# TMU spotlight

# Growing for a Bright Future:

## An Interview with President Yun Yen

Taipei Medical University's President, Dr. Yun Yen shared his vision for the university and his personal reflections over his five-year tenure as president of TMU.

Looking back at my five years with TMU, I am mindful of all the challenges that we have experienced, but equally encouraged by the success we have achieved. I think our biggest accomplishment has been the emergence of our university's status and recognition as a global research university.

We've encouraged entrepreneurism among faculty, staff, and the student body. Historically, scholarly papers were considered the only indicator of a university's strength and recognition. Today, leading universities recognize the importance of finding solutions that solve real-world problems through a number of measures, not just publications.

TMU has launched several strategic initiatives to encourage multidisciplinary collaborations in the hopes of producing solutions for health problems affecting our world.

We recently opened several new core facility centers for drug discovery. For these facilities, we aim to foster world-class research in basic science, clinical research, medical devices and biomarker development.

We're also running projects to improve mentoring. Our SPARK program has several goals: to build entrepreneurial spirit, to explore commercialization opportunities based on research, and to teach our scholars how to deal with finance and patent protection, as well as developing sound business plans.

There are deep roots to our recent shifts in university priorities. We are preparing our staff and students for the future. We have integrated business and finance courses into our students' education. Furthermore, we have aligned these programs with industry leaders, so students can gain a broader sense of their future careers. These changes are geared to help students develop long-term relationships with companies. As soon they

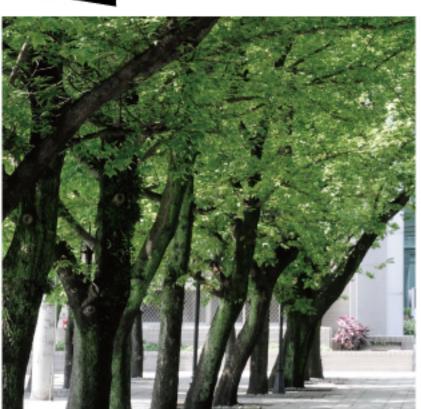graduate, we want them to be ready to contribute in the workplace.

We've also strengthened our relations with leading universities around the world. The dual-degree program in nanotechnology applications for health in affiliation with University of Southern California is a great example. After students complete their five-year program, they receive two diplomas, one from each university. Our dual-degree program with Case Western Reserve University is another example. Investing in international collaborations and marketing our university on the international level has been a common goal across the university, and we have provided resources to support these initiatives, and also biotech-related programs.



## New Colleges and Improvements

Certainly, a big enhancement at TMU has been the emergence of several new colleges. I'm particularly impressed by the College of Biomedical Engineering, which grew out of our

innovative College of Dental Medicine. This college has been recognized in the top 1 percent of ESI (Essential Science Indicators) rankings in seven categories. Graduates of this

new college will find better opportunities to gain development funding for their inventions.

Our College of Management is also helping to produce more capable administrators, and is harnessing "big data" in new ways. We are expanding our course offerings in economics and finance.

And after a strong 37-year track record with the College of Public Health, our new College of Nutrition has achieved a notable reputation for the number of dynamic and market-oriented projects being done there.

Meanwhile, the College of Public Health has expanded new research centers focused on Health Policy and Health Security. Its well-established specialties of injury prevention, trauma studies and occupational health have gained worldwide recognition. And next might be our program in Molecular Epidemiology, which is awaiting accreditation by the Ministry of Education.

Our College of Medicine hasn't stood

stagnant, either – we have diversified our curriculum with greater focus on IT [information technologies].Our new high-tech campus on Keelung Road has extensive facilities for learning with virtual reality and OSCE [Objective Structured Clinical Examinations].

The College of Nursing shares the same goals and high-tech facilities, but has its own demonstration ward at the new campus. The College of Dentistry houses 130 fully computerized student work stations as well.

