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# Table of Contents

## DEPARTMENTS

- **4** Hospital and Health News
- **8** What’s New
- **49** People and Companies
- **50** Old Into Gold
- **51** Marketplace and Classifieds
- **52** Blue Book Price Guide

## INDUSTRY SECTOR REPORTS

- **18** CR and DR
- **23** Riggers and Craters
- **29** De-Installers
- **34** Sterilization
- **38** Monitors
- **42** Chillers

## FEATURES

- **10** Proton Beam Therapy—An Accelerating Market
- **14** Digital X-ray Imaging: Technology, Market Changes, and Business Opportunities
We’re especially proud of two stories in this issue, one by Associate Editor Barbara Kram, the other by industry consultant Wayne Webster, founder of Massachusetts based Proactics Consulting.

In both instances, our writers tackle an issue central to the health and well being of today’s medical equipment business: how technology is changing the market, creating new business opportunities and, most important, providing new therapies that are turning the tide in the battle to cure killer diseases.

Signs of the validity of that claim are everywhere. As Webster notes, current digital X-ray technology is having a significant impact in veterinary and dental medicine.

But the big payday is in human radiography where, Webster says, “change occurs so rapidly that imaging devices considered leading edge three years ago are now deemed obsolete.”

In his piece, Webster provides history, insight into changing technology, an examination of the markets and applications and finally, suggests where opportunities might materialize in the future. In short: invaluable reading.

Barbara Kram, meanwhile, has been following a spate of developments in proton therapy for several months, often referring to the subject as an “overnight sensation” that’s been 50 years in the making.

Not surprisingly, technology’s played the crucial role in making it more mainstream. With what’s available now, proton therapy destroys cancerous targets without any damage to surrounding, healthy tissue.

Oncologists and radiologists are mightily impressed with what companies in the proton business call the “smart bombs” accomplishing this feat.

But the entire healthcare community, however, is scared of the cost. Skillfully delving into the economics of proton therapy is what makes Kram’s story so relevant to this magazine’s readers and users. As already said about Webster’s piece: invaluable reading.

Elsewhere at DOTmed.com Inc., our website’s DOTmed Careers section is worth a long, hard look. It’s filled with news about jobs, continuing medical education classes, engineer/technician training opportunities, news related to the internal training/development at healthcare facilities, and, of course, training and education information from highly regarded training companies. With more than 12,000 daily users, DOTmed.com is among the top rated healthcare job websites.
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**HIMSS08 Stirring Great Interest**

The Health Care Information and Management Systems Society’s annual meeting and conference in Orlando later this month (Feb. 24-28) is shaping up as a “must attend” for those in that business sector.

First off, the topic is hot and getting more so all the time. It’s an area where real cost savings are possible so hospital administrators are very interested, not to mention legions of solution vendors.

The conference boasts a laundry list of important discussions and roundtables, best summed up probably by one called, “The Changing Health Care Landscape and the Acute need for Information Technology.”

Then there’s HIMSS08’s impressive and suggestive roster of keynote speakers. Among them: physician and former Senate Majority Leader Bill Frist, AOL founder Steve Case and Dr. Eric Schmidt, chairman and CEO of Google. Besides being at the epicenter of the info tech business, the latter two would seem naturally interested in health care’s specialized info tech needs and, perhaps, positioned to provide solutions.

One other intriguing note, HIMSS and Blank Rome LLP are co-sponsoring the 2nd Annual Health Care Venture Fair, billed as a unique opportunity for growing companies to showcase solutions to investors. What’s that sage advice? Follow the money.

- [DM 5355]

**GE Earnings Up But Healthcare Lags**

Although General Electric’s recently announced earnings are on the plus side, Chairman and CEO Jeffrey Immelt has been telling financial analysts that medicare regulations continue to cut growth at its healthcare unit due to changes in how hospitals are reimbursed for medical imaging machine scans. GE Healthcare is the world’s biggest maker of MRI, PET, CT and X-ray scanners.

- [DM 5356]

**Gold nanoparticles show promise in treating cancer.**

Thanks to work by Shuming Nie, Ph.D., and his colleagues at the Emory-Georgia Tech Nanotechnology Center for Personalized and Predictive Oncology, gold nanoparticles look to be emerging as powerful tumor-homing beacons for detecting microscopic tumors or even individual malignant cells. Until now, the particles have been used mainly in rheumatoid arthritis research.

Experiments show that the coated gold nanoparticles could serve as potent imaging agents for studies of cancer cells. Researchers injected the targeted nanoparticles into mice with head and neck carcinomas and obtained results within five hours. As control experiments, they injected matching mice with the untargeted nanoparticle. The unique optical spectra of the nanoparticles were easily detected in both sets of animals, but only the targeted nanoparticles accumulated in tumors.

- [DM 5357]
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News from North of the Border
Two newsworthy items from Canada.

Waiting for healthcare services there cost the government, taxpayers and patients another $15 billion, says the Canadian Medical Association. Maximum wait time for an MRI, for example is 30 days but CMA says the average patient goes almost 60 days instead. In fact, patients who don’t get a scan within that first 30 days often end up waiting more on the average of 85 days. In the interim, of course, associated medial expenses just continue to mount.

Meanwhile, in a story reported last month in DMBN, the president of the Canadian Nuclear Safety Commission, Linda Keen, has been fired. She was blamed for provoking an international medical crisis when she closed, for safety reasons, the Chalk River nuclear reactor, among the world’s top producers of medical isotopes and the main supplier to the US medical community.

CMS Takes Further Steps to Lower Medicare Out-of-Pocket Costs
The Centers for Medicare & Medicaid Services (CMS) has announced 70 new areas across the nation that will be part of the second phase of a competitive bidding program designed to help lower Medicare beneficiaries’ out-of-pocket costs and improve access to certain high quality durable medical equipment including prosthetics and orthotics. Ten geographic areas already participate in a program aimed at providing greater beneficiary access to standard and complex power wheelchairs, walkers, oxygen supplies and hospital beds.

The program also is supposed to help federal officials prevent unscrupulous suppliers from participating in Medicare. Once the competitive bidding program is implemented nationally, it’s expected to save $1 billion annually.

“Competitive bidding means that Medicare beneficiaries will have access to these products at substantially lower costs,” said CMS Acting Administrator Kerry Weems.

The home care medical equipment industry, however, has taken the government to task for some of its policies. Concerns include too slow adoption of accreditation standards and underestimation of the true costs of equipment and service provision.

Additional information on the DMEPOS competitive bidding program is available at the following Web site: http://www.cms.hhs.gov/CompetitiveAcqforDMEPOS/.

Information for beneficiaries about what they can do to protect themselves from fraud and abuse when they need certain medical devices and services can be found at http://www.medicare.gov/Publications/Pubs/pdf/11345.pdf.

Information about the program for providers is available at: http://www.medicare.gov/Supplier/Statistics/About/DMEPOS.asp

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AMA Calls on Tobacco to Be Regulated by FDA

AMA president Ronald Davis, MD, has hit out at the federal government, suggesting it has earned failing grades for its tobacco control legislation and policies.

“It’s a cruel irony that tobacco, the number one cause of preventable death, is one of the least regulated products,” Davis said.

AMA says a new report from the American Lung Association should serve as a reminder that “we need meaningful legislative reforms to give the FDA strong regulatory authority over tobacco products.”

While some states have made progress, 32 states have received failing grades for tobacco prevention and control funding. By spending more on tobacco prevention and cessation programs, states have the ability to save lives and stop new smokers before they start.

- [DM 5346]

Fujifilm Phases Out U.S. Medical Film Production

FUJIFILM Medical Systems USA, Inc. will phase out the production of medical imaging film products at FUJIFILM Manufacturing USA Inc. in Greenwood, S.C. by April 1, 2008.

Over the past decade, the medical imaging industry has been undergoing a steady transition from the use of medical imaging film including double and single emulsion and dry films, to digital image acquisition and softcopy diagnosis via Picture Archiving and Communications Systems (PACS). In fact, Fujifilm is the world market leader in digital X-ray with more than 52,000 CR systems sold, and a leading PACS provider with well more than 1500 Synapse® PACS installations around the globe.

Although Fujifilm Greenwood has been producing X-ray film products, the market shift to PACS systems has led to significant declines in the overall sales of medical film. As a result, FUJIFILM Corporation has decided to consolidate the production of all medical film to one facility in Japan.

“While we must adapt our business to the changing landscape of the medical imaging market, Fujifilm remains unwavering in our efforts to meet the existing demands for medical film,” said FUJIFILM Medical Systems USA President and CEO Makoto Kawaguchi. “As is our history with all of our medical imaging products, Fujifilm is committed to the quality and innovation of our extensive medical film lines. The ongoing and stable delivery of film to our medical customers will continue without interruption,” Kawaguchi said.

- [DM 5332]

DRE Medical Equipment Introduces New Microscopes

DRE Inc., an international medical and surgical equipment supplier, has introduced two new microscopes: the DRE Om2100 Ophthalmic Microscope and DRE Em1000 ENT Microscope, the first microscopes to be released as part of the expanding line of medical equipment carrying the DRE brand.

- [DM 1234] What does this ID code mean?

You’ll see an ID code such as [DM 1234] at the end of every story. If you enter that ID code – be sure to enter the “DM” – in any search box on www.dotmed.com, you’ll see the original story as it ran in our online News. You’ll find convenient and useful links in many of those online stories. Try it!
The DRE Em1000 ENT Microscope is a manual, fiber-optic surgical microscope developed for ENT procedures. The Om2100 Ophthalmic Microscope is ideal for cataract surgeries and post-op exams.

According to Charlie Vittitow, General Manager of DRE, “The Om2100 and Em1000 are fantastic additions to our product line because each offers features needed in specific medical practices. With the addition of our microscopes, DRE can better serve our ENT and ophthalmology customers, both of which are essential to our business.”

The DRE brand includes an established line of surgical equipment products. DRE’s product line includes the Integra AV-S Anesthesia Machine, the Waveline Plus Vital Signs Monitor, and the Maxx Luxx II Surgical Operating Room Lighting System.

BioMed Techs Among “Best Careers” for 2008

U.S. News & World Report has identified “biomedical equipment technician” among its list of “31 Careers with Bright Futures” in its online guide to “Best Careers for 2008.”

The magazine says, “imagine you’re in a hospital bed, hooked up to a heart monitor and a ventilator. Those machines had better be working properly. Fortunately, they almost always are. Whom do you thank? A biomedical equipment tech.”

As with any field, there are plusses and minuses, the article notes, but clearly the good outweigh the bad. “Next time you’re visiting someone in the hospital and hear those lifesaving beeps and alarms, think about whether you just want to be grateful to a biomed tech, or become one,” the piece concludes - a strong endorsement for the field.

According to U.S. News & World Report, to select the “31 Careers with Bright Futures,” the magazine used both quantitative and qualitative criteria. “From the hundreds of careers and variants in the Bureau of Labor Statistics’ Occupational Outlook Handbook plus other candidate careers, we selected the 31 that offered outstanding opportunities” based on job satisfaction, training difficulty, prestige, job market outlook, and pay.

Carestream Health Nets Wide Range of Orders

Carestream Health, Inc., has signed contracts for its KODAK DIRECTVIEW computed radiography and digital radiography systems with a number of U.S. healthcare facilities.

Carestream Health recently launched several new digital imaging systems including the KODAK Point-of-Care CR-ITX 560 System, KODAK DIRECTVIEW CR Classic and Elite Systems, and KODAK DIRECTVIEW DR 9500 and DR 3500 Systems. The company’s portfolio of computed radiography and digital radiography products meet the needs of hospitals, trauma units, orthopaedic and specialty clinics, nursing homes, outpatient imaging centers, and other healthcare facilities.

Among the facilities that have placed orders for Carestream Health’s digital imaging systems: Alpena (MI) Regional Medical Center; Bethesda (MD) Memorial Hospital; Cape Canaveral (FL) Hospital; Illinois (Peru) Valley Community Hospital; Kennedy Health (Cherry Hill, NJ); Novant Healthcare Systems (Charlotte, NC); Brunswick Hospital, Supply, NC, Renown Health (Reno, Nev.); Tallahassee (FL) Memorial Hospital and U.S. Naval Hospital (Camp Lejeune, NC).
By Barbara Kram

Proton therapy is an overnight sensation more than 50 years in the making.

It’s been known for decades that protons are a better weapon against cancer than the X-ray photons used in conventional radiation therapy. However, the use of protons was strictly limited until recent advances in medical imaging allowed doctors to visualize and target the cancers more clearly to take advantage of the precision delivery of proton radiation.

Now that multi-slice CT scanners, high-powered MRI imaging and PET technologies are in widespread use, the potential for proton therapy efficacy and adoption expands tremendously. Think of protons as cancer-killing “smart bombs” that can be put to use only with effective guidance systems.

“In the early days of proton therapy there was no imaging or very poor imaging so you had a very precise weapon and no way of seeing where you were aiming it,” says Bernt Nordin, President, IBA Particle Therapy, Inc., Jacksonville, FL. “Now with better imaging we can define the tumor shape and volume in three dimensions and know exactly where to treat, and more importantly, where not to treat to avoid complications.”

What’s more, medical imaging advances help spot cancer in the early stages when intervention does the most good.

Why use protons instead of (or in combination with) photons? Conventional photon particles irradiate tumors too, but photons travel right through the tumor, whereas protons can be aimed to remain inside the lesion to deliver their payload.

“Proton therapy allows us to beat the diseases that we couldn’t using conventional radiation therapy techniques and equipment,” said Susan Michaud, Co-Director of Radiation Therapy Services, Francis H. Burr Proton Therapy Center at Massachusetts General Hospital Cancer Center. “Using conventional treatment, you always end up treating normal tissues and organs. With protons we can provide a true conformal treatment to almost any area of the body and we can do that without treating normal tissues that will leave the patient with side effects,” she says, noting the particular importance of that to pediatric patients.

“This is something that over the next couple of decades will be changing the field dramatically because you now have a tool that for the first time puts the radiation where you want it,” explains Jerry Slater, M.D, Director of Radiation Oncology at Loma Linda University Medical Center. Slater’s father James M. Slater, M.D. is a pioneer in the field who brought the technique into the hospital setting.

