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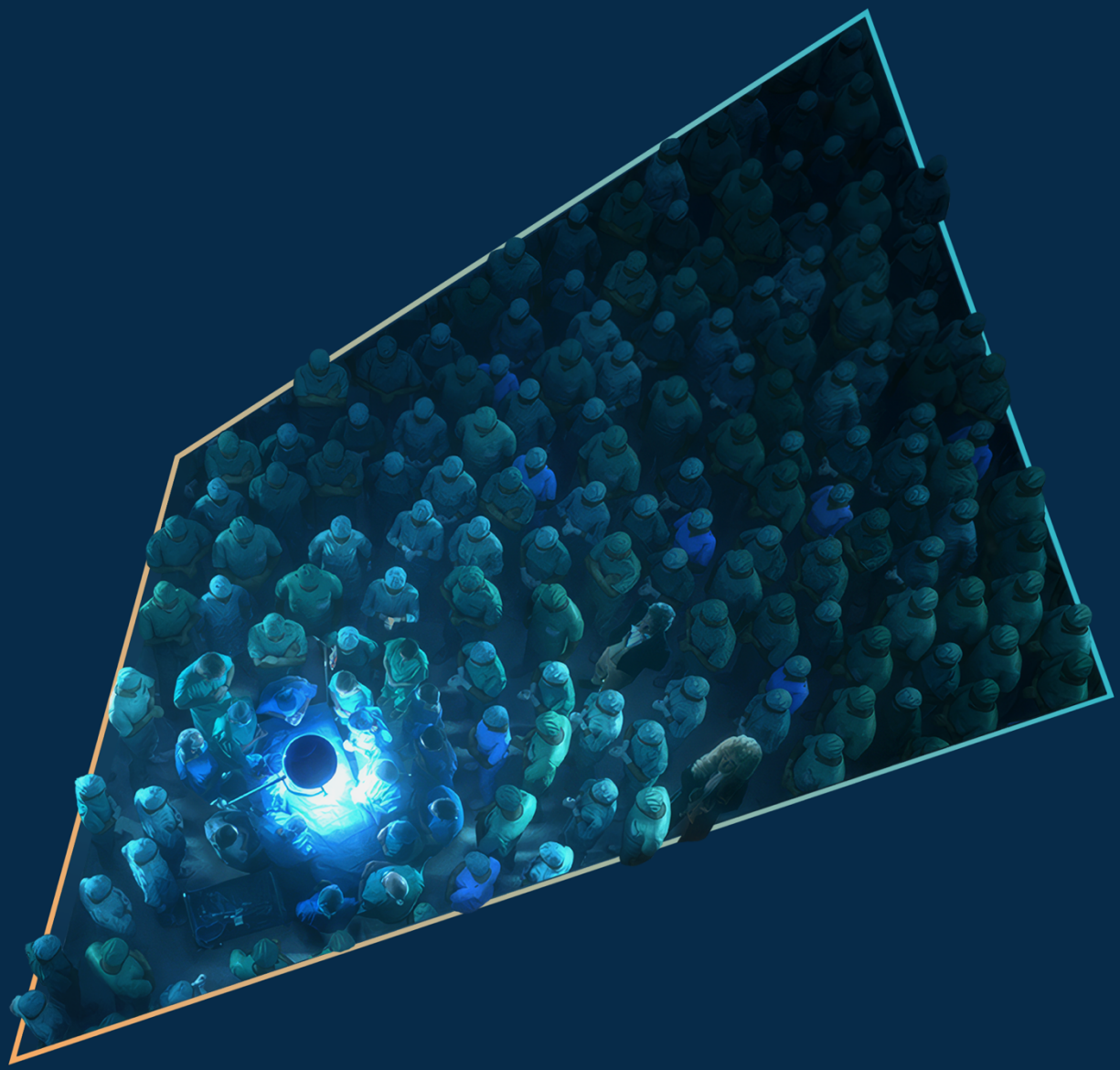
1505

Doubling Up

A GUIDANCE FOR DUAL CONSULTANT OPERATING



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Executive Summary

Surgery is a collaborative and dynamic profession, where patient outcomes are optimised when professionals work together and learn from each other. Dual consultant operating (DCO) is an important feature of modern surgical practice, particularly procedures that require input from more than one surgical specialty. It is also commonly used in high risk, complex or rarely performed procedures where experienced assistance reduces fatigue and cognitive load and enhances patient safety.

