



The ROYAL COLLEGE of
OPHTHALMOLOGISTS

Ophthalmology Service Guidance

Theatre Procedures

February 2018

18 Stephenson Way, London, NW1 2HD T. 020 7935 0702
contact@rcophth.ac.uk rcophth.ac.uk @RCOphth

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Date of review: February 2021

1 Summary

Ophthalmology accounts for around 6% of all NHS procedures, with 700,000 elective admissions per year of which approximately 400,000 are cataracts and over 95% are day cases in England. This document will summarise the processes and staffing required for safe and efficient ophthalmic surgery (not minor surgery, nor intravitreal injections), particularly drawing on the National Safety Standards for Invasive Procedures (NatSSIPs) and the RCOphth guidelines for local anaesthesia in cataract surgery. It describes the processes which occur after the clinician has seen the patient and they have decided together to proceed with surgery. See also *Ophthalmic Service Guidance: Theatre facilities and equipment*.

2 Consent

The General Medical Council (GMC) provides detailed information on the consent process and documentation. It is beyond the scope of this document to describe in detail how this pertains to ophthalmic surgery. It is important to undertake shared decision making, ensure the tenets of obtaining valid consent are followed, and material and individual risks are identified and discussed. It is important to discuss the options of no surgery and of other or lesser interventions. It is best practice to consent before the day of surgery in all but emergency or minor operation situations. On the day of surgery, the consent should be rechecked with the patient and resigned by a consentor. Consent forms and/or the hospital record sheets need to reflect the discussions and risks; procedure specific forms are helpful but, if used, must be tailored for each patient's individual requirements and risk profile. These are usefully supplemented by information leaflets on the condition and the procedure.

Consent must be obtained in the full knowledge of both risks relevant to the operation *and* anaesthesia. It is the responsibility of the individual administering the anaesthetic to discuss possible complications of the anaesthetic. A separate consent form for the anaesthetic *per se* is not required, although it is advisable to record the discussion in the patient records. Patient information leaflets about the anaesthetic to be used are very useful.

3 Pre-operative assessment

The purpose of pre-operative assessment is to identify abnormalities or issues that might interfere with the safe performance and outcome of the operation and confirm the decisions made at the decision to admit were appropriate and still apply.

- For pre-assessment, the general medical records should be available. If the patient has significant systemic or ocular disease, and no information is available, the general practitioner or relevant hospital should be contacted. If the relevant information is not available, planned surgery should be deferred.

- The pre-operative assessment visit should take place before the day of surgery, and occur within three to four months of the surgery. A telephone call to confirm nothing has changed may be done in the week preceding surgery if there is a long gap between assessment and procedure.
- A telephone pre-assessment may be appropriate when a second procedure is planned in healthy patients (for instance 2nd eye for cataract surgery) within three to four months of the first operation.
- The results of pre-operative assessment should be recorded on a checklist.
- Pre-operative assessment should normally be undertaken by trained specialist nurses or other trained ophthalmic healthcare professionals with medical anaesthetic input as required.
- The pre-operative assessment should be conducted according to locally designed protocols which should include criteria for action and routes of communication with other clinical staff (surgical and anaesthetic teams) about abnormalities or concerns.
- There should be specific checks to ensure suitability for day case surgery if planned; living alone is not a contraindication but it needs to be confirmed that the aftercare, particularly instilling the eyedrops effectively at the right times, is possible.
- Some patients may need help, such as a relative, friend or carer, to accompany them to surgery and at discharge, or support from the community nursing team at home.
- There should be specific checks to ensure suitability for the type of anaesthetic scheduled.
- There should be specific checks to highlight any concerns about mental capacity, ability to lie flat and still for the whole duration of the operation, and communication difficulties.

Clinical aspects elicited should include

- Past illness:
 - Present illness and any abnormal symptoms, determined by system e.g. cardiovascular, respiratory (including orthopnoea), nervous system, renal (including urinary incontinence), hepatobiliary, endocrine (including diabetes) and psychiatric.
 - All current medications with generic names should be recorded, including eye drops particularly anticoagulants and antiplatelet medications, alpha blockers (e.g. tamsulosin, doxazosin).
 - Allergies and drug sensitivities.
 - Past surgery and any complications.
 - Past anaesthetic procedures and any complications.
 - Communicable diseases, e.g. viral status, or where isolation is required during hospital stay for the patient according to local protocol and national guidance, and/or disposable/separate surgical instruments are required.
- The following examinations should be undertaken:
 - Pulse rate and rhythm.
 - Blood pressure (BP, to be repeated if abnormal).
 - Hearing, comprehension and co-operation.