The clinical efficacy and promise of protons also portends its business prospects. While five foundational proton therapy centers are operational in the U.S. today (see sidebar), several more are in various stages of planning and development in anticipation of the expanding application for the life-saving power of protons.

An Unlimited Market

Proton therapy is the better mousetrap in radiation oncology. To date about 55,000 patients have received the treatment worldwide, according to the National Association for Proton Therapy, which promotes its use. While the predominant application has been for prostate cancer treatment, proton therapy’s tissue-saving advantage is also critical in treating cancers of the brain, eye, lung, kidney and other sites.

Proton therapy can be used for “any localized cancer that radiation is used [for],” Dr. Slater says. “Prostate has been used a lot just because it’s such a common disease. There are potentially hundreds of different cancers that will be using protons
in the future.” The therapy is also used to treat non-malignant conditions.

CIBC estimates that the proton therapy market will exceed $2 billion by 2010. The demand for cancer treatment is projected to be great and, in terms of supply, the U.S. doesn’t have nearly enough proton therapy centers.

Let’s do the math: About 1.4 million Americans receive a cancer diagnosis each year and about 800,000 receive radiation treatment in some form. A conservative estimate is that 20 percent of those patients or 160,000 would benefit from proton therapy. A four-room proton therapy center could probably treat about 1,500 patients yearly. That suggests a patient population to support more than 100 proton therapy centers.

However, each facility requires expansive physical plant size — measured in football fields — and significant investment, along with a partnership of clinical and engineering experts to build it. A proton therapy center today can cost in the range of $150 to $250 million, and that may be an estimate on the low side.

The original proton therapy centers were built largely with government dollars. The unit at Loma Linda University Medical Center was funded by the institution, the U.S. Department of Energy, and the Adventist Church. Mass General’s unit was funded by the institution and the NIH.

M.D. Anderson’s proton therapy center is a for-profit model with many investors including Sanders Morris Harris (SMH), a Houston-based investment bank. Hitachi provided the equipment, debt financing and equity investment in their center. Other investors include local police and firefighter pension funds, and GE.

The University of Pennsylvania’s center, under construction, was paid for by the institution. The University of Florida used tax-exempt bonds. Financing options vary widely and are tailored to the project from outright purchase to debt equity financing, leasing, fee-per-use rental, special purpose tax-exempt bonds, and other arrangements.

“Every transaction is different with the magnitude of the expense varying widely,” said Jon W. Slater (also James’ son), President and CEO, Optivus Proton Therapy Inc., San Bernadino, CA. “The preferred financing for most of the academic centers and a lot of smaller non-profits is to work with large financial firms to put together a bond financing device to limit the liability exposure of the hospital yet have them maintain full control of clinical operations.” Optivus, the engineering firm that maintains and upgrades Loma Linda’s center, is working on more than a half-dozen prospects for new proton therapy centers at U.S. sites.

The reality for health care organizations that want to offer proton therapy is that many years of planning and approvals, along with institutional, state and federal aid, plus private investment, may all be needed to bring a center to fruition.

But some new ideas are springing up in the private sector. A few innovators offer turnkey solutions so that physician groups or hospitals can get into the segment. One such business model comes from ProCure Treatment Centers, Inc.

“A proton project is a very capital intensive, very complex process. It is going to be beyond the wherewithal — the staffing and financial capabilities— of larger doctor groups or community hospitals,” says ProCure’s CEO Hadley Ford. The company, staffed by technical experts in this esoteric field and backed by venture capital, builds the centers for its partners including radiation oncology groups and hospitals. ProCure has two centers in the works. Partners in their first site in Oklahoma City include two radiation oncology physician groups, and INTEGRIS Health, the state’s largest non-profit health system. IBA, the leading proton therapy particle accelerator manufacturer, is providing its cyclotron for the project. Another ProCure site is planned in the western Chicago suburbs at Central DuPage Hospital.

ProCure handles the business end of gaining investment and running the en-

Radiation beam scatters as it encounters tissue.

Proton beam eliminates scatter effect.
tire project and facility, while partner physicians handle the clinical end. “It’s a typical outsource model,” Ford says. “It’s not dissimilar from EDS or IBM installing a large computer system into your company. They own it and run it and man the help desks so that you can focus on what your business does best. We figure hospitals and doctors treat patients best. We build proton centers best so it’s a good match.”

Nordin says, “When a new technology comes, it’s usually the large universities that are the early adopters and it takes time before this comes into community health care settings. ProCure is going to accelerate that spread of the benefits of proton therapy to more patients in more places.

A Few Specialized Players

Only a handful of companies provide major equipment for proton therapy, although more OEMs are getting involved with some supporting technologies and works in progress.

The main piece of equipment used in proton therapy is the sub-atomic particle accelerator, which comes in two designs: either a cyclotron or a synchrotron. Both use magnetic fields to accelerate the particles and focus the beam, although there are technical differences in the accelerator path and beam output. Synchrotrons are installed at Loma Linda and M.D. Anderson. Nearly all other U.S. sites have IBA cyclotrons including Mass General and the University of Florida; and at the forthcoming locations at the University of Pennsylvania and Hampton University, as well as Oklahoma.

IBA, headquartered in Belgium, offers its own scalable approach, working with ProCure and other equipment makers including Elekta, a market leader in linear accelerators, who brings IBA its know-how in workflow and information systems, patient immobilization, and other techniques and devices. Another IBA partner is CMS, experts in treatment and dose planning.

“The equipment is turnkey in the sense that we build it, ship, install, but we also service it so that for the hospital it’s basically a push-button operation,” said Nordin. “They never have to worry about all the complex technology behind the thick wall. They can bring in their patients and treat them as they would in conventional radiation therapy and not really notice much of a difference.”

Varian Medical Systems, Palo Alto, California, is poised to become a major player. The company acquired ACCEL Instruments GmbH, which made cyclotrons in service in Switzerland and Germany. Varian is known for its treatment planning system and patient information management systems, and for its installed base of 5,000 linear accelerators used in photon therapy.

“The technologies are very complementary. Our role isn’t favoring one particular technology or another, our role is as a tool maker, to make all the clinical tools clinicians need because all cancer patients aren’t the same,” says Lester Boeh, Vice President of Emerging Technologies at Varian. “We have operations all over the world that we can leverage in terms of design, manufacturing, productization, installation, customer support, spare parts distribution, marketing, all that infrastructure already exists around the world.”

The company’s expertise in clinical workflow will prove useful as proton therapy continues to move from research environments to mainstream clinical settings. “We see a big opportunity to bring all of our skills and expertise in clinical workflow to proton therapy as we have been doing so successful in photon therapy—or radiation therapy—all these decades,” Boeh says. Note that Varian also

U.S. Proton Therapy Centers:
- James M. Slater, M.D., Proton Treatment and Research Center at Loma Linda University Medical Center, CA
- Francis H. Burr Proton Therapy Center at Massachusetts General Hospital Cancer Center
- The Proton Therapy Center at M. D. Anderson Cancer Center, TX
- Midwest Proton Therapy Institute, Bloomington, IN
- University of Florida Proton Therapy Institute

Proton Therapy Centers Under Construction:
- Hampton University (VA)
- University of Pennsylvania Medical Center
- Northern Illinois University Proton Treatment and Research Center (DuPage National Technology Park in West Chicago)
- INTEGRIS Health, Oklahoma City, OK
- Barnes-Jewish Hospital, Washington University School of Medicine, St. Louis, MO
teams with GE on a position management system as part of GE’s proton package for its CT scanners.

An interesting niche company in proton therapy is Still River Systems, Littleton, MA, which, in partnership with MIT, is developing a compact proton therapy system one-third the size of current systems. The design is driven by practical necessity rather than theory.

“We took a different approach. Why start with a physics experiment? Why not start with what people are doing today in radiation oncology?” says Lionel Bouchet, Director of Customer Service and Support for Still River Systems. “Although the particles are small you will always need large systems to accelerate protons—bigger than regular linear accelerators [used in photon therapy]. But cyclotrons (unlike synchrotrons) can be reduced in size by increasing the magnetic field.” The first installation for the company will be at Barnes Jewish Hospital in St. Louis, MO, which reported its center will cost $20 million — significantly less than others—and have a patient capacity of about 250 per year. Note that Accuray has partnered with Still River Systems to supply a robotic patient positioning system.

Other OEMs include Hitachi’s Power and Industrial Division. The company acquired AccSys Technology, Inc., a world leader in the commercial supply of ion linear accelerator systems. TomoTherapy is the other equipment maker for this specialty, partnering with Lawrence Livermore National Laboratory on a prototype for a smaller, lower-cost system than now available. Siemens has works in progress and is exploring the next generation carbon ion approach to particle therapy.

Rounding out the manufacturers is Mitsubishi, which built two synchrotron systems in Japan.

A Promising Future

A New York Times article (12/26/07) put proton therapy in the public eye but raised concerns over costs. The fact that Medicare and aligned insurers pay for the treatment supports its value, although published research is scant since randomized clinical trials that withhold proton therapy would be unethical.

Most experts conclude that the technology in the past was limited only by the imaging equipment used in conjunction with treatment planning.

continued on page 46
DIGITAL X-RAY IMAGING
Buyers of new and pre-owned medical imaging instrumentation find it difficult to stay current with all of the changes in imaging technology. Change occurs so rapidly that imaging devices that were considered leading edge just three years ago are now deemed obsolete by the market.

So what’s different in the last few years in X-ray technology advancement and device introduction that has led to what some call, Technology Useful Life Compression. Consider market conditions as if you were being imaged with a 64-slice CT.

In one 10-second breath hold we could: image your whole body, achieve sub-mm resolution, collect data with 1 mm slices, produce 700-1000 images and image the heartbeat in 1-beat.

All of this is possible for about $1.5 million. This is quite the change from three years ago when the market was just beginning to see multi slice CT. And, there’s now much more to digital X-ray than just CT.

But in order to understand where the market is headed, some history, technology, insight into the forces driving the buyer, seller and original equipment manufacturer (OEM), the markets and applications is all required.

In short, the question that looms: how do DOTmed readers capitalize on the opportunities associated with the migration to digital X-ray from analog.

The Digital Advantage

Ask buyers and sellers about the advantage of transitioning from analog to digital radiography and improved imaging, faster throughput and elimination of film and the “correct” answers. Oddly though, with all of the institutions around the world using analog X-ray devices you’d think they’d all be transitioning to digital. But it’s been a gradual progression, one very much driven by cost and performance.

Eliminating film was the biggest catalyst, the trend dating back to the late 1970’s when two Texas speculators, the Hunt brothers, accumulated a major position in the silver market and then conspired to artificially raise its price. Like so many things there was a down stream effect as silver is a component in film.

Spurred by rising prices, OEMs send users began to look for ways to eliminate film and go digital. Thus the move to convert to digital X-ray imaging was on and there was no stopping it.

And with good reason since the first real benefit in going digital is the elimination of film. Others include: elimination of film storage rooms, increased productivity/throughput and improved imaging, though this is application dependent since clinical images are not necessarily better just because they’re digital.

Technology

Through the 20th century technological advancement moved at a digestible pace. There came a point at the beginning of the 21st century when technology began moving faster than the market could adapt. How would this change the way we acquire and think about a new technology like digital X-ray?

The advantages or perceived advantages of transitioning from analog to digital are well documented. But let’s take the buyer’s view as they weigh a move to digital imaging.

In Standard Radiography the primary considerations are patient volume, image reimbursement and acquisition time or throughput advantages. These are reasonably common parameters when qualifying any new technology or device. In most imaging facilities, what’s top of mind is broadening applications and increasing the number of patients imaged. If throughput can also be improved, then such facilities can manage the up tick in patient traffic with the same staffing.

The reciprocal is also a consideration. If throughput improves with the new equipment and the patient volume is maintained, then department staffing reductions are an option.

Secondary considerations are many. The necessity for and the impact of equipment change is more than financial. Staff has to adjust work routines and learn new operating systems. This has an immediate impact on productivity.

In addition, image storage and recall of those images is important. Although digital imaging removes the need for space, cabinets and hardcopy storage, electronic storage requires the addition of equipment and software so that these images can be recalled, manipulated and transported for viewing. All of this requires different experience and knowledge, not to mention additional outlay of capital for hardware and software.

Analog to Digital Pathway

This transition requires a change in the staff work routine, with many opting to take small steps at the outset and with a minimal disruption in patient flow.

Computed Radiography (CR) is a way to test the
water before diving in. Converting to a digital signal eliminates the need for hardcopy storage and the image is now stored digitally. Moreover, the department should see improved workflow.

Next after CR is Direct Digital Radiography (DDR or DR). Using an imaging plate made from amorphous silica or selenium and sandwiched with a semiconductor device like a charged couple device (CCD), the DR plate can covert the captured X-ray energy to a charge that is read by the CCD and then converted to a digital signal.

The result is that with the replacement of the analog equipment there is no requirement for a scanning step as in CR and the image is available immediately electronically. Again, improved patient throughput is the result.

In the digital scheme the image is captured on an image plate, a receptor. From the receptor the data is transferred electronically to an image management system. From there it’s processed in software by an image processor and sent back to the image management system. Once processed the digital image can be stored and retrieved, sent to a patient information system or moved to a communications network where it can be viewed at an adjacent monitor or at a reading station many miles away.

The processing, transferring and archiving of the digital X-ray image is a seamless process dependent on software and bandwidth. But like so many advanced technologies the very switch to digital for the purpose of eliminating film has caused the development of a variety of other technologies like PACS. This is an example of technology breeding technology.

Markets & Applications

There are three market segments in which digital X-ray is making a significant impact.

Veterinary. Vets are using CR and DDR technology. They want to eliminate the use of film and the associated storage of hardcopy files. In general, the veterinarian is focused on cutting costs and is usually interested in securing pre-owned digital X-ray equipment. Equipment portability is important.

Dental. Dentists want their patient base to know that they are employing the latest technology for dental care. The prospect of eliminating the expense of film and its associated processing is an extra benefit. Dentists believe that with the instant imaging available with DDR systems they achieve better throughput and increase productivity.

Human Radiography. By far the largest market of the three, the radiologist is interested in CR, DDR and volume CT, with the latter still garnering most of the interest.

