

FAMILY PRACTICE OF THE 21ST CENTURY COMPUTER, CHANGES & CHALLENGES

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ABSTRACT

There are five Cs facing family practice in the 21st century. The first is the computer. It is here to stay. It allows for computerized records, decisions support tools, data analysis, mobility and transferability of information at the click of a button. The second is Clinical quality. Value for money means improving on quality all the time and every time. Continuing medical education is mandatory. Implementation of clinical practice guidelines may yet be mandatory. The third C is Clinician Practice Groups. I see the solo doctor practice in apoptosis. The lifestyle of the solo doctor as regards to his family and social life is no more attractive. Can he work a five day 44 hours week and survive? Has he time to up skill and keep abreast of medical advances? The fourth C is community accountability as payers look towards payment for performance, rather than just service. And the new value frontier is population health management rather than individual health management. The final C is the culture of our profession. It will shift towards more teamwork, continuous improvement, learning and timely implementation of lessons learnt. This will help us achieve higher clinical quality at lower cost. The specialist is not above the family physician nor vice versa. We need every member in the team to do best the part we have been trained for. Only then will our patients receive increasingly higher quality care at lower costs.

INTRODUCTION

Dr Baratham Ramaswamy Sreenivasan was the founding President of your College; the College of General Practitioners in 1971 now renamed the College of Family Physicians, Singapore. I am an Honorary Fellow and I thank you for the honour bestowed upon me when Associate Professor Lim Lean Huat was the President. Dr Sreenivasan had devoted over forty years of his life to medicine, 15 years of which were in hospital practice and the rest in general practice. He had the wisdom to know that concentrating all development and advances in hospital medicine and specialties with little being done in the field of general practice would not lead to a higher standard of health and health care for the nation. Dr Sreenivasan was physician,

scholar, teacher and administrator but the role most fulfilling to him was that of a physician. He was a true scholar. He faithfully pursued continuing education throughout his life and established with the founding of our College, general practice, now family practice as a separate discipline.

Among his many awards were the Honorary Fellowship of the Royal College of General Practitioners, the Royal Australian College of General Practitioners, and the Royal College of Physicians, as well as this College. He received a Doctor of Laws by the University of Malaya, and was President of Malaya Branch of the British Medical Association, the Singapore Medical Association and the Singapore Medical Council.

Ladies & gentleman, I am greatly honoured to deliver the 19th Sreenivasan Oration.

Looking through the list of previous orators and their topics, I see mine today as a continuation of two previous ones – The Future of the General Practitioners delivered by Dr Wong Heck Sing (the first Orator in 1978) and General Practice towards the year 2000, delivered by Professor James D E Knox (in 1990). We have left the 20th century. What are the challenges for Family Practice in this 21st Century in Singapore? This is what I wish to discuss.

THE MAIN ISSUES

There are three main issues at stake. These are

- I. The need for clinical quality care at every patient-doctor contact;
- II. Using the computer to its full potential for patient care and population health management; and
- III. Why solo practitioners will find it harder and harder to survive. It is, as it were, apoptosis (or programmed cell death) for the solo family physician, if each continues to practice as of today – alone, long hours (when a 5-day week is the norm), poor family and personal life and little time for CME, audit and accountability activities.

CLINICAL QUALITY

We as medical professionals are always concerned about the clinical quality our patients receive. This is different from service quality but both are important. Service quality refers to the hotel industry type of quality like wait times, accessibility to services, courtesy, cleanliness, etc. A quality health service is one that increases the chances of delivering the desired health outcomes, that delivers care consistent with current medical professional knowledge and has little variation in the practice despite different practitioners delivering the care i.e. consistently by superior performance.



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However superior or excellent quality has a cost. So it is important for a health care delivery system to give the right care to the right patient at the right place at the right time and at the right cost. The right siting of care is a strong determinant of cost. In the continuum of care, costs in descending order of magnitude are highest in hospitals, then family physician offices, and lastly self care.