The College of Pharmacy, one of TMU's original programs, now offers a focus on Health Technology Assessment in cooperation with the Global Health and Development program, which is itself an example of our expanded English-language graduate degree programs.

I'm particularly proud of our arts and humanities symposium, which regularly invites experts from diverse fields to present artistic and literary perspectives outside of medicine. I don't want our students to think that because we teach health professions, "this school is dry!" Each year, we publish a book based on these lectures and we have received positive student feedback. We aim continue this tradition.

Finally, for our faculty, recent changes have focused on keeping our professors happy and engaged. We have decreased their teaching loads to facilitate research, and provided free health checkups and better promotion tracks.  Now patents and clinical trials count as factors for promotion – not just scholarly papers. And I'm very proud that about forty percent of our campus leadership is now female, which was not the case before.

## Expanding Infrastructure and Campus

We've vastly expanded our space, despite our limited campus size. While our first ground-breaking ceremonies for new building were this fall, we have several physical expansion projects in the works.

The construction of the Taipei Cancer Center is a major focus of TMU. This building is unique in that half will provide clinical facilities for medical doctors, and the other half will hold researchers. This design will ensure fully integrated transitional medical studies. I am truly excited by our plans and designs for this center. I anticipate it will be home to a vibrant scientific community.

We have also spent additional funding to improve our fitness programs and sports facilities. This includes a new women's rugby program, renovation of our gymnasium and pool areas, and new exercise equipment for our sports teams.  Our new student activity center will give a place for recreation that has been needed for a very long time.  Overall, we are constantly devising plans to construct our projects within our relatively small space.

" *Education is expanding everywhere at TMU! We have wholeheartedly embraced the challenge to improve our university through smart, innovative solutions. These past years have been tough but personally rewarding. I'm always fascinated to watch my alma mater grow. TMU has a bright future ahead!* "

# Have a weekend and a good idea?

## MIT-TMU Hackathon: where problems meet IT solutions

## Health IoT (Internet of Things) Hackathon, 30 Sept.-2 Oct.

What's the fastest way to develop high-tech ideas to solve practical problems? Silicon Valley offers the "hackathon" model, where teams compete within a few days to nurture new ideas into reality.

Taipei Medical University recently squeezed a handful of new patent ideas out of a weekend of frenzied teamwork to win a handful of prizes ranging up to NT$80,000. The grand finale featured no less than Taipei Mayor Wen-Je Ko (himself a doctor-professor with the nickname "Ko P" for "Prof. Ko") bestowing the prizes in a ceremony widely noted in Taiwan news media.

And each team had health professionals with problems plus IT experts, encouraged and advised by Physicians from Harvard, Massachusetts General hospital, Taipei Medical University Hospital and also physician scientists like Dr. Shabbir Syed-Abdul, TMU's online course maestro (nearly 10,000 students have taken his TMU courses through the UK-based FutureLearn platform).

Dr. Syed-Abdul kindly joined a TMU journalism class to answer questions from students about this fast and exciting approach. He also detailed the event's links to the other MIT: not "made in Taiwan" but the famed Massachusetts Institute of Technology, whose health outreach SANA program TMU has partnered with for years.

Known on campus as "Dr. Shabbir," Syed-Abdul has for many years been a strong researcher for TMU's Biomedical Informatics publishing hub, but he talked about nurturing dozens of teams with brand-new ideas that in a single weekend yielded patentable products.

To understand this, he explained the "internet of things" (IoT): the burgeoning field of devices and applications. The Hackathon focused on health problems, with each team bringing together a clinical or other expert who experience the need, and one or more IT specialists who could bring new ideas for a solution to that need.

The event's specific focus on wearable devices takes the lead from his current FutureLearn course on high-tech solutions for problems affecting older adults. And the stakes were high: an NT$80,000 prize went to the top team, with five other prizes for categories and runners-up. Some eighteen expert judges scored each project on a scale of 1-5 for innovation, value and feasibility or practicality.

