

JETS JAG Endoscopy
Training System

**JAG training pathway and
certification standards
Endoscopic retrograde
cholangiopancreatography
(ERCP)**

Part of the JAG programme at the RCP

JAG Joint Advisory Group
on GI Endoscopy



**Royal College
of Physicians**

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Introduction

Background

Endoscopic retrograde cholangiopancreatography (ERCP) is a complex and technically demanding procedure. Over the last three decades, ERCP has become almost exclusively therapeutic. Of all the widely performed endoscopic modalities, ERCP carries the greatest risk of serious complications with a recognised complication rate of between 10 and 14%, and a death rate of 0.1 to 1%^{1,2}.

Since 2011, JAG certification has been awarded for gastroscopy, flexible sigmoidoscopy and colonoscopy³. In recent years, there have been calls for certification to be extended to ERCP with the intention of quality assuring training and to improve UK ERCP standards³.

In response, and following consultation with UK Specialist Advisory Committees (SACs), an expert committee was assembled by JAG and its stakeholders to develop evidence and consensus-based recommendations relevant to training and certification in ERCP. The aim was to develop a robust set of recommendations which would form the framework for this document that outlines the process for ERCP certification within the UK⁴.

Specifically, recommendations were made on the following areas:

- Definition of competence in trainees
- Acquisition of competence
- Assessment of competence
- Post-certification support

Aims and objectives

- JAG Certification in ERCP will demonstrate that a trainee has demonstrated cognitive, technical and non-technical competence to independently carry out effective procedures across a spectrum of case difficulty and case contexts with acceptable safety, including management of complications.
- JAG certification for ERCP will define standards required to undertake procedures of Schutz level 1 and 2 complexity (management of CBD stones <1cm, biliary leaks, and extrahepatic biliary obstruction)⁵.
- JAG certification standards are in line with evidence-based indicators for independent ERCP practitioners.
- The recommended ERCP endoscopy training pathway comprises formal ERCP courses and locally delivered hands-on training. Trainers and trainees are supported by JAG ERCP DOPS assessments and the JETS ePortfolio to provide evidence of competency.
- JAG Certification in ERCP will draw evidence of competence from a combination of case volume; acceptable trainee key performance indicators (KPIs); and a summative assessment.

Certification criteria

Table 1: JAG ERCP eligibility criteria

Certification standard	Evidence required
Certification in Diagnostic OGD and experience of upper GI therapeutic endoscopy	JAG Certificate for OGD (upper GI endoscopy)
Course requirements: JAG Basic Skills in ERCP Course	Course Certificate (approved JAG ERCP Training Centre)
<p>Procedural key performance (KPI) indicators:</p> <p>Recommended minimum lifetime procedural numbers = 300</p> <p>Minimum of 30 formative DOPS registered throughout training (approx. every 10 procedures)</p> <p>Selective cannulation of native papilla as intention to treat = success in >80% of cases (last 50 cases)</p> <p>Complete bile duct clearance (in cases where largest calculus ≤1cm) (as an intention to treat) in 70%</p> <p>Successful stenting of distal biliary strictures (as an intention to treat) in 75%</p> <p>Unassisted in 80% of cases in last 3 months (minimum 15 cases)</p>	<p>Cases registered on JETS</p> <p>ERCP DOPS forms on JETS</p> <p>JETS Performance measure data</p> <p>JETS Performance measure data</p> <p>JETS Performance measure data</p> <p>ERCP DOPS forms on JETS</p>
<p>Summative assessment (Schutz 1 or 2 cases)</p> <p>Prior to undertaking summative assessment, trainees should be rated as 'ready for independent practice' in ≥85% of the individual items of 5 recent formative DOPS (minimum of 3 DOPS on cases with a native papilla within the past 6 months), and with no items rated as requiring 'maximum supervision'</p> <p>Summative DOPS assessment: the trainee should be rated as 'ready for independent practice' in all DOPS items in 2 ERCP cases with native papillae, by 2 different assessors, one of whom is not based at their current endoscopy unit</p> <p>Statement from current ERCP trainer advocating JAG ERCP certification</p>	<p>JETS performance measure data</p> <p>ERCP summative DOPS forms</p> <p>Completed training lead statement</p>