So in Singapore we already have this challenge of moving a patient seamlessly through these levels as appropriate because we are not yet organized to do so. To integrate clinical quality for patients, quality of care is an integrating force. System – wide data sharing and quality reports are the foundation pieces that allow professionals and patients at each level to actively participate in the care process cost effectively. So we must share data and reports. May I persuade you my colleagues to join in this sharing to benefit your patients.

There is unused capacity in the community and excess demand at the hospitals. We would like to shift more care and resources into the community to be nearer patients' homes, and thus relieve hospitals of the congestion and non-sustainable yearly increases in workload of around 6%. More care should move to outpatient sites, and to outpatient sites outside the hospitals. And as society ages, the non- acute sector of care will become more and more important.

If there is a best way of practice based on current medical & health services evidence, then we all should do it. Everybody wants superior consistent performance; this means cutting down and eliminating variation in practice. Variation is the key to understanding Quality. The Toyota way of manufacturing cars exemplifies the consistent, cost effective way of car production. However in health care this is not entirely possible. Four reasons account for the variability in clinical practice. These are firstly, patient factors. The individual patient has demands and makes choices as best suits him. Presented with the same evidence or facts of the medical case, different individuals do make different choices. The second cause of variability is the uncertainty in diagnosis and issue of risk management. Much of medical practice is based on probabilistic medicine. The third reason is perverse incentives in the system. Rewards affect behaviour significantly. Ease of payment e.g. use of medisave for certain conditions and not others, also strongly affects patient choices. And lastly the culture in a system, especially the difficulty of effecting change, creates variation. Some have changed, others are changing and yet others have not changed. Evidence based medicine to impact clinical practice must mean changes to current practice. With the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients, the clinical practice must integrate individual clinical expertise with the best available external clinical evidence from systematic research. So a system with a strong positive reception to change will help towards more standardization and less variation. Why are we where we are today?

EVOLUTION OF MEDICAL SYSTEMS

In 1911, the idea prevalent was to match professional expertise to the job, focusing on specific conditions or illnesses and relying on where and learning curve effects to achieve superior outcomes at lower costs (Taylor)¹. From the 1950s to the 1980s, it was the focused factories approach – heart hospitals, cancer centers, etc, characterized by high volume of acute care delivered largely in hospitals. We were brought-up this way and Dr Sreenivasan had the foresight to see this would not last; that the concentration of care and medical expertise on a hospital base would not be sustainable.

For this century, if we continued the focused approach, we will create even larger silos of care (as medical advances dictate the fragmentation of specialties), not eliminate them. How for example is a diabetic patient with heart disease and asthma served by a focused factory? And an ageing population means more people with multiple chronic illnesses. The new core “business” for many health care systems continues to shift from acute inpatient care to primary care, wellness and the continuum of care. We are in the midst of this shift and this has significant impact on you, my colleagues in family practice. Functional integration is not an option. Functional integration is necessary to manage the health of populations over time in a cost-effective manner, effective referring to clinical efficacy and efficiency applied to health outcomes.

The other evolution of the past concerned the medical profession.

EVOLUTION OF THE MEDICAL PROFESSION

Modern medicine as we know it today is over 100 years old. In 1910, the Flexner Report² in the US made recommendations with enormous contribution to the upgrading and standardizing of medical education based on the biomedical sciences. Locally, our medical school was founded in 1905 and was grounded firmly in the bio medical sciences also. However the report was silent on the contribution of the social sciences and the humanities to the training of doctors.

For the next 50 years and more, medical education did not change much. The medical profession kept its status quo throughout the industrial age and largely skipped it. The key achievement of the industrial age was the ability to achieve economies of scale and scope through mass production manufacturing techniques. So post world wars, the medical profession retained this handicap and so today has great difficulty attempting to adjust to accountability and practice demands in the information age. The medical profession has not been able to embrace information technology as rapidly and as deeply as is possible.

So for the next 50 years, in our present day, what we have is medicine largely as a cottage industry. It is extremely difficult if not impossible for doctors who are practicing in largely solo and small partnership practices to exchange information with colleagues; implement guidelines, protocols and pathways; develop outcome measures demanded by purchasers, and keep up with the explosion of new medical knowledge.

