13 November 2015
No. 35

Excellence in Anaesthesia

Mohamed Raiman

Moderator: Dr A Torborg

School of Clinical Medicine
Discipline of Anaesthesiology and Critical Care

CONTENTS

EXCELLENCE IN ANAESTHESIA

INTRODUCTION

Let us ponder for a moment on what we do. We take a functioning system, the human physiology (albeit sometimes malfunctioning - pathophysiology), we manipulate it (using an in depth understanding of pharmacology and physics of the equipment we use) in order for it to be exposed to a stressful physical insult (the surgery) in order for it to emerge with minimum repercussions and maintained homeostasis. Is that not beautiful? So, enough of this, "I am your anaesthesiologist and I will make you sleep" nonsense.

Anaesthesiology is the oldest medical field. It predates all surgical and medical specialities. TG Morton, a dentist, is traditionally recognised as performing the first public demonstration of general anaesthesia using ether in 1846. The first mention of anaesthesia, however, appears MUCH earlier. As far back as the creation of man or woman, more specifically.

In the book of Genesis in the Old Testament the following is found...

> *"So the Lord **God caused the man to fall into a deep sleep**; and while he was sleeping, he took one of the man's ribs and then closed up the place with flesh"*
>
> **Genesis 2:21**
> **Author: Moses *per procurationem* God**

So, if one believes in scripture and hence creationism, the 1st recorded operation board would look something like this:-

OPERATION	RIB RESECTION (for the fashioning of woman)
ANAESTHESIOLOGIST	GOD
SURGEON	GOD
PATIENT	ADAM
ESTIMATED BLOOD LOSS	NEGLIGIBLE
ANAESTHETIC CONCERNS	HIGH RISK FOR CHRONIC PAIN

Being the final registrar talk for the year and my 3rd and final Friday morning talk as a registrar my topic is more of a reflective and introspective one rather than one that is loaded with hard facts and bits of information. Our curriculum is focussed on the memorisation and regurgitation of facts. This task, whilst vital, is not enough to develop and cultivate excellence in anaesthesia. Formal anaesthetic education is focussed on attaining competence. Excellence is the next step.

I will attempt to define the characteristics, qualities and habits of anaesthetic excellence and highlight some of the lessons learnt during my time as a registrar. Those learnt through personal experience and reflection and those passed on by teachers and more experienced colleagues.

We function in a high workload and high stress environment with limited resources, stress of exams and other registrar academic commitments. There are many boxes to tick and hoops to jump through in relatively tight time frames. Added to this are our other commitments in terms of familial and personal responsibilities. Further, we are lured and consumed by the rat race that is materialism and consumerism – the constant need to acquire, spend, and consume – to have the latest iPhone or the smartest car.

All of these distractions leave little time for reflection and contemplation. Contemplation on our purpose in life in general but specifically on the many invaluable lessons to be learnt from colleagues and the patients we encounter.

WHAT IS EXCELLENCE?

The Oxford definition of excellence is, “the quality of being outstanding or extremely good.” This definition, however, implies comparison to others or a standard or benchmark. Whilst that may have some merit, my impression of excellence is the constant striving and pursuit to be the best one can be. Striving to constantly improve and work toward ones potential in the various roles we have – in the workplace as an anaesthesiologist, care-giver, administrator, clinician, teacher; at home – as a father, husband, son, brother and in the community in our various and often neglected social responsibilities – neighbourhood watches, social welfare and community organisations etc.

“If a man is called to be a street sweeper, he should sweep streets even as Michelangelo painted, or Beethoven composed music or Shakespeare wrote poetry. He should sweep streets so well that all the hosts of heaven and earth will pause to say, 'Here lived a great street sweeper who did his job well.”

Martin Luther King Jr.

“To give one’s best, on the field of play or in life. It is not only about winning, but also about participating, making progress against personal goals, striving to be and to do our best in our daily lives.” Excellence, as defined by the International Olympic Committee.

Excellence is a journey, not a destination. You can never attain a state of excellence; you can only continuously strive for excellence. It is a pursuit, not an end point. It is a habit rather than an isolated act.

There is a term in Islam that appears many times in the Quran – the meaning of which includes this concept of excellence...

IMPORTANCE OF STRIVING FOR EXCELLENCE

The quest for constant improvement is a great motivator. It helps prevent complacency and stagnation. It is an admirable quality that is a fundamental ingredient of progression and positive change.

"Striving for excellence" has been a personal motto in my life. It is what drives me to perform to the best of my ability and to constantly apply myself toward improvement. It stems from a deep seated spiritual and religious motivation: to fulfil ones potential is the best form of acknowledgement and gratitude one can show for one's many God given gifts. Conversely, failure to realise or fulfil this potential; failure to strive to the best of one's ability; settling for mediocrity and working within one's potential – are a rejection of the talents and abilities we have been given.

Nelson Mandela once said,

"There is no passion to be found playing small – in settling for a life that is less than the one you are capable of living."

EXCELLENCE IN ANAESTHESIA

So what is excellence in anaesthesia? Whilst this is difficult to define and measure, there are certain characteristics or behaviours that I feel are important. I began by brainstorming what I thought were important components of excellence in anaesthesia: -

- Empathy
- Professionalism
- Pattern recognition
- Anticipation
- Situational Awareness
- Insight
- Wisdom
- Compassion
- Humility
- Confidence
- Good technical skills
- Adequate and up to date theoretical knowledge
- Teamwork
- Communication
- Patient advocacy
- Professionalism
- Respect
- Attention to detail
- Punctuality
- Meticulous
- Integrity
- Ethical practice
- Leadership
- Rational decision making
- Good teacher/educator
- Good administrator
- Ability to perform under stressful emergent conditions
- Interest in research – take field forward.