## Here is his encounter with the journalism students:

Q: As we know, people from engineering and medical sides have pretty different thinking and mindsets. Did you see any difficulties happen during the idea discussions in this hackathon?

A: This is exactly the thing we want to bring into the hackathon. Once we bring them to the same table, even they have any sort of confusion, they would clarify the issues by themselves.

I'm a medical doctor, but I left my clinical practice and started to learn internet and information technology in order to communicate with the IT people, to help my colleagues and patients how to take best advantage of ICT.

Definitely our department does this bridging between IT and health providers. Definitely we need people who understand both, and help to communicate with both. In the hackathon they see face to face -- and one says what the problem is, and the other provides the solution.

Finally they come out with some new ideas. That's what we want.

Q: In this activity, some good mobile health measuring apps were made. I am wondering whether these mobile health technologies will one day displace doctors' duties. If people are feeling sick at home, the apps will tell them what's going on in their body. All the sick people will have to do is to go to the pharmacy to get the medicine, because these apps already told them which medicine they should take! (Except for emergency conditions or those requiring surgeries...)

A: Well, this is an interesting question! I think apps can assist patients to make decision, but not substitute a doctor. Also, some patients need personal care, attention and continuous monitoring. And that kind of care can be done by apps. When needed, alert can be sent to nurse/doctor.

So my final answer is that the technology can complement the healthcare but not substitute doctors.

Dr. Syed-Abdul said at least 3 patents are foreseen from ideas like an app that can relate the color of urine to possible diagnosis, and a device that can help busy emergency rooms keep track of vulnerable patients. A heart-warming project called "iShareFood" locates edible resources while they are still at peak freshness and puts this information on a widely accessible network for nonprofit groups.

# Wearable devices are the new tech frontier:

## UK-based platform attracts 4000 students to TMU course on ways to help elders while cutting health costs

Recently Dr. Shabbir Syed-Abdul returned for an encore visit with TMU's journalism students. A month earlier he explained the Internet of Things [IoT] hackathon (see related story), but in November he detailed a much larger enterprise.

His second online course on FutureLearn attracted more than 4000 students for a four-week course on IoT applications to support preventive and other health care for elders. Near the end of that course, he shared his insights in this group interview.

**Q:** In your course introduction, we could see what students would learn about elders' health problem-solving and development of tools for this. But what is the core value you think learners can get from this course?

**A:** Why did we start this course? First of all, we want to see what the age-related real problems are. There are thousands of problems, but we must focus on the most common and expensive problems which we will have in the future.

The first issue is related with falls. You may think this is a simple thing, but it is a big problem in elderly populations. If you fall once, then you have a higher likelihood of falling again. We want to prevent falls.

The second major issue is stroke rehabilitation. We want to provide tools/devices for patients that enable them to do rehabilitation at home -- so we would be able to know how much exercise patients are doing.

The third issue is dementia. We will have different strategies for different genders, and show how technology can keep these patients active.

These are the core values of this course. We also focus on problems and provide solutions using available wearable devices.

**Q:** How can we promote the idea of these wearable devices for elders? And how do we choose reliable and professional experts to create reliable and clear instructions?

**A:** We need assistance from the doctor's side and the government side. For example, the government sets up the policy promoting patients monitoring their blood pressure at home -- then the doctor can receive the data by clicking one button.
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**Q:** Currently, scientists are trying to invent robots to help doctors do things such as diagnosis, medical care, or maybe surgery. However, people are worried about if an accident happened during surgery conducted by a robot, who should be responsible? It's impossible for us to accuse a robot. If these wearable devices or other IoT applications perform incorrectly, who should be responsible? Is it the designer, the manufacturer, or doctors?

**A:** Any device before using goes through scrutinizing methodology to check its accuracy, perhaps by the FDA. Devices record your heart rate, and even if they show some error, they are not going to do any harm.

You talk about another very serious thing like robots doing surgery. Obviously, for anything that was being treated by doctors, it is not like patients are going to a robot, saying their complaint, and robots do the surgery. That's not going to happen. Patients go to doctors, and then doctors decide whether they should use robots or not.

