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Michael Salem, MD, President and CEO,
National Jewish Health, Denver, CO, USA



Bringing Personalized Medicine into Focus

For 109 years, National Jewish Health has sought to offer patients the best possible care. *U.S. News & World Report* has ranked National Jewish Health the number one respiratory hospital in the nation for 11 years straight. It is continuing its legacy by launching a personalized medicine initiative, seeking to become a nationally recognized clinical thought leader among American healthcare providers.

By Amy K. Erickson



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National Jewish Health,
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In collaboration with Siemens, National Jewish Health’s individualized medicine strategy is aimed at merging research and clinical efforts to improve and develop novel imaging and laboratory diagnostic technologies.

Medical Solutions sat down with Michael Salem, MD, President and Chief Executive Officer of National Jewish Health, and Christine Forkner, Chief Financial Officer at National Jewish Health, to discuss their strategic alliance with Siemens, their shared vision for collaborative research, improved diagnostic imaging, and financing. It is an ambitious endeavor: National Jewish Health will integrate Siemens technology throughout the facility’s 19-acre campus in Denver, Colorado, U.S. – in order to offer patients advanced diagnoses and treatments.

Personalized medicine is a new therapeutic approach that uses genetic and other information about a person to tailor the prevention, detection, treatment, and monitoring of disease. How does partnering with Siemens Healthcare bolster your strategic plan to advance the field of personalized medicine and use those advances to better care for your patients?

SALEM: Personalized and preventive medicine is about the right diagnosis and treatment for the individual patient. By combining our strengths in technology, patient care, and research, Siemens and National Jewish will advance the idea of early detection and prevention. We will be able to provide more accurate diagnoses that lead to more targeted and effective therapies for our patients and

patients around the world. To do this, we set up three pillars of infrastructure: the Integrated Bioinformation and Specimen Center, the Center for Genetics and Therapeutics, and the Institute for Advanced Biomedical Imaging¹.

Why did National Jewish Health select Siemens Healthcare as a clinical and Siemens Financial Services, Inc. [Siemens Financial] as a financial partner?

SALEM: Siemens is a world-class company and our collaboration brings together the best of the best in terms of faculty, staff, and technology. We share a common vision of bringing laboratory diagnostics together with imaging in order to

¹The Institute for Advanced Biomedical Imaging is a registered trademark of National Jewish Health.

give our patients the best care possible. FORKNER: From a financial standpoint, when we looked at Siemens Financial, we were looking for a broad agreement with a broad scope and a wide range of criteria. We considered how easy they are to work with, their clear and straightforward documents, their experience in dealing with local authorities, and their expertise in tax-exempt lending. We compared their offers with several national and large regional banks, equipment-lending companies, and their competition. Siemens Financial came out on top.

How will National Jewish Health and Siemens Healthcare benefit from this joint effort?

Summary

Challenge:

- Moving away from a reactive trial-and-error method of practicing medicine to a predictive, personalized model
- Practically implementing better diagnostics that lead to more effective treatments
- Obtaining financial assistance to fund state-of-the-art technologies

Solution:

- Collaborating with healthcare institutions to improve and develop novel imaging and diagnostic technologies
- Integrating Siemens technologies throughout National Jewish Health to help diagnose respiratory, cardiac, and rheumatologic diseases
- Merging the institution's research and clinical efforts at the point of care for the benefit of the patient
- Providing easy, affordable financing options to healthcare entities

Result:

- Improved patient care
- Development of a practical model of proactive personalized healthcare
- Advancement of molecular medicine
- Better diagnostic and imaging technologies

SALEM: We think National Jewish is very well positioned to help Siemens advance its technologies. In our laboratories, we have invented and are committed to a number of novel diagnostic tests – whether they are genetic tests, biomarkers, or new predictive tests that can track patient progress – and we think a partnership with a leader like Siemens will allow us to bring these things to patients a lot sooner than we otherwise would have. Additionally, we have tremendous expertise and access to samples and patients. With technology from Siemens and great minds on both sides, we have the opportunity to be very successful.

Why did you choose Siemens Financial to finance the equipment and technology? In other words, what differentiates Siemens from other lending sources?

SALEM: This is a competitive business and we were looking for a business partner and a research partner.