Training pathway

Trainee selection and programme structure

1. ERCP training should take place within a structured training programme to achieve the requisite knowledge and skill-based competencies; required procedure volume and access to training in associated elements of pancreaticobiliary medicine.
2. A structured ERCP training programme is a period, or series of episodes, of ERCP training which has clearly defined the following:
 - a) The number and location of ERCP training lists per week with sufficient frequency to ensure a ERCP case volume and training intensity to achieve competence during the training programme.
 - b) A programme lead and a lead trainer.
 - c) Involvement in the holistic care of patients with pancreaticobiliary disease beyond the endoscopy unit (out-patients, multi-disciplinary team meetings; in patient care; peri and post-procedural care, management of complications and planning future care).
 - d) A structured approach to formative assessment of ERCP using DOPS and confirmation of development of an appropriate clinical knowledge base and non-technical skills.
3. Trainees selected for ERCP training should demonstrate the desire and commitment to practice independent ERCP at consultant level.
4. Trainees starting ERCP training should be JAG certified as independent in OGD.
5. The ERCP training should cover the ERCP core curriculum providing a mixed learning environment utilising different training modalities. These include the use of simulators where available, digital and eLearning resources, interactive endoscopy courses and supervised one-to-one live case training. Suggested training elements are shown in Appendix 1.
6. Trainees are required to show evidence of attendance at HPB MDT meetings and involvement in the care of inpatients and outpatients with pancreaticobiliary disease.
7. It is desirable but not mandatory for trainees to train in both ERCP and Endoscopic Ultrasound (EUS).
8. Trainees looking to practice independently in advanced ERCP (Schutz 3 and 4, and cholangioscopy) will benefit from a further period of focussed training and/or mentorship.

Core curriculum for ERCP

9. The development of a core curriculum for ERCP provides information to trainees and trainers about areas of practice which are considered essential to an understanding of the indications for the procedure, risks, benefits, patient-specific factors and alternative approaches. Sound fundamental knowledge is essential for providing informed consent; for interpretation of endoscopic and fluoroscopic images; for support of clinical decision-making; to accurately report the procedure; to define appropriate aftercare; and to recognise and manage complications.
10. Trainees are required to demonstrate non-technical skills of ERCP (ie communication skills, situational awareness, leadership and judgement).
11. The core curriculum for ERCP supports the overall aim of developing global competency in Schutz level 1 and 2 ERCP procedures.
12. Trainees are required to attend a JAG accredited basic ERCP course in the early stages of their ERCP training. JAG accredited intermediate and up-skilling courses are encouraged but not mandatory.
13. The core curriculum for ERCP is presented in Appendix 2.

Evidence for certification criteria

Standards for certification/KPIs

14. All trainees should record all cases on JETS. When performed by trainees, ERCP cases of Schutz grade 3 and 4 complexity can be used to count towards lifetime procedure numbers and completion metrics, e.g. deep cannulation rates, but should be excluded from other key performance indicators such as therapeutic success.
15. Formative electronic DOPS assessments during ERCP training should be used to track progression in technical and non-technical skills, and to support trainee feedback and should be undertaken approximately every 10 cases. The DOPS can be found at:
[https://www.thejag.org.uk/Downloads/JAG/DOPS%20forms%20\(international%20and%20reference%20use%20only\)/Formative%20DOPS_ERCP.pdf](https://www.thejag.org.uk/Downloads/JAG/DOPS%20forms%20(international%20and%20reference%20use%20only)/Formative%20DOPS_ERCP.pdf)
16. A trainee must have evidence of a career ERCP experience of 300 procedures before certification, and this recommendation is arguably supported by the strongest evidence^{7,8}.
17. Trainees should demonstrate over the last 50 cases, and as an intention to treat, a cannulation rate of >80%; successful stone clearance ($\leq 1\text{cm}$) 70% and successful distal biliary stenting 75%.
18. The ERCP certification criteria (table 1) reflect a reduction of 5% in unassisted success rates for trainees compared to the BSG standards document⁹, which reflects the limitations achievable by a trainee due to the occasions that a trainer takes over aspects of a case to advance the procedure, e.g. due to time pressures on ad hoc training lists or sedation-related factors. These metrics should apply to Schutz 1-2 procedures.

