

# Mahaska Health Partnership

## Delivering Advanced Diagnosis in a Rural Community

### A COMMUNITY HOSPITAL CASE STUDY



#### Background

Mahaska Health Partnership  
Oskaloosa, Iowa  
56 Bed Hospital

#### Challenge

Providing state-of-the-art imaging procedures in a community hospital setting.

#### Solution

A progressive pursuit of healthcare excellence leading to a radiology expansion including the purchase of a SOMATOM Emotion 6 multi-slice CT Scanner and hospital-based MAGNETOM Symphony MRI.

#### Proven Outcome

Increased quality-of-care, patient satisfaction and revenues.

Tucked away in rural Oskaloosa, Iowa, Mahaska Health Partnership (MHP) is a truly big hospital. With just 56 beds and 22 physicians, MHP lives large with advanced technologies and expansive vision that prove size and location do not define a medical facility. Serving a rural area, with 22,000 residents in the county with dedication and innovation — including a recently-completed \$2.5 million radiology department — MHP provides a model for leveraging state-of-the-art imaging equipment in a small hospital setting.

MHP knows that fast, accurate diagnoses can dramatically enhance treatment and improve outcomes. Their new MAGNETOM Symphony MRI and SOMATOM Emotion 6 multi-slice CT scanners from Siemens Medical Solutions deliver cutting-edge technology around the clock to give MHP a significant technological edge within the local medical market and set it apart from most hospitals its size nationwide.

Complementing this, a new state-of-the-art PACS makes advanced digital diagnostic information as convenient as a mouse click 24/7.

Thanks to the leadership of a forward-thinking board of directors, dedicated clinical staff and CEO Jay Christensen, MHP will have realized an estimated 124 percent increase in revenues in just four years. In 2004 alone, it projects a 40 percent increase in revenues over the previous year, following completion of the expansion of its radiology department.



**Dr. Aktar Ashraf**  
Chief Radiologist  
Mahaska Health Partnership

## A Hard-Working Radiology Department

The Mahaska Department of Radiology is covered, part-time, by a local radiology group utilizing teleradiology during the off hours. Assisting them is an experienced radiology administrator and a staff of 10 technologists. The department performed 11,500 procedures last year in a full range of modalities.

“The MRI image quality is 50 to 100 times better, so our diagnostic accuracy has greatly improved. The quality of the exam is also improved. For example, the new CT scanner is better for trauma patients because it is so fast.”

*Dr. Aktar Ashraf, Chief Radiologist  
Mahaska Health Partnership*

Prior to their radiology equipment purchase, MHP relied on a mobile MRI scanner that visited twice a week, as well as a decade-old onsite helical CT scanner with significantly limited applications.

Almost immediately, the new Siemens MRI and CT scanners realized important benefits. MHP now performs a range of advanced clinical procedures with enhanced efficiency. Few patients have to travel offsite for diagnostic exams. The door also has been opened for ongoing expansion of radiology services, increased patient market share and enhanced department profitability.

The new multi-slice Emotion 6 CT delivers dramatically enhanced image quality, clinical applications and speed, as multiple slices are acquired simultaneously. “Absolutely this has improved our quality-of-care with more accurate and faster diagnoses, and streamlined treatment,” said Denise Kelly, Director of Radiology for Mahaska Health Partnership.

Commenting on the clinical benefits of the new MRI and CT, Dr. Aktar Ashraf, Chief Radiologist for Mahaska Health Partnership said: “The MRI image quality is 50 to 100 times better, so our diagnostic accuracy has greatly improved. The quality of the

exam is also improved. For example, the new CT scanner is better for trauma patients because it is so fast.”

With comprehensive planning, the radiology department has managed to implement all this while generating near-term positive income as well as projections for long-term profitability.

“Both our board of trustees and medical staff are very progressive in their pursuit of healthcare excellence,” explained Christensen. “By carefully structuring our projects, we have been able to improve customer satisfaction, meet physician clinical needs and improve financial performance.”

### **Meeting Community Needs and Business Goals**

Why did a small hospital undertake such an ambitious radiology project? Crucial to MHP’s mission is providing all patients with complete primary care and a significant level of specialty services in the local community. Beyond convenience, MHP recognizes that speed and diagnostic sophistication of an in-house MRI and CT mean

better healthcare. Convinced of the clinical benefits, MHP considered its current level of imaging procedures and the number of outbound referrals it might keep in-house with the new equipment. It decided its existing patient base would utilize the technology enough to support it financially.

“First and foremost, we all believed the Siemens CT and MRI represented the quality of services our community and patients wanted and deserved,” said Christensen, noting that the projected usage by its patient base, combined with appropriate financing, suggested a significant profitability. “The board really needed to be convinced we could support this within our existing patient population, and we did,” he said.



**Jay Christensen**  
CEO, CPA, MHA, FHFMA  
Mahaska Health Partnership

“First and foremost, we all believed the Siemens CT and MRI represented the quality of services our community and patients wanted and deserved...”