FORKNER: We went with Siemens Financial because our market analysis indicated that they had the best rate and some of

the easiest processes. Siemens Financial representatives were very responsive to our questions. They took the time to understand National Jewish Health and our financing needs. They had excellent forms, which minimized lawyer time and expense. Overall, among the companies we considered, Siemens Financial came in as the number one frontrunner from a financial standpoint and in the broader relationship. On top of that, they were nice people to work with, which is important, especially in the most complicated financial transactions. I think we came together to make an excellent deal.

How important is it that Siemens Financial provide equipment financing options to healthcare providers?

FORKNER: It's imperative that they do so for several reasons. Healthcare financing is always complicated. A lot of hospitals are experiencing a credit crunch at a time when radiology equipment continues to advance. You have to be very competitive in today's healthcare world. It is beneficial to everyone that Siemens Financial not only has the financing, but also the expertise to make a lot of different financ-

Siemens Provides Personalized Financing Options

Siemens Financial Services, Inc. provides innovative financial solutions to healthcare providers such as National Jewish Health. With expertise in asset-based lending, capital markets, equipment financing, commercial trade finance, and vendor financing, each transaction is tailored to fit the specific borrowing needs of the client.

The financing arm for healthcare at Siemens Financial Services has been in existence for over 20 years. "We offer a turnkey approach," says Lynn Beckham, Vice President of Tax-Exempt Healthcare Corporate Finance for Siemens Financial Services. "The customer not only looks to us for equipment, but also for financial assistance, as was the case with National Jewish Health."

After Siemens identified the best funding avenues for National Jewish Health, the US\$13 million transaction was completed in about five weeks from start to finish.

"We offer excellent customer service," says Beckham. "Our rates are very attractive and we are always accessible. With this equipment, National Jewish Health will be able to expand and do more research, which in the end, means helping more people."

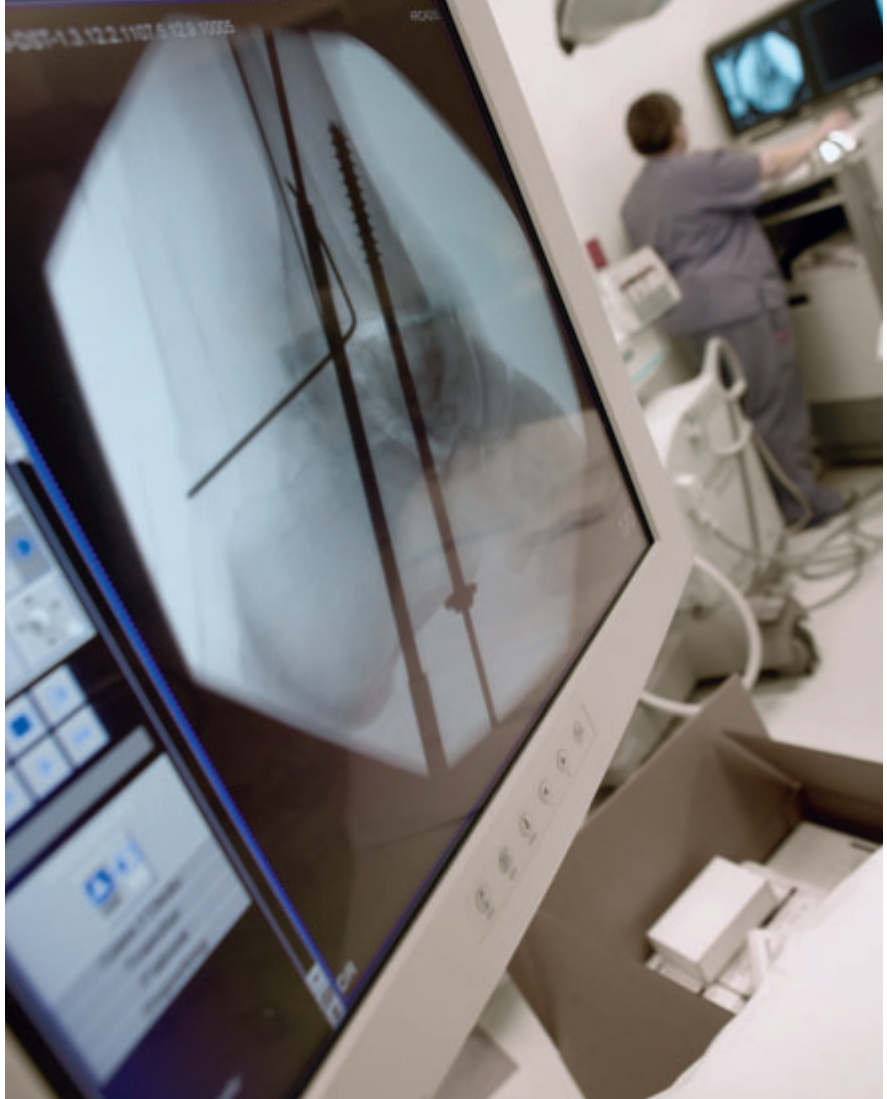
ing options available – from tax-exempt to not tax-exempt, from an operating lease to a capital lease, there are a lot of options out there. Siemens Financial not only makes those available, they also make them easy.

