

JETS JAG Endoscopy
Training System

JAG training pathway and certification standards

Device assisted enteroscopy (DAE)

Part of the JAG programme at the RCP

JAG Joint Advisory Group
on GI Endoscopy



Royal College
of Physicians

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Introduction

Summary

Device Assisted Enteroscopy (DAE) has been adopted in the UK since 2006 as a therapeutic arm to capsule endoscopy. The main indication for DAE is to treat lesions bleeding in the small bowel, to obtain histology on lesions in suspected inflammatory bowel disease and lesions deemed suspicious of cancer seen on radiology or prior capsule endoscopy (1). A recent small bowel endoscopy training survey distributed via the BSG (submitted & accepted as a poster BSG 2021) reported that 36.4% individuals (trainees and junior consultants) undertook DAE of which 75% were independent. A further 42% were interested in becoming proficient (2).

One of the Joint Advisory Group for Gastrointestinal Endoscopy's (JAG) core objectives is to set acceptable standards for competence and capability in endoscopic procedures as part of the aim of ensuring high quality endoscopy and patient safety.

A framework for formal certification for capsule endoscopy in the UK has been developed. The European Society of Gastroenterology Endoscopy (ESGE) has recently recognized the need to formalise training in small bowel endoscopy across Europe and thus a small bowel working group consisting of experts in the field was initiated. Several recommendations were developed by the core working group through literature searches and iterations and a Delphi voting process was subsequently undertaken with a wider group of small bowel experts who are delivering training in this field. Both modalities of capsule endoscopy (CE) and DAE were included (3). Three main areas are covered: skills required prior to commencing training in small-bowel endoscopy; structured training for trainees to become independent endoscopists; and ways of ensuring competence is achieved.

This ESGE position statement comprehensively addresses, a clear framework for the provision of training in both capsule endoscopy and device-assisted enteroscopy. It encompasses the skills required prior to commencing training in small-bowel endoscopy, structured training for trainees to become independent endoscopists, and ways of ensuring competence is achieved, with several practice recommendations.

This document has been published online in Endoscopy June 2020 (3). With the publication of the ESGE Position statement, and recent development in CE accreditation, we now feel that a certification pathway for DAE, informed by the ESGE Delphi process to ensure there is a process for provision for formal training in DAE in the UK.

Aims and objectives

- JAG Certification in DAE will demonstrate that a practitioner has covered a core curriculum comprising common and important less common small bowel pathology and demonstrated global competence (i.e. both cognitive and technical competence) in managing such cases.
- JAG Certification standards are designed to ensure that a defined clinical standard has been achieved that is in line with evidence-based key performance indicators for independent practitioners.
- DAE is a complex procedure and it is recognised that cases present varying levels of difficulty. There are also subtypes of DAE which involves different techniques. JAG Certification Standards and the DAE training pathway seek to provide necessary training and evidence of safe practice in Level 1 (diagnostic and basic therapeutic/ foreign body removal) and level 2 procedures (dilatation, polypectomy/ insertion of feeding jejunostomy etc). It is also recognised that there is benefit in providing some recommendation, based on expert guidance, for training in procedures at more advanced levels. Appendix 1
- The recommended DAE training comprises hands-on training in centres that perform DAE (with a minimum number of procedures). Central elements seek to enrich training and standardise the delivery and testing of core knowledge. Hands-on supervised training is essential for the development of global competence. Trainers and trainees are supported by JAG DAE specific Directly observed procedures (DOPs) assessment forms and the JETS ePortfolio to provide evidence of competency in context of busy service lists. The current COVID pandemic is likely to impact on provision of this training, however without a formal pathway established, succession planning for managing such complex services would be difficult.
- JAG has a central role in maintenance of training standards. Generic recommendations for the quality assurance of endoscopy training apply to DAE training to create an optimised learning environment – maintenance of high-quality endoscopy equipment, performance and training skills of trainers and local organisation of training to ensure adequate intensity of training. The certification of DAE practitioners must be seen in the wider context of workforce development.
- The goal of DAE training programmes should be to ensure the timely and effective training of selected trainees sufficient to meet regional demand and within the limited resources of current DAE training centres. Whilst the selection of trainees for DAE training is not currently centralised/ uniform, this may be required in the future. A national or regional selection process may be required to more closely align training numbers and gaps in service delivery.
- DAE involves several (currently 3 main modalities) techniques and equipment. The technique is different for single balloon, double balloon and spiral enteroscopy. Training provided in DAE should be technique specific. Initially trainees who complete DAE training should only carry out procedures which they have been adequately trained in and deemed competent. It is anticipated that credentialing will be the pathway by which practitioner will develop and extend their skill set in a particular area of practice and could be appropriate for DAE.

