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HealthCare Business News is always looking to share with our readers the best ways to decrease costs, increase revenue, improve efficiency and/or improve patient care at their facilities. Clearly, employees can and do have enormous impact on all of these efforts.

Good staffers will find ways to do more with less, make recommendations to improve process and efficiency, and go above and beyond for patients. The best will always be looking for new ideas that can help increase the profitability of an existing revenue source or help create a new one.

But nothing will hurt morale more than an unsafe workplace, especially if management seems either defensive or indifferent about the risks staffers face — or ignores their ideas to improve safety. Nurses are one of the main groups known to suffer from work-related back injuries. They are also one of the largest groups to suffer from job-related respiratory issues due to various chemicals, both medical- and cleaning-related, in their environment, which they're exposed to on a daily basis. If an employee gets sick or injured, it helps them to know that they'll have their facility's support as they get back on the road to recovery. The boost to morale alone makes it good business. Still, smart facility executives will want to make sure they're covered on the liability side as well. We take a look at some of the things you should know in that regard in our feature piece on handling on-the-job injuries (page 44).

In terms of patient care, employee concern is being coupled with respect for the entire health care team, from the star surgeon to the rounding nurse. In fact it may be the latter, having the most interaction with a patient, who is the first to spot signs of decline or distress. Even in the OR, nurses are gaining more respect and authority to speak up when they have a concern. This change has meant fewer “never events” like wrong-site or wrong-patient surgery, leaving a device in a surgery patient, or any number of other mistakes that could prove catastrophic and deadly.

The federal government has rightfully recognized the importance of improving such teamwork in health care, with the Agency for Healthcare Research and Quality creating the TeamSTEPPS program that promotes an evidence-based teamwork system to improve patient care. AORN president, Victoria Steelman, touches upon the topic in her Q&A on page 29.

We have also seen some dangerous infectious diseases surface in the past few years to threaten staff and patients alike. Making sure employees are up-to-date on vaccinations or protected as well as possible when there's no vaccine to be had is another way responsible organizations put employees first. We delve into some of the latest in infection control in Dr. Stephen Shrewsbury's article on page 32.

The takeaway is that organizations that take care of employees have employees that are engaged and dedicated not just to customers, but to the organization itself. With the right approach it's very possible to create a supportive atmosphere and a home away from home, and that investment will result in big returns in so many ways.

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Marty Zimmerman, president and chief executive officer of LFC Capital, Inc.
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(December 15-January 15)

• Tomosynthesis could bring about $550 million in cost savings per year: study
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★ MR, CT equipment remote troubleshooting “a real, innovative change to the market”
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• New bill introduced to repeal medical device tax gets strong bipartisan support
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• Top DOTmed Online News stories of 2014
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★ Could microwave tomography replace mammography?
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• Philips announces FDA clearance of latest cable-free fetal monitoring system, provides ‘smoother birthing process’
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★ U.S. ultrasound market will exceed $2 billion by 2020
dotmed.com/news/24923

• GE Healthcare to build new PET tracer facility at Sweden’s Karolinska University Hospital
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★ Editor’s Choice
New bill introduced to repeal medical device tax gets strong bipartisan support

Posted: January 08, 2015 by Lauren Dubinsky

On Tuesday, Congressman Erik Paulsen introduced another bill in an effort to repeal the 2.3 percent medical device tax. The Protect Medical Innovation Act received strong bipartisan support with 254 cosponsors, 27 of whom are Democrats.

“The medical device tax continues to stifle innovation, cost American jobs, and drive up health care costs despite bipartisan opposition in both houses of Congress,” Paulsen said in a statement. “With over 250 cosponsors [on] day one of the new session, it’s clear repealing this tax should be one of the priorities for the new Congress.”

The Medical Imaging & Technology Alliance (MITA), Advanced Medical Technology Association (AdvaMed) and the Medical Device Manufacturers Association (MDMA) are applauding the legislation. “Repealing the medical device tax is critical for the United States to maintain its global leadership in this high-tech manufacturing sector and to allocate resources toward the development of new cutting-edge technologies,” Stephen J. Ubl, president and CEO of AdvaMed, said in a statement. “This tax on innovation stymies the search for cures and treatments and stalls job creation.”

The organizations believe that the medical technology industry is “an important engine for economic growth in the United States” since it employs over 400,000 workers globally and generates about $25 billion in payroll. But the device tax has resulted in the loss or deferral of over 33,000 industry jobs, according to AdvaMed.

The device manufacturers are also championing the legislation. Dr. Gregory Sorensen, chief executive officer and president of Siemens Healthcare North America, stated that the tax has led to the loss of hundreds of research-and-development jobs at Siemens, which has greatly hindered medical equipment device innovation.

“And at a time when recent data indicate that diagnostic errors are the most common, most deadly, and most costly of medical errors, this tax has discouraged accurate patient diagnosis by taxing the very systems that can facilitate disease discovery at a stage where it is potentially the most treatable,” he said in a statement.

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U.S. House considering new bill to aid low-dose radiation research

Posted: January 12, 2015 by Gus Iversen

The dangers of high-level radiation are well-known. But the effects of low-dose radiation have not been as well studied.

Now the U.S. Congress is taking up a new bill that could change that. The new Congress will reopen discussion of the issue, begun last session, with a bipartisan bill called the Low-Dose Radiation Research Act. If passed, an initial research study would be launched by the director of the Department of Energy (DOE) Office of Science that would seek to improve risk-management protocols and identify directions for further research.

A bill with similar aims was passed by the House, but died on the floor when Congress adjourned in December.

The new legislation states that, “No later than 60 days after the date of enactment of this act, the director shall enter into an agreement with the National Academies to conduct a study assessing the current status and development of a long-term strategy for low-dose radiation research.”

The newly proposed study would be completed within a year and a half, and hopefully answer questions regarding the state of low-dose radiation understanding, while weighing the importance of research against projected costs.

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U.S. ultrasound market will exceed $2 billion by 2020

Posted: January 14, 2015 by Lauren Dubinsky

The U.S. ultrasound market is expected to experience “stable, reliable” growth and surpass the $2 billion mark by 2020, according to a new iData Research report. The cardiology and radiology ultrasound segments make up more than half of the market and will be responsible for much of the growth.

The market is mostly driven by new, innovative technologies. In the future, the point-of-care ultrasound segment will see the most growth due to the interest in radiation-free needle placement procedures.

The report also found that smaller and more specialized devices are becoming more popular, since general imaging devices are expensive and oftentimes outside of hospitals’ budgets. In addition, radiology ultrasound equipment sales have diminished now that many hospital departments are performing their own procedures instead of directing patients to radiology.

GE Healthcare, Philips Healthcare and SonoSite together make up more than half of the market, and replacement sales are expected to continue to provide them with stable revenues. But investors have also been keeping a close eye on Zonare, Hitachi Aloka, Esaote, Analogic, Toshiba, Siemens Healthcare, Terason and Mindray.

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Hypofractionated whole breast irradiation: faster, cheaper, comparable — underutilized?

Posted: December 22, 2014 by Gus Iversen

Health care reform is all about achieving better outcomes faster, and at a lower cost. Yet when it comes to early-stage breast cancer, two-thirds of patients may be receiving a lengthier treatment than necessary, one that results in greater expenses but comparable outcomes.

WBI is recommended for most women after breast conserving surgery because it reduces the chance of recurrence while improving overall survival. The treatment has been used for decades, and the relatively recent development of hypofractionation builds upon that success model.

Hypofractionation means fewer fractions (treatments) at higher doses and is generally delivered over three weeks. Conventional WBI, on the other hand, typically takes five to seven weeks.

The benefits of hypofractionated whole breast irradiation (WBI) for cancer treatment are well documented. In 2011, ASTRO issued a guideline endorsing it as “equally effective for in-breast tumor control and comparable in long-term side effects” in relation to conventional WBI for many breast cancer patients. That effectiveness, coupled with the cost advantages and faster treatment times should make it very popular in today’s health care climate – so what’s the holdup?

Trends towards hypofractionation, but change is slow

The new study was conducted by Penn Medicine and published by JAMA.

They took data claims from 14 commercial health care plans to assess the use of hypofractionated WBI in 2008 and 2013. Based on the ASTRO guideline, the study retrospectively applied 15,643 patients into one of two candidacy groups: endorsed (8,924) and permitted (6,719). For the sake of their study, the researchers defined hypofractionated treatments as those spanning 11-24 fractions, and conventional as 25-40.

They found that 10.6 percent of the endorsed group received hypofractionated WBI in 2008, versus 34.5 percent in 2013. For the permitted group, hypofractionation increased from 8.1 percent to 21.2 percent.

In terms of cost, total health expenditures for the patients receiving hypofractionated WBI were an average of 10 percent lower, which is significant news, considering that breast cancer treatment accounts for the largest portion of cancer care expenditures nationwide.

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Breast cancer surgery goes wireless

Posted online: December 15, 2014 by Gus Iversen

Cianna Medical Inc. has received FDA approval for a surgical guidance system that uses real-time audible and visual indicators to help with tissue targeting during lumpectomy and excisional biopsy procedures. The product is called SAVI SCOUT and it may help reduce the number of repeat procedures required for breast cancer patients, while also improving the patient experience.

The system works by placing a detector in the target tissue up to seven days before the procedure, then during surgery, the doctor uses a handpiece to locate the detector and plan the incision. The detector makes it easier for the doctor to spare healthy tissue while removing the target, and it is itself removed in the course of the procedure.

In terms of what it does, Dr. Pat Whitworth, breast surgical oncologist and director of the Nashville Breast Center compared the system to the metal detectors beachcombers use, but said the SAVI SCOUT “was actually quite an engineering feat to create.”

All 24 of the patients in the study were found to have successful placement, localization, and retrieval of the detector.

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Health care survey finds doctors, patients OK now, but fear for future

Posted: December 19, 2014 by Lauren Dubinsky

Only one-third of consumers and hospital administrators, one-quarter of primary care physicians and one-tenth of specialists believe that the health care system is on the path to success, according to a new survey conducted by Booz Allen Hamilton and Ipsos Public Affairs. The survey was carried out in August and included 1,000 consumers and 400 primary care physicians, specialists and hospital administrators.

The survey found that 84 percent of the consumers are satisfied with their physician-patient relationship yet the cost of that care is a concern for them. Most of them — 86 percent — stated that the cost of out-of-pocket medical expenses is very or extremely important to them, yet just over half of them are satisfied with what they pay.

Furthermore, six in 10 are worried that the level of health care they currently have will not be accessible to them in the next five years.

The physicians also have a negative outlook about the future of their practices. Two-thirds of them are satisfied with their current practice, but only 61 percent are confident that it is well situated to be successful in the changing health care environment.

Share this story: dotmed.com/news/24829
Could microwave tomography replace mammography?

Posted: December 17, 2014 by Lauren Dubinsky

Mammography has been proven to be effective at detecting early stage tumors but it subjects patients to radiation and discomfort. A new modality without those limitations, called microwave tomography, is set to break into the industry soon.

Dartmouth College in New Hampshire is currently working on developing and refining the technology. It’s still unclear exactly what role it will play in breast imaging.

“There is considerable interest in this technology worldwide, but the success rate of translating the concept into a clinical system is still very low,” Neil R. Epstein, post-doctoral fellow at the University of Calgary in Canada, wrote to DOTmed News.

The three possible clinical breast imaging applications for it are screening, diagnosis, and therapy monitoring. Screening is the largest market but the hardest to break into because the required clinical trials are very large and expensive.

Diagnosis is a smaller market but in order for microwave tomography to be clinically accepted, it would have to be proven to perform better than biopsy. For that, Epstein is looking to pair it with MR and he noted that they have some promising results so far.

Therapy monitoring is the smallest market and Epstein believes it provides the best opportunity to break into the clinic in the shorter term. This involves imaging the breast multiple times throughout chemotherapy treatment to potentially recommend a treatment change if the tumor isn’t responding.

Mammography and ultrasound have no use for that but MR and PET do. However, those modalities are invasive and expensive so the patient is usually only imaged once or twice during treatment, which isn’t enough to make a treatment change recommendation.

The university is in the final stages of receiving a large award from the National Institutes of Health to partner with a large commercial company to optimize microwave tomography for therapy monitoring and perform a multi-center clinical trial. The partner will be revealed early next week when the university officially receives the award.

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Memorial Sloan Kettering, IBM looking at computerized skin cancer lesion identification

Posted: December 19, 2014 by Gus Iversen

Memorial Sloan Kettering has teamed up with IBM to explore ways to train computers to recognize images of cancerous skin lesions, a project both parties hope will expedite accurate diagnoses and ultimately save lives.

Preliminary experiments using a controlled research dataset of over 3,000 dermoscopy images of melanoma, atypical lesions, and benign lesions have yielded very positive outcomes. In this dataset the IBM technology was able to successfully identify the diagnosed disease state to the 97th percentile for sensitivity and 95th percentile for specificity.

Those numbers indicate a sizable improvement over the human averages, which vary widely depending on clinicians and the availability of specialized experts. Even in situations where the unique insights of clinical experts are available to interpret, accuracy is only between 75-84 percent.

Dr. Noel Codella, IBM research staff member and IBM technical coordinator for the collaboration, told DOTmed News via e-mail, “In this case, the machine is able to use its approaches to compliment the human visual system.”

By the same principles that allow a computer to understand the composition of a high resolution digital image better than the naked eye, computer learning allows a system to recognize patterns that are sometimes otherwise imperceptible. The IBM technology analyzes images for color distributions, texture patterns, shape, and edge information. Using algorithms, the system may be able to recognize temporal morphological profession of lesions, such as aggressive growth or any deviation from what is normal.

Codella compares the benefits of this technology to that of a traditional calculator, “Calculators don’t replace mathematicians or engineers, but they augment their ability.” He and his team hope technology like this can help doctors in a similar way.

With nearly 5 million people receiving treatment annually, skin cancer is the most commonly diagnosed cancer in the U.S. Achieving a more reliable visual diagnosis could help patients gain treatment faster, an improvement which may save lives while reducing the $8.1 billion spent every year on treatment.

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XR-29’s lower dose CT requirements: Will iterative reconstruction play a role?

Posted: December 18, 2014 by Gus Iversen

XR-29, MITA’s latest dose related standard, may require one in three CT scanners in the U.S. to be replaced if the facility wishes to receive full CMS reimbursement on select procedures. The fourth standard of its kind to be released since 2010, XR-29 lays out four qualifications a modern CT scanner should meet. As of last spring, Congress incorporated those standards into an SGA law that will go into effect in 2016.

The requirements are: Automatic exposure control (AEC) to access radiation dose in real-time, built-in adult and pediatric protocols for the operator to choose from, MITA Dose Check for automatic notification of when scan settings are likely to exceed dose thresholds, and DICOM (Digital imaging and communications in medicine) SR (Structured Reporting) to incorporate dose history into the patient record.

MITA, a division of NEMA, estimates that one in three CT scanners in the U.S. will need to be replaced if the facility wishes to be compliant with their standard. Of the remaining two-thirds, an estimated 60 percent will require software upgrades.

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GE Healthcare to build new PET tracer facility at Sweden’s Karolinska University Hospital

Posted: December 24, 2014 by Lauren Dubinsky

GE Healthcare announced on Friday that it finalized an agreement with Stockholm County Council and Karolinska University Hospital in Sweden to construct a tracer production center for the hospital. It will help the hospital produce three to four times more PET tracers and also assist in the development of new tracers.

The center will feature two of GE’s PETtrace 800 Series cyclotron systems, 20 hot cells designed to support radiation safety, and fully automated TRACERlab FX series chemistry synthesizers to allow the hospital to remotely monitor tracer production. It will be ready for production in January 2018.

The PET tracers will be used for mapping and treating cancer, cardiovascular and neurological diseases. PET tracers have increasingly been playing a significant role in Alzheimer’s, dementia, and brain research.

GE will also provide the university with a wide range of technical training services for the entire contract period, which will span three years with an option to extend it an additional two years. The contract will also cover delivery, installation and qualification of the equipment.

Share this story: dotmed.com/news/24850
Will focused ultrasound treat OCD?

**Posted online: December 12, 2014 by Gus Iversen**

A proof-of-concept study being conducted by Dr. Jin Woo Chang at the Yonsei University Medical Center in Seoul, Korea, is yielding positive outcomes for treating obsessive-compulsive disorder (OCD) with focused ultrasound. Although only the first four patients, (out of 12) have been reported, their condition six months after treatment has researchers feeling optimistic.

All four patients had small targets deep in their brain, (the anterior internal capsule) successfully ablated in the non-invasive procedure. In the ensuing months, a reduction in OCD thoughts and behavior were reported. After treatment, symptoms of anxiety and depression were almost immediately reduced; both of which frequently accompany the disorder.

Up this point, Dr. Chang's team has reported zero acute complications from the procedure and no change whatsoever in neuropsychological test results.

DOTmed News spoke to Dr. Rees Cosgrove, adjunct professor of neurosurgery at Brown University, about the implication of these findings.

"This is the only study I’m aware of that is using focused ultrasound for OCD," said Cosgrove.

From the start, he emphasized the importance of understanding how severe a patient's OCD must be to even be qualified for a treatment of this nature. That selectivity, coupled with the need for a highly specialized team of experts, may be factors contributing to the slow pace at which data can accrue.

Cosgrove expects outcomes from focused ultrasound to be comparable to stereotactic radiosurgery outcomes with Gamma Knife.

All 12 procedures were performed using the InSightec ExAblate Neuro MR-guided focused ultrasound system and, provided the remaining eight patients in this study yield similar positive outcomes, the treatment may ultimately become a viable non-surgical option for OCD and perhaps lead the way to treating other psychiatric disorders.

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Hitachi partners with iVu for automated whole breast ultrasound

**Posted online: December 17, 2014 by Lauren Dubinsky**

iVu Imaging Corporation announced yesterday that Hitachi Aloka Medical America, Inc. (HAMA) will be the exclusive distributor of its automated whole breast ultrasound system, SOFIA, in North America. This will allow iVu to utilize HAMA’s wide market reach to propel its product, which has the potential benefit the large population of women with dense breasts.

SOFIA is different from other automated whole breast ultrasound systems because the patient is in the prone position during the exam rather than the standard supine position.

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### Philips acquires catheter-based imaging co., Volcano

**Posted: December 18, 2014 by Lauren Dubinsky**

Royal Philips announced yesterday that it acquired Volcano Corporation, a catheter-based imaging and measurement solution company, for $1.2 billion. Philips stated that this will advance its strategy to become the leading systems integrator in image-guided therapies.

Over the last few years, Philips has put much effort into building their image-guided therapy business through strategic investments in research and development, partnerships and technology licenses. As a result, its portfolio includes each of the top 50 heart surgery and cardiology hospitals in the U.S., U.K., France, Germany, Brazil and Japan.

Eight out of 10 of the respondents believe that the sustainable products help to protect their hospital staff and more than half think that sustainable initiatives improve patient outcomes and are important for patients to take into consideration when selecting a hospital.

The aspects the U.S. respondents are focusing the most on are energy efficient devices, recyclable packaging, latex-free devices, products designed for multi-use, devices free of heavy metals, reduced packaging size, and products with recycled content in the packaging.

Most of the respondents — 79 percent — also believe that sustainable products and initiatives have many financial benefits. However, only 38 percent of them are tracking the return-on-investment that the products yield.

That’s because only one or two people in a given hospital are dedicated to focusing on sustainability, and they don’t have much time to set up the data collection to calculate the return-on-investment, said a source from Johnson & Johnson. To solve that, more plug-and-play tools are needed.

The manufacturers also have some work to do — 92 percent of the U.S. respondents reported that manufacturers need to provide them with more information about the benefits of the products.

### Breast density measurement ‘significantly improves’ cancer risk prediction: study

**Posted: December 23, 2014 by Lauren Dubinsky**

Breast density measurements better predict a patient’s breast cancer risk, according to a new University of Virginia Cancer Center study. Incorporating those measurements into breast cancer risk models can help determine how often a patient should undergo a mammogram.

The researchers evaluated 3,400 women who underwent digital mammograms at the university from 2003 to 2013, who were both diagnosed and undiagnosed with breast cancer. They then calculated the women’s breast density with an automated software program.

They found that adding breast density measurements “significantly improves” the accuracy of the breast cancer risk model, which is essential for screening to become more personalized.

The way that most radiologists measure breast density is by visually assigning it to four of ACR’s Bi-RADS categories instead of using the automated software. However, studies that included the visual measurement did not show an improvement in model performance.

The results of this study are consistent with other studies published in Breast Cancer Research, Journal of the National Cancer Institute and Cancer Epidemiology, Biomarkers & Prevention.

### Sustainability: rising to the forefront of hospital purchasing decisions

**December 24, 2014 by Lauren Dubinsky**

*Sustainability is increasingly becoming a major consideration when hospitals make purchasing decisions, according to a recent Harris Poll survey commissioned by Johnson & Johnson.* Over half of the respondents reported that they are currently considering sustainability and 80 percent expect to do the same in the next two years.

The survey interviewed 300 health care professionals both online and by phone from April to July 2014. Among the professionals were physicians, procurement managers and hospital executives from the U.S., U.K., France, Germany, Brazil and Japan.

Eight out of 10 of the respondents believe that the sustainable products help to protect their hospital staff and more than half think that sustainable initiatives improve patient outcomes and are important for patients to take into consideration when selecting a hospital.

The aspects the U.S. respondents are focusing the most on are energy efficient devices, recyclable packaging, latex-free devices, products designed for multi-use, devices free of heavy metals, reduced packaging size, and products with recycled content in the packaging.

Most of the respondents — 79 percent — also believe that sustainable products and initiatives have many financial benefits. However, only 38 percent of them are tracking the return-on-investment that the products yield.

