

10th Chapter of Surgeons' Lecture: The Challenges in Surgery—Past, Present and Future, and in Search of the 4Cs[†]

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Abstract

Challenges facing surgical practice in the immediate future will not only be in the fields of clinical and operative surgical techniques, but will also involve a new complexity of clinical, para-clinical and economical issues.

The impact of casemix, clinical carepaths, evidence-based medicine, high-technological advances, minimally invasive surgery, teleconferencing, robotic surgery, etc will transform the scene of surgical advancement in a dynamic way.

Whatever the winds of change may be, ultimately patient's good and welfare must be uppermost in our minds.

The challenge is how to maintain and achieve the 4Cs in this age of medical and surgical revolutionary changes. Commitment, Continuing medical education, Consistency, Compassion and a Caring spirit are the Cs we must always keep alive in our clinical practice.

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Firstly may I thank the Academy of Medicine and the Chapter of Surgeons for giving me this great privilege and honour to deliver the final lecture of the century for our series of Chapter of Surgeons lectures to close the 20th century and begin a new dawn in the next millennium.

The title of my presentation is “The Challenges in Surgery—Past, Present and Future, and in Search of the 4Cs”. If I were to summarise the entire lecture, it would be called the story of the 3As, 3Ms, 6Rs and 4Cs.

The 3As refer to the early challenges in the evolution of surgical practice—namely, Aseptic technique, Antibiotics and Anaesthesia.

The 3Ms refer to the major advances of the later half of 20th century, especially in the fields of Microvascular surgery, Minimally invasive surgery, and the rapid advances in Modern technological innovations.

The 6Rs discuss the challenge facing surgery today and the next millennium, which include:

1. Renovative changes in surgical technique
2. Remote and robotic surgery
3. Related disease grouping—DRG—casemix
4. Restructuring of the health care facilities in Singapore
5. Rethinking of surgical management along

(a) Clinical carepath

(b) Evidenced-based medicine

6. Restructuring of surgical training programme

The Eternal Challenges to the practice of medicine in general, and surgery in particular, is the necessity to maintain, cultivate, and enhance the qualities of the 4Cs, namely Communication skill, Commitment, Compassion and Common sense. These qualities are absolutely necessary for the survival of doctors of today and tomorrow.

Somebody once said, “*The world owes you a living*”. But you will have “*to work hard to collect it*”. The great Confucius gave these words of wisdom:

“Choose a job you enjoy doing and you will never have to work a single day of your life.”

“Some people are born with a love of medicine (surgery), some have acquired this love, while a few have the love of medicine thrust upon them”. But whichever way it is, we must love our job or else we will have to work very very hard to earn a living. I have often been asked whether I would change my job if I have to start all over again, my answer has always been an emphatic “No”. There are few occupations that combine the excellence of both the sciences and the arts. Medicine in general, and surgery in particular is one (I can assure you I have never fallen asleep while

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operating, even for long hours in the night, although I may have nearly fallen asleep while assisting the neurosurgeon in a marathon 14-hour operation or when I was attending a meeting after an exhaustive night).

But surgery did not begin as a great art or an established science. It had a humble beginning as a job among the labourers and handymen.

In ancient times, surgery was viewed as an inferior trade. The word surgery is derived from the Latin word "Chirurgia", which itself has its route from Greek "Ergon" and "Chirurgia" which means "Work" and "Hand". It was synonymous with "labour" and "hard work" that didn't require much "thinking". Indeed, Henry VIII in the 16th century, through a Royal decree, amalgamated the "guild of surgeons" and the company of barbers into a common charter as one entity (hence, the word "barber-surgeon").

Traditional surgery (even until as late as the 19th century) was often performed by these barber-surgeons, often by the "travelling tradesman" such as:-

1. Travelling oculist—the forefather of ophthalmologist
2. Lithotrist—the earliest urologist
3. Tooth drawers—the precedent of oral surgeons

It was not until early pioneers like Ambrose Pare, Joel Louis Petit and Lister, and later on great names like John Hunter came on the scene that surgery was gradually transformed into a profession.

Historically the earliest records of surgical procedure was the "Burr Hole" described as "Trepanning". However, these holes were made not to evacuate extra-dural haematoma, but to release "evil spirits" from psychiatric patients.