CR and DDR may still be the workhorses of general radiography but CT, originally introduced in 1972, has been reborn with the advances in multi-detector and volume CT.

The new CT with volume detectors and slice capabilities of 40, 64, 256 or higher is center stage. Along with new and interesting applications comes a high acquisition cost. These scanners cost well over $1 million and require expertise to use and technology to deal with the reams of images produced with each scan.

Although the advanced volume CT is more complex and can do more than the single slice scanner, the marketplace drivers are similar.

Technically inclined radiologists often drive such decisions so the savvy hospital or imaging center administrator needs to understand the market for any new device as well as how much capability needs to be purchased to attract the available patient base.

Another influential market factor behind new CT multi-slice technology is the promise of new applications. As those using this new imaging technology publish new and innovative applications the demand grows. Some say reimbursement is what grows a technology, but without the applications driving the demand for reimbursement, growth in the installed base would be limited. Although you can make the argument that once a new medical device reaches a critical mass resulting in local competition, new limited applications and techniques are implemented to further justify the cost of acquisition.

The View from the Supply Side

What of the vendors of the multi-slice or volume CT, how have they responded to this market?

Their goals for the CT were well established: isotropic resolution (similar resolution in all three planes), increased imaging speed (rotate the gantry faster), shorten scan time (increase applications and improve throughput) and sub millimeter resolution (improve lesion detection).
In 2003-4 we saw the introduction of the first multi-slice CT’s. First there were 2 then 4 and 8-slice scanners. By doubling numbers of rows, 16-slices was the next expected with 32 close behind. But something happened. Instead of the doubling effect continuing, there was a technology shift and it jumped from 16 to 40 and then 64. The 256-slice CT was forecasted on the day that the 64 began to be marketed.

With the introduction of the larger or volume CT detector certain attributes of the CT scanner had to be changed to meet the objectives set by the manufactures for improved performance.

The result of these improvements is quite remarkable. Whole body scans in fewer than 10-seconds. The gantry rotates every 0.37 seconds. In 2005, we were excited to learn that this new speed allowed for the imaging of the heart in 5-beats. The first reports considered this quite a breakthrough. But, technology was moving faster than we could digest the change. In a few months it was 3-beats and seemingly overnight it was 1.

Entire body scans are being performed with slice thicknesses of 1-1.5 mm. Each study is generating 500-1000 images. Remember technology breeding technology? Now there is a demand for computer assisted detection (CAD) to handle all of the images produced with each study.

Collecting, processing, archiving and transmitting all of the data resulting from a study is no small matter. Storage devices, network capability and bandwidth are required to move and store the patient studies. This is another example of technology breeding technology.

Lastly, everyone assumes if the scanning is faster, then the radiation dose is less than in conventional analog film imaging. Unfortunately, this is not the case. In CR and DDR imaging, the dose to the patient is similar to film based imaging.

One assumes that volume CT almost demands the delivery of a lower dose. It’s faster so the dose must be lower. It isn’t. When used for CT angiography, the, the dose rate from a single X-ray source CT is substantially higher than that received by the patient during conventional angiography.

The vendors are working on making alterations to the volume CT scanners to lower the dose. These changes will most likely cause an early obsolescence of the equipment already installed.

Digital X-ray’s Market Applications

The applications for digital X-ray can be split into those for volume CT and those in standard radiography.

For CT scanners with 64-slices or higher, with a single or dual source X-ray source, the preeminent application is CT angiography (CT-A). The ability to freeze the motion of the heart and image it in 5 beats or less is phenomenal.

Radiologists and cardiologists see this new technology as a real breakthrough. By studying patients with known or suspected heart disease, examining their anatomy and simultaneously performing a calcium scan, the cardiologist gets a full picture of the condition of a particular patient’s heart.

Some even predict this application may replace invasive cardiac catheterization. It’s more likely, however, that this technology

continued on page 47
The use of film X-rays is being phased out and replaced by digital alternatives including high-speed DR and more affordable CR systems. Market forces such as the high cost of film, which contains raw materials including silver, and concerns over the environmental impact of chemical processing, are among many factors pushing health care providers over the digital divide.

The shift toward electronic medical records and the growing use of PACS systems are also intensifying the urgency to convert imaging studies to digital formats and systems. An ever-present need to cut costs, particularly with today’s reduced reimbursements, makes CR and DR attractive for their increased patient throughput and more efficient workflow, which digital systems support by removing many steps for technologists performing the study, storing, and transferring images where needed. Of course, radiologists and other physicians can easily obtain remote access to digital files. As though these issues weren’t enough to convince providers to switch from analog film to digital CR or DR, some newer technologies also promise to reduce patient exposure to radiation.

There are two ways to “go digital.” Computed Radiography (CR) is a simple — and many believe interim step—to replace film cassettes with reusable plates that translate the X-ray image into a digital format. DOTmed industry experts estimate that the current market for new CR technologies supports sales of about 5,000 systems per year. In the more sophisticated Digital Radiography (DR) systems, the image is stored directly and automatically into a digital file. State-of-the-art DR technology provides the fastest performance and workflow with the highest quality imaging available while minimizing radiation exposure during the exam. About 1,000 new DR systems are sold each year.
As far as the installed based, the vast majority of hospitals have some form of CR in place. Yet many major hospitals are still film-dependent. Regarding DR, market watcher IMV estimates about one-third of U.S. hospitals have at least one DR system in their radiology department.

“We see tremendous growth in DR and have a long way to go for full penetration into the market,” says David Widmann, Global General Manager of Rad/R&F for GE Healthcare. “The expansion of our digital line is beginning to reach out into different markets and we have a commitment to make those technologies available even in the rural healthcare markets.”

“We expect the market [for DR] to grow. It’s not going to ‘hockey-stick’ grow but it’s definitely going to continue growing gradually and smoothly across the marketplace,” predicts Kevin Oakley, National Marketing Manager for DR, Fujifilm Medical Systems USA. (As of this writing, the company is anticipating FDA approval for its Unity SpeedSuite, a single-detector, value-oriented DR system.)

Many Players in a Crowded Field

More than 40 manufacturers offer over 80 products for digital X-ray acquisition systems, Frost & Sullivan reports. These include the big OEMs, which are DR dynamos such as market leader GE, Philips, Canon and Carestream Health (formerly Kodak), and Toshiba, along with Fujifilm and Agfa. (Fujifilm will discontinue U.S. production of medical film April 1, 2008 but will continue to supply film to customers.)

Some flagships leading-edge OEM offerings include GE’s Definium 8000, which among other features provides automatic advanced image processing so technologists don’t have to manually paste multiple images together. (GE doesn’t produce CR systems.)

Carestream’s DirectView DR9500, is a single-detector design that does dual duty with a ceiling mounted U-arm to keep the bucky and tube aligned while it moves around the patient. At the same time, the company remains committed to CR having purchased leading manufacturer OREX in 2005.

“There’s no question that we are continuing to invest in our computed radiography portfolio,” says Eileen Heizyk, CareStream’s Worldwide Marketing Manager for CR. “Some of the higher-end parts of the market are more saturated and may be moving more to DR, but there is certainly plenty of growth and opportunity in the smaller facilities value tier.”

Virtual Imaging, Inc., Deerfield Beach, FL is a Canon authorized distributor that specializes in upgrading facilities from film straight to DR. “We can go into any facility and upgrade to DR without dismantling the room, and get equipment to OEM specs,” says Kris Kessler, Creative Marketing Director. “We skip the CR aspect and go directly to DR.” This is possible because of the versatility of the Canon CXDI-50G Digital Radiography System, which is compact yet large enough for chest and abdominal X-rays.

Many smaller manufacturers offer a number of niche products to meet nearly any budget or application.

One example is Alara, Inc., which makes CR systems. Their T-Series is a drum-based, compact tabletop CR. “It’s inexpensive, rugged, and easy to use. We sell a lot in veterinary and in human health care applications, particularly in the podiatry and chiropractic markets,” says Kuldip Ahluwalia, V.P., Sales and Marketing, Alara, Inc., Fremont, CA. “The beautiful thing about CR over DR is it’s a stand-alone device. It’s easily upgraded from your standard X-ray scanner. There is no workflow difference and it’s an inexpensive way to move into the digital world.”

Another niche company is Torrance, CA-based iCRco, Inc., which offers a CR technology that also promises to tamp down the cost of ownership of digital X-ray while overcoming some inherent CR design challenges. The company’s True Flat Scan Path technology ensures that nothing ever comes in contact with the active area of the costly phosphor plates, producing 500,000 or more artifact-free images for the end-user with no degradation in image quality, according to the company. “True Flat Scan Path is the first thing an end-user should look at when transitioning to the digital environment,” suggests President and CEO Stephen Neushul. (The company also has a DR offering.)

Independent service providers sell and service systems made by the smaller OEMs, an arrangement that can save significant costs.

Sal Aidone, Vice President, Deccaid Services, Deer Park, NY, sells CR systems made by iCRco, Radlink, and Konica Minolta, as well as OREX. “Independent companies like us and the smaller suppliers can drive down costs as long as the customers don’t have the mindset that they have to buy from the large OEMs. They need to look for quality instead of just a name,” Aidone says.
The costs for new CR systems depend on the manufacturer and features and range from about $40,000 to $60,000 for a small system for an imaging center, up to $90,000 to $120,000 for large, high-end, multi-slot, hospital-grade CR. DR requires a more significant investment starting in the six figures. Entry-level DR can go for $200,000.

If all this sounds too expensive, consider some hidden costs of film. “Typically there’s sticker shock when people hear about pricing for the new CR systems, but they have not done their homework in terms of factoring the cost for producing one single film, let alone a study of three to four films,” says Michael Lies, President, Medical Advantages, Inc., Pittsburgh, PA. Additional costs include courier service to doctors off-site and the cost of lost films and repeat studies which digital solutions eliminate. “If customers do their homework, they are not in shock when they hear competitive pricing for CR systems.”

As hospitals and imaging centers upgrade to new CR or DR systems, the used CR systems are put to good use.

“What we are finding is hospitals are expanding the use of CR. They seem to be shuffling equipment around. They might put in a DR room but they don’t get rid of their CR, they are moving it to another department or an off-site imaging center,” reports Heizyk. “There is a lot of competition among hospitals to participate in the imaging center market and make it easier for their patients. We are finding they are moving CR to imaging centers offsite or adding another CR unit to an existing department.”

In other cases the used equipment becomes available on the market, providing another cost-saving opportunity. Expect to pay around $20,000 to $30,000 for refurbished single-slot CR systems and $35,000 to $40,000 for refurbished multi-slot CR. Be sure your system includes the computer hardware, software, and cassette reader and viewer and is brought to OEM specifications and supported with a warranty. (Few used DR systems are on the market and supported with warranties.)

**Time to “Go Digital”?**

There’s a growing consensus that it makes economic sense to convert from film to a CR systems in most cases. “Film will soon be a thing of the past with CR the low-cost solution in the market,” predicts Kessler.

Here are some other suggestions from DOTmed users and industry experts: You know it’s time to go digital when…”the costs of film, transportation of files, filing and storage, chemicals, duplication, lost films, plus the hassle of not having the files at the doctors’ fingertips exceed the cost of the new system,” says Mark Kladivo, Broker, pcCentral, Urbandale, IA.

“When you consider the direct and indirect costs of film, going filmless just makes sense,” says Scott Wasson, President and CEO, Radiology Services LLC, Evansville, IN. “Practically all CR systems are more reliable than film processors.”

At the same time, the decision must be driven by your particular needs and budget constraints.

“It only makes economic sense to switch from film to CR or DR when the cost of the system is less than the cost of chemical processing. It depends on each facility, the volume of images and the reimbursement,” advises Donnie Torok, Business Manager, Beach Medical Imaging, Indian Harbour Beach, FL.

**CR vs. DR**

When should you invest in CR versus DR? Industry insiders predict that CR will continue to dominate the market for the next three to seven years but that DR will gain ground thereafter. Most hospital radiology departments have some combination of CR and DR, along with their older film systems. Generally, CR systems are more affordable for imaging centers and private practitioners, and even small and community hospitals, while larger institutions or groups consider investing in DR.

“When you have 100 films per day then DR will make sense. If less than 100 films per day then CR is a good choice,” suggests Samuel Sandlin, owner of A.M. X-Ray Service, Miami, FL.

“I don’t think CR pricing can go much lower so it’s a step between film and DR. But if you don’t have a real need for super speed then you really don’t need a DR. It’s just for hospitals that want the latest and greatest,” says Aidone. “I would rather have
a new CR than one of those older DRs. It would be faster and the technology is more up to date.”

“CR is leading the way into the filmless future. If a facility has a mid- to high-volume throughput and intends to stay in business more than two or three years, then it is irrational not to go with CR. DR, still being very expensive, has yet to secure a major market share,” says Joseph Jenkins, International Imaging Ltd., Henderson, NV. He stresses the difference in priorities for large and small healthcare providers. “When you’re spending other people’s money, you can buy DR, but when you’re spending your own money you have to be more practical.”

“The larger institutions that are well funded tend to buy the leading-edge technology whether or not they really need it,” says Cefalo. “For-profit hospitals are not as well funded and they really have to scrutinize that decision for CR and DR….It’s still quite difficult to beat the value of CR.”

Still, DR is the cutting-edge X-Ray technology, coveted by clinicians of many specialties. In fact, access to in-office digital radiography (and MRI) capabilities are among U.S. orthopedic specialists’ greatest unmet needs, according to IMV. “Digital radiography is a key priority for many orthopedic practices in their efforts to have remote access to imaging results, to better manage large volumes of imaging data, and ultimately to provide more accurate patient diagnoses,” concludes Mary C. Patton, Director, Market Research, IMV.

Kessler observes, “With CR the user must replace their CR cassettes after so many uses which incurs additional costs. With DR you do not have to worry about replacing equipment as frequently. Digital detectors are more durable and reliable, which extends the life cycle of any existing equipment without any residual costs.”

However, there is one application where CR may reign supreme for some time to come. “I don’t think CR will go away, it has good applications in portable X-ray,” Sandlin says. “I’ve seen some sites go portable with DR and it doesn’t work out as well. It needs to be wireless or everybody runs over the cable. It’s easier to use a cassette when you’re on the hospital floor or ER. So I think CR will be around a while.”