That’s because only one or two people in a given hospital are dedicated to focusing on sustainability, and they don’t have much time to set up the data collection to calculate the return-on-investment, said a source from Johnson & Johnson. To solve that, more plug-and-play tools are needed.

The manufacturers also have some work to do — 92 percent of the U.S. respondents reported that manufacturers need to provide them with more information about the benefits of the products.

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Global CT market to hit $5.1 billion in four years: report

Posted: December 22, 2014 by Lauren Dubinsky

The global CT market hit $3.9 billion in 2013 but is expected to grow by 5.5 percent to $5.1 billion in 2018, according to a new Kalorama Information report. The combination of product enhancements and the need to cut radiation dose levels is fueling the market. A few products in particular have gained a lot of interest from hospitals lately including GE Healthcare’s Revolution and Siemens Healthcare’s Force, which both received 510(k) FDA clearance in April. Philips Healthcare and Toshiba America Medical Systems are also major players in the market.

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New study asks how often chest CT scans yield meaningful results

Posted: December 24, 2014 by Gus Iversen

There are myriad reasons — medical, and economical — not to overuse CT scans. Chest X-rays are responsible for prompting as many as half of all the recommendations for additional imaging (RAIs), which lead to thoracic CT scans.

A new study published online by the journal Radiology looked at chest X-rays to figure out how often those images led to CT scans, and how often those CT scans yielded meaningful medical information.

Only 4.5 percent of outpatient X-rays contained a recommendation for chest CT scans; of those, 41.4 percent showed a corresponding abnormality and 8.1 percent revealed a newly-diagnosed, biopsy-proven malignancy.

“The main conclusion, I think, is that for this particular clinical situation, there is a lot of value in that follow-up CT,” Dr. Tarik Alkasab, one of the lead researchers, told DOTmed News. “That emphasizes how important it is that people get that recommended follow-up image.”

Interestingly, more than one-third of the patients who received an RAI for chest CT scans did not have them performed within the year, which is another concern.

Alkasab and his team combed through over 29,000 reports of outpatient chest X-rays performed at a large academic center over 2008 to identify cases that included a recommendation for a chest CT. They found that older patients and patients with a history of smoking were more likely to have a chest CT recommended.

In a transitioning health care system, radiologists have been under increased scrutiny to use diagnostics responsibly. This study may indicate that RAIs after chest X-rays are making valuable contributions to patient care.

The researchers hope this study will help improve awareness of the importance of follow-up CT scans. They do not know what accounts for the low adherence to RAIs after X-ray, but are looking into the ways recommendation language affects recommendation adherence.

“Most of the prior studies of recommendation patterns have looked at broad swaths of imaging; all CTs, all X-rays, or all ultrasound, we looked at a very specific clinical situation,” said Alkasab.

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Accenture signs five-year extension to manage HealthCare.gov

Posted: December 31, 2014 by Gus Iversen

After a famously bumpy start last October, HealthCare.gov, the federal government’s new health insurance marketplace, righted the ship. If you were of the opinion that Accenture deserved credit for turning the website around, a five-year and $563 million dollar contract extension granted by CMS will only reaffirm those suspicions.

A press release from Accenture outlines the new deal while pointing to the many successes the company brought to the table. Accenture is credited with completing transition activities in an accelerated timeline, executing architecture changes to increase capacity, and implementing usability improvements and re-enrollment capability to support the 2015 enrollment period.

In January of this year, CMS announced that Accenture would be stepping in to replace CGI Federal, one of the principle vendors behind the scenes of the page-freezing, crash-prone website rollout.

The contract announcement comes midway through the second enrollment period, which continues into February and has gone smoothly so far, with over 6.4 million patients registered so far for 2015.

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Kalorama Information names industry trends of 2014

Posted: December 30, 2014 by Gus Iversen

Kalorama Information has compiled a list of five key trends from 2014.

Three of those trends: growth of telemedicine, increased demand for biopharmaceuticals, and a flurry of mergers and acquisitions, have been regular topics on DOTmed News this year. But there were two items on the list that may warrant a closer look — BRIC (Brazil, Russia, India, and China) countries still growing, but not as fast and the rise in popularity of DNA sequencers as a secondary method of analyzing tumors and tissue samples.

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University of Missouri exam measures how well students deliver patient-centered care

Posted: December 31, 2014 by Lauren Dubinsky

The University of Missouri School of Medicine has included patient-centered care in its curriculum since 2005 and recently developed an exam that evaluates the medical students’ ability to deliver it.

Third-year students must pass the exam in order to graduate. It tests them on whether they build rapport, make good eye contact, closely listen to the patient's concerns and uncover the real reason for the visit.

During the exam, the students are placed in simulated scenarios involving standardized patients ranging from adolescents to senior citizens, family members and physicians played by trained community actors. The students must first obtain information from the patients and then create a management and care plan based on their preferences.

The university found that most of the students who took the exam had strong, effective communication skills and refrained from using medical jargon, intently listened to the patient, showed empathy and took charge when they needed to lead a critical conversation.

It also showed areas where the students needed improvement, including the need to engage family members and other members of the health care team involved in the patient’s care in order to prevent compliance problems that patients might have with their treatment plans.

Patient-centered care is also a major focus at the University of Missouri Health System.

It’s not required to incorporate patient-centered care in curricula to achieve accreditation but other medical schools are also putting a focus on it, including Northwestern University Feinberg School of Medicine in Chicago.

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**Olympus’ imaging technology for bladder biopsies gets FDA nod**

**Posted online: December 16, 2014 by Lauren Dubinsky**

Olympus announced yesterday that its Narrow Band Imaging technology received 510(k) clearance from the FDA.

The company claims that it’s the only patented endoscopic light technology that requires no dyes or drugs to effectively target bladder biopsies that were previously not seen under white light.

Blood absorbs NBI’s blue and green light more so it makes the tissue appear darker and allows the surgeon to see vascular structures on the mucosal surface more clearly. The blue light is used to highlight the shallow capillaries and the green light highlights deeper veins.

FDA-reviewed studies found that NBI can visualize 17 percent more non-muscle-invasive bladder cancer lesions, 24 percent additional tumors and 28 percent additional carcinoma in situ than white light.

Bladder cancer is the sixth most prevalent cancer in the U.S., according to the Surveillance, Epidemiology, and End Results Program. In addition, a study published in the World Journal of Urology in 2009 found that it’s associated with the highest lifetime treatment costs per patient.

In addition to physicians’ offices, NBI can also be used in the operating room or ambulatory surgical center to improve the removal of a tumor. Before removal, the surgeon uses it to target the biopsy and then during removal it improves visibility of tumor margins.

Olympus also developed a NBI urology application for physicians that can be used on mobile devices. It includes the technology overview, 28 clinical case images, comparisons of white light and NBI images, an interactive slider and an option to email a case summary to a consulting physician, staff member or patient.

Other than urology, NBI also has implications for gastroenterology and pulmonary and rhinolaryngology. To date, Olympus has FDA approval to screen and monitor Barrett’s esophagus, and they are investigating other applications for NBI in gynecology and general surgery.

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**Carestream’s PACS to be used by U.S. Navy**

**Posted: December 29, 2014 by Gus Iversen**

Carestream has received clearance to provide their Vue Picture Archiving and Communications System (PACS) to U.S. Navy medical facilities around the world, the company announced Tuesday.

Carestream’s Vue was tested in what the company called “an extremely complex environment” at a large department of defense hospital — a facility that performs over 300,000 radiological exams per year.

Having received an official authorization to operate (ATO) from the Department of Defense’s Information Assurance Certification and Accreditation Process (DIACAP), Carestream’s system will support the U.S. Navy’s health network with multi-site access to diagnostic exams and the ability to share radiology information to help inform physicians toward better treatment plans.

Carestream’s native reporting application — a voice recognition feature that expedites the delivery of radiology reports and helps eliminate transcription costs — also passed the Navy’s field testing process.

Utilizing Carestream’s Vue PACS will offer the Navy the same benefits other health care facilities have found with PACS systems — a single platform from which to read medical images. Carestream describes the system as a web-enabled platform that integrates smoothly with complex environments.

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**MR probe breakthrough reveals early onset of Alzheimer’s in animal trials: study**

**Posted: December 30, 2014 by Lauren Dubinsky**

A team of scientists and engineers from Northwestern University have developed a new non-invasive MR method that can detect the condition in an early stage.

And the probe actually improved memory in test animals, according to the study.

A paper on the team’s research, “Towards non-invasive diagnostic imaging of early-stage Alzheimer’s disease,” was recently published by the journal Nature Nanotechnology.

Even though memory improvement was not the focus of the team’s research, they found that the probe improved memory because it binds to the toxins and prevents them from doing further damage.

In an experiment, the MR probe was administered intravenously to mice with Alzheimer’s disease and healthy control mice. The team found that the toxins were dark in the hippocampus in brain MR scans for the mice with Alzheimer’s, but not in the control group.

The team also used the MR probe on human brain tissue from patients who died from Alzheimer’s and compared that tissue with samples from those who did not have the disease. They found that administering the MR probe allowed them to see the dark areas in the brains of the patients with Alzheimer’s.

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Upcoming Events

AAAS 2015
Presented by: American Association for the Advancement of Science Annual Meeting
Location: San Jose, California
Dates: February 12 – 16
Years in Existence: 167
Who should attend: Scientists, engineers, policymakers, educators and journalists

Integrative Healthcare Symposium
Presented by: Beth Israel Medical Center’s Continuum Center for Health and Healing
Location: New York City
Dates: February 19 – 21
Years in Existence: 11
Who should attend: Doctors, nurses, nutritionists, chiropractors, and physical therapists

2015 Annual Meeting of the International Society for the Study of Women’s Sexual Health
Presented by: ISSWSH
Location: Austin, Texas
Dates: February 19 – 22
Who should attend: Physicians, practicing therapists, basic researchers and other health care professionals (physicians’ assistants, physicians-in-training, nurse practitioners, and allied health professionals, etc.) involved and/or interested in the field of women’s sexual health.

CRASH 2015
Presented by: Colorado Review of Anesthesia for SurgiCenters and Hospitals
Location: Vail, Colorado
Dates: February 28 – March 6
Years in Existence: 23
Average attendance: +300
Who should attend: Physicians, anesthesia assistants, residents, nurse anesthetists and other health care providers

SIR 2015
Presented by: Society of Interventional Radiology
Location: Atlanta, Georgia
Dates: February 28 – March 5
Years in Existence: 40
Who should attend: Interventional radiologists, oncologists, medical students, residents and fellows

ECR
Presented by: European Society of Radiology
Location: Vienna, Austria
Dates: March 4 – 8
Years in existence: 48
Average attendance: 20,000
Who should attend: Radiologists, surgeons, oncologists, technologists

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Hospital Spotlight: American Hospital Dubai

American Hospital Dubai

Location: Dubai, UAE
Year Founded: 1996
Number of beds: 384
Number of employees: Approximately 1,000
CEO: Peter Makowski
Top five specialties: joint replacement, neuroscience, oncology, cardiac, diabetes

1. American Hospital Dubai is surrounded by the architectural beauty of the Dubai skyline.
2. Patients are greeted in an expansive and opulent lobby at American Hospital Dubai, an acute care, general medical/surgical hospital. The hospital has been certified by the JCI (Joint Commission International) five consecutive times since it opened in 1996.
3. American Hospital Dubai is one of the most advanced technology-ready hospitals in the region, which includes technology like this 3T MR scanner.
4. Every aspect of the hospital’s services is designed to offer a luxury presentation. Signs are in Arabic and English.
5. The hospital’s outpatient rehabilitation center will soon support the first planned acute inpatient rehab center in the city.
6. Some 40 percent of patients arrive from outside the country, visiting as medical tourists. Patient rooms are modern and well-equipped.
7. American Hospital Dubai offers the most modern oncology and hematology services, including the only linear accelerator in the region.
8. The founders of the hospital consider American quality of medicine to be an important part of its brand image.
Hospital Spotlight

Last month, HealthCare Business News ran a feature on medical tourism. This month, we’re again taking coverage abroad with our hospital spotlight on Dubai and an interview with U.S. expat Peter Makowski.

HCBN: You’ve had a varied career in health care, including CEO at St. Anthony Hospital in Denver, a Level I Trauma Center where you built a replacement hospital. What led you to become CEO of a hospital in the Middle East?

PM: I did my due diligence as I always do — I’ve been in the position about a month. Dubai is one of seven emirates in the country of the United Arab Emirates. Expatriates, such as myself, make up the largest group working in the country and outnumber citizens by about five to one. Consequently, it is a country that comfortably melds many different cultures — from Islamic to Western. What this country has accomplished in only its 43-year history is very impressive. Dubai is a very dynamic place in which to live and work.

HCBN: Tell me about the hospital.

PM: It is a beautiful 384-bed facility equipped with the latest medical technology. We have a three tesla MR scanner, a PET scanner and the only cyclotron linear accelerator in the region for cancer treatment. The founders of this hospital wanted to bring the recognized high quality standards of the U.S. health care system close to home. In fact, they still consider the American name to be a strong brand advantage. Consequently, it was the first hospital in the Middle East to receive Joint Commission International (JCI) accreditation (and was reaccredited for the fifth time in 2012). Every policy and procedure I have seen is the same as you will find in a U.S. hospital. The founders also realized there were many doctors from the Middle East trained in the West who wanted to return closer to home to practice medicine; this hospital provides that opportunity.

HCBN: How big is your medical staff?

PM: We have about 85 active salaried and contracted medical staff members plus community physicians. In addition to physicians from the Middle East countries, we also have a mix of nationalities, including Syria, Pakistan, United Kingdom, Lebanon, Germany, India and South Africa.

HCBN: How much of your patient census arrives from outside the country?

PM: About 40 percent of our patients travel from outside the country; most from within the region. Dubai is actively engaged in attracting that type of patient and expects to see its total medical visits to increase from 107,000 in 2012 to 500,000 by 2020. We do offer a price advantage compared to the U.S., although not as much as medical tourism in such countries as India.

HCBN: What has surprised you about your time in Dubai?

PM: How westernized it is — you would have a hard time distinguishing the city from the U.S. or Europe. I have worked in other diverse hospitals, but I have been surprised at how accepting everyone is. On Christmas, I did rounds in our outpatient clinics and all the Muslim staff wished me a merry Christmas. Cultural respect here is very genuine. It is a very clean and modern city. Tourism is a big part of the economy, the rulers keep the province clean and safe — there are significant security precautions in place. Dubai has a very low crime rate compared to most any U.S. city.

HCBN: What are your plans for this year?

PM: I am researching and writing a five-year strategic plan, which includes establishing Regional Centers of Excellence and the development of clinics in the community outside its medical campus. And we are working on opening the first acute rehabilitation center in the city. Another interesting thing is that the government has recently mandated that everyone have health insurance. One of the requirements when the owners were recruiting was that the CEO be American. They needed someone who had knowledge of the U.S. health care system and who could negotiate with insurance companies, which is relatively new in the market due to the mandate. In the U.S., of course, administrators have been negotiating with insurance companies for decades. The UAE is beginning to see some of the nuances of the U.S. health care system creep their way into the country.

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Q&A with

Peter Makowski

CEO, American Hospital Dubai, United Arab Emirates

By John W. Mitchell
Increasing health care enrollment at your facility under the ACA

The low-hanging fruit from the 2013 Affordable Care Act (ACA) enrollment is gone. More than seven to eight million people enrolled in an available health plan, but that means there are millions of people still to enroll.

And while enrollment in 2013 was far from easy, the difficulties are far from over. The nation’s hospitals and medical clinics must ensure that other populations, including non-English speakers and the economically disadvantaged, as well as young people who see no need for insurance, are targeted, educated and supported through the enrollment process.

That’s a tall order for providers, ranging from busy hospital emergency rooms to federally qualified health centers (FQHC) and community clinics. Yet there is still more to achieve. Policymakers and payers are adding further challenges to the process. Many state exchanges are ratcheting down on enrollment rules for providers and cutting back on reimbursement.

In addition, providers are being pushed to better connect “the front end” of enrollment with “the back end” whereby the intake follows through to a seamless post-enrollment tracking of important patient data such as:

• Did the prospective enrollee complete the process?
• Can he/she prove residency?
• Is all the demographic data correct? (An especially troublesome issue for the past enrollment.)
• Did the consumer make the initial insurance payment?

Finding answers

Part of the solution lies in the technology marketplace that is rising to meet the increased demand for greater enrollment connectivity by offering new cloud-based portable eligibility software. The capability to streamline the enrollment process is crucial. In our experience, an application that asks five simple and quick questions, including information about patient demographics, employment and immigration status, and uses that data to quickly pull up available coverage options in a community, can meet the need.

Adding further value to patients, payers and clinics, especially those medical facilities in states that don’t yet have local exchanges, it’s important that the software doesn’t just provide exchange information, but that it also provides a full listing of all available coverage options. For example, some patients may qualify for certain county programs, or be eligible for a hospital’s charity program — that is information not available on an exchange, but which is of critical importance to patients and providers.

Important lessons from a facility that has had success in implementing an enrollment program, which are useful to other organizations seeking to maximize enrollment include:

• Exploring new screening and data capture technology. Busy clinic and hospital staff need access to simple, easy to learn and use technology that provides guidance and support tailored for their organization. Also, exploring technology that allows enrollment staff to enter patient data into one cloud-based system, rather than a spreadsheet, will reduce human error and enable instant data analysis and reporting (important for providers seeking grants) when it’s needed.

• Reaching out to the community. Because we are now targeting the harder to reach populations, it will be imperative that providers go where their prospective patients and enrollees may be. This may mean sending staff into the community to knock on doors, go to health fairs and visit locations where the homeless or uninsured may congregate. Utilize laptops and smart phones with access to your enrollment system to help with the enrollment process, ensuring you have “feet on the street.”

• Don’t limit your offerings to exchange information. As many providers are discovering, there are coverage options beyond those listed on an exchange that can help patients gain access to health services and providers secure much needed reimbursement. Ensure that your programs provide information on all available coverage options in your community.

No doubt, the process is challenging. But with committed staff, knowledge from past experience, and technology, organizations will be better able to help patients and ensure their own success.
The concept of value-added radiology (VAR) embraces a number of objectives from initial involvement with care team physicians in determining the correct study to order, to improving the quality of the interpretation and turnaround time. This VAR concept coincides with the shift in radiology from volume- to value-based reimbursement. Perhaps a more fundamental point of VAR should be elevating the radiologist’s role above merely interpreting the imaging study…basically interpreting the study in a more holistic (and accountable) manner and not based on the images alone.

To be more involved through the entire process, what the radiologist needs is easy and rapid access to the clinical information on the patient that is relevant to the radiology study and therefore context sensitive.

Unfortunately, radiologists are frequently limited from seeing the broad range of clinically relevant information related to the patient’s condition. Most PACS can only provide access to those prior radiology reports and associated images that are stored on the specific PACS being used. The PACS might additionally provide access to the electronic forms or scanned documents containing procedural notes, calculations and measurements that were contributed by the technologist.

The scanned documents typically contain only that clinically relevant information collected during the patient’s visit to the department. In addition to the PACS, the Radiology Information System may provide access to the original order and thus the reasons for the requested study, and perhaps a summary of the patient’s history. That’s it!

Even when the above information is accessible, searching through an unstructured collection of electronic documents in the PACS or the RIS to discover more than the reason for the order is often considered by many radiologists to be too cumbersome and time-consuming to be worth the effort.

In any case, the real source of the patient’s longitudinal clinical information is the EMR, where the radiologist could discover the patient’s complete medical history, the care summaries, results from imaging procedures beyond radiology as well as non-imaging procedures (i.e. pathology), lab results, surgical history, etc.

While the EMR is a vast repository of clinical data, like a three-ring binder of information organized by tabs, this data is frequently not accessible through the radiologist’s diagnostic workstation, and logging into the EMR directly makes the process of accessing and searching for patient-specific information a burden on the radiologist.

Beyond that, most radiologists are used to working in a highly visual and efficient environment (very few clicks). This is in direct contrast to the way the radiologist would have to consume data from an EMR, which is highly textual and a click-heavy user experience.

What the radiologist needs is a concise summary of the patient’s clinical information that is relevant to the specific radiology procedure about to be interpreted. This “clinical summary” should be automatically presented to the radiologist within a display window of the diagnostic workstation. The following two examples illustrate how this would contribute to the concept of VAR, by improving diagnosis and potentially sparing unnecessary exams or an invasive procedure (e.g. biopsy), potential future complications, etc.

A patient is referred to radiology for a CT of the abdomen to rule out liver cancer due to multiple hepatic masses visualized. Having access to the relevant lab results and vital signs would allow the radiologist to discover that the patient has fever and elevated WBC, which changes the diagnosis from cancer to infection and prevents unnecessary costs and discomfort of hospitalization and liver biopsy.

An ED patient with chest pain and a negative ECG is referred to radiology for a chest CT angiography to rule out aortic dissection because of family history of heart disease. Access to the relevant patient record data such as allergies, clinical notes and medications would reveal this patient has active UTI (Urinary Tract Infection) and was given a type of penicillin to treat this condition, although the patient is allergic to penicillin. Having an easy way to consume this data from within the diagnostic radiology application would allow the radiologist to provide a more accurate, high-quality diagnosis.

The ideal solution would be the automated mining of one or multiple EMRs and other potential data sources for predefined clinical information that is relevant. The final goal is to provide the radiologist with all the relevant clinical information, regardless of where it is stored, in an easy to consume manner. The searches are either performed when the study is first opened by the radiologist, or prior to opening the study (as far back as necessary based on the time required to execute the mining process and assemble the summary).
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Ideally, the search criteria would be user-defined. This would be as simple as one set of search criteria per procedure type for the entire department, but eventually it should be possible for each radiologist to build their own set of search criteria. In the interest of efficiency, the clinical summary would ideally be limited to a single screen presentation with the option to allow the radiologist to dig deeper.