The use of DCO differs between and within surgical specialties. The aim of this document is to give an overview of the benefits and potential pitfalls of DCO and indicate where it may be best used. It provides guidance on how DCO should be employed to maximise both patient outcomes and transfer specialist skills and expertise to all members of the surgical team.

The aim of this report is to guide surgeons in when to use DCO and the various measures that need to be considered in order to optimise its effectiveness.

Introduction

Surgery is a collaborative profession, and patient outcomes are optimised when professionals from different surgical, medical, nursing, and allied health specialities work together. Such an extended team approach to surgery has been proven to shorten the time between diagnosis and treatment[1], reduce the length of hospital stays[2], lead to fewer complications and readmissions[3] and improve clinical outcomes and survival rates.[4] For these reasons, multidisciplinary working is recommended in several NICE guidelines.[5]

Dual Consultant Operating (DCO), where senior surgeons operate with fellow consultants or appropriately qualified SAS / LED colleagues, is an increasingly common method of modern surgical practice particularly in rarely or difficult performed procedures.[6] In England for instance, DCO accounts for 40.5% of the most complex orthopaedic surgery.[7]

DCO is also used in aortic and endovascular surgery as well as procedures such as microsurgical breast reconstruction[8], revision hip and knee replacement surgery[9], spinal surgery and liver resections that may also require specialist input from more than one surgical specialty or sub-specialty.

There are then a number of high risk and complex procedures that are clearly best conducted by an experienced surgical consultant in collaboration with a similarly experienced peer with specialist knowledge in either the same specialty or a related and necessary field.

Operating with colleagues in this way offers a degree of peer-to-peer support which can, in turn, boost confidence, reduce cognitive load and help prevent fatigue during long procedures. Indeed, surveys of spinal surgery conducted in 2015[10]and 2024[11] reporting the presence of two senior surgeons show this directly improved safety through reduced complications, operative room time, and length of stay.

Use of DCO

DCO is now well documented in all surgical specialties. A 2024 survey of FRCSEds engaged in Paediatric Surgery found that two-thirds engaged in DCO at least once a month and over 90% believed it benefits clinical accountability, responsibility and the quality of care given.[12]

Other examples of DCO include:-

Cardiothoracic

DCO was introduced to the National Adult Cardiac Surgery Audit (NACSA) in 2019[13] and is recommended in major aortic surgery as it deepens the overall experience of the surgical team.[14]

ENT

Surgeons participate in a number of cross-specialty procedures such as skull base surgery, head and neck cancers, craniofacial trauma, and deformities.

General Surgery

There is regular collaboration with urological, gynaecological, plastic, and spinal surgeons on a range of procedures such as treating cancers of the pelvic viscera[15], hepatobiliary surgery (especially liver transplants), and colorectal surgery such as cancer, inflammatory bowel disease, and trans-anal surgery.[16]

Neurosurgery

Paediatric neurosurgeons have engaged dual (or more) consultant operating for many years, where the complexity of pathologies, such as intrinsic brain tumours, can benefit from the skill set and experiences of different surgeons. Dual consultant operating also ensures surgeons maintain their expertise considering the rarity of these complex pathologies

In adult neurosurgery, dual consultant operating can reduce patient risk and the duration of surgery, particularly in high-risk pathologies such as giant intracranial aneurysms, large skull bases meningiomas and multi-level spinal surgery. Intra-operative findings may require complex decision making and a second consultant colleague can help.

Ophthalmology

DCO is commonly used in complex reconstructions, orbital decompression, paediatric oculoplastic surgery, exenteration of the orbit, and sphenoid wing meningioma.

Oral and Maxillofacial Surgery (OMFS)

DCO has been the norm in flap reconstructive surgery for the last decade.[17]

Plastic Surgery

DCO often calls on the expertise of Plastic Surgeons and is standard practice for surgeons performing complex plastic surgery.[18] [19] DCO commonly occurs in hand surgery procedures, such as multiple digit replantation and hand transplants, brachial plexus surgery, free flaps, and free functioning muscle transfers.[20]

Combined operating between plastic surgeons and orthopaedic trauma surgeons is the accepted model of care for complex open fractures.