Even if you use the robots, why you think we are using them?

We use robots because of accuracy. Because we are human beings, our hands may shake (minor vibrations) when we do surgery, and usually in brain or in heart surgery, it may be sensitive and dangerous. Even if you touch one millimeter apart, you may damage arteries or veins.

We use robots to overcome these vibrations of our hands. To approach the pathology concretely, we have more advantages using robots. Then, obviously, who should be responsible? The ones using the robot will be responsible -- obviously not the robot.

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**Q:** People living in rural areas may find it more difficult to receive these new technologies. How do we distribute them far and wide, so these people can enjoy their benefits?

**A:** Nowadays people have mobile phones, so it is easy to receive medical related information such as reminders for follow-ups and re-filling of the medication via SMS. If someone goes to the hospital and gets this technology, they can take advantages of such new technologies.



**Q:** I have heard news reports saying the pharmaceutical industry is unwilling to provide drugs to relatively poor countries because they couldn't earn profits there. So I am wondering whether these countries have equal opportunities to take advantage of high-tech health care.

**A:** That's another political concern. Because usually when we talk about developing countries, poor countries, they have more people, like millions or billions. Then when you talk about developed countries, there are few people. For example, Norway only has 5 million population, and Switzerland also only has 6 to 7 million. Even if you take Taiwan, it has only 20 to 25 million. If you talk about big countries like China, India, Africa, there are like, hundreds of millions. So if we have mass production, the government will support these innovations to lower health care costs.

But we should see what they really need. Do they need technology, or do they need drinking water or toilets? So needs are different for each country. You cannot think only technology can help solve all problems. If you use India's solutions in Taiwan, that doesn't work, or vice versa.

So we should go to each country, and learn what problems need to be solved. For some problems, technology may not be useful. For example, drinking water: you cannot give me a device and say that it will provide drinking water. That's definitely not the answer for this problem.

**Q:** Since you mentioned that Taiwan's health system still keeps health spending relatively low by global standards, how we can make a balance between a lower cost and a better Taiwan health system by promoting the Internet of Things? Are there any feasible projects now?

**A:**

This is a good question. How can new technologies actually save money, instead of adding costs? I think this is your question.

The fact is that the elderly need more care. They are the population who visit the hospital a lot. You go to any hospital, you will see more elderly people.

So what we want to do is monitor elderly patients at home. We want to reduce their complication rates. We don't want to wait for a patient to get ill, and then come to hospital and be treated. Once a patient gets ill and comes to hospital and doctors starts treat-ments, costs are higher. This is what we have been doing for many years, but that's not going to happen in Taiwan.

Because now we want to focus on prevention. We want to use technology for prevention. For example, by using the wearable devices, the doctor knows how much the patient has walked. The treatment will be not just based on what the patient has said. That is the reason why we want the technology being promoted in our health system. Obviously, if they visit the hospital less, the cost will be lower.

**Q:** Since Taiwan's health care system faces financial constraints, do you have any solutions for this?
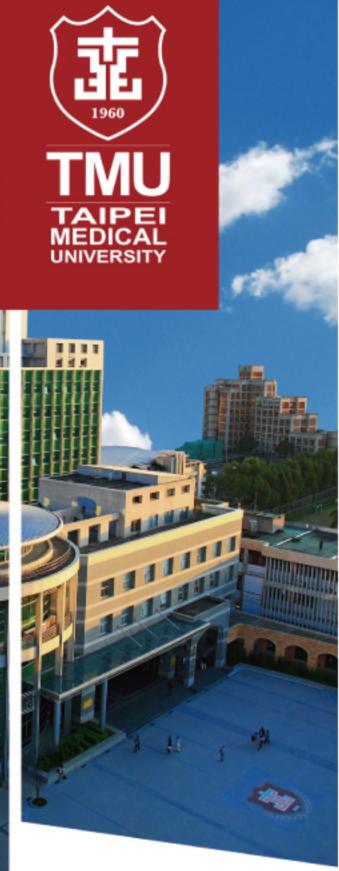
**A:**

The United States spends 17% of GDP on health and still a lot of people are uncovers and lot of them are unsatisfied; Taiwan spends only 6 or 7% of GDP, covers 99% of population and most people are satisfied. So you can't say it is not good financially. But this is why we want to use technology to help patients at home. If they don't need to come to the hospital, this is how we use technology to save money.