Carestream just launched its new KODAK Point-of-Care CR-ITX 560 System for ICU and portable applications. “We’ve made it easier for the techs because they can do the imaging bedside. You can tell at that point if you need to take another shot. Or, if it’s a critical care situation, get a quick X-ray view without carrying away cassettes to put through a reader. The reader is right there bedside,” Heizyk says.

Fujifilm is another OEM well aware of the portable application for CR. The company partnered with Hitachi to create the FCR Go digital portable machine. This device also allows the technologist to see immediately whether the X-ray position was correct while on the unit floor with the patient. Images go
Straight to PACS and the design eliminates the need for re-training for technologists since its interfaces are consistent with prior technologies’. FCR Go is expected to earn FDA approval and become available in the U.S. in mid-2008.

Some of the newest innovations combine the best of both worlds — CR’s ability to position the detector freely and DR’s instant image access and high resolution. Agfa’s DX-S cassette-based X-ray system can be used for any number of exams yet offers DR-like workflow — perfect for a trauma setting.

Also on the horizon is a wireless digital detector from Philips that integrates benefits of both CR and DR. The unit will sync with the hospital network and integrate with PACS at the push of a button.

Another trend is toward automation of multiple spine images for faster studies with less wear and tear on the technologist. For instance, Toshiba’s dual detector RADREX receives instructions for body part mapping directly from RIS information and imports work lists for the particular patient and study. The technologist doesn’t have to find settings for, say, a chest or abdominal X-ray.

These and other innovations mean that those who have delayed the decision to go digital may leapfrog ahead of other providers. And by waiting, prices have come down that put not just CR but possibly DR within reach.

“From a DR perspective, one of the things that’s happened in the last five to ten years is that a lot of people who were going to buy new X-ray equipment held off those decisions so that they could buy other kinds of high-end technologies such as MR and multi-detector CT,” Oakley says. “What’s happening now is they really can’t wait much longer.”

Watch for the PACS industry sector report in the March issue of DOTmed Business News.

DOTmed Registered DR and CR Sales and Service Companies

For convenient links to these companies’ DOTmed Services Directory listings, go to www.dotmed.com and enter [DM 5372]

Names in boldface are Premium Listings.

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Unlike sellers of medical equipment or medical service engineers that face the same problems every day, riggers and craters moving medical equipment in and out of hospitals and other facilities are faced with an endlessly shifting landscape.

New and challenging problems, it seems, are de riguer with each project. But working in concert with the de-installer, riggers and craters create innovative approaches to the most difficult relocation assignments.

The rigging and crating industry has a market value worth millions of dollars annually. Though the business can be lucrative at times, insurance plays an expensive and key role. Most companies carry a $2 to 6 million dollar umbrella policy, due to the job’s unique risks and effect on balance sheets. Riggers must carry general liability, equipment coverage, business auto, trucker and workers’ compensation insurance, among others.

JC Duggan, Brooklyn, NY carries $6 million in liability insurance. John Duggan, vice president of the company says the hardest part of handling equipment in a city like New York is the environment that he and his staff contend with.

“Many of our major hoisting jobs require closing streets,” says Duggan. “Last summer, we had to close the eastbound direction of 34th Street to hoist a 3T MRI magnet over a 15-story building to rig it in through a rear wall opening.” That’s no small undertaking given the Big Apple’s landscape.

Whether moving an MRI, CT scanner, nuclear camera, gamma knife, linear accelerator or an entire laboratory, for every new job a rigger and crater faces, plans that were originally laid out can change without warning. It’s safe to say it takes years of rigging to learn the proper techniques, how to calculate geometry and forces and how to use the proper equipment for each piece of medical equipment moved.

Ronald Cortamilia, Director of Logistics at Med Trans Logistics, Port San Lucie, FL, says his company has successfully transported and rigged medical equipment for some of the largest OEMs. “We specialize in medical imaging and pharmaceutical equipment,” says Cortamilia. He said that Med Trans has rigged MRIs that weigh 8000 to 70,000 pounds.

Many riggers, he says, tend to underestimate medical equipment rigging. “Moving a printing press as opposed to an MRI magnet are two entirely different rigs,” says Cortamilia. “The site conditions for rigging in a hospital versus an open warehouse pose challenges that can’t be taken lightly.”

What You See is What you Get

An experienced rigger will look at a job and visualize the process. Does the machine need to be dismantled? What route in or out of the building looks to be the most efficient? What equipment is going to be needed? What must be done to protect the walls and floors from damage? Is the ceiling too low in certain areas to get the machine in or out? Does the floor have to be braced from below?

Fran Ambrose, president of F. Ambrose Rigging, Montgomeryville, PA, said that the logistics of rigging never end. “From making sure that all the proper permits are in hand, to having the right equipment (often times fabricating it) to ensuring the job is done the right way, it’s all in a day’s work. If an MRI gets damaged, the aftermath has a snowballing effect that not only adversely affects the rigging company, but also...
the hospital or medical facility involved, and the patients awaiting what could be a lifesaving procedure,” he says.

Ambrose is a master of his trade. His company has been in business for 30 plus years, has a staff of 25, a number of which are family. Ambrose has organized the handling of 3000+ MRIs. “Every situation is different,” he says. “Some rigging and crating jobs need special equipment and accessories, and we have our own welding and woodworking shop to fabricate the pieces we need. We can rig, warehouse and transport just about anything.” Ambrose owns a fleet of state-of-the-art equipment including forklifts with a capacity to hold up to 80,000 pounds, air ride trucks and trailers, high capacity lift gates, crane service and aerial platforms for high rise removals.

Like Ambrose, NOR-CAL Rigging & Installations, San Leandro, CA, is an MRI specialist. Company president, Steve Owen says his company business is about 90 percent MRI. “We move about two to three a week,” he says. Like other rigging companies, NOR-CAL fees run about $5,000 for a fairly simple move, while more challenging rigging jobs can run as high as $200,000. “We are about to rig a job in Indiana that should run around $100,000 because we need to use a 350 ton crane,” Owen says. One particularly nettlesome job that stands out in Owen’s mind is moving an MRI out of an antique building where garage floors had to be demolished and a ramp had to be constructed to get the machine out. “We were dealing with four or five other unions to make sure the project was carried out to the finish without a problem.” Although NOR-CAL covers a $3 million dollar insurance policy, with a $2 million dollar umbrella, Owen is proud to say in the 23 years he’s been in business, “there has never been a problem.”

Professional riggers tend to have a wide variety of tools to get the job done, including cranes and forklifts. Many utilize a variety of industry-specific tools like hydraulic jacks, hydraulic comealongs, hydraulic pushers, chains and all kinds of ‘nuts and bolts’. They have to have both U.S. and metric tools, since many of the machines sold in the U.S. are metric. Designing equipment and accessories to fit the need is also a common practice among many reputable rigging companies.

Diamond Rigging, Batavia, IL, technicians, for example, are very much into design. They built the Hitachi Alta ire cold heart cart for long runs or tight doorways, aluminum gantries for MRI installations and stainless steel rigging and jacking equipment for Mires. One of the most challenging jobs Max Mayer, company president, has faced was installing an Aries Elite over a basement. “My crew and I worked under a scaffolding structure, jacked up the 34,500 pound unit 24 inches and rolled the magnet onto a steel supported structure independent of the building – all during ‘Taste of Chicago’ traffic,” said Mayer. “We started the job at midnight and finished at 6:00 am.”

For smaller, lighter and less complicated medical equipment moves, it is not uncommon for reinstallation companies to handle their own rigging, but for bigger jobs there is no substitute for experience.

Richard Babyak, president, Transit Solutions, North Braddock, PA, says common mistakes include, “not adhering to the facilities policies and procedures, not making arrangements with shipping/receiving departments and not making sure the equipment is source free and decontaminated. I feel that mistakes are made by not having the experience or the ability to provide the services, being unfamiliar with the equipment and taking shortcuts,” he says.
Meanwhile, Bob Holt, vp-gm, Quickway Rigging & Transfer, Minneapolis, MN, says his company works in partnership with others to make sure the whole job, runs seamlessly. “Quickway is involved in the transportation, unloading, uncrating and placement of MRIs, CTs and many other medical systems, as well as the relocation of those systems,” says Holt. “The numbers vary, but annually we move approximately 25 to 30 medical systems, with an average cost of $5000 to $30,000. The more difficult the job is, quite obviously, the more expensive.”

Bill White, operations manager, Brandon Transfer & Storage, West Palm Beach, FL, says moving an MRI runs anywhere from $5,000 to over $8,000. “Some weigh 34,000 or more pounds, so the type of crane required usually determines the fee. For complicated jobs when a crane has to reach 60 to 70 feet, and a tractor trailer truck has to have the capacity to counter-weight – the job can run over $18,000,” he said. Gamma knives are generally thought to be the most expensive medical machines to move.

Michael Ahng, operations manager, Reed Machinery & Transportation, Aurora, IL, a full service rigging, moving and specialized transportation company, suggests the biggest mistake a rigger makes is not using the proper rigging points on a piece of equipment per the manufacturer's directions.

Ahng described his most versatile piece of equipment as the 30/0 Versa-Lift, which has the ability to extend its counter weight and lift 30 tons. It has a compact design allowing it to fit into tight quarters. He says MRIs are difficult to handle because each manufacturer has different rigging specifications for each model and many require metric tools and shackles for lifting. “In addition, the imaging rooms can have many obstacles that must be overcome for installations and de-installations,” says Ahng.

**Delicate Medical Equipment**

Many see MRIs as being able to withstand force, but realistically, the machine is extremely delicate and proper care must be taken when rigging and crating. According to Aaron Buckley, Strategic Analyst for Chick Packaging Group, Inc., Chicago, IL, “the choice of equipment used to rig an MRI should be well thought out, because an unbalanced center of gravity could create havoc.” Chick uses a tri-lifter, which helps remove the MRI from the delivery truck and a 35,000-pound forklift that enables workers to place the machine on MRI skates, which are essential to navigate the machine around corners. Chick Packaging Group has twelve locations throughout the US.

MEI, LCC, Albany, OR, has combined rigging and crating into one function according to Bill McGinty, operations manager. “By combining the two functions, MEI has more control and can coordinate all the activities involved in a project and pass along efficiencies and provide quality assurance to their customers.” MEI president and CEO, Dan Cappello said that pricing a project is dependent upon the model of a machine and the peculiarities of the move path (length, turns, elevation, etc.). “A simple move could be priced as low as $2000, with more complex moves running as high as $50,000 or more,” he said.

For the most part, rigging outside of the United States (except in Western Europe) is handled by trucking companies. Sometimes, riggers do their own crating, while others work in concert with professional craters and trucking companies.

For example, O.B. Hill Trucking & Rigging, Natick, MA is a multi-million dollar business offering rigging, millwrighting services, crane and boomtruck services, flatbed, lowbed, over-dimensional and specialized trailer service, as well as crating, warehouse and storage facilities to much of the Northeast. The company’s Randy Curtis said OB has moved more than 165 MRI machines in the last 18 months, including medical installations for companies like GE Medical Systems, Philips, Siemens, Toshiba, Varian and others.

Like rigging, crating demands experienced hands. For example, crating for an air shipment is different from crating for ocean shipments. When you are shipping by air, you don’t want to over crate, because charges are incurred per pound. Depending on what is being shipped, air shipment tends to handle fragile machines with more care than shipping by ocean, which requires heavier crating.

Phil Jacobus, president of DOTmed, says, “When DOTmed auctions equipment, it sometimes handles shipping. Anytime DOTmed ships internationally, it always recommends to the ‘successful bidder’ that they ship an entire container – even if the equipment they are shipping doesn’t fill the container. It is much more likely that your machine will arrive safely and without damage if it is completely contained.”
Many times, ships carrying delicate medical machines sail from a cold climate to a warm climate or warm climate to a cold climate. It is not uncommon for moisture to build up inside the top of the container that holds the equipment. Craters use desiccant to absorb the moisture, and some will install the equipment in a vacuum bag, sucking out all the air, protecting the equipment from moisture buildup. If moisture builds, some equipment is prone to rust during short shipments so when the system is turned on, the circuit board can short out.

Bob Cralle, General Manager, Chick Packaging California, Inc. feels that vacuum bagging is a necessity when shipping high-value and fragile medical equipment. “The combination of vacuum bagging in addition to desiccant protects the delicate electronics contained in many of these machines,” states Cralle.

Larry Knight, Director of Operations at Sunrise Medical Technology, Inc. (SMTI) says the company handles the de-installation, rigging and shipping of MRIs under power using trucks. “When we transport MRIs, we do it in a way that allows the cold head to continue to run and less helium is lost,” says Knight. “We do this for land and sea transport.” SMTI does not use vacuum bags when crating. They use expansion bags because Knight believes they are a much more flexible fixture for crating moderate to heavy small equipment.

Sometimes craters must use special wood, depending on the country that they are shipping to. Many countries require wood that has been disinfected, so that it is not prone to insect infestation while traveling internationally.

Freight Dynamics, Minneapolis, MN, is a $2 million a year, third party logistics company that provides national packaging and crating for the medical industry. Operation’s Specialist Mitch Findley said that when picking up medical equipment that is not packaged for transport, moving technicians use pads and straps and lock the equipment into place in a truck. “We bring the equipment back to the facility where it is offloaded and packaged to our specific packaging instructions,” says Findley. “Freight Dynamics is ISPM (International Standards for Phytosanitary Measures) 15 Certified and authorized to build and export wood crates in accordance with the International Plant Protection Convention (IPPC).”

International Packing and Crating (IPC) maintains a fully insured manufacturing and warehouse facility in Itasca, IL, specializing in wooden packaging for both domestic and international shippers. Company Senior Vice President, Art Gutierrez says crew chiefs go directly to a site to work with riggers to measure and build the necessary crating needed for each machine. “If a machine is traveling internationally, we will use vapor barrier corrosion protection,” he says. “This vapor barrier is placed around the machine to protect it. Once it’s on, we vacuum all the air out and add desiccant before we seal it to make sure no moisture or corrosion occurs.”

continued on page 48
Ever take wire cutters to a 440-volt line that was reported to be in power lock down mode by a hospital’s maintenance staff?