Paediatric Surgery

Paediatric Surgery is a specialty of congenital abnormalities: these are very wide ranging and often infrequent (for example neonatal index cases such as Tracheo-Oesophageal Fistula and Oesophageal Atresia (TOF/OA) may only present in 100 cases across the UK in a year). This rarity of index cases is recognised by the Paediatric Surgery GIRFT document and the Paediatric Surgery Curriculum.

In a Royal College of Surgeons of Edinburgh survey (in conjunction with British Association Paediatric Surgeons (BAPS) and British Association Paediatric Urologists (BAPU), most paediatric surgeons nationally and internationally were engaged in dual consultant operating on a monthly basis.

Furthermore, 90% of consultants and specialists agreed that there were benefits to governance , experience, and training, along with reduction of stress and sharing of workload when complex rare cases were shared with a colleague.

Finally, 83% supported this statement:

> **“Dual consultant/specialist surgeon operating should be recognised and promoted as an important part of a paediatric surgeon’s work.”**

Trauma & Orthopaedics

DCO is recommended by the and British Society for Children's Orthopaedic Surgery for all complex and/or infrequent paediatric orthopaedic procedures such as developmental dysplasia of the hip, slipped upper femoral epiphysis surgery and neuromuscular cases.[21]

The British Orthopaedic Association (BOA) recommends that DCO should be used in limb reconstruction surgery.[22] In spine surgery, a study of 111 spinal surgeons showed that 95% had participated in a two-consultant procedure and 94% found it beneficial, particularly for complex and rarely performed cases such as spinal stabilisation or fusion, scoliosis operations, tumour biopsy and kyphoplasty.[23]

Similarly, the British Hip Society recommends DCO be made available to all surgeons undertaking complex primary and revision hip arthroplasty[24], and that all new consultants be both paired with a senior consultant and offered an opportunity for dual operating within the first 5 years of their practice.[25] The British Elbow and Shoulder Society advise that DCO should be considered for complex primary and revision elbow replacements, usually in regional centres where specialised resources are available.[26]

In knee revision surgery, 40.5% of NHS Trusts report that complex work is already undertaken by two operating surgeons, with a further 55% of NHS Trusts aiming to introduce this.[27] GIRFT recommend that low volume surgeons be encouraged to increase their experience by collaborative working with the high-volume centres by DCO and the use of regional clinician passports.[28]

Urology

Dual operating can improve patient safety in challenging cases such as pelvic exenteration and pelvic sidewall resections.

Vascular

DCO is used in open aortic cases to ensure safety, reduce stress and maintain numbers, and the Vascular Society of Great Britain and Ireland state that DCO for complex open and endovascular cases (including mentorship) should be recognised in new vascular job plans.[29]

The Benefits of DCO

DCO has a number of benefits for surgeons. For experienced consultants, DCO provides an opportunity to widen their expertise by learning new techniques and skills from their peers, particularly in highly specialised procedures that are performed relatively infrequently.[30]

Fear of litigation or complaints has led some surgeons to avoid high-risk treatments or patients. DCO perhaps provides a way that such cases can still be taken on by sharing the burden of risk and reducing stress The onus for the outcomes lies with the team rather than with an individual surgeon.[31]

DCO can also help acquaint surgeons with new areas of practice such as robotic surgery and provide an opportunity for consultants based in lower volume centres to maintain their skills.[32] The GIRFT report on orthopaedic surgery states that as surgeons who perform low volumes of surgery are associated with increased lengths of stay, complications, and costs[33], DCO provides a way for them to deliver appropriate volumes of operations to maintaining their skill as well as providing a mechanism to receive training and professional development.[34]

DCO can also help newly qualified consultants successfully manage their first series of challenging cases, and consultants returning from prolonged periods of absence can also be mentored as they reacquaint themselves with operative practice.

