

## **Sunderland Eye Infirmary: A case study of high throughput cataract surgery**

**Sunderland are recognised nationally as consistent providers of high quality high throughput cataract surgery. They perform around 7500 cataract operations per year, or 170-180 per week. There are a number of ways in which they have transformed the service to achieve this. I visited to try and work out what made them so productive and what were the key learning points for those who wish to replicate their methods.**

### **Preoperative pathway**

Preoperative planning and matching the list and surgeon to patient requirements is key.

Preoperatively, patients are seen in a “one-stop” assessment in the cataract clinic at the base hospital, where they meet their named nurse; and undergo ophthalmic and preoperative assessment including biometry and anaesthetic assessment. The clinic includes consultants, nurses and optometrists working in extended roles, and junior doctors working to assess the patient. The clinic is well supported by consultants who closely supervise all the surgical decisions taken by non-consultants. The first stage of the consent process is completed, that is the detailed risk benefit discussions, although patients do not sign the consent form at that point but do take away a detailed consenting information leaflet. . Patients are offered a choice of anaesthetic (local topical, local subtenons block, topical +sedation, block + sedation) in consultation with their nurse, taking into account their wishes and surgical and patient related challenges (e.g. complex eye, difficulty keeping still). Patients receive their operation date and the postop clinic date before leaving clinic.

There are pooled waiting lists, which work well because all surgeons adhere to the same processes, but lists are planned as 3 main types, high volume, complex-sedation and training lists, and the number and type of patients and staff on the list is adjusted accordingly.

### **Integration of the whole pathway**

The pathway uses a standardised booklet for record keeping for the whole cataract care pathway including clinical proformas which is notable for:

- It's very clear layout with good size font and plenty of room to write and record information
- Use of many tick boxes for standardised responses
- The Plan of Care booklet and cataract paperwork consists of separate sheets which means updates can be made without serious printing costs
- The booklet is frequently updated to improve as learning arises.
- The clinicians are entering legible and comprehensive entries in the notes.

The estates layout (below) ensures that all cataract related areas are housed together. The same clinical staff work in both outpatients and theatre, which is usual for doctors but novel for the ophthalmic nursing staff. This means that the nurses really understand the importance of how the theatre processes and outpatient processes fit together and how actions in each area affect efficiency and safety. The outpatient nurses follow the patient around the whole day surgical path (see below)

and where possible the nurse who saw the patient in the clinic is the same nurse who accompanies them on the day of surgery. This provides consistency, a joined up pathway and a great patient experience.

### **Layout**

There is a dedicated cataract clinic which is located adjacent to the cataract theatres and they share the same reception check in desk, providing a cataract care suite. Patients arrive at a dedicated reception for the theatre area and cataract clinic. Interestingly, patients are asked to queue behind a barrier before they can go up to the desk to protect patient confidentiality, and there is a sign displayed explaining this.

The cataract surgery theatre area is a purpose built, twin theatre surgical unit with an adjacent small waiting area. Each theatre has a 4 room complex consisting of prep room, anaesthetic room, theatre and recovery room, which allows the patient to be prepped and to recover away from the open waiting room but directly adjacent to the theatre room, supporting maximum use of the theatre room for the performance of surgery rather than for perioperative tasks and ensuring optimum patient privacy.

### **Staffing and numbers**

The nursing support for the lists is greater than for most units. There is one band 5 nurses for every 2-3 cases on a list who are the same nurses as in the cataract clinic. This allows for a named nurse to accompany the patient throughout their surgical journey, which reduces repetition and handovers, provides one member of staff to oversee patient safety and checks, and significantly reduces theatre turnaround times, and is hugely reassuring to the patient. It also allows the patient to continue to ask questions and have information provided to ensure they are as prepared and read as possible for surgery and therefore can cooperate well.

For high volume lists, there is one consultant surgeon, no trainee, with 2 scrub nurses, 1 circulating nurse (runner) and 4-5 named nurses, operating on 10-14 patients (depending on complexity and which consultant) per list.

