

Medical Solutions

The Magazine for Healthcare Leadership



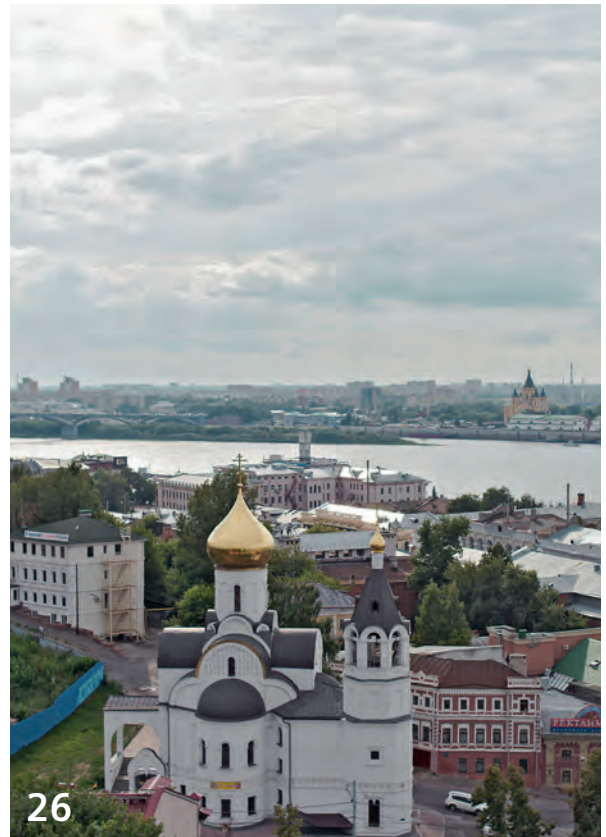
Healthcare Finance

Health economics expert
Reiner Leidl on differing demands
for healthcare funding models in
various country contexts

Facts and figures on healthcare
finance around the world



04



26



36



54

04 Reiner Leidl is Professor of Health Economics and Health Care | 26 How a private hospital group is constantly changing
36 Breast cancer engagement driven by personal fate | 54 Accurate diagnoses and education keep allergies in check

Contents

04 **Safeguarding the Future with Evidence-based Medicine**

Interview with Prof. Reiner Leidl on new healthcare financing options and value-based purchasing models



Focus Topic: Healthcare Finance

- 10 Investing in the Future**
Analysis of the challenges associated with the increasing costs of modernizing outdated medical equipment
- 12 “Hospitals are facing higher reimbursement pressure”**
Tailored financing solutions help U.S. hospitals pursue acquisitions and thereby improve healthcare quality
- 16 Flexible Leasing Supports Continuous Innovation**
How a German hospital remains innovative despite declining public subsidies
- 20 Ticket to Affordable Healthcare**
A healthcare leasing model helped a private clinic in China stay competitive
- 25 Rising to the Challenge**
Analysis of the importance of alternative financing solutions
- 26 A Matter of Will**
A private clinic is setting new standards in the Russian healthcare business
- 30 A Hospital for Everyone**
A public-private partnership in Brazil improves medical care in its region

Features

- 36 Speaking about the Unspeakable**
Madame Yuthar Al Rawahy wants to change attitudes toward breast cancer in Oman
- 42 Transformation through Partnership**
Keeping patient satisfaction in mind, Rush University Medical Center became one of the most advanced hospitals in the U.S.
- 48 Get Tested!**
An annual campaign in Brazil promotes the early diagnosis of HIV
- 54 Educating for More Effective Allergy Treatment**
In Japan, doctors break new paths in counteracting the increase in allergies
- 61 Digital Highlights | 66 Further Publications**
- 67 Imprint**

Safeguarding the Future with Evidence-based Medicine

Globally, the need for medical technology is increasing, while at the same time the financial pressure on healthcare systems continues to grow. This means that, in addition to new forms of financing, the focus is shifting toward evidence-based medicine. Professor Reiner Leidl, expert in health economics, gives an overview of the differing demands for healthcare funding models in various country contexts.

Text: Barbara Ritzert
Photos: Sebastian Forkarth



The replacement of outdated and the acquisition of new medical technology is a problem in many countries. In Europe, Germany is particularly affected, where investment needs are estimated at 1.7 billion euros. One reason is the higher density of diagnostic imaging equipment. Is Germany oversupplied?

Professor Leidl: The question about supply density in Germany cannot be answered using official statistics. There are numbers available for the hospital sector but not for outpatient care; however, indications are clear that the supply density is very high. When some of this existing equipment becomes outdated, there is obviously a need to replace it. This, however, is an oversimplified way of looking at things. What's really important is what medical technology is supposed to provide in ►



Medical Solutions met Professor Reiner Leidl for an interview at the renowned Ludwig-Maximilians-Universität in Munich, Germany.



“Investments in medical technology have to follow future patient care.”

Reiner Leidl, Professor of Health Economics and Health Care Management, Ludwig-Maximilians-Universität (LMU), Munich, Germany

future care and which kind of investment is required to achieve this. That puts the focus on the patient and thus on the medical benefit of the technology. Furthermore, the development of financing options must also be considered, since only effective demand draws investment.

Which factors will influence the demand?

Professor Leidl: One essential factor is demographics. Germany and Europe are not the only countries that are aging, but rather the entire world. China in 2030, for example, can expect

a statistical relationship between older and younger population groups that's similar to the one we see in Germany now. We can therefore assume that the requirements for medical technology will continue to grow. The economic development in a number of countries was so sustainable that new forms of healthcare coverage have been created – in other words, health insurance options and social security systems. This creates new financing opportunities for future healthcare.

Aging, however, also erodes the financing base in a number of markets, since

there will be fewer workers comparatively to pay for it. It can also be expected that this area will see a diverging development in healthcare requirements and financing options. This increases the pressure to finance only effective and cost-effective forms of care. Medical technology will also have to take this into account in the future.

The American healthcare system has experienced massive changes with the Affordable Care Act compared with other countries. Is there already evidence of the effects the law will have on medical technology?

Professor Leidl: This law is revolutionary! Even though a number of states have not fully implemented it, it provides millions of Americans with access to high-quality healthcare in those states that have expanded the health insurance system, and the demand for medical technology therefore also increases. Hospitals with high-quality equipment can position themselves better when competing for patients. But that's no longer enough. Many contracts with health insurance companies – such as those with Medicare – today include quality aspects; it's all about "value-based purchasing." If diagnostics and treatment are not effective and cost-effective, the hospitals run the risk of losing patients and margins. This provides a great opportunity to use studies to show hospitals and medical centers how to apply their technologies effectively and efficiently.

What role does technological progress play in this?

Professor Leidl: This affects the future of medical technology in several ways. Diagnostic procedures are improving and allow even more precise control of the treatment or are associated with less exposure to radiation. The use of imaging procedures in personalized medicine is also being discussed. Here, it is about comparing the advantages of these diagnostic methods with the previous, less differentiated approach.

This could also have consequences for healthcare needs. If, for example, breast cancer screening is adapted to the individual's risk factors, the utilization of the diagnostic technology becomes more specific and the market effect depends on the frequency distribution of the corresponding risk factors. In this area, I see a lot of potential for developing the benefit of these technologies for the patients. We need to encourage the evidence-based use of technologies.

Is evidence-based medicine going to be the next challenge for medical technology manufacturers and users?

Professor Leidl: We have to consider the general trends in regulating healthcare. In the pharmaceutical industry, a benefit-oriented management of healthcare has established itself globally in the last 15 years; now, the institutions responsible for regulating it are also looking at other areas of healthcare. In Germany, for example, there are considerations about performing a medical benefit assessment of innovations in medical technology. This foretells a shift in the overall situation. It is a challenge that medical technology manufacturers and users should be aware of.

Cost pressures in the healthcare systems have several causes.

With regard to medical technology, most people see the high acquisition costs. Should more attention be paid to longer-term financial viability?

Professor Leidl: A profitability calculation should, of course, extend over the entire lifespan of the equipment. However, guidelines on the calculated period of usage determined by the tax authorities or the reimbursement schemes can also play a role. The analysis of the economic feasibility by health policy authorities does not only take into account the benefit of the overall care – in other words, the diagnostic testing and subsequent treatment – but also the total



In a study entitled *Priority Acquisition*, Siemens Financial Service investigated the financial scale of essential medical equipment acquisition in various healthcare markets.



The Institute for Health Economics and Management is part of the Munich School of Management, based at Ludwig-Maximilians-Universität.

healthcare costs. These aspects must be considered in the profitability calculation, too, in order to keep in line with the market.

The acquisition costs of a large piece of equipment are only part of it. Do we need to open up special cost accounts that could also be the basis of new financing models?

Professor Leidl: Of course, operating costs – like staff deployment – need to be taken into consideration; however, there are vast differences in the regulatory guidelines on how investment and operating costs of large equipment in hospitals are calculated and reimbursed all over the world. That means the best possible cost account and financing options for a large medical device can only be calculated within the framework conditions of one specific healthcare system.

The costs can be stretched by leasing or renting the equipment. However, the current hospital financing systems in countries such as Germany stand in the way, since leasing financed equipment is not considered an investment,

but must be financed with current receipts. Do you see any possible solutions to this?

Professor Leidl: Financing approaches like leasing or renting are a step in the right direction, but they are still not sufficient. The solution lies in the general inclusion of investment costs in hospital reimbursements. If this is implemented, the money for investments – and, in turn, for the medical technology that's required – will follow the patient. In this case, various financing models could then also be used by the hospital.

What do you think about the trend toward mergers and acquisitions of hospitals? This can be seen, for example, in the United States and even in Germany.

Professor Leidl: New reimbursement systems have significantly increased the economic and competitive pressure on hospitals in many countries in the last few years. Company groups can achieve improvements in cost and quality through specialization, organizational advantages, or outsourcing, and supply care more efficiently. Costly medical technology can also be established more easily and used in a more targeted manner, which increases the appeal of hospital groups. At the same time, mergers involve several risks that can be substantial. The success of mergers must therefore be reviewed on a case-by-case basis and for one healthcare system.

Are there exemplary approaches for financing large equipment in other countries that could be adopted by other healthcare systems?

Professor Leidl: The German healthcare system has a lot of good premises and some clear need for changes, such as a stronger orientation toward patient benefit and the integration of investment and operating cost calculations. To solve these questions, a look beyond the borders may offer us one or two suggestions, but the specific approaches have to be worked out in each country. ■



About Reiner Leidl

Reiner Leidl is Professor of Health Economics and Health Care Management at Ludwig-Maximilians-Universität (LMU) Munich, Germany, and Director of the Institute for Health Economics and Health Care Management at the Helmholtz Center Munich, the German Research Center for Environmental Health. After studying economics, he headed up the Department of Health Systems Analysis at the Helmholtz Center Munich until 1992, followed by chairs in health economics at the University of Limburg in Maastricht, the Netherlands, and at the University of Ulm. In 2003, he became a professor at the School of Management, LMU, and Director of the respective institute at the Helmholtz Center. At LMU, he is coordinator of the Munich Center of Health Sciences, an innovative research unit including a range of departments for quantitative research. He is currently Chair of the German Association of Health Economics.

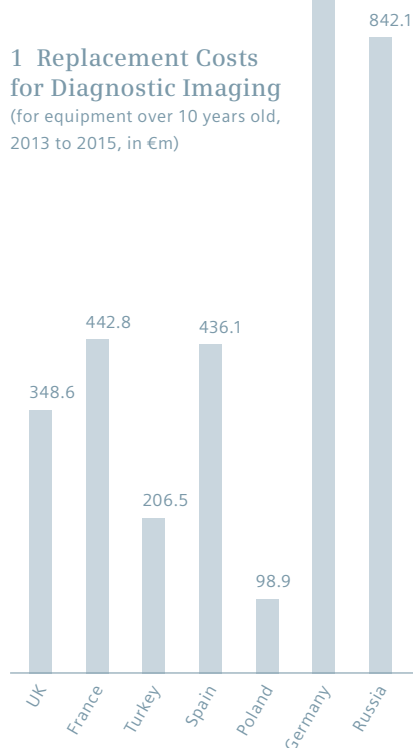
Barbara Ritzert headed the department for media and public relations at the Society for Medical and Pharmaceutical Studies (MPS) and worked as a science editor at *Münchener Medizinische Wochenschrift* (MMW). Furthermore, she worked for national newspapers, magazines as well as radio and television stations for many years.

Investing in the Future

The requirement for up-to-date medical equipment is posing financial challenges of different forms in Europe, Asia, and the U.S.

1 Replacement Costs for Diagnostic Imaging

(for equipment over 10 years old, 2013 to 2015, in €m)



For European healthcare systems, the cost of replacing outdated equipment is presenting a major challenge. A white paper published in 2013 by Siemens Financial Services estimated that until 2015, healthcare organizations in Germany had to invest around €1,659 million alone in replacing diagnostic imaging equipment over 10 years old (see chart 1 on the left). The higher investment need in Germany is due to the higher density of diagnostic imaging equipment there.

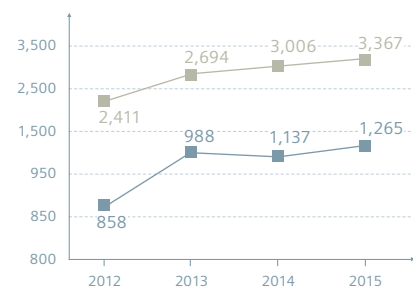
In the rapidly developing economies of India and China, equipment acquisition presents a different challenge – that of setting up a largely new healthcare infrastructure which can extend its reach to the entire population. As a result, spending on new diagnostic imaging equipment alone was predicted to increase by \$1.8 billion in China and \$816 million in India by 2015 (see chart 2 on the left).

technology – to attract patients and referrals.

As healthcare costs continue to outpace public capital, both in mature and in rapidly developing economies, asset finance techniques such as leasing and renting are becoming a valuable investment-enabler. Such alternative financing methods align finance payments with benefits and allow healthcare organizations to spread the cost over the equipment's lifetime. In addition to the equipment acquisition cost, these financial arrangements can also cover maintenance, service, and sometimes consumables. By leveraging asset financing techniques, healthcare providers around the world can make necessary investments in an affordable way that increases their financial agility and competitiveness. ■

2 Spending on New Diagnostic Imaging Equipment (in \$m)

■ India ■ China



Additional spending compared with 2012 budget, 2013 until 2015, in €m

India	816
China	1,834

The U.S. healthcare system is a competitive marketplace in which providers have to attract patients and the insurance payments that come with them. Recent legislation, restricted access to capital, and an increasing trend toward mergers and acquisitions has heightened competitive pressures, with the result that institutions are heavily advertising their service quality – including use of the latest

White paper on “Priority Acquisition”

Find an analysis of the challenges associated with the increasing costs of updating outdated medical equipment under the link below.

➔ www.siemens.com/priority-acquisition

The Balance Challenge

When it comes to healthcare, every region faces specific challenges. One of the greatest in all regions, however, is to balance healthcare spendings related to the region's number of inhabitants.

