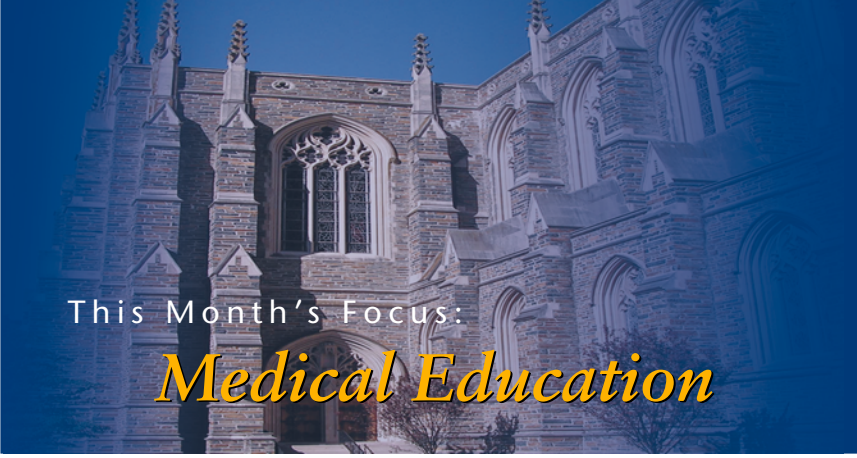

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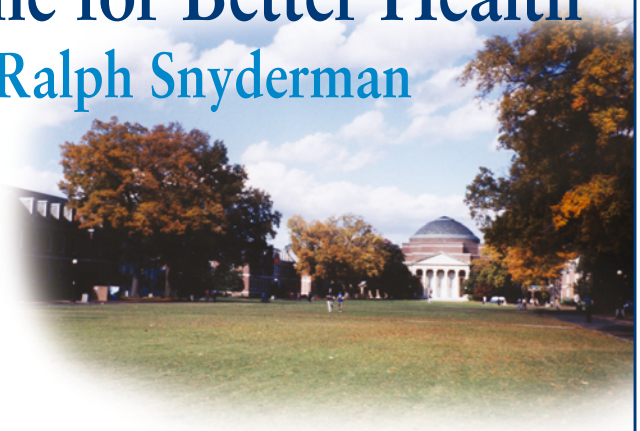
This Month's Focus:
Medical Education

SMA NEWS

Prospective Medicine for Better Health – An Interview with Dr Ralph Snyderman

By Dr Toh Han Chong, Editor



Dr Snyderman, can you tell us more about the concept of Prospective Medicine, which you have proposed as a revolutionary way of transforming healthcare?

The practice of Medicine is very disease-focused. Prospective Medicine (see page 3) is a movement to change the thinking of the physician and approach of the healthcare system to *prospective* from *reactive* – from focusing on managing disease, to focusing on risk factors including the earliest molecular events that lead to the causation and natural history of disease. This allows more personal responsibility and earlier intervention to provide maximum benefit and impact on the health of the individual and community.

Chronic diseases account for 75% of healthcare expenditures in the United States (US) and managing these diseases has become inefficient and financially unsustainable. In many cases, advances in treating chronic diseases at a late stage are challenging, not dramatic in benefit and can be very costly.

There must be many major diseases for which modern risk analysis still may not impact significantly on disease outcomes based on available interventions. Also, what would be the implications for health insurance to know the risk profile of the individual?

This concept is a redirection of Medicine, but we are not ready to pull the switch today to do everything through Prospective Care. Take an individual with a family history of breast cancer. You need to devise a series of tools and algorithms which may be quite complicated as there may be a thousand factors that determine susceptibility to breast cancer. You may look at the data right now and say it is not good enough to predict whether or not she is going to get breast cancer. So, you have to start where predictive values and risk analysis are going to provide the greatest benefit.

With regards to health insurance, there needs to be a lot of thinking by ethicists, policy makers and legal experts, to define the protection needed for the individual. At Duke, the information used to determine the individual's risk is absolutely withheld from everyone, except the provider and patient. The risk profile is not shared with the insurance company or employer. And, we only analyse for risks of major diseases where something can be done about it. For example, we would not analyse risks for Alzheimer's Disease as it may create more problems now than provide tangible benefit.

I believe Prospective Healthcare is an important concept that we can act on right now, but for it to work, we need to redirect our resources and do it in a staged way, focusing on the areas where it works.

Taking a radical example, if a woman has a very high risk of breast cancer, it must be difficult for her to even consider a prophylactic bilateral mastectomy?