19. Trainees should be able to demonstrate an overall post-ERCP pancreatitis rate of 5% or less for Schutz level 1 and 2 ERCP case.
20. Prior to undertaking summative assessment, trainees should be rated as 'ready for independent practice' in $\geq 85\%$ of the individual items of 5 recent formative DOPS (minimum of 3 DOPS on cases with a native papilla within the past 6 months), and with no items rated as requiring 'maximum supervision'.

Summative assessment

21. The ERCP summative assessment can be undertaken when the other standards for certification have been demonstrated (adequate procedure volume and satisfactory KPIs).
22. The summative cases should be undertaken in an endoscopy unit with which the trainee is familiar.
23. 2 cases should be undertaken in patients with native papillae, and ideally with a different indication for the ERCP. There should be two assessors, one of which is not their current ERCP trainer or based at their current endoscopy unit.
24. The trainee should be rated as 'ready for independent practice' in all DOPS items for both cases.

Post certification mentoring

25. There is evidence that performance level continues to increase between 300-800 cases for some endoscopists. It therefore follows that there should be provisions for mentorship and regular performance review should be made available for recently certified ERCP practitioners in accordance with the 2014 BSG standards document⁹.
26. Newly certified ERCP practitioners should have a defined period of mentorship lasting a minimum period of 2 years, with provisions available for regular progress reviews, e.g. at 3 month intervals.
27. The ongoing training requirements of newly accredited ERCP practitioners should be identified and should be encouraged to attend further training opportunities, e.g. upskilling courses.

Post certification mentoring review of JAG training and certification standards for ERCP

28. As ERCP certification rolls out there will be scrutiny of all metrics used as evidence for certification and this evidence will be used to revise the certification pathway as necessary. JETS data will be used to determine the trends in trainee ERCP volume and rate of acquisition of KPIs. Summative DOPS data will be used to determine the validity and reliability of the assessment structure using the 2 cases x 2 assessor strategy.

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On behalf of JAG consensus group for training and certification in ERCP:

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Appendices

Appendix 1 – Training elements of the ERCP training

Training element	Main purpose
Simulator training	Systematic review supports the use of simulators to develop early handling skills with a side-viewing scope, orientation to the papilla and manipulation of the cannula ^{10,11,12} .
eLearning	Two-fold role for questions mapped to ERCP core curriculum 1) testing of core knowledge of anatomy, pathology, physiology and lesion recognition skills; 2) testing decision-making skills in key features scenarios (with emphasis on competent risk assessment).
ERCP Basic Skills course	This provides case-based discussion to underpin skills in providing informed consent, individualised risk assessment, radiation protection and use of diathermy.
Local training	Local trainer includes targeted training on regular lists. Frequency should be at least one list per week. Trainees should regularly attend dedicated HPB MDT meetings.
Advanced ERCP course	This provides a further opportunity to benchmark practice in the presence of expert trainers, to review and discuss technique and clinical decision-making in live cases. It promotes evidence-based practice and self-reflection.
ERCP Forum	This provides access to peer review and support, case presentation and discussion and training process review.

Appendix 2 – JAG core curriculum for ERCP training

Topic area	Sub-topics
Pancreatico-biliary anatomy, physiology and pathophysiology	<ul style="list-style-type: none"> • Common anatomical variants • Post-surgical anatomy • 3-D regional anatomy
Pancreaticobiliary disease	<ul style="list-style-type: none"> • Imaging • Role of diagnostic and therapeutic endoscopy • Role of surgery
Role of ERCP	<ul style="list-style-type: none"> • Indications • Contraindications • Alternative approaches • Structured risk assessment • Role of the MDT discussion • Informed consent for ERCP
Specific considerations	<ul style="list-style-type: none"> • Sedation for ERCP • Anti-coagulants • Antibiotic prophylaxis • Reducing risk of post-ERCP pancreatitis • Diathermy in ERCP • Patient preparation / position / room set up
Insertion of the duodenoscope	<ul style="list-style-type: none"> • Key handling skills • Anatomical landmarks • Pyloric intubation • Identification of the papilla • Orientation to the papilla
Cannulation	<ul style="list-style-type: none"> • Papillary anatomy • Planes of tip movement • Techniques to aid selective duct cannulation • Wire and accessories management
Obtaining images	<ul style="list-style-type: none"> • Radiation protection • Obtaining a control film • Optimal use of contrast • Recognition of anatomical variants and pathology • Interpretation of images and strategic planning of therapy