Germany

Population¹



82,727,000

Life expectancy²



81 years

Expenditure on health per capita in US\$³



4,683

USA

Population¹



320,051,000

Life expectancy²



79 years

Expenditure on health per capita in US\$³



8,895

China

Population¹



1,393,337,000

Life expectancy²



75 years

Expenditure on health per capita in US\$³



321

¹ WHO Data by country (2013), <http://bit.ly/1tJgLMW>

² WHO Data by country (2012), <http://bit.ly/1pcf4aB>

³ WHO Data by country (2012), <http://bit.ly/1BIVG8D>

USA

The U.S. healthcare system is a competitive marketplace in which hospitals have to attract patients and the insurance payments that come with them.



"Hospitals are facing higher reimbursement pressure"

The Affordable Care Act is pushing U.S. healthcare companies to operate more efficiently and achieve economies of scale. This leads to a need for specifically tailored financial instruments, as James Gelwicks of Healthcare Finance Group (HFG) explains.

Text: Norbert Kuls

Photos: Sebastian Forkarth



James Gelwicks

As head of Capital Markets for the middle-market lender Healthcare Finance Group (HFG), James Gelwicks is helping healthcare providers grow by lending and arranging a variety of large loans using specifically tailored financial instruments. Siemens Financial Services has collaborated with HFG on several of these financing strategies.

Mr. Gelwicks, what are the biggest financial challenges for U.S. healthcare companies currently?

James Gelwicks: There is a tremendous amount of change in the healthcare marketplace. Hospitals are facing rising reimbursement pressure because of the Affordable Care Act. For example, reimbursement is being based on new quality metrics, such as readmission rates, as well as the more traditional diagnosis-related categories. Also, many states are using reimbursement rate adjustments to push providers toward less costly alternatives, such as home care.

What are the consequences?

Gelwicks: We see increasing competitive pressure among U.S. hospitals, leading to higher technology expenditures, as well as to increased merger and acquisition activity. To be properly reimbursed, hospitals must meticulously align diagnosis and new treatment codes, which has triggered the need to upgrade software and add staff. In addition, in an arena where the government's decisions on hospital reimbursement dramatically affect the hospital's variable margin. One way to increase profitability is to increase a company's scale. ►



Management Summary

Challenge:

Higher reimbursement pressure from federal and state governments is pushing hospital operators to increase their operating efficiency through acquisitions and investments to retain their profit margins.

Solution:

Specialized financial instruments, such as asset-based lines of credit and term loans for acquisitions, allow healthcare companies to finance capital expenditures, upgrades, and acquisitions.

Result:

New equipment and increased scale from acquisitions increases the efficiency and profitability of hospital operators. Better-run hospitals tend to offer better quality of care for patients.



Healthcare Finance Group is based in Manhattan, only a few blocks away from the New York Stock Exchange on Wall Street.

Case 1: Lowering Interest Expense Through an Asset-Based Line of Credit

A specialty pharmacy company engaged Healthcare Finance Group (HFG) to arrange a \$150 million asset-based revolving line of credit. The company had underperformed for some time. While it reported high revenues, it was hampered by relatively low profit margins. According to James Gelwicks, head of Capital Markets for HFG, in this situation a large asset-based line of credit was the perfect instrument. Such loans are backed by receivables and inventory, which were prescription drugs in this case, and the company was able to borrow more than it could have if the loan had been based on projected earnings.

The company had previously borrowed to make acquisitions and was able to refinance that borrowing with the new asset-based credit line at a lower interest rate. Siemens Financial Services purchased \$25 million of HFG's share.

Could you explain some of your financing products?

Gelwicks: Some of HFG's lending products are based on the assets of a company, others on its cash flow. Asset-based loans are backed by receivables or other hard collateral, such as inventory, whereas cash-flow loans are based on the projected future cash flow of a company. Also, equipment leasing is gaining importance as a lending product. Siemens Financial Services (SFS) has worked in conjunction with HFG to provide some of these products.

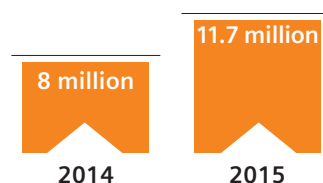
What are the respective advantages of these loan products?

Gelwicks: Companies are usually able to increase their overall leverage by adding an asset-based loan (ABL) to their capital structure since those loans are based on current assets and not on the overall company performance. The ABL typically carries a lower rate of interest than a cash flow-based loan because the risk for the lender is lower. This makes the ABL more suitable for companies with lower margins or inconsistent earnings. Cash-flow loans, by contrast, are common for companies with higher margins. The use of proceeds, purpose of a loan, is also important in deciding whether to use a revolving line of credit or a term loan. With a revolver, you borrow money when you need to, pay it back as funds come in from your customers, and then re-borrow when needed. You only pay for what you need. This loan type is used for working capital and short-term needs. Term loans, on the other hand, are generally used for long-term investments, like an acquisition or the purchase of a large piece of equipment. Some of our clients combine asset-based revolvers with cash-flow term loans to achieve the benefits of both products.

How do these products affect the financial performance of a healthcare provider?

Gelwicks: Companies will be more efficient and more profitable if the cost of financing is lower. Profitable hospitals can then attract and retain better staff, buy better equipment, and eventually improve the quality of patient care. ■

Facts and Figures

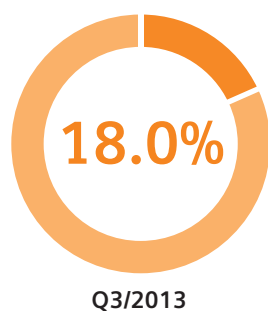


Reducing the number of 48 million uninsured Americans is a major goal of Barack Obama's Affordable Care Act. With 19.7 million in 2014 and 2015 signing up, Obamacare was off to a good start. This number includes 4.5 million who re-enrolled from 2014.¹

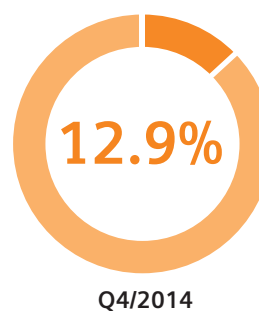
Emergency department visits: 136.3 million people – more than 20 percent of the total U.S. population – visit an emergency room every year.²



Obamacare's 2014 open enrollment period started October 1st. The uninsured rate among U.S. adults for the third quarter of 2013 averaged 18.0 percent, the rate for the fourth quarter of 2014 averaged 12.9 percent. This is down slightly from 13.4 in the third quarter of 2014 and down significantly from 17.1 percent a year ago.³



percentage of U.S. adults without health insurance



- ¹ Obamacare facts, <http://bit.ly/1v54bez>
- ² Centers for Disease Control and Prevention (2011), <http://1.usa.gov/1zGbZVp>
- ³ Gallup (2015), <http://bit.ly/1xRghba>

Case 2: Acquiring Underperforming Hospitals and Restoring Their Profitability

A large for-profit healthcare company, currently with hospitals in nine U.S. states, wanted to purchase several underperforming hospitals and restore them to profitability. The company worked with HFG to structure a \$475 million facility comprised of a \$250 million term loan to acquire these hospitals and make the related capital expenditures, and a \$225 million asset-based revolving line of credit for working capital and to upgrade the acquired hospitals' technology. Healthcare Finance Group (HFG) acted as the sole lead arranger for this transaction involving 19 banks and finance companies. Siemens Financial Services committed \$60 million toward the facility and provided other financing for new equipment from Siemens Healthcare. In the first year, the healthcare company used the financing to acquire five hospitals and to upgrade their medical equipment and overall infrastructure through \$10 million to \$30 million of capital expenditures per hospital. These measures reduced the wait time in the emergency room (ER), resulting in higher satisfaction for paramedics and patients, as well as higher ER throughput. Last year, 13 of the company's hospitals were ranked "Top Performers on Key Quality Measures" by the Joint Commission, the industry accreditor.

Norbert Kuls is an award-winning business journalist based in New York. For more than a decade he has covered U.S. financial markets and banking as a foreign correspondent for two major German newspapers, *Frankfurter Allgemeine Zeitung* and the business daily *Handelsblatt*. He has also served two years in the healthcare field as a paramedic in Germany.

Germany

Germany has a high density of facilities with diagnostic imaging equipment, resulting in higher overall investments to replace outdated equipment.



Flexible Leasing Supports Continuous Innovation

Service providers in the German healthcare system are finding it increasingly difficult to deal with financing issues. Siemens Financial Services offers custom-made solutions with a reliable calculation basis as well as great flexibility and budget security, so hospitals can maintain and even raise their quality standards in clinical diagnostics and treatment.

Text: Dr. Thomas Meissner
Photos: Thomas Steuer

Hospitals in Germany have been in competition with each other and in competition to attract patients ever since the introduction of a case payment system (diagnosis-related groups, DRG) more than a decade ago. This is happening against the background of an aging population and an increase of chronic diseases along with fewer staff – while, at the same time, hospital subsidies from the German federal states have shrunk significantly in the past few years. “Under these conditions, if a hospital wants to be successful in the long term, it needs to generate profit so it can afford the necessary investments in equipment and infrastructure,” explains Dr. Andreas Brakmann, Managing Director of Zentralklinikum Suhl in the federal state of Thuringia.

The acute-care hospital is part of the German SRH Group – a private foundation with companies involved in healthcare and education. With 22 departments, more than 600 beds, and approximately 1,000 employees, the hospital is not just an important employer and economic factor in this region. “We are a private company but we’re also non-profit,” Brakmann says. The hospital supports cultural, sports, and social activities – for example, young talent development for the internationally successful Suhl luge team, as well as kindergartens and other social institutions. This is only possible with an economically prosperous company, says Brakmann.

In fact, a hospital like this one has to find a delicate balance. On the one ►

With more than 600 beds and around 1,000 employees, the acute-care hospital in Suhl, Germany, is an important economic player in its region.

“If a hospital wants to be successful in the long term, it needs to generate profit.”

Dr. Andreas Brakmann, Managing Director, Zentralklinikum Suhl, Germany



Management Summary

Challenge:

Hospitals in the German health-care system are finding it increasingly difficult to deal with financing issues, since the public subsidies for hospital investments have significantly declined. At the same time, hospitals must maintain the latest medical, quality, and technological standards. The number of replacement investments in Germany is increasing.

Solution:

Siemens Financial Services offers financing solutions for replacement investments and infrastructure projects through medprolease.

Result:

The lessee gains financial flexibility with regard to payment forms, duration, and the contract term. The installment payments can be adjusted to suit the revenue situation and include the costs for use, depreciation, and maintenance. So the lessee stays up-to-date technologically – with budget security and financial leeway for additional investments.

hand, profits have to be completely reinvested at the local level. A high technical standard is simply expected of a hospital of this size that is also involved in medical research as an academic teaching hospital for the University of Jena. On the other hand, these investments do not lead to more patient referrals and higher profits. With all of this, the hospital's financial liquidity still needs to be ensured. "We invest up to 5.5 million euros annually," reports Markus Bunzel, the hospital's head of administration. "Around 70 percent of that comes from our own resources." The remainder comes from state subsidies.

Tailored Financing Solution

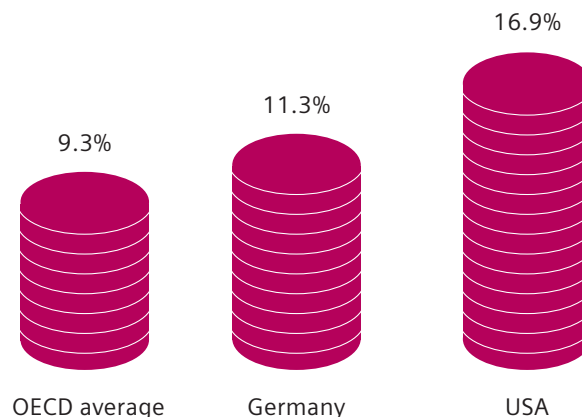
A few years ago, when the hospital needed to buy an angiography system and a new gamma camera, as well as replace an eight-year-old computed tomography unit, it decided against

buying the equipment with conventional financing – and chose to procure the three systems from Siemens Healthcare with customized medprolease agreements with Siemens Financial Services. "The appeal of this financing model is that it contains both investment as well as maintenance components," says Bunzel. The costs of maintenance and replacement parts are already included in the leasing payments, which can be made from current revenue according to the principle of "pay as you earn."

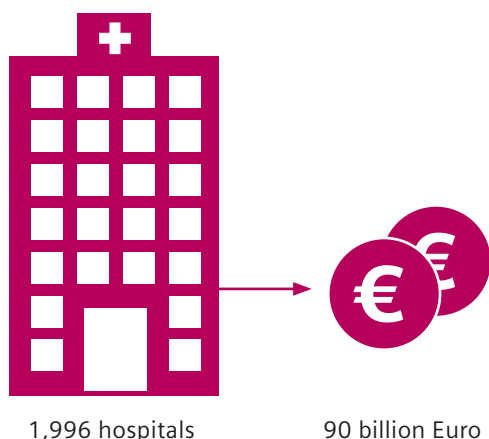
"The contract allows variations with lower or higher installment payments as well as extending its term," Bunzel explains. In good times, when the hospital's earnings are high, the balance can be paid off faster. When revenues decline, on the other hand, the hospital's financial burden is also reduced. This liquidity-preserving leasing model

Facts and Figures

Total expenditure on health in 2012: 11.3 percent of its gross domestic product, which puts Germany two percentage points above the OECD average.¹



Investment costs of hospitals within Germany's dual-financing model in 2013²:



Number of times medical imaging was utilized in German hospitals in 2012.³

¹ OECD Health Statistic (2014), <http://www.oecd.org/els/health-systems/Briefing-Note-GERMANY-2014.pdf>

² Federal Statistical Office Healthcare Data (2013), <http://bit.ly/1DtPNyO>

³ Federal Statistical Office medical procedure (2012), <http://bit.ly/1DWoiPJ>

also allows the hospital to use the available public subsidies for other projects, adds the hospital's head of administration. For example, SRH Holding has invested almost one million euros in modernizing the hospital emergency room by the end of 2014. Bunzel also feels one of the advantages of a medprolease agreement is that the interest rate risk of conventional financing can be avoided while claiming the tax advantages from investments. In this way, the financial risk can be minimized.

Siemens Financial Services globally offers these financing solutions not just for investments to replace individual equipment, but also for major infrastructure projects. The lessee merely pays for the use and depreciation of the investment, while Siemens has the residual value and resale risk. The contract's configuration can be modified

during its term, the volume of services can be terminated, in whole or in part, after the minimum duration of the contract, and individual components can be replaced or added. This flexibility allows the customers to enjoy continuous medical and technical innovation with predictable costs.

Yet another major advantage lies in the competition to attract qualified experts. Particularly for hospitals outside of urban areas, modern technological equipment and the scope of medical care are extremely important when it comes to recruiting qualified medical staff, says Brakmann. "Our hospital can claim to be the leading healthcare provider in southern Thuringia even under the increasingly tough conditions. This includes the competition to recruit the best people." ■

Thomas Meissner, MD, is a medical journalist in Germany with an office in Erfurt, Thuringia. He worked as a doctor in the UK and Germany before completing his training as a journalist with the German periodical *Ärzte Zeitung*, where he also was an editor. He has been working for well-known trade and public media outlets for more than 15 years.