WHAT IS EFFECTIVE MEDICAL PRACTICE

Today this means at least seven abilities or capabilities. First, the ability to be truly patient centred; Second, capability for ongoing capital investment; Third, ability to fund and use advanced information systems; fourth, the ability to work in teams; fifth, the ability to adapt to changes in treatment techniques, practices and payment incentives; Sixth, the ability to improve patient care continuously and last, the ability to be responsive to external parties.

To participate in an effective medical practice, we need to be part of two revolutions in progress. The first is the information technology revolution. Physicians and others will use confidently tools such as computerized records, computerized ordering of drugs and tests with decision support. Secondly, a cultural revolution is underway. Physicians need to understand that they are members of a health care team and practicing as an individual on a solo basis will become harder and harder to sustain.

THE NEW VALUE FRONTIER

As payers and purchasers look hard for value for their money, and as government's health budgets shrink or grow less compared to previous years, population based, rather than individual based, management may well be the new norm of funding. There are three reasons for this. First, all parties at risk for keeping people well will realize the importance of early prevention, health promotion and community outreach efforts. Second, greater value is created by intervening upstream in the value chain with disease prevention and health promotion efforts, rather than waiting to fix the downstream problems of illness and disability. Third, the mission of health care providers will include not only the provision of acute and chronic care but also the need to work with others in the community to produce a healthy population.

Our burden of chronic disease that comes with an ageing population is likely to increase. And if healthy lifestyles can delay the onset of certain illnesses, a population with increasing longevity (estimated to hit 130 years by mid 21st century) will still mean more elderly with chronic conditions. A systematic approach to handle this is required. It would mean rapid translation of clinical research findings into good evidence-based medicine for immediate implementation for patient benefit. More science will creep into medicine. Implementations will necessitate redesigning of many care processes. It will not be just adding more new steps to existing programs. It would mean an overhaul of the way we do things today. There could be three levels of population groups. The largest at Level 1 comprising 70-80% of those with chronic conditions will require usual care guided by protocols and pathways. The bulk of these patients should remain with primary care doctors. Level 2 are high risk individuals in the community who need assisted care or care management. They should still remain mobile and in their own homes with family or maid assistance. We lack a scheme for doctors providing home care to this group of individuals.

Level 3 is intensive care and case management for individuals with complex medical problems. When acute, they would likely be in acute hospitals and intensive care units within the acute hospitals. When stabilized, they may be downgraded to Level 2 and be in need of assistance for their daily living. Case managers will help Level 3 patients and arrange for step down care. At each level, education to prevent recurrence of medical problems and escalation for the need of higher levels of care is mandatory.

So if we were to look at the three "lines of business" as acute care/chronic care "business" verses primary care "business" versus health "business", the value creation as measured by quality adjusted life-years (QALY) or productive capacity, rises linearly from low to high across these three "businesses". So if we ourselves were to remain healthy and well, we would be potentially among the most productive citizens. At the other end are those in need of acute and chronic care where their QALY is lower.

An important driver of the health "business" would be the full realization of the impact of the human genome which has been fully deciphered earlier this century. In 1996, Goldsmith³ said "A movement from an event-driven to a risk-driven framework for health care payment is a possibility. Instead of diagnosis and treatment as its principal business, our health care system will have to predict health risk and try to manage that risk before it flowers into illness and cost".

ACCOUNTABILITY AND PERFORMANCE

As the dollars for health care become more difficult to justify, the current emphasis on cost containment and cost reduction as a way of creating greater value will shift to a greater emphasis on quality and outcomes of care. For the same dollar, we could get more out of the system by improving efficiency and reducing waste. But when this is done, greater value accrues by spending the same dollar for higher quality and better outcomes of care. As more reliable and valid measures of quality and outcomes of care develop, together with advances in information technology that have enabled greater amounts of data to be processed faster; and through the internet, shared with patients and the public at large, we will move from a trust-based accountability to an evidence-based accountability (Relman)⁴. Data and the resulting analysis and information will not be available one to two years late but become more and more real-time.