*Jay Christensen, CEO  
Mahaska Health Partnership*

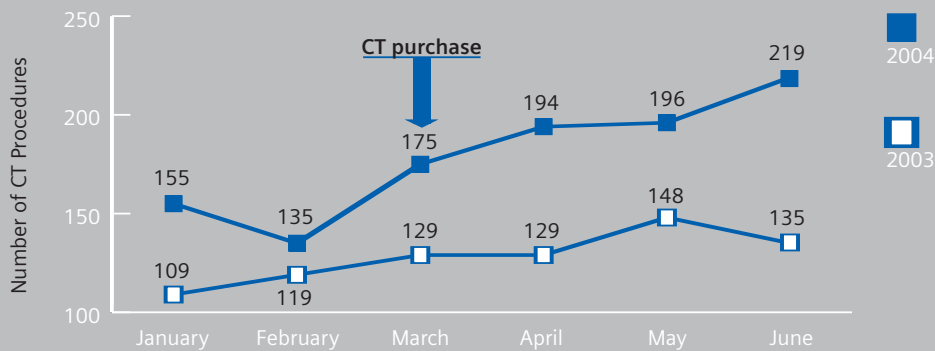
“With the acquisition, we also stepped up and purchased technology we believed we needed to achieve business goals,” Christensen explained. In sum, these were to expand into new CT and MRI service lines, support more complex procedures throughout the hospital, attract new physicians and lay the groundwork for future growth.

MHP hoped to increase its MRI and CT market share, and even in the few months since installation has done so. During the first three months after MRI installation, MHP performed an average of 86 exams per month compared to 41 per month during the same period last year, representing a 110 percent increase. During that same period, it performed a monthly average of 186 CTs, up from 135 the previous year, representing a 37 percent increase.

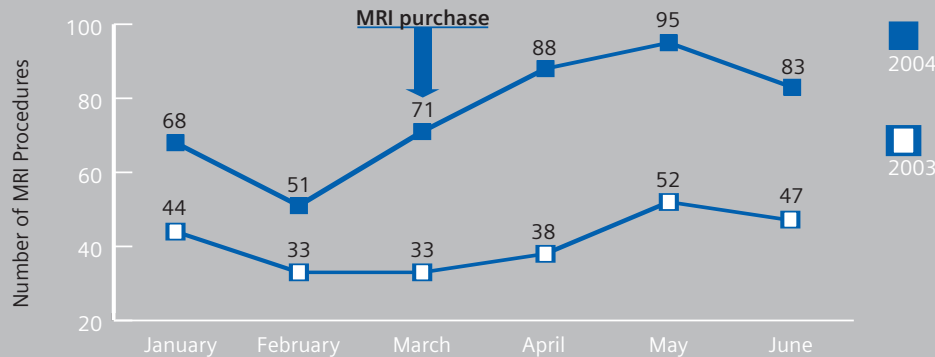
Additionally, MHP believes the ability to attract and retain quality physicians is one of the biggest drivers of quality of care and ultimately of revenues. They wanted to capitalize on this. “Technology is becoming an expectation of every type of medical professional and we wanted to leverage this,” said Christensen. “Many of our doctors believe MRI is no longer a luxury. This, along with the multi-slice CT, is expected and necessary to do business.”

Thanks in part to the new advanced imaging technologies, the hospital did, in fact, successfully attract a second orthopedist following the installation. In turn, increased orthopedic procedures have contributed significantly to a rise in MRI exams.

### Impact From New Multi-Slice CT



### Impact from On Site MRI



## Taking a Hard Look at Equipment Options

While investigating feasibility and financing, the hospital also looked long and hard at technology options. Dr. Ashraf played the key role in determining equipment selection goals, while Kelly served as project coordinator.

For both modalities, Dr. Ashraf wanted equipment that not only met the hospital's needs today but that would accommodate a wide range of new applications and provide a platform for emerging technologies for years to come.

For MRI, he felt strongly that a 1.5T, rather than a 1.0T magnet, would meet these goals. For CT he wanted a strong angiography package, with a flexible platform for new applications, as well as a strong product upgrade path. Naturally, he wanted to maximize the technology for the hospital's capital outlay.

Everyone involved felt strongly that the two equipment purchases should be through a single vendor, possibly offering a common user interface across modalities to streamline cross-training of technologists and customer support. This is particularly important in a small hospital where technologists are typically not specialized and handle a full range of procedures.

## Specialized Siemens Technology — An Excellent Fit

Siemens was the only manufacturer that offered an easy-to-use multi-modality software platform — *syngo*®. After the purchase, MHP set up both modality workstations in a single control room, allowing technologists to move between the two.