The outcomes achieved by the Siemens customers described here in were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g. hospital size, case mix, level of IT adoption) there can be no guarantee that others will achieve the same results.

China

Due to its rapidly growing economy, one of China's biggest challenges is to set up a largely new healthcare infrastructure.



Ticket to Affordable Healthcare

More and more Chinese are receiving treatment in private clinics. However, hospitals in China often cannot obtain loans for the purchase of imaging technology such as CT scanners. In order to be able to use new equipment, clinics turn to leasing models from Siemens Financial Services.

Text: Andreas Kleinschmidt

Photos: Tang Ting



Changchun Orthopedic Hospital (upper right) received everything from a single source – the equipment and the financing.

The Changchun Orthopedic Hospital (COH), located in the Jilin province in Northeastern China, would like to order two computer tomographs, a magnetic resonance system, and three X-ray units. The total price tag will amount to several million Chinese yuan. However, as was the case with its previous Siemens orders – totaling 31 million Chinese yuan (approx. 5 million U.S. dollars) – the hospital wants to lease the new equipment.

An Alternative to Purchasing

Chen Yang works for Siemens Financial Services (SFS). SFS helps Chinese hospitals finance new equipment. Most private clinics are like COH in one respect: They decide not to buy imaging equip-

ment but to lease it instead. This way they can pay off the purchase price in installments spread out over several years. China's financial leasing market is enjoying double-digit growth rates. One of the reasons for that is the government tightening credit. Chinese banks are thus currently more reluctant to lend money than they were in past years. When they do provide loans to the healthcare sector, it is primarily to state-run facilities. Consequently, most private hospitals have to find financing elsewhere. Leasing is a good alternative for many institutions, although it appears to be slightly more expensive at first glance. This financing model enables customers to manage cash flows more flexibly. ►

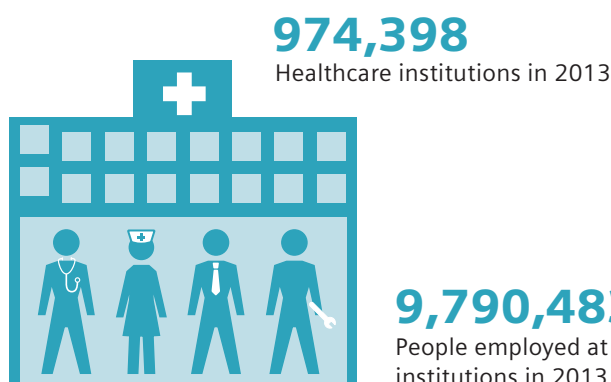


Changchun Orthopedic Hospital has big plans for the future: To build more specialized clinics in other parts of China.



Facts and Figures

Experts predict significant growth for the Chinese healthcare system. The most recent figures show a rise of 2.54 percent in the number of healthcare institutions between 2012 and 2013 alone as well as 7.4 percent growth in healthcare personnel.¹



Future investments:
It is estimated that healthcare spending in China will grow to US\$1 trillion by 2020, up from just over US\$357 billion in 2011.²

2011
more than
US\$357 billion

2020
US\$1 trillion

- ¹ China Statistical Yearbook Public Health (2014), <http://bit.ly/1z9YePI>
² McKinsey & Company (2012), <http://bit.ly/1ogxdpF>

“Price is not the only factor for us. We also consider speed, convenience, and people.”

Chen Wei, Director, Changchun Orthopedic Hospital, Changchun, China

“Setting up long-term partnerships with hospitals such as COH is crucial, but at the same time difficult,” Chen Yang says. “COH received several financing offers from our competitors when it was in the process of buying healthcare equipment from Siemens for the first time. To secure the deal, we commuted between Shenyang and Changchun many times to discuss and understand COH’s exact requirements. As a result, we were quickly able to design a tailor-made leasing solution,” adds Chen Yang.

Real Value for Money

“Of course we negotiate the price every time we discuss new equipment,” Chen Wei, COH’s director, says. “I receive offers from banks and other leasing companies, but price is not the only factor that is important for us. We are really looking for a long-term, reliable partner to provide the best service

overall. So we consider speed, convenience, and people. Siemens is quite simply a company you can trust and that meets expectations.” He adds that, “the leasing solution from Siemens will actually cost me a bit more compared to the traditional mortgage loan, that’s true. But with an SFS lease I’ll receive everything from a single source – the equipment and the financing. I think that’s real value for money, and that’s why I’d like to continue working with Siemens and SFS in the future.”

Since China does not have a central register with reliable assessments of customers’ credit ratings, being able to make an offer to a potential customer quickly is not an easy task for Chen Yang and his team. Therefore, he needs to make a good estimate as to whether the use of equipment will pay off for a prospective customer ►



The fruits of a long-term relationship: Changchun Orthopedic Hospital's director Chen Wei and Siemens representative Chen Yang know, appreciate, and trust each other.

Dr. Andreas Kleinschmidt has been writing on innovation topics for more than ten years. In 2005 he received the CNN Journalist Award for a radio feature from Russia. His degrees include one in International Political Economy from the London School of Economics. He works for Siemens Corporate Communications in Munich.

– that's what ultimately determines whether they can pay their leasing installments.

Long-Term Business Models

One source of information for the SFS risk team crunching the numbers is hospital financials. Industry experience plays an important role, too: What equipment does the customer want? How many beds does the hospital have? How big is the catchment area? What is the average income of the patients in the catchment area? Assessing creditworthiness is much easier of course, when dealing with a repeat customer, like COH. The people who are negotiating the deal know, appreciate, and trust one another. Also, COH has a positive track record with SFS. What's more, it has big plans for the future. "We want to expand within our home province of

Jilin. But we're also building clinics in other parts of the country that are in need of specialized clinics: in Xi'an, in Kunming, and in Haikou," says Chen Wei. COH is targeting the market segment for highly specialized orthopedic clinics, which is growing especially fast.

Chen Wei says that, in spite of the current "gold rush" mood in the private healthcare market in China, he is not out to make quick profits. "Orthopedic clinics require particularly high initial investments. Over the course of time, however, these are balanced out by higher margins, making such clinics very interesting in the long run. But at first there are often challenges, and that makes many investors hesitate. With a strong and reliable partner such as Siemens, we can get through this lean period much better," he says. ■

Rising to the Challenge

Siemens Financial Services asked 40 of the world's largest medical device manufacturers about the importance of alternative financing solutions.

To determine the role asset finance is playing in helping healthcare institutions meet the challenge of medical technology investment, Siemens Financial Services commissioned a survey of the world's top 40 medical equipment manufacturers in 2014. More than two-thirds (68%) of the respondents observed growing demand from their customers for healthcare equipment finance in the last two years. During this period, the proportion of global medical equipment sales financed through asset finance had grown by an average of 6.9% annually.

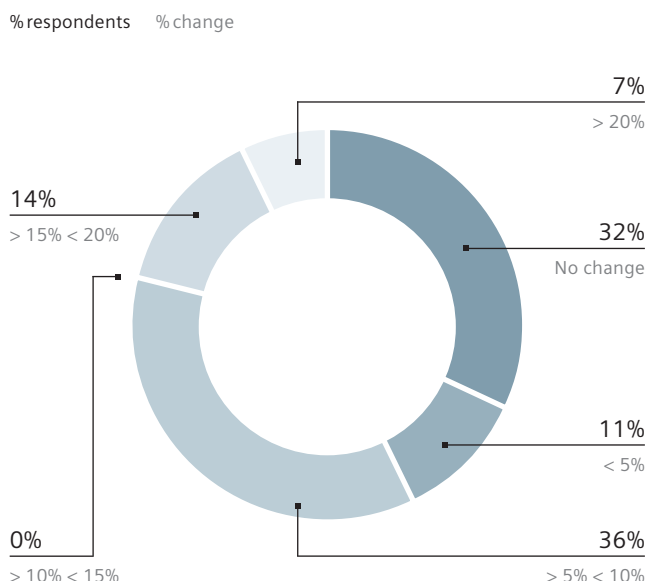
Over 60% of respondents believed that finance penetration will continue to rise over the next two years, albeit at a slower pace of 3.1%. Strong take-up is expected to come from Tier 1 and 2 hospitals in China and from Russian and Indian private sector hospitals and clinics. These results are not surprising, given that two-thirds of respondents reported that their customers are feeling a squeeze

on their capital budgets. Another 57% reported increasing demand for tailored financing.

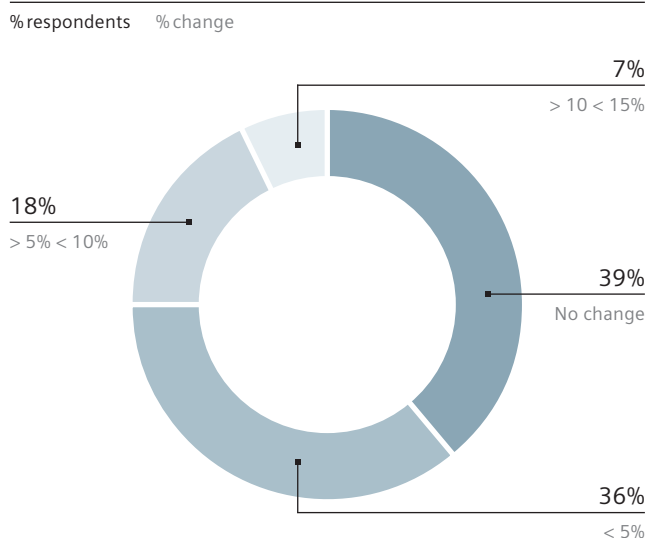
A total of 64% also observed customers' increasing application of Total Cost of Ownership (TCO) methodologies. This reflects the demand for financing techniques that can embrace other associated costs (installation, service, lifetime maintenance, upgrades, etc).

While the results highlight the financial pressure confronting healthcare systems across the globe, the financial challenges differ from country to country. China, for example, is working toward providing universal access to affordable healthcare. Germany has to deal with escalating demand because of its aging population. In the U.S., the Affordable Care Act, combined with the increasing trend toward mergers and acquisitions within the healthcare sector, has increased the competitive pressure on healthcare providers to attract patients. ■

Over the last two years, what has been the annual percentage change in your equipment sales financed through asset finance?



Over the next two years, what do you expect to be in annual percentage change in your equipment sales financed through asset finance?



The Role of Asset Finance in Medical Equipment Acquisition

The survey entitled "Rising to the Challenge" is available for download via the link below.

➔ www.siemens.com/rising-to-the-challenge



A Matter of Will

Text: Diana Laarz
Photos: Fabian Weiß

Olga Mikhalyova, MD, got off to a very modest start. Today, the dermatologist is general director of a group of medical facilities in Nizhny Novgorod, Russia. She offers her patients what government-run hospitals in Russia generally do not: advanced technology, high-quality diagnostic services, and an encouraging smile.



General director of the Tonus group of private clinics, Olga Mikhalyova, MD, has clear objectives in setting new standards in the Russian healthcare business.

Lyudmilla Borisova, MD, surfs through the human body with just a couple of mouse clicks. The skeleton and blood vessels of a 65-year-old patient appear on the screen in front of her. A web of red and white. Borisova, a radiologist, clicks, makes a stroke through the skull, and that's all it takes to lift the top of the skull. A few more clicks and the body rotates. The image zooms in on the upper body, closer and closer. "There!" Dr. Borisova stops the cinemode. Her cursor floats above the aorta, which is constricted at exactly this spot. "Stenosis," she says tersely. There is a risk of total blockage of the artery, followed by a heart attack.

Borisova, 43, examines as many as eight patients a day using the computed tomography (CT) system. Each diagnostic session can take up to an hour. The weekly schedule of upcoming examinations posted on her desk is

filled to the brim with her handwriting. That doesn't leave much time for long-winded explanations. Borisova does not mince words when it comes to diagnosing a problem. "A stent needs to be placed here. Absolutely. This man belongs in the cath lab."

Regional Market Leader

Nizhny Novgorod in summer. The Volga flows languidly through the city, once the seat of Russian grand princes. An imposing monument to the city's best-known son, writer Maxim Gorky, stands majestically on its banks. Nizhny Novgorod today is one of the few Russian cities to have a population of over one million – and it has preserved a good portion of the medieval architecture surrounding the Kremlin, the fortified old part of the city. The private Tonus group of clinics is headquartered close to the city center. In her office, Olga

Mikhalyova, MD, General Director of the Tonus Group, is leaning both elbows on a tidy desk. Her smile and brightly colored floral blouse tell you a little about what she is like. Mikhalyova is someone who, when buying new equipment, even pays attention to its color. "Other people might laugh about it, but creating a good atmosphere is important to me," she says. The Tonus Group is the market leader in the private healthcare sector in the Nizhny Novgorod region. It is immediately believable when Mikhalyova says it wasn't planned that way at all.

Mikhalyova, 41 years old and a trained dermatologist, never worked in Russia's government-operated medical sector. After finishing her studies, she worked as a dermatologist at a beauty salon. "Right from the start, I enjoyed the very close contact with clients," Mikhalyova says. In 1999, she opened her own dermatology practice. She wasn't on her own for long, as a gynecologist, a physical therapist, and a psychotherapist opened up practices in the neighborhood. "Our patients were satisfied, but they kept asking things like, 'Why don't you also treat children? Why isn't there a dentist here?'" Mikhalyova took these questions seriously, and ►



The Tonus Group is the only option in the Russian region of Nizhny Novgorod for a digital mammography. This fact gives the institution a competitive advantage.



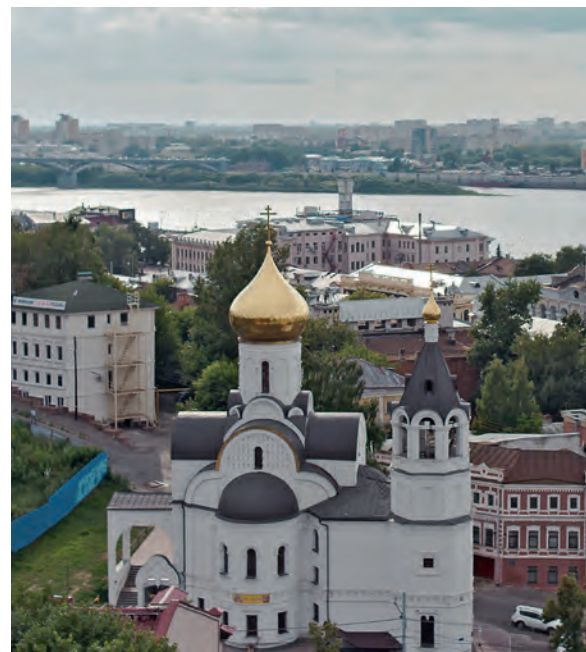
a whole network of practices and specialty clinics gradually took shape.

