

Family Medicine, Healthcare & Society:  
*Essays by Dr MK Rajakumar*

## 12.

# SMA Lecture: Ethical Consequences Of Technological Change

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It gives me a great deal of pleasure to be honoured by the President and Council of the Singapore Medical Association by the invitation to deliver the Annual SMA Lecture. It is for me a homecoming as I am back in the city where I studied and graduated, among my friends and teachers. Presidents of both our national medical associations, which would be one but for an accident of history, have even until now shared this common background. In both the twin cities of Singapore and Kuala Lumpur, several generations of professional men and women share common memories and have strong ties of friendship between them. It must indeed be this special regard we have for each other that persuaded the Singapore Medical Association to go outside this island of such numerous talents to invite a man of my humble capacities to speak on a subject as important as Ethics.

A great many kind things are said on such occasions and your distinguished President and my old friend has been lavish in his remarks. I must go beyond the customary disclaimers to say that there is so much I wish I had done, so much I wish I had done better, and more I wish I had the capacity to do. I am clearly a case of aspirations overvaulting capacities and no one is more conscious of this than I am.

More still when I look at the distinguished line of speakers that have preceded me, many of whom were my teachers, all of whom I would consider it a privilege to listen to any day.

We are unique as a profession in that we alone are ethically commanded to protect, maintain and sustain human life and enjoined never to harm a human being. Because of our responsibility for life, at birth and at death, it is necessary to remind physicians that they must not play God with the lives of the men, women and children in their care.

We live in times of great and rapid change. These changes have already had profound effects on the way we live and the way we think. We have shown a remarkable capacity to assimilate into our lives the uses of new technologies. What has been dismaying has been mankind's inability to develop the spiritual values and moral judgement to put technology to its proper uses. The spectacle of the first nuclear explosion brought to Robert Oppenheimer's mind the words of the Bhagavad-Gita: "I am come as the Destroyer of Worlds". We still live under the shadow of that mushroom cloud and I am amongst those physicians who take seriously the prospect of nuclear conflict that would disrupt civilized existence as we know it. Although less spectacular, the advances in medical technology have transformed dramatically the scale and scope of medical interventions and have placed stresses on our concepts of ethics that stretch them to breaking point. I welcome opportunities such as these to share my fear that we rush like the Gadarenes swine down the technological slope to our own destruction.

We sometimes lose sight of the truth that the practice of medicine has been technologically determined to a very great extent. Where would the practice of surgery be without the discovery of asepsis and anaesthesia, or internal medicine without the discovery of the circulation of blood? Until this century our pharmacopoeia differed little from that of traditional medicine as we know it today. Only the drugs, opium, digitalis and aspirin remain of that vast compendium.

Even as technology has changed the way we practise, our ethical concepts have come under pressure to change in response to what is seen as the needs of the times. Medical schools with overloaded technical curricula can find little time for ethics. All sorts of medical schools produce all types of graduates and sometimes they are ethically blind, aware only of the status of the physician and

not of the weight of moral responsibility that comes with it. Each year when I lecture to students on ethics, I commence with the complaint that ethics should not be taught in this way but in relation to their patient by every single teacher in the faculty. I find these young people extremely concerned about ethical issues and more than a little confused with the reality that they are already beginning to comprehend. There is a conflict in their value system.

In this part of the world, we are inheritors of ancient cultures, Chinese, Indian and Malay and our traditional values still dominate our private lives and dictate the pattern of our behaviour and our responses to events. Yet our professional lives are insulated from these traditional values; in our professional behaviour we are the distant inheritors of the Protestant-Puritan ethic and of the Hippocratic tradition. There is this schizophrenic quality to our educated elite that I will not explore further on this occasion.

We know little of the historical Hippocrates but the ideal of the good physician in the Oath is over 2,000 years old and was adopted by Christian Europe and Muslim Arabs.

You are all familiar with the Oath although few physicians take it and, no doubt fewer still measure their professional lives against it. The heart of the Hippocratic Oath is the injunction not to do harm, never to take human life, to keep confidences and to give equal consideration to people whatever their status.