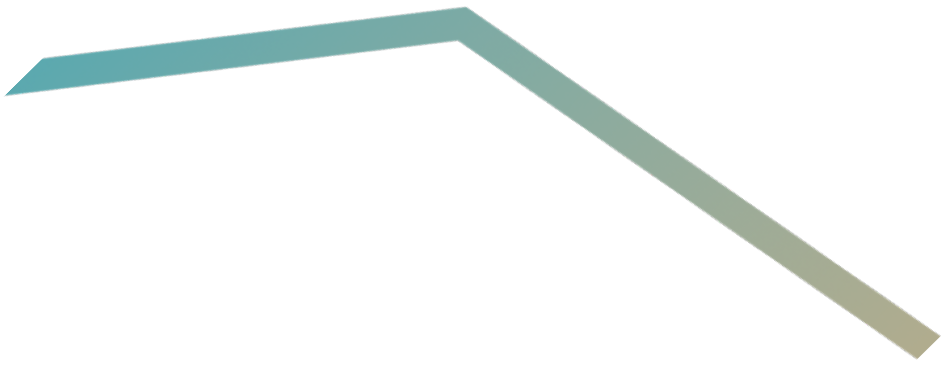
There is evidence that DCO can help build professional relationships and networks[35], raise practitioner confidence and resilience[36] [37] and facilitate training, coaching and mentoring.[38] For example, a 2023 survey of 85 General surgeons across hospitals in the UK stated that dual surgeon operating improved confidence (83.5% of respondents), decision-making (76.5%) and communication, teamwork, and leadership skills (65.9%).[39]

69.4% respondents also felt dual surgeon operating minimised technical error, and 65.9% also believed it would reduce surgeon burnout.[40] DCO can also prevent fatigue when performing long operations and reduce the cognitive load on individual surgeons.[41] Dividing such operations into constituent parts allows two consultants to work in sequential fashion so that a second consultant can continue to operate whilst the primary surgeon is resting. In doing so, this continues the momentum of the operation, reducing the risk of error as well as the overall operating time.

For patients with high-risk conditions, DCO helps deliver complex surgery they might normally be unable to access. By pooling expertise, DCO effectively doubles the surgical experience on offer[42] with evidence - mostly from spinal and breast surgery - that DCO can lessen the duration of surgery (by as much as 30% in breast reconstruction microsurgery[43]), prevent blood loss, shorten hospital stays, and reduce postoperative problems, such as pulmonary complications.[44] [45]

Indeed, DCO in cardiothoracic surgery has been described as *"better for our patients and better for us as surgeons"* particularly as more support translates into a less stressed environment that can then be cascading across the surgical team.[46] DCO may also allow more complex operations to be undertaken in local District General Hospitals or "Spoke" hospitals„ preventing the disruption to the patient if the procedure would have to have been performed in a distant tertiary centre.

There is also a role for DCO when new and innovative technology is being developed and used early in its clinical application as a way of speeding up learning and dissemination of the operative technique.



Benefits of Dual Consultant Operating

Learn new techniques and skills

Broaden experience

Reduce stress, fatigue and burnout

Raise confidence and resilience

Improve efficiency

Support new and returning consultants

Impact on risk

Improve patient safety

Models of Care

Dual operating may be employed in several scenarios, and it is important to have a clear idea of the reasons behind the decision as it will affect the necessary arrangements and governance of any operation. In many instances, the arrangements may be well established and part of regular practice. More challenging is when the process is ad-hoc.

Proctoring

This is used when a novel technique is being introduced, often including new equipment or implants. In this situation, the training surgeon often will be from outside the organisation, even from overseas. Detailed governance and planning are vital including arrangements for temporary registration with regulators and appropriate indemnity for all concerned.

Coaching

The concept of coaching applies when there is a clear differential in the experience between the two surgeons and the aim is to support the development of the less experienced operator in an organised and safe environment.

Supervising

This is a less formal role than coaching. There may be little need for the more experienced surgeon to intervene and the role may be more advisory.

Supporting

This model applies when the surgeons are equally experienced in the procedure, or they are from different surgical specialties collaborating in the management of a patient. Here, the advantages to be gained also relate to efficiency and patient safety, particularly involving non-technical skills.

Hub and Spoke

Where services are delivered from a specialist (tertiary) centre, it may be possible for the patient to be transferred for treatment to that centre and the surgeon from the "spoke" hospital can take part in the surgery in the centre. Alternatively, the surgeon from the "hub" hospital can operate in the "spoke" centre with the support of the local team. The latter arrangement brings the specialist expertise to the patient's locality providing the facilities are adequate. This method of working requires appropriate contracts are in place and is facilitated by the concept of "surgeon passports."

Ensuring Successful DCO

Despite the increasing super-specialisation and complexity of surgical work, as surgical units vary significantly in terms of infra-structure, size, and caseload there is no overarching guidance on which cases should be conducted as DCO.[47]

Surgical Specialty Associations are best placed to recommend when and how DCO should be conducted. However, from the guidance that has been produced, there are a number of common themes that may help inform surgeons and organisations when DCO might be appropriate.

