

**Elective report: Anaesthesia at Barts Hospital**

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Objectives: What are the anaesthetic aspects of pre- and post-operative management in relation to medical conditions that are prevalent in an urban UK setting?

How is peri-operative patient management organised and delivered in London?

Become familiar with the role of anaesthesia in peri-operative patient care.

Improve my knowledge of peri-operative patient management, and of the drugs and monitoring used in anaesthesia and post-operative care.

Gain experience in practical procedures.

Anaesthetists make up the largest specialty in hospital, and they play a major part in running the hospital, by coordinating the multidisciplinary team between surgeons, operating department practitioners (ODPs), theatre nurses, porters and recovery staff. Being an anaesthetist requires a thorough understanding of medicine and surgery as well as physics, chemistry - especially in relation to gases and electrical equipment - and physiology and pharmacology. The job of an anaesthetist is varied, and one's list may include orthopaedics, gynaecology, vascular surgery, general surgery and dental procedures, among other disciplines. An anaesthetist can be part of trauma and cardiac arrest teams, and specialize in intensive care medicine and pain management. From what I observed during my elective, the training is very well supervised, with direct consultant supervision and teaching on a daily basis.

The role of the anaesthetist in a patient's peri-operative care begins with the pre-operative assessment. Important points in the history include the presence/absence of chest pain, shortness of breath, palpitations, recurrent infections, as well as the patient's exercise tolerance. The key question is, is the patient as well as they can be? And if not, what can be done to improve them? Important points in the past medical and family history include past conditions, HIV, hepatitis, previous procedures, anaesthetic problems, unexpected admissions to ITU, and hereditary conditions. For the drug history, a patient must be asked whether they are currently on any drugs, whether they have any allergies, and whether they smoke, drink, or use illicit drugs. The patient will be graded according to their physiological reserve, with the American Society of Anaesthetists' (ASA) score the most common scoring system. The ASA score has been shown to be a gross predictor of overall peri-operative outcome. Afterwards, a physical examination is performed, in which the airway is assessed to predict the difficulty of intubation. Factors which make intubation more difficult include a short neck, small mouth, obesity, and neck/flexion extension limitations imposed by conditions like rheumatoid arthritis and ankylosing spondylitis. The Mallampati scoring system is a visual scale based on vertical distance between tongue and soft palate that is used to assess intubation risk. The patient is examined systematically for murmurs, abnormal breath sounds, masses and skeletal malformations.

Depending on the patient, further tests may include a chest X-ray, ECG, echocardiogram, and PEFr. A cross match and/or group and save is usually done. A cross match is indicated if the patient requires a blood transfusion, and a group and save if the patient is unlikely to require one. Blood tests include full blood count, indicated when large intra-operative blood losses are expected, sickle cell tests, clotting, U+Es - indicated when biochemistry is deranged - and liver function tests in those with known liver problems or at a high risk of developing them. The patient is then optimized for surgery. Cardiovascular considerations include previous acute coronary syndrome, uncontrolled hypertension, arrhythmias, and prophylactic antibiotics are given if there is a risk of infective endocarditis. In the respiratory system, asthma can be optimised with a beta-2 agonist, and the patient should be advised to stop smoking at least 24 hours before anaesthesia. If the patient has a cold that causes excess secretions with mucus plugging, that has to be taken into consideration as well. Diabetics are put first on the operating list, undergo regular glucose monitoring and require a change of route of insulin administration. As part of the pre-operative preparation of the patient, adults must be starved of solids for 6 hours to minimize any risk of aspiration during induction. Water may be allowed up to 2 hours before elective surgery. Some drugs can be continued, such as beta blockers, while others such as aspirin must be stopped. For some drugs, the route of administration needs to be changed. Informed consent must be obtained from the patient. The triad of anaesthesia includes the induction of a reversible state of unconsciousness, muscle relaxation and analgesia. The stages of induction are, respectively, airway evaluation, anaesthetic preparation, pre-oxygenation through a face mask, drug administration, mask



ventilation, laryngoscopy, securing the airway with a laryngeal mask airway (LMA) or tracheal intubation, and confirmation of a secure airway. Propofol is the most common IV induction agent used in the UK. A neuromuscular blocking agent is often given simultaneously with the induction agent. These drugs aid intubation and, later on, aid the surgeon's incision through muscles. After the induction agents are injected, the airway is secured. For tracheal intubation, a laryngoscope is used to see the larynx and vocal cords to help insertion; fiberoptic scopes can be used in difficult cases. Once fully inserted, the cuff is inflated to secure its position. Although LMAs are much easier to insert they do not guarantee that aspiration won't occur. After the airway is secured, it is connected to a ventilation system which controls the patient's breathing. The circle system is the most commonly used ventilation system. Maintenance of anaesthesia uses a combination of inhalational agents, IV agents and muscle relaxants. Intraoperatively, the role of the anaesthetist is to ensure that a sufficient depth of anaesthesia is continuously achieved. Airway, breathing and circulation are checked constantly, and any compromise is treated accordingly.

After the operation, the patient is calmly reoriented and monitored in the recovery room, a warm well-lit area close to the operating theatre. This is also where vital signs and pain are assessed. Before a patient can be transferred to the ward, he must be able to maintain a secure airway independently with intact airway reflexes, breathe spontaneously with adequate oxygen saturations, be haemodynamically stable, awake, normothermic and pain free. Once a patient is safe, discharge can be planned.

I spent my 5-week elective in anaesthetics. Here I shall describe a typical day in the specialty:  
**7.45 am**—On Friday we had a journal club on any topic related to anaesthetics by a trainee in the department.

**8.15-8.30 am**—Although patients have attended a pre-op clinic for anaesthetic risk assessment, they need to be reassessed on the day for fitness for surgery, in case anything has been missed or has changed, especially with regard to respiratory and cardiovascular function and aspiration risk. Things to be assessed include the patient's airway for ease of intubation, previous medical, surgical and anaesthetic histories, and dentition. In addition the patient needs to be warned of potential complications and be given a short explanation of the anaesthetic process, and a chance to ask questions. I was able to help out the anaesthetist doing these assessments on several occasions; the task was made substantially easier by following the prompts on the anaesthetic risk assessment sheet.

**9 am**—I helped the anaesthetist draw up the drugs, cannulate the patient, and take over the airway. Over the course of my elective, I put in multiple LMAs, and I also did a couple of intubations under supervision. I am sure that these airway skills will prove to be invaluable for me as a foundation year house officer next year. I also observed central lines being placed; these are inserted into the internal jugular or subclavian vein, when there are doubts about a patient's cardiovascular function.

Upon transfer to the theatre patients are connected to the anaesthetic machine, which helps to maintain anaesthesia, ventilates the patient and monitors their vital signs. When the patient is stable the anaesthetist is often happy to provide teaching, allowing me to get several tutorials signed off.

**12.30 pm**—Lunch.

**1 pm**—Preoperative assessment for the afternoon list.

**2 pm**—Afternoon list.

**5 pm**—Finish.

Overall the elective was an excellent opportunity to practice practical and airway management skills. Although basic skills like cannulation can be acquired to a lesser extent on standard medical and surgical wards, it is a unique opportunity to have an experienced anaesthetist talk me through things and be at hand in case I fail. Regardless of whether I

decide to pursue anaesthetics as a career, I have learnt valuable transferable skills that can be put to use next year as I take up my foundation year post.