Yes, that is not an ideal intervention option, particularly since the woman may never develop the disease. But if you have the predictive and tracking tools, you can determine at the earliest onset of the disease and if it develops, whether the patient needs systemic chemotherapy in addition to surgery or if she will respond well to this treatment. Such research is, however, in its early stages. What Prospective Medicine does is to try and provide the physician and patient with a map and a system that is designed to best fit the individual rather than treating them in a cookie-cutter way.

Page 3 ▶

Contents

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◀ *Page 1 – Prospective Medicine for Better Health*

Would it not be possible that early, individualised medical intervention and surveillance may add to cost of healthcare?

Rising healthcare cost is a major issue. We can look at the impact of Prospective Care at the level of the population, for example, an employee group or the country of Singapore itself. You can anticipate some 10% to 20% are either very high-risk or at an early onset of a chronic disease, leaving 80% not at high-risk within the next three to five years. You can do a rough sort of the population with a health risk assessment tool (see Figure 1), which is of low resolution but it only needs to differentiate the 80% and 20%. The benefit of this approach is that it increases the utilisation of resources in a rational way. As the disease risk gets higher, the benefits of intervention are greater. Take the population of Singapore as it relates to the development of coronary artery disease – you can look at this as one population, but truly, it is a heterogeneous one. So, with prospective care, you differentiate between people with different risks by using tools which analyse them.

The smarter we become in risk prediction, the more potential preventive measures, interventions and lifestyle modification we can introduce earlier. Over time, for each individual who develops the disease, the disease burden increases, the cost of treatment increases, and the reversibility of morbidity and mortality decreases. It stands to reason that earlier recognition and intervention ultimately are less costly and more humane.

It is necessary that ethicists, lawyers, policy-makers, and even theologians, decide whether it would be fair to do risk assessment when there is no obvious intervention or benefit. For now, I think we should only select those disease risks where we know we can make an objective difference. Certainly, there is a chance of health resource over-utilisation. I personally do not like the idea of blindly screening for risks where there is no benefit. You can identify potential problems and not know what to do about them. Be conservative and only act on those things where we have enough evidence that the data will useful.

Moving on to the Duke model of a Graduate Medical School, how does one teach medical students to be doctors in only four years, including a compulsory research year?

I think Duke has been successful in turning out medical leaders. Since 1966, we have compressed the basic science training into a year. During the second year, medical students go into intensive clinical training. The third year is reserved for doing creative medical work, but it does not have to be bench research. The majority will do research but that may also include a Masters degree in public health, health science or clinical research. Some may go to business school, while a small number may go into medical ethics. Generally, they all do very well. But that may be because we are very selective in our process of choosing medical students.

Having a creative year gets the mind thinking and gives students the chance to ask questions and answer them. We also need to prepare them to have a learning mind. Medical school teaches the rudimentary foundations – the language of Medicine. Once you have that, there are certain thought patterns you need to develop without worrying only about details.

One of the greatest transformations I have seen is when second year medical students start clinical medicine after they have just had one basic science year. Seeing them present the patient's history on the first day is the most painful thing for an attending physician to sit through! It seems absolutely hopeless. You do not know what they are talking about, and they do not know what they are talking about. But by six

Page 4 ▶

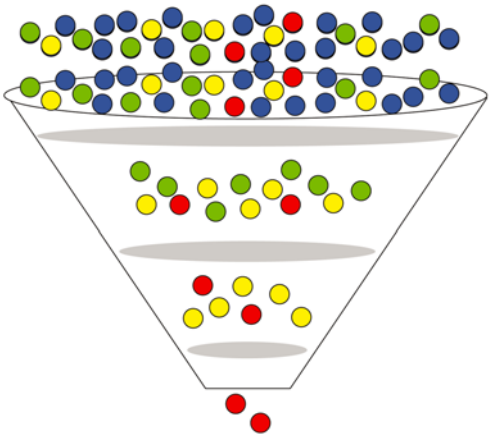
PERSONALISED HEALTHCARE

Prospective Healthcare is a Duke initiative that emphasises early detection and disease prevention methods. In seeking to create a more efficient system of healthcare delivery, the programme focuses on personalising care with the idea of preventing debilitating diseases and chronic conditions – such as heart attack and stroke – before they occur. Recent genomic advancements, coupled with a greater understanding of disease origins and risk factors, have created a ripe environment for greater interaction between people and their healthcare system.

Practitioners of Prospective Healthcare will use these rapidly evolving tools to create a profile of a patient's current health status and risk analysis, taking into consideration factors such as genetic background, current health, environment and lifestyle. Physicians will then be able to identify an individual's risk factors for developing any number of diseases and chronic conditions. A personal health plan will be created and interventions introduced to prevent or detect disease in its earliest stages, when treatments are generally most beneficial. Each patient would have his or her own health "road map" to navigate the most appropriate path to maintain a healthy life.