Diagnostic sampling	<ul style="list-style-type: none"> • Brush cytology • Aspiration techniques for cytology • Direct tissue sampling
Specific techniques <ul style="list-style-type: none"> • Sphincterotomy 	<ul style="list-style-type: none"> • Role of sphincterotomy • Technical principles • Complications • Alternatives • Biliary vs pancreatic sphincterotomy
Specific techniques <ul style="list-style-type: none"> • Sphincteroplasty 	<ul style="list-style-type: none"> • Role of sphincteroplasty • Technical principles • Complications • Alternatives
Specific techniques <ul style="list-style-type: none"> • Balloon catheters 	<ul style="list-style-type: none"> • Use of balloon catheters • Technical principles • Complications • Alternatives
Specific techniques <ul style="list-style-type: none"> • Baskets, emergency lithotripter 	<ul style="list-style-type: none"> • Use of baskets • Indication for emergency lithotripsy • Complications • Alternatives
Specific techniques <ul style="list-style-type: none"> • Stent insertion 	<ul style="list-style-type: none"> • Role of different stent types • Technical principles • Complications • Alternatives • Stent removal techniques
Post procedural management	<ul style="list-style-type: none"> • Report writing • Recognition and management of post-ERCP complications • Planning follow-up and referral

Appendix 3 –

Tools to guide training goals by procedural difficulty levels

Chinnathurai et al have proposed a model of training for ERCP which recognises the increasing technical skills and cognitive awareness needed by the endoscopist to perform component tasks which may benefit trainees and trainers¹³.

The model describes four domains of increasing complexity. In each procedure, the trainee would have the opportunity to gain exposure to aspects of ERCP that is appropriate to the stage/level of training, gradually moving along a spectrum of skills of increasing complexity, associated with higher risk of complications. Such a graded progression focuses on component process goals within the global task and ensures that the trainee is set up to learn each increasing complex skill with appropriate level of preparedness, enabling smoother progression in training. Trainees should undergo a DOPS assessment every 10 cases and be subject to frequent appraisal.

NUMBER OF ERCP CASES		10	20	30	40	50	60	70	80	90	100
DOMAIN 1	Luminal intubation										
	Ampullary visualisation & positioning										
	Wire management										
	Cholangiography										
	Stent removal										
	Cannulation of previous sphincterotomy										
DOMAIN 2	Stent placement – distal metal										
	Sphincterotomy - biliary										
	Pancreatography										
	Stent placement - pigtail										
	Intrabiliary brushings										
	Large volume balloon sphincteroplasty										
DOMAIN 3	Duodenal stricture dilatation										
	Pancreatic sphincterotomy										
	Stent placement – distal plastic										
	Stent placement – pancreatic prophylactic										
	Duodenal stent placement										
	Stent placement – proximal metal										
	Stone extraction - balloon										
Stone extraction - basket											
DOMAIN 4	Intrabiliary biopsies										
	Cannulation of native papilla										
	Mechanical lithotripsy										
	Stent placement – proximal plastic										
	Stent placement – pancreatic therapeutic										

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- Domains are ranked by degree of difficulty
- Trainees focus on the skills in Domain 1 initially
- Higher domain tasks have a shallower learning curve
- Trainees are assessed every 10 cases on their progression against each task attempted
- Ratings are assessed according to the level of trainer intervention required (as per JAG DOPS forms) – Maximum = RED; Significant = ORANGE; Minimal = YELLOW; Independent = GREEN



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