- Tremor and abnormal body movements.
- Infection control screening tests (e.g. MRSA swabs) as per local protocol.
- The following are undertaken if indicated:
 - If there is respiratory distress or breathlessness present, measure the respiratory rate, the oxygen saturation on pulse oximetry and the patient should be reviewed by or discussed with a doctor or an anaesthetist.
 - Practice the patient's ability to lie flat and still in the appropriate position for the duration of the operation.
 - Examination for non-ocular sepsis.
 - Slit lamp examination e.g. for blepharitis.
- For the patient with no history of significant systemic disease and no abnormal findings on examination at the nurse-led assessment, no special investigations are indicated for routine local anaesthetic ophthalmic surgery.
- For any patient requiring special tests, consider whether they also need an opinion from a doctor.
- Some tests are routinely indicated for the following situations:
 - Clotting profile for those on anticoagulants such as warfarin – this depends on local protocols, type of operation and individual clinical situation of the patient in discussion with the patient's non-ophthalmic clinical team.
 - Electrolytes for patients on dialysis.
 - Blood glucose measurement and HbA1C for those with diabetes.
- There should be local protocols for how to assess and manage patients with high BP, diabetes and anticoagulant use for ophthalmic surgery.
- A venous thrombo-embolism (VTE) assessment should be undertaken, if required according to local guidelines, before surgery.
- There is no definitive guidance on the maximum safe length of time between the full pre-operative surgical eye examination and the day of surgery. In most cases currently, the patient will be operated on within the permitted referral to treatment time (RTT) and it is unlikely there will have been significant change e.g. new onset glaucoma or funduscopy change. However, if there are many months between listing and surgery, a further assessment may be required, e.g. a dilated assessment would be required for cataract cases. This could be performed by the surgical team on the day of surgery. However this may be inefficient and, it is not the ideal time to discover a problem. Patients who have a long delay between ophthalmic assessment and surgery need discussion with the surgeon as to the requirement for, and optimal timing of, re-assessment in the community or hospital eye clinic.

Pre-operative information

Although consenting may have taken place, the pre-operative assessment is an important opportunity for providing information to the patient and their family/carers, discussing their concerns and expectations, and clarifying any points of uncertainty. The patient should be provided with appropriate information regarding surgery and anaesthesia, verbal information supplemented with written, audio or video information. Prepare the patient and carers for the day of surgery by discussing what will happen on the day and during the operation. In particular, cover transport, what to wear, time of arrival and discharge, food

and drink, the wearing of dentures and hearing aids during the operation, concerns about being able to lie still. Also cover post-op care particularly who will instil the eye drops and any training needs and/or drop aids, or community/district nursing service requirements. For patients receiving adult social care, make sure the care needs are met adequately for discharging safely back into the community. Reassure the patient about who will be assigned to look after them throughout the operative pathway.

4 On admission

- The patient should be invited to arrive at the surgical unit with sufficient time to complete formalities, but not so far in advance as to inconvenience the patient, escort and staff. Staggered arrivals are convenient to the patient and can reduce the surgical journey time. However, they may be difficult with general anaesthetic (GA) and sedation cases where the anaesthetist needs to see all the patients before the lists starts. For local anaesthetic (LA) lists, the exact surgical staffing can affect whether staggered arrivals are efficient – if there is only one surgeon or professional to undertake the pre-op ophthalmic checks, coming out of theatre to do so for later arrivals can slow list progression.
- Formal hospital inpatient admission is frequently unnecessary if day case surgery is planned, and the patient may be allowed to remain in their own clean and loose fitting clothing. It may be necessary to admit as an inpatient patients undergoing complex/long procedures that require nursing post-operatively.
- For LA ophthalmic surgery without sedation, it is unnecessary for patients to be fasted and patients should have their normal medication on the day of surgery.
- Nurses, or health care assistants (HCAs) under the supervision of nurses, will perform the pre-operative patient preparation on wards or day case areas. Results of the pre-operative assessment should be available and, together with the following, be recorded on a checklist:
 - The patient's identity should be confirmed and a name band should be attached to the patient's wrist.
 - Ensure the next of kin details are documented/updated in the patient's medical records.
 - Confirm that the patient has been well since the pre-operative assessment visit and does not have any acute illness, e.g. upper respiratory tract infection.
 - Confirm whether the patient has taken his/her medication.
 - Confirm allergy status as this may affect the order of the list, e.g. type I latex allergy.
 - Ensure the patient has provision for a safe return home.
 - BP, pulse rate, temperature and oxygen saturation should be checked.
 - Check that the consent form has been signed and rechecked on the day of surgery.
 - Where relevant, check the marking side forms and biometry/IOL data are present.

- Ensure that the pre-operative medications including eye drops or inserts are administered.
- Any change in the patient's condition or therapy since pre-operative assessment, or other concerns from these assessments, should be brought to the attention of the surgeon and, where relevant, the anaesthetist.
- The findings of the pre-operative assessment and checks should be reviewed by the ophthalmologist, and where appropriate, the anaesthetist.
- Examination facilities with privacy should be available and the operating surgeon and (if relevant) anaesthetist should confirm the findings of the outpatient clinic/pre-operative assessment.
- The eye/adnexae should be checked to exclude acute inflammation or infection and rechecked for other factors that may affect safe local anaesthesia or surgery.

Pre-op marking

- Surgical site marking is mandatory for all procedures for which it is possible. The procedure site must be marked shortly before the procedure but not in the anaesthetic room or the theatre.
- The marking must be performed by the surgeon or a nominated deputy who will be present during the procedure. It is the surgeon's responsibility to check that he/she is operating on the correct eye/site.
- The patient's identity should be confirmed (active confirmation by the patient i.e. tell me your name, tell me your date of birth).
- Check the nature of the operation and side or site.
- Mark the eye or side / site to be operated upon with a clear, indelible mark. This mark should remain visible after surgical cleaning, and after draping if at all possible.
- The non-operative side must never be marked - not even with statements such as "not this side".

