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Review article

Quality assurance in gastrointestinal endoscopy: An Egyptian experience

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ABSTRACT

Over the last four decades, gastrointestinal endoscopy has become of paramount importance to diagnose, treat and prevent diseases of the digestive tract. Practice variation, however, is likely to have an important effect on the effectiveness of endoscopy and can impair the delivery of high-quality endoscopic procedures. There have been increasing demands to assess the quality of service and track and improve patient outcomes. Quality assurance has paved its way into professional guidelines for physicians. Developing a modern endoscopy unit demands the institution of a quality assurance programme, continuous training and monitoring of service delivery. This article describes our experience in implementing a quality assurance programme in endoscopy in a secondary care government hospital in Egypt. The implementation of quality assurance and improvement programme can lead to dramatic improvements in the quality of endoscopic care and patient outcomes. Quality assurance and continual improvement can be applied in developing countries.

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Introduction

Over the last four decades, gastrointestinal (GI) endoscopy has become of paramount importance in the diagnosis, treatment and prevention of diseases of the digestive tract. GI endoscopy is widely used and expensive. Upper and lower GI endoscopies together represent the most frequent procedures in the health care system in the United States [1]. Over the past decade, there has been an increasing interest in quality issues in endoscopy to ensure that high-quality endoscopic procedures are performed in all cases. A high-quality endoscopy is an examination in which patients receive an indicated procedure, where correct and relevant diagnoses are recognized or excluded, appropriate therapy is provided, and all steps to minimize risk are taken [2].

Practice variation is likely to have an important effect on the effectiveness of endoscopy and can impede the delivery of high-quality endoscopic procedures. Evidence of a marked variation in usage was demonstrated in a study from Switzerland, showing that only 57% of the indications for oesophagogastroduodenoscopy (OGD) were judged to be appropriate [3]. A larger study showed that 49% of these procedures were inappropriate, and a third study demonstrated 9% overuse and 6% underuse of OGD [4,5]. As with all invasive techniques, GI endoscopy is associated with risks and complications [6]. Two large audits of endoscopic practice in the United Kingdom have shown a surprisingly high incidence of both morbidity and mortality following upper and lower GI diagnostic and therapeutic endoscopy [7,8]. Transmission of infection during GI endoscopy remains rare, with an estimated frequency of 1 case per 1.8 million procedures; however, endoscopes may remain contaminated with bacteria or viruses if not adequately cleaned and disinfected [9].

Demands in medicine to assess and track the quality of services provided to improve patient outcomes have been increasing [2]. Quality assurance has paved its way into health reform laws and into professional guidelines for physicians [10,11]. The development of a modern endoscopy unit requires the institution of a quality assurance programme, continuous training and monitoring of service delivery. Continuous quality improvement is now recommended by professional societies as a part of every endoscopy programme [12]. A study in the United Kingdom in 2004 showed that the crude completion rate of colonoscopy improved from 60% to 88% after the implementation of a quality improvement programme [13]. In a repeat nationwide audit in the United King-

Abbreviations: GI, gastrointestinal; ASGE, American Society of Gastrointestinal Endoscopy; BSG, British Society of Gastroenterology; OGD, oesophagogastroduodenoscopy; ASA, American Society of Anaesthesiology.

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dom in 2011, the average crude completion rate had increased to 92.3% [14].

Quality measures

The quality of health care can be measured by comparing the performance of an individual or a group of individuals with an ideal or benchmark [2]. Benchmarking is the term used to describe comparative data available from other endoscopists, other units or published studies. Quality indicators are assessment tools that can be used to measure the quality of health care. These indicators can be used in programmes to improve the overall quality of endoscopic services. The American Society of Gastrointestinal Endoscopy (ASGE) has developed quality measures for endoscopy, and the British Society of Gastroenterology (BSG) has also formulated quality and safety indicators for endoscopy [2,15]. In 2015, the ASGE and BSG updated these quality indicators and selected performance targets for each quality indicator to serve as specific goals in measuring quality improvement [16,17]. For easy application, quality indicators for endoscopy have been identified for five major groups: patients, procedures, endoscopists, equipment and assistant staff.