These are ancient injunctions and are contained in ethical rules of physicians in all our cultures. How have these honoured injunctions withstood the test of time in the face of technological change?

To take one example, among the more important of these technological advances is the computer which can provide links between medical records and other data banks such as school records, police records, employment records. The individual's medical records are no longer maintained by a specific physician but owned by and in the custody of institutions, and access to them is beyond the control of the physician. The patient himself is often not directly in relation to the physician but to the organisation that employs the physician. These are all very important issues but my remarks today will be directed to the problems of

ethics at the extremities of life, from the ethical consequences of termination of foetal life to the maintenance of terminal life.

Abortion has been legalised in many countries. It is sometimes forgotten that the impulse for the legalisation of abortion has come not from the medical profession but from the changing status of women and the grim hazards of illegal abortions. I would go further and say that if abortions were made illegal or if the laws against abortion were enforced where it is still illegal, I do not believe that the number of women seeking abortion would decrease but a vast illegal abortion industry would spring up and only the poorest would be condemned to maiming and death in the hands of unskilled operators. I shall not go into the profoundly important subject of the morality of abortion. My concern today is the consequences that arise from the changes in our norms of ethically acceptable behaviour with regards to the embryo.

Contraceptive technology has advanced very rapidly in the past few years. It is likely that in many societies, more births are prevented than permitted and there are countries that report more recorded abortions than births. The community as a whole and physicians in general have come to accept this with equanimity because it is argued as socially necessary in the face of pressures of population growth.

It is possible now to poison spermatozoa with a variety of drugs, or with hormones suppress the release of the ovum and make the endometrium inhospitable. By adding a little copper you can induce the endometrium to shed an implanted zygote. A few millimetres pressure of suction can extract endometrium and zygote even before a pregnancy can be diagnosed. You can operate or you can stimulate the uterus to contract and expel the foetus prematurely. It is likely that drugs will become available in the near future from the dispensing machine that will safely inactivate the sperm in the male or induce a monthly abortion in the female. That's technology for you.

As a result of social pressures, abortion is legal and ethical codes have been changed to accept abortion and to exclude the pre-viable embryo from the protection of the injunction not to kill.

The question now arises of the status of the aborted embryo. Can the pre-viable embryo be used for experimental purposes? Can it be cannibalised for parts or used as an experimental subject? The embryo is not a legal person under the law; the ethical code has permitted its destruction. Is there now any restriction to what uses it can be put?

As you all know, foetal material can be obtained at an even earlier stage. For many years it has been shown in animals that oocytes could be extracted from the ovary and fertilised in vitro and reimplanted into the womb. Between 1970 and 1974, when Edwards raised the possibility of this in human beings, there were few who regarded it a serious possibility. Within a few years, it was an accomplished fact. You can now learn the technique in a fortnight and the numbers of centres and research workers able to do this multiplies each year. Multiple oocytes are withdrawn from the ovary and individually fertilised. A few are introduced into the womb and the rest are available for study of embryonic growth and for experimentation. What ethical restrictions are there on the use of these human zygotes?

Genetic material has become a valuable natural resource with the emergence of recombinant technology. It has become possible to introduce genes carrying specific enzymes or associated with certain traits into other living creatures. The first attempt with human beings has already been made. How do you monitor and control these experiments without retarding the acquirement of valuable, indeed essential, knowledge? How far do you go? How should we react to the possibility of para-human primates being grown in experimental farms as a result of recombinant technology in vitro fertilisation and reimplantation? If cloning becomes possible then there is the danger of cloned humanoids grown in surrogate uteri kept as 'the imbecile in the backroom', available for the cannibalising of parts for the wealthy and powerful who do not want to die. If controls in the developed countries prevent this sort of activity, will some developing country be used for such profitable but morally abhorrent genetic farming?

In the case of in-vitro fertilisation and transplant, if the ovum and sperm come from husband and wife, no moral or ethical issues arise. If in addition to blocked tubes the uterus is also unhealthy, then a surrogate mother can legally be used in the United States. The surrogate mother must be emotionally prepared and bound legally to relinquish the infant she has nurtured to strangers whose genetic material

she has carried. The problem has already arisen of an infant born deformed by AID to the surrogate mother which neither party wants.