Handover to procedure teams

There must be a formal handover process from the ward or admission team to a member of the theatre team receiving the patient. In most cases, the day case or ward area nurses bring the patient to theatre and take the patient back to the day case area, conducting handover in or at the entrance to theatre or anaesthetic room. Sometimes, if there are delays or to make things more efficient in high volume lists, this is done flexibly by the theatre staff who undertake to bring the patient in and take back with handover in the day case/ward area.

- The handover should include a check of:
 - Patient identification (name, date of birth, active confirmation), checked against identity band
 - Allergies
 - Procedure, and site or side
 - Site marking
 - Whether patient has any plates, pins, or any metal implants if monopolar diathermia is going to be used
 - Fasting status

- Relevant clinical features, e.g. blood sugar for diabetic patients, INR for some anticoagulants
- An appropriate patient record
- A properly completed consent form
- A biometry sheet if relevant
- Note, if there are any omissions, discrepancies or uncertainties identified, these must be resolved before the next stage of the patient pathway, i.e. the sign in.

5 In theatre

Staffing

There are some general principles to adhere to for all theatre teams.

- Organisations should clearly identify the workforce (number and skill-mix) necessary for safe efficient ophthalmic theatre lists, developed and agreed with appropriate staff representatives. Job plans and workforce must take into account the time required to set up, calibrate and perform safety checks on equipment, and for staff to participate in briefing, debriefing and other key safety steps.
- There needs to be a workforce based upon the expected duration of the activity, and processes for members leaving or joining the clinical team part way through a list or operation, and the steps necessary to ensure handover in that situation.
- All members of the procedural team must practise within the limits of their proven and agreed/documented competence and there must be processes to address the induction requirements of non-substantive staff or those who are not primarily ophthalmic or highly experienced joining the procedure team. Allocation of staff to clinical duties must reflect a risk-managed mix of substantive/familiar/experienced staff and non-substantive/inexperienced staff.
- The surgeon needs to be supported by a team that is well trained to assist and complement his or her skills. Consistency in the team is desirable as well as crucial to high throughput.
- All members of the theatre workforce must receive regular relevant updates and continuous professional development.
- The theatre manager, or equivalent, should confirm the availability of an appropriate workforce for the operating theatre before the start of any list or session. If lists go ahead without the agreed workforce, this must be agreed with the theatre manager who should only advise that the procedure be performed if he or she is satisfied that the workforce is appropriate to support safe patient care, and should be reported as an incident.

For high volume cataract lists, the exact make-up of the team is very dependent upon exactly how high throughput is achieved and can vary. For most LA ophthalmic lists, the following staff are the minimum acceptable theatre team:

Scrub Nurses or Practitioners: most theatres use two, one for the current case and the other preparing the instruments for the next case. They should be theatre trained, and have ophthalmic experience, although they do not always in non-specialist units have to be purely

ophthalmic, and not all need to be registered nurses. They need sufficient experience to handle not only routine cases but also those where unexpected complications occur. It is recognised that a well-trained, dedicated team will provide faster throughput of cases.

Runner: this role is to supply the scrub practitioner with the necessary equipment and consumables, set up the phaco equipment etc., help position the patient and microscope, adjust the lights and other essential duties. This person can be a HCA. This role is very important in ensuring efficient running of the list.

It is ideal if theatre staff can assist in the electronic or operation note recording of the procedure.

Patient monitoring

For GA patients, use other GA procedures in the unit.

For LA patients:

- The patient should be continuously monitored, from before the administration of the LA to the end of the operation. Monitoring should be by clinical observation, communication and pulse oximetry as a minimum.
- The ECG and BP should be monitored in sedated patients and those who are at risk of cardiovascular complications (e.g. hypertensives, patients with pacemaker, diabetics) and higher risk situations such as strabismus surgery, intra-operative use of ocular sympathomimetics (such as phenylephrine and Mydracaine). In stable patients the non-invasive BP (NIBP) measurements should be kept to a minimum to avoid discomfort and undue disturbance during surgery.
- A suitably trained individual must have responsibility for monitoring the patient throughout. This task may be carried out by an anaesthetist, a nurse, an operating department practitioner (ODP), an operating department assistant (ODA), an anaesthetic nurse or, in some cases, a suitably trained HCA as long as they are trained in basic life support (BLS). This person must be trained to detect any adverse events and to initiate appropriate treatment anaesthesia and surgery and to bring any concerns to the surgeon, either directly or via the scrub nurse.
- The ultimate responsibility for the patient rests with the operating surgeon and, when present, the anaesthetist.

Anaesthetists and resuscitation

- Every trust, hospital or unit undertaking ophthalmic surgery should identify one anaesthetist with overall responsibility for the ophthalmic anaesthetic provision.
- General anaesthesia and sedation requires the assistance of a trained anaesthetic technician/or anaesthetic nurse as well as an anaesthetist. In addition there should be trained recovery staff.
- Local staffing availability will dictate whether an anaesthetist can be provided for all ophthalmic lists. An anaesthetist is not essential when topical, subconjunctival or sub-tenon's techniques without sedation are used.