Certification criteria

Eligibility criteria

In order to achieve DAE certification, all of the following criteria must be met. Meeting the criteria will be evidenced via the JAG endoscopy training system – www.jets.nhs.uk.

Certification standard	Evidence required
Certification in Diagnostic OGD & Colonoscopy	JAG Certificate for Upper GI Endoscopy and for Colonoscopy Required prior to start of DAE training
Knowledge based competency:	It is anticipated that trainees would learn CE prior or in conjunction with DAE simultaneously Certificates of completion of CE eLearning module (eLearning for Health)
Minimum lifetime procedural numbers	75 (level 1 with specification of route, minimum 35 retrograde)
Completion of formative DOPS	Minimum of 20 formative DAE DOPS completed on JETS Technical proficiency = trainee unassisted in >90% of cases in the last 3 months of training
Summative sign off process (level 1 or 2 cases; Minimum 2 assessors who are JAG Approved DAE x4 DOPS forms rated as 'ready for independent practice')	4 Summative DOPS cases must include different indications DAE Summative DOPS forms
Statement of verification from local training lead Statement of agreement to mentorship supervision	Completed training lead statement Completed mentor statement

Recommended training pathway for DAE

1. The concept of a training pathway is used to define essential and recommended training elements, their suggested timing and to provide an overview of progress through the training programme.
2. The context of training for an individual trainee will vary. Whilst estimates of time frames and numbers of procedures performed are provided for illustrative purposes in a competency-based training programmes there may be wide variation between individuals on when training way-points are reached.
3. Standardisation of training pathways allows a closer understanding of the factors affecting the learning curves of trainees within the pathway.
4. The training pathway recognises that DAE is a complex task associated with risks to the patient. Supervised training needs to support trainees gradually moving along a spectrum of skills of increasing complexity, documenting evidence of satisfactory completion of process goals, whilst working towards global competency.
5. The trainee is required to have achieved competency and independence in gastroscopy, colonoscopy and able to read capsule endoscopy with understanding of small bowel pathology prior to commencement of DAE training.
6. There are limited national DAE centres, hence training needs to be within a fellowship or a dedicated time period (for example a senior trainee following completion of OGD and colonoscopy sign off placed in a Small bowel centre, or as a post CCT training programme, akin to the way ERCP training is undertaken) taking into account service provision.
7. Attendance to a regular DAE list and a minimum of 75 procedures performed. Due to differing intensity across the UK and impact of COVID-19 a time frame has not been specified.
8. The DAE training pathway elements are intended to cover the DAE core curriculum providing a mixed learning environment utilising different training modalities. In addition, this would be an extension and complementary to the core curriculum for small bowel capsule endoscopy particularly on pathology encountered.
9. The training pathway should include: eLearning resources for background knowledge on small bowel pathology as established for CE and subsequent management, and supervised one-to-one live case training on a weekly basis at a dedicated small bowel unit. There are currently no regular DAE hands on training courses set up in the UK or Europe.
10. Training should include attendance at a dedicated multi disciplinary radiology meeting where small bowel cases are regularly discussed with small bowel endoscopists, radiologists and surgeons. The trainer would provide mentorship throughout the period of DAE training.

