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Issues and Challenges

As the New Year dawns, some thoughts about healthcare, dependence on foreign suppliers and a DOTmed Business News staple that’s especially useful to all readers and users.

As the first wave of responses to our national healthcare survey reveals, readers think there’s plenty wrong with the system. There’s so much blame being spread around, however, that it’s difficult to know just where the fixing begins.

For instance, big pharmaceutical companies are routinely identified as a major culprit. Their greed for profits means, our respondents say, that the millions of dollars they’re spending in lobbying fees ensure the system remains the same.

So what’s the answer, slap punitive regulations on the pharmaceutical giants, and limit the amount that can be spent on trying to shape policy, instead directing more of those dollars into research and development. Sounds good in theory.

The FDA and its propensity to over regulate are deemed another piece of healthcare that must be repaired before any real progress occurs.

One of the more notable messages delivered by medical equipment suppliers at RSNA is how many different technologies are up and running in Europe where as they’re still months, if not years away from FDA approval here.

Since FDA is part of the government, where better to look next than the Federal government, populated as it is, mainly by lawyers, another group working on behalf of the healthcare insurers to guarantee citizens pay the most for the least amount of benefits. And let’s not forget Congress, generally seen as an interchangeable part of the Beltway cabal.

Which brings us to the much-ballyhooed medical isotope crunch that’s plagued nuclear medicine for the past couple of months. With the US relying mainly on Canada, and to a lesser degree other foreign suppliers for isotopes, there’s precious little that can be done when something goes askew outside this country.

The US could, of course, begin now to take steps to ensure that the country becomes self-sufficient. But that would mean big pharmaceuticals, the Federal Government, Congress and the FDA would have to cooperate for the good of the country. Next!

We invite you all to please keep sending us your input at healthcareopinions@dotmed.com. And keep reading DMBN for updates.

Finally, scattered through the pages of DMBN you’ll see a box with a headline asking, “What does this ID code mean?” It means that at the conclusion of every story you’ll find an ID code (DM 3202, for instance). If you enter that code in any search box on www.dotmed.com, you’ll find additional links and follow up news on the website. It’s an important aspect of the effort to supply information and analysis to our readers and we urge you to take advantage of this feature.

Colby Coates
Editor-in-Chief
DOTmed Business News

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Emergency Rooms No Place for Kids, Report Says

In a report in the December issue of Pediatrics, researchers at UCLA paint a gloomy view of hospital emergency rooms’ ability to treat pediatric cases. The survey of 5,144 emergency rooms suggests that only 6 percent have all of the necessary equipment on hand to treat children.

The researchers wanted to determine if the hospitals were following 2001 guidelines regarding pediatric care that were released by the American Academy of Pediatrics and the American College of Emergency Physicians. The study also notes that only 11 percent of emergency room visits by kids occur in hospitals specifically designed to treat children. The overwhelming majority end up in regular emergency rooms.

ACEP, in responding to the 6 percent statistic, called it “misleading.” The organization cited studies suggesting that 95 percent of children who come to emergency departments are treated successfully and released. “This raises the question of whether the list of equipment is too extensive, since emergency departments use it as a guideline, and the universal good outcomes seem to indicate that physicians are making the necessary adjustments,” ACEP said.

Most Powerful MRI Ready for Brain Scans

The world’s most powerful medical magnetic resonance imaging machine, the 9.4 Tesla MRI at the University of Illinois at Chicago, has successfully completed safety trials and may soon offer physicians a real-time view of biological processes in the human brain.

The study was published in November’s Journal of Magnetic Resonance Imaging in an issue focused on MRI safety. Researchers and physicians believe the 9.4T will usher in a new era of brain imaging in which they will be able to observe metabolic processes and customize health care.

The 9.4T magnet has a field strength more than three times that of state-of-the-art clinical units. UIC’s 9.4T is the first such device large enough to scan the head and visualize the human brain.

“Because the more powerful magnet allows us to visualize different types of molecules, we are seeing activity in the brain along a completely different dimension,” said Dr. Keith Thulborn, director of UIC’s Center for Magnetic Resonance Research.

Current MRI visualizes water molecules to track biochemical processes. By visualizing the sodium ions involved in those processes instead, the 9.4T permits researchers to directly follow one of the most important energy-consuming processes in the cellular machinery in the brain.

The strength of magnetic resonance scanners has increased from less than 0.5T up to the first 8T in 1998. As human safety data became available, the FDA limits were revised upwards accordingly — to the current level of 8T in 2003. The study was supported by UIC and the State of Illinois Capital Fund.

Bristol-Myers Squibb To Sell Medical Imaging Business

Bristol-Myers Squibb will divest its Medical Imaging business, the company recently told investors. BMS is also reviewing a range of strategic alternatives for its ConvaTec and Mead Johnson businesses.

“We remain fully aware of the important contributions these businesses have made to earnings and cash flow, and we will take these factors into full consideration when weighing our strategic options,” said James M. Cornelius, chief executive officer, Bristol-Myers Squibb.

The Medical Imaging division mar-
Cancer Death Rate for Kids Registers Dramatic Declines

The cancer death rate for children in the United States has declined sharply, down 20 percent from 1990 to 2004, the Centers for Disease Control and Prevention said in a recent report. Better treatment for a host of cancers has boosted survival rates, the CDC said.

The cancer death rate for U.S. children was 34.2 per million for children up to age 19 in 1990, but fell to 27.3 per million in 2004, an annual decline of 1.7 percent per year during this period.

New Surgical Platform from Steris

STERIS Corporation has launched its newest surgical platform, the Surgimax General Surgical Table, which complements its industry standard Amsco® 3085 SP and Cmax® General Surgical Tables, specialty surgical tables and table accessory lines. The Surgimax table is designed to provide a high level of clinical versatility for ambulatory and outpatient care centers.

The global healthcare environment is dynamic and constantly evolving. New surgical procedures are developed frequently by innovative surgeons seeking to improve patient outcomes. These new procedures can require new methods for positioning the patient on the surgical table. STERIS is continuously monitoring the evolving needs of the surgical environment and has developed this new patient positioning technology to provide a timely solution for current surgical needs and trends.

The Surgimax table is applicable for all diagnostic and surgical procedures including spinal, ENT, ophthalmologic, gastro-intestinal, bariatric, endoscopic, arthroscopic, rectal, obstetric and gynecologic, orthopedic and general pain management procedures. It has also been designed to accommodate new procedures as they are developed.

Many features of this innovative surgical table assure clinical versatility and easy use. “This newest addition to STERIS’s table line provides another valuable enhancement to the STERIS advantage for
healthcare providers,” says Bill O’Riordan, vice president and general manager of Surgical and Critical Care Technologies, STERIS Corporation.

Supreme Court Weighing Safety Standards of Medical Devices

In connection with oral arguments presented before the U.S. Supreme Court on the matter of Riegel v. Medtronic, Inc., AdvaMed General Counsel Christopher White said, “As was made clear in arguments, the safety and efficacy of medical technologies are best determined by Food and Drug Administration (FDA) scientists, not by lawsuits filed in courtrooms across the country. Allowing states to serve as secondary regulatory bodies would undermine the established science-based review process in place for medical devices and diagnostics and slow down patient access to these life-saving and live enhancing products.

“The comprehensive pre-market approval process at the FDA subjects medical devices to intense scrutiny at every stage of development and marketing — from clinical studies to real-world clinical use. A state-law liability approach to assessing safety and effectiveness would undermine this approach to patient safety. It also would override the specific intent of the U.S. Congress that the FDA be responsible for the timely approval of safe and effective medical technologies.

AdvaMed members produce nearly 90 percent of the health care technology purchased annually in the United States and more than 50 percent purchased annually around the world. Membership ranges from the largest to the smallest medical technology innovators and companies. For more information, visit www.advamed.org.

CDC Says 40 million Adults Lacking Adequate Health Care

Nearly one in five U.S. adults - more than 40 million people - say they do not have adequate access to the health care they need, according to the annual report on the nation’s health released by the Centers for Disease Control and Prevention (CDC).

The report also contains a special section focusing on access to care, which shows that nearly 20 percent of adults said they needed but did not receive one or more of these services in the past year: medical care, prescription medicines, mental health care, dental care, or eyeglasses. Common to all, an inability to pay for the services.

“There has been important progress made in many areas of health such as increased life expectancy and decreases in deaths from leading killers such as heart disease and cancer. But this report shows that access to health care is still an issue where we need improvement,” said CDC Director Julie Gerberding, M.D., M.P.H.

In 2005, nearly one in 10 people between the ages of 18 and 64 said they were unable to get necessary prescription drugs during the past 12 months due to cost. Nearly 10 percent said they delayed receiving needed medical care. This report did not study the relationship between access to health care services and health outcomes.

For more on the crisis in healthcare, see what DOTmed readers have to say on page 10.
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GE Aims to Boost Ultrasound Images

GE Healthcare has licensed a technique patented by an Eastern Virginia Medical School (EVMS) obstetrician that automates the acquisition of ultrasound images used by physicians to diagnose fetal heart defects. GE Healthcare has licensed the software for exclusive use in its 3D/4D ultrasound systems.

Alfred Abuhamad, M.D., chairman of obstetrics and gynecology at EVMS – recognized worldwide for his skills in using ultrasound to detect fetal heart defects – developed the automation protocol, called Sonography based Volume Computer Aided Diagnosis (SonoVCAD).

GE launched SonoVCAD on its Voluson E8 ultrasound system for women’s healthcare, when the Voluson E8 launched in October 2006. GE has since migrated the SonoVCAD technology onto its Voluson 730 system, another leading platform that also is used by obstetricians in the physician office-setting. The Voluson 730 has been on the market for about 5 years.

- [DM 5235]

Remote-Control Nanoparticles Deliver Cancer Killing Drugs

MIT scientists have developed remote controlled nanoparticles that, when pulsed with an electromagnetic field, release drugs directly into tumors.

A team, led by Sangeeta Bhatia, M.D., Ph.D., an associate professor in the Harvard-MIT Division of Health Sciences and Technology (HST) and in MIT’s Department of Electrical Engineering and Computer Science, developed injectable multi-functional nanoparticles designed to flow through the bloodstream, seek out tumors and clump together. Clumped particles help clinicians visualize tumors through magnetic resonance imaging (MRI). With the ability to see the clumped particles, Bhatia’s partner in the current work, Geoff von Maltzahn, asked the next question: “Can we talk back to them?”

The answer is yes, the team found. The system that makes it possible consists of tiny particles (billionths of a meter in size) that are superparamagnetic, a property that causes them to give off heat when they are exposed to a magnetic field. Tethered to these particles are active molecules, such as therapeutic drugs.

Exposing the particles to a low-frequency electromagnetic field causes the particles to radiate heat that, in turn, melts the tethers and releases the drugs. The waves in this magnetic field have frequencies between 350 and 400 kilohertz—the same range as radio waves. These waves pass harmlessly through the body and heat only the nanoparticles. For comparison, microwaves, which will cook tissue, have frequencies measured in gigahertz, or about a million times more powerful.

- [DM 5134]
Injured Veterans May be Prone to Epilepsy

Researchers investigating concussive brain injuries among injured soldiers returning from Iraq and Afghanistan are warning that in their post-trauma recovery period, many wounded may be prone to developing epilepsy.

Marc A. Dichter, M.D., PhD, the University of Pennsylvania Department of Neurology and Bioengineering, says concern exists among the medical community that post-traumatic epilepsy in many returning head-injured veterans may not manifest for months or years “after the insult and will go unrecognized and untreated.”