If we were to try and organise these, we would perhaps consider the different roles of an anaesthetist:-

1. Clinician
2. Administrator
3. Educator
4. Researcher

ANAESTHESIOLOGIST, THE CLINICIAN

For most anaesthesiologists the bulk of our time would probably be spent in clinical care. As perioperative physicians our primary responsibility is excellent patient care. This entails the best possible outcome for the patient in both the short and long term. This could mean postponing or avoiding surgery altogether, optimization for surgery, selecting the most appropriate anaesthetic technique, good conduct of anaesthesia and post-operative care.

Specifically, it requires:-

Theoretical Knowledge

Developing and maintaining a solid and up to date theoretical base is vital. Medicine in general and anaesthesia specifically is a field that is constantly developing and changing. New drugs, new techniques, new equipment and new knowledge are common. What we had studied in our time as a registrar for the FCA quickly becomes out-dated. Examples to illustrate this abound:- Beta Blockers for the cardiac patient for non-cardiac surgery (POISE); steroids in sepsis YES or NO (CORTICUS); glycaemic control – tight or not so tight (NICE SUGAR); Aspirin – to stop or not to stop? (POISE 2); Fluids in ARDS – liberal vs. restrictive vs. somewhere in between?

Speciality specific CME programs, courses, congresses and journals are important in maintaining and updating the theoretical knowledge of an excellent anaesthesiologist.

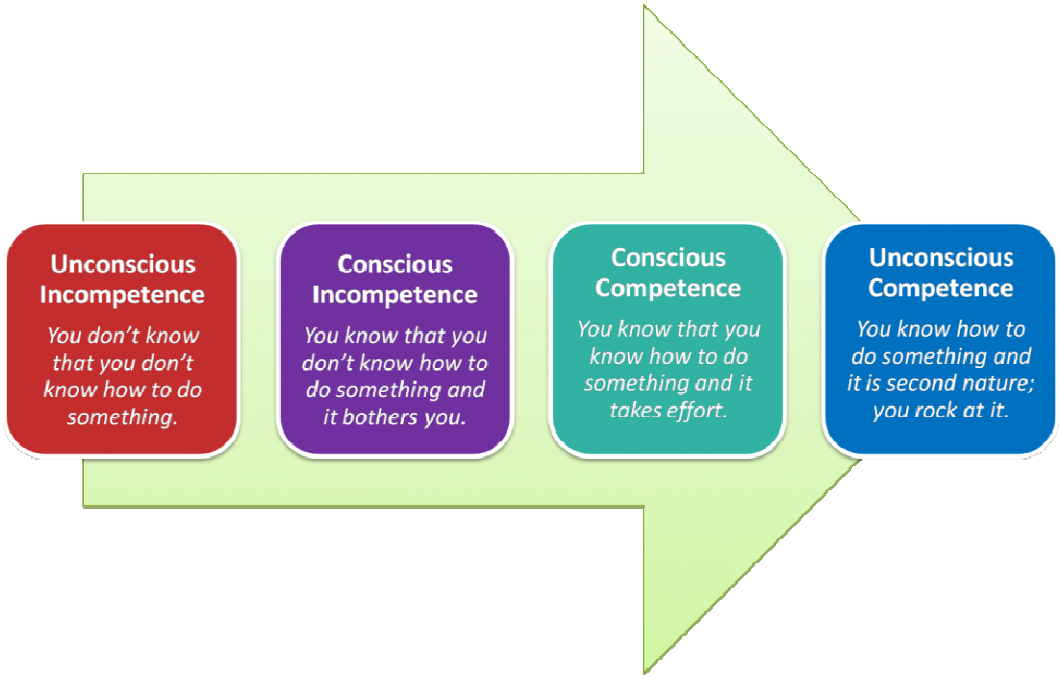
Technical skills – "A good hand"

Anaesthesia requires a fair amount of technical skills. It lies between the extremes of the theoretical nature of internal medicine and the technical nature of general surgery. Intubation, neuraxial blocks, nerve blocks, lines (central lines and arterial lines) are all known to be important skills essential to any anaesthesiologist. Mastery of technical skills is an essential quiver in the bow of an excellent anaesthesiologist. Whilst the technique can be easily read from a textbook (how to insert a CVP for instance) or watched on a YouTube video, competence and then mastery is a process which comes only with good supervision and lots of hands on practice. Firstly, learning good habits from somebody experienced – the subtleties which ensure success – then practice, practice, practice.

One of our internal medicine lecturers at UKZN, Prof Pudifin, who has now passed on, would often tell his medical students with regard to the appreciation of 'subtle' medical signs the joke about the tourist in New York who asked, "How do you get to Carnegie Hall?" A man holding a violin case responds, "Practice, practice, practice."

The four stages of learning model describes the usual process that one goes through in acquiring a skill.

- **Unconscious incompetence** or ignorance with a lack insight of one's ignorance where one either does not recognise their deficit or denies the usefulness of the skill.
- **Conscious incompetence** where one recognises the deficit or the usefulness of the skill they lack – these are the most eager learners.
- **Conscious competence** where one can perform the skill but it takes a concerted effort. Until one reaches the stage of…
- **Unconscious competence** or mastery of the skill (technical excellence) where it becomes second nature.



Four stages of learning[1]

Further than these technical skills, there is a somewhat intangible skill that is required of the budding excellent anaesthesiologist. We often see some of our experienced 'elders' managing to sail smoothly through what was a potentially hazardous case without hiccup. This flair in theatre or *je ne sais quoi* (that little undefined something) is a skill which whilst difficult to define, can be imbibed whilst observing and working with these masters of the trade. It is difficult or impossible even to learn from textbooks or journal articles; it is passed on from teacher to student. I will, however, attempt to define some of these qualities below under "anaesthetic non-technical skills".