The earliest documented full-descriptive laparotomy was only as late as 1809. In that year, a patient, Mrs Jan Todd Crawford, complained of severe abdominal pain. She consulted a country family doctor, Dr Ephron McDonnell. Dr McDonnell explained that she needed a laparotomy, but he has never done one before. However, since that was the only way to save the patient's life, the family consented; and so the first laparotomy was performed in the "kitchen" with very primitive instruments and "alcohol" as anaesthesia. While this was going on, a crowd gathered outside, not to cheer him, but with a rope hanging from a tree, ready to hang him. Fortunately for medicine in general, and for surgery in particular, the patient survived and surgical practice took a giant step forward. But because of the lack of aseptic techniques and anaesthesia, it took more than another hundred years before laparotomy was safe.

Indeed, the earliest challenges to surgery were described as the era of the 3As namely:

1. Aseptic technique
2. Anaesthesia

3. Antibiotics

(The period stretches from late 19th century to early 20th century.)

Before the days of "anaesthesia" and "asepsis", surgery had to be "Quick, Short, but not always Sweet". Robert Lister was credited as the fastest amputation surgeon in history. He performed an amputation every 2½ minute. A challenge to that title is "Dr Larry", Napoleon's personal physician, who was credited with performing 200 amputations in 24 hours at Bordino at the edge of River Bezinan during the French wars.

Lister, with his concept of aseptic technique, brought a new dimension to the safety and survival of surgical patients. Then came the forerunners of modern anaesthesia in the mid-19th century. Oliver Wendell Holmes coined the word "anaesthesia" in 1846. Ether was introduced, followed by a host of other agents. At various times, substances such as opium, hashish, and even cigars (placed in anal canal) were used for the nicotine effect. Nitrous oxide, ether, chloroform were early agents that were effective.

Despite availability of anaesthesia and asepsis, surgical mortality was high until the third "A" came to the scene in the early half of the 20th century and this was "antibiotics" with the discovery of penicillin by Alexander Fleming.

The discovery of penicillin was a true major advancement for surgical practice and the discovery was purely by accident—"literally by accident". The story is told of:

"A rich man once brought his son to the countryside for a holiday, and the boy fell into a pond. Fortunately a nine-year old country boy cycled by, he jumped in and saved the rich man's son. Next day, the rich man went to the country's boy home to thank the family, and he asked the boy what he would like to do when he grow up, and this child answered "I guess, I will be a farmer like my parents and friends". The rich man then asked him, "If you don't wish to follow your parents, what would you personally like to be?", and the child answered, "I would like to be a doctor", and so the country boy was brought to London and educated as a doctor.

During the Second World War, Winston Churchill was stricken with pneumonia and nearly died. His physician asked him, "Would you like to try a new medicine called penicillin?", and Churchill answered, "Why not?" and so penicillin was administered to Churchill. The Prime Minister recovered and went on to fight the war and change the course of history. He told Dr Alexander Fleming, "Doctor, you have saved my life twice". The boy who fell into the pond was Winston Churchill and the cyclist who saved him was Alexander Fleming. Antibiotic was truly discovered by accident—literally.

With the advent of the 3As (Asepsis, Anaesthesia and

Antibiotics), the golden age of surgery was born in the first half of this century. Surgery flourished and became “a profession”. But with overenthusiasm also came “over-servicing”.

William Arbolhart popularised the concept of removal of intestine for constipation. Removal of appendix without symptoms became a fashion in 1930s and 1940s. Fixing of organs was a fashion (e.g. nephropexy). Thousands of tonsils and uterus were removed with minimal and no symptom. It was a common question “Have you removed your uterus, tonsils, or appendix yet?”

But the later half of this century saw a new renaissance, to put surgery under scrutiny and it become more respectable and scientific.

The second phase of surgical challenges occupied the second half of this 20th century (while the first half is called the golden age, the second half is called the diamond age—the age of the 3Ms).

Surgery began to move from mainly destructive to constructive with a pre-occupation to restore organ and function based on sound physiological and pathological principles. Radiotherapy and chemotherapy added a new perspective to surgical advances. The second half of the 20th century surgical challenges were often referred to as 3Ms.

1. Minimally invasive surgery
2. Microvascular surgery
3. Modern technological advances

When we began our surgical career, there was no such thing as flexible gastroscope/arthroscope, laser surgery was in the laboratory, laparoscopic surgery was still a dream. Interventional radiology was still primitive.

Technological advances have been so rapid in the last couple of decades that a surgeon frozen in time 30 years ago and defrosted today would awake in total bewilderment. In the next 30 years, we will see even more dramatic and unimaginable transformation. Three-dimensional laparoscopic surgery will surely be with us in the immediate future, new mechanical-assisted procedures (robotic surgery) is already making its impact. Diagnostic tools are undergoing tremendous metamorphosis. Perhaps in the future, a simple urine sample or a short walk across a metallic / laser beam detector can generate a whole profile of diagnostic data information. But beyond technological advancement, other factors are going to influence surgical practice.