- For any operation, all theatre staff must be regularly trained and able to perform basic life support, understand local resuscitation arrangements, and there should be a resuscitation trolley easily and quickly available.
- All ophthalmic units should have formal policy for dealing with medical emergencies should they occur.
- For isolated units or where procedures are performed outside a main theatre complex, clear, agreed and regularly tested protocols and pathway must be in place to enable the patient to receive appropriate advanced medical care.
- Where there is backup from a formal cardiac arrest/medical emergency team, there should be at least one person available with Immediate Life Support (ILS) or equivalent qualification, who should be supported by staff with the knowledge and skills to assist in resuscitation.
- Where the unit is free-standing and there is no immediate access to a formal cardiac arrest team there should be at least one person with Advanced Life Support (ALS) or equivalent.
- Ideally, an anaesthetist should be available in the theatre complex, particularly when sharp needle blocks such as peribulbar, retrobulbar are used, and when complex or long cases are being performed.
- If an anaesthetist is not available in the hospital or ophthalmic unit, peribulbar or retrobulbar techniques should only be used if appropriately skilled staff are immediately available in the operating theatre.
- If an anaesthetist is not immediately available, the operating ophthalmologist is directly responsible for the management of any untoward event and should have the appropriate skills to safely manage resuscitation, or to have these skills within the theatre team.

5 steps to safer surgery

(1) A safety briefing (team brief): must be performed at the start of all elective, unscheduled or emergency procedure sessions and the list timings must allow for this. The briefing may need to be conducted on a case-by-case basis if there is a change in key team members during a procedure session.

- Noise and interruptions should be minimised during the safety briefing.
- The brief should occur in a location which protects confidentiality and should be conducted before the first patient arrives in the theatre area.
- As many members of the surgical team as possible should attend the briefing, but it must include the surgeon and anaesthetist who have seen and consented the patient(s).
- Any team member may lead the safety briefing.
- Team members should introduce themselves to ensure that their roles and names are known. Each member of the theatre team expected to be involved in the list must be named (even if not present for the brief) and a written list of names should be easily visible throughout the session.
- The safety briefing should consider each patient on the list in order from a surgeon, anaesthetic and theatre practitioner perspective. A process must be in place to update the procedural team with relevant information in the case of staggered admissions.
- For each patient, the discussion should include:
 - Planned procedure
 - Site and side of procedure

- Availability of implant or graft material
- Infection risk, e.g. MRSA status
- Allergies
- Relevant comorbidities or complications
- Need for antibiotic prophylaxis
- Patient positioning
- Equipment requirements and availability, including special equipment or 'extras'
- Postoperative destination for the patient if not standard
- Type of anaesthesia and any unusual concerns or extra requirements
- The expected duration of each procedure, to include anaesthetic
- Any additional concerns from an operator, anaesthetic or practitioner perspective must be discussed, as well as concerns about inadequate time allocated, and contingency plans made.
- A record should be made of the team briefing, and should be displayed in the procedural area for reference during the list.
- Any issues raised in the briefing that may have relevance for the care given to other patients should be reported to local governance systems.

(2) Sign in: all patients must undergo safety checks on arrival at the procedure area, which is the first part of the WHO Surgical Safety Checklist.

- For cataract surgery a specific cataract or ophthalmic checklist is recommended. For other ocular surgery the standard WHO checklist or an ophthalmic specific checklist can be used.
- Noise and interruptions should be minimised during the sign in.
- The sign in must be performed by at least two people involved in the procedure. For procedures involving an anaesthetist, these should include the anaesthetist or anaesthetic assistant.
- Participation of the patient (and/or parent, carer) in the sign in should be encouraged when possible.
- Sign in should not be performed until any omissions, discrepancies or uncertainties from the handover from the ward or admission area have been fully resolved.
- A sign in must be completed and documented on arrival at the procedure area or anaesthetic room.
- The checks performed during the sign in should include when relevant:
 - Patient identity (active confirmation), checked against the identity band
 - Consent form
 - Surgical site marking
 - Operating list
 - Anaesthetic safety checks: machine, monitoring, medications
 - Allergies
 - Aspiration risk / potential airway problems if relevant.
- Any omissions, discrepancies or uncertainties identified during the sign in should be resolved before the time out is performed or any procedure starts.

- Immediately before the insertion of a block anaesthetic, the anaesthetist and anaesthetic assistant must simultaneously check the surgical site marking and the site and side of the block - Stop Before You Block.

(3) Time out: All patients must undergo safety checks immediately before the start of the procedure, the second part of the WHO Checklist.

- Noise and interruptions should be minimised during the time out.
- Participation of the patient (and/or parent, carer) in the time out should be encouraged when possible.
- The time out should not be performed until any omissions, discrepancies or uncertainties identified in the sign in have been fully resolved.
- Any member of the procedure team may lead the time out. All team members involved in the procedure should be present at the time out. The team member leading the time out should verify that all team members are participating. This will usually require that they stop all other tasks and face the time out lead.
- A time out must be conducted immediately before skin incision or the start of the procedure.
- Time out should include when relevant checks of:
 - Patient's name and identity band against the consent form.
 - The results of any relevant tests that must be present and available in theatre, e.g. imaging, biometry.
 - The procedure to be performed.
 - Verification of surgical site marking.
- Surgeon:
 - Any specific equipment requirements or special investigations.
 - IOL power and model
 - Any critical or unusual steps.
- Anaesthetist:
 - Any patient specific concerns.
 - ASA physical status.
 - Monitoring equipment and other specific support, e.g. blood availability.
- Scrub practitioner:
 - Confirmation of sterility of instruments and equipment.
 - Any equipment issues or concerns:
 - Antibiotic prophylaxis
 - Patient warming.
 - Glycaemic control.
 - Hair removal.
 - VTE prophylaxis.
 - Allergies.