Dr. Dichter says many soldiers may be under treatment for post-traumatic distress syndrome by psychiatrists who are not considering that forgetfulness and other problems may also be symptomatic of epilepsy.

Elsewhere in news about epilepsy, a disconnect appears to occur between what their doctors consider a suitable improvement and what epilepsy societies consider the treatment goal: a 90% reduction in seizures, or complete freedom from seizures.

In a survey sponsored by the American Epilepsy Society and the Epilepsy Foundation, 26 percent of patients are not sure what their doctors consider to be an improvement in status; only 35 percent of patients believe their doctor accepts a treatment goal of a 90 percent reduction in seizures or complete freedom from seizures.

Genesis Builds Modular Scanning Facility

Genesis Medical Imaging, Huntley, IL, has completed construction of a modular building housing a complete GE Signa LX 1.5T MR system. The company believes that having a working dedicated MRI system on-site provides numerous advantages, including the ability to “field” test in-house.

The engineers and repair personnel at Genesis now have around-the-clock access to the scanner for diagnostics, coil testing, functionality testing, and education, all in a virtual clinical working environment. Personnel can work and test on this scanner in the shop as opposed to using scanners in the field, which would cost customers in terms of down-time. For optimum performance, all repaired CT and MRI parts are tested and validated through QA testing on CT bays and modular MRI to simulate clinical environment and conditions.

Genesis vice president Ron Ragan says, “By installing this scanner, we have invested in our customers. Having an on-site scanner allows us, unlike other vendors, to ‘field’ test in-house, conducting all testing and validation before parts or coils leave our facility. We can ensure 100% reliability and functionality. We confirm that we meet or exceed OEM standards before shipping.”

Dunlee Introduces the Tube Service Assistant Program

Medical imaging components manufacturer, Dunlee has introduced the Tube Service Assistant, a new online support tool for ISOs and clinical engineers. It is designed to provide pictorial and video instruction for CT tube installation and is intended to serve as an adjunct, based on OEM service manual guidelines, to refresh the tube installation processes for service engineers.

“This will dramatically improve the flexibility of ISOs and clinical engineering departments to service GE’s and Siemens’ installed equipment by providing virtual access to key information while on site. It also enables us to support our key customers by making the Tube Service Assistant tool accessible for their entire service organization,” said David Kuehn, Vice President, Global Marketing and Sales, Dunlee.

“CT tube replacements and system troubleshooting can be a complicated process. ISOs spend considerable time and money for hands-on CT training. The Tube Service Assistant is designed to enhance their training via online support by offering detailed descriptions, photos and video clips of complicated service processes,” Kuehn added.
Campaigning in South Carolina late last month, former president Bill Clinton labeled healthcare the pre-eminent domestic issue facing the country, not to mention its next president.

Few would disagree.

And that’s especially true for the scores of DOTmed Business News readers who’ve already proffered some robust opinions in DMBN’s national survey about what’s broken in the US’s healthcare system and how to begin fixing it.

Certainly, what the presidential candidates are saying on the campaign trail has brought the issue into sharp focus for the population at large. But for millions and millions of Americans already under a Doctor’s care or regularly taking prescribed medicines, however, they are painfully familiar with the Pandora’s box known as US healthcare. Under optimum conditions it means reams of paperwork, pre-approvals, faxes, emails, long tortured telephone calls to insurers and health providers and frustration of gargantuan proportions. And for millions of other citizens and illegal immigrants it means no adequate care of any kind, save for trips to hospital emergency rooms with the system picking up the tab, provided the indigent are even allowed through the door.

Though DMBN’s national survey is a work in progress, preliminary feedback is fairly consistent in pointing the finger of blame at the government and politicians, healthcare insurers, the major pharmaceutical companies and, of course, lawyers. Also coming in for its fair share of slings and arrows, the Food and Drug Administration, illegal immigrants, and the media.

One respondent to the survey, Bob Pray, was succinct about the FDA. “The biggest problem with health care in the US is the FDA. They approved dangerous drugs that kill hundreds of thousands of people every year. They need to be held more accountable for drugs that kill when used as prescribed.”

Many others, however, while routinely lambasting the FDA for what
they see is the agency’s duplicitous role in healthcare, instead focused on the agency’s recalcitrance in approving new therapies and technology that its proponents say could make a real difference now.

Says Elfi Liliana Hacker, owner of a medical instrument company in South Carolina; “big business—insurance companies, pharmaceutical companies and incompetent government agencies—should never be making windfall profits when the basic health care of our people is not addressed. I hope our voters make a move to put a candidate in office who will stop devoting our resources to creating and implementing deadly force and weapons, and place their focus on improving and securing the quality of our lives. Whoever is in office needs to stop talking and start doing.”

Dave Russell, who describes himself as a healthcare worker in Texas, shared Hacker’s view about greed, profits and big business.

“As long as there is an uncontrolled profit motive available to the insurers and the drug companies, they will play by the rules and take full advantage. The insurers and pharmaceutical giants make record-breaking billion dollar profits year after year after year, and they spend those profits on making sure that our government actively supports them.”

He continued, “We will not get any improvements in our healthcare as long as big business is in charge. Whether we like it or not, some form of socialized healthcare works because it controls what is totally out of control.”

Jeffrey Taber, an MD based in Minnesota, might have touched the rawest nerve of all when he suggested, “No one ever thinks it’s them, it’s always the other guy. Even the patient blames everyone else but their own use or misuse of the health care system,” Dr. Taber wrote.

That’s a point endorsed by Ken Hunter who expressed somewhat of a minority opinion when he said, “I just don’t believe that healthcare is as broke as some people—and the media—would like us to think. Yes, we have people without health care but look at the number who have it available and opt out.” Echoing Dr. Taber, Hunter said, “there are too many people who make poor decisions and then want the rest of us to bail them out when that decision turns on them.” Hunter also added this bon mot, “Any time the government gets involved prices go up and the quality goes down and that will be the fate of our health care.”

DOTmed reader Allen Zacher concurred with the notion of an individual’s culpability. “Health care will not be fixed until, and unless, the public starts taking responsibility for their own health by quitting smoking and excessive drinking, getting exercise and making smart personal choices.” And, Zacher added, individuals have to agree to become more financially responsible for their healthcare.

Again personal responsibility was a point that resonated with Dr. J. Matthew Durham who wrote, “One of the core problems in our system is that it is not healthcare, it is sickness care. We were told growing up that, ‘An ounce of prevention is worth a pound of cure,’ but when the caregivers are getting paid huge sums for ‘cure’ and nothing for prevention, guess which one gets treated. Our sickness care system has degenerated to the point that it is so bought and paid for by the drug companies, I don’t feel that true healthcare will ever emerge out of it. Look at CMS’s definition of prevention care. It sounds great. Then the last sentence says, ‘but we don’t cover that.’

Though it’s not necessarily surprising that “big pharma” is on the receiving end of criticism, what’s notable is the intensity of poll respondents’ ire, especially about their alleged greed.

Says Alan Zacher, “the pharmaceutical companies are funding legislation which supports them. While physicians are taking huge cuts in income the drug companies are laughing all the way to the bank on Medicare Part D.”

Or as Dr. Gleb Koslov views it, “the bigger problem is the fight for the almighty dollar. Pharmaceutical greed, which generates dependency, which generates income, which escalates insurance costs as patients scramble to find ways to cover their prescriptions.” If the whole industry would just get their egos and pockets out of the way, Dr. Koslov says, we could deliver a great healthcare system and doctors could still make a living.

Lillian Welleke of Mobile Instruments adds, “The drug companies charge out of this world prices for their drugs so that people who have spent their lives working and should be able to relax in retirement have to make a choice between health and food. The people of this country deserves so much more.”

As for health insurance companies, Dr. Michael Gorback opined, “The single most destructive force in American health care is the insurance industry. They siphon billions of health care dollars that should be spent on patient care into

“The single most destructive force in American health care is the insurance industry.”
the pockets of their executives. They have robbed physicians of their ability to treat patients and placed it in the hands of anonymous star chambers that determine policy, and these policies are then administered by high school graduates.”

Pretty strong words but consistent with what survey respondents seemed to feel about insurance companies.

Showing precious little to the insurance companies, Lynne Love adds, “The biggest problem in healthcare is quite clearly the greediness of insurance companies. They hire oceans of clerks who get as much money as they can from patients/clients and pay as little as they can to physicians.” She continued, “It is quite amazing how much distraction there is from this basic truth. You are an insurance company and you have the time and resources to put out a survey. Are you really going to use it to try to help accomplish something good? Or are you just another insurance company trying to polish the smoke and mirrors that keeps you rolling in the dough while patients and doctors suffer?”

Tom Polston of Specialty Medical Sales added, “As a nation we must decide if healthcare is a right that everyone is entitled to. As long as the Pharmaceuticals and Managed Care (insurance companies) lobby our legislators we will never get there.”

Finally, Dr. Taber also made an especially telling point about inconsistencies in reimbursements.

“There are huge discrepancies and inequities between what the various sub-specialties are reimbursed for the same procedures.” For example, a family physician provides an arthritic patient with a steroid injection into a knee and the orthopedist does likewise, on the same day, in the same community, with the same materials and using the same billing codes. But the orthopedist receives far more for their efforts, Dr. Taber says. “WHY?”

Why indeed? Perhaps because as our survey is suggesting, America’s healthcare system is, if not completely broken, is nonetheless corrupt, malevolent, and controlled by greedy drones with only one concern, the bottom line and what percentage winds up in their own pockets.

Exorbitant malpractice insurance rates as a result of so many frivolous malpractice claims were uniformly attacked by a majority of respondents, not surprisingly with gusto. One other trend that is sure to come in for continued comment and analysis, the suitability of a nationalized, or, as some prefer to call it, socialized medical system for the US. Some respondents see it as a panacea, even a tenable solution. Others, of course, view it as a death knell for American medicine.

What’s been reported here is a sampling of comments received to date. We continue to invite all readers to participate by sending email replies to: healthcareopinions@dotmed.com. Any and all topics are on the table. We’re also particularly interested in specific solutions you believe could be useful to the task of repairing America’s broken healthcare system. So don’t put responding off, and tell your friends and colleagues. At the very least, DOTmed.com Inc. would like to encourage a healthy (no pun intended) debate about an issue of vital importance to the country.
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Canadian Nuclear Isotopes Crisis Underscores Real Problem for US

No Funding, Over-Regulation Makes This Country’s Supplies Vulnerable
By Colby Coates

In the face of withering criticism from groups on all sides with a vested interest, the Canadian government of Prime Minister Stephen Harper rushed emergency legislation through Canada’s House of Commons to reopen the Atomic Energy of Canada Limited reactor at Chalk River, Ontario.

The reactor is North America’s only source of the base isotope for technetium-99 which produces molybdenum-99, the workhorse of modern medical diagnostic systems. As a result of an extended and unanticipated shutdown to repair the 50-year-old reactor, nuclear medical treatments at hospitals around the world were, as of late December, still being delayed or deferred.

In effect, the legislation suspends the Canadian Nuclear Safety Commission’s oversight of the ageing reactor for 120 days, allowing repairs to continue while the reactor comes back online, enabling it to produce the highly prized radioisotopes. Those isotopes, incidentally, are injected into about 200,000 Americans and 50,000 Canadians every month to diagnose such illnesses as heart ailments, cancers, bone diseases and a host of blood related problems. At press time, it was still unclear when the reactor would reopen and begin shipping medical isotopes, though estimates suggested new supplies would be available around the first of the new year.