Anaesthetic Non-technical skills (ANTS)

ANTS was adopted from the aviation industry where in the 1970's it was realised that the majority of aviation incidents were due to problems of human failure rather than technical error. ANTS was designed to help anaesthesiologists recognise and assess the non-technical behaviours, skills and actions that are components of excellence in anaesthesia. Non-Technical skills can be defined as "the cognitive, social and personal resource skills that complement technical skills, and contribute to safe and efficient task performance."[2]

ANTS encompass both interpersonal skills e.g. communication, team working, leadership, and cognitive skills e.g. situational awareness, decision making. Such skills are not new in anaesthesia; excellent anaesthetists have always demonstrated these competencies. In the past, these skills have not been explicitly addressed through any formal education and trainees have had to acquire them along the way.[3]

ANTS is now a skills and behavioural rating system as well as a formalised program and course developed to teach and highlight these non-technical skills. The ANTS skills framework has 4 categories: Situational Awareness, Task Management, Teamwork and Decision Making.

The Anaesthetists' Non-Technical Skills (ANTS) System Handbook is an excellent resource available online.[3]

Decision Making

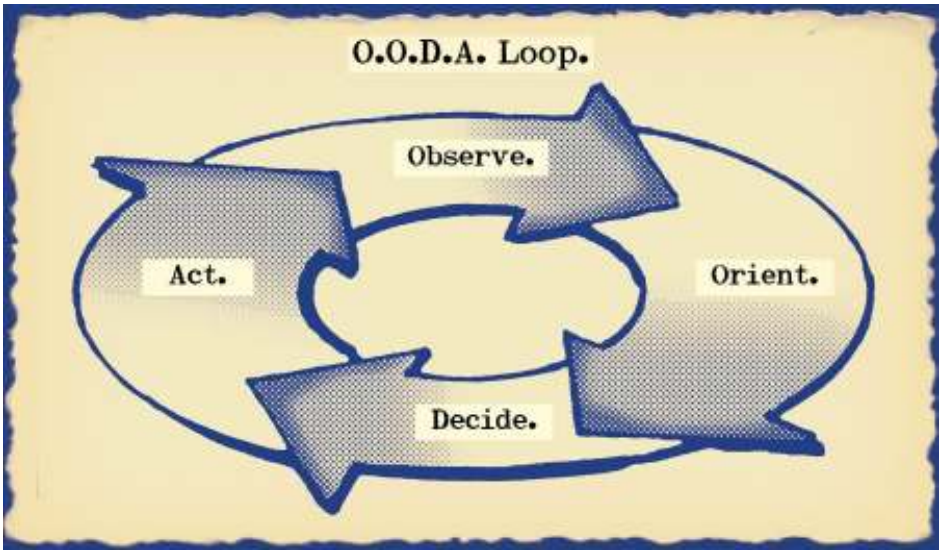
Rational decision making is a key component in anaesthesia. For your final FCA examination you will constantly be pushed into making difficult decisions. We are required to make decisions in emergent and high pressure situations. Keeping a clear and level head is vital. A solid theoretical base enhanced and directed by experience informs these decisions.

Balancing risks and benefits of interventions, diagnostic tests and treatment options is a daily task. In the ideal world complex cases are discussed by a multi-disciplinary team who together weigh up conflicting risks and benefits. This rarely happens practically and is often an issue when deciding on whether to operate or not on a patient with many co-morbidities.

As anaesthesiologists we can risk stratify and prognosticate on perioperative outcomes but we often do not have all the information needed. Outcome without surgery, disease specific prognostication (e.g. In the many different types of malignancies) and survival rates, and the other therapeutic options available are often not known by us. Involving the patient and the family in the decision making process is also of utmost importance to patient centred care and proper informed consent.