But it wasn’t.

The results of that miscue can be, as you would imagine, shocking, if not potentially fatal.

But such are the occasional compromising situations faced by a crew of de-installers who might be removing an MRI, Linear Accelerator, RF, CT or a bi-plane Cath Lab.

De-installing expensive, fragile and sometimes massively bulky medical equipment and then rigging, crating, transporting, re-installing and calibrating it in another location can be a very tough job, almost a heroically unsung one in the medical equipment business. And yet, it’s still one clients take for granted.

Here’s a quick assessment of the basics involved in a de-install, from Michael Profeta, president, Magnetic Resonance Technologies, Willoughby, OH, who views all 50 states as the region his company serves.

“It has many logistical issues. The equipment is large, requiring very special rigging and handling. There are always construction requirements to and coordination issues with general contractors, mechanical contractors for chillers and HVAC units, electricians, riggers, transportation, site personnel. The list is endless.” So the de-install involves all of the above plus many variations specific to individual modalities. Bottom line: nothing’s easy in the de-install trade.

Quite simply, the business can be dirty, dusty, and frustrating. Often a crew will find itself navigating troughs of bundled wires and cables in the dank basement of a 100-year-old hospital at 3 am on a Saturday morning.

Other times, the pathways, door clearances and corridor routes that once accommodated the installation of a Gamma Knife or an R&F combo might now pose a huge impediment to the de-installation of the same machine.

At times, the situation gets dicey, says James Young, vp, Acceletronics, Inc., Exton, PA, who recalls a recent de-install of a cardiac cath lab that happened to be in an adjoining room to another cardiac cath lab. Access to the cath lab being removed was, of course, through the first room. Acceletronics and the hospital were on such a tight schedule “that we were taking things out while people were on the table in the first room.”

Harried hospital administrators are always anxious to keep noise and dust pollu-
tion down and not upset the patients. But sometimes, in order to keep schedules, hold down costs and meet shipping deadlines, extraordinary steps are called for and it’s up to the savvy de-installer to mastermind the effort.

**Who’s Calling the Shots?**

Sometimes one company, especially those that operate in a multi-state region and usually also sell and service the same medical equipment they’re de-installing, will handle most, if not all, facets of the job from physically extracting the equipment from one location and delivering it safely to another. Whether it’s to a facility across town, a ship loading exports or a warehouse where it will be refurbished or sold for parts, the complexity of the job rises exponentially.

Other times, however, several different specialist firms play key roles as subcontractors in the operation. In such cases, a mix of different crews, bosses and clients, demand intense and direct communication between all parties. And even if several specialists are required, the onus should be on the client to establish one chain of command, giving overall management supervision to one person. Otherwise, as happened to the de-installer who shall remain nameless, a facility maintenance worker might forget to cut off the juice.

A perfect example of how specialized de-installs have become: only a small number of firms are licensed to remove the cobalt from a linear accelerator (often called putting it in the “pig”). Only then can the de-installer begin the job.

“We prefer to be in charge of everything from the very beginning,” says Michael Webster of Legacy Medical Imaging, Fort Worth, TX. “Things go smoother that way.”

That’s a point heartily endorsed by Steven Ford, president, Professional Imaging Services, San Diego, CA, who says, “it’s a mistake to have multiple people responsible for one job. Instead a single company should be hired.” “That one point company,” he says, “then hires any other subcontractors that are needed. That way, the lines of communication and responsibility are clear.”

As Glenn Hammerquist of Berrien X-Ray, Berrien Springs, MI, says about what’s necessary to ensure that a de-installation go smoothly, “communication, communication, communication.”

Many de-instellers interviewed for this piece suggest that clients, be they hospitals, imaging centers or small doctor’s offices, will, in what they think is an effort to control costs, try to bring two or three different companies together for one de-install. They think that by parceling out the job, they’ll pay less. Unfortunately, while that perhaps makes intellectual sense, the reality is usually different.

**Insurance Always an Issue**

From an insurance perspective, the cost of being a de-installer can be substantial too.

Many de-instellers carry insurance well in excess of $5 million, with the odds of never having to make any panicky calls to the insurance company increasing in direct proportion to the amount of scrupulously detailed planning that goes into
each operation. Insurance coverage also varies sometimes according to region, size of the job and scope of the de-installer’s responsibilities. But it’s not uncommon for some policies to reach as high as $10 million.

Darrel Kile, Classic Diagnostic Imaging, Macedonia, OH says whatever the policy’s face value, it should cover, “the workers, tools, trucks and any hospital property.”

Frank Boseman, president, Boseman Medical Imaging, Greenwood, SC, recommends a variety of policies including, “commercial general liability, products and completed operations, and general cargo insurance.”

Carrying suitable insurance is also a necessity given the fact that theft of parts occasionally occurs. Nowadays, most of a system’s loose components will be shrink-wraped, the packages signed by the de-installer who then takes photographs. Not a panacea for the sticky fingered but particularly helpful in dealing with clients and insurance companies.

It’s All About Small Details

It’s somewhat ironic how large a role small details play in de-installation. In a business where the simplest, one day de-install of a CT can cost about $1,000 up to the thousands and thousands required to pay for a cross country odyssey, the availability of OEM dollies, for example, are often the difference between keeping a de-install on track or shutting down several crews for hours.

“As soon as an OEM stops production on a certain piece of equipment it stops making the dollies that fit it,” says Ed Gibbs, North Coast Medical Equipment, Berea, OH. “So in the aftermarket, we make our own or do whatever it takes.”

And that’s just one of the hundreds of items that must be factored into any de-installation, remembering, of course, that each and every move is different from the one that preceded it. Nonetheless, tricks of the trade accumulate over time, prompting Gibbs, who serves a 13 state area, to suggest that de-installers with a 25 year track record like his are probably a customer’s best bet, especially outfits that ramrod the entire process.

The de-install arena is, in fact, rife with horror stories of operations gone badly. One company, JDI Solutions, Brevard, NC, even hosts what it calls a “Wall of Shame” on its website, displaying pictures of a number of de-installs gone awry.

Dust is another small albeit villainous detail. Of the 50 plus respondents to the DOTmed Business News questionnaire about de-installation, dust was a virtual unanimous choice, as always being an important issue that the de-installer has to contend with.

“The surrounding environment can sometimes be a disadvantage during installs/de-installs,” says Al Brown, Precision Medical, Kankakee, IL.

“But we find that shrink-wrapping, bubble-wrapping, padding, boxing equipment and components on pallets is always a safe bet.”

“Rooms should be isolated from the rest of the facility by placing plastic drapes at doorways and adding blanket drapes to buffer noise,” says Larry Knight, Sunrise Medical Technology, Waxahachie, TX. Wearing protective garb, bunny slippers and cleaning up with industrial strength vacuums are also all part of the regular routine for most de-installers. Also pop-
ular, dust and grime gathering rubber mats are placed outside the entryway of the room where the de-install is happening so as workers go in and out, much of the excess detritus is captured.

As the new, more sophisticated technology replaces the old and hospitals and clinics continue to upgrade, it seems as if specialization in either particular categories of equipment or brands from one OEM or another is assuming an increasingly important role.

KNJ Tech Service, Monticello, IN, for example, is in line to handle Nationwide Imaging’s business in a 15 state area, says company principal James Gent. And Siemens, according to industry scuttlebutt, was so unhappy with the work of a couple of less than professional de-installer that it’s authorized five de-installer across the US to handle its work.

The Outlook
Looking forward, most de-installer interviewed by DMBN are relatively optimistic about their respective futures, though some problems loom.

One company executive said that increased competition from Korean, Chinese and Indian manufacturers has cut into the major OEM’s market share to the point that aggressive selling is becoming more prevalent.

Says one exec, “the major OEM’s are making new equipment more affordable by lowering prices and offering a variety of attractive financing deals. “In some cases, interest is being waived for up to a year and payments can be deferred.”

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**Names in boldface are Premium Listings.**
Louis Pasteur popularized the sterilization of medical equipment in the 1860s.

As a result of sterilizing infections and using antiseptic techniques in operating rooms, patient survival rates soared. Pasteur was an ardent advocate, preaching adherence to the sterile surgical practices also followed by Lister in England.

But if he were alive today, Pasteur would most likely revel in the magnitude of how far his methods have evolved into the advanced capabilities of modern-day sterilization and the state-of-the-art equipment that goes along with it.

On a global basis, the medical sterilization systems and equipment market is pushing north of $2 billion. The US is the largest market for medical sterilization systems at about half of that, with Europe and Japan trailing. One form, steam sterilization is a $250 million business while another, Ethylene Oxide, is nearer to $300 million.

So why is there increased government and private pressure on the healthcare community to do something about the widespread problem of acquired infections (HAIs), which has affected 2.3 million hospital and ambulatory patients, causing as many as 99,000 deaths yearly.

If everything’s so sterile, why is the FDA, citing strict standards for product quality control and assurance, legislating medical device producers to upgrade and expand sterilization and disinfection systems. The Joint Commission of Medical Standards (JCAHO) requires hospitals to document performance testing of all sterilizers found in surgery, central service, and other departments. Usually, the departments that have sterilizers are responsible for verifying proper sterilization performance and for keeping a record of the testing. Each department’s data must be aggregated and reported.

**Common Methods of Sterilization**

Common methods of sterilization include physical and chemical methods. Physical utilizes dry heat, steam, radiation and plasmas. Radiation relies on gamma radiation, electron beam, X-ray, ultraviolet, microwave and white (broad spectrum) light. Chemical methods include ethylene oxide, propylene oxide, chlorine dioxide, ozone gases and a variety of chemicals in liquid and vapor form, such as glutaraldehyde, hydrogen peroxide and peracetic acid.

According to Raef Warzynski, President of Eagle Technical Services, Eagle, WI, sterilizing equipment must pass a Bowie Dick test to verify that it is able to maintain a vacuum without any air leaks. “This test is mandatory in the health care market and performed daily.” He says that even though a sterilizer passes a Bowie Dick test, it could still have an internal steam leak causing poor vacuum levels, one of man reasons why qualified technicians must inspect sterilizers.

Eagle sells both new and refurbished sterilizers. Warzynski says reputable sterilizer remanufactures clean and test the unit, paint the exterior and frame and install new plumbing, with the cost dependent on what is done in the rebuilding process. “Some rebuilders install new electronics, while others reinstall the old electronics,” says Warzynski. “This is where sale price differs. New controllers typically cost about $8,000 to $10,000.” Warzynski believes that the advantages of buying a new sterilizer are a 15-year vessel warranty and knowing that you are not buying a plugged or defective vessel. “I’ve had a lot of success in marketing and selling Primus Sterilizers,” says Warzynki.

**Sterilization Equipment Market**

STERIS Corporation, with revenues of $1.2 billion in fiscal 2007, offers a mix of capital products including sterilizers.
A provider of infection prevention and surgical products and services, STERIS’ primary focus is on the critical markets of healthcare, pharmaceutical production and research.

Stephen Loes, Vice-president of Marketing, Sterile Processing, believes that STERIS is a leader in the industry because, he says, “We offer the highest levels of value and quality in our products and services and provide the broadest array of solutions based on what our customers actually need. This includes STERIS project design professionals who work with healthcare organizations to develop practical and scalable sterile processing and surgical suite layouts and plan for optimal efficiency and future growth; instrument tracking capabilities, a full-line of sterilization and high level disinfection equipment including steam, ethylene oxide, low-temperature liquid and vaporized hydrogen peroxide systems.”

As for the company’s main products, Rick Gurley, Director of Low-Temperature Reprocessing and Applied Infection Control for Sterile Processing says, “In addition to our well known Amsco® and Century® steam sterilizers, STERIS has recently launched some new sterile processing and high-level disinfection systems such as the Reliance™ Endoscope Processing System; the Amsco® V-PRO™ 1 Low Temperature Sterilization System and the VaproSure™ Sterilizer, which uses an EPA registered sterilant to sterilize all the surfaces in ORs, ERs and other enclosed spaces and is. The company says, the only sterilization process designated and certified by the Department of Homeland Security as an anti-terrorism technology.”

Another key player in the sterilization equipment market is PRIMUS Sterilizer Company, LCC. Since 1990, PRIMUS has been designing a simple yet versatile and easily serviced line of steam sterilizers. With corporate headquarters located in Omaha, NE, and production facilities in Omaha, as well as Great Bend, KA, PRIMUS sterilizers are designed and manufactured according to Quality Management System, which is compliant with ISO 9001:2000 and 13485:2003, FDA Good Manufacturing Devices: General Regulation (21 CFR Part 820) and UL listed through dealers, representative and authorized service agents for both domestic and international markets.

According to Connie L. Mansfield, Manager of Marketing Services, “PRIMUS is the only major US manufacturer with their own ASME certified pressure-vessel factory. It is our only business.” The company takes pride in the unique Pri-Mirror® finish, which produces the most sanitary of all vessels.” The PRIMUS clinical line includes 10 standard 316L stainless steel pressure vessels, from two to 72 cubic feet and custom sterilizers of virtually any size.

David L. Counley, Vice-President of Sales and Marketing says, “Quality and integrity is the core belief of our company since inception 20 years ago. The quality of our product is paramount ensuring we deliver the most cost efficient sterilizer with simplistic functionality and ease of operation, thus reducing ‘Total Cost of Ownership’ (TCO). Our ability to provide a complete ‘turn key application’ from design to post service and support enables us to consistently meet the unique challenges of steam sterilization.” And board member, Peter Huff says PRIMUS is one of the rare healthcare companies that has grown at double-digit rates over multiple decades in good markets as well as bad.

Sterilizing equipment must pass a Bowie Dick test to verify that it is able to maintain a vacuum without any air leaks.

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L & R Services is a medical equipment and repair service company that sells refurbished tabletop sterilizers. President, Randy Lowers says the amount of refurbishing a sterilizer needs depends on how the previous owner took care of the unit. “Some units can be rebuilt by replacing common consumable parts like gaskets and filters, while others need rebuilding or replacing solenoids,” says Lowers, adding “I’ve rebuilt tabletop sterilizers for $100 up to $2000.” As far as finding service and parts for sterilization units, Lowers says it’s fairly easy, especially if you have been in the field for a while and have number of resources to turn to. “As far as parts go,” he says, “it is all up to the manufacturer – most sterilizers in the field today are still honored by the manufacturer, though you come across a unit that is now obsolete and this can cause some problems.”