The immediately compelling fear of the medical community has been that seriously ill individuals were being told they could not have the tests they needed because a hospital’s run out of supplies. In essence, foreign oil producers weren’t the only ones to have a stranglehold on the US over materials and resources this country can’t afford to live without.

“This is a bad news story in every sense of the word,” said Dr. Alexander J.B. McEwan, president, Society of Nuclear Medicine. “It means patients are going to suffer. People are going to look at this and say, ‘Why are we so reliant on a single supplier?’”

Even Cardinal Health, the US’s single largest supplier of radiopharmaceuticals and, unlike most of its competitors, a long time proponent of double sourcing its supplies (besides the Canadian reactor, Cardinal also obtains molybdenum-99 from Europe), admits that all companies in the industry are dealing with the shortages’ effects. “We’re all working to prioritize,” a company spokesperson said.

But the crisis just highlights much larger issues for nuclear medicine in the US, where misguided fears about the effects of radiation already have the industry backpedaling.

Congressional intransigence in providing reimbursement dollars, endless rounds of budget cuts, a preoccupation with over regulation and the pervasive residual effects of a broken healthcare system have combined to undermine nuclear medicine’s promise.

Dr. Peter Conti, chairman of the SNM’s Government Relations Committee and past Society president, said, “This is just the tip of the iceberg. More and more of the core activities in nuclear medicine are moving out of this country.”

He says unfounded safety fears about nuclear products combined with Congressional inaction in getting CMS to approve reimbursements plus too many FDA regulations are harmful to nuclear medicine.

“As critical as this is, the real issue is the lack of investment to maintain nuclear technology in the US. Nuclear therapies are very safe,” he added, “but the risks not rewards are making the headlines.”

Moreover, Dr. Conti says alternatives for use in crisis situations like this one are available but again it’s a matter of reimbursement and too much FDA regulation.

For example, he said that fluoride bone scans are the equal of those using technetium 99. “Hundreds of cyclotrons are out there and could be producing immediately.” That’s unlikely, however, given Congress’s intransigence at loos-
en ing the reimbursement purse strings.

Meanwhile, in Canada, the reactor closed on Nov. 18 for maintenance and was scheduled to open five days later. It didn’t happen.

Atomic Energy’s wholesaler, MDS Nordion, initially said full production would not likely resume until mid-January, 2008 at the earliest. It’s estimated that MDS supplies approximately 50 percent of the world’s isotopes for use in nuclear medicine.

AECL had advised MDS Nordion that a further extension of the maintenance shutdown at the reactor was required to complete upgrades to address regulatory issues. Of primary concern, the fifty-year-old reactor needs two new motor starters for the reactor cooling pumps, which then also need to be connected to an emergency backup power supply.

Because the isotopes created by the reactor decay rapidly and thus cannot be stockpiled, shortages have been felt at hospitals and medical centers in the US and Canada, as well as the rest of the world.

In Canada, for example, Dr. Kevin Forkheim, Director of Nuclear Medicine for Vancouver Island, British Columbia suggested the medical community was caught off guard by the news. “There was no lead time,” he said. “People need these tests in a timely manner. There are no other suppliers.”

Meanwhile, the head of the Canadian Nuclear Safety Commission, Linda Keen, told AECL that it was in violation of its license. Press reports there suggest that AECL alone will, as a result of the extraordinary legislation, be able to determine whether it’s safely operating the oldest research reactor of its kind in the world.

The Canadian Society of Nuclear Medicine has reacted by saying the nuclear medicine community is “devastated” by the shortages. “Nuclear medicine services are now being rationed across Canada. Patients with fractures, cancer, heart disease and blood clots are not getting timely access to critical diagnostic procedures,” the Society said, also noting that the med-

continued on page 45
Medical imaging is one of the biggest industries in healthcare, and there are many companies in this diverse and competitive marketplace. Some are part of the technology-driven world of X-ray tubes and Image Intensifiers (II). For those OEMs and third party providers—the global market is over a billion dollars. Without question, tubes and intensifiers are critical components in X-ray imaging equipment. When they need to be replaced, buyers may have a service contract with the original seller, or they may need to look at other options. Depending on the type of X-ray tube or II and where it’s purchased—and whether it’s purchased new or refurbished—prices range in the thousands to hundreds of thousands of dollars.

For example, German Filgueira, president of Poder Inc., Miami Beach, FL sells Varian and Dunlee X-ray tubes and reloads and sells GE Lunar tubes for bone densitometry. “An OEM densitometry X-ray tube sells for around $9,000,” Filgueira states. Poder Inc. will reload a tube and guarantee it with the same guarantee an OEM gives—and sell it for $4,500.”

Technical Prospects, LLC in Greenville, WI sells X-ray tubes and II. President Jeremy Probst says, “In most cases, reloaded tubes are as good as new tubes. There may be some differences between the OEM insert vs. the aftermarket insert. However, these inserts are manufactured as close to the original as possible. We supply both new and “as is—where is” tubes to the medical imaging market. Probst believes that an end user can save anywhere from 25 to 50 percent when purchasing a reloaded tube or refurbished II.

X-ray tubes are designed for demanding applications including angiography, computed tomography (CT) and for the specific requirements of mammography and dental imaging. An X-ray tube must be replaced when the dose loss reaches a level of 50 percent or when the required exposure time has doubled.

Image Intensifiers convert X-rays into a light image that is recorded with a camera. The performance of an II can be judged by the light intensity produced in the output screen and
the spatial resolution. The light intensity is most often expressed using the conversion factor $G_x$. This conversion factor relates the luminance, measured as:

$$\text{Total gain} = \text{Flux gain (area input screen/area output screen).}$$

The spatial resolution of an II has improved over the last two decades. For example, for a pre 1970 II using a ZnCdS:Ag input screen, a spatial resolution of 2 lp/mm was rarely achieved. Modern IIs show values of 5-7 lp/mm.

Jeff Rondeau, president of 5 Star Imaging, Odessa, FL says that his company repairs and evaluates all X-ray tubes and IIs from Dunlee, Siemens, Varian and Thales. They also sell pre-owned certified products tested at 5 Star Imaging to meet all OEM specifications. Rondeau said that the life of an X-ray tube varies depending on its usage. “If an X-ray tube is sitting in a chiropractor’s office it’s not going to be used as much as it would be in an emergency room,” says Rondeau. “Those that are not used frequently can last ten years or more, while those used on a regular basis may need to be replaced in a matter of months.” 5 Star Imaging reloads, repairs and evaluates all X-ray tubes and IIs from Dunlee,

### New and reloaded tubes

According to Ralph Babcock, general manager at Imaging Affiliates in Rural Hall, NC, refurbished tubes are tubes that have had some repairs done to them, without completely reloading the old housing with a new insert. “It can be as simple as changing and replacing the dielectric oil that is in the housing to replacing grid-switches and even anodes and cathodes,” says Babcock. When a tube is manufactured new, the original manufacturer takes a housing and an insert and combines them to form a new tube-unit.

This new tube-unit will probably include a housing that has been refurbished to conform to original specifications and has some parts replaced on it such as stators, gaskets, expansion-bellows, high-voltage receptacles and port-windows. Babcock says that all the original tube manufacturers “reload” x-ray tubes — that is — take a refurbished housing and load a new insert into this housing as well as some tube reloaders such as STAT, 5 Star and North American Imaging. “Reloaded tubes are tested to conform to the original performance specifications and are given the appropriate warranty that a so called ‘new tube’ would have,” Babcock says. “Refurbished tubes are also tested to this conformity (focal spot sizes, emission, high-voltage stability), but may or may not be given the same warranty as the new or reloaded tubes would have.”

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CT X-ray tube

The CT X-ray tube is one of the more popular, most used and most replaced. The average useful life of a CT tube is sometimes estimated by the number of slices the CT system has performed. Michael Webster, president of Legacy Medical Imaging, Fort Worth TX, says that tube life depends on the type of tube and which system it’s used in. “LMI works with a lot of GE systems and have found the life expectancy on a 3.5MHU tube lasts between 120K to 200K slices and a 6.3MHU Proformix tube can last over one million slices,” says Webster. Ralph Babcock at Imaging Affiliates says, “The CT tubes today are called on to perform at a much higher level then we thought possible 20 years ago.” A typical spiral body scan would be performed at 120 kV, 400mA for 15 seconds or more continuous. This means the tube is performing at 48kw continuous and in the course of that 15 seconds, will emit 720kJ of X-ray energy and heat. Ten to fifteen years ago, CT technology was limited to single exposures of lower techniques and much longer wait times between slices. In order to do the necessary power and through-put demands placed on the scanner, the tube must be comprised of very special components that are designed to take the loads and stresses of the demands placed on the tube. CT tube components such as bearings, targets, cathodes and metalframes must not only be up to the high heat demands of this technology, but also be able to withstand extremely high
G forces as the gantry rotates as fast as two to three times per second. Babcock went on to say that everything in the CT tube has gotten much bigger to handle this and a lot of the metals used in the target are strategically desired materials that are in high demand throughout the world such as molybdenum and tungsten and have a correspondingly high price to go with that demand. “When we look at the types of procedures that we can do non-invasively that result in quicker and faster diagnosis, we can justify the higher costs for these tubes,” says Babcock.

Greg Kramer, president of C&G Technologies, Inc., Jefferson, IN said that prior to multi-slice CT, the industry standard units for tube wear was the “slice”. One rotation under X-ray power, producing one image, equaled one “slice”. According to Kramer, “1 slice = 1 image. The term slice and image became interchangeable words,” Kramer says. “Toshiba counts rotations whereby one 360 degree scan under power, equals the measure of tube wear in ‘rotations’. One rotation can equal as many ‘images’ as the detector can collect in one rotation, i.e. 1,2,4,8,16,32,64, etc.” He went on to say that Philips and Siemens use the ‘scan-second’ measure of tube wear. “This is the number of seconds the tube is under power while scanning,” says Kramer. “One scan-second can equal the same number of images as in rotations, or it can mean more since many scanners can do two or more full 360 degree rotations in one scan-second. Note that none of the above methods take into account the amount of Voltage or Current put into the tube,” states Kramer. “Therefore, two tubes with identical amounts of slices, or rotations, or scan-seconds can have very different amounts of true wear on them.” Kramer explained that GE uses Amp-Seconds to measure tube wear. The amount of current (amps), times the duration of the scan (seconds), equals Amp-Seconds. GE CT scanners report this in mas, a smaller unit the amp-second. 1 amp second = 1000 mas.
“Scanning at 250mas for one second = 250mas. The number of images generated depends on the number of detector rows. This method is more of a true measure of tube wear,” Kramer says. He goes further saying, “having said all this, you can see that the terms ‘scans’ and ‘slices’ are no longer necessarily the same. It would be easier on all of us if the manufacturers would adopt the same method for measuring tube wear, and my preference would be for amp-seconds.” Rick Fow, vice president of sales at C&G said that the company sells new tubes from Varian and Dunlee and also sells refurbished tubes. “We put our used tubes though a “process” checking all parts and replacing the oil in the protective covering,” says Fow. “This process will add longevity to the life of the tube.”