Core curriculum for DAE

11. JAG certification standards have been developed on the principle that outcomes of training should be linked not only to mastery of technical skills but to important cognitive aspects of the procedure.
12. The development of a core curriculum for DAE provides information to trainees and trainers about areas of practice which are considered essential to an understanding of the indications for the test, risks, benefits, patient-specific factors and alternative approaches. Sound basic knowledge is essential for providing informed consent, for real-time interpretation of clinical cues, supporting clinical decision-making, accurate reporting and definition of appropriate aftercare.
13. The core curriculum for DAE supports the overall aim of developing global competency in level 1 and 2 DAE procedures.
14. Testing of explicit knowledge competences aims to ensure coverage of core topics according to a systematic assessment blueprint. Competency will be defined by the achievement of a threshold mark on the eLearning module for CE on small bowel pathology.
15. Evidence suggests that core DAE knowledge competence can be attained by trainees within a dedicated training period. The length of time of training is dependent on case intensity per week and a minimum of 75 procedures in a continuous period is proposed. Whilst this suggested figure is not evidence based, it has been proposed by the European Society of Gastrointestinal endoscopy (ESGE) small bowel working group, based on expert opinion and a Delphi voting process in the recent position statement (3).
16. The application of context-specific knowledge needs to be tested by local trainers during later phases of training.
17. Making explicit a core curriculum serves to support trainers in focusing training on commonly performed therapeutic DAE practice.
18. The core curriculum for DAE is presented in Appendix 2.

Recommendations to trainers and training programme directors (TPDs)

19. JAG certification standards for DAE are supported by JAG training tools and central training infrastructure.
20. Specific DAE DOPS forms to be developed in electronic format as part of the JETS ePortfolio. These provide a breakdown of key procedural skills, including assessment of endoscopic non-technical skills (Appendix 3).
21. Regular use of JAG DOPS forms as a vehicle to providing specific skills-enhancing feedback will support training progression.
22. It is anticipated that DOPS forms will be used in increased intensity at the commencement of training and as trainees' approach certification. Work assessing the learning curve of training in DAE has suggested repeating an assessment of progress after every 5 cases during the body of training (1 formative DOPS every 5 cases performed).
23. Unlike other endoscopy procedures, there are no set key performance indicators for DAE performance. However, one important quality indicator in DAE is the ability to reach the target pathology without a trainer taking over as described in the recent ESGE performance measures for small bowel endoscopy (4).
24. It is expected that hands-on training will be integrated with service DAE lists. Ideally training centres offering training should be achieving numbers of 75 or greater per annum prior to consideration of training others. The extent of direct trainee involvement in the case should be recorded. This will vary depending on the stage of training of a given trainee and the case difficulty.
25. The technical aspects and success rates of the anterograde and retrograde DAE routes are known to be different with the retrograde route being significantly more difficult. Stable intubation of the terminal ileum may be challenging (5). During the fixed period of training, competency achieved should specify for one or both routes of enteroscopy with numbers of procedures for both. A minimum of 35 retrograde procedures is proposed (6).
26. It is recognised that the context of training will determine the availability of lists and the range of cases. It is recognised that DAE is a complex procedure and of varying difficulty. A high case load will also ensure that trainees are exposed to an adequate number of cases with varied pathology and complexity during their training period. A "buddying-up" or mentoring system among centres is therefore encouraged to give the opportunity to trainees from low-volume centers to train in DAE at other higher volume centers. This will ensure that DAE trainees are exposed to an adequate number of DAE procedures and related endotherapy, in order to enable them to achieve independence by the end of their training period.
27. It is essential for trainees to have knowledge of capsule endoscopy and desirable to have simultaneous training in CE.