Of vital importance, the information could be retrieved online, when it is needed from the source of truth (i.e. EMR). This assures that this information is up-to-date, and it eliminates the need from each consuming system (i.e. PACS or applications) to maintain copies of the information. The EMR vendor would provide a Web-based application programmers interface (API) between PACS and EMR that would allow trusted systems to retrieve the information in a secure, standard and reliable manner. The Web API would enable real-time or near real-time retrieval of clinical information from the EMR by other applications (i.e.PACS).

Actually, this concept of tapping the EMR for clinical information is not new. Interviews of radiologists frequently uncover the concept of volume versus value, as in less volume of studies read in favor of more value in each case interpreted.

Radiologists will readily admit that the images are not the whole “picture.” While there is recognition that most of the truly useful clinical information is in the EMR, radiologists will complain that that data is difficult to access. While PACS vendors are now being asked to launch the EMR in patient context, the radiologists are also asking for some methodology to make searching for the relevant data both easy and fast.

There are challenges to bringing this concept to reality. The process has to be largely automated. All radiologists recognize that there is useful clinical information in their EMRs, but they won’t routinely search for that information if they have to work too hard. Launching the EMR in patient context is not going to be a successful approach, because the clinical data is not effectively consumed by simply launching the EMR.

The search process cannot simply be a contextual launch into the binder of clinical data on the patient. What is needed is a search application that assembles information specific to a clinical environment. The search process must be automated and sensitive to relevance. The search process must be based on a rules engine that can convert the clinical setting into search criteria. This effectiveness and the efficiency of this type of search will improve over time.

The process of searching one or more data repositories and assembling the summary information must be very fast. There will be challenges to meeting this performance expectation. This is not like moving image data, but the process requires searching a massive volume of unstructured data, and the EMR is not necessarily good at assembling the clinical data according to clinical context (reasons for ordering a radiology study).

Another complexity, already alluded to, is that we don’t want to have to copy and store the clinical info in the PACS. That would be too slow and run the risk of pulling up old or inaccurate information.

The ideal situation is to be able to communicate very quickly with the EMR and simply present the results of the search as an assembled page of summary information. The solution is to make the information available online and retrieved on-demand, so there is no need to pre-cache and subsequently update the information (keep it synchronized with the EMR). The process must be able to query the EMR for information rather than only get messages pushed to the PACS from the EMR.

This variation on VAR is attainable, but it depends on the radiologist’s ability to effectively consume relevant clinical information from the patient portfolio. To enable that and “unlock” the information, standard APIs should be developed and made available by both the EMRs and PACS vendors because the length of time for the search depends on the API, which in turn determines how far in advance the search must be initiated. It’s definitely time to start thinking about that API.

About the author: Michael J. Gray is a consultant specializing in the digital management and distribution of medical image data, and the founder of Gray Consulting. Gray’s areas of expertise are market analysis, technology analysis, strategic planning, equipment utilization, needs assessment, workflow analysis, and vendor analysis/selection.

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Q&A with Victoria Steelman
president of AORN

By Sean Ruck

HealthCare Business News spoke with AORN president, Dr. Victoria Steelman, to get updates about the association and about the status of perioperative registered nurses.

HCBN: How did you get involved in the health care sector and with AORN?
VS: I’ve always wanted to help people and I get a lot of satisfaction out of doing that. It has pretty much been a lifelong passion. My background is probably unique — I started working in the OR as a technician. I worked with excellent nurses and I noticed the very best nurses belonged to AORN. So wanting to be just like them meant that as soon as I finished nursing school, I wanted to join.

HCBN: What are the biggest challenges facing your membership today?
VS: I think that the greatest challenge for our members is being pressed to do more with less in the clinical practice setting, and there are expectations in evidence-based clinical practice. When it comes to doing more with less, there’s tension because it takes time to evaluate findings and then to implement them. Recognizing that, AORN has developed the resources to help clinicians implement these solutions.

HCBN: What has been the biggest news for the association or even nursing as a whole over the past 12 months?
VS: There are two things. The first is the Center for Nursing Leadership. We created that based on clear communications back from our members on what managers and nurse executives needed to be successful.

The second is that our clinical practice guidelines are being accepted into AHRQ’s National Guideline Clearinghouse. Last week, AHRQ asked permission to showcase the methods used by AORN to develop the guidelines in order to share that knowledge with others. We’re very proud to have the guidelines included in the National Guideline Clearinghouse.

HCBN: A few years ago, there was concern that there was a nursing shortage. Where do things stand now and where do you believe they’ll be in 10 years?
VS: The nursing shortage is spotty — in some places there’s actually a surplus, so new nurses are finding they may need to relocate to find a good match. However, we do have an aging workforce, so we have to make sure we have enough professionals to fill the gap. We definitely want new nurses to go into perioperative nursing because we want a sustainable workforce that’s adequately prepared. AORN actually has an online orientation program that’s very popular in that respect.

HCBN: More professionals seem to be realizing the value of input from nurses. Dr. Atul Gawande talked about it quite a bit in his book, The Checklist Manifesto. Is it a reality that doctors are taking heed more or is it more wishful thinking at the moment?
VS: I am very optimistic about this — at the national level, the teamwork has really improved in the last five years, with ongoing interdisciplinary collaboration. At the hospital level, most facilities are using a program called TeamSTEPPS — it teaches teamwork and communication and most hospitals are using that model. At the local level, I think effective collaboration is still a work-in-progress. Some places are very good, while others are struggling but still improving.

HCBN: Do you believe the nurse of 2025 will be very similar to the nurse of 2015 or will there be significant changes to skill sets and knowledge?
VS: We can expect significant changes in the skill sets and knowledge required. If you look at the Institute of Medicine report, it’s very clear that education will be essential in taking care of the patient of the future. One change that is already occurring — nurses need to be very digitally savvy. They’ll need to extract the information from those systems and then focus on ways to improve care. Nurses will also have to focus on evidence-based practice and quality improvement much more than they had to in the past.

For education, the Institute of Medicine recommends nurse residency programs. Those programs are turning out very strong nurses. It really is new, and my experience with it is that it’s incredibly powerful. Nurses coming out of the residency programs are ready to become leaders very quickly.

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NEW PRODUCT SHOWCASE

New low dose CMOS flat X-ray detectors

Teledyne DALSA, introduced four new dynamic detectors recently. The new Xineos models, include the 2222HS, 3030HS, 2022HR and 3030HR.

The high speed Xineos-HS detectors, feature 152 μm pixel size, are designed to meet the demanding needs of both surgical and cardiovascular procedures by combining high dynamic range with unsurpassed signal-to-noise performance and real-time imaging at the lowest exposure levels in full resolution at up to 90 fps. Additionally, the detectors with square field-of-view of 22x22 cm² are the largest commercially available 9” flat detectors to benefit spinal surgery.

Xineos-HR is the high resolution line of detectors, featuring pixel size of 99 μm, designed to meet the versatile needs of clinical, scientific and industrial applications. These detectors are capable of 30 fps real-time imaging at full resolution of up to 5 Mpixels or 9 Mpixels for the 9” or 12” detector sizes, respectively. Flexible zoom modes can be used to capture regions-of-interest at 120 fps or even faster.

Total Body Digital Skin Imaging System

DermSpectra announced the release of the DermSpectra Total Body Digital Skin Imaging System, a solution enabling physicians to monitor critical skin changes (skin cancers, eczema, lesions, psoriasis, and rashes) over time. The DermSpectra advanced medical technology modernizes the way physicians digitally capture and compare skin irregularities by rapidly delivering patented high-resolution imaging, HIPPA-compliant secure storage, and immediate viewing capabilities.

With DermSpectra, patients experience an in-office private, convenient, and short imaging session (8-10 minutes) while their physician views the latest digital images (on desktop or iPad), annotates directly to the image, and securely stores them on a HIPPA-compliant server database. DermSpectra Total Body Digital Skin Imaging enables physicians to complete the physical exam, assessment, and care plan during one office visit, alleviating post-appointment documentation.

ER-SPEC LED light source

OBP Medical, announced that ER-SPEC, the company’s industry-leading disposable vaginal speculum with built-in light source, will feature a new and improved light-emitting diode (LED). Custom developed for OBP and ER-SPEC, the new LED offers improved color and brightness.

The new ER-SPEC LED light source offers numerous benefits and enhancements, including:
- A white light that gives clinicians a more natural view.
- A level of brightness that exceeds most hospital operating rooms.
- A light source that is activated by simply pulling a tab and generates no heat.
- A light source that is single use, meaning it possesses only enough battery chemistry for a single procedure.
- A light that requires no cleaning or charging/charging.
AeroDR XE wireless digital radiography solution
Konica Minolta Medical Imaging recently announced that their new AeroDR XE wireless digital radiography solution, the lightest DR panel available today, has received FDA clearance.

Built to endure the rigors of extreme imaging environments outside the radiology department, the AeroDR XE combines the industry's most robust wireless DR panel with a simple, yet powerful software interface. As a result, users benefit from the best weight-to-load ratio – up to 661 lbs – and the highest bend and liquid resistance on the market. Weighing only 5.7 lbs, the AeroDR XE is the lightest panel on the market and easiest to handle.

Color LED display for multi-modality imaging
The DBICX50-LED joins Double Black Imaging's line of LED auto-calibrating with X-CAL calibration software. The X-Series LED backlit LCD line consists of a 2MP Monochrome and High-Bright Color, a 3MP Monochrome and High-Bright Color, 6MP High-Bright Color, a 5MP Monochrome and Color LCD and 10MP display for Mammography. This line features higher brightness levels on each LCD, digital uniformity control, 14-bit processing, a retractable front sensor for true DICOM calibration, a backlight sensor for luminance control and display port connectivity. DBI bundles these LCDs with a high speed graphic controller as well as X-CAL calibration software.
If you thought evolution has had its greatest effect upon homo sapiens, higher mammals or even all vertebrates, think again.

Possibly evolution is best-utilized by those invisible microbes we have been waging war against for millennia. Great strides were made in our favour with the understanding of antisepsis. That improved understanding was used by James Lister, Florence Nightingale and others to reduce mortality from communicable disease. Then it seemed we might even have won that war when Alexander Fleming happened upon penicillin.

Alas, despite the numerous antibiotics developed in the last 80+ years, bacteria are gradually fighting back against our best medicines. MRSA (Methicillin resistant Staphylococcus aureus), is perhaps the best known of these resurgent bugs, but by no means the only one. Many bacteria that we thought we had beaten have evolved by acquiring resistance capability from other species, or developing it themselves as a result of evolution — survival of the fittest.

But what about viruses? The recent — and ongoing — outbreak of Ebola in West Africa caught media attention for a while. But while the media has moved on to other news stories, the death toll in Liberia, Sierra Leone and Guinea continues to rise. As yet, no effective antiviral has been rushed to widespread or global basis, an effective vaccine is our best hope, to a whole population.

But what of other bugs: New viruses that spread from animals to humans, as they will almost certainly do? Or old bacteria acquiring resistance against our best antibiotics? How can we beat them? Again, gene patches may provide us with the best chance of beating these new killers.

The exact DNA (or RNA) sequence of the microbe’s genome can be mapped, much as it can be now for homo sapiens. Along with that mapping, scientists can identify the specific sequence of letters within specific genes that code for the microbe’s most important proteins. A highly precise, complimentary “patch” can then be built to those exact letters, which will stick to them and prevent their message being read. Even more importantly, these therapies can be built in a matter of days (as Sarepta has twice demonstrated when requested) — rather than the years it takes to discover and produce other antimicrobials — so they are very appropriate for new, emerging diseases.

The days of the oligo are fast approaching, not just for beating rare disease, but for turning the tide against our old enemy — the microbe.

About the author: Dr. Stephen B. Shrewsbury qualified from the University of Liverpool and entered English family medicine specializing in lung disease. After 13 years in the National Health Service, he switched to pharmaceutical medicine, joining Glaxo and leading the launch of Seretide/Advair in Europe, before moving to the U.S. in 2000. After time at Chiron Corporation working in Cystic Fibrosis and other lung diseases, Shrewsbury joined MAP Pharmaceuticals, becoming their CMO, before AVI BioPharma. Since April 2013, he has been CMO at Aquinox Pharmaceuticals in Vancouver, BC. He is also the author of the book Defy Your DNA.

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In the August 2014 issue of HCBN, “Fighting dirty: the war on germs” author Gus Iverson explores the ability that health care systems now have to reduce the transmission of superbugs that can cause infection or illness in patient populations by practicing “medicine in the cleanest environment(s) possible.” He highlights several new commercially available technologies including “germ zapping” robots and antimicrobial scrub uniforms. The proverbial elephant in the room, however, is lower than acceptable compliance rates with protective actions like hand hygiene and the use of personal protective equipment (PPE). As such, we find ourselves relying more and more on advances in technology for fighting the war on bugs — engaging in stealth fighting tactics rather than hand-to-hand combat.

Longstanding practices like hand hygiene (to include the proper use of gloves) and wearing PPE, protect both health care worker and patient alike; they serve as a disruption to a superbug’s cycle of life — either washing them down the drain or preventing them from taking a free ride. In his article, Iverson identifies that hand hygiene compliance rates fall below 50%. Newly available data through the International Safety Center illustrate that compliance with PPE use is even lower. In fact, the highest risk types of exposures to health care workers are blood and body fluid splashes to the eyes, nose, and mouth. These exposures essentially have the ability to infuse harmful viruses or bacteria into a new host. From a group of nearly 60-plus U.S. hospitals that contributed to The Center’s Exposure Prevention Information Network, of the blood and body splashes that occurred simultaneously to the eyes, nose, and mouth, in only three of 152 cases were personnel wearing the appropriate PPE. That’s a measly 2 percent!

Defining clean in health care
A focus only on clean environments and bug zapping technologies is only as successful as their ability to kill what they can manage to kill. There must be something first that eliminates the heft of blood and body fluids, whether that is PPE or some other form of engineering like sharps safety devices, closed system suction canisters, or fluid repellant barriers for soft or mobile surfaces. Because antimicrobial technologies alone are not effective against all of the bugs that live in a spray of blood or a pint of vomit, they must often rely on two or more mechanisms of action where fluids can be repelled and whatever bugs are left can then be killed.

Expecting a single technology to reduce levels of body fluids would be the equivalent of a household placing a pan with half of Sunday’s leftover pot roast in a dishwasher and asking that dishwasher to miraculously digest the leftovers — roast, veggies and all — while also cleaning, sanitizing, and drying it.

When thinking about safety in a health care environment, we first think about clean. Clean surfaces, clean floors, clean linen, clean bodies, and clean hands. Clean can be as simple as free from visible soil. Clean gets rid of that spray of blood or that pint of vomit. The next step is where technologies like UV, ozone, hydrogen peroxide, and myriad antimicrobials can work on whatever microscopic contamination is left. We cannot sanitize, disinfect, or sterilize without first having clean. Products that claim to do both or all are simply not real.

The “positive deviance” of clean
Health systems, hospitals, health care workers, executives, researchers, and manufacturers need to work collectively together. Diverse working groups with cross-functional backgrounds that are focused on solutions for a cleaner, safer health care environment is now a phenomenon growing in public health and health care called “positive deviance.” Positive deviance is an asset-based, problem-solving, and community-driven approach that enables a community to discover uncommon successful behaviors and strategies, and develop a plan of action to promote their adoption by all.

The practice has been used in infection prevention in innovative ways, using feedback techniques where all groups within the health care facility participate. These groups include those without traditional clinical roles. For instance, in one urban hospital, it was the clergy that identified a possible way to break the chain of transmission when visiting patients from one room to the next, by wrapping their holy book in between visits.

In the forward to the book, “The Power of Positive Deviance” Dr. Atul Gawande offers the following:

Along the way, you will sometimes feel worn down, your cynicism taking over. But resist. Look for those in your community who are making health care better, safer, and less costly. Pay attention to them. Learn how they do it. And join with them.

Ultimately, clean is as clean does.

About the author: Amber Hogan Mitchell, DrPH, MPH, CPH leads Vestagen Technical Textiles’ regulatory affairs, scientific, and educational initiatives. She specializes in regulatory and policy issues related to safe, quality healthcare. She was the OSHA National Bloodborne Pathogens Coordinator and has several Secretary of Labor Excellence awards.

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Industry Sector Report: Hospital Beds

Hospital bed manufacturers put the focus on infection control

By Lisa Chamoff

There are many factors that go into preventing hospital-acquired conditions, and with the federal government getting serious about reducing pressure ulcers, falls and health care-associated infections, bed and mattress manufacturers are taking note.

While “smart” certainly continues to be a buzzword for beds, with products that send patient data to nurses, some recent new releases focus on the basics to better target ulcers and infections as well as seepage; and make technological strides with improved patient monitoring and data collection in order to both improve care and boost the efficiency of caregivers.

Last November, for example, Sizewise introduced its NPT3 mattress, billed as the first pressure redistribution mattress with skin-sensing technology.

Mary Nell Westbrook, chief marketing officer at Sizewise, says the mattress includes new gel-infused memory foam to help maintain an ideal skin temperature, along with a wrapped core to provide protection against seepage. The life of a mattress should be five to seven years, she says.

“Infection control is a huge topic,” Westbrook says. “I’ve seen some pretty horrendous pictures where a hospital has cut open a mattress and the seepage inside is pretty horrible. A mattress in and of itself shouldn’t be a disposable piece of equipment. Once an ingress has occurred, you can’t get that out of foam.”

ArjoHuntleigh markets its Skin IQ Microclimate Manager, a powered mattress cover for use with a pressure redistribution surface that moves moisture away from the patient’s skin.

“ArjoHuntleigh markets its Skin IQ Microclimate Manager, a powered mattress cover for use with a pressure redistribution surface that moves moisture away from the patient’s skin.”

The company also helps health care providers with programs around patient handling and pressure ulcer prevention.

“We’re focused not just on products, but how we can, using our experience and our expertise, help customers reach goals related to clinical outcomes, financial targets and patient satisfaction,” Tucker says.

Repositioning the ‘smart’ way

Beyond the mattress, companies are introducing technology to help in pressure ulcer reduction, and this is where the “smart bed” comes in. As a start, the BAM Labs Smart Bed Technology gives caregivers the ability to provide individualized, patient-centered repositioning and then document that repositioning with the press of a button.

“We have optimized the scheduling for when these events need to happen,” says Mike Hanson, vice president of strategic partnerships at BAM Labs. Hanson says the scheduling can be tied to the individual patient’s needs and occur at the right time.

A study of the product at three long-term care centers in Kentucky, published in the June 2014 issue of the Journal of Aging Science, found that over a 12 week period of using the Smart Bed Technology with 94 patients, the overall number of pressure ulcers decreased by 50 percent from baseline to
New Options... Affordable Price... Growing Company.

NOA Platinum Series

Introducing our newest product line for the acute care market, our NOA Hospital Bed Series. The NOAH Hospital Bed Series offers three specific models to best fit your clinical and patient needs, while providing you with a combination of our standard and premium features, and price points to best meet your overall facility requirements.

**STANDARD FEATURES**

- 600 lb. Safe Working Load
- High Low Bed
- Central Locking System
- High Impact Quick Release Head and Footboards

**PREMIUM FEATURES**

- In Bed Scale with Digital Readouts
- Digital Nurse Panel
- One Button CPR Quick Release
the end of the study, and there was a dramatic 85 percent decrease in new pressure ulcer development during the study period. Additionally, compliance with the two-hour turn schedule (the average time it takes for a nurse to complete a round) increased by 35 percent during the course of the study.

Hanson says the study also adds to the body of knowledge, which is helping validate the standard two-hour turn schedule for patients who are at risk of developing pressure ulcers. In the past, an every-two-hour turn schedule wasn’t based on clinical evidence, but because it took two hours to do a round. Research is ongoing to identify optimal turn scheduling based on risk, surface, and other factors.

“The standard has been around in the medical community, but no one has been able to prove it because the technology wasn’t there,” Hanson says.

Hanson says during the next study, they may look at whether two and a half or three hours is possible, “so patients can get enough rest and sleep.”

The Smart Bed Technology also detects presence in the bed, as well as trends in heart and respiration rate, using a touch-free sensor located under the mattress. This can identify if a patient is getting out of bed in the middle of the night, help assessments of length of time in bed, and provide data on heart rate or respiration rate trends. Changes in all these factors can provide objective data on depression, medication effects, stress, or even infection.

“What we do now is provide out-of-the-box metrics reports and trends and support those quality initiatives that are coming from CMS and those other organizations,” Hanson says. “That has been an important topic for our customer base.”

The bariatric market expands

The bariatric segment remains one of the fastest growing segments of the hospital bed market.

Jeff Ambrose, president of hospital bed distributor DiaMedical USA, says he’s been getting more and more inquiries even from smaller hospitals, which are seeing the need to offer bariatric options.

Ambrose says he often recommends the Burke Triflex II, a true bariatric bed with a 1,000-pound capacity, which he sells for $7,800 to $8,500.

While some hospitals may make a choice between new or reconditioned standard beds, because of the demand, it’s nearly impossible to find reconditioned bariatric beds.

“People need them,” Ambrose says. “It’s a new area of health care that hasn’t seen turnover yet.”

Patient mobility and fall reduction

Beds that turn into chairs, to help with patient mobility, are also seeing a high demand, as are low beds. In fact, in January, Stryker announced that it was acquiring Canadian company CHG Hospital Beds, which specializes in low-height hospital beds and related accessories, specially designed to reduce the risk of patient falls. The company also recently launched its Spirit One bed, an expandable low-height bariatric bed for the acute care market.

