

## Perspective

### Advanced Endoscopy Training in UK – what's in there for Pakistan?

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#### Abstract

Gastrointestinal endoscopy revolutionized the diagnostic as well as therapeutic paradigms of many gastrointestinal diseases. Advanced endoscopy procedures like ERCP and EUS have gained paramount importance in recent times. Structured training in basic as well as advanced endoscopy techniques is essential to boost the confidence of the trainee and ensure positive patient outcomes.

This review article used the databases, published literature, and a large number of research journals to find out the latest data on the standards of advanced endoscopy training to improve patient care.

To excel in the field of endoscopy, studies have established that an endoscopy trainee should be assessed based on his skill and expertise; not based on a particular number of procedures. The endoscopists must benchmark their performance against their peers to assess their competency. The training of endoscopists should be on real patients, in addition to practice on simulators. Also, training programs and curricula should be well structured.

With advanced endoscopy being established across the world in patient-care, it is the need of the hour to establish standards and mechanisms for endoscopy training in Pakistan. The UK systems can offer a roadmap to achieve this goal.

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#### Introduction:

Over the past few decades, the field of gastrointestinal (GI) endoscopy has undergone substantial advancement. Procedures such as gastrointestinal bleed management, stricture dilation, foreign body removal, colonoscopy with level 1 polypectomy are now regarded as basic endoscopy skills. More advanced endoscopic procedures such as Endoscopic Retrograde Cholangiopancreatography (ERCP), Endoscopic Ultrasound (EUS), luminal stenting, colonoscopy with level 2 and 3 polypectomy, and full-thickness resection are increasingly common<sup>1,2</sup>.

It is well accepted that high-quality endoscopy correlates with improved patient care and experience. Therefore, there is a need to ensure high-quality training programs for these advanced skills. Significant improvements in advanced endoscopy training and service provision have been observed in United Kingdom (UK) in

the last two decades due to the development of modernizing programs by the Joint Advisory Group (JAG) on GI Endoscopy, JAG Endoscopy Training System (JETS), and Global Rating Scale (GRS)<sup>3</sup>. Pakistan needs to learn a lot from the UK in this regard.

In this review, we present an overview of advanced endoscopy training in the UK and current endoscopy training in Pakistan, and how the UK experience can be applied and adapted to improve GI endoscopy training in Pakistan. In our article, our focus would be mainly on ERCP and EUS.

#### ERCP

ERCP is technically a difficult technique. To perform it without complications, a lot of experience and skill is required. Therefore, it should be performed only when there is a strong indication and the benefits outweigh the risks. The risks must be clearly explained to the patients<sup>4</sup>. Due to this reason, and to keep the complications

to a minimum, the trainees don't get a chance to practice it more frequently during their training. So, it becomes necessary to go through an extra year of advanced training in addition to three years of standard training to be signed off<sup>5</sup>. It is very important to devise effective tools to assess the competence of a trainee. An important tool developed in this regard is "The EUS and ERCP Skills Assessment Tool" (TEESAT). TEESAT is a procedure-specific tool to assess the competency of endoscopists regarding ERCP and EUS. It has a 4-point scoring system to assess all the technical and cognitive aspects of the procedure<sup>6</sup>.

To improve the quality of performance of endoscopists, endoscopists need to monitor their practice continuously against accepted standards, and some find it helpful to benchmark themselves against peers. But a challenge to this is the lack of infrastructure to collect and analyze the data. The ERCP Quality Network is a web-based tool started in the USA to assess the performance of endoscopists. The endoscopists enter key points of the case of endoscopy onto a server and data is analyzed<sup>7</sup>. The UK also has a National Endoscopy Database (NED) which started in 2013 under the patronage of JAG. Endoscopy data from all the units across the UK is uploaded. It helps to improve the service quality at endoscopy centres, improve training standards, and for research purposes<sup>8</sup>.