For training lists, there is a senior surgeon and a trainee, with 1-2 scrub nurses, 1 runner and 3 named nurses doing 6 cases with a junior trainee, 8 with a senior trainee.

For complex or sedation lists there will be an anaesthetist and numbers are determined by complexity but around 8 to 10.

Anaesthesia is mainly topical. There are several lists per week supported by anaesthetists for blocks or sedation but anaesthetist delivered blocks are usually sharp needle not subtenons.

### **The pathway on the day**

Consultants check notes usually the day before and select and documents the required IOL by marking the biometry sheet and often also writing the IOL on the sheet at the bottom (note there is a process in clinics to highlight unusual IOLs or biometry before the day). This will be discussed with surgeon giving plenty to order special lens.

Patients arrive at the dedicated reception for the theatre area and cataract clinic and have a staggered arrival; the patient will wait for a few minutes in a small unstaffed waiting room. The notes are in a basket in an office adjacent to theatres and the named nurse will go through and check the notes, then get the IOL and put it into the notes. They take the notes with the IOL and call the patient and take them to the prep room in the theatre suite where they are checked in with privacy, going through health checks, paperwork etc. There are small lockers to leave personal effects. Then the nurse and patient enter the anaesthetic room and the patient is seated on mobile operating couch in the upright position. They conduct the WHO sign in, checking with the patient and against the records and the wrist band and a patient id sticker which is attached to the patient's upper clothing but only 1 member of staff conducts the checks.

Note that as an extra check the wristband and the patient id sticker are placed on the same side as the side of the cataract surgery. The dilating drops are started – but note that and the consent form is shown to the patient, the nurse confirms they have had the consent discussion at the clinic and ensures they understand and have no further questions and the patient and the nurse sign the consent form. The nurse can chat with the patient about any concerns, what to expect etc as they wait. The surgeon comes in between cases and greets the patient, asks the patient to confirm their identity and what side, and marks the eye but does not examine the eye. The surgeon then checks the notes and reconfirms the IOL choice and checks against the IOL box in the notes and marks the checklist boxes in the surgical booklet. This is essentially the time out but is done quite informally. Note that some surgeons don't use dilating drops (just diclofenac to stop the pupil coming down intraoperatively) or some do but there is so little time in the anaesthetic room that even with drops, patients are often not fully dilated. This is dealt with by using intracameral lidocaine and phenylephrine in BSS prepared locally on the table.

The nurse then instils the iodine into the eye and also preps the face – and once done, most of the iodine is wiped off/dried. The scrub nurse who is not operating (there are two) will pop in and introduce themselves to the patient and then conduct a detailed reassessment of the biometry, the patient, re-confirms the IOL and signs in the safety check list for cataract procedure. When theatre is ready, the patient is then wheeled through on the operating couch into theatre by the named nurse. Whilst this is happening the surgeon can pop out to see the next patient. The couch is set to the flat position and takes the patient to a lying down position using pre-programmed settings potentially for the individual surgeon and the scrub nurse then puts on the drape and inserts the speculum and places microscope over patient. Whilst the surgeon scrubs there is no time out check in theatre. There is no side arm on the couch and the drape is simply lifted a little off the face or cut away if the patient is claustrophobic.

The named nurse sits by the patient's side, ready to hold hand if required, and pulls over a useful trolley mounted/ mobile computer terminal which they use to enter the patient on the theatre system. The nurse complete the paper op note and some of the electronic notes during the operation. The surgeons have very modern high quality phaco equipment and probes and an *automated* injectable IOL. Intracermal cefuroxime is used but no antibiotic drops at the end of the operation.