So the buzz word for payment policy is P4P – pay for performance. As stated in 1997 by Kindig, "the breakthrough is to pay providers based on the health outcomes achieved"⁵. Realistically in Singapore, this may come about by 2010? That is, as the clusters improve on their information technology systems over the next 3 to 5 years, it is probable that instead of being paid for work at piece-rate, then block funding, a significant budgeting tool will be based on a defined, agreed to, set of outcome measures. This time line could be divided into three phases:

- Phase 1 - Demonstration projects, discussions, debate and research. In this we cannot exclude the family physicians and general practitioners who provide 80% of primary care in Singapore.
- Phase 2 - Expansion of the population based outcome payment to integrated health care systems capable of assuming such responsibility. Maybe it is time for family physicians to group together to meet this challenge head on and accept such responsibility for the population's primary health.
- Phase 3 - The environmental and social service sector's contribution to population will be incorporated. In this respect, step-down facilities, self-help groups, employers and other civil societies may be interested to participate in the wellness and the maintenance of a healthy population.

So the gold standard in years to come in accountability from a value creation perspective will be paying for health produced rather than illness or disease treated. This assumes an illness is preventable and the individuals can take personal responsibility to implement such preventive steps.

One major factor in improving and maintaining patient safety and high standards of clinical care is timely access to appropriate patient information, medical evidence and relevant institutional knowledge. For the latter, integrated delivery system networks (IDSN) would link and incorporate you physicians as integral parts of the clusters. This would allow you access to patient information and updated medical evidence as produced in the many Ministry of Health issued guidelines. This would allow you to participate in good clinical management practices which refer to the use of evidence-based guidelines, protocols and pathways, to case and care management systems, to disease management systems and to demand management. Plugging into all these systems helps achieve the goal of reducing unnecessary variation in clinical practices and thereby improving quality and outcomes for care for the same or lower cost.

The most frequent activity of clinical practice for chronic disease burdens of a society today are for asthma, diabetes, congestive heart failure and depression. At the National Healthcare Group, there already are protocols and pathways for these conditions that allow for consistency of care as a patient moves from hospital down to the polyclinic, at every site. I invite you to participate in these activities. I am sure SingHealth has similar plans so that together as a nation, we can move forward.

Care management refers to the resources that are spent on taking care of those who require treatment (and this need not always mean a doctor or a nurse. Sometimes appropriate care can be rendered by other people including volunteers, maids and family). Demand management is the use of prevention and health promotion activities to reduce the number of visits and overall demand for medical care services.

To do all this, as the medical information base expands and the pressure on the clinicians' time increases, the ability of the computer software to provide the evidence/data to address distinct clinical problems becomes more essential. Imagine two extra computers stuck on your ears to assist your brain.

TEAMWORK

Can physicians form organizations that challenge doctors to look at the bigger picture than just their immediate professional needs, and excite them about working in teams to improve quality and face the issue of restructuring? If clinical quality and health outcomes are the accountability gold standards, can a solo practitioner deliver on these measures and continuously improve on them? Physicians will need to be part of the organizational process that supports the delivery of coordinated care to patients in need, and disease prevention and health promotion services to those who are well.

Everything should be done to increase the interdependence between physicians and its hospital and the health system. This interdependence will broaden to include payers and consumer groups in regard to mutual accountability. Physicians and physician organizations will need the capital of hospitals and health systems to provide needed information for purposes of external reporting as well as for purposes of internal continuous improvement.

ELECTRONIC MEDICAL RECORD

If you were a solo physician, how would you invest in an electronic record which you could share with the specialist or the hospital and vice versa, how can the hospital specialist share his record with you? Are the systems compatible? Are you able to continuously upgrade your software to keep pace with EBM and the issuance of new clinical guidelines? But if you were a part of the cluster network, sharing all these would be part of the deal as the focus is to provide good clinical quality and health outcomes for the population we serve.

As the electronic medical record becomes reality in Singapore, this is part of a revolution of development in support of clinical quality and efficiency.