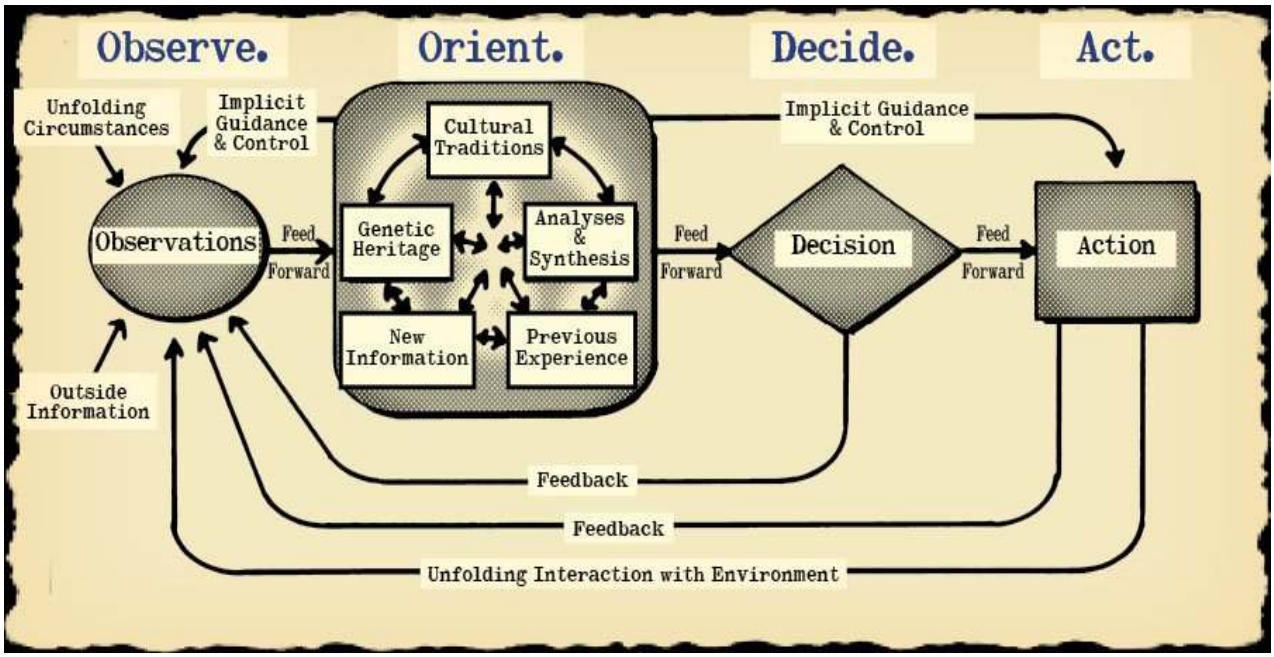
The OODA Loop

The OODA Loop is a learning system and decision-making process that was first described by Air Force fighter pilot and military strategist John Boyd. The four steps of the OODA Loop are Observe, Orient, Decide, Act.[4]



The OODA loop is a mental tool that helps one rapidly gather and comprehend the information available then decide and implement a course of action. It is useful in both the non-emergent and in the emergent settings. When called for a resus for example, one needs to quickly assess the situation and events preceding (observe and orient) then

decide on the appropriate course of action. Senior anaesthetists display this when called to theatre for a problem – a quick assessment of the situation, decide on a course of action then reassess. A more detailed OODA loop proposed by Boyd is found below.



Failure to make a decision (indecision) or making a decision that is irrational or not well informed are both examples of poor decision making skills. Failure to consider all options and weigh up the pros/cons of each, not re-evaluating the decision made and adjusting subsequent decisions based on previous response are further markers of poor decision making.

Team work

Good team work, co-ordination, communication and cooperation are important skills for the anaesthesiologist. In the theatre environment we are directly reliant on our co-workers – the anaesthetic assistant and the rest of the intraoperative team – to work together toward optimal patient outcome. In an emergency scenario these aspects become more important. Clear communication and assignment of roles have been stressed in a previous FMM talk “Crew resource management” and will not be delved into further here. Suffice it to say that these are essential elements to anaesthetic excellence.

Professionalism, courtesy, respect and etiquette toward team members and co-workers are characteristics of excellence in anaesthesia. Sadly, too often do we see these only exhibited when interacting with colleagues or superiors. Yet, when interacting with those whom are perceived to be of a lower status (professionally or otherwise) for example cleaners, porters and even nursing staff we are found lacking in these qualities.

“If you want to know what a man’s like, take a good look at how he treats his inferiors, not his equals.”

Sirius Black. Harry Potter and the Goblet of Fire.

Individualism, failure to involve the team in tasks, intervention without informing/involving others, poor communication, poor co-ordination with surgical team, relying on team familiarity and making assumptions are markers of poor team work.

Task Management

Planning, preparation, prioritization, identification and utilization of resources, task allocation and maintenance of standards are all key components of anaesthesia; for example, planning and preparing for a major case or a difficult airway.

Failure to plan, prepare, prioritize, arrange the necessary resources in advance, or overloading team members with tasks show poor task management.

Situational Awareness

Situational awareness is defined as "the perception of elements of the environment within a volume of time and space, the comprehension of their meaning and the projection of their status in the near future."[5]

The ability to multitask and be cognisant of a number of sensory inputs, sometimes subconsciously even, are hallmarks of the experienced excellent anaesthesiologist. Being aware of the stage of the operation, amount of blood lost, the vital signs and any possible threats to patient safety all whilst doing the crossword puzzle (or teaching trainees, hopefully) are characteristic of good situational awareness.

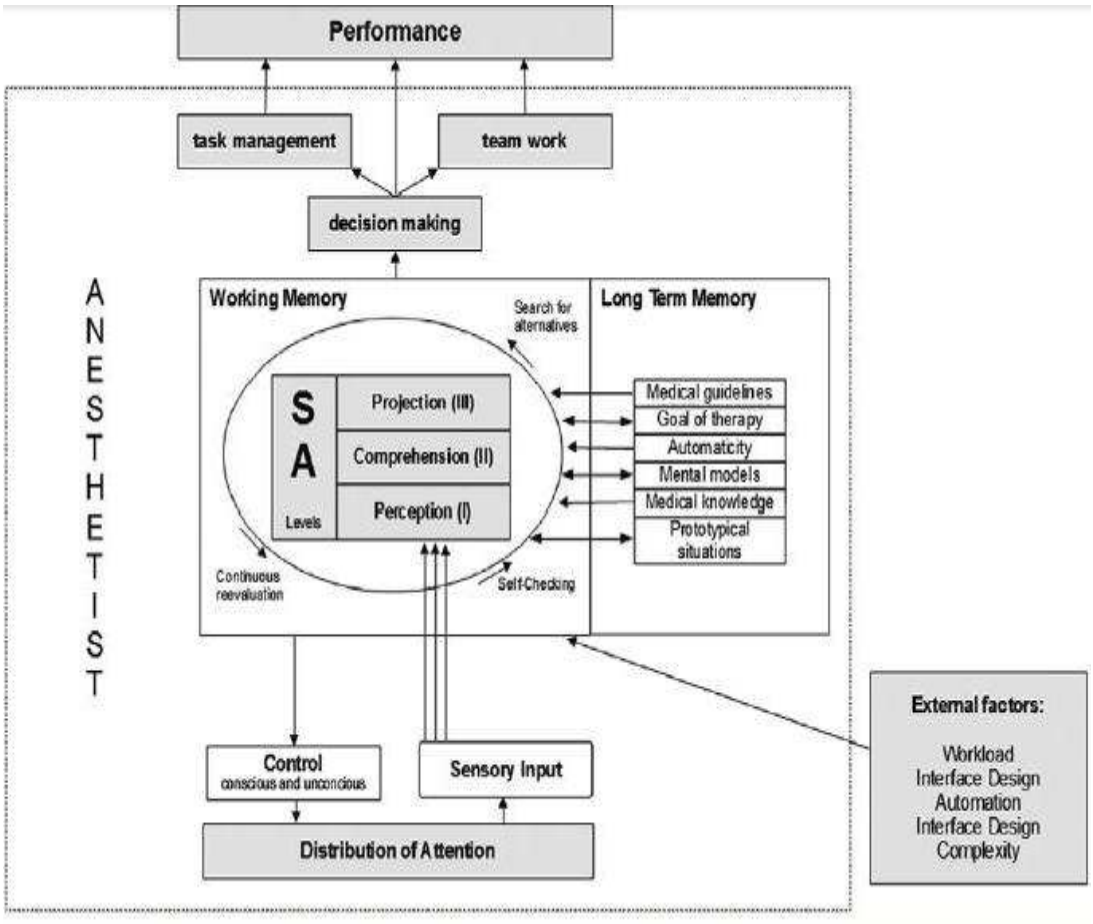
The course of an anaesthetic has ebbs and flows: on induction there are a number of tasks done in a somewhat specified order. Initially, these may be difficult to remember or execute appropriately – as we often see when training interns. Later, they become second nature, like the many subconscious tasks we do when entering and starting our cars every morning. Then, on maintenance there is a bit of a lull wherein one needs to remain vigilant. It is in this phase typically that distraction or inattentiveness creeps in and situational awareness is lost. Failure to monitor blood loss and keep up with fluid and blood product replacement is a common example of this. Not noticing hypotension after a spinal due to distraction or some other task fixation is another one.