As we close the 20th century and enter the next millennium (21st century), the challenges facing medicine in general and surgery in particular will not be just technological changes, and innovating new surgical procedures, but will come also from the paramedical, economical and

sociological spheres.

I would group these current and new challenges under the 6Rs:

1. Renovative changes in surgical technique
2. Remote and robotic surgery
3. Related disease grouping—DRG—casemix practice
4. Restructuring of the health care facilities in Singapore
5. Rethinking of surgical management along
 - (a) Clinical carepath
 - (b) Evidenced-based medicine
6. Restructuring of surgical training programme

DRG / RDG

DRG is here to stay (at least in the foreseeable future) and we must look at the positive side: How it can help and guide us to provide good health care with maximum cost-effectiveness for the patients (it is a tool to help us understand clinical practice). Surgical practice and patient care must improve because of, and not in spite of, DRG.

However, DRG / casemix is a complex issue and I would urge all my medical and surgical colleagues to study its impact.

In institutional practice, a whole machinery has been set up to study its implications and practice. I hope our colleagues in the private sector will take a very active interest in the study of its implications and application and not wait till it is implemented.

Closely related to DRG is the importance of “clinical carepaths” and “evidenced-based medicine”.

These two approaches will enhance good surgical management.

We are also fully aware of the restructuring of the health care facilities and vertical integration of public health care system in Singapore. Hopefully this will bring about better co-ordination and more effective usage of technological tools and more organised shared resources.

The restructuring of surgical training is also undergoing rapid transformation. I hear the poor young doctors grumbling “more and more exams—now you need 3 exams after MBBS to become a specialist”. You hear them saying “with a BLL, BA/BSc, BEng, you can rise to the high public offices of the respective profession, not with a MBBS”. At a time when their colleagues are commanders in the army or in the high echelons of the administrative and technical services, they are still just struggling to get into the specialist medical register.

While their concerns are real, at the end of the day, a good surgical training programme, properly guided and

supervised, will produce a better and safer surgeon. The days of “see one, do one, and teach one” are over and we must accept the changes.

In life, “it is not the direction of the gale, but the set of the sail”, that determines where we go. Changes are inevitable, but we must “adjust our sails”, and move with the times.

What we need is better communication with the young aspiring surgeons. They have a genuine grouse—that they are bewildered and overcome by rapid changes and their future training is uncertain. The everchanging criteria, changing employment options for registrar, the constant modification of training programmes etc; all these must be communicated to the aspiring surgeon in a transparent way. The young ones are often left in the wilderness. A more active communication link is necessary.

In the turmoil of these rapid changes, we must never forget to ensure that service to the patients and his/her welfare is the most important factor and that training and teaching must not be jeopardised. We have many lessons to learn from the early restructuring process and the senior people must have a clear understanding of good clinical practice and patients needs.

Restructuring and vertical integration must not divide us, but bring us together towards a common goal—better quality health care for our patients. Competition must be healthy and not divisive.

It is important that the medical fraternity stay united as a common force to ensure the ideals and the philosophies of good clinical practice is not lost in these rapid medical economics and social transformation. Whatever happens, the welfare and health of our patients must remain uppermost in own minds (healthy people makes a healthy nation).

In the words of Ben Franklin, “*we must all hang together, or assuredly we will all be hung separately*”.

In the face of these changing scenarios and rapid transformation of surgical practice, how can we ensure the resurrection and maintenance of the good qualities of a doctor in general, and the surgeon in particular?

I group these qualities under the headings of the 4Cs namely:

1. Communication skill
2. Commitment (CME, consistency)
3. Compassion (courage)
4. Common sense

The first “C” is “Communication Skill”

Traditionally our students are well taught in all the sciences of medicine and the technological complexities of surgical practice, but often we forget the human aspects and the human touch. It is timely that the University has

recently taken a more active approach in this hitherto untrodden path of education.

Communication skill, ethics and moral issues are vital subjects in the training and practice of surgery, but all these cannot be taught by lectures alone.

More importantly it has to be taught at the bedside and in the clinics, by example, by demonstration, and by personalised tutoring and practice in the wards.

I learn the importance of communication through a personal inadequacy.