Today, the Tonus Group encompasses 15 branch locations, ten in the city and five in the Nizhny Novgorod region. About 200 doctors work for Tonus, covering a wide range of healthcare services, from lab testing and pediatrics to laser eye correction, dental care, and minimally invasive surgical interventions. And the company is still growing, due chiefly to the fact that Mikhalyova does not tolerate long waits. "Whenever we see that we can no longer satisfy demand in a reasonable period, we open a new practice," she says. When she smiles – as she does when making this remark – Mikhalyova has two dimples in her cheeks. But one thing has long been clear: that she makes no compromises when it comes to her clinic.

Underfunded Government Clinics

Strictly speaking, there shouldn't be any private healthcare sector in Russia at all. The Russian constitution guarantees all citizens free basic medical care at a government-operated facility. This fundamental right has existed since the Soviet era. But since the early 1990s, the state-run clinics have been largely underfunded, with many of them having no sign of modern medical equipment anywhere. To this day, for example, the government-run polyclinics in Nizhny Novgorod do not have a single magnetic resonance imaging (MRI) unit to offer solid diagnostic services.

"Basically, patients have two options," Mikhalyova says. "Either they don't get the scan at all, or they get it at a private facility, where they have to pay for it." She is well aware that she has to contend with the criticism of



"two-class medicine." The average bill at a Tonus facility comes to about 35 euros. Waiting rooms at Tonus practices also welcome retirees, who do not exactly receive lavish treatment from the Russian government. That is a sign that anyone who really needs a medical examination can afford the visit. Mikhalyova's opinion: "We give people the ability to receive high-quality healthcare in the first place."

In the meantime, the Russian government has recognized the issue with the government healthcare sector, and has ramped up investments by several billion euros a year starting in 2011. But it will take a long time to clear the investment backlog that has accumulated over the past few decades, especially in rural areas. Lampposts in Nizhny Novgorod are covered in dozens of ads for private clinics. Not far from the Tonus headquarters is a government-run polyclinic. Next to the faded entrance door, a plaque announces that during World War II, the city's residents donated 13,000 liters of blood here, at this clinic, for Soviet soldiers on the front lines. It is an admirable accomplishment. And yet, the clinic's interior still looks as if it dates to precisely that era. It is still the private



Russian Realities

The Russian constitution guarantees all Russian citizens free basic medical care. But in recent decades, the government has invested very little in new medical technology. The facilities and equipment at government-run clinics are outdated, and the doctors are underpaid. Private providers are stepping in to fill the gap in the healthcare system. The Tonus group of clinics, with 15 branch locations, is the market leader in Nizhny Novgorod and the surrounding area. Two hundred doctors work for the company. In early 2012, the Tonus Group opened a center for diagnostics and minimally invasive surgery, investing in 2.3 million euros' worth of medical technology from Siemens in the process. To finance the purchase, the company worked with Siemens Finance, signing a leasing agreement. This arrangement has allowed the Tonus Group to handle the heavy investment volume and enable access to high-quality medical care for the people of Nizhny Novgorod. The Tonus clinic is currently home to the city's only digital mammography system. The system was used to diagnose 62 cases of breast cancer in its first year of operation.

clinics that set the bar higher in terms of medical technology. The city's first, and so far only, digital mammography system is installed at a Tonus facility.

Improved Diagnostics

Tatyana Dyatchkova, MD, looks at a patient's mammogram on the screen. The radiologist wears pearls, her short blonde hair curling behind her ears. It doesn't show, but she has already reached retirement age. Still, Dyatchkova goes to work at the Tonus clinic regularly. Because she feels much too young to stay home. And because she loves her work. A smile flits across her face as she gestures to a tiny abnormality in the image. "When we discover a breast tumor at this size, the chances of recovery are almost 100 percent," she says.

Dr. Dyatchkova has been working with the Siemens digital mammography system for about a year now. "We find about 30 percent more tumors than before," she says. Around 2,500 women have had a mammogram here in the past twelve months, and Dyatchkova and her team have diagnosed 62 cases of breast cancer. "It's a good number," she says, "but we can do even better."

Modern Technology on a Leasing Basis

The mammography system isn't the only piece of equipment Michalyova has bought from Siemens in the past year. There have also been a CT system, ultrasound units, and an MRI system – for investments totaling over two million euros. "We would never have been able to handle this kind of expenditure on our own," she says. With that in mind, Mikhalyova turned for the first time to a leasing offer from the Siemens Finance representative office in Samara, Russia. The Tonus Group will now pay installments over several years, until eventually the equipment belongs entirely to the group. "When we first received the offer, I was interested right away. This is a one-of-a-kind opportunity for us to be able to offer exams using modern technology found nowhere else in Nizhny Novgorod."

Mikhalyova seems to be convinced of the benefits of financing purchases through leasing. The Tonus Group and Siemens are already in talks about a new project. "Trust is an especially big factor in this relationship, and we trust our partner," she says. With those words, she grabs her cell phone and

tablet PC and quickly stands up from her chair. Enough talk, evidently. Mikhalyova has to go to her next meeting. She has an idea for something new the Tonus clinics can offer. She doesn't want to give anything away about it yet. But to see her hurrying along the street at a brisk pace, looking neither left nor right, phone already at her ear, it becomes clear how a dermatology practice was able to grow into a successful group of clinics over just a few years. With vision, ambition, and courage. ■

Diana Laarz is a correspondent in Moscow. She has been a journalist since 2006, writing reports for various German-language journals and magazines.

The statements by Siemens' customers described herein are based on results that were achieved in the customer's unique setting. Since there is no „typical“ hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption) there can be no guarantee that other customers will achieve the same results.



A Hospital for Everyone

Hospital do Subúrbio, on the outskirts of Salvador da Bahia, shows how an underdeveloped and financially weak region can improve its medical care through a public-private partnership.

Text: Christine Wollowski

Photos: Walther Appelt





Josenildis Souza has been suffering for many years from a venous leg ulcer. The woman lives in a tiny cardboard-covered house in Salvador, a Brazilian city with a population of over a million.

"When I had money, I always bought medicines and bandages first," she recounts, smiling. "What I've spent on that over the years could easily have been enough for a better house and a car!" On this early afternoon, she sits on her bright-red sofa as nurse Maria Emilia takes care of the wound, examining and photographing it, washing it, applying ointment and spray, and finally gently applying a new bandage. For two years, Maria has been coming to see Josenildis every day as part of a home-care program offered through the public Hospital do Subúrbio, which opened in Souza's neighborhood. Theoretically, in Brazil, such exemplary care is provided for everyone through the public health system. In practice,

medications and dressings are often in short supply and appropriate specialists are rarely available. Long wait times outside emergency rooms or for operations are both normal and life-threatening. In a worldwide comparison, Brazil's healthcare lags behind even Somalia and Senegal. Government expenditures on healthcare for the country's citizens are 40 percent below the global average. Only 2.8 hospital beds are available per thousand inhabitants; in Salvador the figure is only 0.35 beds.

The Government Saves Money, the Public Benefits

Suburbio Ferroviário is the name of the suburb where Josenildis lives in cramped conditions with neighbors in equally modest circumstances. About one million people live here. Most of the houses are unplastered, the few sidewalks on the main streets are packed with sellers' booths next to piles of rubbish, and strong-smell ►



Hospital do Subúrbio's modern architecture (bottom left) is a contrast to its surroundings – but its services are greatly needed right here.



ing sewage seeps out almost everywhere. According to a recent study by the United Nations Population Fund, residents here are mostly of low socio-economic status, and the death rate among people ages 15-29 is shockingly high. In all, 25 health clinics provide care for only 60 percent of the population. No new public hospital had been built in Salvador in over 20 years.

Then, in 2010, the government built Hospital do Subúrbio, or HS for short. The long white building, set among green spaces and neatly trimmed lawns, looks like a UFO from another planet. People in white, green, and pink scrubs bustle by on meticulously swept pathways. This morning, two ambulances are parked in front of the orthopedic emergency room; their passengers are already being treated. The medical technology and organization meet the same standards as an

expensive private hospital – but this is a public hospital. It was made possible by the first partnership between the government and private enterprises in Brazil's medical sector. The idea came from Siemens – borne through the search for new markets and business models for underdeveloped regions.

More Flexible and More Cost-Effective

"We sounded out health policymakers in various federal states, to see whether they were interested in public-private partnerships," remembers Manuel Moreira, the head of public sales at Siemens' Brazilian subsidiary. "Jorge Solla in Bahia was immediately convinced."

Solla, the Secretary of Health for Bahia state, describes the project as a huge challenge that was overcome: "A hospital for major surgery, emergency medicine, and intensive care had to

In an area with relatively low income, Hospital do Subúrbio offers healthcare free of charge for those without health insurance.



Jorge Solla, the Secretary of Health for Bahia state, Brazil, sees clear advantages of a private partner, such as higher flexibility and a more efficient change management.

Management Summary

Challenge:

Medical care in underdeveloped regions of Brazil is at the same level as in the world's poorest countries.

Solution:

Siemens has started public-private partnerships in the medical sector, making it possible to build and operate first-class hospitals.

Results:

Hospital do Subúrbio was opened in Salvador da Bahia in 2010 and gives even low-income sectors of the population access to the most modern medical care.

The hospital's equipment includes, among other items, a magnetic resonance imaging system, a computed tomography system, and an interventional radiology system.

come into being in an isolated place where there had been hardly any investment in healthcare," he explains. "The operator of a public hospital in Brazil cannot attract the necessary specialists to such an underdeveloped area." The building had already been built, so the hospital's operator, private partner Prodal, took on the task of equipping it.

"We are 30 percent more cost-effective than Hospital Geral, a comparable facility, and technically speaking we are the best-equipped hospital in the city," explains Jorge Oliveira, Director of Prodal, which owns two private hospitals and runs HS. "We are also significantly more flexible in terms of management. Early on, we had to keep changing employees around until the positions were all filled by the right people – with public employees you can't do that so easily."

Prodal has invested 36 million reais (about 15.3 million US\$) in equipment and medical technology. The government is contributing 142 million reais a year (about 61 million US\$) for operating costs. In return, Prodal receives a guaranteed operating license, initially for 10 years. The ►



“Technically speaking we are the best-equipped hospital in the city.”

Jorge Oliveira,
Director of private hospital operator Prodal



operator is required to meet certain benchmarks. For example, at HS, 82 percent of the doctors must be specialists, no beds may be placed in the corridors, and morbidity and mortality rates must be kept below certain precisely defined limits – or government support will be reduced. That is how the government of Bahia controls the quality of medical procedures at the hospital. Through the public-private partnership (PPP) deal, the government is saving over a million reais a year in administrative costs alone. And the bottom line for Prodal? “Profit margins are not large,” Oliveira admits, “but we are expanding our sphere of activity, and we also have a social responsibility.”

Emergency Care Without Hours of Waiting

Jucicleide Ferreira works as a nanny and lives not far from the hospital. She is here with her 10-year-old son, who is injured after falling off their roof. “I live right next to a large emergency clinic, but recently I was there with my grandmother and we waited three hours before anybody even saw her. Here, I was put into a treatment room immediately with my son while my husband filled out the paperwork,” says a satisfied Jucicleide. “A head X-ray and other examinations were done right away, to rule out serious injury. Now he’s being ban-

daged and given medicines – and then we can go home. Even in a private hospital he wouldn’t receive quicker or better treatment.” Such prompt service is often life-saving and therefore one of the highest priorities at HS. Patients are diagnosed upon arrival, and depending on the severity of the case, are treated immediately or within one hour.

“If someone merely has a headache, then we transfer them to the city’s other medical facilities,” explains nurse Roberto Regis, who examines new arrivals. Regis’ training included several years of university study and four years of specialization in emergency room and intensive care medicine, as well as continuing education in various areas. There is no need for him to ask a doctor to order X-rays or notify a specific specialist. This, too, speeds up the process. “Here, specialists are always on call in intensive care. There’s no broken equipment and no drug shortages,” Roberto says proudly.

“With us, everything is geared toward the highest efficiency, even the different-colored scrubs, by which we can recognize people immediately. The man in white is a doctor, the one in green a nurse, and the lady in pink is a psychologist,” explains Jorge Motta, the hospital’s technical manager. “The hospital is built on one level so the

A Pioneer in Brazil

Public-private partnerships, or PPPs for short, make it possible even for public authorities with limited financial resources to build and operate costly infrastructures. This model is now becoming a reality in Brazil's public health system, called SUS (*Sistema Único de Saúde*), which guarantees free treatment for everyone and provides care for 75 percent of Brazilians who do not have private health insurance. Siemens is doing pioneering work with these PPP initiatives and in 2010, together with private hospital operator Prodal, helped equip the Hospital do Subúrbio (HS).

The agreement for construction and operation of HS was as follows:

- Bahia government (public): Invested 54 million reais in building the hospital, pays up to 142 million reais annually for operating costs, and issued the private partner with a 10-year license to operate the hospital and collect the earnings.
- Prodal (private): Invested 36 million reais in equipping the hospital, agrees to achieve 90 percent of the specified patient numbers and meet quality standards. 82 percent of the medical staff must be specialists.

Construction and operation of hospitals through PPPs is a win-win situation for government authorities: Medical care meets higher standards and at the same time is more cost-efficient. HS is saving Bahia's government about a million reais each year. A study by management consultant PricewaterhouseCoopers also confirms this, indicating that PPPs can significantly reduce costs for projects in the healthcare system – by 10 to 30 percent!

The regional government has such a positive view of Bahia state's PPP initiatives that 14 more projects have already begun, with consulting and participation of Siemens.

Following the success of the trailblazing Hospital do Subúrbio, which was praised even by World Bank President Jim Yong Kim, there have recently been invitations to tender, mainly for metropolitan PPPs for medical projects, through which the private sector is to equip and operate highly specialized hospitals, clinics, and diagnostic centers.

patients can be transported more quickly; our test results, from blood tests to X-rays, can be accessed directly from any computer in the facility; and all decision-makers can be reached here on site." Another thing stands out – in comparison to other public hospitals, this one is spotlessly clean: flaking paint and wobbly chairs are nowhere to be found. And the 312-bed facility is full. Beneath cosy blue blankets, emergency room patients await further treatment, shoulder to shoulder with the person in the next bed. "Since the hospital opened, demand already exceeds capacity," Motta says. "In the emergency room, there are sometimes 90 people instead of the 45 for which it was designed." Meanwhile, ambulances arrive even from distant communities. Surveys show that 97 percent of the patients treated at HS are satisfied with the care they receive. An extra ward will be built in the coming year to ease overcrowding.

Meanwhile, Secretary of Health Jorge Solla is already planning the next medical PPPs. The city's oldest public hospital, which treats infectious diseases in a building that's over 100 years old, will be expanded and modernized when it is moved into a new building. The team of public employees will remain; a private company will take on construction, equipment supply, and non-clinical staffing. And in 13 other public hospitals, ultra-modern diagnostic and medical imaging centers are being created. Materials for the centers will be managed at a central site, and a private company will be responsible for furnishing, equipping, and operating them, as well as supplying doctors. "There is no easy answer," says Solla. "We have to develop a new model for each case. One big advantage of private management is its flexibility – that's how we spare ourselves a long bureaucratic process." ■

Christine Wollowski has been a South American correspondent in Brazil since 2000. She writes for publications such as *Süddeutsche Zeitung*, *Frankfurter Allgemeine Sonntagszeitung*, and the renowned business magazine *Capital*.