Any omissions, discrepancies or uncertainties identified during the time out should be resolved before the procedure starts

Avoiding retained items

There need to be safe and consistent practice in accounting for all items used during invasive procedures and in minimising the risk of them being retained unintentionally. This should cover all potentially retainable items used in procedures, as well as those used as part of anaesthesia and sedation, e.g. parts of “spears” or drapes or wicks.

- Instrument sets and equipment should be periodically risk-assessed to ensure they are rationalised to contain minimum amounts of required equipment, and equipment is appropriately maintained. An up-to-date list of the instruments in the sets should be maintained.
- Swabs should be regularly reviewed to ensure the swabs are fit for purpose and ideally standardised for specific procedures.
- Equipment trays must contain a comprehensive list of the instruments present to enable checking before and after use. Photographs may be helpful for unfamiliar equipment. Equipment that can be disassembled, e.g. for cleaning purposes, must be clearly described on the instrument list, including the number of parts.
- The integrity of all items must be checked before and after use, including component parts of equipment and instrumentation.
- The process of counting and reconciliation should be performed by the same two members of the procedure team; both should have received appropriate training and competence assessment. Both should be experienced in counting and reconciliation. Should it be necessary to replace the scrub practitioner during the procedure, a complete count should be performed, including a full instrument check, recorded and signed by the incoming and outgoing practitioners. The name of the replacement practitioner/s must be recorded on the intra-operative record.
- A reconciliation must be undertaken before the closure of each body cavity, and a final reconciliation must be undertaken before the final closure of the operative site and before the sign out.
- Surgeons should check the wound and surgical site carefully for foreign objects before completion/closure.
- When an item is intentionally retained, with plans for later removal, e.g. drain, it must be clear how this should be documented to ensure removal.
- If an item may be missing, consider a further count.
- In the event of an item being declared as missing, the operating surgeon must be informed immediately and a thorough search implemented at once.
- Missing items should be recorded on the records.
- Any investigations that need to be done for an unaccounted item must be undertaken before the end of surgical intervention (i.e. **before** the patient leaves the operating theatre).
- X-rays should be performed at the discretion of the surgeon.
- If there is a failed reconciliation but when the team is certain that there is no foreign object remaining in the patient, the above actions will be taken unless the whole procedural team is agreed that there can be no foreign objects left in the patient.
- Documentation relating to unaccounted for items should be added to the patient’s record and the patient should be informed with an explanation of consequences
- An incident should be reported.

- This should be included at postop handover to recovery/day case area

(4) Sign out: all patients must undergo safety checks at the end of the procedure but before the handover to the post-procedure care team: the third part of the WHO Checklist.

- Noise and interruptions should be minimised during the sign out.
- Any member of the procedure team may lead the sign out. All team members involved in the procedure should be present at the sign out. The team member leading the sign out should verify that all team members are participating. This will usually require that they stop all other tasks and face the sign out lead.
- Sign out checks should be conducted at the end of the procedure and before the patient is awoken from general anaesthesia or before the patient leaves theatre.
- These checks should include when relevant:
 - Confirmation of the procedure performed, to include site and side if appropriate.
 - Confirmation that instruments, sharps and swab counts are complete.
 - Confirmation that any specimens have been labelled correctly, to include the patient's name and site or side when relevant.
 - Discussion of post-procedural care, to include any patient-specific concerns.
 - Equipment problems for inclusion in the debriefing.

Records

- The patient's medical notes including, for cataract surgery, the biometry, must be available in theatre on the day of surgery.
- Where possible, there should be standardised forms on which to record all components of the process in a surgical pathway.
- When checking correct notes are being used, it is important to check both electronic and paper records pertain to the correct patient's identify.
- Standardised documentation for invasive procedures performed in all areas within an organisation must ensure the recording of essential information including:
 - the conduct of anaesthesia or sedation
 - the procedures performed, including side of surgery and implant make and model (operation note)
 - monitoring with contemporaneous recording
 - documented postop instructions from the surgeon
 - theatre scrub documents such as count and instrument records.
- A record should be kept of the performance of the key safety checks in the patient pathway which allows audit of compliance. Local organisations can decide whether this is simply confirmation the checks have been performed by the procedure team, or whether a particular individual or individuals should be responsible for confirming, on the team's behalf, the check has been performed with signatures and ticks.
- Invasive procedure documentation should allow the identification of the members of the team present at each stage in the patient pathway.
- Documentation must be complete, legible and contemporaneous, and must use locally agreed standardised terminology, avoiding the use of abbreviations or jargon.

- The documentation will include records made by responsible persons:
 - Administering anaesthesia or sedation
 - Performing the procedure
 - Providing other care during the procedure.
- When paper and electronic documentation are both in use, both systems should be aligned such that there is no unnecessary duplication of data entry or inconsistency. The organisation must identify which is the primary information source for later reference.
- Where safety checks, examination of the records pre-op or entry of information post-op is conducted via IT systems, there must be enough access to this (terminals, laptops, tablets) in all the relevant areas (anaesthetic room, theatre, theatre admin space) so that both theatre staff and surgeons can complete these activities at the right time; surgeons should not be waiting for theatre staff to finish on a terminal before using and vice versa; theatre staff should be able to undertake any electronic WHO checks in all relevant rooms.