28. DAE training centres should have CE services or direct and formal links to a CE service.
29. Attendance of trainees at regular small bowel multi-disciplinary meetings with radiology and surgical colleagues is required at small bowel training centres. This is essential to the development of appropriate skills in the management of complex small bowel disease including the importance of clinical history, radiology and capsule endoscopy findings in conjunction with patient comorbidity.
30. A large proportion of DAE referrals are for therapeutics, mainly of bleeding lesions. It is anticipated that the trainee should be able to perform therapeutics under supervision, in at least 50% of all cases encountered. Situational awareness and early recognition of adverse events are essential for trainees especially prior to performing therapeutic procedures. Trainees should pre-empt potential complications that may arise and be prepared to manage them rapidly. This implies that they should be aware of the potential difficulty that can be encountered during introduction of accessory equipment through the enteroscope channel due to small bowel looping.
31. Auditing complication rates of trainers within a DAE training centre will ensure that the quality of the training delivered reflects high quality DAE standards within the training unit. The complication rate of DAE varies from 0.8% for diagnostic procedures to 5% for therapeutic procedure. In the recent publication by ESGE on quality performance indicators in small bowel endoscopy, a threshold standard was set for the accepted rate of complications for DAE (4). The rates of severe complications resulting from diagnostic DAE and therapeutic DAE, and the rate of post-procedure pancreatitis should not exceed 1%, 5%, and 0.3%, respectively.

Evidence for certification criteria

Review of evidence to support recommendations for certification and training pathways

32. Where possible high-quality evidence sources should form the basis of recommendations on training pathways. However, it is recognised that there is limited published evidence for training in DAE.
33. The quality of evidence supporting individual recommendations should be explicit, including where low-quality evidence or expert opinion only exists to guide training practice. The recent ESGE Position statement on training in small bowel endoscopy provides a guide for development in the UK (3).
34. Certification standards are designed to provide a measure of global competency and benchmark of safe and effective practice in level 1 and 2 DAE procedures.
35. Lifetime procedures: 75 for basic level 1 competency with specification of route.
36. Setting a minimum lifetime experience before certification can be awarded recognises the context in which training occurs; firstly, trainees require access to appropriate training lists and experienced trainers; secondly, the learning curve for individual trainees will vary and finally, competency-based training requires demonstration of procedural competence via submission of DOPS evidence, ie it is not based on completion of a certain number of cases alone.

Use of DOPS forms as evidence of attainment of competency

37. Previous studies have validated summative DOPS assessment using approved JAG DOPS tools as a measure of basic endoscopic procedural competence.
38. JAG DAE DOPS forms in electronic format will be subject to ongoing validation.
39. Alternative approaches such as self-evaluation tools, eg the Rotterdam assessment form may be used by trainees in conjunction with DOPS to promote self-reflection during DAE training and include the formulation of improvement strategies.

Certification uses DOPS to provide evidence of competency in DAE training

- DOPS methodology is validated in the context of other endoscopic modalities.
- Strength of evidence is weak, strength of recommendation high.

Technical proficiencies

40. Certification standards should be aligned with published key performance indicators for independent DAE practitioners (Wilkinson et al, BSG Standards 2014) with at least 90% independent ratings on DOPS in the last 3 months of training.

Recommended areas for research and development in DAE Training

41. Priority areas for medical education research to support endoscopy training include;
 - Large scale, real-time evaluation of DAE DOPS tools
 - Evaluation of the effectiveness of key elements of DAE training pathway
42. An annual review of the evidence base for DAE training should be performed to update and improve specific elements of the training pathway where appropriate.

