therefore, screening can be performed within the primary care clinic. Unsedated TNE was performed in the sitting position. The nasal passage with the wider patency was selected and anesthetized with an atomizer using a 1:1 mixture of 2.0% lidocaine and 1.0% neosynephrine instilled deep into the selected nares over a 2-minute period. A 3-second instillation of aerosolized 14% benzocaine into the oropharynx just prior to intubation was also used in some patients. Again, trainees were instructed to switch from a transnasal to peroral approach when the nasopharynx was too tight. Subjects who underwent TNE during the independent phase and were found to have suspected BE did not have a biopsy attempted and were referred for standard sedated EGD. Biopsies were not performed because PEs often do not have privileges to perform biopsies.