Many years ago, Dick Dilick, president and CEO of J&M Trading, Goodlettsville, TN had an idea to extend the life of the X-ray tube by attacking the primary element which fails a tube – that being the arcing and/or corona effects which cause the tube to become useless. “We found that the science behind the failure provided a means to correct the problem, in the field, and we received a series of patents for it,” says Dilick. “Basically, tube life is not infinite, but because of its high quality and design characteristics, it is much longer than the life of the combination of the insert and housing in an untouched fashion. Simply removing the water, a polar molecule in a DC Field, and gases, which sometimes produce bubbles in the housing, when created in a situation where the gases are produced in a volume greater than the saturation level of the medium used as either/and an insulation/heat transfer mechanism, allows the dramatic reduction of arcing and corona, and – guess what – a long life (with constant care).” Dilick continues, “Not a very rewarding statement to a patent holder, but very rewarding to the site using the process. In one case, the third party service firm produced an annual profit from one CT scanner alone, over a two year period of $820K,” says Dilick.

OEM X-ray tube manufacturer

GE Healthcare, headquartered in the United Kingdom, is an OEM giant in the X-ray tube business. They manufacture X-ray tubes for every medical imaging application including CT, vascular, radiology, R&F and mammography. Global Tubes manager, David Milner heads up the X-ray tube division at GE Healthcare and says that there are three production centers for X-ray tubes in Europe, India and the United States. “These centers
manufacture thousands of tubes per year,” says Milner. He went on to say that an extensive number of quality control tests are performed through the tube manufacturing process to guarantee a high level of performance and a longer lifespan. Global tube engineer manager or GE tube manufacturing, Thomas Ebben, said that the emergence of cardiac applications in diagnostic imaging requires GE to push the limits of performance with X-ray tubes. “To meet this demand, GE Healthcare engineers have created a new generation of X-ray tubes perfectly adapted to the technical requirements of each clinical segment for a better medical diagnosis,” Ebben used the Performix Pro Line, as an example. “It is the only X-ray tube in the world that is able to sustain 100KW of power for better image quality during cardiac examinations. In addition, the extremely high heat dissipation rate makes it possible to increase the number of consecutive exams without being limited by tube cooling,” states Ebben. GE Healthcare has exclusive rights to their X-ray tubes and only sells directly from GE Healthcare.

In 2000, GE was the first company to introduce full-field digital mammography for patient use, and today there are more than 1,500 GE Senographe systems in use worldwide. GE Healthcare’s Senographe Essential features the largest detector, offering largest field of view. Panel image detectors retain their sensitivity, yielding excellent images over the entire lifespan of the product. The digital flat-panel is more compact than an image intensifier, so it is much easier to incorporate into different system designs, including mobile systems with greater ease of access to the patient.

Heavy hitters in the X-ray tube industry

Without argument – Dunlee and Varian Medical Systems have a huge share of the X-ray tube market.

Dunlee’s roots in the X-ray tube business are obviously strong. Dunlee, a division of Philips Medical Systems, with world headquarters in Aurora, IL, stocks tubes at their factory in Aurora, IL, as well as air terminals throughout the United States, Europe and Asia. Their customers include OEMs, service providers and end users. According to David Kuehn, vice president of Global Marketing & Sales, Dunlee offers a full line of replacement tubes including over 70 CT replacements and 50 conventional X-ray replacements. “Dunlee tubes meet or exceed original OEM specifications for fit, form and function, and the warranty conditions are second to none,” says Kuehn. Dunlee’s prices are lower than the OEMs, but they use the best materials for the construction of X-ray tubes and also use the same vendors (in many cases) as the OEMs. “Streamlined manufacturing, highly experienced workers and an in-depth understanding of CT systems enables us to create products that meet or exceed the specifications of the OEM tube for performance,” says Kuehn. As the OEM sales channel for Philips Medical Systems, Dunlee offers a product portfolio that includes X-ray tubes, image intensifiers, collimators, table-tops, grids, etc. Dunlee and Philips are responsible for several industry firsts, including the first 1 MHU CT tube and their exclusive spiral groove bearing technology. Dunlee’s Glassware Solutions in an innovative program that allows diagnostic imaging institutions the opportunity to eliminate the unpredictable expenditures associated with glassware replacements by providing complete glassware coverage for a flat monthly fee.

Varian Medical Systems, Inc., Palo Alto, CA is the leading independent manufacturer of X-ray tubes and digital detectors for X-ray imaging in medical, scientific and industrial applications. In its most recent fiscal year ended September 2007, the company reported revenues of $1.8 billion, of which X-ray products contributed $258 million. Varian’s X-ray products business based in Salt Lake City, UT supplies powerful and technologically advanced X-ray tubes to many large manufacturers all over the world. David Hurlock, international marketing manager for Varian Interay said that Varian Interay manufactures cost effective replacement medical X-ray tubes in diagnostic equipment made by GE, Hitachi, Philips, Shimadzu, Siemens and Toshiba.

Hurlock explained differences be-
Bernard Glas, vice president of marketing and sales at Adam Medical Sales, Inc. in Brooklyn, NY says that Adam offers short warranties on CT tubes – 60, sometimes 90 days. “It also depends on customer’s usage too,” says Glas. “If we know the CT tube will have ‘light use,’ we may extend the warranty to 90 days.” Glas went on to say that companies like STAT Medical would give a longer warranty because they have better capabilities to test and forecast the life of an X-ray tube. “I can light the tube up and visually check it, but a company like STAT has all the equipment necessary to disassemble a tube and test all components,” says Glas.

STAT Medical X-ray Tubes, Inc. does offer a warranty of 12 months pro rated and some 24 month warranties on their new X-ray tubes. Remanufactured tubes usually carry a 90-day to 12 month warranty depending on the tube. Tim Davis, president of STAT Medical X-ray Tubes, Inc. has found a true niche in the X-ray tube market and its working. STAT specializes in unique, hard to find tubes including stationary anode, monoblocs, cath/angio, and CT tubes. “We have the ability to reload and source hard to find tubes,” says Davis. “When I started this business in 1993, I had 1,250 square feet of space and last year we moved into a 2 million dollar building.” Davis attributes some of his success to the fact that there aren’t many tube loading facilities left in the United States and that has helped his business grow. He also said that STAT deals with tubes that other companies choose not to deal with. “There’s a need out there for hard to find angio and CT used tubes and we will provide them, or fix them and add a significant warranty,” says Davis.

As far as Image Intensifiers go, Davis said that he is not involved.

He is, however, researching flat-panel detectors, which he feels have a way to go in terms of repairability. “When the time is right, and I feel that flat-panel detectors are worth investing in, I’ll consider it,” says Davis. 

**DOTmed will do an Industry Sector Report on Flat Panel systems in its February issue.**

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You are already familiar with the care taken to protect patients during MRI studies, such as getting written documentation of their suitability for the exam. (Did you ever work with metals? Do you have cochlear implants?) Your facility no doubt has measures to ensure that no ferrous or magnetic metals enter the MRI suite. But these protocols are just the final step in a thoughtful process to protect patients and the magnet itself. Well before the magnet is placed into service (or an MRI machine is replaced), the site and suite must be completely shielded by specialized contractors.

How large is the business of MRI shielding? DOTmed experts estimate that around 600 to 700 MRI shields are installed each year in the U.S. However that number may be shrinking while the industry is getting more competitive, according to Mark Holder, Operations Manager, Global Partners in Shielding, Inc., Passaic, NJ. “The small guys are dropping out and only the serious shielding companies are left,” he says.

While most shielding projects are done from the ground up for new magnet installations, the upgrade segment is growing faster. Up to 20 percent of MRIs are installed into existing suites that must be converted for equipment upgrades. Some insurers are choosing not to cover the lower-field open MRIs anymore, further driving the upgrade market.

“We haven’t seen market saturation as far as new magnets but it’s coming. The upgrade business is going to be going on forever,” Holder predicts.

The cost of MRI shielding runs anywhere from about $25,000 up to $1 million for a super high-field 7 Tesla research magnets. Most MRIs in clinical settings are in the range of 0.23 to 1.53 tesla.

MRI shielding has multiple purposes: to prevent electromagnetic fields from escaping the MRI suite, to prevent radio frequency (RF) waves from infiltrating into the room (radio stations, planes, wireless networks), and to guard against “noise” from nearby sources of electrical current. All of these forces cause problems. A person with a pacemaker must remain outside the 5 gauss (5 gauss) magnetic field for their own safety. Each can cause harm to patients with pacemakers. Other sensitive equipment may also be impaired by subtle magnetic fields.

RF and electrical interference can distort MR image quality. “The magnet vendors must sign off on the room and they are not going to put their equipment in a shield they don’t feel will allow it to work to maximum efficiency,” says Rusty Harper, Operations Manager, Shielding Dynamics, Tomball, TX. Texas.

Specialized contractors offer solutions to shielding challenges through the use of various materials and approaches to fit the specifics of your MRI technology and your facility.

“What we are doing [in MRI RF shielding] is making a continuous, seamless, six-sided box room out of a conductive material metal. Special provisions are made at all penetrations to ensure shielding effectiveness, and special doors and windows are utilized. We offer a few different RF shield designs, but recommend a soldered copper room for quality and long-term reliability,” explains Mike Profeta, Magnetic Resonance Technologies, Willoughby, OH. The project budget, site conditions, or the requirement to be re-locatable don’t always allow for soldered copper construction. Therefore, alternative shield designs such as modularized panels that are mechanically assembled are available. Some companies offer galvanized steel panels or aluminum for RF shielding. “Magnetic shields are accomplished with the use of plate steel or layers of thin sili-
con steel. The magnetic shield requires special computer modeling to design. The use of plate or silicon steel is primarily dictated by the quantity of steel and geometry required,” adds Profeta. “Primarily [silicon] steel shields are set up to contain the magnetic field….You can take any metal to create the RF shield.” Profeta recommends a soldered copper room. However, some companies use aluminum or galvanized steel panels for RF protection.

The OEM that manufactured the MRI provides performance specifications for the room in terms of allowable measurements for RF shielding effectiveness or magnetic field containment readings. However, it’s often left to the contractors, such as independent service companies that focus on MRI shielding, to determine the best materials and design approach.

“Aluminum, copper and galvanized steel each has its strengths. Galvanized steel offers great performance and better economic value,” suggests Anthony Steffens, Regional Sales Manager, Braden Shielding Systems, Tulsa, OK.

“We use copper, galvanized and welded steel in our rooms. Each material has a different application determined by the system and the existing site,” says Gregory Vojak, President, MED DMedesign, Inc., Solon, OH. “We feel a copper soldered room is best for RF attenuation, although some low- and mid-field systems can benefit from the use of galvanized steel to control any outside EMI and magnetic fields that may be present. With high-field systems and 3T units, a steel shield of one quarter

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inch or more is recommended to help control the field produced by the magnet.”

ETS-Lindgren offers all three types of RF shielding: copper, galvanized steel, or aluminum, depending on the needs of hospitals and imaging centers.

“If the need is only for RF shielding, most of the RF copper, galvanized steel and aluminum are fairly lightweight with galvanized being the heaviest of the three,” says Ben Turner, Vice President of Sales and Marketing, ETS-Lindgren, whose shielding division is based in Glendale Heights, IL. “When you get into magnetic shielding that is of significant weight, that begins to dictate structural issues and may force the customers to look at only a ground floor or basement site.” (A super high-field magnet might require hundreds of tons of shielding.)

Sage Advice from Industry Pros

Contractors must work out site-specific details such as weight bearing, acoustics and other engineering considerations in MRI suite construction. Some of these may dictate shielding choices. Used equipment installations bring questions to the table, too. You can’t assume that a pre-owned MRI system comes with its shield, although, depending on the shielding medium, you may be able to save money by relocating the shield. Soldered copper can’t be relocated, while modularized systems such as galvanized steel panels may be movable if the work is performed by a professional and great care is taken.