## EUS

EUS has emerged as a very important diagnostic and therapeutic GI endoscopy technique, but its training is more demanding and requires not only technical skill but also clinical discretion. In the present era, there is an increased emphasis on competency-based medical education. This emphasizes that competency should be assessed by what milestones have been achieved by trainees rather than being based upon an arbitrary number of procedures<sup>9</sup>. The emphasis on a minimum number of procedures has lost its importance because every trainee's learning capability is different and some will require a greater number of procedures to achieve the same level of competency. The American Society for Gastrointestinal Endoscopy (ASGE) has recommended 150 EUS procedures before assessing competency<sup>10</sup>. But in a study conducted by Wani et. al., the authors noticed that no trainee could become an indepen-

dent trainee before at least 225 procedures<sup>9</sup>. For now, competency-based assessment is still evolving and the minimum number of procedures is still unclear.

## Scope of advanced endoscopy in Pakistan

Developing countries in Asia (including Pakistan) face two challenges regarding advanced skills such as EUS/ERCP development:

- An ever-increasing demand for skills in such complex procedures
- An existing shortage of training programs<sup>11</sup>

EUS/ERCP training requires at least 2 levels of training (level 1 and 2). ERCP procedures with low difficulty grades (level 1 / 2 procedures) can be performed by the majority of gastroenterologists (Tertiary Teaching Hospitals and General District Hospitals in Pakistan) and there is no need for patients to travel to an expert centre. On the other hand, complex cases (level 3/4 procedures) are left to expert endoscopists in higher specialist centres. Delivery of ERCP/EUS services in Pakistan is in accordance with the hub-and-spoke model in which the secondary care hospital (hub) at the centre is complemented by first-level healthcare facilities and mobile outreach units (spokes) which offer fewer services<sup>12</sup>. The hub and spoke model is used to help connect the resources limited peripheral health care facilities to a resource replete hub. The resource replete hub helps by material means and offers technical expertise and trained human resources. The effectiveness of the linkage depends upon a well-organized system at both the hub and spoke<sup>13</sup>.

## Comparison between College of Physicians and Surgeons Pakistan (CPSP) and JAG endoscopy training

Although quality metrics and skill assessment tools are important for the determination of endoscopy proficiency, most training programs still rely on the subjective assessment and the total number of procedures performed as a criterion for the appraisal of trainees' competency<sup>14</sup>.

For instance, in the UK as per JAG recommendation, a minimum of 200 and 300 upper GI endoscopy and colonoscopy procedures respectively are required to gain competence for independent practice<sup>15,16</sup>. On the

other hand, under the CPSP curriculum, only 120 of each procedure are considered sufficient for a final year trainee to attain satisfactory competence. Similarly, participation in at least 300 ERCP and 250 EUS procedures is obligatory in the UK before the competency is acknowledged for independent practice<sup>17,18</sup>. While in CPSP, the corresponding minimum numbers of such procedures are way less, as shown in table 1.

**Table 1: Comparison between CPSP and JAG endoscopy training standards<sup>15-18,20</sup>**

Characteristic	CPSP	JAG
Diagnostic upper GI endoscopy	120	200
Colonoscopy with polypectomy	120 / 24	300
Diagnostic ERCP	8	-
Therapeutic ERCP	8	300
EUS	4	250
Communication	4	
Sedation management	4	
Scope disinfection	12	
Number of training years	3	5

The significant differences in both training programmes are based on the fact that the UK has structured centralized quality assurance programmes such as JAG and GRS that have considerably improved the standards of training and practice of endoscopy<sup>3</sup>. Moreover, the BSG Endoscopy Quality Improvement Programme (EQIP) has been launched to further elevate the quality of endoscopy service provision across the country with a multifaceted approach<sup>19</sup>.

Apart from the variations in competency standards, the number of years of training differs between the two programs. In the UK, endoscopy training is delivered within gastroenterology and general medicine training program over a minimum of 5 years, after which one receives a Certificate of Completion of Training but endoscopy competence achievement is separate from this. While in CPSP, the gastroenterology fellowship program comprises 3 years of training for which a candidate becomes eligible after completing his/her FCPS-1 in internal medicine<sup>20</sup>. As gastroenterology is a vast field, a comprehensive training program with maximal hands-on practice opportunities is required for one to fully grasp the skills of advanced endoscopy. However, CPSP does not seem to offer a similar level of training due to the reduced number of training years

compared to the UK.