(5) Debrief: a team debriefing should be performed at the end of all lists. The debriefing may need to be conducted on a case-by-case basis if there is a change in key team members during a procedure session. The total time set aside for the list should include the time taken to conduct the debriefing.

- Every member of the procedural team should take part in the debriefing.
- Any team member may lead the debriefing, but the surgeon and anaesthetist (if an anaesthetist has been involved) must be present. If any team member, and especially the senior surgeon, scrub practitioner or anaesthetist, has to leave before the debriefing is conducted, they should have the opportunity to feedback any issues they wish to see addressed during the debriefing.
- The debrief should for each patient should include:
 - Things that went well
 - Any problems with equipment or other issues that occurred
 - Any areas for improvement.
- Records of debriefings should include an action log that can be used to communicate examples of good practice and any problems or errors that occurred. Each procedural team should have an identified member who is responsible for feeding this information into governance processes which promote learning.
- If a significant issue about the care of a patient arises during the debriefing, a clear and contemporaneous note of this should be made in the patient's records.

Post-procedure handovers

There must be a formal handover from the procedure team to the post-procedure care area e.g. the recovery or day case area.

Post-procedure handovers include when relevant:

- Name of patient, checked against identity band.
- Relevant comorbidities.
- Allergies.
- Planned and actual procedure(s) performed, with site and side.

- Surgical complications and interventions to correct these.
- Relevant intraoperative medications, including opioids, anti-emetics and antibiotics.
- Course of anticipated recovery and problems anticipated.
- Postoperative management plan, to include provision of analgesia.
- National early warning scores when in use in the organisation.
- Information given to the patient about the procedure, or any plans for information to be given after the procedure.
- Information about anaesthetic care e.g. anaesthetic complications and interventions to correct these, airway problems.
- Inpatient drug charts are written if patient is for admission overnight.
- If the patient is for next day review, the contact details of the responsible clinician and corresponding instructions are recorded.

6 Post-operatively

- Discharge criteria should be established and met. There should be a clear plan as to what assessments might be required, such as vital signs, state of the eye, before discharge for specific conditions or cases.
- Pain should be assessed and managed.
- After the operation, and before discharge, the patient should feel well and have stable key signs.
- For patients who have undergone general anaesthesia, ensure patient has passed urine before discharge.
- Before discharge the safety arrangements for the patient's return to home, and the level of support available, should be confirmed. All patients are advised to have a friend or relative to accompany them to surgery and at discharge where possible and this is essential for those who are frail and elderly.
- Information (including written) should be provided about post-operative recovery (postoperative instructions, medication dispensing and advice, advice on postop appointments, what to expect during recovery).
- Written instructions should be given to the patient about what to do and whom to contact in the event of problems or concerns, especially signs of post-op infections such as endophthalmitis.

7 Organising lists

- Patient safety during surgery is dependent upon adequate preparation, the accurate scheduling of procedures and the management of lists.
- Organisations must develop standards that dictate how clinical teams schedule both elective and emergency procedures, and communicate key patient and procedure information to procedure teams using agreed, standardised data sets.
- There should be unambiguous use of language in all communications relating to the scheduling and listing of procedures. Laterality must always be written in full, i.e. 'left' or 'right'. The use of abbreviations should be avoided but, when

common abbreviations are used, a list of approved abbreviations should be readily available to all staff.

- The information to schedule a procedure should include when relevant:
 - Patient name
 - Identification numbers, i.e. NHS number with or without hospital number
 - Date of birth
 - Gender
 - Planned procedure
 - Site and side of procedure if relevant
 - Source of patient, e.g. ward or day case area
 - Significant comorbidities
 - Allergies, e.g. to latex or iodine
 - Unusual infection risk including prion disease
 - Any non-standard equipment requirements or non-stock prostheses
 - Unusual body mass index or extreme obesity where normal hospital equipment may have difficulty safely accommodating the patient's weight, e.g. theatre trolley, mobile patient hoist
- The clinical team performing the procedures is responsible for deciding the order of procedures within a list of cases. In determining the order of a list, priority should be given to clinical criteria, e.g. urgency, extremes of age, allergies such as latex allergy, and medical conditions e.g. diabetes. However, some routine rules for scheduling can be delegated to administrative staff.
- There should be all attempts made to make most efficient use of theatre time, to start on time and use theatres flexibly. It is good practice to audit theatre utilisation, start and finish times. Staff need to arrive and see patients or organise equipment in advance of expected theatre start time and their job plans must take account of that.
- The scheduling of a list must take into account the expected workload, taking into consideration other factors that include:
 - Team briefing and debriefing
 - Anaesthetic time required
 - Patient positioning and preparation
 - Preparation of all necessary equipment and instrumentation
 - Familiarity, skill-mix and expertise of all members of the procedure team
 - Complexity of cases
 - In assessing the likely time needed for common procedures, review of existing theatre usage records may be valuable
- There should be a process to sign off the final version of a list for publication, with stated deadlines which are adhered to.
- Late list changes should be avoided if possible. Any list changes made after the deadline for the publication of a final version of the list must be agreed with identified key members of the procedure team, and should be discussed by all members of the procedure team at the safety briefing.
- In the absence of electronic list scheduling, the organisation must have clear processes for managing lists so that different versions of lists are not simultaneously available.