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# High-tech proof for a home remedy: Tea blocks vital cancer pathway

## TMU's Yuan-Soon Ho finds a cup's worth daily protects smokers and passive smokers from four major nicotine-linked cancers

Distinguished Professor Yuan-Soon Ho, who directs Taipei Medical University's Graduate Institute of Medical Sciences, recently detected a mechanism by which tea can block the development of "foam cells" linked to both nicotine and cancers.

"We found dramatic results, with alpha-9 downregulated significantly after two months," said Prof. Ho. "Cellular damage cannot be reversed, but we can slow the destructive processes this way."

This was big news in the global medical community, and both television and international health bloggers took note with stories and interviews. After all, with no expectation of profit, Prof. Ho may have changed the world by highlighting the protective effects of something already found in most homes.

Does it matter which kind of tea? Not a bit, Prof. Ho says, although he chose to conduct his most noted research with Pu Erh, an earthy dark tea that is revered like a fine wine and sometimes aged for generations. Prof. Ho chose it because he likes it – but he suspects

that the slight fermentation of this variety also helps to neutralize any environmental toxins that the leaves may carry.

While nicotine is a quite natural tobacco ingredient that smokers crave, it is linked to cancer-spawning "foam cells" in smokers and passive smokers who breathe fumes. The good news is that long-term tea consumption helps monocytes resist the upregulation nicotine causes that result in such cells.

And this "long-term consumption" was only two months. The study took 200 subjects, drew baseline blood samples, and assigned 100 to take capsules of tea powder daily, while the other 100 served as control. After one and two months, blood was drawn and analyzed for this monocyte upregulation and foam-cell formation – but even lower doses blocked these responses in the test group.

While powdered tea leaves were used in capsules to standardize the research (and were irradiated to eliminate any issues of contamination with other organisms), Prof.

Ho said a daily teabag's brew is a comparable dosage as well.

He encouraged tea drinkers to avoid teas raised with pesticides, but said these pesticides would not affect the protective pathway: even the cheapest supermarket tea protects against this "alpha-nine" (a9-nAchR) reaction to nicotine.

This research was supported by Taiwan's Ministry of Science and Technology, which helps many TMU laboratories lead the nation's private universities in international rankings. Yet the team is small, with three clinical medical doctors, one Ph.D. researcher, four Ph.D. students, two master's degree students and an assistant besides Prof. Ho.

Seven teas were tested for six components, but all were found equally useful. This information was particularly useful for passive smokers, who can suffer mutations at only 8 nanomona-10 micromona exposures. Such exposures are linked to breast, lung, bladder and colorectal cancer, as noted by the Emerald Planet international wellness blog and local TV reports.

Prof. Ho said the Institutional Review Board's ethical standard called for the research to focus on the safest dose with a reasonable effect, which turned out to be just half a gram three times daily. (His results can be found in a recent review article in the influential journal Clinical Cancer Research.

So enjoy your cup of tea with the knowledge that it is protecting you from deadly mutations – and consider joining the leading edge of medical research at TMU.

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# Re-making health care:

Karolinska Institutet's Christer Rolf advises College of Biomedical Engineering

How can a famed hospital with very few beds and

no departments lead its nation in high-tech, low-cost medicine?

Prof. Christer Rolf's and Karolinska University Hospital's vision of changing health care to better serve patients and streamline Sweden's competing public hospital systems was shared in four recent lectures hosted by TMU's new College of Biomedical Engineering (CBE). During this first visit to the campus, Prof. Rolf praised Taipei Medical University by saying he feels at ease here because the two universities have a lot in common: an elite medical focus and many of the same institutional priorities.