“The acquisition of CHG aligns with Stryker’s commitment to offering products that enhance the quality of care for both patients and health care professionals; in this case, aiding in the prevention of patient-related injuries resulting from a fall from a hospital bed,” Timothy Scannell, group president for medical surgery and neurotechnology at Stryker, said in a press release announcing the acquisition.

“This acquisition will bolster Stryker Medical’s bed offerings and allow us to offer additional solutions to our customers.”

Keeping clean with copper

Infection control goes beyond the mattress. Copper BioHealth, a Chile-based startup that launched in 2013, has replaced the standard plastic-coated bed rails with rails made of copper, an anti-microbial element, on 150 beds in four Chilean hospitals, according to an NPR report late last year.

Andrea Cabello Cordero, business development coordinator for Copper BioHealth, says that while copper bedrails are more expensive than regular bed rails, the investment is worth it. The company’s bed rails cost between $890 and $1,370. Cordero compares that to a set of bed rails for electric Hill-Rom beds that cost $1,000 in Chile.

“It’s a fact that the bedrails are the most polluted surfaces in rooms of hospitals and clinics, which are cleaned between two to four times a day with various chemicals,” Cordero says. “That’s why we are focusing on this specific product. Antimicrobial copper bedrails reduce by 90 percent the microbial load on the surface, therefore the cost of investing in copper bedrails pays, not only decreasing infections … but also decreases the use of disinfectants and the impact of this on the environment.”

The company hasn’t yet assessed the impact of those copper railings in the Chilean hospitals. However, a 2013 study published in Infection Control and Hospital Epidemiology looked at three U.S. hospitals, including the Medical University of South Carolina, the Memorial Sloan-Kettering Cancer Center, and the Ralph H. Johnson Veterans Affairs Medical Center that used patient rooms where items such as bedrails, tables, IV poles, and nurse’s call buttons were made of copper-based materials. The study found that the proportion of patients that developed a health care-acquired infection was 3.4 percent in the copper-outfitted rooms, versus 8.1 percent in regular rooms.

The study found that the proportion of patients that developed a health care-acquired infection was 3.4 percent in the copper-outfitted rooms, versus 8.1 percent in regular rooms.
# DOTmed Registered Hospital Bed Sales & Service Companies

For convenient links to these companies, go to www.dotmed.com and enter [DM 24931]. Names in boldface are Premium Listings.

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ArjoHuntleigh / Enterprise
Safety, Clinical Efficacy, Infection Control and Ease-of-Maintenance are the four cornerstones of the ArjoHuntleigh Enterprise® bed frame. The ultra-low height frame and “Auto-Contour” profiling system help to reduce patient migration, shear and friction. The innovative, removable deck is easy and quick to clean, while the “pit-stop maintenance” design offers plug & play components.

ArjoHuntleigh / Pressure IQ Evolve
Pressure IQ Evolve™ is a non-powered therapeutic mattress replacement system (MRS), specifically designed for the prevention and treatment of stage II-IV pressure ulcers. With innovative features such as the 45 Helix pods, the Pressure IQ Evolve provides uninterrupted preventative and therapeutic care in care settings.

ArjoHuntleigh / Nimbus PRO
Pressure is a leading cause of pressure ulcers. The Nimbus PRO® delivers “active therapy” through its high amplitude alternating pressure design that actively manages pressure for your high risk, low mobility patients. With its unique “wound valve” technology, caregivers can now target offloading in key areas such as vulnerable heels. Get “ACTIVE” therapy.

Hausted / The Enhanced EPC250 / ESCYEYE Surgi-Chair
The EPC and ESC Surgi-Chairs feature 500 lb patient weight capacity, lower patient height with increased security from a strengthened rail design, and new latching mechanism. They also have new pads with memory foam and a new braking system that allows easier maneuvering and greater patient security. Accessories include a built-in drainage bag hook, optional folding side table, adjustable patient lap tray, and patient side tray.

Hausted / Fluoro-Track Fluoroscopy-Capable Stretcher
Fluoro-Track Fluoroscopy Stretchers offer the C-arm access of a table with the mobility of a stretcher. They are intended for fluoroscopy, endoscopy, pain therapy, and surgical procedures, as well as transport of patients in health care facilities.

Hausted / 5E8EYE/EXY Powered Articulating Head Surgi-Stretcher
The 5E8EYE (regular width) and 5E8EXY (extra wide) feature an increased patient weight capacity of 720 lb, new Patient/Attendant Pendant, new Attendant Control (tucked in at foot end), low-profile height-adjustable articulating headpiece with dual operation control knobs, motorized backrest (with Emergency Quick drop), and knee flex. They operate through all functions with locking feature. Accessories include Head Extension with Push Bar, Restraint Strap with Buckle, and Adjustable Telescoping IV rod.

Hausted / The Simmons™ Clinical Care Stretcher Pad
This stretcher pad is 5” thick for maximum support and features a contour-cut grid that provides better patient immersion and airflow; a tri-laminated foundation for durability, support, and greater pressure redistribution; and a four-way-stretch fluid-resistant cover. One-year limited warranty. Simmons trademark owned by Dreamwell, Ltd.

Linet Americas / Multicare Critical Care Bed
Multicare® uses innovative technologies to help meet the needs of high acuity patients. Multicare offers unique features such as Mobi-Life® patient mobilization and frame based lateral tilt to help caregivers safely turn and mobilize patients. The frame can accommodate an integrated air surface. Additionally, standard features such as in-bed scale, i-Brake® automatic braking system, lateral therapy, bed exit alarm and battery back-up help staff meet future critical care demands with today’s budget.

Linet Americas / Eleganza 3 (Medical-Surgical Bed)
Through its unique and innovative features and intuitive design, the Eleganza 3 bed has a positive outcome on the treatment and care of patients, while also increasing the safety and efficiency of caregivers. Eleganza 3 addresses common needs in acute care, such as patient and caregiver safety, patient mobilization, infection control, staff efficiency and cost of care. Eleganza 3 offers standard features such as in-bed scale, bed exit alarm and battery back-up to meet future acute care demands with today’s budget.

NOA Medical / NOAH Platinum SC Bed
The NOAH Platinum SC Bed includes top of the line features at an affordable price:
• In-Bed Scale
• CPR Quick Release
• Nurse Panel
• Central locking and steering
• Under bed lighting and backlit handset
• Battery Back up
• Side Rails
• Patient exit alarm and nurse call
• 600 lb safe working load
• 4 Year Warranty on Electronics and Life time on bed deck and frame

NOA Medical / NOAH Platinum NS Bed
The NOAH Platinum NS Bed includes top of the line features at an affordable price:
• High Impact Head and Footboards
• CPR Quick Release
• Nurse Panel
• Central locking and steering
• Under bed lighting and backlit handset
• Battery Back up
• Side Rails
• Patient exit alarm and nurse call
• 600 lb safe working load
• 4 Year Warranty on Electronics and Life time on bed deck and frame

NOA Medical / NOAH Platinum ML Bed
The NOAH Platinum ML Bed includes top of the line features at an affordable price:
• High Impact Head and Footboards
• Manual CPR Quick Release
• Footboard Control
• Central locking and steering
• Under bed lighting and backlit handset
• Battery Back up
• Side Rails
• Patient exit alarm and nurse call
• 600 lb safe working load
• 4 Year Warranty on Electronics and Life time on bed deck and frame

DOTmed asked the leading Hospital Bed & Stretcher manufacturers to submit their current products to be featured in this section. To learn more about these systems and see other models not shown, please visit the Equipment Guide in DOTmed’s Virtual Trade Show, or go to: www.dotmed.com/beds.
Sizewise / Bari Rehab Platform™
The Bari Rehab Platform allows patients to become involved in their care. With the open side rail design, low working deck height, and simplified hand control, the Bari Rehab Platform has a safe working load up to 1,000 pounds. In addition, it will transport in any high or low position. Options include a full-frame trapeze, built-in scale system, battery back-up, and power drive.

Sizewise / NPT3™
The Sizewise NPT3 is the industry’s first pressure redistribution medical mattress with skin-sensing technology. Through 12 independently vented air chambers, the NPT3 is engineered to self-adjust providing full-body support and pressure redistribution patients of all size. It features an extremely durable polycarbonate top cover, a Mattress Asset Protection™ (MAP) Liner to better safeguard patients against infection and new gel-infused thermal neutral foam to dissipate or retain heat depending on patient need.

Sizewise / Navigator™
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Span-America / PressureGuard® recessed deck air therapy surfaces
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Span-America / Encore™ retractable deck expandable bed
The new Encore bed provides superior safety and ergonomics for patients and caregivers in long term or LTAC units. Features GlideAlign™ retractable deck, which helps maintain user’s relative positioning when head of bed is elevated. ReadyWide™ integrated expansion allows tool-less, pin-less expandability to 42 inches. Smart Stop™ low position auto pause helps eliminates hazards.

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TransMotion / TMM5 Surgical Stretcher-Chair
The most advanced line of motorized, mobile surgical stretcher-chairs for demanding surgery departments. Converting from chair to stretcher, motorized positioning allows patients to go from admission to discharge on one surface – eliminating transfers. Achieve safe patient handling and maximize space for increased productivity.

TransMotion / TMM6 Power Drive Stretcher-Chair.
Move up to a 500 lb. patient with just one finger with the TMM6 Power Drive Stretcher-Chair. It features both Power Drive and Power Positioning for easy transport and treatment of patients. Converts from chair to stretcher with just one button for safe patient handling.

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HealthCareBusiness news | FEBRUARY 2015
According to the National Cancer Institute, as many as 170,000 cancer patients are diagnosed with intracranial metastatic disease every year in the U.S., and up to 80 percent of them have more than one lesion (tumor). Determining the best treatment for patients is something a physician must do on a case-by-case basis, in many scenarios, however, stereotactic radiosurgery (SRS) is an excellent option.

Given the various offerings from Varian, Elekta, Accuray, and BrainLab, how does a physician decide which device will deliver the right treatment modality for their patients? And how does a facility decide which radiation device is right for their cancer center? HealthCare Business News reached out to physicians and manufacturers alike to assess the options, and, spoiler alert: there is no one-size-fits-all answer.

Recent history
Although not everyone agrees on the best solutions available for SRS, the consensus is that Elekta’s Gamma Knife has historically set the standard. It was invented and developed exclusively for brain treatment. Catherine Gilmore-Lawless, vice president of clinical intelligence at Elekta, tells us that more than 900,000 patients have received Gamma Knife treatment on one of more than 300 systems in use worldwide. She says those figures account for 75 percent of the world’s total stereotactic radiosurgery procedures.

However, there are limitations to the Gamma Knife. Most notably, it is restricted to treating brain lesions and utilizes a stereotactic head frame to achieve immobilization and accuracy of the treatment. Securing the head frame to the skull is uncomfortable and means radiosurgery must (almost always) be performed in a single fraction.

Other devices, such as Accuray’s CyberKnife and TomoTherapy, and the latest linear accelerators, including BrainLab’s Novalis, Varian’s Edge and TrueBeam, and Elekta’s Versa HD, utilize image guidance and motion sensing to stay on target while treating brain lesions as well as tumors located in other parts of the body. Eliminating the head frame also means that those platforms can treat in multiple fractions if the patient’s needs call for it.

So, one may make the assumption that the Gamma Knife set the stage for stereotactic surgery and then new equipment came and improved on every aspect of its innovations. That’s not exactly the case. Dr. Lijun Ma, a physicist from the UCSF radiation oncology department, has all of those options at his disposal, however, he and his colleagues continue to exclusively use Gamma Knife when treating the brain.

Small target precision
Ma, who has nearly 20 years of experience performing SRS, says the latest version of
Gamma Knife (Perfexion) retains an advantage over other platforms with regard to dosimetry and accuracy. He also points to the vast amounts of published data on Gamma Knife SRS as an invaluable resource in utilizing the tool responsibly and to its highest potential.

Ma participated in a study published online earlier this year entitled, Variable Dose Interplay Effects Across Radiosurgical Apparatus in Treating Multiple Brain Metastases, which evaluated the use of Gamma Knife, Novalis, TrueBeam, and CyberKnife at six different clinics to better understand how well each modality spares healthy tissue from radiation. Their findings indicate that treatment by the Gamma Knife did the best job at sparing normal tissue, however, it requires the longest beam-on time (the amount of time that the radiation beam is transmitting radiation to the patient).

"From a physics point of view, the head frame does several important things that people need to know," says Ma, "Once you target the lesion, it’s easy to be very precise." He says that the body movements that an image guided platform has to account for—rotational shifts, breathing, sweating, even gravity itself—are infinitely complex and can result in reduced accuracy of the treatment.

When radiation is off-target, it subjects normal tissue to radiation, which can lead to various side effects of varying complexity. For example, when treating trigeminal neuralgia, which affects the fifth cranial nerve, there is precious little room for missing the target. “You want to zap a little nerve, (1mm by 7mm), with a high dose such as 80 gray,” says Ma, “You better do that with something that can deliver the dose precisely.”

Ma says that Gamma Knife is more focused than other platforms and has sharper dose falloff. “The dosimetry using X-ray comes from electrons hitting the target,” says Ma, “Those modalities tend to deliver a factor 2 to 3 times higher in the normal tissue dose, or the skirting dose, than does the Gamma Knife.”

“For other tumors you can make the argument saying those things are tolerable, however, the entire backbone of doing radiosurgery is to be precise,” says Ma. So, for whatever temporary discomfort it implies, he believes the Gamma Knife and its head frame yield better outcomes, especially for the most complex brain cancer cases.

Considerations for throughput and versatility

Alliance Oncology, a technology agnostic and comprehensive network of radiosurgical programs, has Gamma Knifes installed in two of their 29 partnering radiation therapy centers. They also partner with hospitals using modalities from the other major stereotactic manufacturers.

Cindy Winkler, senior vice-president of operations at Alliance Oncology, says that a patient’s individual needs dictate the choice in both the technology and method of radiation. “As more long-term data accrues for SRS treatment delivered with different devices, physicians are able to select the platform and proper type of radiation based on factors such as type of lesion, size and proximity to critical anatomy,” she says.

Dr. Salim Siddiqui, a radiation oncologist at Henry Ford Hospital, uses Varian linear accelerators for intracranial treatments. His hospital has performed more than 4,000 stereotactic procedures throughout the body, and their brain treatments are typically performed in a single fraction, despite the option of multi-fraction.

In March of this year, Henry Ford Hospital installed a Varian Edge linear accelerator. Siddiqui says they chose the Edge because it is more efficient and offers the same accuracy as other platforms while having the versatility to treat the entire body. Other key benefits include the 2.5mm multi-leaf collimator and a robotic couch that assists in properly positioning the patient. Those features allow for better dosimetry (dose accuracy to the tumor) and faster delivery.

With the Edge, there is also the option to extend into additional fractions when necessary. “You balance treating the target against the organ at risk,” says Siddiqui, “If you’re going to or above the tolerance of that organ then you move to three fractions. If you still can’t do it then you move to five.” With the Edge, he says they only reach three fractions in less than 10 percent of their treatments.

“When you compare Gamma Knife to linac, it was not robust enough for our stereotactic needs,” says Siddiqui, whose hospital has treated over 1,000 spine cases radiosurgically. Varian’s RapidArc (volumetric modulated arc therapy), and cone beam CT imaging ca-
Feature: Stereotactic Radiosurgery

Stereotactic radiosurgery (SRS) capabilities make it a state of the art option for treating extracranial lesions as well as those in the brain.

"With the Edge, some spine treatments using Varian’s RapidArc planning and the higher dose rates have beam-on times of approximately 3 minutes — that makes a big difference for the spine patients suffering a great deal of pain,” says Siddiqui.

Raymond Schulz, radiosurgery manager at Varian Medical Systems, points to the efficiency of Varian’s latest linacs, (Edge and TrueBeam) as the primary feature that distinguishes them from comparable platforms. "Recent studies have shown that we are as precise, or more precise, and dosimetrically equivalent to other platforms,” says Schulz, "But we have substantial efficiency benefits.”

One such study is entitled, Comparison of Plan Quality and Delivery Time between Volumetric Arc Therapy (RapidArc) and Gamma Knife Radiosurgery for Multiple Cranial Metastases, and was published online and in the October 2014 issue of the journal, Neurosurgery. That study, conducted at the University of Alabama, illustrates drastically reduced treatment times for the latest VMAT-capable linear accelerators.

The study also indicates equivalent conformity and moderate isodose spill between Gamma Knife, Novalis, and TrueBeam. However, it is noteworthy that the Gamma Knife in the study is a Leksell Model C, which is an older model than the current Perfexion.

The capability to deliver 2400 monitor units per minute means giving a dose 3 to 6 times higher than competing technologies, says Schulz. In the case of Henry Ford Hospital, the combination of throughput, accuracy, whole-body versatility, and positive clinical outcomes with Varian’s Edge has been invaluable to their practice.

With the brain in mind

Like Gamma Knife, the CyberKnife was designed for treating intracranial lesions. David Schaal, senior director of clinical publications at Accuray says, “From the start, John Adler, the inventor of CyberKnife, wanted to design a device that would be able to deliver many beams of radiation from multiple non-coplanar angles around the patient, but without a head frame."

He says the company achieved that goal with the implementation of their robotic, motion-sensing system. To get a better understanding of the CyberKnife’s capabilities we spoke to a physician from Stanford Health Care, where they have a Varian TrueBeam linac as well as two CyberKnives, and perform stereotactic radiosurgery in an average of 2.5 fractions.

In favoring X-rays over gamma rays, Dr. Steven Chang, a neurosurgeon at Stanford Health Care, points to the evolution of the machinery. "A lot of radiation oncology machines now use image guided tracking,” says Chang, “It has sort of become a de facto standard for radiation delivery compared to older methods using rigid immobilization."

Chang believes that for treating certain indications, some radiation delivery devices do not have sufficient accuracy. "The primary two machines that have an established long term track record regarding sub-millimeter accuracy are Gamma Knife and CyberKnife,” says Chang, who also points to trigeminal neuralgia as a disease that should specifically be treated with those platforms.

Chang says that with CyberKnife you have many of the benefits that are associated with linacs: you can treat the entire body, you can break up treatment into multiple fractions, and you can treat infants who have soft skulls. In weighing the benefits of CyberKnife over Gamma Knife, Chang says it’s in the lack of head frame and the option to treat the entire body.

It’s not the car, it’s the driver

When analyzing the differences between these modalities it’s easy to lose sight of the big picture. “In terms of outcomes, if you used the same doses and had the same target, whether you treat on the Edge, Novalis, CyberKnife, or Gamma Knife, your outcomes should basically be the same,” says Siddiqui, who emphasizes that all these cutting edge modalities can universally outperform anything from just a few years ago.

What matters most of all is the experience of the team performing the procedures, and their level of knowledge and expertise with the system they use. “If you imagine a racecar, you can have the best car but you need the best driver and the best pit crew to make it work,” says Siddiqui, “Good technology has to be in great hands.”

Chang takes the car analogy a step further saying, “If you give a NASCAR driver a Honda and give you or me a Ferrari, the NASCAR driver would still beat us.” Meaning the experience of the team goes a long way, and for patients, it’s important to choose facilities that practice a high volume of the treatment technique that they are seeking.

Ma, from UCSF, warns that patients looking at treatment options should be mindful of the studies they are presented with and make sure the information is not being provided with a particular manufacturer’s interests in mind. “You have to look at academic and multi-institutional studies,” says Ma. “Were the physicians involved experienced and were the modalities equivalent and state-of-the-art?”

Economic factors will also inform a hospital’s choice of modality. Each machine has something special that sets it apart from the others and, if they had the space and the budget, there is no reason a hospital would not elect to have all of them at their disposal.

Winkler, with Alliance Oncology, emphasizes the role of the physician in selecting the best course of treatment for each individual patient. “Our hospital and physician partners are integral in the choice of equipment,” she says, however, the palliative and curative needs of the center’s patients are the ultimate deciding factors.

A recent partnership between the American Association of Neurological Surgeons (AANS) and the American Society for Radiation Oncology (ASTRO) should yield even more insight into maximizing positive outcomes in SRS. The two groups are building a national registry that will log data from 30 diverse, high-volume, stereotactic radiosurgery centers for a three-year time period. The data from this registry will be aggregated and analyzed in order to ensure safe, high-quality care and to help define treatment guidelines.

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On-the-job injuries: Cost of doing business or avoidable liability?

John W. Mitchell

Health care safety consultant Randy Charpentier walked into his hospital client’s half-billion-dollar renovation project unannounced one day during lunch hour to find a subcontractor crew working without proper safety equipment and failing to follow basic infection control protocol. They hadn’t even sealed up an exposed overhead from an adjoining space occupied by mothers and newborns.

He knew he had no choice but to stop the entire project immediately.

“The foreman told me I didn’t have the authority to shut them down because I was a consultant. I told him that I was not going to have a dead baby on my conscience and not only were they through for the rest of the day, they weren’t getting paid,” Charpentier recalled.

His next stop was the hospital administrative office where he informed the hospital executives of his decision to halt their massive five-year overhaul of the facility’s most crucial — and most infection-sensitive areas — including operating rooms, imaging procedure rooms, intensive care units and an obstetric delivery unit.

“It was a tense conversation,” he says with a laugh. “But I finally persuaded them they had hired me to be responsible for the safety of the patients, employees and contractors on this project. There was either a culture of safety or there wasn’t. And if there wasn’t, I was resigning.” By the time he finished the consulting job, Charpentier says he was able to reduce the hospital’s infection rate related to construction to zero.
Charpentier, who is president of HealthSafe New England and has held management positions in hospital and workers’ compensation insurance providers, shared his story to highlight the best tool in preventing workplace mishaps: a culture that values injury prevention.