Many years ago, as a young surgeon, I had to do a Halstead’s radical mastectomy on a young lady. I sat down and began to talk to her but she said “Doctor, I know—just go ahead and cut off the tumour”. So I left her without any further counselling or discussion. Next morning, I told the ward sister, “Sister Thanga, this patient is very good, she is rehabilitated even without any counselling”. Sister looked at me with “big” eyes and said, “Doctor, you are wrong, you are very wrong. Last night, the whole night she was crying, she wanted to know what will life be like without a breast. Can she swim again? Can she have a prosthesis? Can she play tennis? Will her family accept her? etc. She was crying and crying for two hours.” Sister sat with her for a long time and held her hands. I then realised how inadequate I was. Since that experience, I have learned to look after cancer patients with a more humane approach. All cancer patients require rehabilitation and counselling (even doctor patient). The care of cancer patients begins long before surgery and continues long after. It is a life-long commitment. In looking after cancer patients, we must not only “*add years to life, but also life to the years added*”. Happy is the doctor whose patient can tell him, “Doctor, I may have cancer, but cancer does not have me”.

Good communication demands us to explain and discuss with patients and their families. Communication also requires us to maintain proper etiquette between doctors and colleagues. Please don’t run down your colleagues (don’t forget when we point a finger at others, we are pointing three fingers at ourselves). So frequent have we come across remarks that patients were told “why did you come to me so late”, “the appendix is bursting”, “the ovaries are bleeding” or “you arrive just in time”. Sometimes we ourselves initiate complaints from patients. Indeed 70% to 80% of all hospital complaints are communication related.

Somebody once said “no man is an island”, I don’t agree, I think “we are all islands, each of us is an island—an island of ignorance, separated by seas of misunderstanding”. Let us be good physician and surgeons and try and build bridges across these islands of misunderstanding (good communication is vital and fundamental to good clinical practice).

We must also be sensitive in our conversation and choice of words [In operating theatres (OT), be cautious of our conversation].

Sometime ago, a ward sister noticed a patient crying on waking up after surgery and asked the patient “why?” The patient answered: “While I was under the surgical procedure, although I was anaesthetised, I could still hear the doctor commenting—The cancer is too advance, there is nothing we can do—let’s just close up”.

In the “twilight zone” of anaesthesia between “anaesthetised” and “awakening”, sometimes the sensory level is still intact—the “OT walls have ears, and patients do hear”.

Let us be sensitive to our patient’s feelings. Don’t say “It is alright to have a colostomy, you don’t have to go to the washroom to open your bowels” (It is a cruel remark). Good communication at all levels and across all disciplines is the basic and fundamental requirement towards appropriate medical care.

The second “C” is “Commitment”

It includes also commitment to our profession, commitment to CME programme, and consistency in carrying out our duties in the interest of the patient and not in the interest of our ego and self-prestige. The great nobility of teaching and learning is an ancient art that has become adulterated, and commercialised in today money-minded world.

Commitment to CME is an absolute necessity, it is an essential part of our survival kit. When we graduated, there was no flexible gastroscope, no laser surgery, no laparoscopic procedures and no CT scan. If we do not constantly upgrade our knowledge, we will soon be exiled into the wilderness of medical ignorance and antiquity (I am sure if Prof Bala, President of the Medical Council, has his way, he would want to make CME compulsory from January 2000). So let us police ourselves before others police us. But in setting out the polices, we must bear in mind the needs of our colleagues in the private sector where time is limited and difficult to control. However, with the Internet, CME on the computer is now a reality.

Aristotle once said “*the half life of knowledge is 5 to 7 years*”, which makes learning a dynamic process.

Professor Claude Organ said “*be more impressed by how much you have to learn then by how much you know*”.

Hand in hand with constant learning is the importance and willingness to teach. Perhaps Hippocrates relevance in the 21st century would be a resurrection of the Dying Art of Apprenticeship.

Hippocrates taught:-

“I will pay the same respect to my master in

the science as to my parents and share my life with him...I will regard his sons as my brothers and teach them without fee or contract. I will hand precepts, lectures to those of my master, and to those pupils duly apprenticed and sworn...”

(Such noble ideals of teaching and training is a forgotten art that needs resurrection).

The third “C” is “Compassion”

Compassion is a quality which cannot be measured and yet without it, one can never be truly a doctor. It is compassion that drives us to take up the noble art of healing and it is compassion that motivates us to serve our fellow human being in pain. It is a matter of the myocardium. Indeed, the “heart of medical education is the education of the heart”.