Chris Miller, President of Zoetek Medical sells both new and refurbished sterilizers. “Our market seems to demand equal amounts of both new and refurbished sterilizers,” he says. Zoetek Medical services and installs sterilizers almost every day. Miller said that his technicians do a complete electrical safety inspection, as well as replace common failure parts and do detailed cleaning and calibration of the temperature and pressure. Finally, a spore test is performed and brought back to the Zoetek lab for testing.

Sales support person, Terra Stumbo of Zoetek said that a refurbished unit, depending on its condition, can range in price from $5,800 (low end) to $12,000 (high end). A new unit runs from $14,000 to $18,000. “We estimate the cost of a refurbished unit to be about 50 percent the cost of a new unit,” says Stumbo. She went on to say when Zoetek refurbishes a sterilizer, technicians replace the external tubing and steam traps, then rebuild the safety valve. “They replace common parts like filters and door gaskets, and verify all connections. If needed, they replace the heater and calibrate the temperature controllers,” states Stumbo. “When refurbishing a steam generator, our technicians clean the inner chamber and replace the heater if necessary.”

Sterilizer Services, Inc. sells new Midmark, SciCan and Tuttnauer sterilization products. Steve Beno, President of Sterilizer Services said that the company sells used autoclaves to other refurbishing companies and end users. “Our main line is service, which accounts for 95 percent of the business,” says Beno, “Sales is the other five percent.” Beno said that from a budgetary standpoint, the lifespan of a sterilizer is about 15 years. “There are some units that we service that are 30 years old,” he says. “They run and do their job, but parts that were common 15 years ago are no longer available.”

Beno gets his parts from OEMs (STERIS or Getinge) or other suppliers like RPI or PartsSource. Beno feels that STERIS and Getinge control the sterilizer market, but “with STERIS moving manufacturing out the US, PRIMUS might move up as a main US producer of autoclaves.” He said that STERIS sells remanufactured units and he promotes Medequip and Continental because, “our company gets the warranty work for selling their units.”

Bob Reindel is a Biomedical Technician II at Sodexho, Inc., which is an integrated food and facilities management service company in the US, Canada and Mexico with $7.3 billion annual revenue and 125,000 employees. Reindel said that their healthcare environmental services division helps ensure that a facility is consistently clean and comfortable for patients. Staate Hayward is an imaging specialist under the Sodexho,Inc. umbrella. He feels that the lifespan of a sterilizer can be 20 years plus. He said that Sodexho strictly services sterilizers and has seen units that are old but still able to perform flash sterilization modes. Sodexho services hospitals and clinics sterilization equipment by
cleaning, checking and replacing what is necessary and by testing all safety valves and operational features. “The newer models have many self-checks built-in via feedback sensors – pressure, temperature, water flow, etc,” says Hayward.

North American Medical is a used medical equipment liquidation company. President Mitchell Guier says, “we buy and sell a wide variety of medical equipment. We sell anything from CT scanners and MRI’s to autoclaves and stretchers.” He sells used sterilizers and does not refurbish any of his equipment. Guier says that before he sells a sterilizer, it has been checked by a hospital’s biomedical department to make sure it meets guidelines for certification. His units run anywhere from $4,000 to $8,000 depending on the age and model.

Biomedical Technical Specialties offers per diem consulting, JCAHO survey preparation, cost savings initiatives, inventory certification, complete physical inventory, review quality of inventory data and equipment risk assessment, program development, equipment inventory review and assessment, maintenance inspections, per diem contract maintenance and equipment repair and sales. President of the company, Jeovanni Rivas said that Biomedical Technical Specialties sells mostly refurbished sterilizers – about 95 percent refurbished and five percent new. Rivas said that in order to ensure proper operation, sterilizer equipment should have spore test done on a daily basis and chambers should be cleaned at least once a year. He always recommends using distilled water in tabletop sterilizers.

On a slightly different note, but still in the sterilization market, SPSmedical Supply Corp. is the largest sterilizer laboratory in North America and a corporate member of numerous healthcare organizations, including standard setting organizations like AAMI and CSA. “With a dedicated staff and over 50 sterilizers, SPSmedical provides sterilization test results to thousands of customers each year, and we manufacture a comprehensive line of sterilization monitoring, packaging and record keeping products,” says Mariann Pierce, Director of Sales & Marketing. “SPSmedical shares a passion for infection prevention as we assist healthcare facilities and medical device manufacturers meet their sterility assurance needs.”

SPSmedical has a quality system in place and complies with the Federal Food and Drug Administration. “The system we are regulated with is compliant with QRSSs (Quality Systems Regulations) as listed in the United States Code of Federal Regulations. 21 CFR Part 820. Pierce said that the company’s market involves all healthcare industries where instruments and devices are reprocessed, e.g. hospitals, private offices and clinics as well as dentist’s offices. “There are other companies out there that are competitors who offer testing services and those who offer sterility assurance products,” says Pierce. “However, we are the only company that offers both testing services and a full-line of sterility assurance products.”

The Future of Sterilization

The need to improve sterilization methods and machinery has created ongoing research in order to produce better and more complete sterilization performance. Steve Beno thinks the new Ozone

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**DOTmed Registered Sterilization Sales and Service Companies**

For convenient links to these companies’ DOTmed Services Directory listings, go to www.dotmed.com and enter [DM 5373]

**Names in boldface are Premium Listings.**

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Primus sterilizer chamber. (Courtesy of Sterilize Services, Inc.)
In the world of medical mysteries, monitors and other portable or fixed diagnostic cardiography systems serve as hard-working detectives, carefully gathering and analyzing patient data, in real time and after the fact. Whether a Phillips IntelliVue patient monitor checking vital signs, a GE Holter or ECG seeking heart arrhythmias, or a Quinton Stress Monitor looking for possible arterial blockage, monitors measure and evaluate critical body functions, allowing physicians to better diagnose and treat everything from high blood pressure to cardiac arrest.

Phillips Cardiography Systems and GE Healthcare Diagnostic ECGs are generally considered the top two companies for patient monitoring systems. However, their expertise is pricey and Japanese (Nihon Kohden), Chinese (Mindray), and other global companies such as Welch Allyn and Schiller are coming forward with either low-end, or just lower priced, monitors making it “tough to compete,” according to some monitor dealers who sell both new and re-furbished equipment.

For Scott Burke, however, GM/GE Healthcare ECG, his company’s “heritage of research in ECG algorithms, dating back to its purchase of Marquette in 1998,” clearly warrants its Number One position, globally, in resting ECG/EKG quality.

“Hands down, we are Number One,” Burke says, insisting that while UK-based GE Healthcare is a global company with a “very strong presence” in Asia and the Middle East, poorly-made foreign monitors can sacrifice quality for cost.

“You’re not just looking at cost, but the depth of research,” he adds. “There are different classes of equipment that fit certain price ranges. For GE, we can provide ECG’s from $9500 to $20,000, depending on the ruggedness of the equipment and the number of special features. But our resting ECG’s are based on solid, proprietary and continual research, data, and science.”

Pat Dorsey, global product manager for GE Healthcare’s Holter Monitor System, notes that GE’s legacy of research goes back even further in this area, to the later 1970s.

“Not only do we have clinical excellence in how we detect and measure algorithms,” Dorsey says, but we have products that measure three levels of disease: measuring anemia, measuring diminished blood flow, and, since the 2006, new Holter software that can give a clinician a look at a patient’s future risk of sudden cardiac death, which we introduced at the Heart Rhythm Society. This is huge for us.”

According to Dorsey, GE’s global market in Holter monitors represents about 15 percent of its total business, ranking it Number Three of Four in the world, with Phillips Number One, overall.

Medical Electronics Co., Inc (MEDELCO), based in Boynton Beach, FL, sells, rents, and leases pre-owned equipment such as ECG/EKG machines, patient monitors, pulse oximeters, defibrillators, ultrasound and more. Ronald Tarr, its president for 24 years, has about $400,000 worth of inventory on site at any time. And because of the imbalance of trade support, he says about 98 percent of his sales will be domestic.

“Too many global dealers care only about the cost of the equipment, they don’t care about the quality or accuracy,”
Tarr begins. And many foreign competitors entering the US market also have unfair cost advantages. “You’ve got Chinese companies coming in with no overhead, offering a very low price for monitors,” he adds, “That makes it very tough to compete.”

The cost differential is significant. For example, a GE DASH monitor, offering high-performance and mobile monitoring that includes an integrated wireless LAN option, sells anywhere from $5500 and $8000, depending on features. Full ECG/EKG monitors can start at $20,000 and up. “Some low-end companies can offer their own monitors for half that,” Tarr notes. “I’ve had doctors in here asking why should they pay so much more, and I answer, ‘Do you ever walk into a hospital and see those low-end names?’ No, you don’t.”

Jeff Corliss, global marketing manager for Philips Cardiography Systems, says pressure exists from Chinese, Japanese and Korean monitor manufacturers, but more for smaller sites than for hospitals settings that mandate cutting edge care.

“The individual drivers for the monitor markets are quite distinct,” Corliss notes. “You have clinics and doctors’ offices, where much is driven by cost, and you have hospitals where 12-lead ECG’s are among the most pervasive, highest volume procedures. Hospitals are driven by three concerns: streamline workflow, maximize connectivity, and handle real clinical pressure. Philips has built our business on the hospital setting and we offer the best seamless, wireless ECG, stress and Holter integration. We’re the only ones doing 16 lead ECG’s for example. That is very important when it comes to adult chest pain where every second counts.”

Corliss points out Philips is supporting the American Heart Association’s “Door-to-Balloon” initiative which seeks to cut down the time it takes when someone walks in with chest pains to when that person receives angioplasty. “We are looking to do it within less than 90 minutes. None of our Asian competitors have the kind of seamless/integrated integration required to accomplish this.”

Quality Costs
“Quality costs money,” says Roger Nasiff, president, Nasiff Associates. His Brewerton, NY company, although small, is credited with having created the first PC-based CardioCard monitoring ECG’s, Stress and Holter machines. In 1996, Nasiff Associates built the first PC-based CardioSuite, a PC-based system that monitors all three. Separately, Nasiff sells its ECG’s for $2195, its Stress Monitors for $3395 and its Holter Monitors for $3195, with the Suites going for $6295. These prices are very competitive when put up against GE, Phillips, and other big companies.

Low cost doesn’t have to mean low quality, however, as Nasiff pointedly explains.

“I would say GE and Phillips are tops in EKGs, GE and Quinton are tops in Stress Monitors, and Phillips still leads in Holters,” Nasiff explains, “but these guys are huge and will make and create 1000 of them a month. My company will make 50 to 70 Holters a month, but many people who bought them in the early 1990’s are still using them. Our quality is very high. I definitely think we offer the best value for the price.”

Nasiff, with two degrees in biomedical engineering and a PhD in electronic engineering, began in the basement of his house, but, today, he says his craftsmanship creates a level of accuracy that trumps cost.

“Schiller or Welch Allyn has a nice breadth of products, but what they sell isn’t quite as accurate yet. To Nasiff, better diagnosis is the only “blue sky” parameter worth pursuing, now or in the future.

“To me, to increase our depth and accuracy in any monitoring system is, in itself, major blue sky advancement. We all need to work to make the systems better, more accurate, and to avoid settings that lead to wrong diagnoses,” Nasiff says, adding, “While everyone’s all excited about wireless, Nasiff hasn’t pursued it yet, outside of our own research, because we feel it’s still not as accurate as what we have out there. You can still lose data.”

Refurbishing/Repairing Monitors
Companies offering used and refurbished monitors suggest a mixed bag in terms of market strength. Owners are split in terms of whether sales are weak or strong.

John Newbury, sales and service manager for Medelco, describes a variety of monitor repairs and refurbishing used on previously owned monitors.
“We clean the entire inside with a blow out from an air gun,” he says. “We then have qualified engineers inspect all the interior electronics. Sometimes we need to replace external cables, and, if the unit needs it, we’ll professionally repaint the outside.”

“I think the market is still strong,” reports Ronald Tarr, president of Medelco Co. in Boynton Beach, Fl. “Smart hospitals and clinics are buying the pre-owned equipment for 25 or 35 cents on the dollar, and, as I mentioned, technology has not really changed in the last 10 years.”

Ron Smith, of Lifeline Biomedical in Nashville, TN, agrees. “The market is strong. With the state of reimbursements, doctors and administrations are looking to upgrade older units with newer equipment, but need to be frugal in acquiring same.”

Adds Alan Avitt, sales manager, Display Resources, Inc: “Smaller clinics and doctors’ offices now can utilize equipment never before available to them.”

“The market for used is strong as always, especially the parts market insists Mitchell Guier, broker, North American Medical, Sweet Springs, MO. “Manufacturers stop making specific models and BioMed departments are scrambling to service the 50 monitors they still have in service.”

Randy Lowers, president of L&R Services in Miramar, FL, takes the opposite view.

“Recently, I see the market as weak due to the fact that many manufacturers from abroad are starting to sell product here in the USA at cheaper prices then we are accustomed to. Also, domestic manufacturers are quick to make a product obsolete after a short selling period. One manufacturer I won’t name will sell something, support it 100 percent for five years, and then discontinue parts production. This makes selling their products refurbished and/or used harder because the seller cannot support the product for a warranty unless they have an inventory of their own.”

Having said that, Lowers acknowledges a 32 percent increase in total sales for refurbished or used ECG/EKGs, the only medical monitors he deals with.

“It all comes down to price,” says Charles Moore, president of Moore Medical Sales & Service, Cartersville, GA. “Manufacturers are starting to discontinue certain models. The industry is pushing for new equipment because they make more money. Plus, the Japanese are dropping their prices on new items, in order to get into the market. Mindray (Chinese) is very cheap but parts are a real problem.”

Poor operator performance also throws a wrench (literally) into how new equipment becomes problematic and in need of repair.

“Never use a monitor without proper training from a vendor,” says Robert Keller, president, Travelmed, Northridge, CA. “Malfunctions can be due to several issues such as testing and training,” he says, adding, “A monitor should be operator friendly, as easy to operate to avoid human mistakes from a non-understanding operation.”