Another concern is the standard of training provided by the endoscopy centres in Pakistan as most centres perform a limited number of procedures while some of them do not even perform many of those procedures which have been recognized for training, due to the lack of related equipment and specialist doctors. On the other hand, endoscopy centres in the UK such as the Wolfson's Unit of Endoscopy, St. Mark's Hospital, and Sheffield Teaching Hospital, are included in the World Endoscopy Organization's (WEO) list of "centres of excellence" on behalf of their outstanding reputation in training and education of endoscopy<sup>21</sup>. These training centres are well-equipped with the latest facilities and perform a large number of endoscopy procedures, for instance, the Wolfson's Unit of Endoscopy, St. Mark's Hospital owns 6 procedure rooms having latest endoscopy equipment, and together with a smaller two-room unit at Central Middlesex hospital, performs 18,000 endoscopies each year under the supervision of specialist endoscopy doctors<sup>22</sup>. This number is far greater than the number of endoscopy procedures performed by any of the leading training centres of Pakistan, for example, 6000 endoscopies are done annually at the Aga Khan University Hospital<sup>23</sup>.

Despite the difference above, in CPSP, endoscopic non-technical skills (ENTS) such as communication skills, sedation management, and scope disinfection are areas, central to endoscopy training. These skills are very important as advanced endoscopy carries significant risks and complications, and effective communication, consent, and safety assurance is essential to prevent and manage these if it arises.

### UK ERCP service framework

To improve the quality and availability of ERCP across the UK a framework has been formed. Following are the standards for service development and training improvement:

ERCP should be carried out at only those centres where safety standards are high; as measured by key performance indicators. Emergency ERCP should be made available. Hub and spoke model should be implemented. Hubs should have the most experienced endoscopists and highest quality services while spokes will

provide fewer services but they will have access to all kinds of services. The performance should be regularly assessed independently to ensure compliance with established policies and suggest improvements. There should be a national registry to record the details of ERCP cases from all the centres. It will provide data for research and also it will be very helpful in improving the standards of service.

The endoscopy trainee must complete >300 procedures before being appointed as a consultant. Unselected cannulation rate should be >80% for the last 50 cases. The trainee should know basic ERCP skills and be able to recognize and manage complications without any assistance<sup>17</sup>. (Table 2)

**Table 2: UK ERCP standard service framework<sup>17</sup>**

Service development	Training Provision
Facility with safety standards and emergency ERCP availability	>300 procedures before consultant appointment
Hub and spoke support	Competence in level 1 and 2 cases; 80% cannulation in last 50 cases
The complication rate of level 1 and level 2 < 6%	ERCP basic skill course
Outcome and audit; registry	Recognize and manage complications

### Curriculum development; an important aspect

Curriculum development is an important aspect of endoscopy and it is still evolving. Certain things are very important and merit a brief discussion. There is a rapid development of new techniques in endoscopy with the advent of new technology. This is increasingly relevant as ERCP has shifted from a diagnostic to therapeutic procedure making it more challenging to achieve competency. In the future, the demand for interventional endoscopy would likely increase and this would equate to an increase in the need for therapeutic endoscopists<sup>24</sup>. Although simulator-based learning techniques are the mainstay of the initial stages of training, its learning curve to that of patient-based endoscopy varies significantly<sup>25</sup>. As such patient-based learning during training is necessary and it can be done efficiently by the step-wise introduction of complex procedures in the train-

ing.

In the current era of rapidly progressing endoscopy techniques, competency-based medical education is paramount. As such the development of efficient assessment tools like the Direct Observation of Procedural Skills (DOPS), and “The EUS and ERCP Skills Assessment Tool” (TEESAT) would be required<sup>6,26</sup>.

