

22nd Gordon Arthur Ransome Oration: Is Medicine Still an Art?*

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Distinguished guests and colleagues in medicine, I am deeply honoured to have been invited to deliver this 22nd oration in honour of Sir Gordon Arthur Ransome, and also humbled when I peruse the list of outstanding previous orators.

I took up my position here as Dean of the Lee Kong Chian School of Medicine exactly a year ago, in time to welcome just the second cohort of medical students to Singapore's newest medical school. Soon after I arrived, I was addressing a group of high school students interested in studying medicine. I emphasised that medicine is both an art and a science. After my address, one of the students came up to me and asked, "What do you mean that medicine is both an art and a science?"

I was sure he was not questioning whether medicine is a science, but I am not sure my answer convinced him—perhaps because this proposition was self-evident at the time when I learnt the practice of medicine and so I have not thought very carefully about it in the current era. So choosing this topic has given me the opportunity to consider this proposition anew and to share with you this evening my thoughts about whether medicine is still an art.

Now I mentioned that I have been living in Singapore for only one year but I am not a stranger to Singapore. In fact my first visit here, and to Kuala Lumpur on the same trip—the first time I left Australia—was in 1963, the same year as this Congress was first held. My grandfather brought me here to meet his Singaporean friends. Singapore made a deep impression on me and I have been here many times since. So it is a particular pleasure to speak at the Singapore-Malaysia Congress of Medicine over 50 years after my first visit to both the island and the peninsula.

Medicine Has Evolved Since the Era of Hippocrates and Voltaire

Medicine has long been described as an art. "Life is short, the art long, opportunity fleeting, experience treacherous,

judgment difficult" wrote Hippocrates. Voltaire was being frivolous when he wrote "Medicine is the art of amusing the patient while nature cures the disease" and more serious when he wrote "Nothing is more estimable than a physician who, having studied nature from his youth, knows the properties of the human body, the diseases which assail it, the remedies which will benefit it, exercises his art with caution, and pays equal attention to the rich and the poor".

But we are over 2000 years on from the time of Hippocrates and more than 200 years on from the time of Voltaire. Has the scientific era changed medicine irrevocably from an art to a science? Has that other common medical aphorism—"cure sometimes, relieve often, comfort always"—been overtaken by advances in diagnostic and therapeutic medicine?

Certainly engineering and technology have brought great advances to medicine over the past 40 to 50 years. I choose this interval as the likely lifetime in medical practice and coincident with my own. Over the past 40 to 50 years, dramatic developments in imaging techniques have allowed us to see inside the body, particularly the brain, with both structural and functional analysis. Surgery has advanced, with laparoscopic techniques and robotic surgery. The prevention and treatment of cardiovascular disease has changed dramatically, with angioplasty and refinement of coronary artery bypass surgery. In vitro fertilisation has brought the joys, and the tribulations, of parenthood to many families. In my own field of diabetes, we now have miniaturised insulin infusion pumps and continuous glucose monitoring devices, enabling a more physiological match between insulin and glucose levels.

Advances in therapeutics have been equally impressive. Study of the genetic and molecular basis of cellular function in health and disease has led to many new therapies. Inhibitors of the enzyme HMG-CoA reductase in the cholesterol synthesis pathway—statins—have revolutionised the prevention and treatment of coronary heart disease. We have entered the era of designer drugs, targeted at cellular signaling pathways and based on

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knowledge of molecular structures. For example, the tyrosine kinase inhibitor, imatinib is dramatically effective in several cancers, including chronic myeloid leukaemia and gastrointestinal stromal tumour. Biological therapies have been developed, such as antibodies designed to block the function of the inflammatory molecule TNF α , which have proven very effective in the treatment of rheumatoid arthritis and useful in other inflammatory diseases such as ulcerative colitis and psoriasis. Another antibody therapy, solanezumab, binds to β amyloid proteins and was reported only last week to slow progression of dementia. Stem cell therapies are starting to show real promise in the treatment of macular degeneration and Parkinson's disease.