Quality indicators for patients

Procedure indications are measured against current appropriateness guidelines. The ASGE has published a list of accepted indications for endoscopic procedures [2,18]. The European Panel of the Appropriateness of Gastrointestinal Endoscopy is an experimental site set up to assist in the evaluation of the appropriateness of GI endoscopy [19]. Written instructions must be provided to the patient and should include specific information relevant to procedure regulations and potential delayed complications. An agreed policy for the use of prophylactic antibiotics and for the management of patients taking anti-thrombotic agents and diabetic patients undergoing endoscopy is available. Informed consent is a process that involves the patient acquiring full and accurate information about all aspects of their forthcoming procedure, including risks, in a timely manner. Relevant pre-procedure history and a directed physical examination must be documented. Before sedation is given, a risk assessment should be performed to stratify patients into higher- or lower-risk-for-complications groups. The American Society of Anaesthesiology (ASA) score is the most commonly used risk stratification system before endoscopic procedures [20]. Patient comfort during endoscopy is also a measure of endoscopy performance quality. Assessment of patient satisfaction provides further outcome data. The Group Health Association of America has published a satisfaction questionnaire for use after endoscopic procedures [21]. Post-procedure discharge criteria must be documented, and patient instructions should be provided. Non-attendance (no show) for planned outpatient endoscopy should be documented. Cancellations made by the hospital as result of lack of time, unexpected unavailability of staff, lack of facility or managerial problem should also be documented.

Quality indicators for procedures

Established standards of practice should be achieved at all times. For example, in all patients in whom polyps were detected during colonoscopy, there must be a complete polyp description, polypectomy should be performed on every polyp if possible, polyps less than 2 cm should be either resected or documented as being unresectable, there should be a 90% retrieval rate of all excised polyps for histological analysis, follow-up of histology reports should be routinely performed and appropriate surveillance intervals should be documented. A team pause (time out) should be conducted before the institution of sedation, during which the correct procedure and patient are confirmed. Sedation policy should be followed (doses, intended level of sedation and sedation reversal), and patient monitoring (ventilatory status, hemodynamic variables and level of consciousness) should be documented.

Procedure success can be measured by the assessment of technical and therapeutic outcomes [22]. Technical success criteria for upper GI endoscopy include gastric retroflexion and visualization of the second part of the duodenum. The agreed standard for technical success for upper GI endoscopy is $\geqslant$95% in all cases. For colonoscopy, quality indicators include bowel preparation (type and quality), photo documentation of caecal intubation (90%), recording of failed and aborted colonoscopy with reason given, withdrawal time in negative colonoscopies and the time taken for the examination. Colorectal biopsies should be obtained in all patients with chronic diarrhoea (even with normal-appearing mucosa), and the terminal ileum should be intubated. The polyp detection rate, polyp removal and recovery, and adenoma detection rate should be recorded, and the surveillance intervals recommended (inflammatory bowel disease and post-polypectomy and post-cancer resection) should be stated.

Procedure complications are adverse events that necessitate intervention such as stopping the procedure or admission to hospital. Complications are classified as immediate, occurring during the procedure or before leaving the endoscopy department, or delayed, occurring up to 30 days after the procedure. It is necessary to collect the data on complications so that processes can be implemented to reduce these risks. A complete procedure report must be created. The World Organization of Digestive Endoscopy has created minimal standard terminology for use by the endoscopic community in creating endoscopic reports [23]. Pathology follow-up should be specified and documented.

Quality indicators for endoscopists

Training must be provided within the context of an approved training programme [24]. Training should be formal, apply to all physicians and be on one-to-one basis. In addition, all trainees are supervised until judged to be competent, and a minimum number of procedures should be performed before competency is assessed. Competency is determined by direct supervision of procedural skills, knowledge, attitude and behaviour [24]. The ASGE made an assessment tool that can be used to assess competency in endoscopy [25]. Competency is maintained by continuous medical education and monitoring of performance [24].

Quality indicators for equipment

Adequate cleaning and disinfection of endoscopes require a purpose-designed separate well-ventilated room for equipment with leakage tester, enzymatic detergent, disinfectant and disinfector, whether manual or automatic. A written protocol based on international standards is essential. Staff performance and equipment must be monitored with record keeping (repair and maintenance) and regular review (processes and data) and with microbiological surveillance [22].

Quality indicators for assistant staff

Continuous training and regular attendance at nurse courses on sterilization and disinfection of endoscopes should be undertaken with regular staff meetings for open discussion and encourage-

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