A further step down the road is the establishment of commercial sperm banks. AID is used where the male alone is infertile and the impregnation of the women personally by a strange man is culturally and emotionally unacceptable. The physician acts as intermediary and undertakes the task of instrumentally placing the semen in juxtaposition to the cervical opening. Sperm banks have been established in the United States and it is already becoming possible for a woman to specify the characteristics of the donor male whose sperms she will accommodate.

The antenatal diagnosis of foetal abnormality has become an important new indication for abortion. It will soon be possible to make the diagnosis much earlier by use of recombinant technology on chorionic villi. Trisomy of chromosome 21 and thalassaemia are two important diagnosable conditions in our part of the world. Ultrasound allows early diagnosis of spina bifida and termination is advised in many countries although it has been found that the image of the embryo on the real-time scanner is sufficient to bond the mother to the foetus and for her to refuse termination. The other major cause for termination is rubella infection. This involves the destruction of a significant number of normal foetuses, depending on the time of infection. Pre-natal sex determination is now possible and there are foetuses being aborted for belonging to the wrong sex.

The rule then is that once the defective foetus is born it is protected by the laws of the country and will be entitled to loving care; if diagnosed a few weeks before delivery it may be killed. Once born it can even sue for damages against persons who may be liable for having caused the deformity or for not having prevented it. Imaginative lawyers in the US have even suggested legal action by the deformed infant for 'wrongful life', i.e. for not having been killed and spared the misery of life.

The extent of this misery is variable. The Down's infant is generally a happy and contented person although it will have more than its share of complications. The spina bifida, say a meningomyelocele, is assured of a long miserable life which will tax the parents to the utmost. Where the infant is born with an additional defect that is incompatible with life, e.g. Down's syndrome with duodenal atresia,

then can the infant be allowed to die by withholding surgery? You may think so, but in the recent Arthur case in the UK, a Down's syndrome infant developing signs of pneumonia on the second day was denied treatment and died. Dr Arthur was saved from conviction only by the appearance of a pathologist who could find multiple congenital abnormalities that were incompatible with life.

The technology to sustain life has raised important issues at the other extremity of life. How far should we go to use our new machines to maintain life? The issue of sanctity of life is brought up with greater passion since the individual has developed a personality and a presence and has emotional and economic links in the community. No society accepts that human life is totally inviolate. Tribes and states since time immemorial have gone to war to kill members of other tribes or states that have annoyed them. Many states still break the necks of individuals who cause sufficiently big problems. Ironically those persons who favour abortion are usually opposed to capital punishment and vice versa although I believe there are countries that favour both.

Some states make suicide illegal and if you fail in your attempt at suicide, you will be punished for your pains, but this is changing. It is illegal as well as unethical for a physician to assist in a suicide. Every physician knows the terminal case who begs for his life to be ended, more often I sense out of helplessness and hopelessness than out of pain. Where the patient is in pain, we have powerful drugs and techniques to relieve the pain, even if in the process life is shortened and consciousness impaired. Beyond that, physicians may not ethically or legally go. If society wants to give individuals the right to kill themselves, then physicians will have the ethical obligation, not directly to help, but to continue caring. Direct involvement would introduce an ambivalence into the relations between the physician and patient and create new tensions that would destroy the heart of that relationship. Instead lay organisations have sprung up that provide advice on how to kill oneself and in Scotland you can buy a 'do-it-yourself' booklet.

In the United States, 'right-to-die' laws are being advocated and the physician, in determining the vigour of resuscitative efforts, is expected to be guided by the wishes of the individual expressed in 'living wills'. Hospitals have their own policy on resuscitation. An elderly physician wrote some years back, noting with bitterness, that he was at the age where some London Hospitals would not resuscitate him if he had ventricular fibrillation.