Laboratory research has also led to an understanding of how some existing therapies work. Only recently have we known that metformin, firstline therapy in the treatment of type 2 diabetes for over 50 years, activates the enzyme AMP-kinase, which is also activated by exercise. The holy grail of research in this area is to develop a therapy which is the pharmaceutical equivalent of physical exercise. We have also learned that insulin stimulates uptake of glucose by muscle tissue through activating transfer of a specific glucose transporter protein—a sugar shuttle—from an inactive intracellular site to insert itself in the cell membrane.

At the same time, particularly in the use of pharmacological treatments, medicine has moved from relying too much on treacherous experience and difficult judgment to the use of systematised evidence based on well conducted and unbiased clinical trials. One of the great pioneers in this area of medicine, David Sackett, died on May 13 this year and has left a huge legacy based on judicious application of knowledge. For what use is new knowledge if it is not used appropriately? It can be considered an art to apply the scientific basis of medicine wisely and effectively.

The Era of Precision Medicine

Now—62 years after Watson and Crick reported the structure of DNA and 12 years after the first human genome was sequenced—we stand on the threshold of an era named precision medicine. In this proposed model of medical care, diagnosis, prognosis and treatment will be based on genome analysis—genomics, protein analysis—proteomics and metabolite analysis—metabolomics, from each individual. This mega-data or big data will be collated to predict response and so to individualise therapy.

Of course this approach relies on high level computing, which is also changing the nature of medical practice. Although it is argued that medicine has been much slower to utilise computing technology than other industries such as the commercial and engineering fields, the advent of the electronic medical record and digitisation of imaging and

laboratory results mean that the computer screen is or will soon be our constant companion during the consultation. As we all know, our patients can and do access medical information on the internet, as well as from family, friends and neighbours, who also get information from the internet. And our patients can also seek treatment through the internet. Computerised cognitive behavioural therapy is available online for help with anxiety, stress, depression, phobias and obsessive compulsive disorders. Systematic analysis of studies in this area has demonstrated the utility of this approach.

So what are the consequences of the explosion of technology and scientific discovery for the practice of medicine and the role of the doctor? Science and technology of medicine is at its most advanced in the US, of course, and so perhaps we should look there for the answer to what lies ahead. Dr Abraham Verghese, physician-author and Professor for the Theory and Practice of Medicine at Stanford University Medical School says, “I joke, but only half joke, that if you show up in an American hospital missing a finger, no one will believe you until they get a CAT scan, MRI and orthopedic consult”. So using one's judgment and common sense is still part of the art of medicine, in both diagnosis and treatment. Much of medicine continues to involve complexity and uncertainty, so there remains a place for clinical reasoning despite the ubiquity of clinical guidelines and decision support systems.

What Constitutes the Art of Medicine and Is It Still Required?

But what other elements of medical practice remain relevant and constitute the art of medicine? They are contained in the many strands that make up the bond between doctor and patient. The basis of the doctor-patient relationship is trust—and trust is engendered in ways that include active listening, empathy, compassion and physical contact.

That is not easy. As Kafka wrote in his short book, ‘A Country Doctor’: “To write prescriptions is easy; to come to an understanding with people is hard.” That is the essence of clinical medicine: to come to an understanding with people and with that understanding to accompany them on their medical journey. No matter how sophisticated diagnosis and therapy becomes, patients will still appreciate someone they trust accompanying them on that journey. What comfort can a computer provide? Even if it does have artificial intelligence and even if it can simulate the human touch, it will still be just that—artificial and simulated.

Even with the scientific advances over the past 40 to 50 years, I would contend that this kind of relationship with our patients is just as important as it ever was. With more

chronic disease and in Singapore an ageing population, complex illnesses such as diabetes require a strong bond between doctor and patient to achieve good outcomes. We are far from curative treatments for kidney, liver, lung or heart failure, despite the advances in stem cell research. Neurodegenerative diseases and musculoskeletal disorders are major burdens with only modest advances in most areas. Mental illness remains a major cause of morbidity and progress in the therapeutic management of major psychiatric disorders over the past 40 to 50 years has been incremental but not dramatic.

In cancer treatment there have been significant advances in some areas, but cancers of lung, pancreas, breast, ovary and prostate are still major causes of mortality and the promise of precise therapies based on the genetic and molecular analysis of individual cancers remains just a promise.