In addition to individual situational awareness, situational awareness of the entire operative team is required. The WHO surgical checklist is an evidence based intervention that represents a transfer of the theory of situational awareness into practice.

The first 2 steps of the OODA loop, Observe and Orient (discussed earlier) represent situational awareness. Observe is being receptive to the information available and Orientation tells us *what* we should look for when we're observing, and then puts those observations into context
so we know what to *do* with the information.[5]

So Observe + Orient = Situational Awareness.

Inattention, distraction, task fixation, tunnel vision, unmindfulness are the opposites of good situational awareness.



Anaesthesiologist situational awareness (reproduced with permission)[6]

Pattern recognition

Many of the grandmasters of chess display the ability to recognise patterns on the chess board. They identify multiple chunks or constellations of pieces and are thus able to anticipate danger or opportunity. The ability to recognise patterns is a ubiquitous skill – anticipating danger of a possible hijack for example; in general medicine diagnosing a

constellation of symptoms and in anaesthesiology a pattern of intraoperative events or findings that signal danger. Grandmasters in anaesthesia are often able to see the patterns many moves ahead and thus pre-emptively act in order to avert a problem.

Focussing on one piece of information (one piece on the board) can sometimes prevent appreciation of the larger pattern that is emerging. Sometimes it requires a conscious effort to step back and look at the bigger picture. This concept is illustrated by the phrase "can't see the forest for the trees" meaning that one is so fixated with the details of a situation that he loses sight of the larger issue. An example of this in anaesthesia is the fixation with intubation rather than oxygenation of a patient with a difficult intubation.

Anticipation

Anticipation is linked to the concepts of situational awareness and pattern recognition. When learning to drive I clearly remember my father teaching me the important lesson of anticipation. Anticipate adverse events to avoid them rather than merely react to them. Run through the “what if” scenarios in your head. What if that car were to suddenly change lanes, what if the pedestrian crossing the street suddenly trips and so on. Be proactive rather than reactive. In anaesthesia, anticipating the possible scenario specific adverse events and preparation for it can help either avoid it all together or mitigate the effect of it.

Patient centredness

Finally and most importantly, the patient is at the centre of it all. The way we behave toward our patients; the compassion, kindness and empathy shown are critical elements of excellence. Whilst they are natural, innate human qualities it seems like our training, both at undergraduate level and thereafter extracts these qualities out of us. This is obviously not deliberate, but the focus on the pathology and the treatment thereof sometimes shifts focus away from the patient.

Battered by information overload, fear of making a fatal mistake, patient overload, long hours, limited resources, difficult working conditions, overwhelming disease burden and the sheer agony of human suffering that we constantly face, we morph from a starry eyed medical student into a cynical and heartless practitioner. This is partly a coping mechanism and partly due to desensitisation.

In anaesthesia we work with one patient at a time. We meet the patient when they are probably at their most vulnerable, anxious and afraid. In the little time we have with the patient a kind word, a smile, the empathy shown does much to allay anxiety, fear and goes a long way to comfort our patients.

Patient-centredness also involves always doing what is best for the patient. All interventions, treatments, procedures and decisions are made with the patient’s best outcome in mind. To care for the patient as though they were your mother, father, brother, sister or child will ensure that the highest standards are maintained.

Patient advocacy is another critical role served by the anaesthetist perioperatively. Representing the best interests of the patient when they are unconscious may manifest in many ways:-

- covering the patient when exposure is not necessary in order to maintain modesty and uphold dignity
- ensure standards are maintained
- infection control – hand washing, maintenance of sterility
- prevent errors
- curtail surgery for e.g. damage control

The recent (June 2015) case of the anaesthetist in the US who was sued after her mocking of a sedated patient was recorded by his cell phone is a case in point of the antithesis of patient advocacy.[7] It is very easy to lapse into this due to over familiarity and lack of professionalism.