Requirements for success

Governance

Communication

Planning

Define responsibilities

Utilise the extended team

Maximise training opportunities

Pre Surgery

Governance

The decision to allocate any patient for DCO should usually be agreed by a functional and quorate MDT meeting[48] and documented in the meeting notes.[49] This will then enable any clinical governance meetings to scrutinise and evaluate the procedure in terms of its quality performance, effectiveness, safety, and any external compliance.

Having MDT approval will also help counter any scepticism over the merits of DCO, particularly to convince management that the higher initial costs of DCO are justified in terms of patient safety and outcomes.

If a formal MDT meeting is not possible, such as in an urgent situation, then at least a formally documented management plan should be agreed between the two surgeons.

DCO relies on all members of the extended surgical team understanding their respective roles, so there needs to be sufficient time for the operating team to discuss, agree and document in advance how the procedure will be performed.[50] Whilst operative assessment tools, such as SORT, EuroSCORE (Cardiothoracic), and the Carlisle Risk Calculator (Vascular) are not always suitable for patients with very high-risk profiles[51], they can help shape MDT discussions and decision making.

If DCO is to be employed, there should always be a detailed account of the agreed operative plan, any anticipated challenges and what strategies will be used to overcome them.[52] It should also clearly outline the roles and responsibilities of each participating team member as well as other factors such as training and learning objectives.

To comply with the concept of DCO, it is expected that both consultant surgeons are present for the case and scrubbed for much of the time at the operating table.[53]

Designating A Lead Surgeon

When operating, the lead surgeon will often be the one who was responsible for the initial assessment and decision for operative treatment as they are best placed to understand their patient's needs.[54] Any MDT should document who the lead consultant is for the purposes of organising the procedure. The lead surgeon must ensure and carry ultimate responsibility for the safe and smooth running of the entire process.

Responsibilities

At the planning stage there needs to be a clear mutual understanding of responsibilities which is recorded in the notes. This should include the model of care, the logistics of arranging the procedure, the pre-operative preparation of the patient, the arrangements for specific equipment or implants and informing ancillary services such as radiology.

Patient Consent

The lead surgeon must discuss the procedure and obtain consent as per the GMC Good Medical Practice guidance. In addition, it needs to be made clear to the patient that two consultants will be operating and why this is to be the case. If at all possible, both consultants should see and assess the patient together prior to obtaining consent.

Pre-op Briefing and Checklist

The pre-op briefing and check list are especially important prior to starting the procedure. This is the final opportunity to ensure the whole surgical team fully understand and are prepared for the operation.

During Surgery

The operation should follow the pre-operative plan. With adequate preparation there should be little need to deviate. During DCO it is particularly important that all the team are fully aware of the non-technical skills required for safe surgery in these circumstances with particular emphasis on good communications and leadership and maintaining situational awareness.

Post Surgery

Debrief

A full debriefing should always take place after the procedure and include thanking the team, an overview of operative events, the postoperative plan, discussion of learning objectives and suggestions for further education possibilities.

Recording and Data Reporting

A clear operation note must be constructed which makes clear which surgeon performed which steps throughout the operation. The immediate post-operative plan should be discussed and agreed with the team and be recorded accurately.

Data should be submitted to appropriate national databases to monitor performance against national standards.[55] Some specialty registers and audits (such as NJR) allow both consultants to record their involvement in the DCO. Trust records need to match registry records to ensure accountability and governance.[56]

Post-Operative Care Plan

The immediate and early post-operative care should have been agreed as part of the pre-operative planning. The contact details of both surgeons must be recorded. There are particular risks related to proctoring or hub and spoke care where the most experienced surgeon may no longer be available to support the team in case of an adverse event or complication. It is reasonable to expect the second consultant to have joint responsibility for ensuring the safety of the patient.[57]

Longer term follow-up should also be agreed, and all parties be kept informed of the progress of recovery and outcomes.

Risks of DCO

Whilst DCO is generally best suited for elective surgery, there are many situations where it can be used to great advantage in emergency and trauma cases. There is much less opportunity for pre-operative planning and preparation in these instances and it is therefore even more important that the whole team has an opportunity to be involved in ensuring the process will be safe and efficient with an excellent understanding of non-technical skills.