At the end of the operation, the scrub nurse removes the drape, and cleans the iodine off the face. In addition, they do NOT apply a protective shield nor is the patient instructed to use one

postoperatively. The surgeon can add any unusual steps to the op notes as required that the nurse has missed. Although the nurses check the equipment there is no sign out confirmed verbally to the whole team, unless a suture is used in which case a formal needle count is confirmed to the surgeon. The patient is wheeled out on the couch with the named nurse to the recovery room where the couch is returned to the sitting position. They are then taken back to the initial admission/discharge room by the named nurse for the discharge. The postoperative instructions are briefly rechecked and it is confirmed the patient knows when their post clinic appointment is. The patient or their relative then leaves and obtains their own drops from the hospital pharmacy. The nurse returns to the office and finishes off the op note and e-discharge and then gets the next set of notes and on to the next patient.

Throughout the whole theatre session, there is no feeling of being rushed, all were calm, there was time for a debrief chat and coffee, and patients and staff very engaged and satisfied. This was the case even during a case that was highly complex with multiple ocular and patient difficulties/risks. **The whole journey is 1-2 hours for each patient.**

#### **Secrets of success:**

In my opinion, the three most important factors delivering the high throughput, all of which I believe are replicable in many other units, were:

- Significantly more ophthalmic nurses allocated to the list who accompany the patient through the whole journey and who do many of the traditionally medically delivered perioperative tasks including the skin prep, op note and consent. However the increased income from operating on more patients can cover that extra staff cost and still be profitable.
- Separation of training, business and complex/sedation lists and very careful preop assessment with allocation of time or list individualised, for each patient based on risks and requirements
- Patients ready for surgery located very near the operating theatre ready to come in quickly.

Other important specific factors are:

- The same nurses in theatre and cataract clinic so they understand the whole pathway and consequences if any one element of care goes wrong.
- Nurses doing skin iodine prep, and drape and speculum insertion
- Scrub nurses reconduct IOL selection check
- Reduced or bespoke WHO checklist methodology
- No exam on the day from surgeon but compensated by a hospital based detailed preop assessment system
- Heavy consultant delivery of surgery and in clinic clear consultant oversight of listing
- Use of intracameral dilating medications
- Patients wheeled from room to room on the operating couch/seat so no transfers in theatre
- Very good well laid out surgery record booklet filled in very well

Culture factors:

- Consistent small team who have all worked together for years – they need very little formal communication as they know each other and the pathway and tasks so well
- Non-hierarchical – nurses check IOLs and will challenge if needed
- Ruthless elimination of extra steps where there is no evidence of benefit e.g. use of the eye shield, use of side arm to lift drape off face
- Whole team concentration on efficiency and safety with willingness to constantly adapt processes and learn
- Ability of the team to develop and adapt methodology specifically for ophthalmology not limited by standardised requirements for other specialty theatre processes
- Consultant leadership and engagement in service improvement
- Consultant appointments often given to those they have trained themselves
- All adhere to the same operational processes and decision making processes

## Results

The Sunderland outcomes are excellent. They have had a 0.036% endophthalmitis rate (reference rate 0.1%) with no such infections last year, have had no never events reported and achieve over 96% friends and family test score, with 5 stars rating on NHS Choices. However they are not currently able to submit to the NOD national cataract audit without a suitable EPR but internal audits show low PCR rates.

## How easy is this system to replicate and what might be the barriers?

There are many elements of this system which could be replicated without great difficulty but there are some areas which may be perceived as difficult to overcome especially in units which are not so close knit or so ophthalmic specific:

- Community preop clinics and direct listing by optometrists could be difficult and require a precheck by the surgeon preop
- All surgeons need to adhere to the same processes and decision making methods
- Separating training lists can be difficult in units with high trainee and fellow numbers
- More nursing staff are required
- Non-standardised WHO checklists but risk assessed by the trust.
- Willingness to operate without fully dilated pupil at the beginning of the case.
- Willingness to abandon commonly or traditionally used steps

*Melanie Hingorani*

*Consultant Moorfields Eye Hospital, Chair UKOA*

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