MHP found the Siemens SOMATOM Emotion CT, a new six-slice unit, offered a wide range of clinical applications combined with superior image quality, compact size and affordable price. MHP felt its advanced features would put the community hospital on a par with larger hospitals. A wide range of enhanced applications, from CTA to

“Many of our doctors believe MRI is no longer a luxury. This, along with the multi-slice CT, is expected and necessary to do business.”

*Jay Christensen, CEO  
Mahaska Health Partnership*



Mahaska CT Technologists Molly Dugger (left) and Julie Spears (right) next to Mahaska's new SOMATOM Emotion 6

virtual colonoscopy would be available to meet MHP's evolving needs.

The SOMATOM Emotion CT also offered Siemens C.A.R.E. — Combined Applications to Reduce Exposure — bringing together a range of breakthroughs to ensure the lowest possible patient x-ray exposure, while maintaining image quality, for a complete range of applications.

At the same time, the department also preferred Siemens MAGNETOM Symphony MRI because its unique Integrated Panoramic Array (IPA) system combined multiple coils into an all-in-a one unit, minimizing coil changing and patient repositioning.

Adding another dimension to the project, the team had decided early on that PACS would be essential to manage increased study sophistication and volume. PACS would streamline image storage, enable image communication to a wide range of physicians and help realize a host of departmental efficiencies. "We calculated that with savings in film, supplies and storage costs, PACS would pay for itself within five years," said Christensen. Siemens also offered this advanced digital solution to tie the growing department together. The vendor choice was clear.

## Significant Short-Term Impact

Just several months after the acquisition, the new MRI and CT technology's positive impact have been felt throughout the department and beyond. Representing greater patient convenience and quality-of-care as well as increased revenues, CT volume rose significantly while MRI exam volume more than doubled. Projections had been correct, and a significant portion of the increase was due to previous outbound referrals now being handled onsite. But clearly new business also was coming in.

Procedure volume will likely increase with an upcoming hospital physician education program and planned adoption of Siemens specialized modality packages to enable additional exams.

Now available every day, unlike the mobile unit, the new Siemens MRI is used for a wide range of immediate imaging applications. These include abdomen and liver, angiography, total spine, MRCP and emergency procedures. "To have a state-of-the-art MRI machine in a community this size is a great asset," explained Ashraf. "It is such a great diagnostic tool for us as physicians to help provide superior health care for our patients." With the MRI onsite, diagnosis is faster and treatment can begin earlier, improving quality of care.



*Julie Hartke, MRI Technologist, and Mahaska's new MAGNETOM Symphony MRI*

The new Emotion 6 multi-slice CT enables significantly higher image quality, boosting diagnostic accuracy with less radiation exposure than the previous scanner. Clinicians agree that the new multi-slice CT's superior image quality enables more effective diagnosis over a full range of applications. "We're doing far more studies to diagnose PE. Previously, we had to send patients to other facilities," comments Kelly. "Additionally, our immediate and accurate imaging of trauma cases is significantly improving patient care." MHP finds that Siemens advanced volume reconstruction technology eliminates any compromise between volume coverage, thin slice and image quality.

The patient experience is also significantly enhanced for both modalities. With faster imaging speed than the old single-slice CT, multi-slice CT requires fewer and shorter breathholds and minimizes artifacts due to patient movement. MRI scan times are also significantly faster and higher in quality.

Transitioning to the new CT and MRI was easy. "At a small hospital," said Kelly, "technologists really have to do it all and have little time for training. The consistent, easy user interface really paid off. Siemens training and customer support also has been terrific."

## Unlimited Long-Term Possibilities

MHP feels that a talented medical team, visionary administration and top-of-the line equipment will open unlimited future possibilities. According to Christensen, the hospital has only just begun to take advantage of a small range of the new technologies' full possibilities. "As a next step, we will focus on physician education in-house and beyond about our growing imaging capabilities," he said.

To add to the roster of imaging services, MHP doctors have expressed an interest in bone densitometry, angiography, cardiac scanning and bariatric surgery.

"We have a great staff that is just so excited to have all this technology and the new services we offer. There are a lot of smiles down in the radiology department," Christensen said. "They know we're really nailing it for a rural facility."

"At a small hospital, technologists really have to do it all and have little time for training. The consistent, easy user interface really paid off."

*Denise Kelly, Director of Radiology  
Mahaska Health Partnership*



**Denise Kelly**  
*RT (R)(M)(CT), RDMS, RVT,  
Director of Radiology  
Mahaska Health Partnership*

On account of certain regional limitations of sales rights and service availability, we cannot guarantee that all products and features included in this brochure are available through the Siemens sales organization worldwide. 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.

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

Siemens Medical Solutions USA  
51 Valley Stream Parkway  
Malvern, PA 19355-1406 USA  
Telephone: 1-888-826-9702  
[www.usa.siemens.com/medical](http://www.usa.siemens.com/medical)

Siemens **Medical**  
**Solutions** that help

© 2004 Siemens Medical Solutions USA, Inc.  
All rights reserved.  
Printed in USA  
04-20-CC-198 09-2004