



Professor Erich Reinhardt, PhD (left), and Professor Detlev Ganten, MD, PhD, (right) have given impetus to progress in the healthcare industry and medical research for decades.

Discussing Healthcare: Where Will We Be in 40 Years?

Two long-standing representatives from the medical industry and research came together with *Medical Solutions* to talk about their visions of treatment, patient management, and general prospects in future healthcare systems.

By Linda Brookes

In January 2010, Professor Detlev Ganten, MD, PhD, and Professor Erich Reinhardt, PhD – representing the viewpoints of academia and industry, respectively – met at Siemens Healthcare headquarters in Erlangen, Germany, to exchange ideas about how healthcare is likely to develop in the decades ahead. Ganten, formerly CEO of the Charité University Hospital Berlin, is President of the World Health Summit – an annual meeting of political decision-makers, members of the scientific community, and representatives of industry and society from all over the world who come together to discuss glob-

al healthcare challenges. Reinhardt is the former CEO and President of Siemens Healthcare, and currently consultant to Siemens. Below, you can read an extract from their discussion.

What do you consider to be the main advances in medicine by 2050?

REINHARDT: I believe that by 2050, because of better understanding of disease, particularly at the molecular level, we will be able to detect diseases at very early stages using innovative technologies based on blood tests or imaging. It will be possible to predict individual

response to treatment, which means that we will be able to realize so-called 'personalized medicine'. By 2050, we will have seen significant progress in this field.

GANTEN: Personalized medicine is based on the concept that every individual is unique. It means making a detailed analysis by genetic testing, imaging, and determining biomarkers for an individual patient, which will predict treatment success. However, there is another type of personalized medicine that I always emphasize, which is personal responsibility for health.



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Professor Detlev Ganten, MD, PhD, CEO of Charité University Hospital Berlin until 2008, Chair of the Charité Foundation, Berlin, Germany



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Professor Erich Reinhardt, PhD, former CEO of Siemens Healthcare, Executive Advisor CEO, Siemens AG, Erlangen, Germany



What do you believe will be the biggest factor driving healthcare by 2050?

GANTEN: In the future, chronic diseases will probably dominate healthcare. With good medical care, acute diseases can be managed and patients do not usually die. Chronic diseases are the bigger challenge, because they require long-term medical care, which is expensive. Again, personal responsibility has to come into play, because a healthcare system cannot be expected to continue to treat a person for up to 40 years for diseases of civilization such as cardiovascular disease, type 2 diabetes, asthma, or chronic liver disease.

Do you think that people born in 2010 have a better chance of avoiding diseases of civilization?

GANTEN: Yes, because they will receive better health education.

REINHARDT: I believe the sum of the problems remains constant, although the diseases may differ.

How will patient data be managed in the year 2050?

GANTEN: All important individual patient data, including the complete genome, proteome, and metabolome, will be entered into a computer and attached physically to each patient. The data will follow patients when they visit a physician or a hospital and in that way, be continuously available for use in making diagnoses and prescribing treatment. Thus, management of disease will be improved.

REINHARDT: By 2050, physicians will have access not only to all their own patients' data, but also to relevant information about similar cases that have been treated worldwide. This will be used to reach the most professional, competent decisions for their patients. It will make life easier for physicians, because it will enable them to be more productive, more efficient, and more effective, and it will allow them to spend more time with patients.

GANTEN: In addition, all the data will be available for research, allowing us to

study the real outcomes of specified treatments. At present, treatment recommendations are based on clinical trials, which involve a select group of patients and relatively short observation periods. When we can get data from daily life, we will know what is going on in practice and have better estimates of how effective we are.

How will these data be organized?

REINHARDT: I do not think that one company will own all the data. Although there will be open access for research, I would rather imagine business models for distribution and application of the data.

GANTEN: We need an organization to make the database compatible between insurance systems, academic health centers, clinical companies, and research organizations. Of course, in dealing with patients and diseases, data protection and ethics of handling data are extremely important.

REINHARDT: We will have to ensure that privacy is protected. I believe that by 2050, technical solutions will be available for integration and compatibility in dealing with huge amounts of data while applying high ethical standards.

Are you optimistic or pessimistic about the state of healthcare in 2050?

GANTEN: One of the greatest philosophers of modern times, Karl Popper, said that the future is uncertain. He also said that the more discoveries are made, the more uncertain the future is. I think it is important to keep this in mind when discussing the future of health, medicine, and technology. Many people say that it is pessimistic to believe that the future is uncertain, but the optimistic view is that we have a responsibility for the future, and if you have a personal idea of how the future should be, then you have a responsibility to work for it. Health is a human right, and it is our responsibility to work for this human right. We must do everything we can to improve health not only in wealthy populations that can

afford everything available for their own personal health, but also for people who are underprivileged and do not have the same access to healthcare.

REINHARDT: I agree that the future is uncertain, but I think there are opportunities to create the future by developing scenarios for possible alternatives in order to be prepared. A prerequisite is to respond quickly to changes so that they can be integrated into healthcare. I am convinced that we will see significant improvement in knowledge about health. Personally, I am an optimist, so I think that there are very positive opportunities ahead.

Linda Brookes is a freelance medical writer and editor who divides her time between London and New York, working for a variety of clients in the healthcare and pharmaceutical fields.

Summary

Challenge:

- To integrate advances in medical technology for prevention and early diagnosis of disease while streamlining patient services and optimizing costs and reimbursement structures

Solution:

- Understand the patient's disease (imaging, laboratory diagnostics)
- Understand the patient's biology (molecular applications)
- Streamline acquisition, storage, translation, and distribution of all medical data
- Optimize all patients' enrollment in primary and secondary prevention programs
- Assess similar cases from state-of-the-art databases

Result:

- Wider application of personalized medicine
- Optimal knowledge of patients' health states for both patients and healthcare providers
- Minimization of preventable premature morbidity and mortality
- Greater cost effectiveness within healthcare systems