These non-technical skills are thus an important aspect of the anaesthesiologist's role as a clinician. A study by Koetsier et al published in the European Journal of Anaesthesia in 2011, titled "Complaints and incident reports related to anaesthesia service are foremost attributed to nontechnical skills" found that that the majority of complaints against anaesthetists were actually due to non-technical skills or lack thereof.

They concluded, *"Our data suggest an increased importance of nontechnical skills in addition to medical expertise in anaesthesia service. We propose to take this aspect into consideration in postgraduate training programmes of anaesthesiologists to improve satisfaction of patients as well as colleagues."*

ANAESTHESIOLOGIST, THE ADMINISTRATOR

In addition to clinical duties, anaesthesiologists are increasingly being called upon to serve administrative roles and responsibilities particularly in the public sector. Resource utilization, allocation of staff, rostering, conflict resolution, audits, clinical governance, quality improvement, meetings and paperwork (motivations, reports etc.) become the daily tasks of anaesthesiologists.

These require a different subset of skills – leadership, managerial, administrative etc. They can be inculcated through training and experience though character traits determine whether one thrives or struggles with these roles. Useful experience may come in the form of assuming leadership roles through one's life – prefect, student representative, NGO's, religious organisations, body corporates etc.

ANAESTHESIOLOGIST, THE EDUCATOR

Teaching and training of junior staff is another important role of the anaesthesiologist. Training needs to be on multiple levels depending on specific situations. Mentoring of junior consultants, registrar, intern, student and nursing teaching and training may be required. In theatre teaching around a case has become a rarity rather than the norm. Consultants need to consciously do this more. Relieving trainees for tea and lunch breaks and to see premeds is not enough to nurture an academic environment.

A hallmark of a good educator is the ability to take a difficult concept or task, simplify it and pitch it at the level of the recipient in a palatable manner. Theory and technical skills are usually the focus of anaesthetic education. The non-technical skills are usually only picked up passively. It is only recently that efforts have been made to actively teach ANTS.

The intricacies of anaesthesia education are a vast topic and beyond the scope of this talk.

ANAESTHESIOLOGIST, THE RESEARCHER

This is an oft neglected aspect of the anaesthesiologist. The introduction of the compulsory MMed, whilst being an arduous and lengthy process (and the bane to many registrars existence) admittedly does give one an awareness of and exposure to research in anaesthesia. As Prof Biccard memorably mentioned during an address at the 2015 SASA conference; “collaborative research is the only way we can make a greater impact on more lives.” Good research is the public health of anaesthesia. It may change practice and thus save many more lives all around the world.

Anybody who has tried to get their MMed published will recognise that research is a task that requires a great deal of patience and perseverance. One needs to get used to the inevitable rejections and multiple requests for revision. Research is, however, the only way to take the field of anaesthesia forward. To work toward improved outcomes one needs to constantly hypothesize and test hypotheses. Are we doing this right? Can we do it better?

An enquiring mind and an enabling environment further assist in developing the anaesthesiologist as a researcher.

Other characteristics of excellence in anaesthesia which I wish to highlight which are important in all the above roles are:-

Integrity and Ethics

Being honest, principled and upholding oneself to high moral and ethical standards are hallmarks of professionalism and good character. Whilst this is easily glossed over, if we were to think critically about what we do, we would recognise that we sometimes fall foul of some of these principles. In private, where monetary gain is the major driver, issues of overbilling (for more time or for procedures that were not done), “double-doping”, outsourcing to GP’s whilst billing as a specialist etc. are some of the dishonest and unethical practices prevalent.

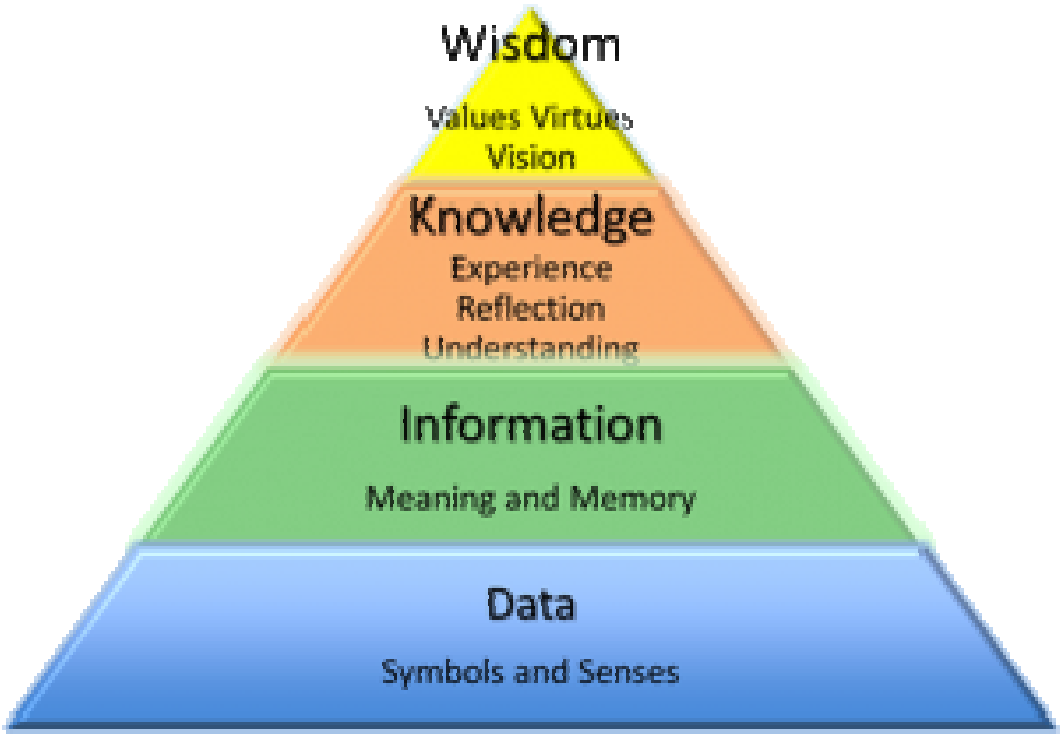
In the public sector wastage of resources (theatre time, equipment etc.) is commonplace. Let’s be honest with ourselves, how often have we seen cases being cancelled for “soft reasons” – for reasons that are not truly patient centred but rather clouded by personal reasons. Yet the same case would have been anaesthetized in private by the same anaesthetist without any issue. Inefficiency and laziness – trying to get the most personal gain for the least amount of work done are challenges we face. We all succumb to it every now and then. We have to realise though that as public servants we are charged with managing resources (improving efficiency) and putting the patient first.