DCO should not be used to perform procedures where neither surgeon has experience of a new technique.[58] Surgery should not proceed on the basis that one surgeon assumes that the other has the requisite knowledge and skills to be able to support them.

Similarly, DCO should not be used when the nature or complexity of the case does not demand it. This can reduce training and development opportunities for residents and appropriately qualified SAS / LED surgeons.

Further, it should only be performed after appropriate consideration has been given to the organisation and governance of any such arrangements.[59]

DCO & Surgical Training

As DCO is used in complex and challenging surgical cases, it can present an opportunity for trainees and members of the wider surgical team to learn from the combined experience and expertise of two senior surgeons and observe complex decision-making.[60] In complex breast reconstruction for example, plastic surgeons in Nottingham reported that DCO resulted in surgical trainees receiving more one-to-one training from consultants in preparing vessels and performing anastomosis.[61] As they state:

> **"It is our experience that dual-consultant operating results not in detriment to training experience but instead offers profound enhancement. Two consultants, with two trainees, can deliver outstanding quality training, allowing close instruction and direct observation without compromising expedient theatre progress. Indeed, our operative documentation reflects that trainees are involved at every stage of these microsurgical reconstruction cases."**[62]

Similarly, 86% of RCSEd paediatric surgeons surveyed agreed that DCO provided positive training and mentoring opportunities as it allows them to observe and develop non-technical skills including communication, team-working, and leadership and contribute to higher-level clinical thinking.

Trainees should be involved throughout the DCO procedure from its very inception. They should be encouraged to contribute to the preoperative MDT/discussion, and to attend the outpatient consultations.

If the second surgeon is not from their parent speciality they should be supported to access resources to deepen their understanding of the elements of the procedure the second specialty will be undertaking. They should also be involved in elements of postoperative care undertaken by the second specialty.

Surgical training relies upon trainees regularly operating with a consultant and performing elements of the operating under close supervision. For this reason, careful consideration must be given to the potential impact DCO has on surgical training.[63]

The experience offered by the case to trainees should be outlined at the MDT/preoperative planning meeting and again the education objectives for trainees should be discussed at the team brief. This experience may not be purely technical. Developing familiarity with the management of complex cases and DCO planning and team dynamics can fulfil some learning needs. Equally being guided through a technical part of a procedure 1:1 whilst a consultant colleague is operating in parallel carries great merit. Senior trainees should be supported to perform elements of the surgery supported by one or both consultants.

The risk to surgical training is that two consultants decrease physical space at the table, potentially restricting the opportunity for trainees to engage and learn from the procedure. Consultants may lose their training focus and may indulge in banter or be tempted to grandstand in front of each other.

Trainees, particularly those in early-stage training for whom their learning objectives are not met by involvement in long complex cases may lose hours of training time. In this circumstance it may be better for them to be invited to attend the DCO cases occasionally rather than being expected to be present regularly. Their time may be better spent working on technical skills in more straightforward procedures or honing their consultation skills under consultant guidance in clinics.

Senior trainees should be actively taught all the elements of DCO and should be supported to participate in both technical and decision-making parts of the procedure.

Rotas & Job Plans

DCO requires sufficient time to allow for appropriate discussion, planning and preparation of the procedure. This is likely to require changes to staff rotas and theatre schedules, particularly if one surgeon is based off site.

A significant amount of DCO relies on the second surgeon using their non-clinical time to take part in the procedure. DCO needs to be acknowledged in consultant job descriptions and job plans, particularly in sub-specialties where DCO is more common to ensure sufficient clinic, operating and clinical governance time along with paired or flexible timetables for those who frequently operate with colleagues.

Conclusion

DCO has a number of clear benefits in that it can help experienced consultants and resident doctors alike learn new techniques and gain specialist knowledge. On a practical level, it can help reduce operating fatigue and has been shown to have a positive impact on surgical training and collegiate working.

The ultimate decision of when to use DCO depends on the specific needs of the patient and skills and experience of individual surgeons. As it will be based on local circumstances and differs between surgical specialties, the surgical specialty and sub-specialty associations are best placed to provide additional advice on where DCO should be used.

Dual Consultant Operating should be recognised in job planning and rotas and recorded in audit and outcome measures.

DCO must be overseen by robust governance processes and underpinned by consensus over roles and responsibilities.

Acknowledgments

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The Royal College of Surgeons of Edinburgh

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