In fact, in July TMU sent a team to the Karolinska Institutet – and hopes are high that student and staff exchanges may soon follow.

CBE Dean Chih-Hwa Chen joined Prof. Rolf for an interview at the end of his intensive visit, which also focused on the Swede's specialty of orthopedic medicine. Prof. Rolf has supported the creation of a sports medicine program at Chinese University of Hong Kong.

Clearly he's not afraid of considering radical alternatives to traditional medical organizations. "My job is to lead in transitioning toward more ambulatory care programs. The traditional organization in Divisions and De-

partments like Orthopedics disappears. "Instead we are moving into themes and functions: the new focus where orthopedics together with other appropriate former departments will join is called 'trauma and reparative medicine,' but it is multidisciplinary."

Citing Prof. Michael Porter's value-based health care model (which he said is also being employed by the famed Cleveland Clinic in the United States), Prof. Rolf said, "We are reshaping the whole university hospital system. Former heads of departments and divisions must re-apply for the new jobs under one of seven themes or three functions. … Because of the huge interest in these new posts, sometimes people who have worked there for 30 years and lead their departments may not even qualify for an interview."

And even if you get chosen, you are not guaranteed continued employment, he said: "Some officers [administrators] for each theme and functions come from business backgrounds to assist the medical staff. But they must re-apply for their jobs after one year – and face the best international competition for

those jobs, it's not at all guaranteed that they can continue. So they must be bold…"

But this patient orientated approach has advantages for patients, Prof. Rolf said. For example, instead of cancer patients having to visit a range of Departments for example first visiting radiology after seeing their GP, then going and waiting for attention in an oncology department elsewhere, then waiting for the lab results taken elsewhere before coming to the surgical department, "the doctors come to the patient. These functions must combine in an efficient and well organized flow from suspected diagnosis to completed and finalized treatment."

A range of advanced surgical and medical treatments can now be applied as ambulatory care in highly profiled day cases surgical and medical centers within the hospital. Laparoscopic surgery is an example of one area that has transitioned to mostly outpatient now. After their surgical procedures, patients may, if not being able to go directly home as a majority will do, settle into a nearby "hotel" – either a real one, or a converted ward space with a nurse manager and a bell in case of trouble.

Prof. Rolf said that this requires better-informed patients throughout the convalescence as well as families who need to be able to recognize signs of trouble. But it's worth the extra patient education, as this system also keeps the remaining hospital resources available for patients who really need them.

The goal to be achieved by turning half of the Health Care into Ambulatory care is clearly to be able to offer fewer high-cost, full-service hospital beds which require the multidisci-



plinary care of a University Hospital. "We are trying to see the basic steps in each procedure in an efficient way as when you would repair a car, even though this cannot be streamlined in the exact same way because each patient has individual and often multiple needs. You don't want patients waiting around the hospital for follow-up exams to tell what they can detect themselves: is the incision red, do you have a fever to indicate infection? Patients must learn more about their own care by being more involved and informed by their physician or surgeon." This will also increase the demands of doctors to be very transparent and open with what they offer, providing evidence based alternatives to their patients.

And when, for example, a child with cancer needs acute care, they don't go to the ER to sit with everyone with every other problem. Instead, they go right to the ward that knows them from other treatments before this crisis – because under this new system of "themes," the cancer area can better deliver acute care formerly done by ER generalists. Prof. Rolf said this reorganization is responsive to patients, but also to politicians and

health economists. Since Sweden's hospitals are overwhelmingly public and supervised by different governmental agencies, the new value-based care theory looks at per-cost services as well as quality.

He said current approaches and outcome measurements can be as impractical as "when you have a broken bone and say you did a good surgery … but the patient still has a bad outcome. "The screws might be in the right place, but this might not give the level of function appropriate for that patient. If it's an older person, being able to walk is the goal; if a young athlete, different procedures are needed. One size does not fit all."