Industry experts at DOTmed.com suggest you do your due diligence in choosing a shielding company. The company installing the MRI may not have shielding design and build expertise. Here some suggestions for hospitals and imaging centers planning to install or replace an MRI:

“Check references and do not rely on the architect to select your shielding company because they don’t research companies,” notes Paul Yastrab, Physicians Imaging Solutions, Akron, OH. “Always insist on two shield tests: one upon completion of the room and one after the magnet is installed.”

“Don’t wait until the last minute to discuss and decide on shielding and don’t let the general contractors make decisions for you,” adds Michael Krachon, Imedco America Ltd., Noblesville, IN. “You choose the MRI, you should choose the MRI shield package. Find the time to get involved. This may be one of the most critical packages in your build-out. Remember that if the shield has problems, your MRI will not work properly.”

“Get references and test the room by an impartial tester,” confirms Marshall Shannon, Director, Image Technology Consulting, LLC, DeSoto, TX Texas. Never, I repeat never take the word of the installer that the room is tight.”

A cautionary note: Qualified shielding companies are often brought in too late, after another contractor has built an ineffective shield. “Happens all the time,” reports Profeta. He once tested another company’s shield only to find he could pull in radio stations and make cell phone calls from the MR room. Obviously

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that work was nowhere near being properly shielded.

“In an existing site receiving an upgrade or MRI replacement, time should be allowed in the construction schedule to identify and repair compromises in the shield,” Profeta strongly advises. He notes that it may take anywhere from a day to a ten days to modify and repair an existing shield, and four days to two weeks to build a new shield. It all depends on the material, size and complexity of the project. A pre-fabricated shield will take less time to install than a shield made from raw materials such as soldered copper. However, the off-site pre-fabrication must be added to the schedule.

“I would advise getting the shielding contractor involved in the early stage in any type of discussion. A good one will work with your architect for free to design the system,” Holder adds. “Too often inexperienced architects don’t understand the nuances of shielding and may give you four inches to build a shielded wall and it doesn’t work. You’ve got to get it down on paper from day one.”

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Today’s MRIs incorporate powerful magnets that must be kept at sub-freezing temperatures of about 4 degrees Kelvin or minus 470-450 Fahrenheit. To reach these temperatures, superconductive magnets use a liquid helium technique: Inside an MRI is a helium vessel with an electromagnetic coil flooded with liquid helium. Surrounding the helium vessel which is kept in a vacuum, are insulating shields. The shields, cold head, cold head compressor, and chilled water are all part of a refrigeration system that reduces the helium boil-off or “evaporation” rate.

This elegantly simple design supports a segment of the medical industry that produces, distributes and fills liquid helium to cool the MRIs in service at U.S. hospitals and imaging centers.

Helium is a byproduct of natural gas production. Only a handful of firms around the world refine and supply liquid helium, and the United States is one of the few countries in a position to produce it. About 20 percent of the global market for helium is used to cool MRI magnets, with another 17 percent used in laser welding. We are in the midst of a global helium shortage, in part, because overseas plants that were supposed to come online in 2006 have not. U.S. production was slowed this year by storms in Kansas and Oklahoma that damaged power lines to major refineries. In addition, plant maintenance at other U.S. facilities has contributed to a production slow down. Shortages have brought price increases so cooling magnets and keeping them cold while conserving helium has become a priority in the medical equipment industry.

Even at the sub-freezing temperatures inside an MRI, a continual boil-off of helium takes place, requiring constant replenishment. While the newer MRIs have less boil-off and require less frequent service, the overall growth in the use of MRI supports an estimated 2-4
percent yearly global increase in the medical consumption of helium.

In addition to this regular service, more significant quantities of helium, as well as less costly nitrogen, are used for the initial cool down of the magnet and to re-cool it in the event of a quench—a massive helium release, which can occur for various reasons due to the MRI is malfunctioning or some procedural errors when servicing.

DOTmed.com estimates the cryogenic service industry distributes more than $25 million in helium yearly just to service existing MRI magnets as part of regular maintenance, not counting the additional consumption that may be required to re-cool magnets that have “warmed up” or that have developed an ice block.

“Liquid helium is the coldest substance known to man. In that MRI you are trying your best to insulate it against the outside world [where] heat is trying to make its way into that magnet,” explains Mark Glajchen, Head of Liquid Helium and Associated Services, Linde Inc., Murray Hill, NJ. The company’s acquisition of BOC in 2006 makes it a major player in the distribution of medical cryogenic products to thousands of MRI systems in the U.S. “Our focus in this market space is not only providing the helium but actually transferring it from the dewar [portable insulated vessel] into the magnet, Glajchen says. “We view it as a vendor-managed inventory process.”

A handful of suppliers distribute medical gas products including Linde, Inc., Praxair, Air Liquide, and Air Products. In addition to the producer/suppliers, selected specialized independent service organizations also provide helium service, including remote monitoring of the MRI to check helium levels, topping off the helium regularly, and providing cool down service when needed. Many third party service companies also provide helium service, and a number of them subcontract that service.

Loading helium is part science and part art. There are a lot of people somewhat familiar with the process, but experts are prized. Good equipment is also a factor. In particular, helium is loaded with a fill-line and over time it loses efficiency.

**Cool Down Service Requires Great Care**

MRI magnets are contained in sealed vacuums with a vent to allow gas to escape since the helium is always boiling. But if a leak breaks the seal on that venting, ice (frozen air) could get into the magnet, which may trigger a dreaded quench. Once that occurs, the magnet may need to be brought back up to room temperature and cooled down again. (Think of defrosting a freezer.)

Because of the high cost of helium, a warm magnet is first pre-cooled with nitrogen, a process that takes several days to “soak.” Nitrogen is then carefully extracted and helium introduced into the thermal vessel of the MRI.

“With a liquid that is very expensive if you were to just start pouring helium into [the MRI], it would vaporize because it’s like pouring drops of water on a hot frying pan,” says Thomas Freund, Director of MRI Services, Oxford Instruments. “What we do is fill it with liquid nitrogen first, which is very very cold but also very cheap compared to helium. This is a pre-cooling process—just as you would pre-heat an oven, you would pre-cool a magnet.”

The cost of cooling down the magnet runs in the $10,000 to $15,000 range just for labor, not including the significant cost of upwards of 5,000 liters of helium — at least $5 per liter as of this writing.

“Another important thing is the time it takes because, if it’s in a hospital or clinic, you are looking at least three
weeks of down time: the warming up process, pre-cool when we put nitrogen in, then pump the nitrogen out, and fill with helium,” Freund says.

Clearly you want to be sure your service company knows what its doing. A mistake can be not just costly but dangerous. For example, odorless helium or nitrogen can quickly displace oxygen if leaked into the suite. This can cause suffocation so technicians need personal oxygen monitors. To work on the magnet, the technicians use a variety of specialized tools and instruments including turbo-molecular vacuum pumps and mass spectrometer leak detectors.

“The quench may occur for any number of reasons: procedural, hardware failure, magnet problems such as ice gets in through a leaking venting connection…this could divert the helium fill to the exhaust line, not the magnet,” cautions Mike Profeta, President, Magnetic Resonance Technologies. “Or, if the file line vacuum is compromised the liquid might turn to gas as it’s being pumped into the magnet instead of liquid—it’s not as cold as liquid and the magnet can quench.”

Profeta recommends choosing MRI servicers carefully: Check the credentials of those you are dealing with. Ask for

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Cold Head Maintenance Is Also Key

There are steps that you can take to reduce the helium boil-off and reduce helium consumption. This entails proper maintenance of the MRI's internal refrigeration system and it’s useful to know something about its design.

The MRI Cold Head is used in conjunction with a cold head compressor to reduce the boil-off rate. Typically, a cold head will last between 18 and 24 months. If a cold head fails, the helium boil-off rate can increase as much as 5% a day. A broken cold head can sometimes produce heat and create so-called thermal inversion. This introduction of heat into the helium shields can increase the helium boil-off to as much as 10% a day.

Other components may also contribute to helium loss. Specifically, a compressor pumps helium gas through high pressure lines to the cold head. If the cold head compressor stops working, the cold head shuts down and in a day or two, the magnet begins to burn 3-5% of its helium per day. While the cold head compressor can run for years, there is an adsorber that purifies helium traveling through the cold head compressor to keep microscopic bits of oil from contaminating the helium lines or damaging the cold head. Properly maintaining the adsorber and the cold head compressor also reduces helium boil-off.

MRI operators should consider hiring service companies capable of keeping the entire refrigeration system running smoothly as well as providing the helium. For this reason, you may want to find technicians such as independent service organizations that can also provide related MRI services such as maintenance of the cold head component.

Other MRI services include shimming, which is the adjustment of the magnetic field to ensure uniformity. Ramping the magnet is yet another specialized process since electrical current is introduced gradually when you place the unit into operation.

Future Trends

MRI manufacturers are coming up with new cooling techniques to lower maintenance costs and reduce downtime for the equipment. For example the older MRIs require helium to be added every few weeks while some of the newest designs claim they need filling only every few years. Other technologies are also on the horizon.

“Right now companies are working on using liquid neon instead of liquid helium. The expense and scarcity of liquid helium is driving the market,” says Marc Fessler, Partner, Independence Cryogenic Engineering. “Manufacturers are trying to find ways to use less liquid helium and to keep what you have longer, to recycle or re-condense the liquid that boils off using cryogenic pumps and a cold head that can reach liquid helium temperature. These trends add to our business because in the past people let cold heads and compressors run till they weren’t efficient. Now it’s more optimal to do preventive maintenance.”

DOTmed Recommends

All the experts interviewed for this story stress the complexity and even danger of the helium cool down process. As Mike Profeta cautions, due diligence is vitally important when selecting a company to handle the process as this is not a process that can be handled by amateurs or even companies with only passing knowledge. It’s a field that demands the highest level of expertise.

● [DM 5263]

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Heart disease is one of the deadliest and most expensive illnesses, claiming over 500,000 lives annually in the U.S. alone, while costing a staggering $394 billion in health-care expenditures and lost productivity, according to the Centers for Disease Control.

When seeking care, a special procedure room often stands between a patient’s life and death.

Whether individual Catherization or Angiography Labs, these suites contain some of the most expensive and cutting-edge medical equipment available today.

There are two families of cath/angio labs, according to Andy Dunn, marketing director, Philips Medical Systems: a single plane or a bi-plane, which cost from $1.2 to 2 million new.

Over the past 10 years, two major technological advances have occurred within Special Procedure Rooms: 3D imaging and the growing use of digital (or flat paneled) image detectors. 3-D reconstructions of blood vessels and soft tissues allow interventions guided by technology representing a quantum leap in angiographic imaging, according to Dr. Michael Marks, chief of Interventional Neuroradiology at Stanford Hospital & Clinics. Advanced digital tools help physicians see detailed views of the operating area, leading to greater accuracy and better results.

Opened in 2005, Stanford’s Cath/Angio Lab took almost two years to complete. The 916-square-foot space serves three to five patients daily using Siemens DynaCT and AXIOM Artis dBA image detectors, one of only three hospitals in the nation to offer this type of advanced digital imaging. Image detectors provide both front and lateral images, creating a three-dimensional view of blood vessels and soft tissue.