How are current U.S. market conditions affecting your ability to fund projects?

FORKNER: The market has impacted budgets across the country and ours is no exception. Siemens Financial worked wonderfully with us to help get our program financed. National Jewish has a dedicated donor base and, with relationships with industry leaders like Siemens, I think National Jewish will weather this crunch just fine.

National Jewish Health's mission of personalized medicine is aligned with Siemens strategy of providing cutting-edge technology to improve patient care. Can you highlight a few examples of how this collaborative effort benefits patients?

SALEM: I think the benefit to patients will be this transition to more preventive care – this notion or idea of early detec-



Collaboration Strengthens Patient Care

A cornerstone of National Jewish Health's mission to advance personalized medicine is the integration of Siemens technology within the existing medical infrastructure. Currently, physicians and clinicians at National Jewish Health are supported by a wide range of Siemens in vivo diagnostics and information technology, including SOMATOM® Definition, SOMATOM Sensation 64, MAGNETOM® Avanto, syngo® Imaging and syngo Workflow, Biograph™ 40, ARCADIS™ Avantic, and c.cam. Additionally, National Jewish Health plans to install several Siemens solutions for in vitro diagnostics in the near future. The Institute for Advanced Biomedical Imaging, which opened its doors in the spring of 2008, houses two Siemens computed tomography (CT) systems and one Siemens PET-CT (positron emission tomography-CT) system. The institute also has an integrated radiology information system (RIS) and picture archiving and communication system (PACS) that uses the same syngo architecture as the imaging modalities, leading to streamlined data

reconciliation and consistency. Additionally, National Jewish Health and Siemens are launching several collaborative research projects that seek to improve the diagnostic capabilities of several imaging technologies. The overarching goal of these projects is to detect disease earlier and make more precise diagnoses, leading to improved patient care.

These projects include:

- Using technology from Siemens to develop techniques for detecting very small lung nodules (four to eight millimeters in diameter) in individuals at a high risk for lung cancer
- Developing a model of the lung that can be used by others to calibrate CT systems in order to produce comparable images
- Developing a Quantitative Imaging Laboratory at National Jewish to improve quantitative imaging techniques for better integration of radiologic and molecular imaging