Sweden's medical system used to welcome everyone to every hospital, but this has proven impractical. In fact, Prof. Rolf says the only clients besides cancer patients who will enter one of the campuses of Karolinska University Hospital will come by ambulance or helicopter! The hospital's other half will be more open, but the goal is to send most patients needing routine care to the six hospitals operated by the city of Stockholm. The remaining "highly profiled" units will increase both the volume of clients they help, and the quality of



care given.

This specialization extends to doctors as well. Physicians will have to adapt to more specialized roles and jobs in their practice: they will see more patients with a narrower range of conditions. Prof. Rolf spoke of inclusion criteria according to "best praxis" from evidence-based medicine using international benchmarking. The outcome measures will be clear from the start: "We have transformed surgery, and can operate at almost double the volume with more effective results."

This involves challenging existing medical hierarchies and divisions of labor – with more teaching and clinical research in general hospitals.

Prof. Rolf criticized the narrow use of current measures of academic clinical medicine to be restricted asnumbers of papers, journal rankings and citations. He said this has lead to a system where "the most common clinical problems are the least researched. Many papers are irrelevant to patient care, because they look for limited areas that may not be clinically relevant.

In the new organization Karolinska University Hospital aims to integrate clinical practice, research and education much more within and between Themes and Functions, in order to make it truly relevant for the patients we treat.

"For example, stem cells have been a hot topic for 20 years –– but how many patients have been helped by this research?" Referring to Mc Masters University and Professor Mohit Bhandari et al who has shown that "simple questions that are globally important" and "very high volumes of patients" often provides a better evidence base for best praxis than

smaller clinical trials even though perfectly executed. So this means we have to organize us in a way where we can match those quality measures when we conduct an international bench marking on the care quality we provide in the future.

Karolinska University Hospital will publish its outcome measures online, with "quality outcome measures per patient flow" as the overarching goal. Other relative outcome measures will address specific patient groups, he said. "Every patient wants 100% return to function, but if you tell someone this will take two years, it may not be very helpful. Two years is not a long time for a young patient, but for a fragile elder it's a very long time to live with recovery."

The new technologies of M-health (health applications using mobile phones) can help patients take more responsibility for their care as well by staying in touch with Health care providers from home.

"Quality assurance hasn't worked, because it simply hasn't been done," he said. "We currently as most other Health Care providers around the world have many different databases in the hospital – and they don't always interconnect." Instead, a longer-term perspective can encourage patients to check in from home, and send tests or readings for follow-up by specialists at a distance.

The solution is "to have IT people and economists closer to each care unit. Then they will see what is needed, and medical staff and IT responsible can learn to communicate in a way that we get better transparency and more comprehensive baseline data."

"It helps that we have national identity numbers so we can track patients between in-

stitutions," Prof. Rolf said. It also helps that the technical counterpart of medical doctors are "civil engineers" who study for six years, including three years of a specific practical specialty. This means they are ready to work in industry or public-sector institutions from day one. His own son is pursuing this degree, while his daughter is pursuing medical school, a profession that enjoys a healthy female majority in Sweden.

Prof. Rolf said the Karolinska University Hospital in close relationship with Karolinska Institutet, his country's largest medical university, has set a deadline to make this transformation by 2018 for the more specialized half of its teaching hospital. Then possibly successful parts of these ideas may be imported by five other teaching hospital campuses by 2020.

By that time, "We will have single rooms only in the wards –– because these patients must be unwell enough to really need a room with full hospital care and the remaining patients will only go through their care at one of Karolinska University Hospitals Ambulatory Units.

Prof. Rolf's other ideas also encompass biomedical engineering: "Why not put smart sensors in more surgical sites to monitor healing? We may be able do this now by closer communication and research between engineers and medical experts." To advise the new College of Biomedical Engineering is a vote of confidence – and perhaps the beginning of some exciting changes for TMU's affiliated hospitals.