Yet another distinguished cardiologist died from a myocardial infarction because his physicians reluctantly respected his firm instructions not to be resuscitated, although he might have had many years of useful life if he had. One wonders if he would have felt the same if he had been defibrillated and lived to reconsider. Difficult though it is to talk about it, some patients should not be resuscitated but be permitted to die with dignity. We all must die one day, and as physicians we would choose a massive myocardial infarction before we become utterly senile; and we must live in terror that some enthusiastic intern with a defibrillator would shock our tired heart and revive our weary brain, not to give us a new lease of life but only to prolong our dying. Lay persons who are enthusiastic for the physician to undertake euthanasia are full of the good intentions with which is paved the road to hell. These good souls must be unaware of the complex emotions of guilt and recriminations that engulf physician and patient, family and friends around a death bed. The patient with the legal right to die may change his mind each day, indeed by the hour depending on the degree of pain and discomfort, on mood and relations with those he or she loves. Granted the right to die, he will look guiltily at his physician each time he changed his mind and feel pressured by the long, long suffering faces of those who are to mourn his death.

The brain damaged patient is an entirely different issue. If the cerebral cortex is permanently damaged, and physicians are agreed that coma is irreversible, then extraordinary measures need not be taken to sustain life. This means in practice that mechanically assisted ventilation is not offered but once initiated, disconnection is a more difficult matter. In the case of Karen Ann Quinlan in the United States, the Court returned the decision to the physicians in consultation with the family, the ventilator was disconnected and the young woman continued to breathe, still in coma.

The new concept of brainstem death as defined in the UK means that death has occurred when there is permanent functional death of the brainstem. When the ventilator is disconnected, there will be no respiratory efforts and the heart will stop shortly. Even on the ventilator, dissolution of tissues will proceed and the heart will stop within a few hours to a few days. Once a diagnosis of brain stem death is made, if an organ is needed for transplant, the ventilator can be left on to sustain the heart until the required organ or organs are removed from a 'beating heart cadaver'.

This concept has been cogently defended and the Conference of the Royal Colleges in the UK has clearly described how brainstem death can be established. The importance of this new definition of death lies in the need for organs for transplant that have suffered as little anoxia as possible. The logic is perfect but we must make allowance for the primitive reluctance to accept as dead a body with a beating heart.

Our techniques for life support are improving and most vital functions can be temporarily replaced. This is an expensive technology and in a society with limited resources – which is true of every society – that means life-support systems are either not available for everyone or else some other facility must be deprived of resources to provide more life support systems.

In the poorer countries, the choice may be simple and scarcity will determine that only those clearly going to recover to near normal life with reasonable life expectancy will be given the use of expensive resources. There are countries where unfortunately the choice may be simpler still and the politically most influential and the wealthy will get priority every time.

Much of the decision-making on the allocation of health resources is out of professional hands. Politicians make these decisions, physicians live with them. We have the technology to immunise children against diphtheria, tetanus, Poliomyelitis, whooping cough, rubella, measles, tuberculosis, even hepatitis B, and perhaps, liver carcinoma. The technology has been available for a long time to ensure clean water and safe disposal of sewage, control of vectors and prevention of pollution. Physicians do not have the power to determine how available technology will be applied but we do have an ethical obligation to speak out about it.

However, the physician has wide discretion in the use of extraordinary medical life-saving therapy such as bypass operations, organ transplant, dialysis and the exhibition of expensive drugs, and normally exercises it without challenge. We are ethically bound to make our choice of patients to benefit from these technological developments on purely clinical grounds yet social criteria must inevitably creep in. In the UK, for example, it was found that medical indications for dialysis were unconsciously adjusted by physicians to fit the number of places available. A majority of centres would regard with disfavour candidates above

60 years of age. When physicians in 25 renal units were recently asked to evaluate 40 patients in renal failure with a view to selecting 10 for dialysis, it was found that only a third of the patients would have been accepted by all units and no patients were rejected by all units. This would suggest a considerable degree of subjective variation on what is purportedly an objective clinical decision. At Seattle, where they pioneered dialysis, a civilian board makes the choice with the help of specific criteria and the report on the deliberations of this board makes depressing reading inducing one to revert to the view that these decisions are perhaps best left to physicians. In Los Angeles, optimum candidates are identified, that is, with no other significant organ damage, and one is selected by lot to fill the vacancy in the dialysis pool.