The statements by Siemens' customers described herein are based on results that were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption) there can be no guarantee that other customers will achieve the same results.

Speaking about the Unspeakable

In Oman, it used to be taboo to speak openly about breast cancer. Thanks to Yuthar Al Rawahy, who has been diagnosed with cancer four times, and her Oman Cancer Association, women now have breast cancer screenings and allow themselves to get treatment.

Text: **Sascha Karberg**

Photos: **Thomas Steuer**

A colorful Fabergé egg, a tapestry with a hunting scene – Yuthar Al Rawahy's living room in Muscat, the capital of Oman, is not very oriental but rather full of souvenirs from her trips to Europe. "This is not a traditional Omani house," she says. "We wear Western clothes and our children play on computers." Nevertheless, she follows the tradition of serving guests the typical thin, tea-like coffee and fresh dates. Not many people in Oman handle the balance between tradition and modernization as well as she does. Although people here do not talk about a woman's breasts, 64-year-old Al Rawahy, a mother of five, has been teaching women about breast cancer for 14 years. She founded the Oman Cancer Association, convinced more than 11,000 women of the importance of breast cancer screenings, and has even spoken publicly about her own struggles with thyroid, uterine, and breast cancer.

In the Sultanate of Oman, a country of 2.7 million people at the mouth of the Persian Gulf, one out of five women is diagnosed with breast cancer at some time in her life. Unlike in Western European countries, these women are usually at least ten years younger, on average 48 years old, and are diagnosed with aggressive, advanced-stage tumors, so that the chances of successful treatment are lower.¹ This is a trend characteristic of newly industrialized countries like Oman, where the healthcare systems are still establishing expertise, specialized hospitals, and above all screening and educational programs for its citizens. A study of 122 breast cancer patients in Oman between 2003 and 2008, where the five-year survival rate was 78 percent, shows that these investments are worthwhile.² Prior to that, from 1996 to 2002, the rate was only 64 percent; and this success is attributable not least to the efforts ►





A strong woman determined to fight breast cancer in Oman: Yuthar Al Rawahy convinced more than 11,000 women of the importance of breast cancer screenings – and still wants to do more.



It took about four years to have the Oman Cancer Association (OCA) registered by the Ministry of Social Development in order to raise funds and bring Yuthar Al Rawahy's vision to life.



Management Summary

Challenge:

One out of five women in the Sultanate of Oman is diagnosed with breast cancer at some time in her life. Culturally speaking, inhibitions about a breast cancer examination are very hard to overcome.

Solution:

The Oman Cancer Association (OCA) educates women in cities and rural regions and offers screening tests in a mobile mammography unit.

Result:

Over 11,000 women have taken advantage of the OCA's screening test over the 14 years of work to raise awareness.

of Yuthar Al Rawahy to educate women in Oman about breast cancer and the necessity of early detection and treatment.

The Stigma of Cancer

In most countries, cancer education is not unusual anymore. Hardly anyone takes exception when they are taught about breast cancer, treatments, and early detection through mammograms. This is not true of Oman, despite being considered quite liberal among Islamic countries. Discussing cancer, let alone breast cancer, touches on taboos that are part of the social fabric. "A man can marry up to four women here," Al Rawahy explains. "So it takes a lot of courage for a woman to have a breast amputated to get rid of the cancer." She then no longer feels like a whole woman and fears that her husband might marry another woman. "In other words, she'd rather sacrifice herself to keep the family together."

This mentality needs to change. "We must make it clear to women that they only have one body and are responsible for ensuring that it stays healthy," says Al Rawahy. "Early detection and early treatment is the key to recovery." A cancer diagnosis used to be a death sentence in Oman, because hardly any of the women diagnosed with the disease went in for treatment – let alone for early screenings. "Now people see that you can survive," says Al Rawahy. "Just look at me. I've survived four times!"

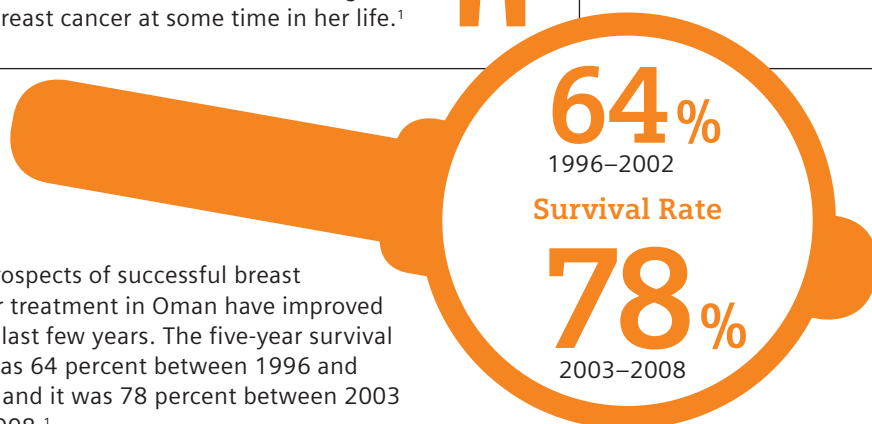
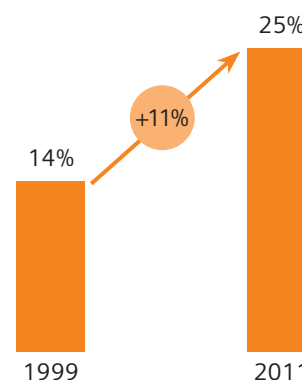
In 1998, when Yuthar Al Rawahy was diagnosed with cancer for the first time, she was 48 years old and working as a medical education officer at the College of Medicine at Sultan Qaboos University. "I was fit; I did gymnastics three times a week and yoga twice a week." The diagnosis: thyroid cancer. "It was a shock." Cancer patients could not even be treated in Oman at the time – it wasn't until 2004 that the National Oncology Center opened in Muscat. However, the government paid the costs of Al Rawahy's treatment in the United States. "I had to leave my six-year-old twins behind," she remembers. With the support of her husband and family members, Al Rawahy survived the operation and aftercare, but

Facts and Figures



One out of five women in Oman is diagnosed with breast cancer at some time in her life.¹

In 1999, the Omani Cancer Register recorded 14 percent of cancer patients as having breast cancer. By 2011, this figure had risen to 25 percent. This is likely to be due to the fact that more women are undergoing screening and breast cancer treatment.²



The prospects of successful breast cancer treatment in Oman have improved in the last few years. The five-year survival rate was 64 percent between 1996 and 2002, and it was 78 percent between 2003 and 2008.¹

¹ Shiyam Kumar et al.: "Changing Trends of Breast Cancer Survival." *Journal of Oncology*, Volume 2011, Article ID 316243, doi:10.1155/2011/316243

² Ministry of Health Oman, "Cancer Incidence in Oman 2011." From: www.moh.gov.om/en/reports/Cancer2011-Final.pdf, Accessed: July 2014, page 21.

she'd hardly got back and recovered when the next blow came: a tumor in her breast and in her uterus. "Having to leave my family again, it was the worst time of my life," she says. "But I also had a lot of time to think during treatment." And she promised herself that when she returned to Oman, she would devote her life to fighting the disease.

Cancer as Punishment?

Once back in Oman, it became clear to her that this fight would be primarily about educating people. Friends and neighbors treated Al Rawahy as if she were being punished for something. "I simply could not accept that way of thinking." So she organized an educational evening – "brainstorming" – with a couple of girlfriends, cousins, and sisters-in-law who'd also had experience with the disease. "So many women came, hungry for any information, that I immediately knew I would devote all my time and energy in the future to educating this country about cancer."

In 2000, she founded the National Cancer Awareness Association, now the Oman Cancer Association (OCA), which focuses on educating people about all cancers, not just breast cancer.

She did not receive much praise for her efforts – just the opposite. "Friends and acquaintances called my husband and told him he should forbid me from talking publicly about breast and uterine cancer," Al Rawahy says. And it wasn't just men who found her campaign offensive. One woman came up to her after one of the many presentations she gave throughout the country. "She spat at me and told me I was a devil." Al Rawahy still fills up when she thinks about it. A strong woman, she quickly recovered, realizing she had train herself early on not to let things get her down.

"I was born in East Africa – in Zanzibar, which is now Tanzania," she recalls. When she was 13, she fled with her

family to England after the Sultan of Zanzibar, Oman's Brother Sultanate, was overthrown. "It was a culture shock for us." Her father, who had worked as a surveyor, had to go to work in a factory, while her mother financed the children's education by working two jobs. "It was hard, but we managed." In 1970, the new Sultan of Oman called all of the Omanis scattered around the world to come back home. The family once again moved to a country they'd never seen before. "Another new life," Al Rawahy says. "There were no schools, no healthcare system, and hardly any roads. It was just desert here, where our house is now." But Al Rawahy felt at home. And life improved.

Today, Oman has a healthcare system in which every citizen is treated free of charge thanks to his Majesty Sultan Qaboos. There are no longer hospitals just in the capital, but distributed throughout the country. "Unfortunately, the specialized hospitals, for ►

example for cancer treatments, are all in the capital region," she says.

In Every Village

The OCA has a "mobile mammography unit," a truck with a digital mammography platform for screening and diagnostics, to educate women throughout Oman about breast cancer, and, above all, motivate them to get early detection screenings. "It took us seven years to raise the funds to build the mobile unit here in Oman," says Al Rawahy. "And I would like to thank all the corporate companies and individuals who believed in us and donated the funds."

The truck stays in each region, next to the healthcare center, for about a week. "In the beginning, it was difficult," recalls Al Rawahy. But fear of the device and the stigmatizing disease decreased the more people the OCA educated. "Years before we had the truck, we would go to the villages and explain what a mammogram is, what breast cancer is, and what people can do," Al Rawahy says. Approximately 20 women a day can be screened in

the truck. "You don't need an appointment, you don't have to be Omani; we are available to any woman over 40." The women wait for treatment in a waiting area and learn about cancer and mammograms in a video before they go into the room where the mammogram is performed. "We built the mobile with our tradition in mind," says Al Rawahy. And the women feel very comfortable in it. "Some say that it feels like a home and ask whether they can rent it for their daughter's wedding," she laughs. After 15 minutes, the women are given a CD with their images that they can take to any hospital in Oman and elsewhere for a second opinion – if they wish to do so. "We have consultant radiologists who come every week to the association to read the mammogram views. We have a fast-track referral system organized by the Ministry of Health at the Royal hospital, and we follow the women until they are seen by the doctors and try to help them to cope psychologically and spiritually with the diagnoses."

Al Rawahy's success is visible. In the beginning, only 50 Omanis participated in the Cancer Awareness run that Al Rawahy has been organizing since 2003 – more than 5,000 people participated in 2013, and more than 7,000 women have availed themselves of one of the OCA's breast cancer screenings. "The women would not have done that if our mobile mammography unit hadn't come to them," says Al Rawahy. Of those 7,000 women, only 17 have since died of breast cancer.

Al Rawahy has plenty of plans for the future – regardless of the fact that she was diagnosed with breast cancer again last year. She wants to build free housing near the cancer hospital in Muscat for the families of cancer-stricken children. She is also fighting for psychological care in the hospitals and palliative care for patients who can no longer be helped, so that they can die at home. "Numerous studies have shown that patients who are with their families live longer." Yuthar Al Rawahy's biggest wish, however, is to ensure that every patient in Oman has access to the cancer treatments they need. "*In schā'a llāh*, God willing, it will happen in my lifetime." ■

"Early detection is the only cure"

Get a closer look at Yuthar Al Rawahy's work for breast cancer awareness in this short documentary.



To watch the video, scan the QR code using the reader app on your smartphone or enter the URL into your browser.

www.siemens.com/breast-cancer-oman



“We must make it clear to women that they only have one body and need to keep it healthy.”

Yuthar Al Rawahy,
Oman Cancer Association

From its main office in Muscat, the OCA team organizes the route of the association's breast cancer truck. Equipped with a mammography unit, staff are able to screen around 20 patients a day.



Sascha Karberg studied biology and worked in genetic research before he graduated with a degree in scientific journalism from Freie Universität Berlin in 2000. Karberg's texts have been published in the *MIT Technology Review*, *BBC*, as well as trade journals like *Cell*.



- ¹ Shiyam Kumar et al.: "Changing Trends of Breast Cancer Survival." *Journal of Oncology*, Volume 2011, Article ID 316243, doi:10.1155/2011/316243 and Itrat Mehdi et al.: "Age of diagnosis of female breast cancer in Oman: Issues and Implications." *South Asian Journal of Cancer*, April-June 2014, Volume 3, Issue 2
- ² Shiyam Kumar et al.: "Changing Trends of Breast Cancer Survival." *Journal of Oncology*, Volume 2011, Article ID 316243, doi:10.1155/2011/316243

The statements by Siemens' customers described herein are based on results that were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption) there can be no guarantee that other customers will achieve the same results.

Transformation through Partnership

Text: Jürgen Schönstein Photos: Jens Passoth

Ten years ago, Rush University Medical Center decided to bring its facilities into the 21st century. The partnership with Siemens played a key role in the success of this transformation.



The butterfly-type shape of the hospital's new tower follows functional aspects of care. The hospital's CEO Larry Goodman (above) made sure that employees were involved in the hospital planning from the very start.



For Dr. Sharon Byrd, the 21st century began in 2004: "We were still in the 19th century as far as our imaging technology was concerned," the Chairperson of the Department of Diagnostic Radiology and Nuclear Medicine at Rush University Medical Center in Chicago openly admits. Even Professor Peter Butler, who as the Medical Center's President is responsible for the operational and administrative aspects and procedures, recalls dark times when he thinks about the last renovation, which was completed in 1982: "I was here when we opened the then brand-new clinical facility, and I remember patients being rolled down the hall with paper charts on their chests." The patient folder has since given way to electronic medical records that can easily be transmitted wirelessly between departments and

referring physicians, and thanks to an innovative layout for the new main wing, the distances in the corridors have become shorter – Rush is one of the leading and most modern hospitals in the United States.

Brainstorming with Employees

And this required more than a renovation – "transformation" is the term chosen by Rush management, headed by Professor Butler and Larry Goodman, Chief Executive Officer. The idea that the newly created "Office of Transformation" was intended to implement was not limited to expanding the capacities or purchasing new equipment; the primary goal, according to Goodman and Butler, was to integrate ideas and suggestions from the employees ►



Administrator of Diagnostic Services, Bernard Peculis (above) was looking for a partner to support the hospital not only in clinical applications, but in research and educational tasks, as well.

Management Summary

Challenge:

The Rush University Medical Center was not only interested in upgrading; it was looking for a partner in a comprehensive transformation process.