I do, of course, share the excitement at the discoveries that have enhanced our knowledge of the pathophysiological basis of human disease and I can envision the amazing progress likely to occur over the next 50 years in the treatment, and hopefully in the prevention, of many of the diseases I have mentioned. But I do not foresee medicine becoming totally mechanised and even if there are effective treatments for all illnesses, they will still need to be managed by caring clinicians with empathy and compassion. Just as insulin was expected to be a cure for diabetes 94 years ago, I expect that many of the so-called cures that will be discovered in the future, will in fact, be imperfect and complex therapies.

Management of Patients with Terminal Illness in the Era of Precision Medicine

One concern about the advent of precision medicine is that we could, as a profession, focus almost entirely on technical treatment of the disease process and lose our view of the whole person, our patient. This danger of applying scientifically sound therapies in circumstances which are futile already occurs frequently in the management of patients with cancer.

In his book 'Being Mortal', Harvard Medical School surgeon Atul Gawande writes "The simple view is that medicine exists to fight death and disease, and that is, of course, its most basic task. But the enemy has superior forces. Eventually, it wins. And in a war that you cannot win, you don't want a general who fights to the point of total annihilation." Treatment that is burdensome—both in terms of major side effects and cost—and essentially futile in that it may prolong life by only a few months is already prevalent in the so-called battle against cancer.

In the precision medicine age, we will undoubtedly see major advances in cancer therapy with dramatic and

worthwhile outcomes. At the same time, there will be many other therapies that have only incremental benefit, extending life by a few months at great cost to all concerned. Helping our patients and their families to choose wisely in this situation will require great art.

Sir Murray Brennan, a New Zealand born and educated surgical oncologist, who was Chairman of the Department of Surgery at Memorial Sloan Kettering Cancer Center in New York for over 20 years, spoke at a symposium I attended earlier this year on 'Affordable Cancer Care.' He spoke about the extensive practice of futile and burdensome surgery in cancer care because doctors lose sight of what is good for their patients.

And he contrasted the ways that doctors can care for their patients when the decision is made that aggressive treatment of the disease is no longer warranted. An all too common approach is to say, "There is nothing more I can do for you" and to pass the patient on for palliative care management. His recommended approach is to say, "I do not think there is any further benefit to be gained from more surgery. But I will continue to care for you and make sure you receive the best possible treatment." I believe that is the kind of doctor you and I would like to have caring for us.

So let us make sure that use of the new treatments that will become available as the precision medicine wave rolls in, is matched by a renewed focus on patient-centred care, balancing the science with the art of medicine. Let us afford our patients a good death when the time comes, with all the care that modern medicine can provide, but avoiding futile and invasive treatments that rob them of dignity and precious last moments with their loved ones.

The Rewards from Medicine as a Caring Profession and its Teaching

While doctors who are skilled in the art of medicine provide great benefit to their patients, we should not forget the rewards we receive as clinicians from practising the art of medicine. Robert M Solomon, medical graduate of University of Singapore and bishop of the Methodist Church in Singapore believes that "the quality of the doctor-patient relationship... is guided by the best of human virtues such as altruism, compassion and the desire to alleviate human suffering." Isn't that what has drawn us to medicine as a career—the opportunity to share in the lives of others and to lighten their burden in times of trouble? Doesn't that give meaning to our lives—or at least to our working lives? As the American poet and essayist Ralph Waldo Emerson said: "To know even one life has breathed easier because you have lived. This is to have succeeded."

So if it is important for doctors to practise the art of medicine well into the future, how should we be equipping

our medical students to learn the art? Again Dr Verghese from Stanford: “What we need in medical schools is not to teach empathy, as much as to preserve it—the process of learning huge volumes of information about disease, of learning a specialised language, can ironically make one lose sight of the patient one came to serve; empathy can be replaced by cynicism.”

Of course we do attempt now to select students in part on the basis of their empathic skills, but that is a very inexact science. At least we demonstrate that we think it is important. Encouraging our students to learn from their patients and from other health professionals is part of the modern curriculum for instilling a sense of empathy and compassion. We can also teach about professionalism and ethical responsibility. The development of professional identity is aided in many medical schools by white coat ceremonies and recitation of the Hippocratic Oath on entry to medical school. Over 100 years ago William Osler urged us to treat medical students as our junior colleagues, surely an important way for them to develop that sense of belonging to our profession.