Absenteeism or calling in sick when one is not is another bugbear. It puts colleagues who have to cover the workload at strain.

Experience

Many of the skills presented thus far have stressed that it is only with experience that one gains mastery. This applies to both technical and non-technical skills. Personal experience takes a lifetime to attain. This is problematic. The solution is obviously to learn from the experience of others. Human knowledge is the summation of the collective experience of mankind over the years. Not all of this can be articulated accurately in the written form. In Islamic scholarship, there is an emphasis on the direct transmission of knowledge from teacher to student and so that forms an unbroken chain back to the source.

It recognises that certain aspects of knowledge cannot be learnt simply by sitting alone with the latest textbook or journal. Understanding the information, contextualising it, reflecting on it represents knowledge. Underpinning this knowledge by virtue, values and vision represent wisdom as illustrated in the knowledge pyramid below.



Knowledge hierarchy pyramid

This teacher-student relationship is underpinned by respect and etiquette. Whilst being accepted as a fellow and thus a colleague, the one who taught you remains your teacher and hence deserves on-going respect. Unfortunately, I have personally witnessed disrespect to seniors once one has qualified as a specialist.

The evidence based medicine pyramid views anecdotal evidence and expert opinion as the lowest form of evidence. This is for good reason as bias becomes an issue. However, its value depends on what sort of **information** we are looking to glean. If we wish to know if drug A is better than drug B for a certain condition – then a well conducted randomised controlled trial (RCT) or a meta-analysis of good RCTs is the best evidence. For application of this information, wisdom and non-technical skills experience helps us.

Evidence based medicine pyramid (modification is mine)

In preparation for this talk, I randomly sent out emails to some of the experienced experts in anaesthesia. It was open ended with certain prompts. I asked them to relate some of the life lessons that they have learnt through the profession or that were relevant in helping them strive for anaesthetic excellence. Memorable cases, maxims or tricks that have served them well in their career. Selected responses are relayed below.

- **"Good Airway and a Good Drip"**
  This maxim was actually taught to me very early on in my anaesthetic career. As a medical officer, back in 2007, whilst doing a weekend day call with Dr Joseph Rubin, I remember his blaring voice echo down the corridors of S Block theatre at King Edward Hospital. ***"The most important thing of an anaesthetic, Doctor, is a good airway and a good drip."*** This advice has stood me in good stead so far in my career. A dodgy drip or a dodgy airway can lead one down the road to an anaesthetic fraught with issues and irritation.

The next 3 are courtesy of Dr Clive Daniel.

- **"*Better is the enemy of Good*"- Voltaire**
  So often in my medical career I have seen, probably more so from the surgical perspective, attempts at improving on an already good position leading to disaster while chasing after a "better" result. Classic examples are the repositioning of an intracranial aneurysm clip to get a better position resulting in an intraoperative rupture of the aneurysm instead or chasing after the last bit of tumour clearance resulting in an uncontrollable haemorrhage.

- **Trust your own Intuition or feelings**.
  If things don't feel right then something is wrong. The human mind is far better at collating incoming information utilizing multiple inputs and memory recall than the reliance on one or two monitors to identify the presence of a scenario that could forebode an impending disaster. Bottomline - Trust your instincts!

- **There are generally three components to most disasters**
  In my experience when at least two things are not as they should be, such as the non-availability of important equipment, blood for transfusion or essential blood results, going ahead is inviting disaster as a third issue is likely to emerge resulting in a disaster.

Courtesy of Prof Mike James.

- Difficult situations – **always look at the PATIENT first!** Too often, I see junior anaesthetists desperately trying to find out what is wrong by looking at the machine. Check airway, breathing and circulation ON THE PATIENT first. I have a recent medico-legal case in which a junior anaesthetist spent 10 minutes or so getting another BP machine in the recovery room, instead of examining the patient. The patient died from a hypotensive event in which treatment was unacceptably delayed.

- Drugs – magnesium should always be the first-line choice for the treatment of unexpected hypertensive events in the operating theatre. A 30 mg/kg bolus is entirely safe and can be repeated within five minutes if the response is inadequate. Obviously, simple causes such as inadequate anaesthetic depth should be looked for, but this is the safest, simplest and quickest way to treat any hypertensive event. In the case of a catecholamine overdose, especially after successful management of an acute event such as anaphylaxis, magnesium should be the first choice drug for post-recovery hypertension and tachycardia.

- When I was training, one of my consultants said to me that **a good anaesthetist was a scared anaesthetist.** He did not mean that you should approach every case in a state of terror, but that you should constantly check everything you do. Obsessive-compulsive behaviour, particularly when checking anaesthetic equipment and drugs should be the absolute minimal requirement. My former student, the Prof of anaesthesia in Auckland, Alan Merry, says that the average anaesthetist will give around 1 million drug dosages in a lifetime. It is inconceivable that you will not make drug errors. Your challenge is to limit that to the absolute minimum.