“Operators of monitors and EKGs are the biggest problem in the field,” Randy Lowers says. “Ninety percent of my service calls are due to operator error.” Biggest issue is getting

continued on page 46
DOTmed Registered Monitors Sales and Service Companies

For convenient links to these companies’ DOTmed Services Directory listings, go to www.dotmed.com and enter [DM 5374]

*Names in boldface are Premium Listings.*

<table>
<thead>
<tr>
<th>Name</th>
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<td>Jupiter</td>
<td>FL</td>
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<td>U.A.E.</td>
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**Introducing**

**The NEW PaceTech VitalMax 4000**

The Ultimate Portable Patient Monitor with the Brightest, 10 Channel Color Display!

**Standard Functions**
- 3 or 5 Lead ECG • NIBP • SpO2
- Impedance Respiration • Temperature

**Standard Features**
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- 10-channel selectable wave forms
- Programmable audible/video alarms
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- AC/DC operation
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**Venture Medical ReQuip, Inc.**
800.627.3215 • 800.627.3215 • www.venturedcom.com
The bottom line about medical chillers is succinct: they are indispensable equipment that if not in good working order can grind any hospital’s operations to an abrupt stop.

Should one of these sometimes hefty (as much as 90 tons) cooling systems go awry, multimillion dollar hospital equipment—MRIs, CT Scans, X-rays, Operating Room Air Conditioners—stops dead in its tracks.

And the dominoes would continue to fall: diagnostic and therapeutic operations stop, patients’ health is perhaps imperiled and a hospital, clinic or center sees multiple revenue streams shut down until repairs are completed.

So when problems unexpectedly beset chillers, most often as a result of poor maintenance, the medical institution can go into what Martin King, president of Legacy Chiller Systems, Placerville, CA, describes as “mission critical” mode.

And the folly of allowing such a situation to occur, say chiller manufacturers and specialists, is that 95 percent of all problems could be avoided, provided facilities adhere to a regularly scheduled preventive maintenance program.

“It’s so easy to catch the problems before they occur,” says Jerry Hoover, HVAC Service Solutions, Inc., Dallas, PA, a chiller specialist serving a wide variety of institutions in the Northeast. Hoover, who strongly advocates quarterly service calls, also says that whatever service and maintenance company hired, “make sure they are familiar with the equipment.”

Even with the best maintenance, however, chillers sometimes fail, though usually it’s not mechanical failure. More often than not, refrigerants run low, filters get clogged, dust and dirt builds up. But such small factors are not always obvious to
the medical equipment engineer at a facility, so it becomes just
another important reason to call in a professional chiller ser-
vice company.

OEMs tend to favor authorized service operations as well.
Most back the practice of having factory trained mechanics and
technicians primarily service one brand and its considerable
range of products.

Though some facilities still call the local air conditioning re-
pairman on occasion, that’s usually not the whole answer. While
HVAC technicians certainly can service the chiller, the advantage
to a medical chiller specialist is knowledge of various modalities
and how the chiller fits into their operational system.

**Why Chillers Are So Important**

MRIs, CTs and many major medical devices generate heat
while in operation. With the advent of super conducting MRIs
that rely on liquid helium, and high speed helical CT scanners
that have powerful X-ray tubes, chilled water is the perfect so-

Chillers, meanwhile, with integrated tanks and compres-
sors are the workhorse of the fleet and are available in many
sizes, from one to 90 tons. Most medical MRI chillers, how-
ever, weigh in around two to 10 tons, costing up to $40,000.
Manufacturing a chiller has become a specialized skill, one
that the OEMs have ceded to independent manufacturers.

The OEM matches the size of the chiller to the heat of the
head load. If an end user purchases a chiller that is too small in
an effort to save money, or a used machine that is overpowered
to the heat load demand, then a chiller can fail more quickly.
An underpowered chiller will have to work too hard, and a
compressor can burn up. With an overpowered chiller, the compressor turns on and off too quickly, and again the compressor
can burn up.

“All the OEMs have special applications for the large-
scale image equipment that needs to be kept cool,” King says.
His company, in fact, is among the dominant players in manu-
facturing MRI chillers, shipping “hundreds annually.”

Filtrine Manufacturing Company, another important
chiller manufacturer, has been in the cooling business since
1901. Based in Keene, NH, it’s forged close ties with the major
medical equipment OEMs over the past seven years, says Mark
Huston, director of marketing and communications.

“All the major OEM’s work with us because everything
we do is customized to their design,” Huston says, adding, “and
our chillers are backed by a lifetime guarantee.”

And Turner Hansel, a Filtrine vp, points out, “The key
issue when installing an MRI chiller is getting the start-up right.
Doctors,” he says, “hate to see scan time interrupted, because
MRI’s are cash cows.”
Chiller Technology Simple Albeit Sophisticated

Chiller technology has not changed much over the years nor is it that complicated. Still, chiller technology, and almost more important, chiller repair and refurbishing requires a host of special skills.

While some medical equipment engineers are familiar with the technology of the chiller and the basic concept, very few, if any, will try to repair a broken chiller. An MRI technician will replace parts and a cold head, or load liquid helium, and a CT engineer will diagnose high voltage problems in a CT scanner, but neither has the skill to work on a broken chiller. Sometimes chiller problems result from design flaws or while installing the chiller. But the vast percentage of breakdowns is attributable to poor maintenance.

According to Gary Julian, GJ Maintenance, Garland, TX, “The biggest cause of chiller death is not cleaning the condenser coils,” he says. “These are hard to get at within the compressor system. It takes some effort to disassemble and get access.”

Julian’s specialty is medical chiller maintenance for display trailers, 18-wheelers hospital and medical centers set up to house MRI and cath labs. According to Julian, costs for a correctly refurbished chillers averaging seven to 10 tons is anywhere from a few thousand to more than $20,000.

Sig Carlson, president and founder of Recovery Systems, acknowledges that his company, based in Crystal Lake, IL, “gets a very high percentage of business for chillers related to GE, Siemens and Philips equipment.”

Chiller manufacturers must work closely with independent and sometimes authorized service personnel around the world. These service personnel install the machine, perform preventative maintenance, and repair it when it breaks.

“The key is that chillers must be sized for the right range of outside temperature, whether its 40 below or 120,” says Carlson. “What we do at Recovery Systems is offer compressors that can be integrated to operate separately or in sequence.”
Carlson estimates smaller chillers, five to 10 tons, for example, cost roughly $10,000. Larger ones can run up to $40,000 with refurbished equipment “half those costs.”

Chiller Repair and Refurbishing a Vital Service

Among the chiller refurbisher and repair companies polled, most agree preventive maintenance several times a year is key.

“I would say a mobile unit should be looked at every three months,” says Ronnie Taylor of SVSR, Inc, Statesville, NC, “With fixed sights every six months.” Over or under powering a chiller means, “the motor windings overheat and short. This could cause contractors and controllers to fail also, causing major downtime,” Taylor adds.

Laurence Frayne of Prairie Imaging, Hurst, TX suggests that checking “all systems” twice a year is sufficient but Mitchell Guier, broker for North American Medical in Sweet Springs, MO, thinks four times a year is best. “I think a service contract should require maintenance every few months, with personnel actually going up on the roof to make sure the chiller isn’t leaking,” he says.

Sig Carlson agrees about regularly scheduled maintenance, but says it’s very difficult to find quality repair people to do the work.

“Schools have eliminated a lot of the mechanical trade education they once offered high school students.” Carlson says. “Today, you are really dependent on using people who don’t know a lot about the product they’re repairing.”

There are simple chillers, generally two to 10 tons that represent about 75 percent of all medical applications. But then there are complex ones, 24 tons or more, with multiple compressors and separate chilling units, such as the Siemens 3.1 Tesla MRI. The latter requires only expert attention.

An inadequately maintained chiller can quit after only a few years. A well-maintained one can last “a lifetime.”

“Adding more sensors to (detect) overload helps prolong chiller life,” says Saeed Hashemi whose company, NASS Medical Image, does all service, repair, application and technical training for GE products and is based in Ontario, Canada.

While Legacy’s King feels strongly that “mission critical” chillers ought to be purchased new “otherwise you’re not going to get the same warranty, you’re not really going to know a machine’s past maintenance record,” others such as Hasemi disagree. He says it’s appropriate to rebuild a chiller and that it only makes economic sense to opt for new one, “when (the current one) is not capable of cooling to the minimum requirement.”

NOTE: DOTmed.com has been involved in auctioning a number of chillers because frequently when the original equipment manufacturer sells the machine, they ask the hospital to buy the chiller separately. When the machine is sold or traded in, the hospital is sometimes left with chiller, and they have utilized the DOTmed Online Auctions to sell them.
continued from page 13 Protons

“As the imaging improves, we’re now able to focus [protons therapy] better and better. We’re just still on the very frontier of what it is potentially going to do,” Dr. Slater says.

With the imaging problem solved only the issue of money stands in the way of more widespread adoption of proton therapy. New cyclotron designs and creative business models are providing more manageable and affordable options that may soon bring proton beam therapy to the masses, so to speak.

“It is going to be a big change for radiation oncology. I hope that places can get up and running and that many more centers open. I really think this is going to replace portions of conventional therapy in the next ten years,” Michaud predicted. “As the public becomes more aware of proton therapy and the demand continues to grow, we as health care providers need to provide this latest technology. People count on us for that.”

● [DM 5375]

Sterilizer by TSO3 could replace ethylene oxide and hydrogen-peroxide units in the near future. Raef Warzynski feels that Ozone may also be the answer to Prion sterilization and be a low cost alternative to Plasma and ETO sterilization. He feels that it still needs to be a proven method but it does have potential. The challenge, however, in developing Prion deactivation technologies is that there is no appropriate standard for a company to measure the effectiveness of sterilization technique against Prions. Whatever the challenges, the sterilization equipment industry is alive and well and has evolved over the years – driven by consumer demand and competition in the marketplace. As medical devices become more intricate, and regulatory and sterilization standards become more demanding, sterilizer manufacturers and companies are working to develop and maintain advanced systems and features to meet the challenges.

● [DM 5373]

operators to understand that ECG’s work with electric current, and that measurement can be skewed by body jewelry, scars, even interference from the operator.

Lowers is so concerned he performs workshops in proper ECG operation at a small college nearby. The most common part failure will be the actual patient cable or leads. “Preventive maintenance requires that cable or leads should be inspected frequently, as staff using the unit will not be able to identify if the unit is out of calibration unless it shows patient is dead.

Several refurbishers complained about the growing bulk of OEM manuals, which, some insist, staff ends up not really reading.

One major OEM, speaking off the record, admitted that can be the case.

“We continue to try to refine the interface so operators can understand our equipment by using it, even if they haven’t read the manual,” this OEM executive explains.

With a shelf-life of five to ten years, monitor and heart cardiology equipment either are upgraded by the OEMs themselves (then deemed obsolete) or carefully re-furbished by 50 or so companies stateside who correct leakage, updating data, and more.

Mitchell Guier sells only used monitors.

“Monitor technology has developed by leaps and bounds,” Guier notes. “Manufacturers are now bundling features. Now, one monitor can perform dozens of diagnostic tests, as opposed to just one or two tests 10 years ago.”

All those features demand specific parts and BioMed departments are “scrambling to service the 50 monitors they have in service,” Guier says.

According to Randy Lowers, a refurbished ECG can sell for $500 to $5000, substantially lower than the low four figures new equipment requires. Lowers, also, is among one of the few refurbishers dealing exclusively with non-domestic sales.

● [DM 5374]
will identify normal patients and those with limited disease who can be managed medically and with lifestyle changes. Those with serious coronary artery disease will, of necessity, go on to the more invasive cardiac catheterization.

In addition to CT-A, which is overwhelmingly the application of choice for volume CT, there is trauma and vascular imaging too. These last two areas are not gaining much momentum, probably because the cost of the equipment and marginal improvement in scan results will limit demand for volume CT use.

In general radiography CR & DDR will continue to replace film based analog equipment. The improvement in imaging may not be evident in standard radiography with digital but in mammography there seems to be no question that the transition to digital from analog yields improvements for the patient and the reader.

Understanding the Opportunity

This is a difficult task, almost a double-edged sword since technology is moving more rapidly than ever. With each new introduction, technology breeds technology. New applications, which are a result of the capability of the new technology, seem to be arriving monthly.

Moreover, technology and applications are shortening the life cycle. Once it was 5-7 years. Now, however, it can be as short as 24-36 months, which means the entry for a buyer is expensive and the exit at 36-months even more so.

Five years ago a dealer in pre-owned imaging devices might have paid 50¢ on the new equipment dollar for a 5-year old device. Now, with the furious pace of new technology introduction by the OEM’s the technology life cycle is much shorter. Now a center interested in selling or trading in a device for the purpose of upgrading to the latest and greatest may find that they are being offered 10¢ on the dollar. Frequently they are unable to recover enough to retire the outstanding debt.

Summing It All Up

As we consider digital X-ray and the markets involved, we know that transitioning to digital from analog and eliminating film means improvements in productivity, reduced cost with the elimination of film processing and a constant introduction of new technology.

In human radiography we have volume CT with applications mainly in CT-A. Some project an expansion into vascular and trauma but that’s an open question. CR & DDR will continue to impact and grow general radiography and mammography.

Technology Breeding Technology.

As technology continues to advance, the life cycle shortens. This decreases equipment value and results in expensive entry and very expensive exit for the user of the equipment. Technology life cycles that once were typically 5-7 years are now 2-3 years.

We find ourselves in a truly wonderful time in the development of X-ray imaging technology. What’s old is new and now more than ever we are employing more non-invasive techniques to diagnose disease earlier.

About the Author

Wayne Webster founded Proactics Consulting in 2003 for the purpose of providing business planning and strategic acquisition support for diagnostic imaging clinics and hospitals seeking new opportunities in medical diagnostic imaging. Proactics also supports business development efforts for High-Tech electronics & other businesses requiring strategic business planning guidance.

