

# Endoscopy services for acute gastrointestinal bleeding in low- and middle-income countries: challenges and solutions

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Received: 5 February 2022  
Accepted: 21 February 2022

Dear editor,

Acute gastrointestinal bleeding (AGIB) is a hospital emergency with a 5–10% mortality rate. The incidence rates for upper gastrointestinal bleed (UGIB) and lower gastrointestinal bleeding (LGIB) are 67 and 36 per 100,000, respectively. The patient present with hematemesis, melena, hematochezia, or syncope<sup>(1,2)</sup>. The leading causes of UGIB are peptic ulcer disease (55%), esophageal varices (16.7%), inflammation (9.75%), Mallory Weiss tears (7.6%), angiodysplasia (6%), and neoplasm (3.45%)<sup>(3)</sup>. Common causes for the LGIB are diverticular disease (28.5%), angiodysplasia (15%), colitis (16%), polypectomy (12.5%), anorectal diseases (7%) and small bowel bleeding (5.5%)<sup>(3)</sup>.

With advances in medical science, treatment protocols for AGIB have advanced from pharmacological treatment to endoscopic intervention. Endoscopic intervention includes epinephrine injection, thermal coagulation, sclerotherapy, or clip application. Endoscopic management and band ligation are the gold standards for treating AGIB, having 90% effectiveness in stopping the bleeding<sup>(4)</sup>. Endoscopy has replaced several open medical and surgical procedures.

Early emergency endoscopy is defined as the intervention carried out within 24 hours of patient presentation with GIB. This timely intervention ultimately reduces morbidity and mortality by securing early hemostasis and shortening hospital stays<sup>(5)</sup>. In peptic ulcer disease, the risk of rebleeding with medical therapy alone is 80–90% which can be reduced to 10% with modern combination endoscopic therapy<sup>(6)</sup>. Endoscopy may also help with the early diagnosis of the malignancies.

The inequitable distribution of resources on a global scale extends to medical services. High-income countries have well-developed endoscopic facilities, even at the primary health care level<sup>(7)</sup>. The global consensus for the minimum requirement for an endoscopy unit is the availability of endoscopic light sources, standard monitors, flexible endoscopes, electrosurgical equipment, and at least two gastroscopes and two colonoscopies<sup>(8)</sup>. Low- and

middle-income countries (LMICs) with limited resources spend a low percentage of their gross domestic product (GDP) on health-care. This low spending results in a reduced availability of acute emergency services. Endoscopic facilities are constrained to the central specialized centers in LMICs, mainly providing diagnostic procedures<sup>(9)</sup>. The inadequate training of the physicians and technicians providing services at the endoscopic units may affect the quality of services provided to the patients. The available endoscopists cannot provide round-the-clock emergency therapeutic services during their hectic routines of diagnostic endoscopies. The absence of emergency therapeutic endoscopy within 24 hours of AGIB can increase mortality, especially in an anemic adult population<sup>(1)</sup>.

The endoscopy centers in LMICs are ill-equipped and are not ready to deal with emergencies in many cases. The mortality rate due to UGIB can increase up to 18.7% in LMICs<sup>(9)</sup>. Variceal hemorrhage, a leading cause of UGIB, with a high mortality rate, requires band ligation, which can cost up to 300\$ for a single application. In Nigeria, band ligation therapy is modified by cutting the 14 French Foley catheters to the required size and combining them with used Opti-Vu-cups, which reduces the cost to 30\$ per session<sup>(7)</sup>. Despite these modifications in LMICs, endoscopic services cannot meet the demands due to the lack of endoscopic units and adequate equipment availability at the centers.

An efficacious endoscopy requires a team of emergency physicians, an endoscopist, and an anesthesiologist<sup>(5)</sup>. In the United Kingdom (UK), out-of-hour (OOH) endoscopy for AGIB is available in only 80% of hospitals<sup>(10)</sup>. There are significant challenges in the recruitment of endoscopists (20%), the pressure of general hospital routine (18%), and cross-site working challenges (13%)<sup>(10)</sup>. Anesthesiologists are pivotal for the sedation of patients and cannot fulfill the demands in LMICs. Other limitations encountered are the interrupted power supply, inefficient equipment, and poor disinfection techniques<sup>(8)</sup>.

Pakistan spends 1.2% of its GDP on healthcare instead of 5% recommended by the World Health Organization (WHO)<sup>(11)</sup>.

Declared conflict of interest of all authors: none

Disclosure of funding: no funding received

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Endoscopy, both diagnostic and therapeutic, is not available in many under-privileged areas in Pakistan due to the low numbers of existing centers, equipment, and trained staff, making it costly and inaccessible for a vast majority of the population<sup>(12)</sup>. World Gastroenterology Organization (WGO) established training centers in Ankara, Cairo, Karachi, New Delhi, and many other metropolitans. These centers aim to provide primary and advanced level training in locations of need to establish standardized management for gastroenterology and liver disorders<sup>(13)</sup>.

Need of the hour is a renewed focus on developing endoscopic facilities in LMICs. National health care departments should build endoscopic centers near the high-risk population. These centers should be available in rural and urban regions to provide treatment in emergency medical situations. The equipment at these centers should be sufficient to facilitate diagnostic and therapeutic services. International and national authorities should collaborate to generate innovative solutions according to the available resources. Reducing the cost of intervention can reduce a significant barrier to the availability of endoscopy in LMICs.

An increase in trained gastroenterologists is needed to meet the demand. The interest of medical trainees in these procedures can be increased by conducting seminars and workshops at the undergrad-

uate level. The most critical intervention is raising public awareness regarding prevention and earlier treatment of the diseases leading to GIB, such as hepatitis, peptic ulcer disease, cancer, etc. Healthcare providers working at the primary healthcare level should educate, diagnose and refer the patients requiring endoscopic treatment at the initial stages, decreasing emergency intervention. Governments should spend more on public healthcare infrastructure to ensure the availability of medical services to their nation.

#### Authors' contribution

Tahir MJ and Tariq W conceived the idea, Tariq W, Jamil H, Tahir MJ, Yousaf Z, and Asghar MS retrieved the data, did write up of letter, and finally, Asghar MS, Yousaf Z and Jamil H reviewed and provided inputs. All authors approved the final version of the manuscript.

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Tariq W, Jamil H, Tahir MJ, Yousaf Z, Asghar MS. Serviços de endoscopia dedicados para sangramento gastrointestinal agudo em países de baixa e média renda: desafios e soluções. *Arq Gastroenterol.* 2022;59(2):314.

**Keywords:** Endoscopy; bleeding; gastrointestinal tract; services; emergency.

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