While staffers are usually the ones hurt on a job site, patients and customers can also be impacted, which often leads to lawsuits. It seems there is never enough of a budget for safety, but when something bad happens, money cannot be spent fast enough. A 2012 UC Davis study placed the direct and indirect costs of occupational work injuries and illness at $250 billion a year. This expenditure, according to the report, is higher than annual costs for three other major disorders, including cancer ($220 billion), diabetes ($175 billion) and strokes ($63 billion).

“Employees learn how to ignore the rules, especially those that don’t seem to apply to them or are not reinforced by their manager. So it’s important to allow employees a voice in the policies designed to keep them safe.”

A lack of organizational commitment to preventing on-the-job injuries nearly always manifests itself in obvious ways. “I can walk into a company and within five minutes tell you if that company has a safety-based culture or safety-avoidance culture,” says Charpentier. Since all states mandate employer obligations to injured workers, a company’s leadership needs to focus on workplace injuries, he adds.

“Companies are really good at making rules that don’t work,” says Jim Murphy, who has served in a wide range of human resources and organizational development management positions, including for the City of Boston and Massachusetts Bay Organizational Development Learning Group. He now acts as a consultant through his own firm, Management 3000. He notes that a common mistake he sees is that a company has a safety policy – most often linked to a new employee handbook – and they call it good. But if that’s as far as the effort goes, it’s far from good.

“You have to make sure you are dealing in the real world with your people,” he explains. “Employees learn how to ignore the rules, especially those that don’t seem to apply to them or are not reinforced by their manager. So it’s important to allow employees a voice in the policies designed to keep them safe.”

In hospitals, this fact of human nature can be seen in the stats for nursing injuries. Nurses have access to many types of equipment designed to prevent injury to caregivers when lifting patients. Yet according to a landmark study released in 2013 by the Lucian Leaps Institute titled “Through the Eyes of the Workforce” up to a third of health care workers suffer back or musculoskeletal injuries every year related to lifts, as well as exposure to blood-borne pathogens through preventable events like needle sticks or respiratory compromise. Beth Boynton, a nurse and workplace safety advocate who is writing a textbook on the subject, says employers often create adversarial relationships with employees in their response to an injury claim.

“Sure there are some malingerers who work the system, but treating every injured worker like a suspect turns injury management into a self-fulfilling prophecy of conflict. The injury becomes a source of power for the employee because that’s all they have to negotiate with,” she says. “This kind of attitude does not help recovery and it doesn’t help prevent future workplace accidents.”

There’s a lot of shame and guilt when people get hurt on the job – both on the part of the employee and the employer, says Management 3000’s Murphy. “Most organizations hesitate to expose emotions, but people need the ability to speak up.”

Underscoring this point is Boynton’s personal experience as a nurse. “Early in my career I was choked by a patient who was going through heroin withdrawal. Fortunately, I wasn’t seriously injured, but the doctor who was on the floor dismissed the incident like it was just part of the job,” says Boynton. “There was no concern about how I felt about being attacked,” she says.

Andy Gebhard, director of communications and social media at SFM Mutual Insurance, which issues workers’ compensation polices
in several states, says that his company is having good early results with a new program to foster open communications between injured workers and their client employers.

“In October, we set-up a 24-hour hotline staffed by registered nurses,” says Gebhard. “The manager dials the number and then hands the phone over to the employee. The nurse performs a triage to determine the extent of the injury and if the employee needs to go to the emergency room, to their doctor or self-treat the injury.” According to Gebhard in the short time the program has been in place, 20 percent of their clients have already self-reported accidents through the nurse triage system.

He says that several clients have aggressively adopted the system to help address common mistakes that are made in reporting workplace accidents with injury. This includes: reporting the injury late; indicating if the employee is missing work due to injury; communications breakdowns; not reporting questionable claims, and allowing employees to fill out accident forms.

“Our perspective is from that of the employer,” Gebhard stressed. “But there is nothing to be gained by avoiding taking care of an injured employee,” as all states mandate programs for injured employees that allow salary continuation and coverage of medical expenses related to the injury.

“Back in the days when workplaces were more dangerous than they are now, employees were treated like replaceable equipment. That’s why workers’ comp laws evolved into the system we have today. My company seeks out clients who have a good commitment to keeping their employees safe. We then partner with them to help them reduce their claims losses by improving safety through good practices.”

It always comes back to the idea of a commitment to safety and employees.

“There are two kinds of people in charge – those who know and care what is going on and those who don’t,” Murphy states. “You can’t get to be CEO without being conscious of details of the job and employees are the most important detail. Get that wrong and it can be very costly.”

Charpentier’s experience echoes Murphy’s views. A workplace with a poor safety culture is the common thread in organizations with substantial workplace safety and injury records.

“You can see safety banners and signs all over a company and no one adhering to the safety policies. Management will tell you that OSHA has never visited them, so they must have a good safety program. That’s when I know this is a company focused on production and the bottom line, and the leaders don’t understand that if nothing else, keeping employees from getting hurt is also a good way to control expenses.” He recalled a case in which he visited a client who nearly lost an entire research facility because one of the employees did not follow safety procedures.

“I spent all night going through the building with the fire chief to figure out what happened and it was an obvious safety policy violation. The next morning I met with the CEO and COO, with whom I had good relationships, to ask how they planned to hold the employee accountable. Their answer was, “We’ll talk to him.” Of course, that’s not going to prevent another fire. Later, I learned the researcher brought in a $50 million-research grant and had been exempt from safety training. So I knew what values were important to that organization – and so did their employees.”

He says part of the problem is that making changes to save $100,000 in an injury claim expense in an organization as big as a hospital, for example, which can have hundreds of millions in revenue, seems like a lot of effort for a little return.

“I understand that senior executives have a lot of competing priorities,” he says. “But if nothing else, a 10 to 15 percent increase in workers’ comp insurance a year is going to add up eventually. It’s worth the effort to make a workplace safer.”

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The top five common issues related to workplace injuries:

1. No safety policy or an outdated policy
2. Ignoring safety policies (no enforcement)
3. Poor safety training/prevention
4. Poor incident reporting
5. A culture of injury denial (blaming the injured)
HealthCare Business News spoke with SGNA president, Colleen Keith, about her background and the society’s role in the future of health care.

Colleen Keith started her health care career in infection prevention in the U.S. Air Force — she was in a regional hospital in the U.S. From there, she went on to nursing school and was a critical care nurse for a number of years before specializing in gastroenterology. She is now the director of surgical services and ambulatory services at The King’s Daughters’ Hospital and Health Service.

HCBN: What attracted you to SGNA?
CK: Well, I began working in the GI specialty and I am working in a small community hospital. So what attracted me were the available resources to help me determine the standards of care to provide at my own hospital. I also appreciate the networking with other GI nurses and the chance to exchange knowledge.

HCBN: What is your platform as society president?
CK: My catchphrase — that we step forward and connect with our GI community. The essence of that is to develop working relationships within the team — our patients, our families, our community. And also, taking a step beyond that and connecting globally with international GI societies.

HCBN: What are the biggest challenges facing your membership today?
CK: I think the main thing is the moving targets that we have in health care as far as policies and regulations. It can be hard to determine where reimbursements are and where regulations are for CMS and Medicare. I guess the largest challenge in health care, in general, is having to do more with less.

HCBN: What has been big news for the society over the past 12 months?
CK: We’ve done so much. One of the big things was to update our nursing sedation website information. So we have a new website for that which has been huge. Another thing our members have asked us to do was to create education and a mentoring programs for new GI nurses, and we rolled those out this year. And then we have our infection prevention champion program. It’s about infection prevention and scope cleaning and different infection prevention practices. Currently, we have recognized 156 champions who ensure patient safety.

HCBN: Do gastroenterology and endoscopy nurses focus just on those areas or is that one of the many hats they wear?
CK: It depends on the size of the institution you’re at — you’re the GI, Endo nurse at a small facility maybe. But nurses tend to gravitate to one special area.

HCBN: How is membership doing?
CK: Increasing every year. It is currently over 8,000 strong. To increase membership we work to provide the services our members need to stay within the society. We need to provide them with what they need and we listen to what they want.

HCBN: You were involved in developing the GI unit at your own hospital. How did that project come about?
CK: The administration decided they needed a dedicated GI unit and I had worked in a fairly large family practice and had done some endoscopy, so it was kind of a match when I came to the hospital.

HCBN: How long did it take to get the GI unit fully operational?
CK: About six months.

HCBN: What were the big challenges?
CK: Finding the space for it. We’re a hospital that’s 114 years old, so room is hard to come by. And then there was the challenge of finding staffing. We had one LPN that had assisted with endoscopy before I got there, so that was a start.

HCBN: How challenging is it for gastroenterology and endoscopy nurses to keep their knowledge current?
CK: I think it’s ever-changing, insofar as the technology is ever-changing with our instrumentation and our technology we use within the society. There are also so many new GI drugs out, to care for our patients. So it’s a challenge to keep current, but it’s a necessity.

One of the things within the mission of SGNA — we provide the standards to everyone. Anyone can go online and get our guidelines — cleaning and reprocessing an endoscope properly, for example.

Q&A with
Colleen Keith
president of SGNA

By Sean Ruck
Lasers and energy-based devices for surgery

By Andrea Alstad

Lasers and other light technologies can be applied to a wide variety of open, minimally invasive (e.g. laparoscopic) and robotic surgeries in general surgery and other surgical disciplines. Laser light can be very highly focused and precise, making these devices desirable for cutting tissue in place of a scalpel. Lasers can seal lymph vessels to reduce swelling, limit the spread of bacteria and tumor cells, and shrink or destroy tumors and other lesions.

“These sophisticated devices produce highly precise and controllable effects on tissues,” explains Dr. Raymond J. Lanzafame, a board-certified surgeon, expert in laser applications and research and past president and current CME director for the American Society for Laser Medicine and Surgery. “Each laser wavelength has a characteristic effect on tissue based on the degree to which the light energy is absorbed, scattered, reflected or transmitted through the tissues and how the energy is delivered to the intended target tissue. The combination of the laser tissue interaction and the selection of the appropriate delivery systems and laser parameters determines the ultimate effects of laser use on the conduct and outcomes of surgery.”

Lasers allow the appropriately trained and skilled surgeon to accomplish more complex tasks, reduce blood loss, decrease postoperative discomfort, reduce the chance of wound infection, decrease the spread of some cancers, minimize the extent of surgery in selected circumstances and result in better wound healing.

So the overall advantage of the use of lasers in surgery is the ability to improve patient outcomes. In general, with the appropriate use of laser technology, the patient experiences less pain, bleeding, swelling and scarring, plus a reduced risk of infection. Ultimately, with these advantages, the length of the recovery period should be shorter and the patient is able to return to normal activities faster.

The majority of so-called “laser surgeries” actually use the laser device in place of other tools such as scalpels, electrosurgical units, cryosurgery probes, or microwave devices to accomplish a standard procedure like mastectomy (i.e. breast surgery) or cholecystectomy (i.e. surgical removal of the gallbladder).

The surgeon’s understanding of safety procedures and proper training are critical. The benefits are considerable, if the laser is used appropriately by a skilled and properly trained surgeon.

Applications of lasers in surgery

The earliest applications for lasers in surgery occurred in the areas of ophthalmology and dermatology. LASIK surgery is perhaps the most best known laser application in ophthalmology, but lasers are also used to treat detached retinas, glaucoma and diabetic retinopathy. The dermatological use of lasers and other energy-based devices spans from the vastly increasing applications for cosmetic procedures to the treatment of port-wine stains, melanomas and scars due to traumatic injury. Currently, the CO₂, holmium, thulium, KTP, KDP, LBO, Nd:YAG, and high power diode laser technologies are available for use in soft tissue applications. Laser technology is also available for lithotripsy.

Common uses for surgical lasers include:
- Neurosurgery, with precision cutting and endoscopic guidance in the brain and spinal cord
- Urology – treatment of urinary stones, bladder obstructions and enlarged prostates
- Dental applications such as drilling cavities, gum surgery, antibacterial treatments and tooth decay detection with optical coherence technology OCT imaging
- Gastroenterology, for management of obstructing and bleeding tumors and vascular malformations
- Gynecology, for treatment of cysts, endometriosis and fibroid tumors
- Otolaryngology, for treatment of lesions of the nasal passages, paranasal sinuses, larynx, and trachea

The photons from a CO₂ laser can be carried via hollow tubes, waveguides and
mMirrors. The OmniGuide fiber is a flexible chalcogenide glass waveguide that has been utilized for otolaryngological and neurosurgical procedures. “The potential exists for broader clinical use including various general surgical procedures,” states Lanzafame. “The laparoscopic use of this wavelength is possible with the use of a focusing cube and an operative laparoscope, or with a variety of waveguides designed for multi-puncture laparoscopic applications. The OmniGuide overcomes some of the problems associated with free beam and rigid waveguides due to its small diameter and flexibility, which more emulates a true fiber. The availability of these highly flexible devices has resulted in resurgence in the use of carbon dioxide laser energy for neurosurgical and otolaryngological procedures including microsurgical applications.”

Thulium laser technology has recently become available for use with the da Vinci Surgical Robotic System from Intuitive Surgical, using the RevoLix system from LISA Laser USA. The robotic platform is fitted with a flexible introducer that is capable of accepting up to a 5F (1.67mm) diameter fiber. According to Lanzafame, “The system is currently being marketed to gynecologists. However, the platform is certainly capable of much broader use in minimally invasive surgery.”

Some of the most exciting advances for lasers and energy-based devices have taken place in the area of cancer treatment. Applications include the use of these devices for tumor resection or ablation as well as in combination with drugs for photodynamic therapy, and interstitial thermotherapy. During Laser-induced interstitial thermotherapy (LIIT), laser light at the tip of an optical fiber raises the temperature of the tumor cells and damages or destroys them. The FDA cleared an LIIT device for use in neurosurgery in 2009.

Photomedicine
In addition to the use of lasers in surgery, the application of lasers and energy-based devices extends into in the area of photomedicine, which includes Photodynamic Therapy and Photobiomodulation.

Photodynamic therapy (PDT)
A drug, called a photosensitizer (which is a substance that sensitizes an organism, cell, or tissue to light), is injected into a patient and absorbed into cells in the body, staying longest in the cancer cells. Laser light is then used to activate the agent and destroy the cancer cells. PDT is usually used to treat tumors on or just beneath the skin, or on the lining of internal organs or cavities. Areas of treatment include pre-skin-cancers, esophageal cancer, and non-small cell lung cancer.

According to the National Cancer Institute, clinical trials are being conducted to evaluate the use of PDT for cancers of the brain, skin, prostate, cervix and peritoneal cavity. Also under development are more powerful photosensitizers, ways to more specifically target cancer cells and the delivery of the activating light.

Photobiomodulation
Photobiomodulation (PBM) also known as low level light therapy (LLLT) was first developed in the 1960s. It is a form of photonic therapy that utilizes non-ionizing light sources, including LASERS, broad band light, and LEDs in the visible and infrared spectrum that result in therapeutic benefits including alleviation of pain or inflammation, immunomodulation and promotion of wound healing and tissue regeneration. PBM is a non-visual, non-thermal process. In this therapy, light energy (photons) penetrates tissue, where it interacts with chromophores located in cells, resulting in photophysical and photochemical changes that lead to alterations at the molecular, cellular and tissue levels of the body. Light induces a complex chain of physiological reactions in diseased and damaged tissues to accelerate wound healing and tissue regeneration, increase circulation, reduce acute inflammation, reduce acute and chronic pain and help restore normal cellular function. Interestingly, recent research indicates that light can enhance performance in normal tissues and cells. PBM has been used as an effective tool to accelerate post-surgical healing.

Dr. Juanita J. Anders, a professor of anatomy, physiology and genetics, and neuroscience at Uniformed Services University of the Health Sciences in Bethesda, Maryland, expert in photobiomodulation and current president of the ASLMS, comments, “We’d really like to see a broader adoption of the
use of the term photobiomodulation, versus low level light therapy or laser therapy, because now there are a number of light devices that are being used to stimulate cell and tissue processes. We feel that the name photobiomodulation better describes the underlying mechanism."

“Unfortunately, there is not mainstream medical acceptance of the use of photobiomodulation yet,” Anders explains. However, photobiomodulation is being used successfully pre-clinically and clinically in a broad range of applications including: wound healing and tissue repair, pain treatment, alteration of inflammation, and treatment of diseases and injury of the nervous system.

“With the application of light for PBM, it is important to get the dosage right; that is, the power density that is delivered and the time that you treat,” states Anders. “When you think about light, think about it as if you are using a drug, think about the dose of application.” When going deeper into the tissue, “the wavelength is the determiner of the depth of penetration of the light. The output power that you use will determine the number of photons that are delivered at any point along the depth of penetration for a given wavelength.”

The field of PBM is expanding from wound healing and tissue repair to work in neurodegenerative diseases, such as Alzheimer’s and Parkinson’s Diseases. An exciting development is Transcranial Laser Therapy (TLT), which is the noninvasive delivery of near infrared laser energy to the brain for the treatment of acute brain injuries such as post-traumatic stress disorder, chronic neurological diseases, and mental illnesses.

Perhaps the most talked about recent development in PBM is in the dental field. Praveen Arany, a researcher at the National Institute of Dental and Craniofacial Research in Maryland, has discovered that laser light applied to a tooth can stimulate stem cells to produce dentin that restores the health of the tooth. This discovery is now moving into the clinical trial stage.

Safety
With the myriad uses for lasers and other light-based devices in medicine and surgery, there is one factor which remains constant; the critical need for the implementation of safety measures and appropriate training for physicians and staff performing the procedures.

“The surgeon should have a complete working understanding of lasers, their delivery systems and their tissue effects prior to attempting to apply them clinically,” states Lanzafame. “The surgeon must be aware that all lasers and delivery systems are not alike and that attention to the selection of the proper wavelength, delivery system and laser parameters are central to achieving the desired clinical endpoint, given the appropriate technical expertise. An intimate understanding of the details of the procedure, as well as the laser technology and delivery systems selected for use, is critical for the safe use of these technologies.

The surgeon and the entire surgical team should understand and implement safety procedures as recommended by the ANSI Z136.3-2011 Standard for Safe Use of Lasers in Health Care (Laser Institute of America, Orlando FL) and other appropriate regulatory bodies. Implementation of these guidelines in facilities and venues wherein lasers and light based technologies are being used will prevent injury to patients and personnel.”

Armed with the proper training and knowledge of safety procedures, surgeons can benefit from the high degree of precision and control laser devices provide. Lasers and other light sources can improve efficiencies and yield improved outcomes for the patient.

About the author: Andrea Alstad is the marketing and communications coordinator for the ASLMS, which is the largest multi-disciplinary professional organization dedicated to the development and application of lasers and related technology for health care applications. Currently, ASLMS has over 4,000 members, including physicians and surgeons representing more than 51 specialties, physicists involved in product development, biomedical engineers, biologists, nurses, industry representatives and manufacturers.

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Fibertom™ cutting mode.

where lower power is effective. Unique safety features for endovenous laser treatment for a 940 nm wavelength make it ideal with a 940 nm wavelength. The use of a 80 watt continuous diode laser is designed for applications requiring easy operation and fiber delivered, high output power at specified wavelengths. The innovative fiber calibration port design allows use of a variety of fibers and provides well regulated, optimum output power. It is the ideal OEM medical laser and can be customized and private labeled for you.

CoolTouch / CTEV
The CoolTouch CTEV 1320nm laser for endovenous ablation of varicose veins is available in both a 10 and 15 watt system. The laser system includes automatic pullback device for even energy delivery and a variety of cost effective fiber options including single use, reusable and 2.5F for tortuous veins.

Dornier MedTech / Medilas H 20
The Dornier Medilas H 20 is a holmium YAG laser especially designed for the treatment of stones and soft tissue, featuring 20 watts of power and 2.1 micron wavelength. Complemented by a variety of flexible lightguide fibers, virtually all stone locations are accessible in endoscopic applications.

Dornier MedTech / Medilas D Flexipulse
The Dornier Medilas D FlexiPulse is a 120 watt (peak pressure) continuous diode laser with a 940 nm wavelength. State-of-the-art Power Bar technology and a 940 nm wavelength makes it ideal for endovenous laser treatment for varicose veins, superficial veins, ENT applications and other surgical applications. Unique safety features including the LPS, Light guide Protection System and cutting mode.

Dornier MedTech / Medilas D MultiBeam
The Dornier Medilas D MultiBeam is a 80 watt continuous diode laser with a 940 nm wavelength. The use of Diode Power Bar technology and 940 nm wavelength make it ideal for endovenous laser treatment for varicose veins and a variety of surgical applications where lower power is effective. Unique safety features including the LPS, (Light guide Protection System) and Fibertom™ cutting mode.

Foton / Dynamis Pro
The new Dynamis Pro is the latest high performance, multi-modality system. It is the new work platform for your office. Perform proprietary 4D procedures to achieve fast enhanced results. With no down time options, your patients are your best marketing. Dynamis-VSP technology delivers impressive Piano, Smoothlase & Avalanche procedures for an unprecedented range of treatments. With advanced accessories, and user-friendly touchscreen the Dynamis Pro is the true multi-application system.

Light Age / Epicare™ Advanced Laser Systems
The Light Age, Inc. Epicare™ Laser Systems are intended for use in general and plastic surgery, dermatology, and podiatry for the treatment of vascular lesions, benign pigmented lesions, for removal of dark tattoo inks and reduction of hypertrophic and keloid scars, hair removal, and for stable long-term, or permanent hair reduction. Designed for those who require the very best performance and additionally desire the lowest treatment cost, provides astonishing value – setting a new standard unmatched in the industry.