The top OEM providers of Cath/Angio special procedure equipment are Siemens, Philips, Toshiba, Shimadzu and GE Healthcare.

This year, at RSNA, Siemens introduced its Artis zeego multi-axis angiographic system with imaging that moves into an additional dimension. Greater freedom of positioning accommodates nearly all projections from head to toe while the syngo Dynast application has been expanded, creating not only 3D but 4D image applications.

Philips, meanwhile, introduced the next generation of its Allura Xper line of interventional imaging machines, including monoplane and biplane.

GE Healthcare is touting its Innova 2100 next generation of cardiovascular...
imaging and its LightSpeed VCT for its Cath Labs and EP Labs. And Toshiba has unveiled a host of new products including its Aquilion CT line platform that allows users to benefit from Quantum Advantage.

Key cardiac teaching and research hospitals such as Stanford Hospital in Stanford, CA, Methodist DeBakey Heart Center in Houston, TX and Sarasota Memorial in Sarasota, FL are the ultimate end-users of all the latest bells and whistles.

Cardiac vascular attacks are the number one killer in the nation, says Dennis Holloway, director of the Cath Lab at Sarasota Memorial Hospital in Sarasota, FL, a leading specialist in the cardiac field treating from 4000 to 5000 patients annually.

Sarasota Memorial has four Cath Labs, two EP Rooms and one Outpatient Cath Lab with two rooms. All of the above is carefully monitored by the Siemens Guardian Program, which uses various alert systems to continually monitor all Siemens equipment in real time.

Though many hospitals are sometimes particular about using newly purchased equipment, Siemens, says its Proven Excellence Refurbished Systems sells pre-owned Siemens cath/angio equipment.

“OEMs take back their own equipment to refurbish because only we (have the ability) to do this from the ground up,” says Kurt Fenner, VP/GM, business management, Siemens.

“We clean, disinfect, paint and test each piece even before we refurbish,” he explains. Parts replacements are always done off-site but some software upgrades can be done in the field.

Philips also has a refurbished systems group which sells pre-owned Philips cath/angio suites through its Diamond Select Sales Group.

“We take out old Philips equipment and bring it back up to current standards,” says Dunn. While the pre-owned market is not as big in the US as it is globally, Dunn notes that budget is the determining factor in the U.S.

“What do they want to do and how much can they afford are the guidelines within the states. While the trend in the US is mostly towards the new, those looking for lower capital costs should be most concerned with checking the entire imaging chain when judging a pre-owned suite,” Dunn says.

Dunn offers one big caveat when it comes to upgrading in the field.

“Different manufactures have different capacities to upgrade. An upgraded system doesn’t move. The ability to upgrade has to be designed into the system platform and that’s something Philips does very well.”

Indeed, according to Dunn, upgrades should only be done by the individual OEM supplier in order to insure longer asset life.

Among DOTmed readers who answered our recent questionnaire asking when a pre-owned special procedure suite was appropriate versus a brand-new one, Carl Hoffman, president of

continued on page 44
Take this insurance test: Company X hires Company Y to install a CT in Hospital Z. Company X, a broker, sold the CT to Hospital Z “as is.” Soon after a patient is injured during a scan: who does the patient sue? Probably X, Y and Z – oh, and go to the head of the classifyou got the bonus answer, the OEM that made the CT. In addition, Hospital Z may sue Companies X and Y to boot.

So the correct answer is: an injured party can, and often will, sue everyone possible – particularly anyone with “deep pockets” – if the injured party thinks they can collect a liability judgment. We’ll come back to this case in a minute after a brief look at the nature of “risk.”

Business insurance 101: Accepting risk vs. transferring risk

In its simplest terms, insurance is a gamble. It’s all about an individual or company either retaining the risks they face, i.e., remaining uninsured, or transferring the risk for a price (the premium) to an insurance company. This can be a tough judgment call because there can be so many variables; but the main factors typically are the maximum potential loss of an event, the probability that it will happen at all, and the cost of the insurance.

For example, take the risk of fire. The chance of your business burning down is very remote, so why pay for insurance? First, it’s a catastrophic event, it would put you out of business. And second, because the frequency is very low, the cost is relatively low, so virtually every business has property insurance which always covers fire damage. (Incidentally, you should make sure your property insurance specifies “full replacement value” for all equipment and furnishings, not just a dollar amount. If you’ve expanded recently, make sure your coverage is up to date.)

Liability insurance is a lot more

What hospitals and medical equipment companies need to know.

By Robert Garment
“iffy.” While the probably that you or your employees may cause a law suit may be low, the amount of damages sought can be astronomical. So how do you weigh this “bet?” One thing you need to do is take a good hard look at a factor that many people overlook.

Liability insurance and legal fees

Hopefully, you’ve never faced a liability law suit. If that’s the case, then you may not be aware of one of key benefits of liability coverage: if a suit goes to court, it is common practice for the insurance company to pay for your legal defense. And those fees can run up to be tens, or even hundreds of thousands of dollars.

Why do insurance companies do this? Because they have a vested interest in helping you win the case, particularly since liability claims tend to be multi-million dollar claims. Some insurance companies will tell you which lawyer to use, because winning is cheaper than paying.

Now let’s go back to the injured patient from the beginning. Let’s say his claim turns out to be frivolous and no award is justified. You still have to go court and pay your lawyer. Without liability insurance, you’re still hit with a big bill. Which is why many business people see the legal fee coverage of liability insurance reason enough to buy it.

What kind of liability coverage is available, which should you consider?

There are very few “absolutes” when it comes to liability insurance, and there’s plenty of differing opinions what you should and shouldn’t do to protect yourself and your business. But once this is certain, your chances of being sued are greater than ever.

General Liability

To provide coverage for a broad range of acts that could cause a law suit, General Liability coverage has evolved. This is something of an entry-level product with limits that typically are not very high. If you have, or are considering getting General Liability, check the limits.

General Liability pays losses arising from real or alleged bodily injury, property damage, or personal injury on your business premises or at other locations where you normally conduct business. Often, General Liability insurance is packaged with Property coverage in a “business-owner’s policy,” or BOP.

Make sure you understand the scope of the coverage of your General Liability policy. If any of the following coverages are not specifically included but relate to you, weigh the pros and cons of buying them.
### Products/Completed Operations Liability

This is something many ISOs need to evaluate. If you repair, maintain, or refurbish medical equipment, Products/Completed Operations Liability insurance covers bodily injury or property damage from equipment you’ve serviced or sold. For instance, if you do a PM on an MRI and miss a defect in the cooling system and something goes wrong with that machine and someone is injured, or property is damaged, you can be sued.

Another reason to consider this coverage is it can make you more “saleable” to both new and existing customers. If a hospital knows you have Products-Complete Liability coverage, then they know there’s an insurance company behind you.

If you plan to hire a company to do technical or engineering work for you, such as an installation or deinstallation, ask to see their Products/Completed Operations Certificate of Insurance before using them. Also be sure to have them name you as an Additional Insured under that policy. That way if a claim is made against you because of work they did, their insurance company will defend you, and your insurance company can be kept out of the loop.

### Product Liability Insurance

Product liability insurance isn’t just for OEMs. While Products/Complete Operations Liability will cover most of the work you or your engineers perform on equipment, if you say you remanufacture equipment, the OEM may be off the hook and you may be on it. You should definitely talk to your insurance agent about this coverage.

### Employment Practices Liability Insurance – EPLI

As we have noticed, today anybody can sue anybody for anything. One area that has become an expanding minefield is called Employment Practices Liability. Typical law suits here can arise from alleged transgressions in the workplace by employers, and you can be sued for sexual harassment, abusive behavior, unjustified termination because of age, race, religion, etc.

As with other liability coverage, the benefit here is not just the insurance coverage. EPLI law suits can be extremely subjective, and the possibility of a disgruntled employee filing what ends up to be a false, yet nevertheless very expensive lawsuit, makes EPLI worth considering. EPLI is also not just for big companies; if you have 10-15 or more employees, you should at least ask for a quote for this coverage.

### “Will that be Occurrence or Claims-made?”

Occurrence and claims-made policies are the two basic “flavors” liability insurance come in – by comparison, property insurance is simple and straightforward. Here’s a simple way to understand how they differ: claims-made insurance is like term life insurance.

You have coverage as long as you pay your annual premium; if you stop paying, you no longer have coverage, and the policy has no value – the policy is finite. Occurrence liability coverage never ends. Even after you stop paying your premium, your policy provides coverage indefinitely for any acts that occurred when the policy was in force, even if the claim is made years in the future. Most experts agree that an occurrence policy, because coverage never ends, is superior to a finite claims-made policy. That’s the theoretical side. In practice these two type of liability coverage can, and do, get very complicated.

Because occurrence policies leave the insurance company liable to pay a claim years into the future, it’s difficult to price. To protect themselves, the underwriters typically charge a higher premium for an occurrence vs. a claims-made policy. One might think that the insurance companies would abandon occurrence forms entirely, but that is not the case. Today, liability is written under both types of coverage.

Occurrence forms are typically used today for liabilities where the chance of a claim are low, and the limits are low, factors which help keep the price down. Claims-made forms are used for liabilities which are more likely to occur, and have higher financial repercussions. Because claims-made insurance does not expose the underwriter to claims beyond the term of the policy, the cost can be more accurately determined.
But wait, there’s more...

If you get a claims-made liability policy and renew that policy annually with the same company, however, it starts to act like an occurrence policy. The date the policy goes into effect the first year becomes your “retroactive date” – which is simply the starting date of your coverage. In the second, third, and subsequent years, that date stays the same. So while you’re paying insurance on an annual basis, your coverage becomes multi-year.

The real complications arise when you switch carriers, or retire. If you switch – let’s say to get a lower premium – you get a new retroactive date (start date), and the new policy won’t cover claims from before that date. However, your new insurance company, for a hefty premium, may write a “priors act” policy.

This coverage has a retroactive date that goes back several years, depending on the terms negotiated. But we are aware, your new insurance company is not obligated to offer this coverage.

If you decide to retire and have a claims-made policy, your liability protection ceases. However, there is a remedy for this, too. It’s called a “tail” policy, though perhaps it should be called a “forward-looking” policy, because it gives your claims-made coverage additional life for several years into the future, should you get sued.

One common problem develops when you get liability coverage after having been in business for several years. Neither take policy will cover claims that may arise from that time period – not even an occurrence form.

Talk to your agent

We’ve just looked at the tip of the iceberg from a lay person’s perspective regarding business liability insurance.

We recommend you talk to an insurance agent for more information. There other coverages to consider, and your business needs a customized insurance program that addresses your specific needs.

● [DM 5267]

Disclaimer: This article was written for informational purpose only. It is not intended to provide legal advice for any specific situation or circumstance. Contact legal counsel for specific advice.

Insurance Providers

For convenient links to these companies’ DOTmed Services Directory listings, go to www.dotmed.com and enter [DM 5267]

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● [DM 5267]
Operating room surgical microscopes are an electrifying innovation in the field of surgery.

The high-end surgical microscopes available incorporate a wide range of advanced features and accessories including surgical microscope cameras, monitors, recorders and printers. There are also microscopes with speed recognition, a voice activated control system in the microscope that helps control various functions like zoom, focus and X-ray movements. The days of purchasing surgical microscopes based simply on magnification, illumination and focusing are long gone. Today, when purchasing a new surgical microscope, which can cost hundreds of thousands of dollars, balance, stability, positioning, viewing, Image Guided Surgery (IGS) and documentation capabilities must be considered.