## WHAT PAKISTAN NEEDS TO DO

### A Patient-Centred Approach

Anthony Christopher Bateman Wicks (“Tony”) was a consultant physician and gastroenterologist at Leicester General Hospital<sup>27</sup>. He is one of many who revolutionized the concept and proposed that instead of being trainee-centred, patients should be the centre in the development of advanced endoscopy training programs. This strengthened our understanding of patients’ needs; empowering subsequent development of quality services, workforce, and training assessment tools<sup>28</sup>. (Table 3) The implementation of this concept is evident in the development of the Global Rating Scale (GRS) of the UK, which has led to significant improvement in the quality of endoscopy services and practice<sup>29</sup>. Therefore, this approach will help us plan a better future of endo-scopy training and service provision.

### Curriculum development

European Society of Gastrointestinal Endoscopy

**Table 3: Advanced endoscopy workforce development**

<b>Advanced endoscopy fellowship</b>	Skilled and experienced endoscopists are required for the successful performance of complex (high-grade) EUS/ERCP procedures. As this requires a long period of training, acquisition of advanced skills usually requires an additional year of training after fellowship <sup>30</sup> .
<b>Skill-based endoscopy courses</b>	To achieve competence, exposure to high-volume procedures is paramount. The number of procedures undertaken varies according to the intensity of training (rate of procedures over a continuous training period). High-intensity training appears to be beneficial.

<b>Accelerated endoscopy program</b>	Numerous studies have proved the successful role of novel technology/methods for improving endoscopy performance <sup>31</sup> . For instance, the modified “immersion technique” is a novel and safe method for visualization of the small bowel villi <sup>32</sup> . Similarly, Double-balloon enteroscopy is a method for the examination of the whole intestine and for hidden areas that cannot be reached by the standard endoscopy <sup>33</sup> . Chromoendoscopy with methylene blue is a novel and efficient method for the early detection of intraepithelial neoplasia and CRC <sup>34</sup> .
<b>Dedicated training centre infrastructure</b>	Effective training courses benefit the trainees whilst maintaining positive patient outcomes and experiences. Trainers positively engaging with the trainees are essential in a training program. High trainer confidence in ensuring a positive trainee experience and reduced trainee fatigue guarantees the best outcomes from a training program <sup>35</sup> .

(ESGE) has developed its curriculum in 2019. The methodology is as follows. The development of a curriculum includes a clear description of the skills required (pre-adoption); defining the different steps to achieve the technique (training), and finally elaborates the criteria for assessment of competency and conditions for technique implementation in a centre (autonomous implementation and assessment)<sup>36</sup>.

### **Punjab Advisory Group Endoscopy (PAGE)**

In Punjab, Pakistan, there is a greater need for the development of a joint advisory group; Punjab Advisory Group Endoscopy (PAGE) for competent EUS/ERCP training and quality assurance of the training procedures. The challenge would be to use the resources wisely to ensure that the improvements introduced are sustainable. JAG has played a central role to address this challenge in 2001-2010<sup>37</sup>. A formal curriculum with defined goals and effective training methods should be developed.

Endoscopy training has evolved greatly over the past decade and should be supervised by experts. Training should focus on the importance of sedation/analgesia

techniques, obtaining informed consent, and knowledge of medical ethics. To shorten the learning period, it is necessary to have a well-organized training program and curriculum. Teaching conferences should be held regularly to improve the trainees' understanding and interpretation of endoscopic findings to improve patient care. Lastly, trainees should still be regularly assessed once they have completed their training<sup>38</sup>.

### **Conclusion:**

With advanced endoscopy being established across the world in patient care, it is the need of the hour to establish standards for endoscopy training in Pakistan. The focus should be shifted to patient-centred training. Competency-based education should be the basis of assessment. Benchmarking against peers and endoscopy centres, with patient-based learning should be the features of endoscopy training. To achieve new milestones in the field of endoscopy in the province, there is a need to develop Punjab Advisory Group Endoscopy (PAGE) with clear goals, effective training methods, formal curriculum development, and regular assessment of trainees.

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