Clients include: GE Health Care, Perkin Elmer, Inc., Neusoft Group, Ltd. (China), and The I.R.I.S. In addition he has supported the business planning process for dozens of imaging clinics and hospitals. Webster also serves as the Managing Director for Diagnostix Plus, Inc. In this capacity he supports the development and implementation of new business opportunities for the company. In addition, he is the Technical Editor for IAMERS, a medical device trade association. Those interested in reading one of Wayne’s articles can visit www.Proactics.net and request a copy and learn more about the services offered by Proactics Consulting.
Sometimes shipping/logistics companies handle rigging and crating for their customers. Rusty Waterhouse is an account executive and logistic expert for American Shipping Company, Grapevine, TX. The Texas based freight forwarder suggests that when crating equipment vacuum/barrier bagging be used because it is a small price to pay for peace of mind and offers absolute protection from a moisture laden environment.

Similarly, Image Technology Consulting, LCC, Desoto, TX, offers logistical services for rigging, and they also use wooden crates to deliver delicate medical machines. Marshall Shannon, president, says his services costs a bit more than most, but “we make sure we have your machine padded, protected, strapped and packaged so that it will show up on the other side exactly as it left the original facility.

Ultimately, both riggers and craters are successful as a result of their experience, which usually translates into getting the job done faster, safer and cheaper.

**DOTmed Recommends**

If you’re using an independent service organization to dismantle and rig your equipment, make sure that either they have the equipment they need, or that you are paying them enough so that they can afford to rent the equipment they need. When it comes to rigging and crating and shipping valuable medical machinery, cutting corners is a no-no. If the firm you are considering does not have the funds to rent the equipment, or if they feel that they need to ‘improvise’ to save money, chances are problems will arise.

Despite all the advance planning, it’s likely there will be some problems during a complicated project involving moving medical equipment but in order to minimize the risk, always go with a reputable company (there are plenty out there). Check references and stay involved with the project. Visit often and always, always ask questions.

● [DM 5369]
**Medical Advantages Inc. Serves Diverse Markets**

Medical Advantages Inc. has sold new and pre-owned diagnostic imaging systems to imaging centers, doctors’ offices, mobile x-ray companies and hospitals for more than ten years. They sell a wide range of products nationally and throughout Canada.

“Diversification is our mantra because our valued clients request many types of diagnostic imaging systems,” said President Michael D. Lies, a radiologic technologist. “One week they need a couple of BMD systems, and the next week three dozen ECG systems, and then the following month eight ultrasound systems.”

The company buys its new and pre-owned medical equipment from six or seven suppliers. “We like to do continued business with the same companies and individuals who have proven themselves trustworthy. For installation and training we rely on specific engineers and service techs depending on the modalities,” Lies said.

“We are seeing trends from analog to digital systems in the imaging centers, doctors’ offices and small hospitals. Because of new governmental restrictions for reimbursement - DRA - these trends are slow, but I like to think the changeover will increase during this election year,” he said.

“DOTmed has always been helpful to us particularly now that we are DOTmed Certified. This Certification provides our end user clients with a healthy comfort level of assurance.”

**Marquis Medical Celebrates First Anniversary**

Opportunity knocked for Joseph Sciarra when CTI Molecular Imaging of Knoxville, TN was taken over by Siemens in October of 2005. CTI, in partnership with Siemens, virtually invented the PET scanner, a way to measure radioactivity distribution within the body to track various disorders such as stroke, Alzheimer’s and epilepsy. Now Siemens owned the entire company outright.

Sciarra, a long-time CTI employee and highly-trained avionics technician, felt the merger created a competitive “void.”

“My partners and I felt there was no choice for customers looking for PET and PET/CT service providers. Where once they had CTI and Siemens, now they just had Siemens,” he explains. Thus Marquis Medical was born.

Based in Denham Springs, Louisiana, Marquis Medical specializes in the maintenance, installation and servicing of Siemens PET and PET/CT scanners. A small company with a staff of four, Marquis rests its reputation on its extensive knowledge of the Siemens product. Indeed, when Washington University School of Medicine in St. Louis, MO, sought to replace its worn-out PET scanner, Marquis won the contract and the task of delicately installing a significant piece of equipment in a working, highly-complicated research hospital ICU. (See DM 4820)

While only a year old, Marquis Medical now has a wide range of customers, from research facilities such as Washington University, to private practices and other clinical and nuclear imaging centers. The company services 10 Siemens PET and PET/CT accounts and projects 20 by the end of 2008, according to the recently DOTmed Certified Sciarra.

As for acquiring new customers, “We had advertised with other sites without impact,” Sciarra recalls. “But DOTmed has brought us the most response. It’s been very helpful to us and our business.”

**Crown Medical International Delivers Quality Medical Imaging Equipment**

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DOTmed Works with South Carolina Company to Move Equipment

by Scott Hutchins

John (Jack) Chesney runs a leasing business in Beaufort, SC, dealing in medical equipment, computers, and vehicles. Selling the equipment is not his business, but when people are no longer leasing a particular unit, he calls DOTmed to resell it.

Recently, a friend of his in Charleston was closing her OB/GYN/cosmetic practice and moving to California, and she entrusted him to handle the sale of her equipment, including lasers, ultrasounds, chillers, and examination tables. It was very important to them that he sell it and not get robbed. Chesney had tried eBay, then learned of DOTmed from a competitor in Savannah, GA. Chesney thought the disclaimers and contract seemed fair. “We could get hurt,” he said, “but we didn’t.”

Of his DOTmed sales contact, David Blumenthal, Chesney says, “I was very pleasantly surprised to see David did everything he promised. He gets back to you; he’s professional, and makes sure people get what they’re paying for.” Chesney says he has had some opportunities to do some deals without Blumenthal’s help for which he could get more money, but because David has been square with him, he has opted not to do such transactions on his end. “For somebody I can trust, I’ll pay extra. He has even gone back to the buyer and gotten a little bit more money. If it’s something you guys do better, I’m not going to waste my time for an extra 10%, because it’s not my business.”

With DOTmed’s assistance, he has made $47,200, including a QuantelAramis II Laser – Erbium for $14,500, a lot of 12 Ritter Midmark 104 Exam Tables for $1,200, five Zimmer Cryo 5 Chillers for $3,500, a GE Logiq 200 Pro OB/GYN Ultrasound for $6,500, an Asclepion MeDioStar Laser - Diode for $16,500 and a STORZ D-Actor 100 EPAT for $5,000.

To further facilitate the purchasing process, Chesney found a crating outfit in Charleston, “So David and I are going to deliver a quality piece of equipment.” Chesney welcomes those who wish to come inspect and test the equipment. While he himself does not know how to run much of the equipment, he instead relies on establishing trust with his customers. “You are experienced and you do what you say you’re going to do, and it’s a fair price, and I’ve been delighted. It’s been perfect.”

What Riches Lie in Sheehan’s Shed

John Sheehan had some second hand MRI equipment in a storage shed from doing some odd job deinstallation work. He expected that it might have some value. Having learned of DOTmed from someone whom he had worked with, he ordered a DOTmed-Managed Auction. DOTmed set up the pictures and information.

“DOTmed was very helpful with the type of information to put in and also with setting it up. They had a cookbook formula to make sure we had the right information so the potential buyer would know what he was looking at.”

Many of Sheehan’s auctions ran for over a year, but Sheehan followed e-mail and phone contact procedures to revise the auctions and kept them going until it finally paid off. In 2007, he sold an APD model HC-8C4 Cryo Compressor for $2,500, a 2006 Neslab HX-200A Chiller for $2,800, and six Philips MRI coils for $2,000, double the starting bid.

Sheehan finds the site a good place to show equipment and is very happy with the service, which he finds easy to use and to navigate through. “I have some other stuff in my garage, old x-ray equipment, to put up in the future.”
These are some of the more than 27,000 listings on www.DOTmed.com on any given day.

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PICKER Portable X-Ray Explorer II Manufactured 1994 Dunlee Tube PX-1355C Target Angle 12.5 Focus 75x 125 KV Sold for hospital. Auction 4240 - $1,500.00

PLANMED portable Mammro Unit Sophie Classic Manufactured 2002. Tube Number 628965V Tube Type M113SP Sold for auction. Auction 4241 - $4,500.00

SIEMENS Mobilette II Portable Unit 1999 50 - 117 KV Signal: 1.2 Mass - 400 Mass 5 collimator Field size is adjustable .5cm x .5cm to 45cm x 33cm. This unit is in great working condition. Sold for hospital in New Jersey. Auction 4271 - $1,500.00

SIEMENS Portable X-Ray Mobilette II 50 - 117 KV Signal: 1.2 Mass - 400 Mass 5 collimator Field size is adjustable .5cm x .5cm to 45cm x 33cm. Great working condition. Sold for hospital. Auction 4272 - $1,300.00

SIEMENS CT Scanner Somatom Plus 4 equipped with a xenon detector. Deinstalled by a hospital, and in good working condition before deinstallation. Sold for broker. Auction 4297 - $20,000.00

DYNAVAD Portable X-Ray Phantom 2000 Condition: Very Good. Two units are available. Priced per unit. Auction 4423 - $7,000.00

SIEMENS CT Scanner Somatom Volume Zoom Dm: January 2001. The following is the Site ID#: 400-093429. Current tube installed May 2006. Before deinstallation, this unit was in good working condition. Gantry Slice Count: 706,568. Sold for dealer. Auction 4434 - $42,500.00

NUCLEAR

KODAK Dry Camera 8100 Manufactured 2002 Imager has 5 connections/Med/Ver-V-2 Key Pad/PS422 Host/RS232 Host/Spy Out Put, Pacs Link 25 Print Server w/ PKD Key Pad. Sold for hospital. Auction 4257 - $1,500.00


ADAC Nuclear Gamma Camera Arc 3000 Pegasys 20: The computer platform for this unit is Sparc 20 and the software application is Pegasys 20. A color monitor comes with this auction along with a Codonics EP1650 printer. Good working condition. LEGP collimator. Analog system. Priced low for fast sale. Sold for broker in Georgia. Auction 4466 - $500.00

ULTRASOUND

GE OB / GYN Logiq 200 Pro Ultrasound. Includes two probes: one 3CB and one 6.5MHz. Sold for broker in South Carolina. Auction 4226 - $6,500.00

MRI

HITACHI MRI Scanner MRP 5000 Coils: Knee, Spine wrap (med and large) 5" x 10" circular, head. Optical disks: Maxell 64x MS MO NW Driveway 8100 laser camera Sold for imaging center in South Carolina. Auction 4112 - $5,000.00

MARCONI MRI Scanner Eclipse Parts Kit: 61 used parts from known working systems at the time of deinstallation; sold on an outright basis; “as is.” Sold for dealer. Auction 4337 - $13,500.00

PHILIPS MRI Scanner Gyroscan .5T Parts Kit: 31 used parts from known working systems at the time of deinstallation; sold on an outright basis; offered “as is.” Sold for dealer. Auction 4341 - $10,000.00

SCHILLER MRI Accessories MAGLIFE C Monitor compatible with .2T to 3.0T scanners of all manufacturers. Includes Magmove non-magnetic trolley, Schiller Magscreen remote control & display unit placed outside faraday cage. Sold for dealer in France. Auction 4517 - $2,500.00

BONE DENSITOMETERS

GE Bone Densitometer Lunar Prodigy Advanc 2005 system. Software level 9.15.010. Used for less than 20 procedures per month. Includes: Prodigy Computer, Lunar Direct 17 inch CRT Monitor Prodigy Printer. Price includes GE professionally deinstalling the unit. This is covered by the service contract. This is also optional. Sold for Imaging Center in Florida. Auction 4431 - $25,500.00

IMAGING ACCESSORIES

KODAK Multi-Loader 8700 You are bidding on TWO (2) Kodak Dryview 8700 Laser Imagers with ONE (1) GE Dry Cam 8800 Multi-Input Manager. 8700 MFG. Date 1998 8700 MFG. Date 1996 8800 MFG. Date 1998. Sold for hospital. Auction 4232 - $1,000.00 KODAK Film Duplicator Dryview 8300 Table Top Laser Imager. Both imagers were never used and in the original box. Sold for hospital. Auction 4244 - $5,000.00

OR - SURGICAL

JACE Continuous Passive Motion knee machines (CPM) K100-2, lot of 4. Includes Jace MS9916 Knee CPM Pads. Great shape. Sold for hospital. Auction 3716 - $1,000.00


GE/Marquette Bedside Monitor Eagle 4000: Flat Screen Multiparameter patient monitors with ECG, Temp , IBP, SPO2,NIBP , Delt氏 no patient cables. Sold for hospital. Auction 4245 - $3,600.00 OLYMPUS Gastroscope GIF-130. Good angulation and the rubber silicon covers are not even close and would not detract from use. Sold for dealer in Kentucky. Auction 4258 - $375.00


ZOLL Defibrillators NTP1000 Hard protective case and all pieces are wrapped in plastic still. All cords, manuals, etc are included. Sold for crator in Utah. Auction 4258 - $375.00

PHYSIO CONTROL Biphasic Automated External Defibrillators (AED) LifePak 500 in excellent condition. Current with latest AHA CPR/AED guidelines. Pediatric enabled (with pink electrode connector). Unit includes one (1) non-rechargeable OEM battery with expiration date 8/2011, two (2) Quik-Combo Pedi-Pak electrodes with expiration date 10/2008, and carrying case. Sold for dealer in Wisconsin. Auction 4303 - $350.00

PHYSIO CONTROL Defibrillators Codmaster XL Five (5) Available. Priced per unit. Includes Paddles, ECG, Cables. Sold for manufacturer in New Hampshire. Auction 4437 - $600.00

SOMATIC, INC. Electroconvulsive Therapy Unit (ECT) DAKMED INC. MODEL 760. New in the original box. Requires 9 volt battery not included. Sold for surplus outlet in Ohio. Auction 4501 - $125.00

RESPIRATORY


ALPHATEK Film Processor AX 700 LE Used Working Condition. Sold for exporter. Auction 3944 - $1,250.00

AIR SEP CORPORATION Oxygen Concentrator NEW LIFE ELITE This oxygen unit only has 1,265 hours recorded at the last inspection. Sold for dealer in Missouri. Auction 4288 - $225.00

TRAILERS

MEDICAL COACHES Empty Trailer 1997 Trailer, 102 inches wide 4474 - $23,000.00
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