Light Age / Ta2Eraser™
The Ta2Eraser™ is a high-performance and affordable Q-Switched Alexandrite laser from the inventors of the Alexandrite laser. The system is a premium blend of Light Age’s laser expertise and the most effective technology for treating a broad range of tattoo pigments and pigmented dermal and epidermal lesions. The 755 nm wavelength maximizes beam penetration for optimal clearance of black, blue, brown and green tattoo pigment, and effective treatment for benign epidermal lesions such as ephelides (freckles), and solar lentigines, as well as dermal pigmented lesions like Nevus of Ota, and with reduced risk of collateral tissue damage or scarring. Advanced features include nanosecond domain pulse duration for maximum photomechanical effect, red aiming beam for precise targeting, and efficient and reliable articulated arm beam delivery-no fibers to break or replace.

Light Age / Q-Clear™ Compact Laser System
One of the most useful clinical innovations in a generation. The 1064 nm wavelength is very gentle to normal tissue and can be used on all skin types ( Fitzpatrick I-VI) with typically no pain during or after treatment. The 1064nm wavelength is useful for the treatment of onychomycosis and several other conditions. Lesions of the skin and subcutaneous tissue, Debridement of decubitus ulcer, Treatment of keloids, Dark ink tattoo removal, Treatment of pigmented lesions (particularly Nevus of Ota), Skin resurfacing with or without adjuvant preparation, Treatment of common Nevii.

Lumenis / AcuPulse Duo for ENT and GYN
The AcuPulse™ DUO CO2 laser is a state-of-the-art system that uniquely combines Fiber and Free Beam laser technologies in a single device. New surgeons can seamlessly alternate between these delivery modes to achieve superior clinical results. Durable, efficient CO2 fibers facilitate delivery of CO2 precision in difficult-to-reach and contoured anatomy. The SurgiTouch™ free-beam mode offers precise, automated microsurgery with customizable beam delivery for improved clinical outcomes and enhanced patient safety.

Lumenis / Pulse 120H for Urology
The Lumenis Pulse™ 120H is the optimal platform for preforming enhanced Vaporization, Enucleation, Flexible Ureteroscopy and Percutaneous Nephrolithotomy (PCNL) procedures. With unrivaled power, speed, safety and versatility, the Lumenis Pulse™ 120H (120 W, 80 Hz and 6J) provides physicians performing urological procedures with a superior product enabling excellent clinical results and greater return on investment.

Lumenis / Array LaserLinkPattern Scanning Laser Technology for Retina
The Array® LaserLink™ is a technologically advanced laser delivery system that significantly enhances standard photocoagulation treatment by adding pattern scanning capabilities. The Array is compatible with all Lumenis photocoagulators and different laser wavelengths. With the Array, laser treatments become uniform and precise, PRP treatment time is shortened and patient discomfort is reduced significantly.
Ebola may have highlighted the critical role sterilization plays in a modern hospital for civilians, but for health care professionals, the importance and challenge of meeting the ceaseless demands in a modern facility have long been understood.

To that end, industry veterans and newcomers alike have responded with novel takes on old designs, concepts and automation straight out of high-tech manufacturing, and a trend toward pushing speed, customization, and a reduction of the physical burden of those involved in the process, all while finding ways to boost efficiency and cut costs without sacrificing safety.

In fact, some manufacturers of medical equipment are even turning to offsite sterilization contractors, though that approach is not currently feasible for most hospitals and health care providers.

A good example of the new direction for this critical part of the health care process is the sterile processing department at Virginia Mason Medical Center in Seattle.

During a recent remodeling completed over the summer, the department’s leaders sought to find equipment that would increase throughput and facilitate flow, using the principles of lean manufacturing taken from the Toyota Production System. This philosophy is in play throughout the entire hospital where, for example, employees are encouraged to report problems and defects without fear of repercussions. In Virginia Mason’s sterile processing department, it led to the purchase of pass-through Belimed washers and sterilizers that automatically load and unload, saving precious time and taking some of the physical burden off staff.

“Labor, obviously, is the most expensive part of everyone’s budget,” says Sam Luker, the director of sterile processing at Virginia Mason. “If you can get the equipment to work for you, you’re really going to be saving on FTEs and enhancing ergonomics for your team members, who are no longer going to have to load and unload those sterilizers.”

In fact, Luker notes that labor represents approximately 65 percent of his annual budget.

“Designing principles of lean into the department remodel has resulted in operational, work flow, and equipment efficiencies that have helped reduce our labor expense by 8 percent,” Luker says.

Before, his staff had to push heavy loads of stainless steel surgical instruments manually into the autoclaves, work that could lead to injury. Now, Luker says, “our team members have more time to focus on instrument set assembly and inspection while the automated sterilizers load and unload themselves. With preset cycles, the machines also allow for mistake-proofing of proper sterilization parameters for the different types of surgical instruments we process.”

Luker estimates the machines, which can hold up to 24 full-size instrument sets in one cycle, save around five minutes of manual loading and unloading per cycle, along with reducing the burden of work on team members. This compares to the previous sterilizers, which could accommodate only 12 full-size instrument sets and loading/unloading had to be coordinated, monitored, and performed manually for every cycle. “The automation and increased capacity of our new machines
has reduced bottlenecks and doubled our sterilizer throughput,” Luker says.

While the automated machines are about 13 percent more expensive than non-automated sterilizers, Luker says, “in the end, the benefits outweigh the disadvantages.”

Sterilizer manufacturer Belimed offers a service where representatives come in and streamline a hospital’s sterile processing department. They do simulation models, showing where the bottlenecks are and how to eliminate them. They also look at steam quality.

“More and more investment is being put into, ‘how do we make it more of a manufacturing facility?’” says Joe Smith, a product manager at Belimed. “It’s become much more of a manufacturing, reprocessing department.”

“What we’re taking out is not the time it takes to wash something, and disinfect, and sterilize,” Smith says. “We’re taking out all the waste: the time a machine takes to fill with water. The time it takes for a person to walk from point A to point B. When a cycle is done and the door opens, it’s dry, instead of opening the door and adding 30 more minutes onto the cycle.”

Smith says this year Belimed will be focusing their sterilization technology on accommodating more instrument trays per load, larger tray sizes and greater weight, and a user interface that’s easier to manage.

And the latest trends are not just about speed and efficiency. Nancy Chobin, assistant vice president for sterile processing at St. Barnabas Health in New Jersey, says the automated washers and sterilizers can take up a lot of space, which is something that a lot of sterile processing managers just don’t have.

“When you look at equipment, you can’t just look at productivity,” Chobin says. “You have to look at how much space you can save.”

Luker says that with an OR volume of more than 77 cases per day, the current demand is 13.8 instrument sets per case cart, with an average of 53.4 instruments in each set.

“As a result, we need sterilizers with the capacity to meet our customer demand,” Luker says.

To address the need for more productivity without additional space, Belimed has been focusing on minimizing equipment footprint while maximizing throughput capacity.

“Our SPD [sterile processing department] design team applies proven lean manufacturing principles and process simulation studies with the primary focus on process efficiency,” Smith says. “The combination of these two results in roughly 30 percent more space for future growth or other needs in the SPD.”

### Breaking into the sterilizer market

While established companies like Getinge and STERIS have the greatest representation among hospitals, there are other companies now bringing new sterilizers to the market.

One such company is Skytron — mostly known for surgical tables, lights and booms, — which officially launched its Integrity line of steam sterilizers in September. “It was challenging to take a 100-year-old technology and bring something unique to the market,” says Jason Simon, Skytron’s product manager for infection prevention.

The company, which partnered on the product with Sakura Seiki, a leader in steam sterilization in Japan, also used recommended parameters from the Association for the Advancement of Medical Instrumentation guidelines. Simon says the idea was for the new product to meet the needs of sterile processing managers by creating a fast and easy way to create custom and extended steam cycles.

Simon says, for example, that with an older sterilizer, if a facility gets a new da Vinci Xi handpiece that needs to be sterilized for a four-minute exposure time and 50-minute dry cycle, they would have to erase one of the cycles and reprogram it for that one
Industry Sector Report: Sterilizers

Skytron's sterilizers, users can create custom steam cycles in just a few seconds and add a button with a shortcut for the cycles to the tablet-like LCD touch screen.

“We really made a very simple, intuitive control system,” Simon says. The company started a reference-site program a couple of years ago and installed units at several facilities around the country. “Because Skytron was new to the sterilization world, we wanted to make sure we had a number of facilities around the country that would take a perceived risk by going with an unknown product,” Simon says. “We saw it as a natural fit as far as our product mix and our focus on the OR. We always knew infection prevention was somewhere we’d want to go.”

Filling new markets
Sterilizer manufacturers are also looking to fill new markets. David Morganstern, director of sales and marketing for Tuttnauer, says the company is waiting for FDA clearance on a new product that is geared toward ambulatory surgery centers. He says it will fill the niche between a tabletop sterilizer and a larger piece of equipment.

Tuttnauer has also been active in detailing the role sterilizers would play in a hospital’s response to an outbreak of Ebola or other highly infectious diseases. Regional networks should consider buying and storing a couple of mobile, double-door sterilizers with effluent systems and have them sitting on a shelf ready to go, Morganstern says.

DOTmed Registered Sterilizer Sales & Service Companies
For convenient links to these companies, go to www.dotmed.com and enter [DM 24933]. Names in boldface are Premium Listings.

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Getinge Group / Getinge 400 Series
IUSS Sterilizer
The 400HC-E Series Steam Sterilizers are ideal for use in the OR with their whisper-quiet ejector vacuum system and 110V power requirement. They are designed with adjustable gravity and hi-vacuum cycles in the same unit. The vertical sliding door and pullout shelves make it easy to load in confined spaces. When used for immediate-use steam sterilization, the 400 Series is validated for either 132°C or 135°C pre-vacuum cycles when using “flash-packs”. The 400 Series is validated for a maximum load of two large surgical trays, with up to 25 pounds of instruments each, per AAMI ST8: 2008 guidelines.

Getinge Group / Getinge 500 Series
Steam Sterilizer
The 500HC-E Series Steam Sterilizers are built to deliver an unmatched combination of sterility assurance, cycle flexibility, real-time information access and advanced operator controls. The new 8.4” touchscreen display makes it easier than ever to set parameters and custom name cycles for fast, accurate identification. They are designed with adjustable gravity and hi-vacuum cycles in the same unit and are dual validated for either 132°C or 135°C pre-vacuum cycles. Compliant with AAMI ST8:2008 the three tray capacity for 25 pounds each will allow you to increase your instrument processing weight by 50% per load.

Midmark / Ritter M3 UltraFast®
Automatic Sterilizer
Sterilize unwrapped instruments and handpieces in just 6 minutes and pouched instruments in just over 10, with the touch of a button. The M3 is the simple, intelligent and fast choice for your sterilization needs, featuring one-step loading; push-button cycle selection; automatic-opening door; and intelligent features that monitor water levels for worry-free operation.25 minute drying time. Contact 1-800-MIDMARK or visit midmark.com.

Midmark / Ritter M9 UltraClave®
Automatic Sterilizer
Provides an intuitive display and simple prompts that help you easily select the cycle you need...whether it is for unwrapped items, pouches, packs or handpieces. Once the sterilization process is complete, the door conveniently opens automatically and quietly to dissipate the steam and provide fast and efficient drying of your instruments. Contact 1-800-MIDMARK or visit midmark.com.

Skytron / Integrity 175/175SG
The Integrity 175 Steam Sterilizer gives you standard throughput in a tight footprint. Process up to two 25 lb. trays in one cycle – all while requiring minimal floor space! Reduce water usage up to 67% with the integrated water recirculation system. Simple touchscreen control, combined with a large countdown timer and progress bar, make operating the Integrity 175 easy. Record, store, chart and print data for thousands of cycles – all with simple touchscreen control.

Skytron / Integrity 215/215SG
The Integrity 215 exceeds all standards for capacity— efficient enough for immediate use, productive enough for high-demand environments, and compact enough for most replacement applications. Despite the compact footprint, you can process up to six 25 lb. trays. That’s over twice the content of competitive-sized models while reducing water usage up to 43% with the integrated water recirculation system. Record, store, chart and print data for thousands of cycles – all with simple touchscreen control.

Skytron / Integrity 270/270VP
The Integrity 270 is the workhorse of the Integrity line, exceeding all standards for capacity and processing up to sixteen 25-pound trays per cycle. Reduce water usage up to 33% with the integrated water recirculation system. Simple touchscreen control, combined with a large countdown timer and progress bar, make operating the Integrity 270 easy. Record, store, chart and print data for thousands of cycles – all with simple touchscreen control.

Steris / V-PRO maX Low Temperature Sterilization System
This V-PRO maX and V-PRO 60 both enable you to enhance overall performance, reduce inventory, save time and money and ensure quality patient care. The V-PRO maX is intended for use in the terminal sterilization of properly prepared (cleaned, rinsed and dried) reusable metal and nonmetal medical devices used in healthcare facilities.
- Options include a 35-minute Flexible Cycle, a 55-minute Lumen Cycle and a 28-minute Non Lumen Cycle
- Low sensitivity to moisture minimizes aborted cycles
- Plasma free process

Steris / V-PRO® 60 Low Temperature Sterilization System
This system is sized for sub-sterile environments. It is intended for use in the terminal sterilization of properly prepared (cleaned, rinsed and dried) reusable metal and nonmetal medical devices used in healthcare facilities.
- 2X the usable volume of the competitor sterilizer helps to maximize your busy OR’s productivity
- Options include a 35-minute Flexible Cycle, a 55-minute Lumen Cycle and a 28-minute Non Lumen Cycle
- Low sensitivity to moisture minimizes aborted cycles
- Plasma free process

Steris / AMSCO® Evolution® Steam Sterilizer
The difference in Evolution’s controls is obvious, even from across the room. The end results - improvements in efficiency and productivity - will be just as clear. A dramatic redesign of Evolution’s controls and displays includes crystal clear, high-resolution graphics and an Ethernet-enabled PC control. The elliptical chamber provides maximum throughput and efficiency. The STERI-Green Plus Water Recalculating System helps reduce water consumption by 99%.

Tuttnauer / Steam Sterilizers
The Tuttnauer 4472/5596, featuring 16” x 16” and 20” x 20” chamber sizes, come standard in a space-saving design capable of fitting into the smallest of footprints. FDA cleared, these sterilizers are manufactured primarily for use in the operating room and ambulatory surgery centers. Reliable, non-proprietary components add to the “uptime” and low cost of maintenance. Flexible door designs, eco-friendly systems, and a wide range of options are available. Tuttnauer also offers larger sterilizers for central steri supply applications.

DOTmed asked the leading medical equipment sterilizer manufacturers to submit up to three of their top products to be featured in the section. To learn more about these systems and see other models not shown, please visit: www.dotmed.com/sterilizers
Hybrid OR: the changing landscape calls for new approaches

By Lauren Dubinsky

Walk into a modern hybrid operating room today and you will be surrounded with state-of-the-art equipment. The technologies ranging from the imaging systems to integration solutions have improved by leaps and bounds over the past few years.

But a fully equipped hybrid OR comes with a hefty price tag that typically only the large teaching hospitals could afford. And such rooms were reserved exclusively for cardiac and vascular procedures because of the influx of transcatheter aortic valve replacement (TAVR) technology.

However, now the rooms are used for a greater diversity of procedures including neurological, pediatric and orthopedic surgery and can pay for themselves even at smaller hospitals. Those smaller facilities have been taking on hybrid OR projects recently in order to stay competitive and retain their patient bases.

Greater diversity has also spurred manufacturers to develop solutions to actually fit all the technology into the space. While challenging to implement, careful planning of how and where the various technologies will fit into the space has become incredibly important. In some cases the drive to create the most efficient space has even resulted in vendors joining together to deliver the best solutions for customers.

Utilization is the name of the game

The shift away from only cardiac and vascular procedures toward a more diverse mix including orthopedic, pediatric and neurological procedures is part of a growing trend, according to Tom Watson, clinical analyst at MD Buyline. The number of patients qualifying for cardiac and vascular procedures is currently modest due to some of the FDA’s TAVR device restrictions.

Many of the trans-catheter procedures are currently limited to patients who cannot undergo traditional open-heart valve replacement because they fall into the high or extreme risk category.

In order for a hospital to have the room pay for itself, the shift needed to happen. “If you invest in a hybrid OR and you spend close to $5 million by the time it’s finished, you need that room to be utilized between five to sev-
en days a week,” says David Browne, senior group marketing manager at MAQUET Medical Systems USA. “It’s not enough to simply do a few different procedures a week.”

Now that CMS is bundling payments, it’s more important than ever to bring as many medical professionals into the same room as possible, according to Sudhir Kulkarni, segment director of hybrid OR at Siemens Healthcare.

The same imaging equipment can be used for any procedure, but the secret to making it a multi-discipline room lies in the room layout. The ceiling must be outfitted with the proper surgical lights and a surgical table must be installed that can easily transform from a supine to a bench position and anything in-between.

MAQUET and Trumpf Medical offer certified surgical tables with all the functionality required for an OR environment that can be integrated with the imaging systems. Philips Healthcare, Siemens and Toshiba America Siemens’ Artis zeego. The integrated solution can be used for neurosurgery, urology, trauma surgery, orthopedic surgery, abdominal surgery and thoracic surgery.

But bringing all of these multiple disciplines are going to be working in that room, then they need space to bring in all of that equipment,” says Kulkarni.

He has noticed that in order to accommodate all of the equipment, the rooms have started to become bigger over the past couple of years.

Now that CMS is bundling payments, it’s more important than ever to bring as many medical professionals into the same room as possible.

The technology follows suit

When GE Healthcare designed its Discovery IGS 730 and 740, which received FDA approvals in 2011 and 2014 respectively, it kept the idea of a multi-discipline hybrid OR at the forefront. “We already had that understanding about the market going forward baked into the design of the product,” says Miranda Rasenberg, global interventional marketing manager at GE.

The IGS 730 and 740 are both mobile laser-guided angiography systems and the only difference is the detector sizes. The 730 has a 30 by 30 centimeter detector, which is an ideal field-of-view size for cardiology and vascular applications. The 740 has a 40 by 40 centimeter square panel, which is a comfortable size for abdominal procedures.

Their mobile design sets them apart from systems like Siemens’ floor-mounted Artis zeego and Philips Healthcare’s ceiling-mounted Allura Xper system.

Traditionally, GE only had a floor-based product platform but when it noticed the hybrid OR trend coming down the pipeline, the company started to think about what would most satisfy the needs of the surgeons and hospitals.
The surgical table adds an additional $200,000 or more to the total cost of the system and most facilities are not willing to make that kind of investment.

“We started investigating this and learned that the main clinical criteria and customer needs were really about the capability for gantry back out and sterility,” says Rasenberg.

If a surgeon is performing a very complicated minimally invasive procedure and open surgery is suddenly required, they must be able to move the gantry out of the way immediately. If the system is mobile it makes that process much easier.

GE also took note that for each type of procedure, the surgeon approaches the patient from a different angle — for a cardiac case, the surgeon would be on the left side of the patient, but in a vascular case the surgeon would be on the right side. A mobile system can be helpful in handling those different types of procedural approaches.

Ever since the IGS 730 and 740 hit the market, GE has noticed that many of the smaller hospitals have taken an interest in the technology. “These hospitals would not be able to financially sustain having a high-end hybrid OR dedicated to just one department or one procedure,” says Rasenberg. “They would be looking for synergies between different departments to optimize the return on investment.”

Keeping track of dose
In 1992, the Center for Devices and Radiological Health and the FDA received reports of potential patient radiation injuries as a result of fluoroscopic X-ray exams. In early 1994, mandatory radiation dose requirements under the Safe Medical Devices Act of 1990 provided information that proved that the dose associated with the X-ray systems were causing harm to the patients.

Now, millions of fluoroscopically guided procedures are performed on an annual basis and many organizations including Ac-creditation for Cardiovascular Excellence are recommending and even requiring hospitals to monitor and record patient radiation dose. In response, many of the new fluoroscopy systems on the market have build-in radiation reporting and managing capabilities.

In March, Toshiba launched its Dose Tracking System (DTS) for its Infinix cardiovascular X-ray systems. It displays a real-time 3-D model of the patients with color-coded radiation dose so the physician can change the distribution throughout the procedure. Once the dose reaches the yellow zone at 1.5 Gy, the physician is alerted to move the X-ray beam. When the procedure is finished, the system generates a dose report, which lists the peak skin dose and displays a color-coded 3-D patient model.

Toshiba announced enhancements to DTS in early November including new patient head models that allow the system to provide peak skin dose estimates for neurovascular procedures. It also features frontal and lateral bi-plane coverage, which is optimal for neurovascular and congenital cardiology cases.

Smaller hospitals step up to the plate
The large teaching hospitals have been touting their flashy, high-tech equipment and cutting-edge procedures for years and it hasn’t gone unnoticed by smaller facilities who have stepped up their game as well. “They’re not willing to just stand by and let their patient base erode and be pulled away,” says MD Buylene’s Watson.

The smaller hospitals are starting to take on hybrid OR projects, but without all of the bells and whistles of a high-end solution. Both the hospitals and the vendors have determined that having all of the premier features is not necessarily required.

OR suite technology
Skytron LLC’s SkyVision Linx 300 hybrid OR integration system captures still images, video and audio recordings from OR cameras, endoscope cameras, C-arms, ultrasounds, robotics and 3-D navigation system and send or archives the information to the OR, hospital information system network or a remote location.

Stryker Corporation’s iSuite controls the basic OR environment including the surgical technology and the room environment and its SwitchPoint Infinity 3 Control System manages images, patient vitals, digital radiography, diagnostics and teleconferencing.