Appendices

Appendix 1 – Elements of training in DAE

Training element	Main purpose	Evidence
eLearning	Two-fold role for questions mapped to small bowel core curriculum for capsule endoscopy (CE). 1) testing of core knowledge of anatomy, pathology, physiology and lesion recognition skills; 2) testing decision-making skills in key features scenarios and management.	Achieves threshold mark in online assessments
Local training	Local trainer includes targeted training on regular lists. Number of procedures per route specified, minimum of 35 retrograde. Total minimum 75 procedures. Trainees should regularly attend small bowel MDT discussion of cases.	Local JETS appraisal DOPS Case record on JETS
DAE/ UK small bowel user group & symposia	This provides access to peer review and support, case presentation and discussion and training process review.	Attendance at peer review sessions

Appendix 2 – Core curriculum for DAE training

Topic area	Sub-topics	Assessment
Small Bowel anatomy and pathophysiology	Common anatomical variants Post-surgical anatomy Common diseases and classification systems Less common diseases	DOPS
Role of DAE	Indications Contraindications Alternative approaches Structured risk assessment Role of the MDT discussion Informed consent for DAE	DOPS
Specific considerations	Sedation methods for DAE Anti-coagulants Reducing risk of post-DAE pancreatitis Diathermy/APC Patient preparation/ position	DOPS
Insertion of the DAE scope	Key handling skills Anatomical landmarks Retrograde route/TI intubation and stability	DOPS
Pathology	Recognition of anatomical variants and pathology Interpretation of pathology and strategic planning of therapy	DOPS
Specific techniques (Level 2) dilatation polypectomy	Technical principles Use of diathermy/ ERBE settings Complications/management of post polypectomy bleeding Use of CRE balloons and technique Assessing success and complications	DOPS
Specific techniques (level 1) APC, Clips	Technical principles-setting, flow of APC Complications	DOPS
Specific techniques (level 2) Jejunostomy	Technical principles Complications	DOPS
Specific techniques (level 1) foreign bodies/retained CE	Use of Roth net Retrieval of foreign bodies Complications Alternatives	DOPS

Specific techniques (level 2) SB Stent insertion	Role of different stent types Technical principles Complications Alternatives Stent removal techniques	DOPS
Post procedural management and management of complications	Report writing Recognition of post-DAE complications Management of complications Planning follow-up and referral	DOPS
Endoscopic non-technical skills (ENTS)	Communication and teamwork Situation awareness Judgement and decision making Leadership	DOPS
Small bowel anatomy and pathophysiology	Common anatomical variants Post-surgical anatomy Common diseases and classification systems Less common diseases	DOPS

Appendix 3 – DOPS for DAE

Date of procedure –

Type of procedure –

Double Balloon Enteroscopy OR Single Balloon Enteroscopy OR Spiral Enteroscopy

Route of procedure

Anterograde Retrograde

Name of trainee

Name of trainer

Outline of case

Case difficulty

Easy Moderate Difficult

Level of supervision

Maximal supervision Significant supervision Minimal supervision Independent practice

Pre-procedure

Indication

Risk

Consent

Sedation and monitoring

Equipment check

Comments

Procedure

Intubation route

Small bowel progress

Pathology reached

Therapeutics

Comments

Post Procedure care

Appropriate follow up management

ENTS (Endoscopic Non-technical Skills)