Solution:

The Medical Center found Siemens to be a vendor that understood the hospital's needs and responded to its specific requirements.

Result:

The upgrade simplified processes, made the employees' jobs easier, and led to higher patient satisfaction scores – even in departments that were not directly affected by it.

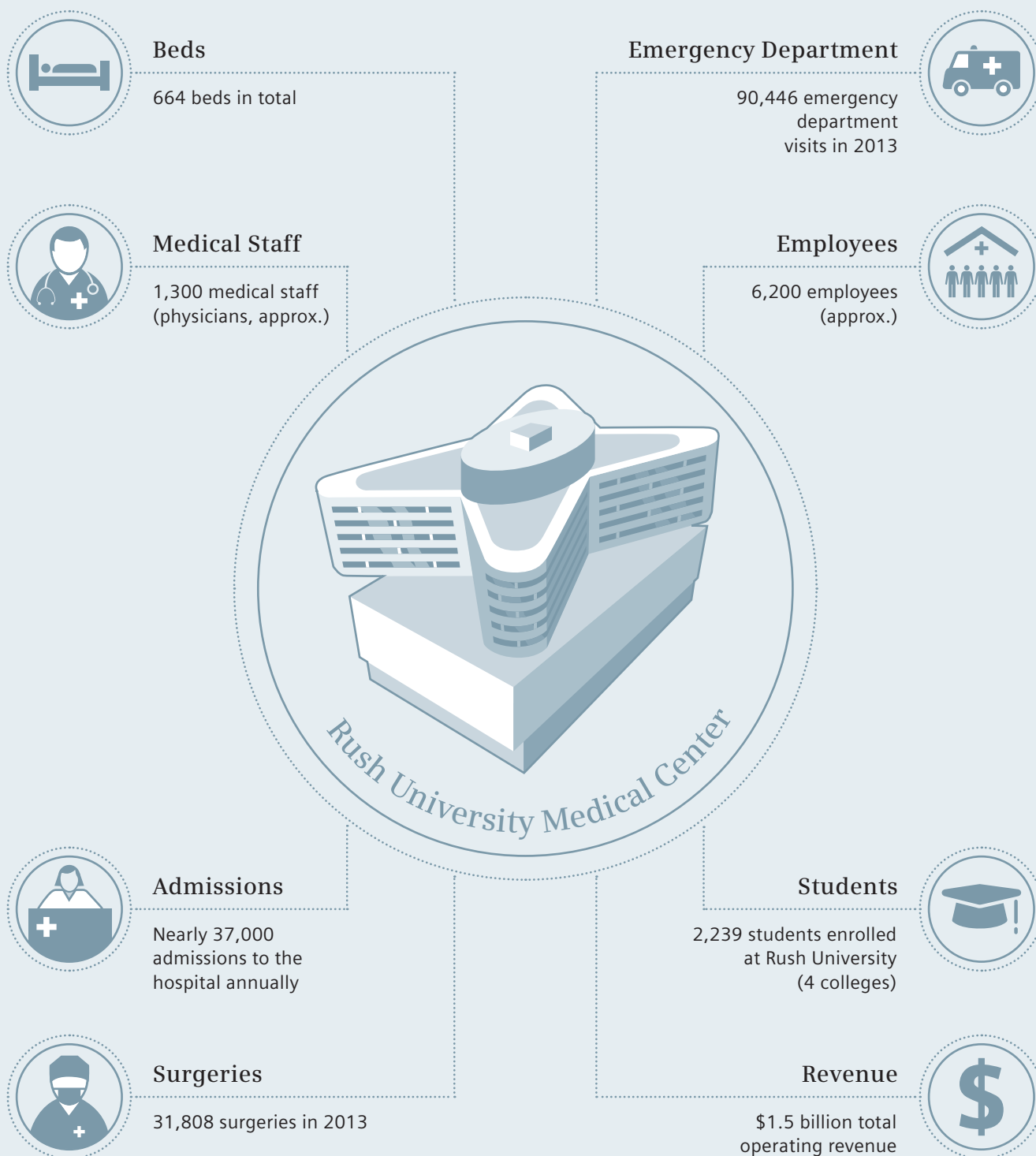
on how patient care could look in the future into the concept of the transformation. The shape of the hospital's striking new tower, which opened in January 2012, did not come from the creative ideas of an architect team, but rather from the practical suggestions of employees: "Our nursing staff thought that a butterfly-type shape would actually create hospital wards that have better sightlines and shorter distances," explained Goodman.

Encouraging Collaboration

Rush was one of the first hospitals in the United States to implement the concept of an "interventional platform." 40 operating and treatment rooms for interventional radiology – as well as for interventional cardiology, electrophysiology, and surgery – are concentrated on three floors, which not only shortens the distances for patients but also encourages cooperation between the specialists. For example, a hybrid operating room is also equipped with interventional radiology imaging equipment. "It has really revolutionized the things we do," states Dr. Byrd. The technology for the treatment of stroke patients was also stuck in the 19th century, to stay with her analogy. The Siemens experts have been able to raise the standard with the Act on Stroke analysis tool so that Rush is now one of the top emergency centers for stroke patients in Chicago. In ►

Facts and Figures

Rush is a not-for-profit healthcare, education, and research enterprise. It is also one of the biggest hospitals in Chicago and one of the top-rated hospitals in the United States. The facts below outline the hospital's outstanding character.



particular, the expanded capacities for magnetic resonance imaging should be mentioned, says Bernard Peculis, Administrator of Diagnostic Services: "MRI has really become the primary modality for supporting our physicians in diagnosing stroke."

One important step in this transformation, which everyone agrees on, was the decision to concentrate on a single partner when purchasing the medical – and particularly the imaging – technology. "I can't imagine doing this with 85 different partners at once," says Butler. Goodman insists that it is not just about the technology, but the fact that it is combined with the experience and care of a skilled team of experts. "We were looking not only at the technology that's available," explains Peculis, "but also at who can be the partner as we move forward, to support us in not only our clinical applications but our research and educational missions, as well." Moving from an environment of running two 1.5-tesla MRIs to two 3-tesla devices and expanding the dual-energy CT capacities gave Peculis some cause for concern, because the X-ray technicians had to be cross-trained as CT technicians.

Contagious Enthusiasm

Dr. Byrd, who had the final decision with regard to the imaging technology, therefore wanted to make certain that the staff's training program for the new equipment was flexible enough to deal with all the different levels of knowledge as well as the resulting and unavoidable scheduling problems arising from the hospital's 24/7 operations. "We looked for a company that could not only offer all the equipment we needed, but also respond to us and our requirements," she explains. "Siemens offered us all of that." The training concept was a three-pronged approach. In addition to several days of workshops in a Siemens training facility in the suburbs, the employees also received one-on-one training and could access an online course specially tailored to their needs and available 24/7. "We didn't make it easy for Siemens," stresses Dr. Byrd: "I was skeptical in the beginning, and the Siemens people knew that they had a lot of work to do – but they did a tremendous job."

The enthusiasm that the construction project inspired in the employees has apparently also spilled over to the patients – and not just those who get to enjoy the new facilities. "The increase in patient satisfaction has occurred across the institution, also in the older facilities," states Butler. "The new facilities suggest to the world that we are moving forward not backward."

At a time when "healthcare reform" is primarily discussed as synonymous with "cost reduction," positive signals like this for the future are essential for the patients as well as the employees. "None of us are in healthcare just to balance the budget at the end of the year," says Goodman as he explains that it is not all about finances – even if they are unavoidable. The University Hospital is on the West Side



President Peter Butler (above) and Chairperson of the Department of Diagnostic Radiology and Nuclear Medicine Sharon Byrd (far right) see the results of their hard work: satisfied patients.



of Chicago, a region, according to Goodman, that has "significant disparities in healthcare, where many people use an emergency department as a primary care place." The pressure to cut costs makes several amortization calculations look different today than they did ten years ago, Butler admits. "But there are certainly far more people with insurance coverage than used to be the case, and that's a positive thing. For example, in the Department of Radiology, we have seen an increase in the number of patients of between 7 percent and 20 percent, depending on the modality [CT or MRI]," states Peculis.

And even if the economic conditions have altered since the transformation process started, the basic idea of the new hospital has not changed, claims Peculis: "The driving objective from the beginning was to be focused on the needs of the patient, so regardless of what developments there were in the market, we focused specifically on creating an environment that best supports the needs of the patients and their families. And having that as the driving objective would not have changed." ■



Becoming a Hospital of the Future

How did Rush University Medical Center transform into a hospital of the 21st century? Learn more in this short documentary.



To watch the video, scan the QR code using the reader app on your smartphone or enter the URL into your browser.

www.siemens.com/rush

Jürgen Schönstein has been the editor-in-chief of the German science portal *ScienceBlogs.de* since the beginning of 2011 and teaches academic writing at the Massachusetts Institute of Technology.

The statements by Siemens' customers described herein are based on results that were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption) there can be no guarantee that other customers will achieve the same results.



Get Tested!



Brazil's public health system, SUS, is a world-wide leader in the treatment of the immunodeficiency disease HIV with the help of anti-retroviral therapies. Improved early diagnosis is now also being promoted through an awareness campaign in the federal state of São Paulo. The crucial factor: The population needs to be convinced of the importance of regular testing.

Text: Thomas Milz
Photos: Walther Appelt

São Paulo's intellectual elite can often be seen in the Casa das Rosas, gathering to listen to literary lectures or admire art exhibits. This gracious building is an architectural oasis amidst the high-rise towers of the hectic Avenida Paulista. In the last week of November, however, it resembles a circus of suit-clad business people and employees who come here from the neighboring office towers of São Paulo's banking and business district. They are led to a back room by attendants in white lab coats, where a blood sample is taken from them. Every year, the Casa das Rosas becomes the headquarters of the Fique Sabendo ("Find Out") campaign week, organized by the São Paulo state Ministry of Health. Every day, about 200 people come here to get tested for HIV and syphilis. For both diseases, quick tests are available, providing a result within minutes, as well as conventional tests whose results can be obtained within a few days. Starting in 2014, a quick test for hepatitis is being added.

Campaign in the Runup to World AIDS Day

"The Casa das Rosas is the showcase of our campaign," says Dr. Maria Clara Gianna, who is pleased at the turnout, which is good, despite the bad weather. Dr. Gianna, as director of the DST/AIDS program (DST stands for Doenças sexualmente transmissíveis, sexually transmitted diseases) of the São Paulo Ministry of Health, is responsible for implementing the campaign. The days prior to World AIDS Day, December 1, are used to raise awareness of the national AIDS program, which is now in its sixth year. Members of the community can get tested free of charge at any time of the year in the hospitals and the CTA centers (Centros de Testagem e Aconselhamento, testing and consultation centers) of the public health system, SUS (Sistema Único de

Saúde, unified health system). "But many people simply don't know that," Dr. Gianna adds. For this reason, the weeklong campaign is intended to generate maximum media interest, and Dr. Gianna has had a series of interviews at local TV and radio stations over the past few days.

"In reality, the campaign runs throughout the year, but if you want to get the attention of the Brazilian media, you have to create concrete events, such as this campaign week," says Dr. Gianna. Since the start of the AIDS epidemic, in the early 1980s, she has been at the forefront of the fight against the immunodeficiency disease. So she is able to report on Brazil's impressive successes over the last two decades without losing sight of the system's weaknesses. "In the SUS, we have found consistent responses to many challenges," Dr. Gianna says. "Drugs that significantly increase the life expectancy of people infected with HIV, despite the side effects, are available today." At the same time, the generally late diagnosis of the disease concerns her because, she explains, many patients don't come to the clinic until the first symptoms have already appeared.

Getting oneself tested is far from being a matter of course. Often, it's even the case that people will get tested but then not pick up the results afterward. That's the advantage of quick tests, since patients receive their results directly – with no time to change their minds. This tendency to avoid testing means that diseases like syphilis, which are relatively easy to treat, continue to spread. In addition, it makes preventing transmission harder. "We are still struggling with vertical transmission during birth, in the case of both syphilis and HIV," says Dr. Gianna. "Thanks to existing test methods and new drugs, we've actually reached a different point in ►

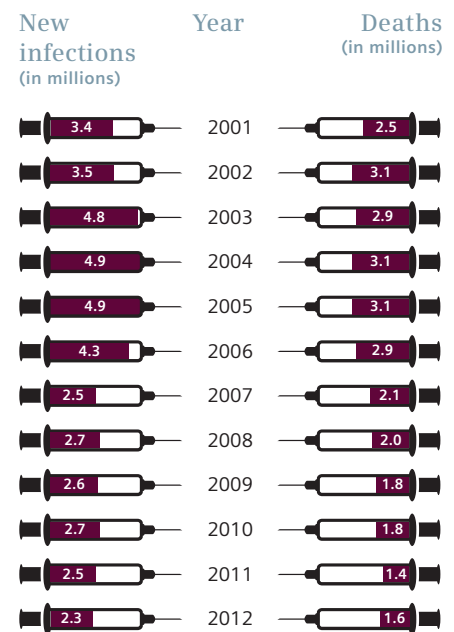


Dr. Maria Clara Gianna of the São Paulo Ministry of Health during her campaign work (top) when condoms are also distributed for free (right).



Fighting AIDS Worldwide

Through information campaigns and improved therapy, the numbers of new infections and deaths have drastically decreased worldwide:



Source: AIDS epidemic update 2013 (UNAIDS)

the epidemic, and we have to inform people about this."

Hope Thanks to the Joint Struggle

In the past 30 years, 656,000 cases of AIDS have been registered throughout Brazil (as of mid-2012).¹ The epicenter of the disease, with more than half of all registered cases, is the southeast, Brazil's most populated region with the megacities São Paulo, Rio de Janeiro, and Belo Horizonte. Particularly in São Paulo, where Dr. Gianna works, the disease reached alarming dimensions in the 1990s. "In the 1980s, if someone asked me whether they should get tested, I had doubts," the doctor recalls. "Because at that time, we didn't have the right drugs to treat the disease." Since then, however, desperation has given way to justified hope. Since 1996, every infected person in Brazil has had the legal right to free antiretroviral therapy (ART). Brazil gained international recognition for the allocation of HIV-suppressing drugs financed by the SUS.

Furthermore, SUS research institutes now work at an international level in developing HIV vaccines. The Instituto Butantan in São Paulo is currently testing the vaccine HIVBR18. In the 1990s, the Ministry of Health also began widespread information campaigns about AIDS, accompanied by the free distribution of millions of condoms. However, the healthcare policy achieved particular success in reducing the mortality rate thanks to the use of drug cocktails. Mortality at the height of the epidemic in the 1990s in the state of São Paulo was still 15 deaths per 100,000 inhabitants, but has since been steadily decreasing. "The data from 2012 indicates 6.6 deaths, down from 7.2 in 2011," says Dr. Gianna.