The physicians making these decisions or advising on them will in practice have a great say. It has been argued that physicians have no training in moral philosophy or ethical analysis, yet make what are essentially moral decisions in the guise of clinical judgement. Philosophers may go on principle, but physicians have to decide case by case. My fears go further. Do physicians in fact function as gatekeepers to scarce resources, watchdogs for the Treasury, so to speak? Does clinical judgement serve economic necessity and are physicians the instrument of politically determined rationing of scarce resources. In private practice, those who cannot pay can either go to a state hospital or go home and die; you ration by ability to pay. Extraordinary life-saving technologies such as bypass or dialysis are purchasable. Where it is available, the family is under great emotional pressure to purchase it with whatever resources they have for the satisfaction of having done everything possible. Have you ever heaved a sigh of relief when a patient in renal failure died before the family could sell everything they owned, and got in debt to purchase a few weeks of dialysis time? These human tragedies will increasingly press down on physicians as medical technology advances and more can be done. For example, when the problems of transplant rejection are solved, there will be an explosive increase in demand for kidney, liver, heart and other organ transplants; or for the machines that are invented to do the task. Has the physician the moral qualities and the ethical strength to make these choices, or even to advise on them and to quietly reject decisions that are contrary to his or her conscience and his or her ethical standards. Or will events make us the custodians of interests other than those of our patients.

We are not permitted as physicians, ethically and in good conscience, to distinguish between millionaire and indigent, prime minister and peon, political prisoner and parliamentarian. Is this a sustainable position in any society? When it is breached, where do we stop? If a tyrant needs a young heart to transplant, will there be physicians ready to oblige by diagnosing brainstem death in the prospective donor?

When the technology is primitive and unsafe, the pressures are small, but when the technology is perfected, great indeed will be the pressures to get to the head of the queue.

The dilemma of the profession is a universal one. More and more physicians depend for their living on the State or on great private institutions or boards. More and more physicians see their personal advancement in the role of technologists dependent on expensive equipment and highly trained staff. Physicians are not invariably men or women of special moral qualities or of a compelling sense of vocation. They are selected as young men and women essentially for their examination results, and may be motivated by the high status and large incomes that they believe is assured by a medical career. If at medical school they see that their contemporaries lack ideals, that their teachers talk like tradesmen and, when they graduate, discover that the leaders of the profession are merely successful tradesmen in white coats, then all is lost. Under these circumstances, the chances of an ethical profession surviving are smaller than that of a snowball in the streets of Singapore.

Ours is a noble profession but it will not stay noble unless its members are individually seen to be noble in their aspirations and endeavours. We must at all costs cling to certain constant values as a profession, most of all an invariable respect for human life. If our professional ethics suffer brain stem death, then the annual ventilation of SMA Lectures will not keep off the stench of dissolution.

But I believe the high ideals of medicine will prevail. I believe that, the practice of our art of itself tends to enlarge the conscience and humane impulses of its practitioners. I believe that society as a whole needs in the most profound way the existence of physicians that people can respect and trust, next only to their separate gods and this will force the profession back to its ancient role. Our protection as a profession against the threats to our ethical standards lie in

increasing awareness of these issues both within the profession and without. The profession must provide leadership in discussing ethical issues. We should discuss these issues with dignity and defend our ethical positions with passion and when the community sees that we stand up for values, and not only for our personal advancement, then they will be with us. Whatever the technology, we must keep the doctor-patient relationship at the heart of the practice of medicine. We live on the threshold of the 21st century and we must prepare for the future by refining our ethical concepts and developing the application of our ethical code so that the medical profession is seen to be firmly on the side of those in our care, willing to defend their human rights and in whose care their rights will be safe.

In conclusion, may I remind you of the first Aphorism of the Hippocratic Collection, whose humility and wisdom should be our guide.

“Life is short and the Art long, opportunity fleeting, experiment dangerous and judgement difficult.”