KARL STORZ Endoskope has its OR1 integrated OR system, which includes routers, cameras, graphics processors, flat panel displays and audio and video conferencing. The company also has a high-end solution called OR1 NEO that controls the surgical system’s light source, insufflators, monitor, image management, documentation system and table.

Olympus Corporation of the Americas’ ENDOALPHA is a central control system that can control the endoscopic towers and the OR environment, import EMR and PACS images and communicate and collaborate all of the data in real-time.

Black Diamond Equipment has its Entry-Level Integration System for HD video conferencing, multi-view windowing, HD image capturing, HD video recording and hand-free VoIP communication.

STERIS Corporation has both its Entry-Level Integration System for video routing in three locations and its V52 Series that can route video to up to eight locations.

MAQUET’s TEGRIS controls the tables, lights, cameras, endoscopes, can interface with patient data systems and has teleconferencing capabilities.
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The EIZO Large Display System is a complete turnkey solution that upgrades multiple standard size displays to one large format Quad HD 8MP display without obtrusive bezels. The Large Monitor Manager formats configurations from multiple video sources and displays them to a physician’s preference. This solution maximizes the flexibility of image layouts and allows users better concentration on surgical and minimally invasive procedures.

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All of the high-end imaging systems on the market are outfitted with advanced software solutions but MD Buyline has noticed that there has recently been more of an interest in systems without all of those bells and whistles.

“I think some of the tier two hospitals may be going in and dipping their toes into the water without jumping out all the way to start with,” says Watson. “They are not just automatically going out and buying everything they possibly could ever want or need to be a hybrid solution.”

There are primarily two different types of hybrid ORs — one is primarily focused on imaging with the ability to do some surgical work and the other is a true hybrid OR that can be switched to almost any type of surgical application.

That is largely dictated by the type of table technology the hospital deploys. The imaging systems come with an imaging table that has some surgical capabilities, but not all of the functions that are required for every procedure.

But about 90 to 95 percent of the recent deals involve a traditional imaging/OR table opposed to a full-fledged surgical table, according to MD Buyline. The surgical table adds an additional $200,000 or more to the total cost of the system and most facilities are not willing to make that kind of investment.

Integrating all of the pieces

With all of the new technology flooding into the hybrid OR, managing workflow is becoming increasingly complex. That creates a great need for integrated ORs that feature a basic automation system and sometimes more advanced integrations including telemedicine and real-time information systems.

Many hospitals deploy one of the automation packages that manufacturers offer in order to link all of the OR equipment to one central device. It enables the surgeon to operate the equipment through voice commands or a remote control panel.

Most of those systems also offer some level of teleconferencing capabilities. Telemedicine is a growing area, but it’s generally the bigger hospitals most interested in it right now, according to Maquet’s Browne. The large teaching hospitals are going so far as to stream live procedures in lecture halls to educate their students.

“They realized that you can’t take the two solutions and push them together and expect it to work well.”

The real-time information systems provide the surgeons with access to PACS images, EMRs and lab reports while performing high-level procedures such as open heart surgery, tumor removal or neurosurgery. That enables the surgeon, radiologist and pathologist to communicate efficiently without all having to be present in the surgical suite.

Is it worth the investment?

While OR integration has its benefits, whether those benefits are worth the pricey investment is not clear. According to MD Buyline figures, automation packages range between $20,000 and $50,000, telemedicine solutions can cost as little as $30,000 or as much as $400,000 depending on whether two-way communication is added and real-time information systems can range from $20,000 to $500,000, also depending on two-way communication.

MD Buyline has noticed that some of the prices have come down, but whether or not the buy makes sense even at the lower price point is still in question. Regardless, the level of integration that a hospital deploys should be determined by its size and what it actually needs.

A small hospital with one hybrid OR may not need high-end telemedicine and real-time information systems. “That’s probably a little bit of overkill for most of those hospitals,” says James Laskaris, emerging technology analyst at MD Buyline. “You have to think of where you can best target your money.”

But when a hospital does make the decision to purchase a full range of integration solutions, it’s imperative that those solutions work together seamlessly with the imaging equipment, surgical lights and booms. “There are so many different vendors that are working together that sometimes it can make it very difficult to get set-up and work through all the issues,” says Katie Regan, clinical publication manager at MD Buyline.

In order to ensure that all of the technologies work together properly, some of the imaging vendors have been partnering with the integration system vendors. In November, Philips announced a partnership with Image Stream Medical (ISM) to integrate its imaging system with ISM’s audio and visual integration solution.

On the hospitals’ side, they must choose what vendors they want to work in the initial planning and strategy session in order to make the process smoother. The room has to be logistically designed so that there is adequate movement around the table for the imaging system, without the lights and monitors getting in the way.

“They realized that you can’t take the two solutions and push them together and expect it to work well,” says MD Buyline’s Watson.

Now that more hospitals are taking on hybrid OR projects, these are the challenges that are naturally cropping up. The surgeons must learn a plethora of new procedures, the rooms must expand to accommodate all of the new equipment and vendors must find a way to make that equipment work well together.

But as the technology to train the surgeons refines and the imaging, integration, table, light and boom vendors team up, the challenges start to iron out.

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With the growing number of endovascular procedures, indications and possibilities, the necessity of a hybrid room becomes more and more important. But what if a hospital is not able to implement such an installation due to restrictions on finance, space, human resources, etc.? Dr. Peter Goverde, MD, Vascular Clinic ZNA, Antwerp, Belgium, asked himself exactly this question. His assumption: A mobile C-arm, bundled with an operating table, could offer the ideal alternative hybrid solution. After one year of testing 5 models of C-arms and 4 models of operating tables, he came to an unambiguous result: Ziehm Vision RFD Hybrid Edition in combination with the Stille Imagiq2 table proved to be the most valuable alternative to a hybrid room.

First motorized C-arm for use in hybrid ORs
Fully motorized in four axes, Ziehm Vision RFD Hybrid Edition is ideally suited for hybrid room applications. The C-arm features a joystick module with a function for defining an isocenter around which the system moves concentrically. Distance control, an assistance system supporting non-contact collision protection, allows for enhanced patient safety: The C-arm movement slows down in the proximity of the patient and stops before entering a defined safety zone.

With flat-panel detectors measuring 20 cm x 20 cm and 30 cm x 30 cm Ziehm Vision RFD Hybrid Edition is the ideal imaging modality for complex interventions in cardiology, cardiac and vascular surgery.

The 25 kW generator is one of the most powerful in the mobile-imaging market and delivers crystal-clear images.

The liquid cooling system (Advanced Active Cooling) keeps the generator at a consistent operating temperature and ensures reliable imaging without interruption even during lengthy procedures.

Mobility and flexibility make the difference in an emergency case
A recent emergency case – a 46 year-old Belgian dock worker was trapped between two shipping containers – showed Dr. Goverde that he was right opting for Ziehm Vision RFD Hybrid Edition as an interventional suite. Given the urgency of the hypovolemic patient’s condition, he decided to suspend another intervention for which one of the clinic’s operating theaters had already been prepared with the Ziehm Vision RFD Hybrid Edition and the Stille Imagiq2 table. Within less than 10 minutes, the team was able to set up the OR for the hypovolemic patient, including shutting down, transporting and starting the systems again.

“This case underscores the importance of flexibility and mobility in imaging and treatment systems”, says Dr. Goverde. “These can be key success factors in ensuring the best and most expedient therapeutic treatments, contributing to optimum patient outcomes.”

Why opt for Ziehm Vision RFD Hybrid Edition as an interventional suite?
• Cost-efficiency
• Saving of space
• Maximum flexibility and mobility
• Up & running in less than 10 minutes
• Optional 3D imaging for ortho/trauma/spine surgery

For more information, please visit: www.ziehm.com

(Advertorial)
Industry Sector Report: OR Suite

“T’ve exhibited and lectured at the COPA Show in London for two years – it is a unique, vibrant experience. I highly recommend attending. Progressive health care providers can learn about the latest health care technology, research and techniques in order to improve their clinical and financial outcomes.” -Phil Harrington, K Laser USA

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Anesthesia Machines

Draeger / Apollo® Anesthesia Workstation
Equipped to meet the clinical demands of today and tomorrow, the Apollo can grow with your practice to protect your investment. Proven to reduce volatile agent costs, the Apollo’s Low Flow Wizard helps clinicians deliver low flow anesthesia with confidence and ease. Combined with its heated breathing system and precision E-vent® plus piston ventilator, the Apollo offers exceptional opportunity for uniform delivery of low flow anesthesia in your healthcare facility.

Draeger / Fabius® GS premium Anesthesia Workstation
The Fabius GS Premium combines time-tested design concepts with the comfort and utility of modern digital technology. It’s an anesthesia workstation built for today and ready for the future. Export gas flows, concentrations, and waveforms to our Infinity® patient monitors and Innovan® Anesthesia system to enhance monitoring, charting, and networking power. Its intuitive user interface, common to Dräger workstations, enables fast and precise adjustments.

Draeger / Perseus® A500 Anesthesia Workstation
A highly configurable anesthesia workstation, the Perseus A500 can be easily tailored to meet your needs. Its generous, well-lit workspace can be used to keep supplies organized and within reach. Its compact, heated breathing system is designed to reduce condensation build-up and facilitate fast exchange rates. And to support continuity of care between the ICU and OR, the Perseus A500 offers Airway Pressure Release Ventilation (APRV).

GE Healthcare / Aisys CS²
Modular and upgradeable, with Aisys CS² you’re planning for the future while protecting your investment. Electronic agent control allows you to capture set agent concentrations and precisely measures agent usage. The 15” touchscreen ventilator display and ecoFLOW option displays oxygen flow alongside pre-set targets while calculating anesthetic agent cost and usage in real-time. Clinicians can use this to adjust oxygen flow to help avoid unnecessarily high fresh gas flow rates. The Aisys CS² includes a wide-angle view for surgical teams.

GE Healthcare / Avance CS²
GE’s Avance CS² features a 15” touchscreen ventilator display. The optional ecoFLOW feature provides a graphical display of oxygen flow and anesthetic agent use that shows you your pre-set target and calculates the cost of agent used in real-time. Clinicians can use this to adjust oxygen flow to help avoid unnecessarily high fresh gas flow rates for potential environmental and economical benefits.

GE Healthcare / Aespire View
Clarity of view...clarity of decision. Advanced anesthesia delivery in a compact, cost-effective system ideal for hospitals and outpatient surgery centers. With its 12-inch color ventilation display and five ventilation packages, the Aespire View lets you tailor ventilation for each patient. The small breathing system responds to fresh gas changes rapidly even during low flow anesthesia.

MAQUET / FLOW-i
MAQUET’s FLOW-i Anesthesia Delivery System features a modular, ergonomic design that seamlessly combines high-performance ventilation capabilities with precise electronic anesthetic delivery. FLOW-i is engineered with the core technology of the unrivaled MAQUET SERVO ventilator platform and delivers ventilation support for all types of patients. The Innovative VOLUME REFLECTOR technology replaces traditional bag in bottle and piston designs.

Mindray / A3 Anesthesia System
The comprehensive ventilation modes of the A3 appeal to mid-acuity settings and outpatient surgery centers. The 15-inch touchscreen allows clinicians to easily select ventilation settings. The A3 comes standard with VCV, PCV, PS, SIMV-PC, heated breathing system, mounting rails and adjustable workspace lighting. Built-in HL7 connectivity provides the industry standard interface for AIMS and EMR systems.

Mindray / A5 Anesthesia System
The A5’s advanced ventilation modes enable effective care across a wide range of patients with optional integrated gas analysis, dual agent auto ID, aged-based MAC values and capnography. The 15-inch touchscreen allows clinicians to easily select ventilation settings. The A5 comes standard with VCV, PCV, PCV-w/ Volume Guarantee, PS, SIMV-VC, SIMV-PC, spirometry, temp controlled breathing system, high pressure O2 port, central brake, mounting rails and adjustable workspace lighting. Built-in HL7 connectivity provides the industry standard interface for AIMS and EMR systems.

Mindray / Anesthesia Consumables
Mindray’s new anesthesia consumable line complements your anesthesia system, offering one solution in the OR masks offering high quality breathing circuits, face masks, filters, gas sampling lines, and laryngeal airway masks - at a value that is right for you.

Spacelabs / ARKON
The high-performance anesthesia delivery system that offers the maximum functionality, comfort and control. All ventilation modes come standard, and offer capabilities to ventilate a wide range of patients, including the most difficult cases. ARKON features an intuitive and highly customizable user interface, signature lighting to emphasize active controls, a touchscreen display with intelligent navigation, an expandable clinical console, enabling a wide-angle view of your clinical setting.

Spacelabs / BleaseSirius
The BleaseSirius was designed to help meet the daily challenges arising from the diversity and complexity of your patient population, as well as pressures from budget and resource restrictions. Spacelabs Anesthesia Systems, including the BleaseSirius, incorporate the latest technology to offer you unparalleled performance in ventilation and vaporization, including enhanced flow meter visualization.

OR Tables

MAQUET / YUNO OTN
MAQUET’s multi-purpose YUNO OTN mobile operating table revolutionizes today’s OR for Orthopedic, Traumatology and Neurosurgery interventions. Engineered with modular components, the YUNO can be configured quickly and easily for a variety of procedures, which enables surgical teams to rapidly respond to changing situations, thereby saving time and costs. It safely supports up to 1,000 lbs.

Mindray HyBase 8500/8300 Operating Table
Engineered for increasingly complex surgical scenes, HyBase 8500/8300 comes with extreme weight capacity up to 460 kg guaranteeing highest safety and stability in any position. With longitudinal slide up to 480 mm, it is ideally suitable for cardiovascular surgery with C-arm. The modularized tabletop can be tailored to various surgical disciplines. (Not available in North America)
Industry Sector Report: OR Suite

Mindray / HyBase 6100 Operating Table
Engineered for increasingly complex surgical scenes, HyBase 6100 needs least effort and time to position the patient in a safe, comfortable and efficient way. With 600 mm low table position, it is benefit for Neurosurgery & Minimal Invasive Surgery. Additional features include 250 KG weight capacity, 320mm longitudinal shift, 600-950mm table height. (Not available in North America)

Mindray / HyBase 3000 Operating Table
Insightful to the surgeon and nurse’s needs, Mindray is answering demands for a total solution of operating table with better mattress for the comfort of patients, safe and efficient patient positioning and know-how for maximizing the versatility. Additional features include 185 KG weight capacity, 300mm longitudinal shift, 720-1070mm table height. (Not available in North America)

Oakworks / CFPM Line
The CFPM table line from Oakworks Medical offers a range of table options to meet positioning needs and budget. Five table movements (height, Trendelenburg, longitudinal travel, lateral travel, or lateral tilt) and two top options allow for increased imaging flexibility. All of the CFPM tables are FDA listed.

Oakworks / Spine Positioning System II
Do you want better images, faster procedures, and more comfortable patients? This radiolucent support prevents unwanted patient movement and is perfect for cervical, thoracic, and lumbar imaging. The target anatomy is more readily visualized, which allows the physician to perform spine procedures in a more efficient and secure manner.

Oakworks / Lithotripsy/ Urology Table - CF1U401
The CF1U401 is the most versatile table on the market! The radiolucent table top and 6 extensions are designed to work with most portable lithotripters and C-Arms. Convert the table to a full featured urology table in seconds. The table features a 500 lb. patient weight capacity and 4 powered motions- height, Trendelenburg, longitudinal, and lateral travel.

Skytron / UltraSlide 3602
The UltraSlide is uniquely designed to address all your OR needs. Its industry-leading 23” top slide allows for increased imaging flexibility and its pre-programmed positioning options allow for quick table set-up at any point during the procedure. Features include 1,000 lb. lift and 800 lb. articulation capacity, removable back and leg sections, 24”-42.5” table heights, Auto Beach Chair position, 30” tilt, powered kidney bridge, Trendelenburg and reverse Trendelenburg.

Skytron / Hercules 6702
The Hercules is ideal for nearly any procedure. With its re-engineered electronics and safety devices, the Hercules offers unparalleled reliability and safety for both the patient and surgeon. With 210° top rotation, the Hercules offers unique imaging flexibility. Additional features include 1,200 lb. lift and 1,000 lb. articulation capacity, removable back and leg sections, 23”-41” table heights, Auto Beach Chair position, 30” tilt, powered kidney bridge, Trendelenburg and reverse Trendelenburg.

Skytron / Elite 6302
The Elite is designed to deliver optimal value, versatility, and reliability. From its 1,000 lb. lift and 800 lb. articulation capacity to its full body imaging capability and enhanced C-Arm access, the Elite improves workflows, efficiency, and patient safety. Additional features include a removable leg section, 210° top rotation, 25”-39.75” table heights, Auto Beach Chair position, 30” tilt, Trendelenburg and reverse Trendelenburg.

Steris / The STERIS® 5085 SRT Surgical Table
This is the only one cleared by FDA for patient transport. The table’s fifth wheel allows one caregiver to safely and easily move and rotate patients 360°. The same 5085 SRT table can be used from induction to recovery, to reduce the need to transfer sedated patients. This table offers outstanding C-arm access, for clear high-quality images during advanced procedures.

Steris / The STERIS® 4085 General Surgical Table
This is a versatile, highly productive general surgical platform specifically designed to help improve patient outcomes. Designed using human factor analysis, this table offers excellent imaging and patient posturing, all in one table. Powered slide improves C-arm access; generous weight limits support virtually any patient; and the table accommodates a broad array of previously purchased accessories.

Steris / The STERIS® OT 1000 Orthopedic Surgical Table
This table offers superior control to the operative site. Designed with SWAN Technology, our proprietary mechanism for simple, weightless articulation, it enables one person to have control of the slide, traction and rotation of the boot with one hand and fluid movement of the leg spar with the other. This provides focus on the patient, and a full range of motion without interference from the equipment.

Surgical Tables, Inc. / URO MAX
When it comes to a urology table, lithotripsy table, or a nephrology table, you need a table that’s capable of handling a wide variety of patients and procedures. Our URO-MAX Imaging C-Arm tables allow for simultaneous motion in all five directions for fast and accurate patient placement. Our 24” x 84” carbon fiber tops make for the best image quality. 500lb weight capacity with a 4 year warranty.

Surgical Tables, Inc. / Streamline Series Imaging Tables
Designed for high patient throughput for surgery centers, pain management, and other multidisciplinary medical facilities, the Streamline series X-ray imaging tables are the lowest priced tables in the imaging table industry. Our 24” x 84” carbon fiber tops make for the best image quality. 500lb weight capacity, 2” pad for patient comfort and 56” of metal-free area.

OR Lights
MAQUET / PowerLED
MAQUET’s PowerLED surgical lights provide homogenous light for outstanding deep-cavity illumination with long-life LEDs (up to 40,000 hours), providing accurate tissue color rendering intra-operatively. PowerLED lights minimize shadows with patented AIM™ technology and exclusive FSP™ technology compensates for light drift ensuring continual, optimized output at the surgical site during extended procedures.

Mindray / HyLED 9 Series Surgical Light
The intelligent shadow management system devotes to the better and more flexible illumination. Three lighting modes, full illumination, general and ambient, provide more options for the surgeon. Its cross-shaped outlook minimizes interference to the laminar flow system. The rotatable HD camera system provides a clear solution for communication and documentation. (Not available in North America)

Mindray / HyLED 7 Series Surgical Light
The touch control panel allows for clear and intuitive operation. Three lighting modes, full illumination, general and ambient, provide more options for the surgeon. Its compact outlook minimizes interference to the laminar flow system. The rotatable HD camera system provides a clear solution for communication and documentation. (Not available in North America)
Skytron / Nautilus LED
Skytron Nautilus LED lights offer maximum performance, extreme durability and simplicity of design giving the users high value and low cost of ownership. The Nautilus LED can be combined with monitor arms or the exclusive Skytron boom system.

Skytron / TR-7 LED
The new Skytron TR-7 LED exam light provides excellent illumination for exams with intensity of up to 55,000 lux. The TR-7 comes in either a ceiling or wall mounted configuration, or on a portable floor stand.

Steris / Harmony® LED Surgical Lighting and Visualization System
Delivers exceptional surgical site illumination and tissue differentiation, with extraordinary shadow control. This HD-capable system, with surgical-grade monitors and HD camera, enables stunningly clear images in the OR. The system’s unique gliding suspension and cable management system is modular and flexible to accommodate future needs. Available accessories include additional LED lightheads, an ambient light, a radiology shield, monitors, cameras, and Harmony ConnectPoint™ Video Connectivity.

Steris / Harmony® vLED Surgical Lighting System
The Harmony® vLED System combines high-performance Harmony LED optics with a streamlined suspension and control. The suspension maneuvers for full clinical needs, including low lateral and high “parked” positions. The surgeon can directly control light intensity, spot size (if applicable) and light placement within the sterile field.

OR Microscopes

KARL STORZ / VITOM
VITOM® represents a new concept in high-resolution visualization during open surgical procedures, including brain, cardiovascular, spine, small joint applications, pediatric, head and neck, plastic surgery, and other types of surgery. More than a simple surgical tool, the VITOM® system enhances visualization with a depth of field up to 2 inches and offers exceptional ergonomics for surgeons. The system simplifies presentation and sharing of clinical images for training, and simplifies documentation.

Leica / M720 OH5 for Neurosurgery and Spine Surgery
The Leica M720 OH5 with TrueVision® smart 3D technology inside saves space, simplifies surgical workflow, and is fully upgradable to support future surgical guidance applications. It is the premium operating microscope for neurosurgery. With this operating microscope, surgeons will benefit from greater visibility in deep cavities or lesions and improved ergonomics and comfort. The Leica M720 OH5 surgical microscope offers full HD 3D and 2D visualization and recording, so that the entire surgical team as well as students will be able to observe and learn more easily.