Courtesy of Prof Christina Lundgren

My take on lessons learnt come from a medico legal background:

- Our practice is governed by the following laws: The Bill of Rights of the Constitution, the NHA, The Children's Act, the Choice on Termination of Pregnancy Act, the Health Professions Act and the Consumer Protection Act.
- Any breach of these is unprofessional and possibly illegal, such as not obtaining proper informed consent for anaesthesia, off label drug use, charging issues and the like.
- Our practice is also governed by the HPCSA ethical guidelines. There are numerous booklets.
- Believe your monitors. They seldom disconnect themselves during a case. If the CO2 drops or the sats probe stops reading, then there is probably a problem with the patient.
- Check that neuraxial and other nerve blocks have worn off properly.

- Perform proper handover of your patients in recovery room and make sure that the recovery nurse knows what type of anaesthetic you gave to the patient.
- Consumer Protection Act: know and understand the patients' rights as well as your rights.
- Don't sweep your mistakes under the carpet. Be honest with the family and yourself and report them properly as per the HPA, the Inquests Act and the Births and Deaths registration Act.

Interestingly, Anaesthesia News ran a similar article[8] a few weeks ago where they asked anaesthesia educators what advice they would pass on to junior colleagues. The responses are interesting and a link to the article can be found in the references.

Humility

Larsson and Holmstrom conducted a qualitative study, "How excellent anaesthetists perform in the operating theatre" published in the BJA in 2012.[9] In it they identified 6 themes that are characteristic of anaesthetic excellence: organisation, communication, situational awareness, leadership, patient-centredness and humility. Humble to the complexity of anaesthesia and admitting fallibility were identified as being important. Coulehan[10] suggests that humility is composed of four personal characteristics: 'unpretentious openness, honest self-disclosure, avoidance of arrogance, and modulation of self-interest'.

As we acquire knowledge, material possessions (wealth) and status we tend to get puffed up with pride and arrogance. Our EGO is inflated and to maintain humility becomes a challenge. Confidence, assertiveness, decisiveness and resilience are important characteristics of a good doctor. Technical skills like surgery often require this confidence in order to perform optimally. It comes as no surprise then that we find many of our surgical colleagues struggle with balancing this confidence required with controlling one's ego.

The more we learn, the more we realise how little we know. This in itself should be humbling.

Cognisance and Appreciation

We encounter tragic scenarios on a daily basis. Patients whose lives are suddenly changed forever due to illness or trauma. In the last couple of months alone I remember the 17 year old emaciated patient with probable oesophageal malignancy who complained about not being able to eat for 3 months. The 23 year old who was in a taxi accident on her way to work and now a quadriplegic. The 34 year old man whose body was ravaged by SLE. We see this often yet we perhaps fail to comprehend the tragedy that the situation represents. We perhaps fail to realise that we too could easily be struck by a similar fate. We become numbed to these realities. Again, partly as a coping mechanism. We need to find the balance between appropriate distancing from the tragedy in order to maintain functionality and being cognisant of the lesson. Good health is one of those blessings which we often take for granted.

THE OUTCOME OF EXCELLENCE

There is a verse in the Quran which states:-

هَلْ جَزَاء الْإِحْسَانِ إِلَّا الْإِحْسَانُ

"Is the reward/result of Excellence anything but Excellence"
The Noble Quran. (55:60)

One possible interpretation is that the pursuit and striving for excellence is the result/reward in and of itself.

CONCLUSION

As I come to the end of my time as a registrar I reflect back on the past four years and some of the lessons I have learnt. As I begin my career as a specialist anaesthesiologist, I tried to explore what excellence in anaesthesia means. I have tried to share some of my thoughts on this here. It is obviously by no means comprehensive or complete. I hope to build on the competencies achieved in my training and strive toward excellence in anaesthesia.

REFERENCES

1. The four stages of learning. Available from: <http://www.marcusmavakala.com/wp-content/uploads/2015/02/learning-process-1024x656.png>. Last accessed 3 November 2015.

2. Flin R, O'Connor P, Crichton M. Safety at the Sharp end: A guide to non-technical skills. Aldershot: Ashgate 2008

3. Flin, R. Patey, R. Glavin et al. Anaesthetists' Non-Technical Skills (ANTS) System Handbook v1.0. available online http://www.rcoa.ac.uk/document-store/aae-ants-handbook. Last accessed 3 November 2015.

4. McKay B, McKay K, The Tao of Boyd: How to Master the OODA Loop. 15 September 2014. Available online http://www.artofmanliness.com/2014/09/15/ooda-loop/. Last accessed 3 November 2015.

5. Endsley MR: Design and evaluation for situation awareness enhancement. In Proceedings of the Human Factors Society 32nd Annual Meeting, Santa Monica, October 24–28, 1988, pp 97–101

6. Schulz CM, Endsley MR, Kochs EF et al. Situation awareness in anaesthesia. Anesthesiology 2013; 118:729–42.

7. Welsch A. Patient sues anaesthesiologist who mocked him while sedated. 24 June 2015. Available online http://www.cbsnews.com/news/patient-sues-anesthesiologist-who-mocked-him-while-sedated/. Last accessed 3 November 2015.

8. Leading Anesthesiology Educators Give Some Sound Advice. 22 October 2015. Anaesthesia News. Volume 41:10.Available online http://www.anesthesiologynews.com/ViewArticle.aspx?d_id=21&a_id=33928&d=PRN&i_id=1232&i=October+2015&tab=RSS#sthash.IFHEeOzQ.dpuf. Last accessed 3 November 2015.

9. Larsson J, Holmstrom I. How excellent anaesthetists perform in the operating theatre—a qualitative study on non-technical skills. Br J Anaesth 2013; 110: 115–21.

10. Coulehan J. A gentle and humane temper. Perspect Biol Med 2011; 54: 202–16