There are 6 levels of increasing sophistication in the development of medical management systems. Level 1 in the traditional model of care, with the physician relying upon his own knowledge/ brain power, and focusing on patients during their visits to his clinic. This may be the level most of you are at today. At level 2, paper based chart inserts help the physicians to remember to perform key functions during a patient visit (e.g. diabetes care, so at certain visits you will order the HbA_{1c} level, check his lipid levels, urine micro albumin etc). A few to many of you may be at this level, using the MOH Clinical Practice Guidelines conscientiously to deliver EBM. Level 3 are paper-based systems to track

populations of patients between visits ("shoe box" registries). This maybe a few of you are doing. Level 4 is the use of computerized registries to track populations and detect gaps in care. This the cluster is only just embarking upon. There is initial substantial capital outlay and training costs to staff. Level 5 is the availability of electronic medical records that prompt physicians to perform key functions. And finally Level 6 is the use of computerized prescribing and test ordering with decision support. Again we have just started on this. As the level of development increases, the infrastructure of the physician's office and work environment has to change. From level 1 which is what small traditional practices are all about, practices have to invest in quality improvement for populations, rather than just individuals. And by the time level 6 is operational, practices will have improved clinical quality through efficiency and efficacy. Efficacy means doing the right things that matter to patients' health.

Australia's Plans

In February 2004 there was a report in the RACP News titled "Advancing the National e-Health agenda. There are two parts to this. The first is Health Connect. It is Australia's proposed national network of electronic health records. It aims to improve the flow of information across the health sector. The second is MediConnect. It is a secure electronic system designed to help improve quality and safety in managing medications. Electronic decision support systems within the computerized records will assist clinicians make clinical decisions. It can provide access to clinical guidelines and pathways, incorporate built-in alerts and have links to medical information, journals and peer support networks. This can contribute to improved safety and quality of care and improved patient outcomes. It can help improve patient safety by reducing medication errors and adverse drug events.

United States of America

The Health and Human Services Secretary announced in July 2004 a 10-year plan to get individual doctors, clinics and hospitals to install computer-based systems, and build an interconnected system to link different facilities. To encourage hospitals and clinics to go electronic, the government planned to look at incentives such as regional contracts, grants and low interest loans. A panel appointed to cost this project would report on the potential benefits of this system by the end of this year. The secretary said, "this transformation will require the collaborative efforts and leadership of clinicians, consumers, hospitals, purchasers, payers, technology companies and informatics thought leaders to make this ground work for change a reality". The Chairman of the American Medical Association said, "Electronic health records have the potential to be revolutionary, but work remains for us to be sure they deliver on this promise." (New Paper 28 July 2004).

CONCLUDING REMARKS

I see a fire raging in the bushes. All trees and paper are being consumed. I also see the electronic revolution fast descending on the medical profession and health care. We were overtaken and sidelined by the industrial revolution. But it is unlikely we will be ignored by the electronic revolution. Join us in the drivers' seat. Let us have a significant say in how to utilize this revolution to benefit our profession in serving our people better. There is time yet to reflect and think carefully just what our national e-agenda should look like. D H Lawrence said, "if only we could have two lives: the first in which to make one's mistakes, which seem as if they have to be made; and the second in which to profit by them." Well we have only one life to make good on this revolution.

I wish to summarize my talk into 5 'C'. The first is the computer. It is here to stay. The younger generations are very comfortable with the technology. It allows for computerized records, decisions support tools, data analysis, mobility and transferability of information at the click of a button. The second is Clinical quality. Value for money means improving on quality all the time, every time. Continuing medical education is mandatory. Implementation of clinical practice guidelines may yet be mandatory. The third C is Clinician Practice Groups. I see the solo doctor practice in apoptosis; it has been programmed to die. The lifestyle of the solo doctor as regards his family and social life is no more attractive. Can he work a five day 44 hours week and survive? Has he time to up skill and keep abreast of medical advances? The fourth C is community accountability as payers look towards payment for performance, rather than just service. And the new value frontier is population health management rather than individual health management. Finally the culture of our profession will shift towards more teamwork, continuous improvement, learning and timely implementation of lessons learnt. This will help us achieve higher clinical quality at lower cost. The specialist is not above the family physician nor vice versa. We need every member in the team to do best the part we have been trained for. Only then will our patients receive increasingly higher quality care at lower costs. I look forward to significant changes in the collaboration with our family physicians.

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