Leica / M822 for Cataract Surgery
The Leica M822 surgical microscope, with enhanced Red Reflex, meets the highest professional requirements of ophthalmic surgeons to perform cataract surgery more precisely and efficiently.

Leica / M530 OH6
As a surgeon you have to be focused. The Leica M530 OH6 has been designed to support you in staying focused: It offers optimal visualization thanks to the groundbreaking FusionOptics technology which combines high resolution and increased depth of field. Plus, the truly ergonomic design enables you to operate in a comfortable position. With less physical distraction you can remain focused on the critical task at hand.

Seiler / Evolution ZOOM
The Seiler Evolution ZOOM is our superior Multidisciplinary Surgical Microscope designed for ENT Surgery, Spinal, Hand, Neuro, Reconstructive-Plastic Surgery, and Ophthalmology (utilizing XY function). It is the perfect choice for any surgery center or small hospital offering motorized Focus and ZOOM functions, all APOchromatic Lenses and a wide field of view. Contact Seiler at 800-489-2282 www.seilermicro.com

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Industry Sector Report: Endoscopy

Seeing is believing: the present and future of endoscopy

By Gus Iversen

Medical percussion, the process of tapping a patient’s chest to diagnose conditions of the abdomen and thorax, was popularized by Leopold Auenbrugger in the 18th century. On the strength of that discovery, the era of modern medicine was ushered in, and medical percussion is still practiced to this day.

But compared to the latest in endoscopic advancements, this technique seems “archaic,” according to Paul Wetter, chairman of the Society of Laparoendoscopic Surgeons. He says, “It would seem like standing behind a wall and trying to figure out what’s on the other side.”

For Wetter and his colleagues, rapid advancements in endoscopic technology will soon displace such time-tested approaches. He points to the smart phone — and the notion that it contains greater computing power than the NASA spacecraft that put men on the moon — as evidence of an overarching change in mankind’s relationship with the world. And it isn’t merely a philosophical shift.

New offerings from endoscope OEMs are breaking ground in computerized visualization. That clarity, coupled with smaller scopes with bigger channels and more capable clips, are expediting better outcomes. For gastrointestinalists, one of the largest endoscopic specialties, a trend toward in-house pathology is cutting costs and leading to more accurate results. All of these developments, plus improvements to screening protocols and reimbursement guidelines, are making a huge impact on a major patient base.

3-D technology is becoming an increasingly central part of the endoscopy conversation too, and breakthroughs in robotic tools and tech-
Innovations in Endoscopy: Efficiency, Quality, and Refurbished Equipment

Techniques are not far behind. But, say the experts, there is still a vital role for older refurbished equipment, especially for the reimbursement-pressured, budget-conscious facility.

Endoscopy, as a concept, is right at home in the modern health care landscape. By utilizing the latest in computer science, it is accomplishing more — faster — by actually doing less. Those efficiency-oriented outcomes are intrinsic to not only health reform, but life itself in the 21st century.

Evolving quality measures in gastroenterology

With over 11 million colonoscopies being performed in the U.S. every year, Dr. Blair Lewis, a private practice gastroenterologist in New York, calls them the “bread and butter” of endoscopy. And while the number of practicing gastroenterologists is declining, there is no small demand for quality care.

“The challenge is that the number of gastroenterologists is not growing at the pace of the market,” says Doug Ladd, chief marketing officer at EndoChoice. Ladd attributes this, in part, to limited GI fellowship slots and sees a trend — predominately in rural areas — toward general surgeons and family practitioners taking up the slack. He says that shift raises questions about training qualifications, which is something the major medical societies have to address.

Meanwhile, pathology services are emerging that focus on gastroenterology practices. “Big lab players like Quest, Sonic Healthcare, the big national laboratories; they do everything from blood samples, urine samples, hair samples, dermatology samples, and so on,” says Ladd.

“As a gastroenterologist, do you want someone evaluating your GI specimen who just reviewed a scalp sample? Or do you want that being looked at by an expert pathologist who has spent the entire day looking at gastro slides?” says Ladd.

Lewis credits new quality-assurance data-bases and information technology advancements with establishing more thorough and effective care standards. He says a doctor should spend at least six minutes conducting a colon exam because shorter exams are proven to yield fewer polyps and adenomas, and those detection rates are part of the data being collected. Lower polyp detection rates are shown to lead to a high interval colon cancer rate.

“In New York, the Department of Health sends out quarterly reports benchmarking where you stand,” says Lewis. They are evaluating doctors on a number of things: “Ten-year recall numbers, adenoma detection rates, examination time, completeness of exam, and quality of exam,” he says.

“Screening every ten years helps wipe out 80 percent of colon cancer deaths,” says Lewis, but over-screening can lead to unnecessary expenses. It has been shown that many doctors do not follow national guidelines and that excessive screening can be a costly problem in its own right.

“The only exceptions are if you find polyps or there is high risk, or colon cancer in the family,” says Lewis, which would indicate the need for more frequent screenings.

There are also new quality measures that make doctors responsible for their patient’s prep, which in previous years had not been the case. If a patient shows up for a colonoscopy but they haven’t been prop-
ерly prepped, (usually with a liquid diet or something to clear the bowel) then time and money are wasted.

“The cleansing of the bowel before the procedure is important because if it’s not effective then it’s hard to see lesions in the colon,” says Philip Doyle, director of marketing, gastroenterology at Olympus, who anticipates preparation becoming an increasingly important topic in coming years.

According to Lewis, this emphasis on prep has opened the door to a new kind of third-party business that helps patients along that process. “They call, text, or e-mail the patient several times leading up to the exam to make sure they’re following directions,” he says.

**The more cameras the better**

Quality measures aside, new tools from the major manufacturers are also contributing to better patient outcomes. Doyle says his company’s EVIS EXERA III has been shown in some studies to detect polyps at double the rate of the standard accepted threshold. It is also proven to provide faster insertion into the colon and therefore may lead to increased throughput while minimizing anesthesia requirements.

On the miniaturization front, more imagers are enabling a wider angle of view, and additional cameras are being fixed to the scopes. “It’s about seeing more,” says EndoChoice’s Ladd, “You can’t fix a problem you can’t see.”

The latest suite of equipment from EndoChoice, the second generation of their Fuse system, features a three-camera colonoscope and a two-camera gastroscope presented on a widescreen 4K Ultra HD monitor. “In three to five years, will anyone buy a single camera scope for upper or lower flexible endoscopy? I can’t comprehend that happening,” says Ladd.

Dr. Lewis echoes that sentiment, “Having three cameras will be the way of the future. All manufacturers will move to this technology because you can see more.”

And while some companies are beginning to offer 3-D tools, Ladd questions the ratio of cost-to-benefit. “The challenge of today’s 3-D technology is that it requires the doctor to wear different glasses,” he says. Those glasses, coupled with the need for specific viewing angles, are principal drawbacks to 3-D.

“And being able to see in 3-D does not necessarily increase ability to find something,” says Ladd. Despite his skepticism, he did allude to some 3-D developments at EndoChoice that he was not at liberty to discuss.

Wetter, of the Society of Laparoendoscopic Surgeons, looks at 3-D as one part of a much bigger picture. “It’s really an improvement in visualization — and that’s computer driven.” He expects that kind of computer assisted procedure to become more and more standard going forward.

Ladd notices another overarching trend in the next generation of scopes, “As microchip technology and lighting technology gets better, working channels will get larger, enabling clinicians to get larger tools that allow them to do more through their endoscopes.”

A greater channel allows for more versatile clips. As one example, “If a doctor is looking at an aggressive upper GI bleeder, or they did a polypectomy and got a very large open defect in the mucosa as a result of it, you don’t really have a good way to close that with today’s clips,” says Ladd.

Olympus is now marketing the QuickClip Pro, which is a rotatable clip with the ability to open and close. “Basically, you’re talking about a very long shaft where the working end is down in the body and the control end is several feet away in the hands of the physician or nurse,” says Olympus’ Doyle, “So to be able to rotate from outside the body and precisely position the clip with the edges of a defect or bleed is an important and fairly unique capability.”

**Robotic- or computer-assisted developments**

Ladd says that the overwhelming majority of endoscopic procedures are relatively straightforward and that robotics is still primarily a topic of interest reserved for the academic and research side of things.

“Making it practical for the average gastroenterologist who does eight procedures per day of moderate complexity, it’s probably not something that will become realistic and
Ladd says that while there have been attempts at robotic colonoscopy, none have been successful. The consensus, however, is that the popularization of robotics in an endoscopic setting is more a question of when than if.

“Robotics is one of the most important and misunderstood areas of surgery,” says Wetter, of the Society of Laparoendoscopic Surgeons, “99.99 percent of robotic surgery is really computer assisted surgery.” Meaning the surgeon is doing the surgery — not a robot.

“The reason there has been this discussion about robotics is that we haven’t seen big changes recently,” says Wetter, who mentions the da Vinci Surgical System from Intuitive Surgical as an example, but says that system had so many patents associated with it that the competition was stifled. He thinks that will change soon.

“There is no question that the idea of the computer chip and its enhancement make better surgeons, just as the way a car now has computer assist on the brakes, steering, and safety features,” says Wetter.

**New life for used equipment**

Not every physician or facility can afford the newest equipment, so they may explore fully refurbished alternatives. Consequently, a number of companies, including OEMs, have tapped into that growing market.

Olympus, the market leader in Endoscopy, is in a particularly good position to help fulfill the demand for certified pre-owned (CPO) scopes.

“We fully refurbish all of our CPO scopes with original Olympus parts that are installed by extensively trained technicians in our National Service Center in Silicon Valley,” says Tonya Resutek, CPO product manager at Olympus.

Resutek says the original manufacturer specifications for their endoscopes are proprietary information that a third-party seller would not have access to.

“All of our certified pre-owned (CPO) endoscopes get a certain list of brand new OEM parts installed on them,” says Resutek, which include new insertion tubes, angulation wires, and channels. “Then it’s packaged up and we provide a warranty just the same as we would a new product.”

**Infection control**

While smaller incisions are typically associated with lower infection rates, an unsanitary endoscopic procedure carries infection risks of serious consequence. Diseases like Hepatitis C, HIV, and other blood-borne pathogens are all within the realm of possibility and ensuring a clean procedure and scope is of paramount importance.

Ladd says national guidelines from the
SGNA and OSHA have established standards and protocols to help limit the incidence of cross-contamination. And although infections related to endoscopy are pretty well under control, when one does happen it can result in some high profile bad press for the treating facility.

Olympus provides its end-users with a manual devoted to reprocessing and also provides a large field-based team and other resources for training and technical support for reprocessing. “We put a lot of effort into making sure that protocols are clearly spelled out so people don’t have mistakes that could lead to contamination,” says Doyle.

“If you follow the process for cleaning a scope post-procedure, you’re certain to put a clean scope into the next patient,” says Ladd, “When the process fails, that’s when you don’t know.”

Doyle says patients undergoing certain advanced endoscopic procedures may already have increased likelihood of acquiring an infection because they are generally already not well, so, “It’s crucial that people follow all the required steps.”

“There is a 3M Clean-Trace product that came out a year or two ago that measures a chemical compound called ATP, which is residual of bacteria,” says Lewis. “You can wipe down an instrument, put it through the machine, and it will tell you if instrument has been adequately manually cleaned.”

Lewis also says new software tracks an instrument so that if you pick it up you can see the recent history on who cleaned it and when it was cleaned, which may tie in to the overall trend toward greater accountability in endoscopy and health care.

The endoscopy of tomorrow

Despite the uncertainties faced by gastroenterologists, (a group he calls “an aging subspecialty”), Lewis describes himself as “upbeat” about the changes happening in the industry. For him, it’s the new regulations and care standards that are creating better outcomes, just as much as, if not more than, new tools.

Lewis also says that there has been discussion in the industry of establishing companies where patients can go for all preparation and gastroenterological testing, such as blood work, stool testing, and sonograms. They have not materialized yet, but the increase in GI-only pathology labs may be an indication that it’s coming.

Doyle, with Olympus, says that while there is still a lot of screening and diagnosis going on, “Therapeutic or interventional treatments have grown over the years.” He notices more and more formerly surgical procedures becoming outpatient endoscopic procedures, and expects that trend to continue.

Ladd, with EndoChoice, foresees a near future with full spectrum endoscopes using larger channels, better tools, and the emergence of versatile, multi-channel capabilities.

Wetter, with the Society of Laparoendoscopic Surgeons, describes a recent visit to an ear, nose and throat (ENT) doctor. “Right there in the office they had a miniature scope and looked right into my sinus, and in five minutes it was done. All new technologies start with the elite and then if it’s useful they go down, so I wouldn’t be surprised if down the road even more family doctors will be doing certain types of endoscopy.”

Meanwhile, Wetter says simulation systems are already starting to allow new surgeons to perform their first procedures on virtual patients. He sees this as a logical step in a movement toward computerization. “We’re getting very close to the point where a surgeon’s capabilities can be checked using simulation,” says Wetter, “Airline pilots do the same thing.”

And from there, as with airline pilots, the sky is the limit. Wetter foresees a future beyond incisions altogether, where what was once minimally invasive will become non-invasive, and there will be no cutting whatsoever.

“All new technologies start with the elite and then if it’s useful they go down, so I wouldn’t be surprised if down the road even more family doctors will be doing certain types of endoscopy.”
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DOTmed asked the leading endoscope manufacturers to submit up to three of their current products to be featured in this section. To learn more about these products and see other equipment not shown, please visit the Equipment Guide in DOTmed’s Virtual Trade Show: dotmed.com/endoscopy

Industry Sector Report: Endoscopy
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Each month, we visit Dr. Blaufox’s Museum of Historical Medical Artifacts to take a look back at the medical equipment that cleared the way for what patients encounter in the doctors’ offices and operating rooms of today. Some equipment may be recognizable, while other featured items have since become obsolete or have had their usefulness discredited.

The picture and description appear courtesy of Dr. M. Donald Blaufox, M.D., Ph.D, from his website: www.mohma.org.

**Category:** Surgery  
**Estimated Date:** 1895  
**Manufacturer:** Seabury and Johnson  
**Description:** 1.25”x2.75” glass bottle containing three spools of silk thread. Labeled Carbolized twisted silk, sorted. Bottle is stamped, Patd Dec 10, 1895. Has a nickel plated screw on cap.
The nation’s first black female physician

Rebecca Lee Crumpler overcame significant racial and gender barriers when she became the first black woman to earn a medical degree in the United States. Crumpler earned her place in medical history in the 1800s, and very few records of the story of her life survive today. In fact, most of what historians know about Crumpler comes from a primary source — the brief biographical preface in a book she wrote on public health, one of the first medical texts written by an African American.

Crumpler was born on February 8, 1831 in Delaware. Her aunt, who lived in Pennsylvania, raised her. People in the surrounding community often turned to Crumpler’s aunt for medical care. Crumpler wrote that watching her aunt care for sick neighbors served as an inspiration for her to find work in a field where she could help to “relieve the sufferings of others.”

At the age of 21, Crumpler moved to Charlestown, Massachusetts, where she worked as a nurse for the next eight years. She did not have any formal training, but neither did anyone else. The country’s first official nursing school was not established until 1873. Crumpler impressed the physicians she worked with, and they encouraged her to apply to medical school. In 1860, Crumpler was admitted to the New England Female Medical College in Boston.

It seems that getting accepted to medical school was the easiest part of Crumpler’s academic journey. When the Civil War broke out in 1861, she had to quit her studies and relocate to Virginia. When she returned two years later, she learned that she had lost her financial aid. Fortunately, the Wade Scholarship Fund granted Crumpler a tuition award. The Fund was established by Benjamin Wade, an abolitionist from Ohio. Thanks to Wade, in 1864, Crumpler became the first black woman to earn a medical degree in the U.S. (Dr. Crumpler also happened to be the only black woman to ever graduate from the New England Female Medical College; the school merged with Boston University soon after.)

After graduating, Dr. Crumpler briefly practiced in Boston before moving to Richmond, Virginia at the end of the Civil War. She joined other black medical professionals to care for recently freed slaves, who had no access to adequate health care in the postwar South. Dr. Crumpler partnered with the Freedmen’s Bureau and a variety of social service organizations to deliver care to those who needed it. Her time in Richmond, Dr. Crumpler wrote, was “a proper field for real missionary work, and one that would present ample opportunities to become acquainted with the diseases of women and children.” She quickly earned an excellent reputation for her strong work ethic and commitment to her patients.

She married a colleague and returned to Boston in 1869. She opened a practice that specialized in women and children’s health, focusing on educating women about proper nutrition and preventive medicine. By 1880, she moved to Hyde Park, Mass., and began working on a book. Throughout her career, Dr. Crumpler kept meticulous journals and used the notes about her experiences as the basis for the manuscript.

Her work, entitled “A Book of Medical Discourses in Two Parts,” was published in 1883. Dr. Crumpler wrote it as a guide for women who could use it to improve the health of their families. This work is known to be one of the first medical publications written by a black American doctor and one of the first texts on public health ever published.

Dr. Crumpler died on March 9, 1895. As a way of honoring her legacy, today the Association of Black Women Physicians offers a scholarship in her name to aspiring black medical students. 

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Features

• The DOTmed 100 for 2015 are... This is the issue in which we announce the DOTmed 100 class for 2015! Find out who made the grade for equipment and for parts. And check out the top 25 international sellers and top 100 manufacturers as well

• Contrast Agents - We look at the flurry of FDA approvals for contrast agents that happened last year. We also explore the way they are being re-packaged, and ask the question: who benefits? With toxicity still a concern, we will see how physicians are ensuring the safety of patients receiving contrast

• Cardiology Special Report - We interview some of the top cardiology centers in the country to uncover the trends, innovations and challenges they have encountered in the past 12 months. We also get insight and opinions on what the future will hold. Further, we offer a sneak peek at some of the schedule for the upcoming ACC conference

• ACC Leadership Q&A - Q&A with president Dr. Patrick O’Gara of ACC

• NAPT Leadership Q&A - Q&A with executive director Tyler Wilson of NAPT

Industry Sector Reports:

• C-Arm - We focus on emerging technologies such as 3-D imaging, flat panels and image transmission to a PACS or EHR system. We also look at the use of image hold during a surgical procedure.

• Special Procedures/Cath Angio - We’ll look at the counter-intuitive use of more powerful X-ray tubes to decrease dose and reduce exposure to surrounding tissue as well as providing sharper images. We also report the latest on TAVR in the light of strict requirements for CMS reimbursement which may have dampened enthusiasm.

• Injectors - We explore whether injectors that integrate with CT and MR systems are worth the cost versus traditional injectors and look at maintenance steps to keep injectors working properly. Issues of extravasation, allergic reactions and renal failure are also explored as well as hydraulic vs. battery powered systems.
Bruce Johnson has been with supply chain organization GHX since 2000. Prior to that, he spent 12 years with GE Healthcare. He shared his thoughts on the obstacles the supply chain needs to overcome as well as what hospitals should keep in mind when trying to curb costs.

“When you talk about the challenges of the supply chain, I think it’s a continuation of some of the trends you’re seeing because of health care reform,” says Johnson. “When I meet with hospital executives, they’re looking at what they can do to dramatically improve their costs and quality.”

To cut costs hospitals are turning to information tied to clinical data. The goals: To better standardize care, to improve patient experience and outcomes — and to boost efficiency.

But “dirty” data can make that tricky. “There’s definitely a lot of data, but it’s not necessarily clean or normalized data. You’re trying to marry supply chain with clinical data. But there’s a step before that. You have to clean up and normalize it to have actionable data you can use,” he says.

Johnson says the growing use of UDIs and requirements for their use being introduced by the FDA will help in that regard.

**Tradition needs to move aside**

Key to progress, he stresses, is overcoming any traditional lack of trust between providers and suppliers. Facilities able to build a healthy partnership between provider and supplier and increase transparency of interactions will be the most successful.

“Some of our customers are very adamant about the fact that health care is dealing with patient lives and you’ll never be able to directly compare the type of transparency in health care to that found in automotive or electronic industries, for example,” he stresses. “But a common theme among leaders — regardless of what your take is on that — everyone agrees that [the] status quo and going after just price cuts per unit won’t get things done. That’s where we’re seeing more progressive organizations looking at other cost drivers,” Johnson says.

“The cost-cutting and negotiating of the past, say, getting 10 cents off unit cost, isn’t going to get a hospital where it needs to go.” Instead, he says, they need to consider inefficiencies. “If we look at that, is it possible there could be a savings of $10 per unit with smarter planning?”

**The data exchange**

“One of the things I think you’ll see — because the hospitals have to consider a new situation for them, against quality and outcome — will be hospitals looking at what partnerships they’ll need in order to have a big enough [data] slice of the population,” Johnson says.

For many hospitals, getting a large enough data pool to effectively run algorithms means entering into new relationships to get information from a broader pool. “The companies that have algorithms developed to leverage that technology to pull together some of the information will do the best at helping to standardize care,” Johnson says.

Johnson says there are things to look for as a supply leader trying to improve efficiency:

1. **Look at the data you’re responsible for** — getting the process in place as far as contracts and having strategy there. What tools will you have in place to manage it?

2. **What is your strategy around automation?** Best in class hospitals and suppliers are looking at how they get to the perfect order — ultimately a “touchless” scenario, one in which to meet the goal of maximizing efficiency requires no human intervention on the provider or supplier side, will likely be the way of the future.

“The key is the accuracy of the data,” says Johnson. “So that’s why the key there is touchless — because for both supplier and hospital, if you get the information error free, you can go from requisition to payment invoice. Having a way to decipher content and contract is key.”

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