Communication & Team work

Situation awareness

Judgement & Decision Making

Leadership

ENTS Overall

Pre-procedure	
Indication	<ul style="list-style-type: none"> • Has read and evaluated referral. • Assess relevant documentation and results of tests. • Understands clinical question and role of DAE in management of patient
Risk	<ul style="list-style-type: none"> • Assesses co-morbidity including drug history • Assesses any procedure related risks relevant to patient • Takes appropriate action to minimise any risks
Consent	<ul style="list-style-type: none"> • Early in training the consent process should be witnessed by the trainer, once competent it is acceptable for the trainee to confirm that valid consent has been gained by another trained member of staff. • During the summative DOPS the process of obtaining consent should be witnessed and assessed • Complete and full explanation of the procedure including proportionate risks and consequences without any significant omissions and individualised to the patient • Avoids the use of jargon • Does not raise any concerns unduly • Gives an opportunity for patient to ask questions by adopting appropriate verbal and non-verbal behaviours • Develops rapport with the patient • Respects the patient's own views, concerns and perceptions
Preparation	<ul style="list-style-type: none"> • Ensures all appropriate pre-procedure checks are performed as per local policies • Ensures that all assisting staff are fully apprised of the current case • Ensures that all medications and accessories likely to be required for this case are available
Equipment check	<ul style="list-style-type: none"> • Ensures the available scope is appropriate for the current patient and indication • Ensures the endoscope and balloons are functioning normally before attempting insertion • Ensure equipment for therapeutics available and in good function
Monitoring	<ul style="list-style-type: none"> • Ensures appropriate monitoring of oxygen saturation and vital signs pre-procedure • Ensures appropriate action taken if readings are sub-optimal • Demonstrates awareness of clinical monitoring throughout procedure
Sedation	<ul style="list-style-type: none"> • When indicated inserts and secures IV access and uses appropriate topical anaesthesia • Uses sedation and/or analgesic doses in keeping with current guidelines and in the context of the physiology of the patient • Drug doses checked and confirmed with the assisting staff • If Deep sedation provided by anaesthetic team, understand the implications on the patient and potential side effects of drugs.

Endoscopic skills	
Intubation:	<ul style="list-style-type: none"> • Demonstrates safe and effective progress into the small bowel. • Stable platform into small bowel with retrograde route.

DAE pathology	
Pathology	<ul style="list-style-type: none"> • Can record clear description of pathology encountered. • Ability to tattoo pathology as clinically appropriate.
Interpretation	<ul style="list-style-type: none"> • Understands normal and abnormal findings and correlates with clinical problem to aid diagnosis.

Therapeutics	
Therapeutics	<ul style="list-style-type: none"> • Appropriate need for intervention/ therapeutics carried out as per indication • Demonstrates ability to perform therapeutics safely.

Complications	
Recognition and management of complications	<p>Recognition :</p> <ul style="list-style-type: none"> • Understanding of potential complications and demonstration of knowledge about likely symptoms in immediate post procedure time, short term and long term. To include those related to general endoscopy and those specific to DAE and interventions. <p>Appropriate action :</p> <ul style="list-style-type: none"> • Demonstration of ability to set in motion necessary actions in case of immediate and short term and long term complications, including communication with patients and staff, stratification of risk and appropriate therapies.

Post procedure	
Report writing	<ul style="list-style-type: none"> • Structured endoscopy report: <ul style="list-style-type: none"> - Background / Findings / Intervention / Post procedural Instructions • Adequate record of definitive findings • Record of conclusion of findings and relevance to clinical care.
Management plan	<ul style="list-style-type: none"> • Adequate communication with clinical staff, patient & relatives before, during and following procedure.

ENTS (endoscopic non-technical skills)	
Communication and teamwork	<ul style="list-style-type: none"> • Maintains clear communication with assisting staff • Gives and receives knowledge and information in a clear and timely fashion • Ensures that both the team and the endoscopist are working together, using the same core information and understand the 'big picture' of the case • Ensures that the patient is at the centre of the procedure, emphasising safety and comfort • Clear communication of results and management plan with patient and/or carers
Situation awareness	<ul style="list-style-type: none"> • Ensure procedure is carried out with full respect for privacy and dignity • Maintains continuous evaluation of the patient's condition • Ensures lack of distractions and maintains concentration, particularly during difficult situations • Intra-procedural changes to scope set-up monitored and rechecked
Leadership	<ul style="list-style-type: none"> • Provides emotional and cognitive support to team members by tailoring leadership and teaching style appropriately • Supports safety and quality by adhering to current protocols and codes of clinical practice • Adopts a calm and controlled demeanour when under pressure, utilising all resources to maintain control of the situation and taking responsibility for patient outcome
Judgement and decision making	<ul style="list-style-type: none"> • Considers options and possible courses of action to solve an issue or problem, including assessment of risk and benefit • Communicates decisions and actions to team members prior to implementation • Reviews outcomes of procedure or options for dealing with problems • Reflects on issues and institutes changes to improve practice

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