- The procedure list should be clearly displayed in the room in which the procedures are performed, and any other areas that are deemed important for the safe care of the patient e.g. anaesthetic room.
- The final version of the list should be available at the safety briefing.

8 Patient Safety

Unexpected complications: Theatre staff must be able to deal with unexpected complications including having available extra or unusual instruments or sets and devices/consumables, knowing where they are and how to use them. Rehearsals or simulations of such events can help prepare teams, especially those who are less experienced or familiar with ophthalmology to be ready for these.

Training of the theatre team: must not only be on an individual basis but must also include training as multidisciplinary and multi-professional procedural teams – team members should train together in the delivery and development of local theatre procedures and also must receive regular training in human factors and non-technical skills.

Incidents: all patient safety incidents and near misses should be documented and reported to the organisation's incident reporting system, which should be a standardised process. These should be analysed, investigated as appropriate, and learning should be fed back to staff for continuous improvement. This should be in accordance with organisational policy, ensuring compliance with the Serious Incident Framework and Never Event Framework. The organisation must promote transparency and openness when near misses or patient safety incidents occur, in line with the statutory Duty of Candour.

Feedback of issues: Each procedure team should have an identified team member responsible for collating relevant briefing and debriefing documentation and issues highlighted and sharing information with local governance and management systems on a regular basis. There must be arrangements that promote the escalation of issues identified that may have implications for the safety of the ophthalmic service and other surgical services in the organisation. Organisations must comply with local and national processes that promote the sharing of information about safety issues with other organisations that provide NHS-funded care.

Clinical governance meetings: There should be scheduled regular meetings for multidisciplinary procedural teams of adequate length and frequency to allow training, analysis of adverse incidents and near misses, review of audits of compliance with safety procedures and teamwork development and practice. Such meetings have had names such as Morbidity and Mortality (M&M) Meetings, Audit Meetings or Clinical Governance Meetings.

9 Workload

There are many factors which affect patient throughput including but not limited to:

- Number and experience of surgeons
- Staffing and skill mix of theatre and day case/ward team
- Anaesthetic and anaesthetic support staff number and skill mix
- Topography and linkage of relevant clinical areas (ward, day case area, theatre)
- Ergonomic design of theatre suite
- Pathway, processes and variables in how staff are used
- Access to and rapidity of supporting IT systems
- Methods of record keeping
- Technical support (hospital sterilising unit for example)
- Teaching and training, and experience of surgical trainee
- Anaesthetic type
- Case-mix and sub-specialisation
- Complexity of procedure
- Duration of theatre session
- Whether patient arrival is staggered
- How much of the process is completed prior to admission vs immediately pre-op
- Methods and timing of pupil dilatation

The current Getting it Right First Time (GIRFT) project will be able to demonstrate in detail what the current variation is in throughput for cataract surgery lists and help to demonstrate what might be expected as “standard” and what might be achievable in the best case scenario. The Monitor Elective Care Report published in 2015 has often been quoted and put forward several “good practices” which would improve efficiency (which includes costs as well as productivity) and examined the whole pathway not just theatre processes; in addition the report examined both ophthalmology and orthopaedics and made recommendations aimed at all elective care not just ophthalmology. The report found variation between 5-15 cataract cases per list and suggested that units should be routinely expected to deliver at minimum a cataract case every 30 minutes. Although, it was acknowledged that for training lists with inexperienced trainee surgeons and those with more complex patients there will be fewer cases per list. There was an example quoted of one unit where non-teaching lists operated on 10-12 cases in non-teaching lists and on 6 cases in teaching lists.

Early learning from GIRFT suggests that most variation in the number of cases per list in routine cataract surgery is not due to significant difference in the time taken for the surgeon to perform the surgery but, in fact, due to efficient use (or not) of theatre e.g. late starts and long turnaround times. When examining how the time in theatre is spent and what the likely delay is, it is important to divide the time into: intraoperative (time from first instrument to approach eye to last instrument leaving eye/shield application); the prep time whilst the patient is in theatre, that is patient getting onto the bed and getting comfortable, surgical checks, prepping, draping, microscope coming in, surgeon getting comfortable etc; and the

time when the theatre has no patient there. The timing of factors outside theatre is also crucial to assess. It is also important to understand that the complexity and risk of the surgery (e.g. small eye, pseudoexfoliation) and the complexity of the patient (e.g. difficult to position, difficulties with communication) *will* slow down the operation and the set up for the operation, and must be factored in to expected timings.

Training: Teaching is an essential duty for most ophthalmic units, with most demand on theatre time (and surgeons) being associated with cataract surgery. This can be handled by individual units in various ways. Some surgeons preferring to concentrate on “modular” teaching of particular stages of cataract surgery, whilst others prefer to allocate a specific time on certain lists for teaching surgery. Some find it helpful to separate “service” cataract lists from teaching lists to some degree, where the latter can be planned with fewer non-complex, cases. The requirements of individual trainees are also varied, however, and some flexibility in planning lists is beneficial in providing a variety of training opportunities for trainee surgeons whilst maintaining an efficient and safe procedure for patients.

How to achieve greater theatre productivity

There are numerous ways in which a unit can work to improve productivity. The Monitor report and its detailed appendices contain many sensible suggestions and these are summarised below.