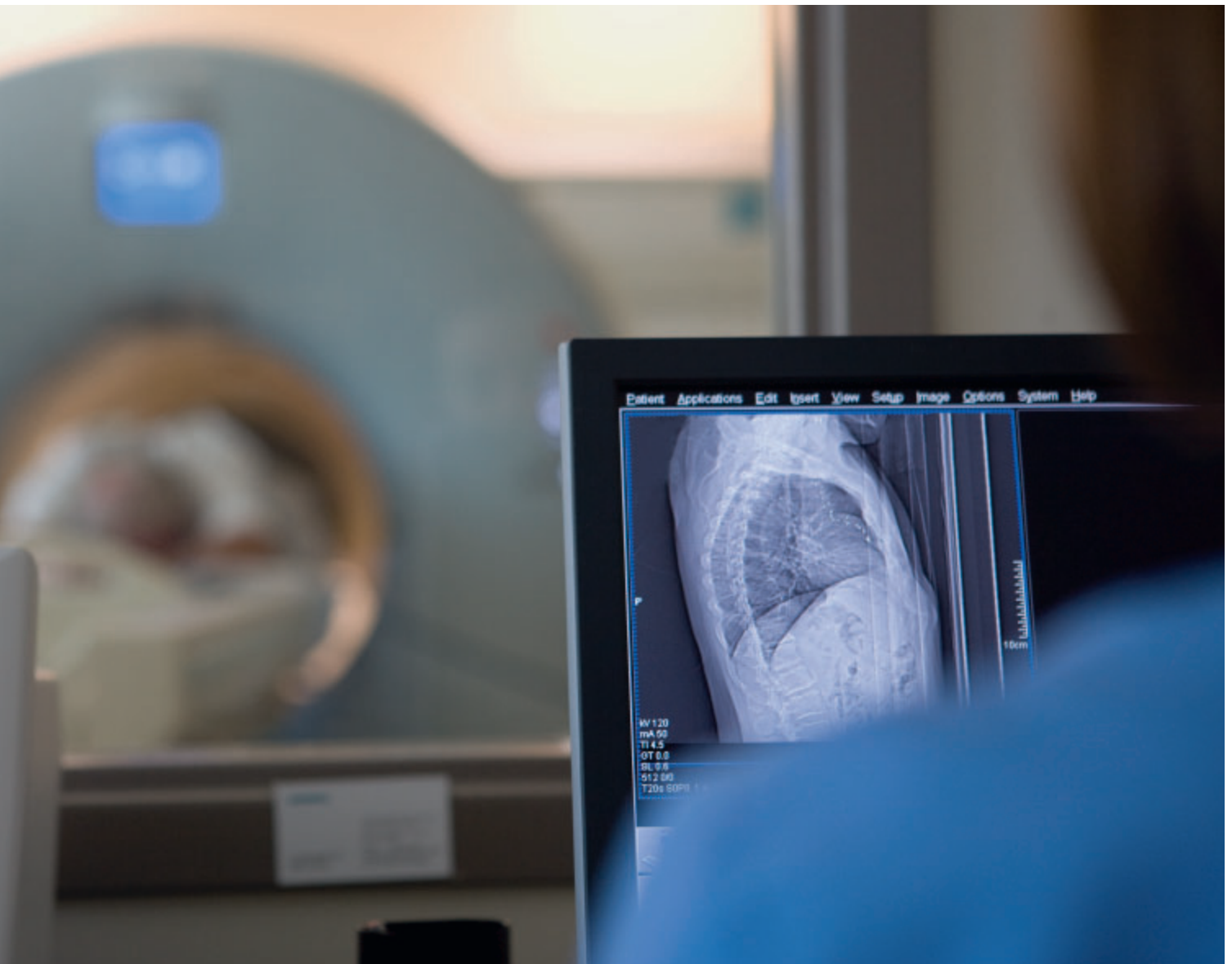


tion. How do you practically implement the idea of prescribing medications more precisely? Patients suffering from COPD [Chronic Obstructive Pulmonary Disease] offer one example. COPD is really a syndrome, a broad group of conditions grouped together through a fairly crude diagnostic tool – the amount of air a person can exhale in one second. Advanced imaging is increasingly able to distinguish the two main characteristics of COPD – lung destruction and airway inflammation. As we learn to distinguish the varieties of COPD and couple that with information gleaned from biomark-

ers and genetics, physicians will have improved knowledge about a patient's disease. Physicians will be able to target treatments to address specific situations within the COPD spectrum, and patients will have better outcomes. We also expect to improve imaging of the right side of the heart, which is less advanced than imaging of the left side of the heart. It can often be difficult to determine whether a patient's shortness of breath – a common complaint among our patients – is caused by problems in the lung or in the right side of the heart, which pumps blood to the lungs. By

developing improved tools to measure right-heart function, we will better understand our patients' needs and address them more effectively. One of our collaborative research projects also seeks to detect potentially cancerous lung nodules when they are smaller than we can currently detect. Earlier detection and removal of cancerous nodules could significantly improve survival in lung cancer.

What are the measurable outcomes of the partnership between National Jewish Health and Siemens?



SALEM: Research results and patient outcomes. As our collaboration produces new methods and tools for diagnostic imaging and healthcare solutions by bringing together imaging and the clinical reference labs, we will share that knowledge, which may change the way medicine is practiced. And, as the broader diagnostic imaging and laboratory communities adopt those new methods and tools, patient outcomes will improve. Providing testing using cutting-edge diagnostics and targeted therapies is a real challenge. We think if we put together the best of what the industry

has to offer and the best of what academia and medicine have to offer in this environment here at National Jewish Health, then we have the potential to really help patients.

Amy K. Erickson is a Chicago-based writer specializing in medicine, science, and biotechnology.

Further Information

[www.siemens.com/
personalized-medicine](http://www.siemens.com/personalized-medicine)