Manufacturers have improved apochromatically-corrected color, which provides the surgeon a truer color of structures that could not be done before. Floor stands are improved giving smoother, easier movement, using electromagnetic release or easy positioning, and assisting microscopes have improved as well, with some microscopes providing the assistant stereoscopic imaging.

Surgeons around the world have been performing intricate surgeries with surgical microscopes for over half a century. Pioneered by Carl Zeiss, a leading German company in optical and opto-electronic industry, microscopic surgery was first performed on a human in 1957.

There is, of course, a robust market for new O/R surgical microscopes. However, there is also a sizeable market for used and refurbished units that can sell for as much as 20 to 60 percent less than a new one.

Nicholas Toal, corporate account executive, Seiler Instruments and Manufacturing, St. Louis, MO said the company’s Seiler Precision Microscopes division sells new microscopes and sometimes offers “demo” specials on equipment that has been in the field for a long period of time or when upgrades have been made to Seiler’s microscopic units. According to Toal, Seiler is the largest microscope company in the world that only sells through dealers and distributors, “unlike the major players in the microscope game that sell their products directly.”

“When it comes to market share,” Toal says, “Seiler offers microscopes in several areas in the medical and dental market, so it is hard to gauge exactly where we are market wise. I guess it’s safe to say, we are at the top.” Seiler sells colposcopes for gynecology, women’s health, proctology, ear nose and throat (ENT), dental, ophthalmology, surgical and compound microscopes. They also...
sell medical and dental loupes with an available LED loupe light (type of magnification device) and many other accessories.

Michael Launius, operations manager, MedNet Locator Inc., Memphis, TN says his company sells refurbished microscopes with a two to three year warranty (depending on how far the client is from Memphis). Launius reports that MedNet sells around 50 or more microscope systems a year. “We specialize in the field of otolaryngology and sell to hospitals and surgery centers for this specialty as well as others,” he says. He explains that the Zeiss OPMI-1, both bulb illuminated and fiberoptic, is the most popular microscope for otolaryngology, as well as the Zeiss OPMI MD S3 and Zeiss OPMI-IFC S21 surgical microscopes.

MedNet sells Zeiss, Storz-Urban and Vasconcellos microscopes. Launius says these systems have many interchangeable accessories and configurations for flexible usage in the operating room. Launius warned that when purchasing a new or used microscope, the buyer should know the company they are buying from.

“The company should not only know how to sell a system but also be able to sell it to you in good working condition,” he says. “Beware of the word bargains on the Internet. You can spend a lot of time and money restoring a system to working condition and not have the support you need after the purchase – not to mention the condition it may arrive in after shipment.”

Prescott’s Inc., Monument, CO sells new and used microscopes, and President Mark Redner believes that the market is very strong for both smaller facilities that go with a refurbished microscope because of budget constraints. “On the other hand, larger hospitals and research facilities always want new, state-of-the-art equipment,” says Redner. Prescott’s obtains pre-owned microscopes from hospitals and/or clinics that have changed or expanded their microscope capabilities.

“We bring these units to our facility, where they are disassembled to basic components. These components along with additional parts and accessories are used to remake an operating microscope,” Redner says. He also noted the company sells a new Prescott’s Omni-Flex – a dedicated cataract microscope that combines German optics with an American built floor-stand for a superior operating room system. “The optics designed and supplied by Haag-Streit feature the absolute latest in optical innovation with apochromatic lenses, and a red reflex enhancement system,” says Redner. “And, we have engineered...
a specific support package for the optical unit that gives the physician the most ergonomically correct operating microscope available anywhere.”

L & R Services of Miramar, FL mainly services microscopes, along with many other medical equipment systems. The company also sells some medical equipment, including microscopes. President Randy Lowers says that L & R doesn’t sell new, but if he comes across a facility that is looking to replace a microscope that is in good working condition, he’ll take the unit and sell it “as is”.

“If a scope is sold in working condition, there should be no problems,” says Lowers. He thinks that the Zeiss and Leica microscopes are the most popular because “people know they keep up with today’s market wants and needs and are competitive in pricing.” Lowers thinks that the market for used microscopes is very low. “Many of the older scopes don’t have the features of the new and are still selling for high prices. If a hospital or office spends $10K or more on a scope, they will get better warranties, more options and better support on the new product. These are key selling points for hospitals,” he says.

Stefano Fumasoli, president, Rhynstar, Inc, Davie, FL sells and services new and refurbished microscopes in the Caribbean, Central and South America. He has factory-trained technicians that service the scopes on-site. “Many of the hospitals and clinics we sell to and service have limited budgets, and I’ve found that there is a substantial market for refurbished O/R microscopes,” Fumasoli says.

When Rhynstar refurbishes a microscope, the technicians rebuild it, and will often exchange old pieces, like lenses, with brand new ones. Fumasoli cautions buyers to beware and know what they are buying. “It is vital to now the application/discipline that a microscope is being used for in order to configure it correctly,” says Fumasoli. “Our company will not quote without knowing the application. The problem with buying ‘as is’ is you don’t really know what you are getting.”

● [DM 5266]

### DOTmed Registered OR Microscope Sales and Services Companies

For convenient links to these companies’ DOTmed Services Directory listings, go to www.dotmed.com and enter [DM 5266]

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Skytron and CEC Collaborate on Helios Technology Management

Skytron and Clinical Engineering Consultants (CEC) have launched Helios Technology Management. Helios brings together what the two companies describe as a profound familiarity with biomed, business, and the current healthcare environment. Through Helios, they hope to consult, service, and manage resources for safer and more economic results.

“Managing a tangled web of contracts often leads to inefficiencies and redundancies,” says Travis Nipper of CEC. “Decisions on the level of integration are unique to each case. With Helios Technology Management, we don’t make the rules; the client does. We provide the depth and breadth of service personalized for client needs. For years, the old model of managing technology resources has been overwhelmingly inefficient. Helios exists as the Dawn of a New Way.”

Helios offers a full spectrum of technology management solutions, including general biomedical equipment repair and inspection (on-site and depot), multivendor service capability, compliance with Joint Commission on Accreditation of Healthcare Organizations (JCAHO), asset management, inventory and service audit, capital acquisition consulting, servicing and management of resources consulting, and in-service and education. “We utilize proprietary technology management software called BEAMworks™,” Nipper says. “Through a secure web portal, it tracks performance and ownership costs of the thousands of pieces of medical technology. BEAMworks synergizes numerous components for a turnkey medical equipment management plan.”

With Helios, a hospital can increase or maintain the quality of its technology and technology management. Larger hospitals seek the best care, best staff, and best equipment, which patients expect of them. Helios’s service can protect their investments and ensure their maximum contribution through asset management at audits. “We perform a robust assessment in order to gain a global view of the current service requirements and costs,” Nipper says. “This allows us to pinpoint opportunities for financial improvements.”

● [DM 5208]

Bed Techs’ New 30,000-Foot Facility Doubles Its Space

Bed Techs, Inc., based in Milan, Indiana, refurbishes several thousand hospital beds a year, a hefty number for a company only six years old. Bed Techs’ success, in fact, warranted a recently completed major expansion as the company added a new 30,000-square-foot facility, doubling its space to two sites representing 60,000 square feet.

“There are three macro-steps in refurbishing a bed,” Bill Montgomery, Bed Techs’ VP, explains. “You need a large area to first disassemble the old bed, you need an area to re-condition the bed, and a clean space to re-assembly the refurbished bed.”

With a staff of 50, Montgomery’s original site was “very cramped.” “These two facilities are 10 miles apart, but we increased our capacity not only to re-assemble but also provide a closed, clean area where we can do electronic re-conditioning.

Bed Tech has also moved into the area of circuit board re-conditioning, a critical re-conditioning service, especially as newer beds are almost all computerized.

“One newer model bed has 18 computer chips in it,” Montgomery notes. “We needed a closed, clean space to do more circuit board work.” Although most manufacturers in the U.S. are sending their computer work abroad, especially outsourcing to China and Asia, “We’re one of the very few U.S. companies that re-condition these circuit boards,” Montgomery says.

Bed Techs specializes in Hill-Rom beds since it was founded by two former Hill-Rom technicians who had a vision to help reduce the cost of healthcare by making a great product better. Its facilities, by the way, are about 15 miles from Hill-Rom’s head office.

“Our technicians have about 200 years combined experience,” Montgomery says. “And we offer extensive warranties.” Also, “Our expansion,” he says, “puts us in a position to meet our projected growth plans.”

● [DM 5122]

DRE Medical Named to Louisville Business First Fast 50

DRE Inc., an international medical and surgical equipment supplier, has been named the 25th fastest growing privately owned company in the Greater Louisville area by Louisville Business First. This is the first year DRE has been included on this list.

Over the past three years, DRE Inc. has experienced significant overall company growth. Much of the it can be directly related to an expanded product line of factory new products for the operating room and surgical environments. Within the past year DRE has added a new line of vital signs monitors, surgical microscopes, a new flagship anesthesia machine, and a surgical table.

DRE also continues to expand refurbished product lines by sourcing an increasing amount of equipment from brand name manufacturers. In late 2006, DRE more than doubled the size of its in-house biomedical facilities.

Export business has also played a strong role. DRE International has added representatives and infrastructure to better serve Latin America, Southeast Asia, and professionals in the Middle East. By giving international clients quality medical equipment at affordable prices, DRE is able to expand the capabilities of many professionals worldwide who would otherwise not be able to effectively expand their practices.

● [DM 5183]
Blue Ridge Medical Imaging in Salem, VA suggested there was no one an answer “because there are so many variables.” According to Hoffman, when some hospitals need an extra room for overflow, when the present system is failing and a facility needs a Special Suite, or when tight budgets dictate, a pre-owned suite makes sense.

On the other hand, he agrees that most major hospitals and teaching institutions usually purchase new equipment.

“They want the latest and greatest even if there is no significant increase in image quality,” Hoffman adds. “Sometimes, that’s for their image and sometimes to attract certain doctors. Or the facility may have had a bad experience buying used or improperly refurbished equipment.”

Peter Chen, president, Global Medical Equipment of Harleysville, PA, agrees.

“Pre-owned is for a hospital in a developing country or for a doctor’s office,” Chen says. Adds Chris Hogan, president, MEPS Inc. of Gallatin, TN, “A lot depends on the size of the facility and services offered, and whether a pre-owned is going to be a back up or a primary system.”

One interim solution to upgrading a cath or angio lab is the short-term lease. According to John Froemke, President, MMI, Vernon Hills, IL, providing special procedure rooms and cath labs housed in trailers often is the perfect solution for hospitals undergoing construction or renovation of existing cath/angio facilities.

“It can take a hospital two to three months to replace what they have,” Froemke says. “We provide short-term leasing using primarily GE Healthcare/IT equipment.” Fully equipped, some of these trailers cost upwards of $1.8 million. MMI generally leases about seven cath/angio lab trailers a year, serving all 50 states.

Along with steady growth in all medical scanning modalities, Medical Imaging Resources, Ann Arbor, MI continues to see strong demand for Cath/Angio equipment in both sales and leasing. Jeff Rogers, Director of Sales, says that despite more diagnostic work shifting into CT, Cath/Angio sales, plus consulting service and peripheral technologies, are a robust part of MIR’s sales/service package. In fact, Cath/Angio Mobile Leasing is so important that MIR pays special attention to maintaining its fleet of Cath/Angio, CT, MRI, and Nuclear Mobile units in ever-increasing numbers.