Once a plan is created, "health coaches" will be on hand to guide a patient through successful implementation of his or her health maintenance programme.

Figure 1: Risk Assessment Solutions



◀ *Page 3 – Prospective Medicine for Better Health*

weeks, they are ready to engage intelligently. By eight weeks, they are far more competent. And it gets better over time.

You have been a leader in nurturing clinicians to contribute to research. How is it done at Duke?

The importance of creativity and team sports has been undervalued. Clinical research is a team effort. At Duke, we have created a Clinical Research Institute which has been very productive. We have established a tenure track and created a Masters degree in clinical research. We need to give a tremendous amount of respect and recognition to the clinical researcher making a livelihood. Too often, doctors are doing it out of their back office.

When I was appointed Chief of Rheumatology at Duke, my Chairman, Dr James Wyngaarden, insisted I aim to be as good a clinician as I could be, even though he knew I was mostly involved in intense, competitive research work. I would not say I was the best rheumatologist there was, but I was decent enough! And I did and still greatly enjoy clinical bedside Medicine.

The ability to do good research is also partly related to the specialty one chooses. Some specialties demand constant technical practice, upgrading and experience, and therefore, combining clinical work and research is harder. To a certain degree, it is a self-selection process. Some individuals are driven by the quest for the creation of new knowledge and they choose specialties to attain this. Finally, there is no substitute for leadership. If the medical leaders, administrators and support systems get behind it, Singapore can very quickly become a leader in clinical research.

Doctors generate clinical revenue and are measured by patients they see. At Duke, how do you assess doctors who divide their time between seeing patients and doing research?

We work with individuals to decide what they want to do professionally. Those who have research interest could be part of the Clinical Research Institute, where it is possible to spend half their time seeing patients and the other half doing research. Salary works both ways, because clinical research generates salary. In the Duke University Health System, our overall budget revenue last year was US$2.2 billion, and we had 1.6 million patient visits or more. With this volume, we can try to select and plan for what our doctors want to do. And everybody has to be involved in teaching at least 20% of their time. We have different tenure tracks, and try to rationalise the economics.

What do you feel are the key qualities that medical students should have?

Medicine is a heroic and wonderful profession. You need to have compelling compassion and desire to help and give of yourself. It is important to have high baseline intelligence. You do not need to be brilliant, but have to be willing to work hard and not be lazy. It is also important to have an inquisitive mind, to continue to learn and be fascinated by solving problems, because that is needed in medical care and differential diagnosis. It helps to be competitive – in a good way – because it makes you want to improve vis-a-vis standards.

More and more today, the patient is being described as a healthcare consumer. What are your views on this?

Medicine becoming a big business may be one of the most tragic impacts on the profession. Healthcare has become one of the largest industries in the western world – healthcare is $^{1}/_{7}$ of the US economy. So, it is impossible to say that it is not an industry. But that is not how the physician should look at it with regards to the patient.

As somebody who was responsible for the US$2.2 billion healthcare system at Duke, I needed to think about issues such as consumerism and bottom lines. I needed to think about whether Duke was going to be competitive with patients who could pay, or if we could support patients who could not. But in any patient interaction, we forget the overall business issues and focus on what is best for the patient.

I remember *Time* magazine did a feature on Duke a few years ago. I was making rounds and getting ready to see a patient. It was a shock for the reporter who said to me: "You are not going in to see the patient! You are the head of this major health system – how do you balance your role as a CEO with being a physician?" But there is no balance whatsoever. When I step into the patient's room, I am a physician. Everything else is irrelevant. As a physician, I think of the patient and what is best for them above all else.

With such a busy career, how do you relax?

I love to do physical activities and I love the outdoors. I run and love to hike and ski. I love to travel (that is, Singapore!) and read. I also follow nutritionally balanced eating. ■

Dr Snyderman (third from left) with hospital residents.

Ralph Snyderman, MD, is Chancellor Emeritus, Duke University, and James B Duke Professor of Medicine, Duke University School of Medicine. He is the immediate past President and CEO, Duke University Health System.

Dr Snyderman has played a leading role in the conception and development of Prospective Care, a novel approach to personalised health and an evolving model of national health delivery. He is now working towards the development and implementation of prospective healthcare.

Dr Snyderman is currently on a one-year sabbatical at the University of California at San Francisco where he is a visiting professor in the Global Health Science Center.