The all-clear cannot be sounded for a long time yet: In the state of São Paulo alone, eight people die of AIDS every day; the national figure is about 12,000 annually. And while the number of

new infections is decreasing in the southeast, it is increasing in the rest of the country, as is the number of deaths. A "farical situation," summarizes Dr. Gianna. The problem of AIDS in Brazil is far from being solved. In general, patients with a CD4 cell count of less than 500 – the indicator for the number of white blood cells, which control the immune system's response to infections – have been included to date in the national AIDS program. Through improved early diagnosis, it would be possible to also include patients with values over 500, with far better treatment prospects, says Dr. Gianna. A crucial factor: Testing as early as possible. Information and raising awareness are therefore required.

A Partner From Day One

An essential partner in implementing the campaign is the Adolfo Lutz Institute, whose head office is only a few hundred meters from the Avenida Paulista, in the middle of Latin America's largest hospital complex, Clínicas. The conventional tests as well as a portion of the quick tests are forwarded for analysis to the institute, which has a network of 13 regional laboratories scattered throughout the state. Yet, the contribution of the Adolfo Lutz Institute extends beyond laboratory analysis itself. The institute trains the assistants working in the campaign and also provides logistical support. In addition, the analysis equipment used at test centers such as the Casa das Rosas come from the institute's stock. "Without this partner," says Dr. Gianna, "our campaign could not have been carried out at all."

"Since the appearance of the first AIDS cases in São Paulo in the early 1980s, Adolfo Lutz has closely collaborated with the state government and investigated the then new disease in its laboratories," reports Dr. Carmen Aparecida de Freitas, deputy director of the institute as

Regular Testing: How São Paulo Fights the Spread of AIDS and Syphilis

Since 2008, the state government of São Paulo has conducted the Fique Sabendo ("Find Out") campaign, offering free AIDS and syphilis tests. The initiative intentionally does not target high-risk groups such as homosexuals, transsexuals, drug addicts, or prostitutes. There are special state government programs available for these groups. Instead, the goal of Fique Sabendo is to increase the general population's awareness of how important regular testing is. In order to gain their attention, a weeklong campaign takes place at the end of every November, culminating in World AIDS Day on December 1. During this campaign, temporary test centers are set up at strategic points in the cities where local residents can be tested for HIV and syphilis free of charge. Since 2014, tests for hepatitis A, B, and C have also been available. During the campaign week, around 100,000 citizens took advantage of this opportunity. They were able to choose between quick tests, whose results are available within 30 minutes, and conventional tests, whose results are available in about two weeks. To date, 527 of the 645 municipalities of the state of São Paulo are taking part in the campaign.

“The state government has shown courage and the necessary pioneering spirit to initiate a campaign on this scale.”

Dr. Helio Hehl Caiaffa Filho, director, Adolfo Lutz Institute, São Paulo, Brazil

well as technical director of the Department of Immunology. “As the idea for the testing campaign emerged, we immediately got involved and set up our laboratories in the state for this purpose. Of course, in doing so, we constantly strive to use the most-modern technology available.” The Adolfo Lutz Institute was the first laboratory belonging to the SUS to analyze blood samples on a large scale. Prior to this, the health authorities always had to resort to private laboratories. The institute, which arose from the merging of a bacteriology center and an institute of pathology in 1940, is one of three Brazilian national reference centers of the SUS today, along with the Evandro Chagas Institute in Pará, in northern Brazil, and the Oswaldo Cruz Foundation in Rio de Janeiro, which is responsible for the development of the rapid tests used in the campaign. Since the start of the Fique Sabendo campaign in 2008, about half a million blood samples have been analyzed in the laboratories of Adolfo Lutz, reports Dr. Helio Hehl Caiaffa Filho, the director of the institute. “A campaign of this type is unequaled not only in Brazil but in all of South America and perhaps even



Dr. Carmen Aparecida de Freitas, deputy director (bottom left), and Dr. Helio Hehl Caiaffa Filho, director of the institute (bottom right) rely on state-of-the-art technology from Siemens (top).

Management Summary

Challenge:

Although the infection and death rates for HIV/AIDS have been dropping in many parts of Brazil, the disease is far from conquered.

Solution:

With the Fique Sabendo campaign, awareness of the importance of regular testing in the general population should increase. Using

the ADVIA Centaur CP system, the laboratory has the capability of performing hundreds of automated HIV and syphilis tests per day, keeping up with the ever increasing demands of testing.

Result:

More than 100,000 people underwent testing as part of the campaign in November/December 2013.



worldwide. An amazing project in which the state government of São Paulo has shown courage and the necessary pioneering spirit to initiate a campaign on this scale.”

In order to manage blood tests in such quantities, the institute relies on state-of-the-art technology. One central laboratory and nine regional laboratories, equipped with cooling units full of test tubes of blood, have an ADVIA Centaur® CP Immunoassay System from Siemens. Since 2011, the device has been used for analysis of blood samples that the campaign has collected. In the November campaign week alone, the laboratory releases about 50,000 results. To date, only HIV tests from the campaign have been analyzed with the ADVIA Centaur CP. However as of 2014, the national health authorities have also approved the analysis of syphilis tests. The device provides 180 results per hour, which are immediately fed into a special website and made available online for those people who underwent testing. “It is our mission to make an SUS laboratory capable of processing large volumes of blood samples with results available online in the shortest possible time,” says Dr. Carmen Aparecida.

In this process, the use of modern technology is essential. “The Centaur CP is a very reliable device that helps us achieve certainty for the test results communicated to the public,” says Dr. Aparecida. “Particularly during a campaign of this type, we need a product that doesn’t break down, is accurate, and comes with excellent technical support from the manufacturer – and all of this in real time and covering the entire state of São Paulo, where there can easily be 800 kilometers between laboratories. Our experience with Siemens has shown that we can achieve an equally high standard of quality in the 13 laboratories of our network.”

The ADVIA Centaur CP system is also used outside of the campaign for the institute’s routine work. Every month, the institute tests between 20,000 and 30,000 blood samples for various diseases, including hepatitis A, B, and C, along with HIV and many others.

Despite the evident quality of the Adolfo Lutz Institute, Dr. Helio Hehl Caiaffa Filho is aware of the problems of the SUS public health system. “I consider the SUS to be model of success, but of course, in a country such as Brazil, with its gigantic size, it is a challenge to achieve perfect health conditions for everybody.” Under these circumstances, it is even more important to change people’s awareness. “What we’re still lacking is a way to make people understand how important early diagnosis is, how important it is to detect the disease with tests in as early a stage as possible,” says Dr. Caiaffa. “Many of those who are infected ultimately don’t know that they carry the virus. Campaigns such as these are therefore essential.” ■

Thomas Milz has worked for 10 years as a journalist in Brazil. He currently works for ARD radio broadcasting and is active as a freelance author for agencies and journals. He is also the author and editor of several books about South America.

➔ www.siemens.com/infectious-disease

¹ Source for statistical data on the spread of HIV/AIDS:
<http://www.aids.gov.br/pagina/aids-no-brasil>



Educating for More Effective Allergy Treatment

As in most industrialized countries, allergies are also on the rise in Japan. Parents are often unaware that early diagnosis can lead to effective treatments in children. With the help of a network of educators, pediatrician Dr. Hiroshi Odajima has succeeded in effectively treating an increasing number of allergies. Meanwhile, dermatologist Dr. Michihiro Hide hopes to find a cure in the not-too-distant future.

Text: Susanne Steffen
Photos: Thomas Steuer

"If children are treated adequately and at an early stage, thanks to very good new therapies, allergies hardly interfere with the person's quality of life," says pediatrician Hiroshi Odajima, MD, Deputy Director of Fukuoka National Hospital and pediatric allergist. "Unfortunately, too many parents think that allergy therapies are not necessary or not successful," explains Dr. Odajima. He often has to treat children who do not start treatment until the symptoms are almost unbearable. However, the longer treatment is delayed, the greater the risk that the patients may have to live with considerable limitations in their daily activities, despite therapy. "When left untreated, allergy symptoms become

chronic over time. Anything that is not treated before puberty has little chance of being reversed," warns Dr. Odajima.

Allergies as a Widespread Disease

While allergic rhinitis in the form of pollen allergies dominates among adults, the most frequent allergic reactions in children are atopic dermatitis (such as eczema), asthma, and food intolerances.

Regular surveys of elementary-school children in 11 western Japanese prefectures, showed Dr. Odajima in 2012 that more than half of the children had already experienced allergic

Dr. Hiroshi Odajima (above) and Dr. Michihiro Hide consider the rise of allergies as a wake-up call for all humans.

diseases¹. More than 20 percent of all Japanese students, including middle- and high-school students, have had one or more allergic diseases, according to a 2004 study by the Japanese Ministry of Education's Research Committee on Allergic Diseases.

New Educational System for Patient Motivation

Educational work is extremely important to slow down or stop the advance of allergies toward more serious symptoms, says Dr. Odajima. "We must also reach the children who do not visit the hospital regularly," explains the pediatrician, who has almost 40 years of experience in the field of allergies. Doctors and educators must motivate their patients time and time again to prevent them from terminating sometimes lengthy therapies, or encourage them to start therapy in the first place.

For this reason, Dr. Odajima launched the Pediatric Allergy Educator system in Japan five years ago. Similar to the American system of certified asthma educators, it relies on the expansion of duties of nurses, dietitians, and other medical staff members. Since 2009, these occupational groups have the opportunity to train and become certified allergy educators.

They are then sent regularly to schools and other educational facilities, where they hold allergy courses for students, parents, teachers, and local decision-makers and talk about the necessity of early diagnosis and treatment. Helping them is the children's book *Mickey and the Giant Kachoo!* that Siemens and the Walt Disney Company have created to educate kids and parents about the diagnosis and management of allergies. "I expected their mothers would pay attention to the lecture but not the one- or two-year-old kids. I was wrong. Mickey Mouse was amazing in making all the kids listen to the talk seriously and not get tired of it," says Dr. Odajima. There are currently around 200 certified allergy educators. "Not nearly enough," laments Dr. Odajima, "but it is a good start."

Raising Awareness is the Biggest Challenge

These educators usually receive positive responses to their classes, although they always illustrate how little their audience knows about allergies, says Dr. Odajima. Allergies are often very difficult for people to understand, especially since it is still unclear why some people develop them and others do not. The fact that there is no simple causal treatment and cure leads to incorrect assumptions, such as the idea that doctors are powerless against allergies and people should therefore treat them on their own, reports Dr. Odajima.

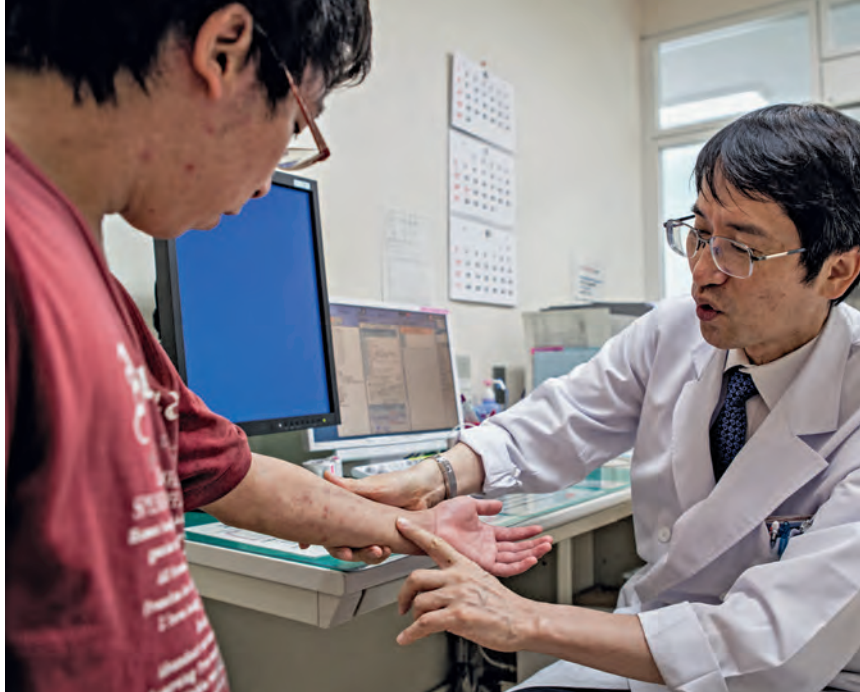
According to a study by the Ministry of Education from December 2013, of the approximately 454,000 students claiming to have food allergies, only about two percent were found to

Hiroshima University Hospital strives to fight against allergies in Japan.





Teaching kids in a language they understand: Allergy educators show them a specially developed children's book named *Mickey and the Giant Kachoo!*, for example.



Doctors at Fukuoka National Hospital and Hiroshima University Hospital make use of a highly sensitive allergy test by Siemens for objective and accurate diagnosis.



have received doctors' diagnoses². The vast majority did not have a professional diagnosis or therapy. By visiting the schools, the doctors and allergy educators are able to motivate these children to have their allergies regularly checked and treated by a doctor, states Dr. Odajima.

Educators Trained In-house Improve Therapy Success

According to Dr. Odajima, these educators have become indispensable, helping doctors in everyday hospital routines. "We do not have enough time to teach patients how to treat their neurodermatic skin rashes, or how to correctly inhale with asthma," he admits. Therapy success depends largely on how well patients can follow their educators' therapy instructions in their everyday lives, he explained.

His educators now gather reports from patients on their experiences and work together with them to find solutions that are suitable for daily use. For example, in three-day hospital stays for young patients with extremely sensitive skin, educators work with the children and their parents to come up with a skincare program that is tailored to their specific needs.

Accurate and Objective Tests Help Optimize Individual Therapies

Along with his educators, Dr. Odajima also relies on objective and accurate allergy tests to determine the best therapy for each patient. The highly sensitive 3gAllergy® test by Siemens helps him make an accurate diagnosis, along with the patient history of allergen exposure and physical symptoms. In addition to the 11 assays that Siemens has specially developed for the Japanese market, the system's large measurement range and extremely low detection limit for allergen-specific immunoglobulin E (IgE) are a great help. In this way the success of a treatment can still be monitored with repeat test measurements over time. This works even in patients with extreme levels that far exceed the maximum and

Management Summary

Challenge:

Allergies are also gaining ground, not only in Japan. When left untreated, allergy symptoms become chronic over time. This is why education about this disease is extremely important.

Solution:

In addition to allergy educators, who explain allergies to patients with the help of the children's book *Mickey and the Giant Kachoo!* that Siemens and the Walt Disney

Company created, allergist Dr. Odajima uses the highly sensitive 3gAllergy test by Siemens for more accurate diagnoses to determine the best treatment for each patient.

Result:

The 3gAllergy test's large measurement range and extremely low detection limit for allergen-specific immunoglobulin E (IgE) enable doctors to check the success of a therapy – even in patients with extreme levels.

minimum levels detectable with some other tests. "If I see that the IgE level is no longer increasing, I dare to try to test how severely the patient still responds to the allergy-triggering food by asking him/her to eat the food," explains Dr. Odajima. Without the certainty that the IgE level has passed its peak, "food challenges" like this are often too dangerous, due to the risk of anaphylactic shock. Now, however, he can prevent children from completely eliminating food that is essential for nutrition, says Dr. Odajima.