### DOTmed Registered Special Procedure Cath & Angio Labs

For convenient links to these companies’ DOTmed Services Directory listings, go to www.dotmed.com and enter [DM 5262]

Names in boldface are Premium Listings.

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“We mainly provide hospitals with replacement parts,” says Ralph Frizzle, president of GECO (German Electronics Company), Largo, FL, a key supplier of Siemens parts.

“Third-world countries would benefit from pre-owned or businesses or doctor offices with budgetary concerns,” he says, adding the dollar variables are not small. “We have certain labs that can be upgraded for $200,000 versus millions for something totally new,” he says, suggesting the key is camera and tube upgrades since image quality deteriorates over time.

Frizzle is keen on the new flat panel digital image screens now newly available from Siemens and others. (DOTmed Business News plans a special issue on digital flat screens in February, 2008).

“It’s like going from watching analog television to digital, the quality of picture is that good.”

The new kid on the block is the digital flat panel detector (FPD) replacing the Image Intensifier and TV chain. Though some doctors still prefer Image Intensifiers, the future is with the FPD; its major drawback, for the moment, is the high cost of service contracts.

Indeed, all of the DOTmed readers who responded to our Cath/Angio questionnaire underscore the best way to upgrade a Special Procedures Suite in the field are to do a digital upgrade.

“I would bring in a mobile and upgrade the whole suite,” says Hogan, who also recommends upgrading to new style generators/new style monitors/add-on Dicom option/image upgrades and II-pickup tube-monitors.

Considering the ongoing advances and the truly fatal cost for any error, what should a buyer look for, and look out for, when buying a refurbished Cath or Angio Lab?

“Absolutely know the company doing the refurbishing,” Carl Hoffman says. “Go see their facility. Are their people trained or is the refurbishing farmed out? Is the company ISO certified?”

“I would only go one generation back in age/image quality even with a company with experience,” adds Chris Hogan. Nelson Espinosa, whose company is based in Buenos Aires, suggests buyers get a field engineer’s opinion while looking at service records, tube and II rate replacement, number and kind of parts replaced and user experience.

DOTmed Recommends

Considering refurbished cath/angi labs? Some key questions require answers.

Does the company totally prestage the system and calibrate it with equipment that has up to date calibration stickers?

Will the company supply Image Quality Calibration certificates to ensure the equipment is calibrated to OEM standards?

How old is the glassware? Used is OK, if full-tested and warranted.

And finally, Systems should always be reinstalled with new mounting hardware as you don’t know if the original bolts holding the ceiling rails or the bolts holding on the large C-arm to the floor were properly torqued to begin with.

“You don’t want an overhead system falling out of the ceiling,” Carl Hoffman warns.

[DM 5262]
Devil in the Details

Any large metal objects in motion near your suite (trucks, subway cars, elevators) can cause a problem for your MRI in terms of magnetic forces, vibration, and/or electrical output, all concerns for the shielding design.

In addition to site specifications, trends in MRI design also affect how new equipment is shielded. The new machines are lighter, which helps installers, but also leaves the suite more susceptible to vibration to be mitigated by the shield. New, large bore equipment may also impact shielding specifications.

Older equipment may have significant magnetic shielding already in place since MRIs of yesteryear weren’t self-shielded magnetically like today’s machines. However, with the increased field strength in favor today, even heavy, older shielding may not be enough if it’s not welded. You will likely need to replace the shielding in the room when you upgrade to a new MRI system.

In addition to those big considerations, many small details will dictate success. “Every time you penetrate the room with a pipe or wire you need special shielding,” observes Irwin Newman, owner of Universal Shielding, Deer Park, NY. Examples include RF filtering for wiring, wave guide protection on pipes, and specialized honeycomb material for air vents. The MRI suite also requires shielding a pipe for helium exhaust along with a protected door and window. (See the separate story on MRI helium services.)

Specialized MRI applications require similar meticulousness such as shielding interoperative MRI systems that must work near surgical lighting, gases, monitors, and other equipment. Mobile and temporary MRI facilities must also be protected. And aluminum is often used for blocking RF in those settings.

Finally, it’s important to remember that safety considerations for the equipment, as with patients, extend long after the room is done. Price should not be your primary consideration in choosing a shielding company.

“In a lot of cases it boils down to price but end users [hospitals and imaging centers] should look at the overall service that the shielding vendor supplies not only after the installation of the room but even later,” Harper says.

“There is always an interest to maintain maximum image quality. People talk about quality in images but there is nothing

continued from page 29 MRI Shielding

focused therefore, there should also be focus on the continued performance of the shield, it’s all focused on the performance of the scanner,” Profeta says.

“We offer a planned maintenance programs tailored to the individual site. A program of this type ensures artifact-free images from shield compromises and will also reduce any down time to perform shield repairs during upgrades and equipment replacement.”

● [DM 5264]
**Marketplace & Classifieds**

These are some of the more than 27,000 listings on www.DOTmed.com on any given day.

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Field Service engineer with GE/Siemens MRI or CT experience. 5 plus years experience. Join the industries’ leading sales and service organization. Full benefits including Health, dental, Life, 401K. Mulitple locations available. Craig Palmquist, Genesis Medical Imaging 847-961-5802

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Field Service Engineer positions available with rapidly growing and progressive full service radiology imaging company. Jason Olenio, Associated X-Ray Imaging 800-356-3388

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RADIOLOGY

BIODEX C-Arm Table 058-800 2004 BiodeX 058-800 Urology C-Arm Table Five-axis motorized tabletop positioning: Accessory rails M Power: 115 VAC or 230 VAC and Battery. Battery automatically charges when table is plugged in. An additional battery can be charged with optional wall-mounted charger. Standard Accessories: - retractable stainless steel pan with screen - plastic drain bag holder and disposable bag - rail mounted knee crutches - rail mounted IV pole - rail mounted arm boards - radiant loop extension - transfer extension - bellows skirt (disposable, 250 roll) and dispenser Certifications: ETL and eETL listed to UL-2601-1B, CAN/CSA C22.2 No.: 601-1-M90, EN 60601-1, IEC 60601-1-2:2001-09 $7,000.00 – Sold for dealer in New York - Auction 4216

ZIMMER Chiller Electromedizin Cyro 5 $3,500.00 – Sold for broker - Auction 4227

PICKER Portable X-Ray Explorer II Manufactured 1994. Dualene Tube PX-135SC Target Angle 12.5 Focus. 75 125 KVP $1,500.00 – Sold for Hospital in New York - Auction 4240

SIEMENS CT Scanner Somatom Plus 4 equipped with a xenon detector. Good working condition before deinstallation by hospital. Has been stored in a climate-controlled room. $20,000.00 – Sold for independent service organization in Pennsylvania – Auction 4297


RS MEDICAL Medical Stimulator RS MEDICAL RS-4i used only once and in great condition. This item retails for $3,500.00. This offers the most advance form of muscle stimulation. Includes: - 2 RS-4i data cards (one slightly scratched) - ac adapter, stimulator, cable set, self-adhering reusable muscle stimulator pads, instruc- tional vhs tape, manual, pre-paid return envelope, carry case. $99.99 – Sold for broker in Illinois - Auction 4090

HANALUX OR Light London 4201A3A06. Six (6) sets of lights with 3 Heads and One (1) set of lights with 2 Heads. $3,200.00. Sold for Hospital in New York - Auction 4107

COROMETRICS Fetal Monitor Model 150. Excellent condition. Includes 1 Corometrics 9-Crystal ultrasound transducer, 1 corometrics TOCC transducer, abdominal belt, Trace paper $750.00 – Sold for broker - Auction 4166

OEC UROLOGY Urology Suite 2600 in perfect operating condition: FOB NY DOM: November 1999 12" I. left hand load. $22,000.00 – Sold for broker – Auction 4191

MARQUETTE Bedside Monitor Eagle 4000. Flat Screen Multiparameter patient monitors with ECG, Temp, IBP, SpO2,NIBP, Defib sync. No patient cables. $3,600.00 – Sold for Hospital – Auction 4245

OHIO Infant Incubator Care Plus 3 units. $900.00 - Sold for Hospital in New York - Auction 4265

BIRTHCER Electroosurgical Unit 5000 Power Plus TWO (2) Units with Foot switches only. $500.00 – Sold for Hospital – Auction 4267

MARQUETTE Physiological Monitor Lot of Eight (8) Eagle 3000 with dual invasive pressure, NIBP, and EKG. With EKG,BP,NIBP,SpO2,Temp,Rec. Build-in printers. $3,250.00 – Sold for broker in Wisconsin – Auction 4291

OPTICAL

MORIA Microkeratome Evolution II CBL/LSK. Seven cases of equipment. $6,000.00 - Sold for Medical Office in Washington – Auction 4205

ENDOSCOPY

OLYMPUS Gastroscope GIF-130. Has good angula- tion and the rubber coating is very good, no kinks, bulges or cuts, slightly yellowed numbers. $1,875.00 - Sold for broker in Kentucky - Auction 4246

STRYKER Endoscope Stryker 988 lot: (3) Sony Video Printers, (3) SDC Pro 2 024o-050-825, (10) Light Sources X6000 0220-185-000, (13) H88 CUCV 0988- 101-000, (3) TPS boxes, no handpieces, TPS V3-3, (9) Insufflators Wish 7070 20L, (1) Insufflator older model, (2) 288 Camera Heads 0988-410-122, (2) 1088 Camera Heads 1088-210-122, $20,000.00 - Sold for broker in Wisconsin - Auction 4250

OLYMPUS Colonscope CF-10L has some black dots. One owner from local hospital.Angulation is very good and smooth, plastic coating is very good with the exception on one cut near the top that would never be inserted (not even close and would not detract from use). Includes case. $1,000.00 – Sold for broker in Kentucky – Auction 4300

LASERS

COHERENT Laser - Co2 Ultrapulse 5000 DOM: 3/1996. 1060 wave length Continuous wave and pulse mode 100 watts Pattern generator (Facial resurfac- ing). Accessories: Microinstruments: ENT & GYN Pattern Generator handpiece Glasses (x8) Goggles (x2) Danger Signs L.A.U.P. handpiece 1.0 mm hand- piece x 2 0.2 mm handpiece x2 lenses x4 Nezhat Coupler (taperoscopy) 3mm (face) hand piece $7,500.00 - Auction 4253

CANDELA Laser - Alexandrite GentleLase Handpiece for 6, 8, 10 spot size Handpiece for 12,15,18 spot size With / Epilator Model TS-1, SN – T1-100453 $30,000.00 - Auction 4254

CARDIOLOGY

DATASCOPE Balloon Pump 97 Two (2) units available. Price per unit. Purchased new 1996/7, Includes Datascpe doppler and Datascpe ecg cables. Manu- als will be provided on disk in pdf format. This equip- ment has been under service contract from $1,500.00 – Sold for independent service organization in Florida - Auction 4114

NOVAMETRIX NICO Cardiopulmonary Monitor Excellent condition. Includes all reusable patient cables, Capnostream sensor kit, SPO2 finger sensor, ear sensor and instruction book. $1,000.00 – Sold for broker in Utah - Auction 4245

ZOLL Defibrillators N10000 New condition. Hard protective case. All pieces wrapped in plastic still. All cords, manuals, etc are included. $375.00 – Auction 4258

RESPIRATORY

RESPIRONICS CPAP/BIPAP 1005960 REMstar Plus Domestic unit. Comes with manual, hoses, carry case. All very clean and in excellent condition. $225.00 – Sold for independent service organization in Texas - Auction 3997

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