Let me relate to you an incident. A couple of years ago, Mrs Liew, our stomatherapist, called me and said “Mr XXX, our stoma club pioneer, is dying”. I quickly responded and said “Oh yes, if he goes, make sure the cancer society and the club send him a wreath, perhaps we should send the family a token of some kind too”. She angrily responded, “What are you talking about, I mean, don’t you think we should do something now and not wait till he is gone?” Suddenly I felt like a small boy being scolded—she was absolutely right. That afternoon we went to buy a beautifully engraved pewter and went to Mr XXX’s home. He was deeply jaundiced, semi-conscious and could barely open his eyes. I said “XXX we have come to see you, we want you to know we are very grateful to you. Because of you, many stoma patients have benefited and are living quality lives. We will miss you, but we will always remember you, we treasured your friendship, your kindness, your laughter, your smile, goodbye for now”.

He opened his eyes, smiled and whispered, “Thank you, thank you all for coming, I am happy you came, take care”. The next day, he was gone, but I have learned a lesson.

Years of clinical exposure sometimes numb our hearts and harden our souls, but let us lubricate it with compassion, so that we may never mistaken the disease for the patient. Let us treat the patient as a whole, where illness is only a transient episode, and let us never forget that “not all diseases can be cured, but all patients can be given care”.

The final “C” is “Common Sense”

As doctors and surgeons, we need all the five senses; but also we require an extra sense, “the 6th sense”, which is “common sense”. But surprisingly common sense is sometimes not common and occasionally hard to come by.

Let me relate to you an interesting episode:

Some years ago, a colleague of mine brought his brother-

in-law to see us. He came with a stack of notes, X-rays, IVP, CT scan, MRI angiogram etc. and he had an RIF mass. The stated diagnosis was inoperable “retroperitoneal sarcoma”. He was devastated. But if you throw away all that notes, and just examine the patient, you will find that he had a tender mass in the RIF. What is the probable diagnosis? A final year medical student could answer—“appendicular mass”. We operated on the patient, and it was an inflammatory appendicular mass. If we had trusted the MRI etc, the patient could have gone to his grave and the cause of death on his death certificate would be “inoperable retroperitoneal sarcoma”.

This episode illustrated how sometimes we have become slaves of technology. Let us remember “*it is not the pride of knowledge but the humility of wisdom, it is not the science of technology, but the art of healing that makes a good doctor*”. This reminds us of old Professor Ransome’s favourite anecdote, “If you see a bird in the tree (in Singapore), is it a sparrow, or a robin? Need we guess? Sparrow, of course!” In clinical practice, common sense teaches us, “*think of common disease first, then think of the rarities*”.

Let me end with a little story:

Once there were two oncologists at a breakfast table. They were both using a common regime for a certain cancer treatment, consisting of 4 drugs (Etoposide, Platinum, Oncorein, Hydrourea).

One oncologist said to the other “How is it that I used this regime and I get only 25% response and you used the same regime you are getting 75% response?”

The second oncologist replied “Well, you tell your patient you use the EPOH regime. I tell my patient I used HOPE, that is the difference.”

The moral of the story is that we can never fully understand “mind over body” and that hope is sometimes a force in surgical care. As Alexandre Dunes puts it “**Hope** is, and will always be, the last thing that is extinguished in the hearts of man”.

Well, my dear colleagues, I like to be an optimist and live in hope:

- **Hope** that as we enter into the new millennium, we will have the courage and the integrity to face the challenges of new surgical practice.
- **Hope** that because of, rather than in spite of DRG, we will provide better quality care for our patients.
- **Hope** that clinical carepath and evidenced-based medicine will become the keys to quality in good surgical care.
- **Hope** that the medical profession will regain its rightful place as a great profession, a responsible art and science, and a wonderful calling.
- **Hope** that vertical integration and restructuring of public health care will bring about good quality care, and improve the training and teaching of our future generations of doctors and surgeons (If we don’t train them well, no one will care for us in our old age).

I would like to go on dreaming and hoping, but realities of life tell us we must begin the journey of surgical renaissance today. Let us not wait for the dawn of the millennium. Today we will resolve to bring surgical practice to greater heights, today is the day.

*“Yesterday is but a dream
Tomorrow is only a vision
Today well lived
Makes every yesterday a dream of happiness
And every tomorrow a vision of hope”*

Let us rise up to the challenges:

*We shall sail the uncharted seas,
We shall climb the insurmountable mountain,
and challenge the unknown.*

In medicine and surgery, for those who dare, the sky has no limit.