The most important factors from that report are:

1. Clinicians and managers supported to work effectively together.

There must be clinical engagement, and managers and clinicians need to work together effectively to improve. Both groups of staff must have enough time and seniority to elicit change and need senior support from medical and managerial operational or executive leads. Most of the other suggestions are logical and obvious but it needs the right people to work together in an effective manner to work out how best to plan actions to improve lists, pilot and learn from them in that particular unit.

2. The use of data to improve.

There need to be high quality theatre performance systems so important data can be collected and analysed. Daily attributable (non-anonymised) measures of theatre use, number of cases per list, cancellations, late starts and early finishes at individual theatre, team and surgeon level should be available, ideally published in real time. These should be communicated, used to manage scheduling, and comparative data (with each other, with external peers) used to raise awareness of variation, benchmark and drive improvement. Improvement needs to be recognised and rewarded. Some extra observational mapping of all the pathway steps (i.e. not just in theatre) and flow may be required to identify where any blockages lie. Ensure however that data is assessed not in isolation of all relevant factors. A surgeon who does ten cases on a list may be only prepared to handle straightforward cases, one with five may take all the difficult cases. Using a clinical complexity scoring system to identify how much theatre time is required for each case may assist in identifying these issues.

3. Take all possible actions to minimise cancellations and late starts, and optimise turnaround times.

Also suggested were:

- Have good layout and ergonomic design of relevant areas e.g. have theatres near day case area.
- Risk stratification with high volume standardised pathways for low risk cases.
- Avoid complications: through good pre-op assessment, patient education, standard strategies and protocols to manage high risk cases including appropriate choice of surgeon and anaesthesia.
- Better pre-op assessment to identify and manage risks and difficulties (e.g. communication, positioning issues etc.), select patients for different lists based on suitability and risk, and ensure patients are educated, engaged and as prepared and cooperative as possible in their preoperative care and during surgery.
- Use non-medical clinical staff in extended roles inside and outside theatre (e.g. nurses to deliver local anaesthesia, or to complete operation note) or use them in different ways e.g. same nurse accompanies patient through whole admission day journey. Trial different staff configurations and practices to see which works best. High volume lists may need *more* non-medical staff to achieve but may still be more cost effective overall. Learn from other units.
- Standardised, documented and understood pathways and protocols for pre-op and theatre processes and postop care.
- Optimise scheduling and ensure an active senior theatre scheduler as a close member of the surgical team. Schedule realistically based on surgeon's speed if there is variation.
- Extended hours for theatres (11.5 hour days).
- Incentives are possible in the NHS setting to motivate surgical teams, such as:
 - allowing a surgical team to leave theatre once it has completed its expected target volume and mix of procedures for each list.
 - employing staff on contracts that account for productive use of time; for example, contracts that specify the expected procedure volume and mix of surgical activity rather than the number of theatre sessions or blocks.
 - linking job plans and support resources for surgeons to outcomes and productivity.
- Have consistency in the surgical team with the same people working regularly together if they work well as a team.

Here are some other useful tips from the RCOphth Ophthalmic Clinical Leads Forum and Quality and Safety Group:

- Inserting dilating drops at home, or using pellets such as Mydriasset
- Be aware that some surgeons will be slower and beware that attempts to increase speed too much or too quickly may cause stress and errors. Stopping slower surgeons operating completely might have knock on effects for their ability to offer full on-call surgical service.
- When undertaking process mapping/ time and motion audit, consider using a statistical approach such as the 80th centile as a "standard" time, and think about what was the usual cause of delay and address it.

- Turnaround can be aided by:
 - altering the timing of moving patient to theatre
 - alternating scrub nurses
 - nurse skills e.g. nurses prep and drape the patient
 - do all left sides together
 - think about how and when you do the pauses and briefs
 - timing coffee breaks
 - use two theatres or operating tables
 - streamlined paperwork / IT records
 - agreed/standardised post drops
 - enough ward staff
 - walk in walk out vs wheeled
 - hoist in ward not in theatre etc.

- Consider surgical instruments and consumables. Use preloaded IOLs, simplify and standardise tray lists, and have extra instruments defined at brief.
- Surgical technique can be changed for instance "stop and chop" can be quicker than divide and conquer.
- For slow surgeons, video their surgery and also get someone to video camera them preparing – adjusting their chair, adjusting the microscope repeatedly - and get the surgeon to watch it.
- The phase of procedure with most scope for time reduction is prep and drape.
- Having fast adopters keen to try tweaking and encouraging refinement of process creates impetus to improve throughput - and trains the nurses who are then prepared for the slow adopters and "up and running" - and peer pressure may intervene.
- No distractions – no calls for supporting A&E or trainee and nurse queries from outpatients to interrupt.
- No on-the-day consenting
- Ensure complexity and trainees are accounted for
- Ensure any EPR is suitable and rapid for recording operative details.

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Authors: Melanie Hingorani, RCOphth Chair of Professional Standards

Nick Wilson-Holt, RCOphth Chair of the Quality and Safety Group

With thanks to the RCOphth Clinical Leads Forum, Theatre, Nursing, Anaesthetic and Preassessment staff of Moorfields Eye Hospital, British Ophthalmic Anaesthesia Society (BOAS), Clinical Leads for Ophthalmic GIRFT.

Appendix: Key time points on the day of surgery