Innovative programmes in the humanities and medicine use art, literature and poetry to explain the human condition and to help our students come to an understanding of human nature and the effect of illness on the individual. In fact, it is not just students who can benefit from a study of the humanities. William Osler read non-medical classics from 10 to 11 every evening—and just as we keep ourselves up to date with medical literature, we can refresh our commitment to the art of medicine in this way.

With all of these efforts to develop our students as caring professionals, it is the role model that doctors provide to our students that probably has the most impact. Learning by example, just as children tend to emulate their parents' behaviour, is called the hidden curriculum. That means we all have a responsibility to demonstrate the art of medicine when we are being observed and to practise it even when we are not being observed. Because genuine empathy and compassion are not qualities that can be turned on and off like a tap.

What Can We Learn and Emulate from Gordon Arthur Ransome?

In his collection of aphorisms called ‘Aequanimitas’, William Osler wrote “the stories of the lives of the masters of medicine do much to stimulate our ambition and rouse our sympathies.” So what can we learn from that master of medicine and first master of the Academy, Gordon Arthur Ransome, that will stimulate our ambition to practise the art of medicine?

I draw on his entry in Munk's Roll of the lives of members

of the College of Physicians, which in turn, derives from the writings of his students and colleagues, some of whom have spoken of him at earlier orations in his honour. He is described as kind and softly spoken. He was always ready to answer any cry for help from patients, staff or colleagues. When he was with a patient, he was transported into a world where only the patient mattered—and his patients knew that. He believed that a doctor is placed in a special position to gain the patient's trust and that a doctor needs to be a student of human nature. He was a master of clinical diagnosis and an enthusiastic and effective teacher, fondly remembered by his students.

I want to emphasise here that Gordon Arthur Ransome loved teaching, as did William Osler. In fact Osler said: “I desire no other epitaph—no hurry about it, I may say—than the statement that I taught medical students in the wards, as I regard this as by far the most useful and important work I have been called upon to do.” I am sure Ransome knew this Oslerian saying and he himself was notorious for becoming so engaged in teaching his medical students that they complained he would often keep them through their lunch period. He believed that students should study history and philosophy—and I am sure he would have approved of the introduction of the study of the humanities into the modern medical curriculum.

As Dean of a medical school, I cannot pass up the opportunity to recommend teaching as another way to maintain our currency in the art and science of medicine, as well as to give back to the profession which has nurtured us.

I mentioned earlier the practice of reciting the Hippocratic Oath at entry to medical school or after graduation. It is usually a modern version such as that endorsed by the World Medical Association. Another interpretation that I particularly like was written in 1964 by the Dean of Tufts University medical school, Dr Louis Lasagna. The first promise in this version is: “I will respect the hard-won scientific gains of those physicians in whose steps I walk, and gladly share such knowledge as is mine with those who are to follow.” And there is another promise that is relevant to my topic this evening: “I will remember that there is art to medicine as well as science, and that warmth, sympathy and understanding may outweigh the surgeon's knife or the chemist's drug.”

Clearly, Gordon Arthur Ransome epitomised the art of medicine and we can learn much from his example of selflessness and devotion to his patients. Of course, the world and its ways have changed since he practised medicine here in Singapore. The gender balance of the medical profession has changed and the importance of family and other commitments outside of medicine are acknowledged more readily. We are also challenged by changes that can distance us from our patients, like the computer terminal, the

mask and gloves that are now part of the medical uniform in many settings. But it is the ethos, the spirit of his legacy that we want to emulate and pass on in turn to the future members of the medical profession.

Gordon Arthur Ransome valued medical history and medical books and was a devotee of the works of William Osler. So it is fitting to conclude the oration in his honour

with another aphorism from ‘Aequanimitas’: “The practice of medicine is an art, not a trade; a calling, not a business; a calling in which your heart will be exercised equally with your head.”

Thank you for this singular honour of addressing you this evening.