Hope for a Cure – At Least for Atopic Dermatitis

"Unfortunately, with the current methods, we can only reduce the allergy symptoms," explains dermatologist Dr. Michihiro Hide from Hiroshima University Hospital. "This is an important step, but I want to cure allergies," he says.

The example of atopic dermatitis, Dr. Hide's specialty, shows how difficult that is. After years of research, he has discovered the reason why sweat aggravates allergy symptoms in almost 80 percent of all atopic ►



Dr. Hiroshi Odajima's young patients benefit from his almost 40 years of experience in the field of allergies.

dermatitis patients: the protein of a fungus that thrives on the skin of every human being. The protein dissolves in sweat and enters the body through the skin, where it triggers an allergic reaction in patients, since the immune system identifies the protein as foreign body.

However, Dr. Hide does not believe that the complete removal of the allergy-triggering fungus from the skin will lead to a cure. "We do not know what the functions of this fungus are on our skin," he warns. He admits that, despite his new discovery, he is no closer to finding a cure. The causes of atopic dermatitis are complex and sweat is just one of many components.

Promising Atopic Dermatitis Therapy

To alleviate the allergy symptoms associated with sweat, Dr. Hide is currently developing skincare products with tannin, an ingredient in green tea, which potentially alters the fungus protein so that the body no longer perceives it as a foreign body, thus

preventing an allergic reaction. In an experiment with 18 atopic dermatitis patients, he determined that the symptoms improved significantly in 14 of the patients who had been treated with a tannin spray.

On the Way to Immunotolerance – the Combined Search with Transplant Medicine

"If we want to cure allergies, we have to directly intervene in the immune system and increase immunotolerance," says Dr. Hide. In order to gain insight into what an intervention like this would look like, Dr. Hide is cooperating with doctors in the field of transplant medicine. After all, organ transplants and allergies have a lot in common. Just as harmless substances can trigger allergic reactions in defense, without medication, the body treats the transplanted organ as foreign.

"Once we find out how we can convince the immune system to treat allergens like endogenous substances, allergies can be cured," explains Dr. Hide. If all goes well, he hopes this could happen within ten years. ■

Breaking New Paths in Allergy Education

Watch a film about why treating allergies more effectively requires not only an early diagnosis of allergy, but also a wealth of educational work.



To watch the video, scan the QR code using the reader app on your smartphone or enter the URL into your browser.

www.siemens.com/allergies-japan

Susanne Steffen is an East Asia specialist who completed a trainee program with *Deutsche Welle* before she started working as a moderator and editor with *Radio Japan*, *NHK World*, in Tokyo. She has been the Japan correspondent for the German weekly news magazine *FOCUS* since 2000.

¹ Hiroshi Odajima: Prevalence of allergic diseases in Japanese children.

² Reported food allergies on rise among students in Japan, *Mainichi*, December 17, 2013, <http://mainichi.jp/english/english/features/news/20131217p2a00m0na014000c.html>. Last accessed August 8, 2014

Digital Highlights

The digital edition of *Medical Solutions* offers best practice examples from customers around the world on a weekly basis. On *Medical Solutions Online*, you can also subscribe to our newsletter to receive updates on the latest healthcare trends. Just scan the QR codes with your mobile device or enter the URL on the following pages to read more articles.



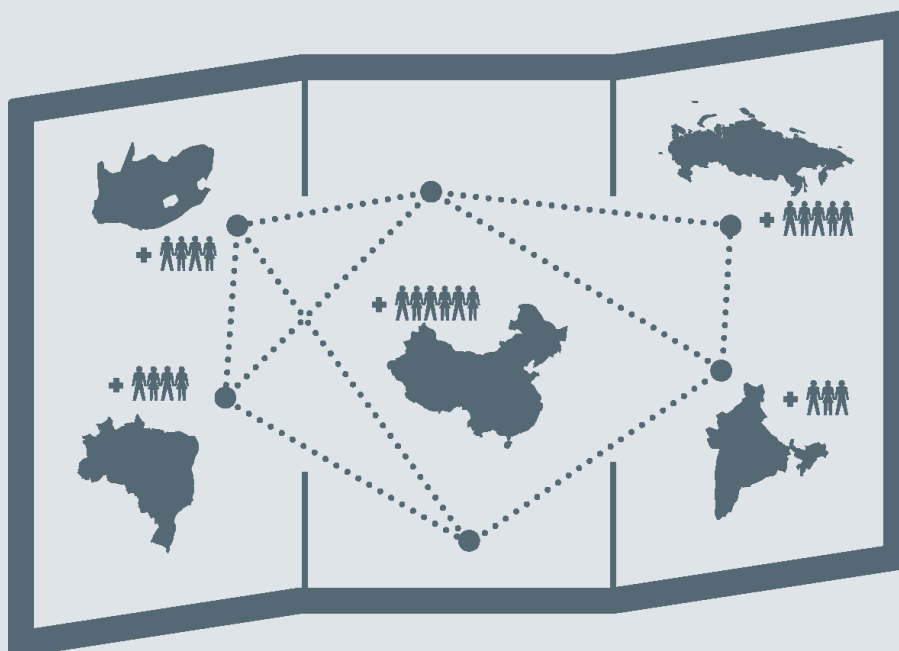
➔ www.siemens.com/medical-solutions

Healthcare in Emerging Markets: Challenges & Opportunities



Healthcare in developing countries is undergoing rapid change. The healthcare systems in those countries are facing challenges such as the burden of rising and aging populations, and with it the delivery of adequate healthcare to the masses. How can these challenges be met? Explore more in this article.

➔ www.siemens.com/healthcare-in-emerging-markets





Challenging the Textbook of Cardiology



Korean cardiologist Professor Seung-jung Park is not afraid to embark on new paths in the field of cardiac interventions. He has achieved remarkable academic outcomes and received international attention, not least by applying state-of-the-art imaging technology in his procedures. This portrait gives more insights into his achievements.

➔ www.siemens.com/advances-in-interventional-cardiology

Every Vision Needs an Opportunity



The integration of interventional and surgical techniques necessitates a new working environment for interdisciplinary treatment teams: A hybrid operating room in which angiographic imaging capabilities are integrated into an operating suite. Read how Heidelberg University Hospital, Germany, benefits from their investment in a hybrid OR.



→ www.siemens.com/future-of-surgery

Twenty Percent More Patients



What if you could treat 20 percent more patients with the same staff and no additional overtime? Thanks to the combination of angiography and CT, Iowa Methodist Medical Center has extended its range of treatment options. Find out more in this business case.



→ www.siemens.com/iowa-medical-center

"To See the Structures in Exquisite Detail"



Two-dimensional imaging is useful, but adding another dimension opens up new possibilities for clinical practice. Dr. Amin Al-Ahmad is pioneering the use of real-time 3D intracardiac echocardiography (volume ICE) for electrophysiology procedures and is convinced of its potential for the future. He explains more in this interview.



→ www.siemens.com/volume-intracardiac-echocardiography

Less Radiation, Sharper Images



In interventional cardiology, increasingly complex and longer procedures mean that managing radiation exposure is of growing importance. A clinical study conducted at the Cardiology Department of Basel University Hospital showed that certain angiography systems offer a significantly lower radiation dose while still delivering high image quality. Follow the link for more on this story.



→ www.siemens.com/low-dose-angiography



Touching Young Hearts



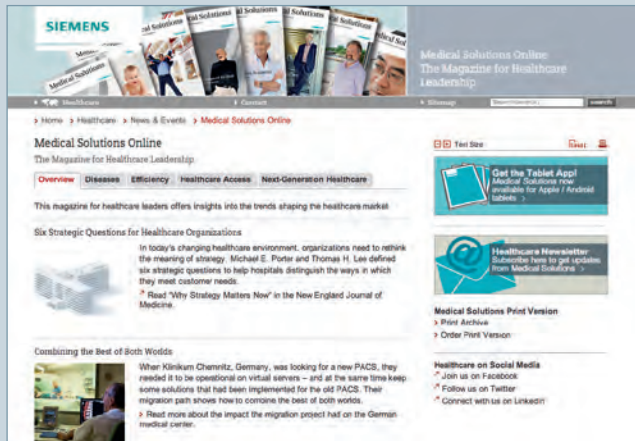
Professor Sir Magdi Yacoub dreams of fighting the number one killer in the developing world: cardiovascular disease. He founded a medical center in Egypt with the aim of providing high-quality healthcare to children in particular – free of charge. Watch a video about the advances in pediatric cardiac care at the Egyptian Aswan Heart Centre.

➔ www.siemens.com/pediatric-cardiac-surgery

Medical Solutions Publication Family

There is a *Medical Solutions* for everyone. Feel free to decide when and how you want to enjoy best practice examples from leading healthcare professionals around the world.

Weekly Updates on *Medical Solutions* Online



➔ www.siemens.com/medical-solutions

Medical Solutions Tablet App



iOS



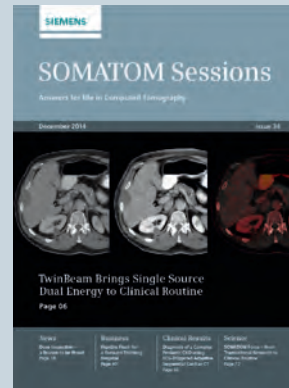
Android



➔ www.siemens.com/publications-app

Siemens Healthcare Specialty Publications

Our specialty publications offer best practices and background information for a variety of clinical fields.



SOMATOM Sessions
Everything from the world of computed tomography.



AXIOM Innovations
Everything from the world of interventional radiology, cardiology, and surgery.



MAGNETOM Flash
Everything from the world of magnetic resonance imaging.



Imaging Life
Everything from the world of molecular imaging innovations.



Heartbeat
Everything from the world of sustainable cardiovascular care.

For current and past issues and to order the magazines, please visit www.siemens.com/healthcare-magazine

© Siemens Healthcare GmbH, 2015

Publisher:
Siemens Healthcare GmbH
Henkestraße 127
91052 Erlangen, Germany
Phone: +49 9131 84-0
siemens.com/healthcare

Responsible for Contents:
Silke Schumann (liable for content within the meaning of German press law, V.i.S.d.P.)

Chief Editor: Tanja Berbalk

Production: Norbert Moser

All at: Henkestraße 127
91052 Erlangen, Germany
Phone: +49 9131 84-0

email: editor.medicalsolutions.healthcare@siemens.com

Publishing House:
C3 Creative Code and Content GmbH
Heiligegeistkirchplatz 1
10178 Berlin, Germany

Shareholders of C3 Creative Code and Content GmbH are Burda Gesellschaft mit beschränkter Haftung (Limited Liability Company), Offenburg, and KB Holding GmbH, Berlin, to 50% each. Sole shareholder of Burda Gesellschaft mit beschränkter Haftung is Hubert Burda Media Holding Kommanditgesellschaft (Limited Partnership), Offenburg. Shareholders of KB Holding GmbH are Lukas Kircher (Managing Director, Berlin) and Rainer Burkhardt (Managing Director, Berlin) to 50% each.

Content and Journalistic Network,
p. 4-19, p. 30-60:
C3 Creative Code and Content GmbH,
Munich, Germany

Head of Content Unit: Kim Kranz
Executive Editor: Dr. Martin Lindner
(freelancer)

Design and Editorial Consulting:
C3 Creative Code and Content GmbH,
Munich, Germany

Art Direction: Michael Helble

Layout: Christian Kühn, Sabine Skrobek
(freelancer)

Senior Managing Editor: Christa Krick

Photo Editor/Infographics:
Ann-Kathrin Hartmann

All at: Arabellastrasse 23,
81925 Munich, Germany

Content and Journalistic Network, p. 26-29:
Primafila AG, Hornbachstrasse 50,
8034 Zurich, Switzerland
Viviane Egli, Roman Elsener,
Simon Froehling

Photo Editing, p. 28-31:
independent Medien-Design,
Widenmayerstrasse 16,
80538 Munich, Germany

All other photos: hl-studios GmbH –
Agentur für Industriekommunikation
Reutleser Weg 6, 91058 Erlangen

Copy Editing: Sheila Regan,
UNIWORKS, www.uni-works.org

PrePress:
Reinhold Weigert, Typographie und mehr ...
Schornbaumstrasse 7,
91052 Erlangen, Germany

Printer: G. Peschke Druckerei GmbH,
Schatzbogen 35, 81829 München, Germany

Note in accordance with section 33 Para.1 of the German Federal Data Protection Law: Dispatch is made using an address file which is maintained with the aid of an automated data processing system.

We remind our readers that when printed, X-ray films never disclose all the information content of the original. Artifacts in CT, MR, ultrasound, and DSA images are recognizable by their typical features and are generally distinguishable from existing pathology. As referenced below, healthcare practitioners are expected to utilize their own learning, training, and expertise in evaluating images.

Partial reproduction in printed form of individual contributions is permitted, provided the customary bibliographical data, such as author's name and title of the contribution as well as date and pages of Medical Solutions, are named. The editors request that two copies be sent to their attention. The consent of the authors and editors is required for the complete reprint of an article. Manuscripts submitted without prior agreement as well as suggestions, proposals, and information are always welcome; they will be carefully assessed and submitted to the editorial conference for attention.

Medical Solutions on the Internet:
www.siemens.com/medical-solutions



ClimatePartner®
climate neutral

Print | ID: 53152-1506-1001

DISCLAIMERS: Practice of Medicine: "The information presented in this magazine is for illustration only and is not intended to be relied upon by the reader for instruction as to the practice of medicine. Healthcare practitioners reading this information are reminded that they must use their own learning, training, and expertise in dealing with their individual patients. This material does not substitute for that duty and is not intended by Siemens Healthcare to be used for any purpose in that regard." Contrast Agents: "The drugs and doses mentioned herein are consistent with the approved labeling for uses and/or indications of the drug. The treating physician bears the sole responsibility for the

diagnosis and treatment of patients, including drugs and doses prescribed in connection with such use. The Operating Instructions must always be strictly followed when operating your Siemens system. The source for the technical data are the corresponding data sheets." Trademarks: "All trademarks mentioned in this document are property of their respective owners." Results: "The outcomes achieved by the Siemens customers described herein were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption), there can be no guarantee that others will achieve the same results."

On account of certain regional limitations of sales rights and service availability, we cannot guarantee that all products included in this magazine are available through the Siemens sales organization worldwide. Availability and packaging may vary by country and is subject to change without prior notice. Some/All of the features and products described herein may not be available in the United States.

The information in this document contains general technical descriptions of specifications and options as well as standard and optional features which do not always have to be present in individual cases.

Siemens reserves the right to modify the design, packaging, specifications, and options described herein without prior notice.

Please contact your local Siemens sales representative for the most current information.

Note: Any technical data contained in this document may vary within defined tolerances. Original images always lose a certain amount of detail when reproduced.

Siemens Healthcare Headquarters

Siemens Healthcare GmbH
Henkestraße 127
91052 Erlangen
Germany
Phone: +49 9131 84-0
[siemens.com/healthcare](https://www.siemens.com/healthcare)